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CONTENTS

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT member countries and the most recent PCT rule changes see the notices appearing in the Official Gazette at 1001 O.G. 14 on Dec. 9, 1980 and at 1012 O.G. 20 on Nov. 17, 1981.

Note that the international fees have been increased as of Jan. 1, 1982. The current schedule of fees is as follows:

Transmittal fee	$ 35.00
Search fee	300.00
International Fees	
Basic Fee (first 30 pages)	270.00
Basic Supplemental Fee (for each sheet over 30)	6.00
Designation Fees	65.00

GERALD J. MOSSINGHOFF,
Commissioner of Patents and Trademarks.

Jan. 19, 1982.

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

3,449,938, Re. S.N. 339,173, Filed Jan. 13, 1982, Cl. 73/23, METHOD FOR SEPARATING AND DETECTING FLUID MATERIALS, John Calvin Giddings, Owner of Record: *University of Utah, Salt Lake City, Utah,* Attorney or Agent: Vaughn W. North, Ex. Gp.: 244

3,520,186, Re. S.N. 342,432, Filed Jan. 25, 1982, Cl. 73/290, ULTRASONIC FLUID INTERFACE SENSING, George L. Adams, et al., Owner of Record: *National Sonics Corp., Farmingdale, N.Y.,* Attorney or Agent: Harold I. Kaplan, et al., Ex. Gp.: 244

3,813,699, Re. S.N. 324,992, Filed Nov. 25, 1981, Cl. 3/1, PROSTHETIC HIP JOINT, Richard P. Giliberty, Owner of Record: *Gill Prosthesis, Inc., Manhasset, N.Y.,* Attorney or Agent: Richard Brink, et al., Ex. Gp.: 337

3,886,979, Re. S.N. 294,230, Filed Aug. 19, 1981, Cl. 138/118.1, SHIRRED TUBULAR FOOD CASINGS HAVING A BARRIER COATING, Jerome J. M. Rasmussen, Owner of Record: *Union Carbide Corp., New York, N.Y.,* Attorney or Agent: James C. Arvantes, et al., Ex. Gp.: 243

3,981,945, Re. S.N. 344,173, Filed Jan. 29, 1982, Cl. 260/950, COATING COMPOSITIONS COMPRISING A POLYSULFONE AND A FLUOROCARBON POLYMER, Terence E. Attwood, et al., Owner of Record: *Imperial Chemical Industries Ltd., London, England,* Attorney or Agent: Watson T. Scott, et al., Ex. Gp.: 142

4,000,493, Re. S.N. 323,206, Filed Nov. 20, 1981, Cl. 346/1, ACOUSTOOPTIC SCANNER APPARATUS AND METHOD, Richard A. Spaulding, et al., Owner of Record: *Eastman Kodak Co., Rochester, N.Y.,* Attorney or Agent: Milton S. Sales, et al., Ex. Gp.: 211

4,118,369, Re. S.N. 325,392, Filed Nov. 27, 1981, Cl. 260/45.8, 2,2,6,6-TETRASUBSTITUTED-4-PIPERIDYL CARBOXY HETEROCYCLIC COMPOUNDS AS STABILIZERS FOR SYNTHETIC POLYMERS, Montonobu Minagawa, et al., Owner of Record: *Argus Chemical Corp., Brooklyn, N.Y.,* Attorney or Agent: John R. Janes, Ex. Gp.: 143

4,129,097, Re. S.N. 340,415, Filed Jan. 18, 1982, Cl. 119/28, FLOOR COVERING SHEET FOR STABLES, Udo Schwartzkopff, et al., Owner of Record: *Akzona, Inc., Ashville, N.C.,* Attorney or Agent: Jack H. Hall, Ex. Gp.: 333

4,170,958, Re. S.N. 311,313, Filed Oct. 14, 1981, Cl. 118/325, DEVICE FOR APPLYING DESIGNS, Manfred Moser, Owner of Record: *Eduard Kusters, Krefeld, Germany,* Attorney or Agent: Richard L. Mayer, Ex. Gp.: 162

4,177,489, Re. S.N. 327,644, Filed Dec. 4, 1981, Cl. 360/74.2, TAPE RUNNING MECHANISM PROVIDED WITH AUTOMATIC STOPPING DEVICE, Isao Hasegawa, Owner of Record: *Clarion Co., Ltd., Saitama, Japan,* Attorney or Agent: William A. Drucker, Ex. Gp.: 235

4,177,564, Re. S.N. 327,289, Filed Dec. 3, 1981, Cl. 433/82, DENTAL HANDPIECE CONNECTOR, Lloyd P. Flatland, Owner of Record: *Inventor,* Attorney or Agent: J. Georg Seka, Ex. Gp.: 333

4,179,786, Re. S.N. 332,802, Filed Dec. 21, 1981, Cl. 29/407, TENSION CONTROL OF FASTENERS, Siavash Eshghy, Owner of Record: *Rockwell International Corp., Pittsburgh, Pa.,* Attorney or Agent: Richard A. Speer, Ex. Gp.: 321

4,181,821, Re. S.N. 336,067, Filed Dec. 31, 1981, Cl. 179/1SD, MULTIPLE TEMPLATE SPEECH RECOGNITION SYSTEM, Frank C. Pirz, et al., Owner of Record: *Bell Telephone Laboratories, Inc., Murray Hill, N.J.,* Attorney or Agent: S. E. Hollander, et al., Ex. Gp.: 236

4,183,202, Re. S.N. 339,786, Filed Jan. 15, 1982, Cl. 057/328, METHOD AND APPARATUS FOR PRODUCING SPUN YARN, Toshihumi Morihashi, Owner of Record: *Murata Kikai Kabushiki Kaisha, Minamihi, Japan,* Attorney or Agent: Robert W. Spensley, et al., Ex. Gp.: 244

4,184,205, Re. S.N. 342,159, Filed Jan. 25, 1982, Cl. 364/508, DATA ACQUISITION SYSTEM, Robert S. Morrow, Owner of Record: *IRD Mechanalysis, Inc., Columbus, Ohio,* Attorney or Agent: Gerald L. Smith, et al., Ex. Gp.: 236

4,184,838, Re. S.N. 339,679, Filed Jan. 15, 1982, Cl. 431/202, IGNITER FOR OIL AND/OR GAS WELL DRILLING OPERATION, Kenneth L. Burns, et al., Owner of Record: *Loffland Brothers Co., Tulsa, Okla.,* Attorney or Agent: James R. Head, et al., Ex. Gp.: 345

4,185,437, Re. S.N. 342,478, Filed Jan. 25, 1982, Cl. 52/601, BUILDING WALL PANEL AND METHOD OF MAKING SAME, Ralph C. Robinson, Owner of Record: *Olympian Stone Co., Redmond, Wash.,* Attorney or Agent: James R. Uhlir, et al., Ex. Gp.: 354

4,191,334, Re. S.N. 342,337, Filed Jan. 25, 1982, Cl. 24/16PB, CABLE TIE, John J. Bulanda, et al., Owner of Record: *Panduit Corp., Tinley Park, Ill.,* Attorney or Agent: Charles R. Wentzel, Ex. Gp.: 355

4,193,247, Re. S.N. 342,191, Filed Jan. 25, 1982, Cl. 52/713, PANEL MOUNTING CLIP, Robert E. Heckelsberg, Owner of Record: *AMCA International Corp., Hanover, N.H.,* Attorney or Agent: Cyrus G. Minkler, et al., Ex. Gp.: 354

4,194,661, Re. S.N. 342,621, Filed Jan. 25, 1982, Cl. 226/95, TAPE ADVANCING METHODS AND APPARATUS, Frederic F. Grant, Owner of Record: *Bell*

& Howell Co., Chicago, Ill., Attorney or Agent: Luc P. Benoit, Ex. Gp.: 242

4,194,935, Re. S.N. 336,294, Filed Dec. 31, 1981, Cl. 148/175, METHOD OF MAKING HIGH MOBILITY MULTILAYERED HETEROJUNCTION DEVICES EMPLOYING MODULATED DOPING, Raymond Dingle, et al., Owner of Record: *Bell Telephone Laboratories, Inc., Murray Hill, N.J.,* Attorney or Agent: S. E. Hollander, et al., Ex. Gp.: 111

4,199,235, Re. S.N. 328,660, Filed Dec. 3, 1981, Cl. 354/25, CAMERA WITH AUTOFOUSINE DEVICE, Mutshide Matsuda, et al., Owner of Record: *Canon Kabushiki Kaisha, Tokyo, Japan,* Attorney or Agent: Joseph Fitzpatrick, et al., Ex. Gp.: 211

4,203,114, Re. S.N. 341,914, Filed Jan. 22, 1982, Cl. 343/100.5A, DIGITAL BEARING INDICATOR, Carl Gerst, et al., Owner of Record: *Anaren Microwave, Inc., Syracuse, N.Y.,* Attorney or Agent: Camil P. Spiecens, et al., Ex. Gp.: 222

4,212,613, Re. S.N. 343,057, Filed Jan. 27, 1982, Cl. 425/141, APPARATUS FOR HANDLING HEAT-SOFTENABLE BATCH MATERIAL, Stephen Seng, Owner of Record: *Owens-Corning Fiberglas Corp., Toledo, Ohio,* Attorney or Agent: Ronald C. Hudgens, et al., Ex. Gp.: 147

4,213,282, Re. S.N. 342,151, Filed Jan. 25, 1982, Cl. 52/404, METAL PANEL ROOFING STRUCTURE, Robert E. Heckelsberg, Owner of Record: *AMCA International Corp., Hanover, N.H.,* Attorney or Agent: Cyrus G. Minkler, et al., Ex. Gp.: 354

4,224,775, Re. S.N. 342,701, Filed Jan. 25, 1982, Cl. 52/528, BUILDING PANEL, Robert E. Heckelsberg, Owner of Record: *AMCA International Corp., Hanover, N.H.,* Attorney or Agent: Cyrus G. Minkler, et al., Ex. Gp.: 354

4,225,672, Re. S.N. 343,922, Filed Jan. 29, 1982, Cl. 435/74, METHOD FOR PRODUCING MALTO-OLIGOSACCHARIDE GLYCOSIDES, Leo M. Hall, Owner of Record: *Inventor,* Attorney or Agent: John H. Faro, et al., Ex. Gp.: 172

4,228,365, Re. S.N. 324,709, Filed Nov. 24, 1981, Cl. 307/221.D, MONOLITHIC INFRARED FOCAL PLANE CHARGE COUPLED DEVICE IMAGER, William A. Gutierrez, et al., Owner of Record: *The United States of America as represented by the Secretary of the Army, Washington, D.C.,* Attorney or Agent: Nathan Edelberg, et al., Ex. Gp.: 254

4,229,786, Re. S.N. 312,525, Filed Oct. 19, 1981, Cl. 363/126, FLY-BACK TRANSFORMER WITH A LOW RINGING RATIO, Yutaka Mitani, Owner of Record: *Murata Manufacturing Co., Kyoto, Japan,* Attorney or Agent: Sidney, G. Faber, et al., Ex. Gp.: 212

4,250,282, Re. S.N. 338,504, Filed Jan. 11, 1982, Cl. 528/509, MELAMINE RESIN, PROCESS FOR ITS MANUFACTURE AND ITS USE FOR THE MANUFACTURE OF COATED WOOD-BASED MATERIALS AND LAMINATES, Peter Dorries, et al., Owner of Record: *Cassella Aktiengesellschaft, Frankfurt am Main, Germany,* Attorney or Agent: Arthur G. Connolly, Ex. Gp.: 144

4,252,512, Re. S.N. 307,336, Filed Sept. 30, 1981, Cl. 424/164, SYNERGISTIC FUNGICIDAL COMPOSITIONS CONTAINING 1,2,4-TRIAZOLE DERIVATIVES, Wilheim Brandes, et al., Owner of Record: *Bayer Aktiengesellschaft, Leverkusen, Germany,* Attorney or Agent: Arnold Sprung, et al., Ex. Gp.: 125

4,259,920, Re. S.N. 324,028, Filed Nov. 23, 1981, Cl. 118/116, TONER IMAGE PRESSURE FIXING DEVICE, Yoshitaka Sasaki, Owner of Record: *Hitachi Metals, Ltd., Tokyo, Japan,* Attorney or Agent: Douglas B. Henderson, et al., Ex. Gp.: 162

4,260,912, Re. S.N. 336,009, Filed Dec. 30, 1981, Cl. 307/597, DIGITAL DELAY GENERATOR, Melvin D. Bjorke, Owner of Record: *Honeywell, Inc., Minneapolis, Minn.,* Attorney or Agent: John P. Sumner, et al., Ex. Gp.: 254

4,262,677, Re. S.N. 302,581, Filed Sept. 15, 1981, Cl. 128/759, CULTURE SAMPLING DEVICE AND METHOD, Robert F. Bader, Owner of Record: *Inventor,* Attorney or Agent: None, Ex. Gp.: 335

4,275,343, Re. S.N. 337,139, Filed Jan. 5, 1982, Cl. 318/721, BACK EMF CONTROLLED PERMANENT MAGNET MOTOR, Donald E. Fulton, et al., Owner of Record: *The Charles Stark Draper Laboratory, Inc., Cambridge, Mass.,* Attorney or Agent: Joseph Weingarten, et al., Ex. Gp.: 217

4,283,731, Re. S.N. 339,255, Filed Jan. 13, 1982, Cl. 346/75, INK JET PRINTING APPARATUS, Dennis E. Bok, et al., Owner of Record: *The Mead Corp., Dayton, Ohio,* Attorney or Agent: Nathaniel R. French, Ex. Gp.: 211

4,293,004, Re. S.N. 339,367, Filed Jan. 15, 1982, Cl. 137/884, ELECTRONIC VALVE ASSEMBLY FOR GLASSWARE FORMING MACHINERY, Earl L. Lowe, Owner of Record: *Ball Corp., Muncie, Ind.,* Attorney or Agent: Gilbert E. Alberding, Ex. Gp.: 341

4,293,268, Re. S.N. 342,245, Filed Jan. 25, 1982, Cl. 414/591, MATERIAL HANDLING DEVICE, George Mink, Owner of Record: *Inventor,* Attorney or Agent: Ernest A. Beutler, et al., Ex. Gp.: 314

4,296,581, Re. S.N. 342,162, Filed Jan. 25, 1982, Cl. 52/520, ROOFING STRUCTURE, Robert E. Heckelsberg, Owner of Record: *AMCA International Corp., Hanover, N.H.,* Attorney or Agent: John A. Artz, et al., Ex. Gp.: 354

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b).

3,707,126, Reexam. No. 90/000,167, Requested: Feb. 24, 1982, Cl. 105/282, HOPPER GATE LATCHING MECHANISM, Francis M. Nester, Owner of Record: *Keystone Ind., Inc., Chicago, Ill.,* Attorney or Agent: Albert W. Bicknell, Ex. Gp.: 310, Requester: ACF Ind., Inc., Saint Charles, Mo.

4,059,405, Reexam. No. 90/000,171, Requested: Mar. 1, 1982, Cl. 23/230, METHOD AND APPARATUS FOR ANALYSIS OF CONSTITUENT CARRIED IN FIBROUS MEDIUM, Lester A. Sodickson, et al., Owner of Record: *Damon Corp., Needham Heights, Mass.,* Attorney or Agent: Herbert P. Kenway, Ex. Gp.: 170, Requester: American Hospital Supply Corp., Miami, Fla.

Availability of Copies of the Magnetic Tapes of the Third Edition of the International Patent Classification (IPC)

The Assembly of the IPC Union has decided to make available copies of the magnetic tapes of the third edition of the IPC through the International Bureau of the World Intellectual Property Organization.

The IPC Assembly made the following decisions:

"The International Bureau should put at the disposal of the Industrial Property Offices of any country member of the IPC Union which so wishes the magnetic tape of the third edition of the IPC *at cost,* provided that any such Office receiving a tape accepts the three conditions set forth . . . below:

(i) the tape is used by those Offices . . . for the purposes of carrying out their functions,
(ii) no reproduction of the tape or its contents, in whole or in part, is made in the form of paper copies or microfiches, except in the case of on-line printouts, and
(iii) the tapes or copies thereof, in whole or in part, are not made available to any third party."

The Committee of Experts of the IPC Union decided that the tape (in the English *or* French language) would be made available to Industrial Property Offices of countries being members of the IPC Union at the price of 1,000 Swiss francs.

In order to carry out its function of disseminating patent information contained on IPC tapes, the U.S. Patent and Trademark Office may need the assistance of qualified U.S. public organizations or private companies. Accordingly, the Office will consider requests from such organizations or companies interested in disseminating such information.

The Committee also decided that, subject to the conditions enumerated in (ii) and (iii) above, the tapes would be made available for the following prices to any public organization or private company authorized by its governement:

- for internal use only, at the price of 5,000 Swiss francs; and
- for exploitation of the tape on a commercial basis, at the price of 30,000 Swiss francs.

The Patent and Trademark Office will authorize United States public organizations and private companies to purchase the tape under these conditions and at the agreed upon prices quoted.

For further information contact:

Office of International Patent Classification
Crystal Square, Bldg. 4, Room 108
U.S. Patent and Trademark Office
Washington, D.C. 20231
Tel: (703) 557-3756

GERALD J. MOSSINGHOFF,
Mar. 8, 1982. *Commissioner of Patents and Trademarks.*

Adverse Decisions in Interference

In the designated interference involving the indicated claims of the following patents, final decisions having been rendered that the respective patentees were not the first inventors with respect to the claims listed.

Patent No. 3,812,245, M.A. Dugan, NOVEL COMPOSITIONS FOR RADIOTRACER LOCALIZATION OF DEEP VEIN THROMBI, Interference No. 99,133, decided Oct. 29, 1981, claims 1, 5 & 10.

Patent No. 3,941,898, S. Sadamatsu and T. Nozaki, DEVELOPING METHOD UTILIZING PULVERIZED, COLORED, CROSSLINKED, VINYLIC POLYMER RESIN AS TONER, Interference No. 99,884, decided Dec. 17, 1981, claims 1-3, 5, 7, 8, 11 & 13.

Patent No. 4,051,032, J.A. Borchardt, WATER TREATMENT SYSTEM, Interference No. 100,414, decided Jan. 6, 1982, claims 8 & 16.

Patent No. 4,069,743, B. Bertanza, CONTROL UNITS FOR VEHICLE POWERSTEERING MECHANISMS, Interference No. 100,177, decided Aug. 13, 1981, claim 1.

Patent No. 4,104,029, C.L. Maier, Jr., PROCEDURE FOR THE ASSAY OF PHARMACOLOGICALLY IMMUNOLOGICALLY AND BIOCHEMICALLY ACTIVE COMPOUNDS IN BIOLOGICAL FLUIDS, Interference No. 100,521, decided Nov. 1, 1981, claims 1-12 & 14.

Patent No. 4,108,653, M.T.J. Peters, PRESSURE-FIXABLE TONER POWDER WITH A THERMOPLASTIC POLYETHYLENE BINDER, Interference No. 100,558, decided Dec. 1, 1981, claims 1-11.

Patent No. 4,138,554, T. Naito, J. Okumura and M. Oka, 7-[D-α-(4-HYDROXY-1,5-NAPHTHYRIDINE-3-CARBOXAMIDO)-α-PHENYL(AND P-HYDROXYPHENYL) ACETAMIDO]-3-CARBAMOYLOXYMETHYL-3-CEPHEM-4-CARBOXYLIC ACIDS, Interference No. 100,579, decided Dec. 2, 1981, claims 1-5, 16-20 and 31-35.

Patent No. 4,145,284, E.L. Neu, METHOD FOR MAKING POLYMERIC FILTER AIDS AND PRODUCTS THEREOF, Interference No. 100,555, decided Jan. 19, 1982, claims 1 & 3.

NANNIE B. HENRY
Deputy Clerk
Board of Patent Interferences.

Change in Drafting Practice

Effective Apr. 12, 1982, the Patent and Trademark Office is terminating its drawing correction service.

In order to effect any changes in the drawings, applicants will be responsible for submitting either new drawings or having the drawings corrected by a bonded commercial draftsman, at applicant's expense, in the manner specified below. The new practice will permit applicants to delay correction of drawings in almost all cases until after the Notice of Allowance is mailed.

The initial list of bonded commercial draftsmen appears below. This list will be expanded as more commercial draftsmen are bonded. Applicants will, at least initially, be supplied with a current list of the bonded draftsmen with all Office actions requiring a drawing change.

The following is a letter which will be supplied, at least initially, to applicants in all Office actions requiring a drawing change. This letter explains the procedures for accomplishing the above, sets forth the time period within which the drawings must be corrected, and lists all of the currently bonded commercial draftsmen.

U.S.Department of Commerce, Patent and Trademark Office

Attachment to Paper Number
Serial No.

INFORMATION ON HOW TO EFFECT DRAWING CHANGES

1. Correction of Informalities (Draftsman's objections on PTO-948)

In order to correct any informalities in the drawings, applicants *MUST* comply with options (a) or (b) below. Failure to do so will result in *ABANDONMENT* of the application.

a) File new drawings with the changes incorporated therein. Applicant may delay filing the new drawings until the application is allowed by the examiner. If delayed, the new drawings *MUST* be filed within the *THREE MONTH* statutory period set for payment of the base issue fee in the **"NOTICE OF ALLOWANCE AND BASE ISSUE FEE DUE"** (PTOL-85). Also, if delayed, the drawings should be filed as a separate paper with a transmittal letter addressed to the Official Draftsman and which indicates the following in the upper right hand corner:

Date of the Notice of Allowance
Issue Batch Number
Serial Number

b) Request a commercial bonded drafting firm (see list below) to make the necessary corrections.

A BONDED DRAFTSMAN MUST BE *AUTHORIZED, THE CORRECTIONS EXECUTED AND THE CORRECTED DRAWINGS RETURNED TO THE OFFICE* DURING THE THREE MONTH STATUTORY PERIOD SET FOR PAYMENT OF THE BASE ISSUE FEE IN THE "NOTICE OF ALLOWANCE AND BASE ISSUE FEE DUE" (PTOL-85). NOTE THAT THE STATUTE DOES NOT PERMIT EXTENSION OF THE THREE MONTH PERIOD SET TO PAY THE BASE ISSUE FEE.

2. Corrections other than Informalities Noted by the Draftsman on the PTO-948

All changes to the drawings, other than informalities noted by the Draftsman, *MUST* be made in the same manner as above except that, if delayed option (a) is selected, normally, a sketch of the changes to be incoropratted into the new drawings *MUST* be approved by the examiner before the application will be allowed. If option (b) is selected, normally, applicants must submit, in duplicate, a separate paper containing a sketch of the proposed changes before the application will be allowed. No changes will be permitted to be made, other than correction of informalities, unless the examiner has approved the proposed changes.

3. Listing of Bonded Draftsmen

Graphe-Tech
11301 Rockville Pike
Kensington, Md. 20895
(301) 881-9400

Ultra Graphics, Inc.
Suite 300
3720 Farragut Ave.
Kensington, Md. 20795
(301) 946-1343

Mantech International Corp.
2121 Eisenhower Ave.
4th Fl.
Alexandria, Va. 22314
(703) 838-5793

National Graphic Center
205 W. Jefferson St.
Falls Church, Va. 22046
(703) 533-8700

Mil-R Productions
2107 Mt. Vernon Ave.
Alexandria, Va. 22301
(703) 548-3879

Ord-Marine Engineering
10315 Kensington Pky.
Kensington, Md. 20895
(301) 949-3282

Patent Reproduction Co.
26 "N" St., S.E.
Washington, D.C. 20003
(202) 488-7096

Quinn Pat. Drwg. Service Co.
2021 Crystal Plaza Dr.
Arlington, Va. 22202
(703) 521-1650

Kirby Lithographic Co.
2900 South Eads St.
Arlington, Va. 22202
(703) 684-7600

Technical Illustrator
1911 Jeff. Davis Hwy.
Suite 600-CM1
P.O. Box 2627
Arlington, Va. 22202
(703) 920-8900

IT IS SUGGESTED THAT APPLICANTS DETACH THIS LETTER FROM THE OFFICE ACTION AND ATTACH IT TO THE FRONT OF APPLICANT'S FILE AS A REMINDER THAT, IN ORDER TO AVOID ABANDONMENT, A BONDED DRAFTSMAN MUST BE *AUTHORIZED, THE CORRECTIONS EXECUTED AND THE CORRECTED DRAWINGS RETURNED TO THE OFFICE*, OR NEW DRAWINGS SUBMITTED, DURING THE THREE MONTH STATUTORY PERIOD SET FOR PAYMENT OF THE BASE ISSUE FEE. NOTE THAT THE STATUTE DOES NOT PERMIT EXTENSION OF THE THREE MONTH PERIOD SET TO PAY THE BASE ISSUE FEE.

Currently there is a large backlog of applications pending before the Office draftsmen. Applicants whose applications are part of this backlog are strongly encouraged to have the necessary drawing corrections made by one of the bonded commercial draftsmen to expedite the issuance of their applications. If there has been authorization to charge a deposit account for these corrections, the authorization will not be processed. If a fee has been paid with cash, a refund will be processed.

The requirement of 37 CFR §§1.85, 1.86(b) and 1.123(a), specifying that drawings, or corrections to the drawings, may or must be made by the Office, is hereby waived.

GERALD J. MOSSINGHOFF,
Mar. 16, 1982. *Commissioner of Patents and Trademarks.*

PATENT NOTICES

Certificates of Correction for the Week of Apr. 6, 1982

Re. 30,495	4,282,711	4,299,988	4,307,205
4,097,069	4,284,624	4,300,343	4,307,289
4,124,296	4,285,772	4,300,353	4,307,737
4,156,014	4,286,087	4,301,363	4,307,757
4,187,631	4,286,148	4,301,779	4,307,772
4,192,772	4,286,677	4,301,946	4,308,146
4,224,379	4,288,394	4,302,206	4,308,275
4,228,938	4,288,399	4,302,342	4,308,662
4,233,187	4,288,434	4,302,344	4,308,795
4,233,728	4,288,555	4,303,011	4,309,451
4,236,964	4,288,781	4,303,295	4,309,479
4,237,409	4,289,466	4,303,631	4,309,567
4,238,570	4,290,103	4,303,677	4,309,756
4,242,249	4,291,374	4,303,704	4,309,770
4,244,878	4,292,374	4,303,717	4,309,871
4,246,318	4,292,685	4,304,010	4,309,908
4,251,384	4,293,721	4,304,508	4,310,141
4,255,895	4,294,158	4,304,536	4,310,183
4,255,919	4,294,646	4,304,596	4,310,459
4,256,047	4,296,527	4,305,044	4,310,474
4,256,518	4,296,993	4,305,555	4,310,479
4,257,829	4,297,185	4,306,289	4,310,483
4,261,525	4,297,247	4,306,341	4,310,641
4,261,667	4,297,468	4,306,366	4,310,690
4,264,480	4,297,680	4,306,377	4,310,774
4,265,640	4,297,735	4,306,523	4,310,949
4,270,937	4,298,416	4,306,629	4,311,092
4,275,035	4,298,669	4,306,837	4,311,352
4,275,050	4,298,731	4,306,842	4,311,513
4,275,148	4,298,797	4,306,919	4,311,562
4,275,748	4,299,011	4,307,104	4,311,750
4,277,676	4,299,438	4,307,123	4,312,148
4,278,663	4,299,454	4,307,124	
4,279,294	4,299,476	4,307,131	
4,281,388	4,299,986	4,307,156	

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Birmingham Public Library	(205) 254-2555
Arizona	Tempe: Science Library, Arizona State University	(602) 965-7607
California	Los Angeles Public Library	(213) 626-7555 Ext. 273
	Sacramento: California State Library	(916) 322-4572
	Sunnyvale: Patent Information Clearinghouse*	(408) 738-5580
Colorado	Denver Public Library	(303) 573-5152 Ext. 222
Delaware	Newark: University of Delaware	(302) 738-2238
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4519
Illinois	Chicago Public Library	(312) 269-2814
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6552
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214, 215
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7814
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 930-0850
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1321**
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 226
South Carolina	Charleston: Medical University of South Carolina	(803) 792-2372
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 528-2957
Texas	Dallas Public Library	(214) 748-9071
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

*Collection organized by subject matter.

**Call only between the hours of 10:00 a.m. and 5:00 p.m.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner
WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF March 6, 1982

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director .... Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	6-23-80
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director .... Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	1-04-80
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director .... Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthdontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	3-04-81
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director .... Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	3-02-81
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director .... Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	12-08-80
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—S. W. ENGLE, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	6-18-80
SPECIAL LAWS ADMINISTRATION, GROUP 220—KENNETH L. CAGE, Director .... Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy, Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	7-09-80
INFORMATION TRANSMISSION, STORAGE, AND RETRIEVAL, GROUP 230—EARL LEVY, Director ..... Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	4-17-80
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—G. M. FORLENZA, Director .... Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling.	2-26-79
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director .... Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	11-26-79
DESIGN, GROUP 290—KENNETH L. CAGE, Director .... Industrial Arts; Household, Personal and Fine Arts.	5-05-80
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director .... Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	6-30-80
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—M. M. NEWMAN, Director ... Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	7-14-80
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. AEGERTER, Director .... Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	5-06-80
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director .... Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	12-11-79
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—A. L. SMITH, Director .... Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Miscellaneous Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	6-02-80

Expiration of patents: The patents within the range of numbers indicated below expire during March 1982, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents .... Numbers 3,171,131 to 3,176,313, inclusive
Plant Patents .... Numbers 2,486 to 2,489 inclusive

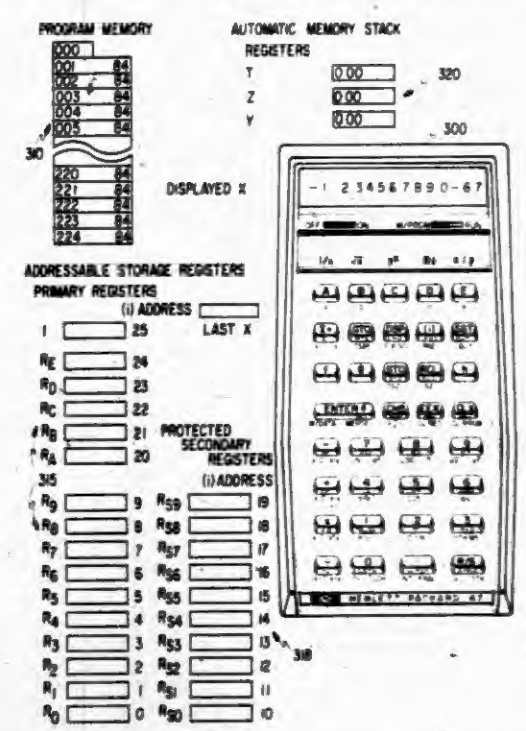
DEFENSIVE PUBLICATIONS

PUBLISHED APRIL 6, 1982

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O.G. 687. The abstracts of Defensive Publication applications are identified by distinctly numbered series and are arranged chronologically. The heading of each abstract indicates the number of pages of specification, including claims and sheets of drawings contained in the application as originally filed. The files of these applications are available to the public for inspection and reproduction may be purchased for 30 cents a sheet.

Defensive Publication applications have not been examined as to the merits of alleged invention. The Patent and Trademark Office makes no assertion as to the novelty of the disclosed subject matter.

T101,701
PORTABLE PROGRAMMABLE CALCULATOR
William E. Egbert, 1760 Noranda Dr., #1, Sunnyvale, Calif. 94087
Continuation of Ser. No. 46,971, Jun. 8, 1979, abandoned, which is a continuation of Ser. No. 933,204, Aug. 14, 1978, abandoned, which is a continuation of Ser. No. 817,934, Jul. 22, 1977, abandoned, which is a continuation of Ser. No. 701,718, Jul. 1, 1976, abandoned. This application Aug. 28, 1980, Ser. No. 182,161
Int. Cl.[3] G06F *15/02, 15/04*
U.S. Cl. 364—706
19 Sheets Drawing. 157 Pages Specification



Two battery-powered hand-held programmable calculators for performing arithmetic, trigonometric and logarithmic functions and displaying the results thereof are provided with the capability of being fully programmable via magnetic cards or a keyboard. Through a unique transmographic coding scheme, programs coded on one embodiment may be executed on a second embodiment even though the key codes for the respective functions are dissimilar. In one embodiment, a processor distinguishes between magnetic cards containing coded instructions and cards containing data. The calculator prompts the user via the display when additional cards are needed to form a complete set of program instructions. The processor, registers, and display may be initialized by control words on magnetic cards. During program execution, the calculator can pause to permit data entry from the keyboard or from magnetic cards. The operator may also cause the calculator to pause and display the data of an intermediate calculation. A number of stack and program review capabilities are provided, including the ability to accelerate, temporarily suspend, or indefinitely suspend review. The operator may select either of two sets of registers for access by the processor. In one embodiment, a hard copy printer is provided for creating a permanent record of the calculations.

T101,702
TEXTILE SIZING COMPOSITIONS
Kenneth R. Barton, 201 Claymore Dr., Kingsport, Tenn. 37663, and Richard L. McConnell, 421 Manderley Rd., Kingsport, Tenn. 37660
Continuation of Ser. No. 136,148, Mar. 31, 1980, abandoned. This application Apr. 27, 1981, Ser. No. 258,155
Int. Cl.[3] C08F *110/02;* D06M *15/26*
U.S. Cl. 526—352
No Drawing. 13 Pages Specification

Disclosed are hot-melt polyethylene compositions which are particularly useful as sizing compositions for textile materials. The compositions have a melt viscosity of from about 150 cp at 125° C. to about 6000 cp at 190° C. and may be removed from textile substrates using conventional petroleum based solvents. Useful polyethylenes include those having viscosities of from about 100 cp at 125° C. to about 40,000 cp at 190° C., densities of from about 0.90 to about 0.97 and melting points of from about 95° C. to about 135° C.

REISSUES

APRIL 6, 1982

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 30,893

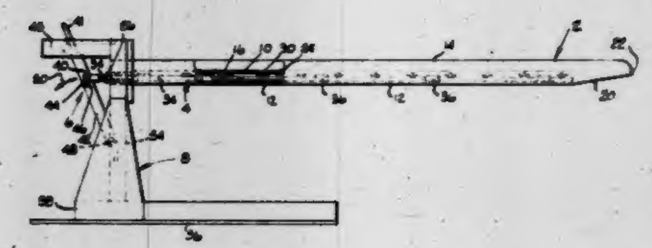
METHOD OF VACUUM PACKAGING COMPRESSIBLE MATERIALS AND APPARATUS

John E. Puchosic, McPherson, Kans., assignor to Johns-Manville Corporation, New York, N.Y.

Original No. 4,016,707, dated Apr. 12, 1977, Ser. No. 663,373, Mar. 3, 1976. Application for reissue Dec. 26, 1978, Ser. No. 973,422

Int. Cl.[3] B65B *1/26*

U.S. Cl. 53—436 12 Claims



1. In *a* method of packaging a compressible material having a generally cylindrical configuration wherein said compressible material is placed inside a tubular container made from a flexible fluid impervious material, [a partial vacuum is created inside said container by withdrawing air from the container to compress the compressible material inside the container, and] *closing any open ends of said container after said compressible material has been placed therein, creating a seal around a portion of the exterior of said flexible container, making one or more perforations in the flexible fluid impervious material within said sealed area using a puncturing means and creating a partial vacuum in said container by continuously withdrawing air from inside said container through said perforations until said compressible material has been compressed to a diameter less than the size of* a restraining sleeve [is] *to be* applied around said compressed container to maintain the compressible material in a compressed state when said partial vacuum is lost, the improvement comprising:

[closing any open ends of said container after said compressible material has been placed therein, creating a seal around a portion of the exterior of said flexible container, making one or more perforations in the flexible fluid impervious material within said sealed area and withdrawing air from inside the container through said perforations until said compressible material has been compressed to a diameter less than the size of said retaining sleeve,] *discontinuing the withdrawal of air from said container through said perforations, forcing said flexible, fluid impervious material away from said puncturing means and allowing said flexible fluid impervious-material to be pressed against said compressible material in order to substantially self-seal said perforations* and there after applying said restraining sleeve.

Re. 30,894

OSCILLATING PISTON APPARATUS

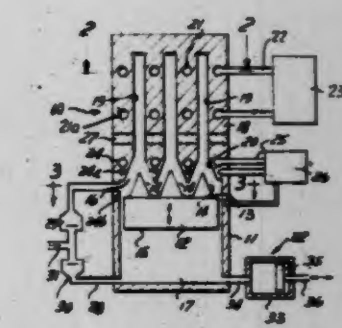
Mark Schuman, 101 G St., SW., Apt. #516, Washington, D.C. 20024

Original No. 3,899,888, dated Aug. 19, 1975, Ser. No. 465,138, Apr. 29, 1974. Continuation of Ser. No. 227,514, Feb. 18, 1972, Pat. No. 3,807,904, which is a continuation-in-part of Ser. No. 121,371, Mar. 5, 1971, abandoned. Application for reissue Aug. 12, 1976, Ser. No. 713,841

The portion of the term of this patent subsequent to Apr. 30, 1991, has been disclaimed.

Int. Cl.[3] F02G *1/04*

U.S. Cl. 60—520 162 Claims



1. An oscillating piston apparatus comprising a cylinder, a free piston in the cylinder, said [cyliner] *cylinder* having a side wall with a port therein, a rebound chamber containing compressible fluid for reversing the motion of the piston[.], said rebound chamber having as a moving wall portion a face of the piston, means including said rebound chamber for sustaining oscillatory motion of the piston in the cylinder and means for controlling the location of the center of oscillation of the piston in the cylinder, said controlling means including said rebound chamber and a passageway communicating with the cylinder via the port, said passageway by-passing a portion, and only a portion, of the axial length of the cylinder, said passageway having a fluid flow impedance which is substantially the same for fluid flow in either direction through the passageway, wherein said port, said by-passed portion of the cylinder, and an unbypassed portion of the cylinder are all at least partially traversed by the piston.

Re. 30,895

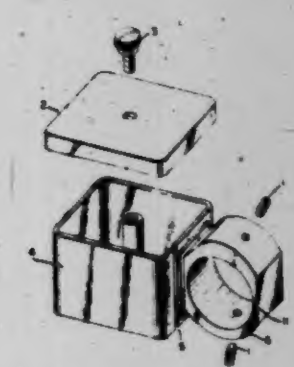
FILTER PAPER DISPENSER

Anthony W. Butera, 112 Tuthill St., Port Jefferson, N.Y. 11777

Original No. 4,095,729, dated Jun. 20, 1978, Ser. No. 714,951, Sep. 3, 1976. Application for reissue Jun. 24, 1980, Ser. No. 162,601

Int. Cl.[3] B26F *3/02*

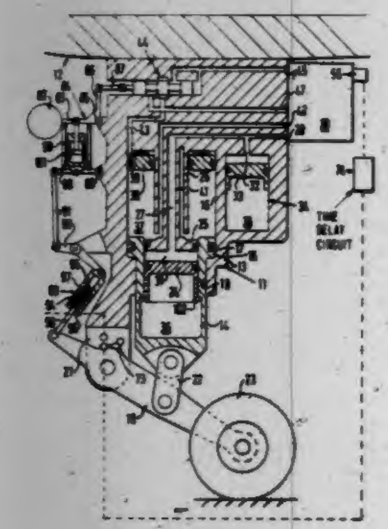
U.S. Cl. 225—42 2 Claims



2. A dispenser for filter paper comprising a housing for enclosing

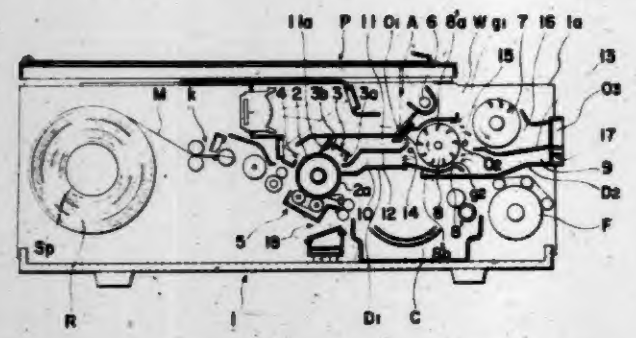
a roll of strip material, said housing having bottom and wall portions and a removable top portion, a slot in said wall portion, means connected to said wall portion adjacent said slot for attaching said housing to a smoke tester, and a cutting edge on said attaching means, said edge being parallel to said slot and spaced from said housing.

Re. 30,896
AIRCRAFT UNDERCARRIAGE SUSPENSION
Stanley F. N. Jenkins, Tarporley; Roy Fairclough, Warrington, both of England; Brian A. Howard, Hawarden, Wales, and Frederick Miley, Widnes, England, assignors to Automotive Products Limited, Leamington Spa, England
Original No. 4,065,078, dated Dec. 27, 1977, Ser. No. 663,436, Mar. 3, 1976. Application for reissue Jul. 28, 1980, Ser. No. 172,702
Claims priority, application United Kingdom, Mar. 19, 1975, 11520/75
Int. Cl.³ B64C *25/60*
U.S. Cl. 244—104 FP **20 Claims**



1. An aircraft undercarriage for supporting an aircraft structure comprising:
a ground contacting element;
a variable length liquid-filled strut operatively connected to the aircraft structure and the ground contacting element to support a proportion of the weight of the aircraft structure;
resilient means for controlling the length of said strut in dependence on the load supported thereby;
a first liquid-filled chamber in said strut from which liquid is displaced by upward movement of the ground contacting element relative to the aircraft structure;
a second liquid-filled chamber closed by a movable wall acting on said resilient means in a direction to increase the load thereon under the pressure of liquid displaced from said first chamber;
a valve block;
first and second flowpaths defined by the valve block connecting said first chamber and said second chamber;
first flow restricting means in said first flow path and second flow restricting means in said second flow path to damp movement of the ground contacting element relative to the aircraft structure;
a selector valve in the valve block operable to direct the displaced liquid selectively through each of said flow paths;
[and means responsive to] *and switch means operated by compression of said strut on* aircraft landing to control said selector valve such that said first flow path is operative while the aircraft is landing and the second flow path is brought into operation when the aircraft is taxiing.

Re. 30,897
ELECTROPHOTOGRAPHIC COPYING APPARATUS WITH GAS EVACUATING MEANS
Shunji Yamamoto, Shinshiro; Koji Imaizumi, and Takashi Hikosaka, both of Aichi, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan
Original No. 4,178,092, dated Dec. 11, 1979, Ser. No. 814,831, Jul. 11, 1977. Division of Ser. No. 631,463, Nov. 12, 1975, abandoned. Application for reissue Jun. 24, 1980, Ser. No. 162,610
Claims priority, application Japan, Nov. 30, 1974, 49-137974; Dec. 4, 1974, 49-139735; Jan. 16, 1975, 50-8147
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—3 R **4 Claims**



1. An electrophotographic copying apparatus which comprises a rotatable photoreceptor member having a photoconductive surface for repeated formation of an electrostatic latent image of an original thereon, means disposed around said photoreceptor member and including corona charger means for uniformly charging said surface, exposure means for exposing said charged surface to image light of the original through an optical assembly including an illuminating light source so as to form the electrostatic latent image of the original thereon, and means for eliminating harmful gases generated by said corona charger means disposed within the copying apparatus, said means having suction means for drawing away said harmful gases adjacent to the corona charger means and said surface, said suction means including first duct means having one opening adjacent to said corona charger means, and suction fan means connected with said first duct means for generating air flow in the first duct means for drawing said harmful gases generated within said corona charger means through said opening of the first duct means and toward said suction fan, and means for supplying fresh air free from harmful gases toward said photoconductive surface opposed to said corona charger means, said fresh air supplying means including second duct means, one end of the second duct means being adjacent to said photoconductive surface opposed to said corona charger means.

Re 30,898
ger means. **INFRARED LASER SYSTEM**
Cyrus D. Cantrell, Richardson, Tex.; Robert J. Carbone, Johnson City, Tenn., and Ralph Cooper, Hayward, Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.
Original No. 4,061,921, dated Dec. 6, 1977, Ser. No. 466,583, May 2, 1974. Application for reissue Mar. 16, 1979, Ser. No. 967,171
Int. Cl.³ H01J *27/00;* H01S *3/00*
U.S. Cl. 307—426 **7 Claims**

14. A laser system for generating a laser signal at approximately 7.75 μm comprising:
CO laser means for producing a laser injection beam at a predetermined frequency;
H_2 scattering means for shifting said predetermined frequency of said laser injection beam to approximately 7.75 μm using rotational Raman transitions in H_2.

PLANT PATENTS

GRANTED APRIL 6, 1982

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,835
LIGHT PINK MINIATURE ROSE
Mark C. Spies, Arlington, Va., assignor to Nor'East Miniature Roses, Inc., Rowley, Mass.
Filed Sep. 22, 1980, Ser. No. 189,796
Int. Cl.³ A01H *5/00*
U.S. Cl. Plt.—9 **1 Claim**

1. A new and distinct variety of rose plant of the miniature class, substantially as shown and described, characterized particularly by Venetian pink blooms borne on a vigorous, compact, well rounded plant of attractive foliage.

4,836
***NERIUM INDICUM*—LITTLE RED VARIETY**
Richard C. Aldridge, Jr., Von Ormy, Tex., assignor to Aldridge Nursery, Inc., Von Ormy, Tex.
Filed Sep. 29, 1980, Ser. No. 192,093
Int. Cl.³ A01H *5/00*
U.S. Cl. Plt.—54 **1 Claim**

1. A new and distinct variety of *Nerium indicum* resulting from a cross of the Single Hardy Red variety and the Scarlet Beauty variety, substantially as shown and described, characterized by:
(a) a dwarf growth habit which produces an overall plant one-half or less the size of the Single Hardy Red variety in any given period and which after several years is approximately as broad as it is tall,
(b) the formation of deep scarlet red flowers which are smaller than those of the Single Hardy Red and Scarlet Beauty varieties and substantially identical in color to those of the Scarlet Beauty variety,
(c) the formation of leaves approximately one-half the size of the leaves of the Single Hardy Red variety, and
(d) superior hardiness when compared to the Scarlet Beauty variety.

PATENTS

GRANTED APR. 6, 1982

ERRATA

For CLASS	See PATENT NO.
574–011	4,322,942
141–070	4,323,090
428–036	4,323,400
376–353	4,323,428
525–237	4,323,485
525–054	4,323,486
525–054	4,323,487
528–032	4,323,488
524–788	4,323,489
523–409	4,323,490
524–144	4,323,491
524–388	4,323,492
524–451	4,323,493
524–858	4,323,494
524–156	4,323,495
528–499	4,323,519
524–545	4,323,603
219–213	4,323,607
373–101	4,323,717
373–073	4,323,718
370–102	4,323,790
372–046	4,323,856
372–002	4,323,857
372–107	4,323,858
372–046	4,323,859
372–032	4,323,860
367–040	4,323,876
346–074	4,323,933

PATENTS

GRANTED APRIL 6, 1982

GENERAL AND MECHANICAL

4,322,858

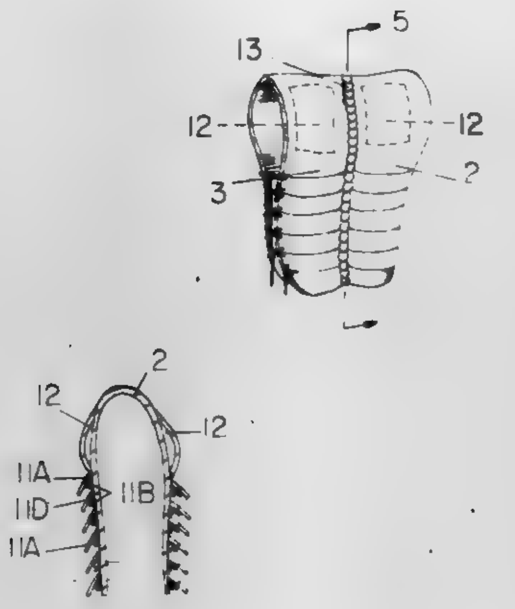
PROTECTIVE GARMENTS FOR FOOTBALL PLAYERS

Huey Douglas, Baton Rouge, La., assignor to Douglas Equipment Manufacturing Co., Baton Rouge, La.

Filed Sep. 17, 1979, Ser. No. 76,074

Int. Cl.³ A41D *13/00*

U.S. Cl. 2—2 **1 Claim**



1. A protective jacket to be worn by a person to protect the rib cage of said person, comprising:
   - (a) liner cloth pieces adjustably attached to one another and provided with arm openings through which the arms of said person can pass, said cloth pieces fitting over the shoulders of said person and extending below the rib cage of said person; and
   - (b) flap assemblies having over-lapping, flexible convex shaped flaps hingedly attached to said liner cloth pieces, said flaps being arranged in five columns, two of said columns being positioned over that portion of said rib cage in front of said person, two other of said columns being positioned over that portion of said rib cage in back of said person and a fifth column being positioned to fit over the spinal column of said person.

4,322,859

SHOULDER PAD

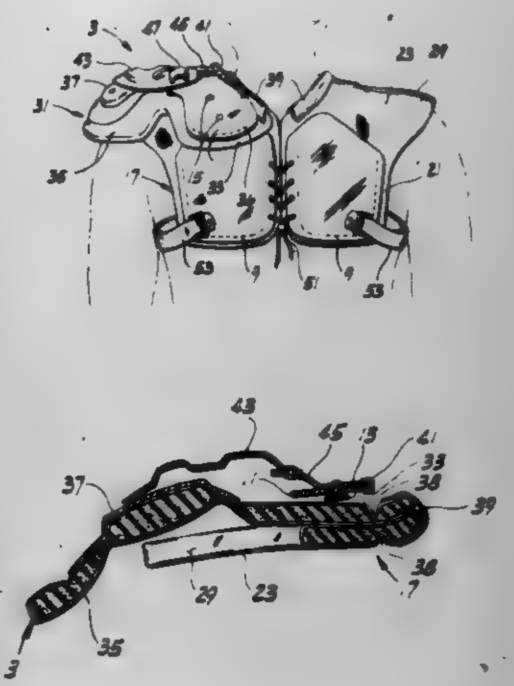
Hal D. Mitchell, Rolla, Mo., assignor to A-T-O Inc., Willoughby, Ohio

Filed Apr. 25, 1980, Ser. No. 143,900

Int. Cl.³ A41D *13/00*

U.S. Cl. 2—2 **12 Claims**

1. A shoulder pad for football players comprising a left-hand member adapted to fit over the left shoulder and a right-hand member adapted to fit over the right shoulder, each of said members being of generally inverted U-shape as viewed from the side and comprising a chestplate, a backplate and an arch at the top of the shoulder adjacent the neck of the wearer, said arches being laterally spaced to provide an opening for the neck of the wearer with the spacing such that said arches lie adjacent and relatively close to the neck, said chestplate, backplate and arch each comprising a separate discrete piece of relatively rigid material, said arch being mounted for upward swinging movement with respect to the chestplate and backplate about a hinge line extending in front to back direction with respect to the shoulder pad over the shoulder, whereby freedom is provided for raising the arms above a horizontal



position by permitting upward movement of the arm at the shoulder without substantial interference from the arch.

4,322,860

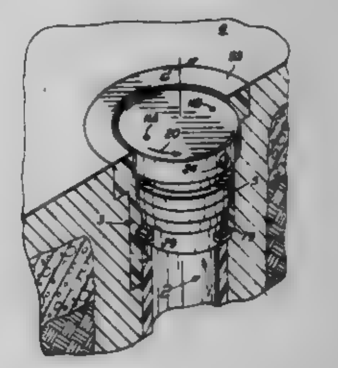
POOL CLEANING HEAD WITH ROTARY POP-UP JET PRODUCING ELEMENT

Henry D. Gould, Phoenix, Ariz., assignor to Shasta Industries, Inc., Phoenix, Ariz.

Filed Oct. 6, 1980, Ser. No. 194,679

Int. Cl.³ E04H *3/20*

U.S. Cl. 4—490 **16 Claims**



1. A cleaning head for installation in a housing disposed in an under-liquid surface of a liquid container such as a swimming pool, the housing having an upper surface flush with the under-liquid surface, the housing receiving a pressurized liquid, the pressure of which is intermittently or periodically cycled between a relatively low pressure and a relatively high pressure, said cleaning head comprising in combination:
   - a. stationary means open at upper and lower ends thereof for removable connection in sealed relation to said housing;
   - pop-up jet producing means, having an outlet opening, rotatably, indexably disposed in said stationary means for moving outwardly from the under-liquid surface in response to said relatively high pressure to expose said outlet opening

and produce a concentrated, high-velocity liquid jet along said under-liquid surface from said outlet opening; and

c. retracting means connected to both said stationary means and said pop-up jet producing means for retracting said pop-up jet producing means when said liquid pressure is cycled from said relatively high pressure to said relatively low pressure, said pop-up jet producing means rotating to successive fixed positions in response to said cycling, thereby producing a plurality of successive concentrated, high velocity liquid jets to clean a circular pattern around said cleaning head.

4,322,861

ENTRANCE FOR A BEEHIVE

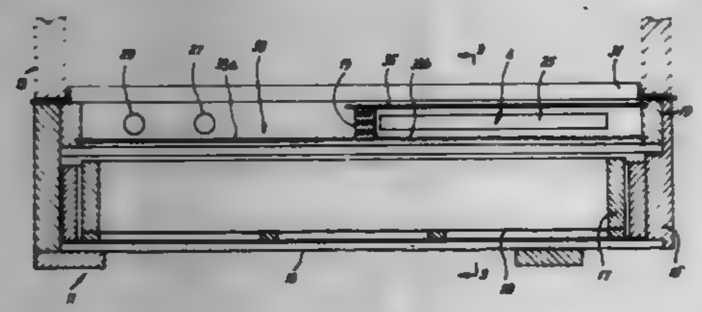
Kenneth T. Healy, P.O. Box 131, Cannington, Western Australia, Australia (6107)

Continuation of Ser. No. 28,644, Apr. 10, 1979, abandoned. This application Jan. 13, 1981, Ser. No. 224,683

Claims priority, application Australia, Apr. 14, 1978, PD4036

Int. Cl.³ A01K *47/06*

U.S. Cl. 6—4 R 22 Claims



15. A pollen-collecting entrance structure for a beehive comprising a base for supporting a beehive, said base defining a space located below the beehive and in open communication therewith through the bottom of said beehive, a pollen collecting drawer slidably supported in the bottom of said space and removable transversely from said base, an accessway through a wall of said base providing access for bees from the exterior of said base to the area above said pollen-collecting drawer, and a pollen extracting drawer slidably supported in said base and removable transversely therefrom, said pollen-extracting drawer comprising means defining an area in communication with said accessway whereby bees may enter said area through said accessway, a perforate member providing communication between said area and the portion of said space in communication with the open bottom of the beehive through which at least a portion of the bees entering the open bottom of the beehive must pass, the openings in said perforate member being sized so that pollen is extracted from the bees passing therethrough, and a floor extending horizontally and located between said pollen-collecting receptacle and the bottom of the beehive, said floor having a grid extending beneath said perforate member and above said pollen-collecting receptacle for permitting pollen extracted by the passage of bees through said perforate member to fall into said pollen-collecting receptacle.

4,322,862

APPARATUS AND METHOD FOR FEEDING BEES

Irvin C. Beuthling, Roseville, Minn., assignor to Gary J. Beuthling and John A. Miller, a part interest

Filed Nov. 24, 1980, Ser. No. 209,837

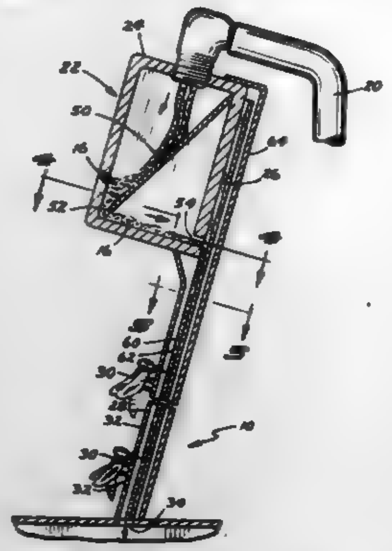
Int. Cl.³ A01K *53/00*

U.S. Cl. 6—5 14 Claims

14. A method for feeding bees including the steps of:

A. causing a bee fee liquid to flow down a plane inclined at an angle to the horizontal;

B. providing an otherwise imperforate liquid access screen having holes therethrough of dimension to permit penetration through said holes by the proboscis of each of the bees to be fed, and to prevent penetration of the remainder of the bee therethrough, said screen having sufficient imperforate surface around each hole to support each bee on one side of said screen while its proboscis protrudes through one hole to the other side and to prevent contact between any part of such feeding bee and the periphery of any other hole;



C. situating said screen in parallel, spaced relation to said inclined plane at a distance to allow each bee proboscis to access bee feed liquid flowing on said plane while preventing said liquid from contacting said screen; and

D. permitting bees to have access to a surface of said screen opposite said inclined plane.

4,322,863

MACHINE FOR LASTING HEEL SEAT PORTIONS OF SHOES

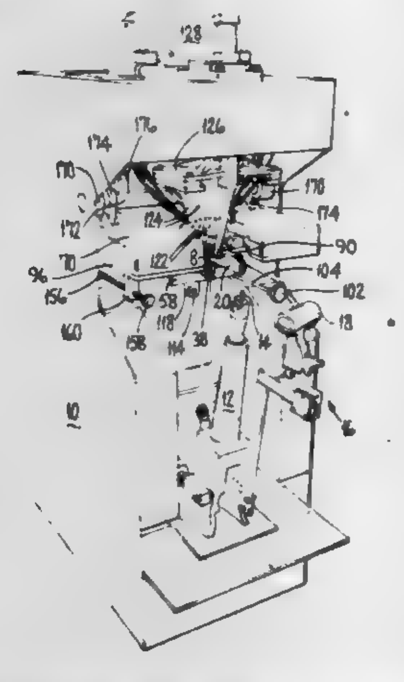
Gerhard Giebel, Bad Soden, Fed. Rep. of Germany, assignor to USM Corporation, Farmington, Conn.

Filed Jul. 21, 1980, Ser. No. 170,690

Claims priority, application Fed. Rep. of Germany, Jul. 20, 1979, 2929536

Int. Cl.³ A43D *21/00*

U.S. Cl. 12—12.5 16 Claims



1. A machine for lasting heel seat portions of shoes, comprising a shoe support for supporting, bottom uppermost, a shoe comprising an upper carried on a last and an insole held against the last bottom, a heel band for clampingly engaging the heel end of a shoe supported by the shoe support, a wiper assembly for wiping marginal portions of the shoe upper, at the heel seat region thereof, inwardly over, and pressing them against, corresponding marginal portions of the insole, and fastener inserting means effective to cause said lasting marginal portions to be secured, when pressed as aforesaid, to said corresponding marginal portions of the insole, wherein the wiper assembly includes a pair of wiper plates, fluid pressure operated means for effecting movement of the wiper plates in a direction extending lengthwise of the shoe bottom, and cam means effective, as such lengthwise movement is effected, to cause pivotal movement of the wiper plates to take place about an axis extending normally to the direction of lengthwise movement thus to cause the wiper plates to effect an in-wiping movement in relation to the shoe bottom, and further wherein each wiper plate has a row of apertures formed therein, adjacent a leading edge thereof, through which apertures fasteners can be driven by the fastener inserting means to secure the lasting marginal portions of the upper as aforesaid, the machine further comprising control means by which the operation of the fluid pressure operated means can be controlled, said control means comprising two cooperating abutment members, one of which is movable, under the action of the fluid pressure operated means, as lengthwise movement of the wiper plates is effected as aforesaid, from a position spaced from the other abutment member into engagement therewith, such engagement being effective to cause the action of the fluid pressure operated means to be terminated thereby causing the lengthwise movement of the wiper plates, and thus also the in-wiping movement thereof, to be arrested and the control means further comprising adjustment means whereby, when the machine is in a rest condition, the distance between the abutment members can be varied thus to enable the position to which the wiper plates (and the apertures formed therein through which fasteners can be driven) are moved when lengthwise and in-wiping movement of said plates is subsequently effected as aforesaid to be set in a desired relationship with the shoe bottom.

4,322,864

BINDING MACHINE FOR THE APPLICATION OF A STRIP OF FLEXIBLE MATERIAL AROUND THE OUTLINE OF THIN ARTICLES, PARTICULARLY FOR EDGING PARTS FOR BOOTS AND SHOES

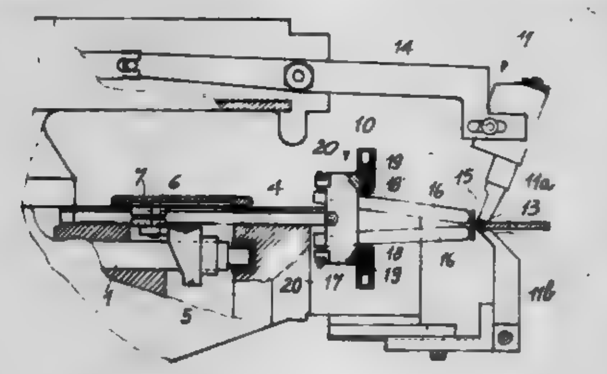
Alberto Bocca, and Mario Pagani, both of Vigevano, Italy, assignors to Sagitta Officina Meccanica S.p.A., Italy

Continuation-in-part of Ser. No. 891,756, Mar. 30, 1978, abandoned. This application Nov. 12, 1980, Ser. No. 205,905

Claims priority, application Italy, Apr. 1, 1977, 22031 A/77

Int. Cl.³ A43D *43/06;* B32B *3/04;* F16H *21/00*

U.S. Cl. 12—24.5 5 Claims



1. A binding machine for the application of an edging strip of flexible material around an edge of thin articles particularly for edging soles of boots and shoes comprising, a hollow shaft oscillating about its axis, a pressure and transportation group, driven by said shaft, said pressure and transportation group comprising a hammer shaped part and an anvil shaped part, a first rod in the hollow shaft coaxial therewith driven reciprocably longitudinally to control pressing of the strip in a folded condition, and a second rod parallel to said hollow shaft driven reciprocably longitudinally, a fork actuated by said second rod to fold the strip partly above and partly below an edge of a thin article before the pressing operation, characterized in that said hollow shaft is connected with said hammer and anvil shaped parts, a support arm mounted on the hollow shaft connecting said shaft to said hammer and anvil shaped parts, a leverage device comprising a lever centrally pivoted on a pivot supported by the support arm, a sleeve, said lever carrying on one end said hammer shaped part, and on the other end being articulated to said sleeve, said sleeve being slidingly mounted on said first rod, and another lever, centrally pivoted on said pivot, a link rod, said another lever carrying on one end the said anvil shaped part and the other end being articulated to said link rod at its lower extremity, the upper extremity of said link rod being articulated to an end of a bell crank lever pivoted on the support arm and having the other end articulated with said first rod, and said bell crank lever; the first rod, the second rod and the hollow shaft being connected to a driving shaft for a common, synchronized drive and control.

4,322,865

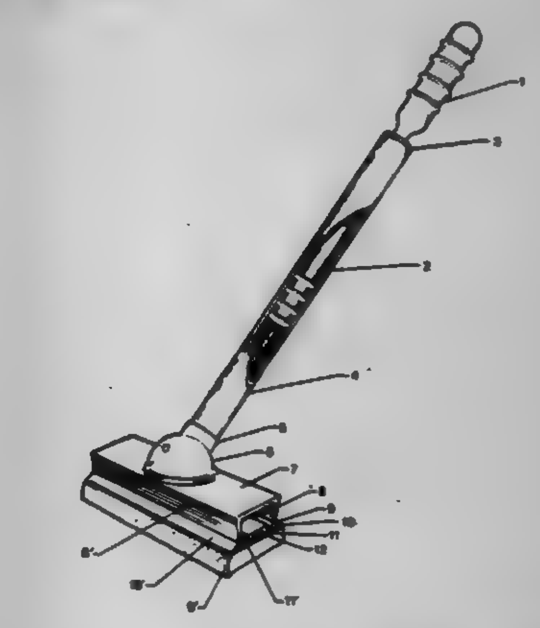
PNEUMATIC SPONGE MOP

Robert F. von Meyer, 219 W. 104th St., New York, N.Y. 10025

Filed Sep. 18, 1980, Ser. No. 188,544

Int. Cl.³ A47L *13/146*

U.S. Cl. 15—119 A 6 Claims



1. A pneumatic sponge mop comprising an airtight tubular handle terminating in an air chamber with a means of creating a vacuum therein whereupon a movable bottom in the air chamber will oscillate upward in response to the vacuum, an elongate boxlike wringer with a rigid top, flexible walls, and an articulated bottom capable of collapsing upward when pulled by a linkage to the movable bottom of the air chamber, and in so doing axially folding and compressing an elongate mop head attached to it by quick release fasteners.

4,322,866

POLISHER MOUNTING MEANS

Gina Brazzale, Norwood, South Australia, Australia, assignor to Anthony John Brazzale, Norwood, South Australia, Australia

Filed Jun. 19, 1980, Ser. No. 160,982

Int. Cl.³ A46B *13/02*

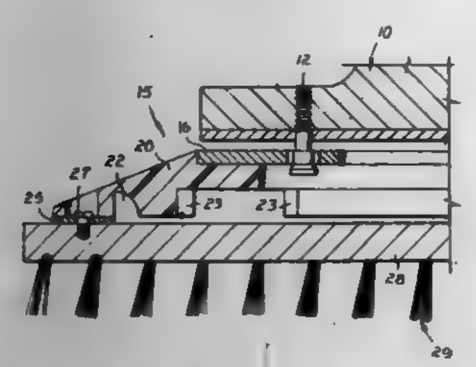
U.S. Cl. 15—180 9 Claims

1. Polisher mounting means for mounting a floor polisher brush or pad to coupling means on a floor polisher shaft, comprising:

an annular discoid member formed of elastomeric material having a durometer hardness of between 60 and 90 (shore A), the discoid member having a relatively thick central zone which grades down through an intermediate zone to a peripheral zone, and is relatively thin where the intermediate zone joins the peripheral zone,

a central metal boss on the central zone of the discoid member embodying attachment means cooperable with the coupling means,

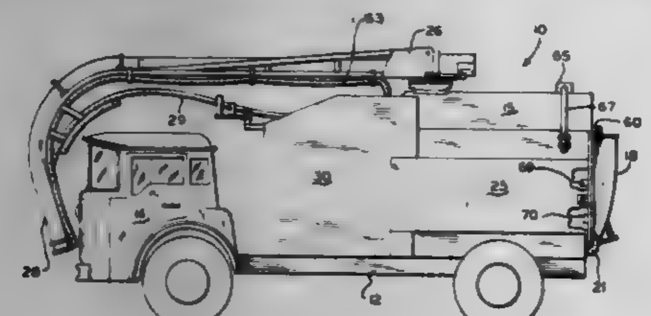
a thin annular metal member on the underside of the discoid member and extending around the peripheral zone, and



securing means for securing the brush or pad to the annular metal member.

4,322,867
Patent Not Issued For This Number

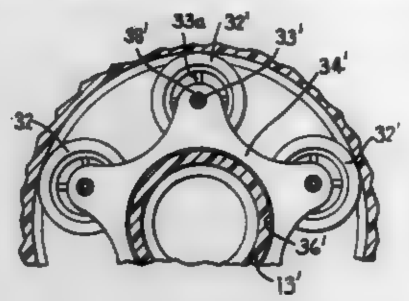
4,322,868
SEWER AND CATCH BASIN CLEANER
James C. Wurster, West Allis, Wis., assignor to Super Products Corporation, New Berlin, Wis.
Filed Sep. 11, 1980, Ser. No. 186,235
Int. Cl.^{3} B08B *3/02*
U.S. Cl. 15—302 **12 Claims**



1. In a combination sewer and catch basin cleaner of the type including water injection and vacuum loading systems, said water injection system comprising a water tank, a water hose and a first pump means for delivering water under pressure through said hose, said vacuum system comprising a body, a vacuum hose and a vacuum pump downstream of said vacuum hose and body for vacuum loading material into said body through said vacuum hose, said cleaner also including recirculation pump means for pumping water from said body into said water tank and filtration means for said water whereby the water tank may be replenished from said body, the improvement in said cleaner comprising:
valve means downstream of said recirculation pump means, said valve means having an inlet and two outlets, discharge hose means coupled to a first outlet, the other of said outlets being coupled by conduit means to said water tank.

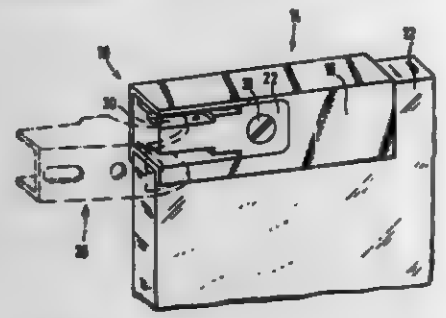
4,322,869
WHEEL ASSEMBLY
Gerald J. Jordan, P.O. Box 93, Marceline, Mo. 64658
Filed Sep. 8, 1980, Ser. No. 185,108
Int. Cl.^{3} A47B *91/00*
U.S. Cl. 16—46 **15 Claims**

1. A freely rotatable wheel assembly, comprising:
a one-piece freely-rotatable annular rim having a central opening extending therethrough in coaxial alignment with the rotational axis of said rim, said rim being constructed of a hard low-friction material and having an inner annular surface which surrounds said opening for defining an outer bearing race;
bearing means positioned within said central opening for creating a low-friction rolling engagement between said rim and a shaft which is coaxially and centrally positionable within said opening, said bearing means including a plurality of cylindrical rollers which are constructed of hard low-friction nonmetallic material, said rollers being positioned within said central opening and being uniformly angularly spaced apart around said rotational axis so that the axes of said rollers define a circular locus which is generated about said rotational axis, said rollers being individually disposed in direct rolling engagement with said outer bearing race and with an inner annular bearing race defined on the exterior periphery of the shaft;
a pair of coaxially aligned but axially spaced annular retain-



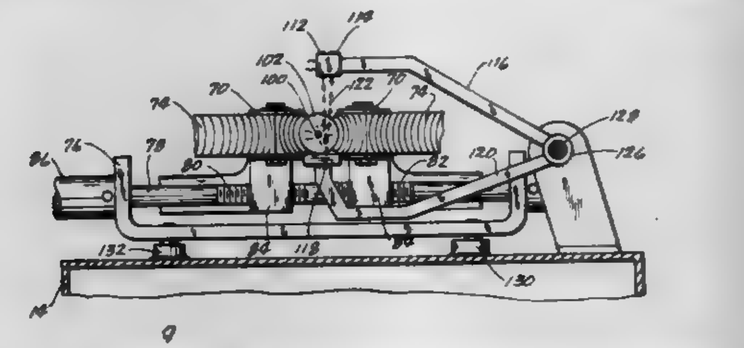
ers disposed concentrically with said central opening adjacent the opposite ends thereof so that said plurality of cylindrical rollers are disposed axially between said retainers, said retainers being freely rotatable relative to both said rim and said shaft; and
an axle associated with each said roller for supporting same on and between said retainers, each said axle extending parallel to said rotational axis and having the opposite ends thereof freely rotatably supported on said retainers, each said axle also having a respective said roller freely rotatably supported thereon.

4,322,870
HINGE FOR ALL-GLASS DOORS OF CABINETS
Gerhard W. Lautenschläger, Brensbach-Wersau, Fed. Rep. of Germany, assignor to Karl Lautenschläger KG., Mobelbeschlagfabrik, Odenwald, Fed. Rep. of Germany
Filed Jul. 26, 1978, Ser. No. 927,966
Claims priority, application Fed. Rep. of Germany, May 9, 1977, 2739939
Int. Cl.^{3} E05D *7/04*
U.S. Cl. 16—235 **9 Claims**



1. A hinge for a glass door on a cabinet having a supporting wall, said hinge having a first part to be fastened to the door, and a second part to be fastened to said supporting wall, and a pivot axis, said first part comprising an elongated metal fitting to be disposed in a corner area of the glass door, overlapping the margin thereof, and having a recess which is open on that side which is to be located on the inside of the door and at the end to be facing the supporting wall, a mating insert of metal fastened releasably in said recess, said second hinge part being pivoted on said insert and in the form of an elongated supporting arm of approximately U-shaped cross section, which is adjustably attached to a mounting plate to be fastened to the supporting wall of the cabinet, said recess in said fitting having in plan approximately the shape of an elongated rectangle whose longer sides are at right angles to the hinge pivot axis, said insert having a slightly reduced height in comparison with the clear height measured between the longer rectangle side of the recess, so that between said fitting and said insert mounted therein slots extending at right angles to the hinge pivot axis are formed, into which engage extended sides of the elongated supporting arm pivotingly articulated to the insert at their free end area.

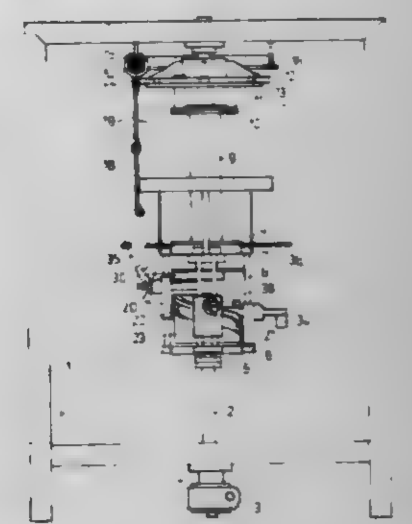
4,322,871
LINK CUTTER
Ray T. Townsend, Des Moines, and Floyd R. Ladd, West Des Moines, both of Iowa, assignors to Townsend Engineering Company, Des Moines, Iowa
Filed May 29, 1980, Ser. No. 154,480
Int. Cl.^{3} A22C *11/00*
U.S. Cl. 17—1 F **8 Claims**



1. An apparatus for separating a plurality of links interconnected by twisted casing sections, comprising
a support frame including a cutting zone having opposite upstream and downstream sides,
a first conveyor on the upstream side of said cutting zone for sequentially conveying joined links to said cutting zone,
a second conveyor on the opposite downstream side of said cutting zone for receiving links from said first conveyor, said second conveyor being operable at a faster rate of travel than said first conveyor for stretching the twisted casing section between links at said cutting zone,
a knife movably supported in said cutting zone for severing the stretched twisted casing section,
a knife drive means, and
a sensor positioned on the upstream side of said cutting zone for detecting the presence of a twisted casing section between a pair of links, said sensor including a source of electromagnetic waves directed across the path of said links and means for sensing those waves which pass between links adjacent the twisted casing section,
said sensing means being operatively connected to said knife drive means for cutting movement of the knife through the sensed twisted casing section upon movement of said twisted casing section downstream from said sensor to said cutting zone,
said first and second conveyors each comprising a pair of continuous belt conveyors adapted to engage opposite sides of said links, and
each pair of continuous belt conveyors including a plurality of cupped rollers and a pair of continuous belts trained about said cupped rollers to define a partially tubular conveying sleeve between said belts.

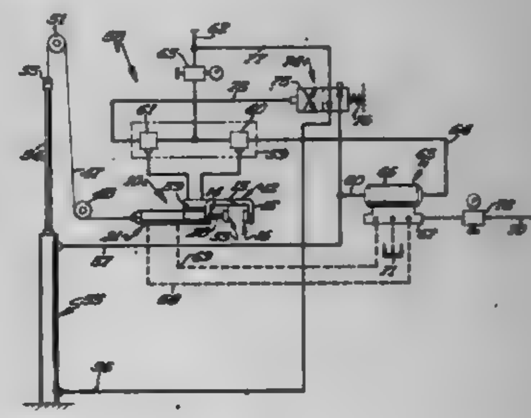
4,322,872
APPARATUS FOR BREAKING THE NECK OF A FOWL
Pieter Meyn, P.O. Box 16, 1510 AA Oostzaan, Netherlands
Filed Jul. 9, 1980, Ser. No. 167,197
Claims priority, application Netherlands, Jul. 19, 1979, 7905612
Int. Cl.^{3} A22C *21/00*
U.S. Cl. 17—12 **6 Claims**

1. Apparatus for breaking the neck of a defeathered headless bird, which hangs by the legs from a shackle of an overhead conveyor, comprising:
a frame;
a support movably supported by said frame;
first moving means for moving said support along in synchronisation with said overhead conveyor during part of the path thereof;
second moving means for additionally moving said support up and down relative to said conveyor;
a forked clamping member carried by said support and adapted to receive the neck of said bird, one of the fork legs of said clamping member being axially slidable relative to said support;
a pressure bar attached to the outer end of said slidable leg and laterally extending towards the other leg of said clamping member; and



means for controlling the movements of said support and said slidable leg in such manner that the neck of said bird is received in said forked clamping member when said support is in its lowermost position relative to said overhead conveyor and said slidable leg is fully extended relative to said support, after which said support is moved to its uppermost position and said slidable leg is pulled back towards said support, so that the neck is pressed into said clamping member by said pressure bar and broken thereby, then said support is moved down again, so that said broken neck is at least partially stripped out of the skin and finally said slidable leg is extended again.

4,322,873
HIND LEG SKINNER
John G. Lunn, Austin, Minn., assignor to Geo. A. Hormel & Company, Austin, Minn.
Filed Oct. 20, 1980, Ser. No. 199,032
Int. Cl.^{3} A22B *5/16*
U.S. Cl. 17—21 **1 Claim**



1. Apparatus for pulling skin from the hind legs of hog carcasses, comprising:
a clamping device including a support frame;
a fixed jaw on said support frame;
a first fluid pressure unit including a cylinder connected to a

source of fluid under pressure, a piston rod movable in said cylinder between retracted and extended positions;
a movable jaw secured to the end of said piston rod and being movable therewith, said movable jaw being spaced from said fixed jaw when the piston rod is in the retracted position, and being disposed in close proximal clamping relation with the fixed jaw when the piston rod is in the retracted position, and being disposed in close proximal clamping relation with the fixed jaw when the piston rod is in the extended position;
a second fluid pressure including a cylinder and a piston rod movable in said cylinder between retracted and extended positions;
an elongate, flexible member interconnected with said clamping device and the piston rod of said second fluid pressure unit whereby when the piston rod of the second unit is retracted, said clamping device will be retracted; and
A control mechanism arranged in controlling relation with respect to said fluid pressure units, said control mechanism including actuating means on said clamping device selectively operable between clamping and released conditions, said actuating means when in the clamping condition causing said further first fluid pressure unit to move the movable jaw into clamping relation with said fixed jaw to clamp the skin of the hind leg of an animal carcass therebetween, and simultaneously causing said second fluid pressure unit to retract and pull said clamping device and the skin clamped thereby, said control mechanism being operable to cause the piston rod of said second fluid pressure unit to automatically extend after completion of the retraction stroke, said actuating means when in the released condition causing the piston rod of said first fluid pressure unit to retract to release the clamped portion of the skin clamped thereby.

4,322,874

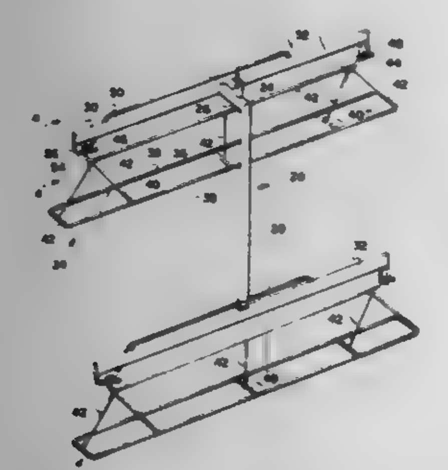
MULTIPLE STICK FOR SMOKE HOUSE

Guy E. Beller-Colthurst, Rexdale, Canada, assignor to Knud Simonsen Industries Limited, Rexdale, Canada

Filed May 16, 1980, Ser. No. 150,303

Int. Cl.[3] **A22C** *15/00*

U.S. Cl. 17—44.4 **4 Claims**



1. A hanger system for supporting meat products such as sausages and the like on a moving conveyor system during curing and the like wherein such meat products are supported on hangers which in turn are releasably carried transversely of the path of movement of such conveyor system by support bars suspended from such conveyor system, said hanger system comprising:
overhead conveyor means defining a conveyor movement path;
a plurality of carriers on said overhead conveyor means in spaced apart relation along said path, each of said carriers comprising;
a generally horizontal upper cross member having two ends, extending lengthwise along such conveyor path;
a generally vertical leg portion extending downwardly from one end of said cross member;
a lower transverse support bar attached to the lower end of said leg portion extending transversely of such conveyor path;
an upper transverse support bar attached to the free end of said cross member remote from said leg portion extending transversely of such conveyor path, thereby locating said upper support bar vertically spaced apart, and spaced apart along such conveyor path relative to such lower support bar;
attachment means on said support bars for releasably securing hangers thereto so that meat products supported on a said hanger secured to one of said support bars are suspended in vertically spaced apart relationship to meat products supported on a hanger secured to the other said support bar, and are located transversely relative to such conveyor path and spaced apart along such conveyor path; and,
suspension means on said cross member intermediate said ends whereby said carrier may hang substantially vertical when carrying meat products on both said support bars.

4,322,875

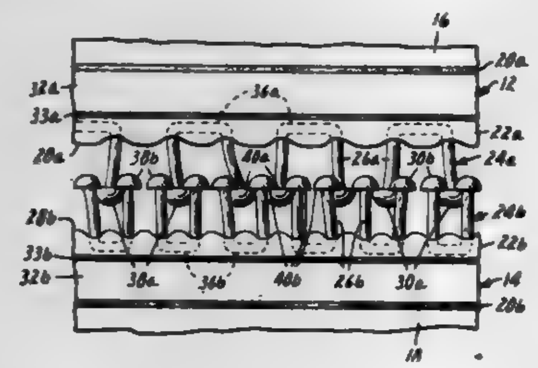
TWO STRIP MATERIALS USED FOR FORMING FASTENERS

James N. Brown, and Melvin O. Kalleberg, both of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 31, 1980, Ser. No. 135,339

Int. Cl.[3] **A44B** *17/00*

U.S. Cl. 24—204 **3 Claims**



1. Two strip materials from which lengths may be severed to form portions of a fastener, said strip materials each having a known structure comprising a polymeric bonding layer; and a multiplicity of flexible, resilient, generally U-shaped monofilaments, each monofilament including a central bight portion embedded in the bonding layer, two stem portions extending from the opposite ends of said bight portion and projecting generally normal to an exposed major surface of the bonding layer, and enlarged, generally circular heads at the ends of said stem portions opposite said bight portion, each of the heads having a cam surface opposite its supporting stem portion adapted for engagement with the cam surfaces of heads along the other strip material to produce deflection of the stem portions and to afford movement of the heads on the stem portions past each other, and having a latching surface opposite said cam surface adapted to engage a similar latching surface on another head; the bight portions of said U-shaped monofilaments on each strip material being disposed in a rectangular array and spaced to afford movement of the heads of the strip materials past and into releasable engagement with each other, said strip materials being improved to restrict relative movement between the engaged portions in directions parallel to said bonding layers in that the stem portions on each of the strip materials are about equally spaced in each direction to provide numbers of stem portions per unit length on one strip material that are different from and not a multiple of or evenly divisible by the number of stem portions per unit length on the other strip material in either direction so that when portions of the strip materials are engaged with the rows aligned, certain of the stem portions will always interfere with each other to restrict said relative movement between the portions of the strip materials.

4,322,876

DEVICE FOR INSERTING A SHADOW MASK INTO THE FACEPLATE OF A COLOR-PICTURE TUBE

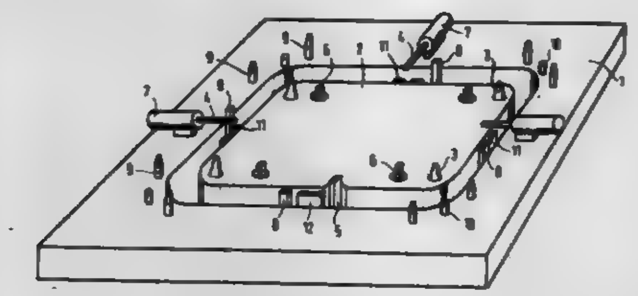
Peter Schmidt, Denkendorf, and Emil Mühlberger, Esslingen, both of Fed. Rep. of Germany, assignors to International Standard Electric Corporation, New York, N.Y.

Continuation of Ser. No. 63,013, Aug. 2, 1979, abandoned. This application Nov. 17, 1980, Ser. No. 207,171

Claims priority, application Fed. Rep. of Germany, Aug. 26, 1978, 2837381

Int. Cl.[3] **H01J** *9/18*

U.S. Cl. 29—25.19 **11 Claims**



1. A device for inserting a substantially rectangular shadow mask into a substantially rectangular faceplate of a color picture tube comprising:
a first horizontal table having an upper horizontal surface, a lower horizontal surface and a central cut out therein, said faceplate having N studs each secured to and extending inwardly from the inner surface of a different side of said faceplate, said N studs being employed as reference points for said device, where N is an integer greater than two;
a second horizontal table having an upper horizontal surface and a lower horizontal surface disposed in said cut out, said shadow mask having a frame and N leaf springs on the external surface of said frame, each of said N leaf springs being positioned on said frame to be associated with one of said N studs and having a hole for receiving said associated one of said N studs and a first positioning notch to enable said device to employ said N leaf springs as reference members;
one of said first and second tables being fixed and the other of said first and second tables being vertically movable such that when said shadow mask is positioned on said second table said upper surfaces of said first and second tables are in the same plane and when said faceplate is positioned on said first table, after positioning said shadow mask on said second table, said second table is lower than said first table;
four first guide members projecting upwardly from said upper surface of said second table, each of said first guide members being shaped like truncated cones to engage the inside of said frame when said shadow mask is placed on said second table to preposition said shadow mask on said second table; and
at least three centering members each fastened to said upper surface of said first table in association with a different one of said N leaf springs, each of said centering members being movable by a means in a plane parallel to said upper surface of said first and second tables for fine positioning of said shadow mask on said second table, said means moving each of said centering members against the outer circumference of said frame to engage an associated one of said first notches and moving each of said centering members outside said shadow mask and said faceplate region when said centering members are in their rest position.

4,322,877

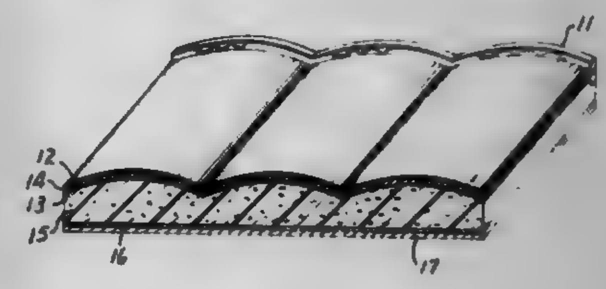
METHOD OF MAKING PIEZOELECTRIC POLYMERIC ACOUSTIC TRANSDUCER

Allen L. Taylor, Woodbury, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Continuation of Ser. No. 944,207, Sep. 20, 1978, abandoned. This application Jan. 22, 1980, Ser. No. 114,239

Int. Cl.[3] **H01L** *41/22*

U.S. Cl. 29—25.35 **7 Claims**



1. A method of making a flexible piezoelectric acoustic transducer tape which is thin enough to be convolutely wound on itself in roll form and when extended is adapted for placement on a lengthy supportive surface, said method comprising:
I. heat forming a long, narrow, thin, flexible layer of poled piezoelectric thermoplastic film material having two extended surfaces and a poled direction generally perpendicular to said extended surfaces of said film on a surface having a plurality of repetitively curved elements disposed in an area corresponding to one of said extended surfaces to provide a comparable plurality of repetitively curved segments in said film;
II. applying a first and second continuous long, thin, narrow, flexible conductive electrode in a surface-to-surface contact with respective sides of poled piezoelectric layer and coextensive therewith;
III. adhering to said first extended surface in at least a plurality of positions a long, narrow layer of flexible resilient material having first and second extended surfaces, with said first extended surface of said resilient material in contact with the second conductive electrode along substantially the entire length thereof; and
IV. applying one or more adhesive portions coextensive with at least a portion of said second extended surface of said resilient material.

4,322,878

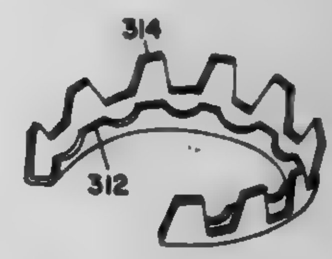
BEARING COMPONENTS AND METHOD OF MAKING SAME

Henry A. Warchol, 2 Sackville Ave., Westfield, Mass. 01085

Division of Ser. No. 876,899, Feb. 13, 1978, Pat. No. 4,212,095. This application May 13, 1980, Ser. No. 149,326

Int. Cl.[3] **B21K** *1/05*

U.S. Cl. 29—148.4 C **4 Claims**



1. A method of making a bearing component comprising the steps:
forming an elongated metallic strip into a circular tubular

ring with the opposite end edges of the strip being brought into confrontation and fused together,

forming the ring into a frustoconical configuration with one edge of the ring defining a small circumference and one edge of the ring defining a large circumference and with the ring retaining the original circular ring diameter,

flattening the frustoconical configuration into a single plane and turning the opposite edges of the flattened ring in planes normal to the plane of the flattened ring and in parallelism with each other.

4,322,879

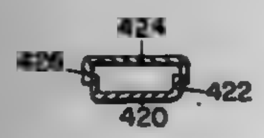
BEARING COMPONENTS AND METHODS OF MAKING SAME

Henry A. Warchol, 2 Sackville Ave., Westfield, Mass. 01085

Division of Ser. No. 876,899, Feb. 13, 1978, Pat. No. 4,212,095. This application May 13, 1980, Ser. No. 149,318

Int. Cl.³ B21K *1/05*

U.S. Cl. 29—148.4 C 3 Claims



1. A method of making a bearing cage comprising the steps of:

forming a first outside strip of flat metallic stock with opposite side face portions turned inwardly in parallel planes normal to the plane of the main face portion,

forming the main face portion of the first outside strip with a plurality of equi-spaced ball or roller openings therethrough,

forming the first outside strip into a first annular ring with the confronting end edges fused together and with the main face portion defining a first cylindrical annulus of a certain outside diameter,

forming a second inside strip of flat metallic stock with opposite side face portions turned outwardly in parallel planes normal to the plane of the main face portion,

forming the main face portion of the second inside strip with a plurality of equi-spaced ball or roller openings therethrough,

forming the second inside strip into a second annular ring with the confronting end edges fused together and with the main face portion defining a second cylindrical annulus of an inner diameter less than the certain outer diameter of the first annulus,

joining the respective side face portions of the main face portion of the first and second annular rings to each other with the outside side faces of the inside ring being nestably received inside of the inside side faces of the outside ring in defining a pair of coaxial annuli equally spaced as to each other throughout their circumferences.

4,322,880

METHOD OF FABRICATING A PRESTRESSED CAST IRON VESSEL

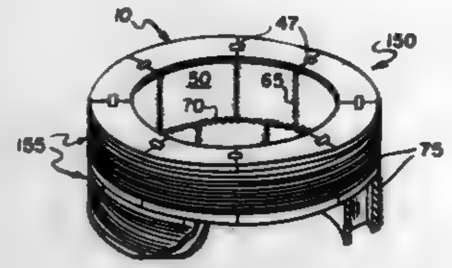
Robert F. Lampe, Bethel Park, Pa., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Apr. 9, 1980, Ser. No. 138,804

Int. Cl.³ B21D *39/00*

U.S. Cl. 29—452 20 Claims

1. A method of fabricating a prestressed cast iron vessel comprising: casting body segments; forming liner segments each complementary in shape to a selected one of the body segments; mounting each formed liner segment to the selected one of the body segments; forming a plurality of ring assemblies by assembling combined liner and body segments into a ring; welding the liner segments of each ring together forming a unitary liner ring; providing the outer surface of the cast iron body segments of each ring with tensioned members to compress and complete each ring assembly; stacking ring assemblies to form the vessel; welding adjacent unitary liner rings



together; providing a head to cover the top ring assembly to cover the vessel; and providing axially extending tendons under tension to retain the head in place under pressure.

4,322,881

METHOD FOR MANUFACTURING SEMICONDUCTOR MEMORY DEVICES

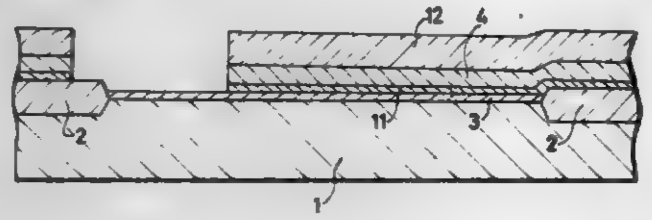
Tatsuya Enomoto, Itami, and Hiroshi Shibata, Kawasaki, both of Japan, assignors to VLSI Technology Research Association, Kanagawa, Japan

Filed Dec. 26, 1979, Ser. No. 107,286

Claims priority, application Japan, Dec. 26, 1978, 53-163808

Int. Cl.³ H01L *29/78;* B01J *17/00*

U.S. Cl. 29—571 8 Claims



1. A method for producing a semiconductor memory device comprising the steps of:

providing a wafer of silicon semiconductor material containing an impurity of a first conductivity type;

forming a thick oxide layer in a predetermined pattern on a surface of said wafer;

thermally oxidizing said surface to form a thin oxide layer;

forming a layer of silicon nitride over at least portions of said thick oxide layer and said thin oxide layer;

forming a layer of polycrystalline silicon upon said layer of silicon nitride;

etching away first portions of said layer of silicon nitride and first portions of said layer of polycrystalline silicon in a predetermined pattern;

etching away second portions of said layer of polycrystalline silicon to partially expose second portions of said layer of silicon nitride;

removing first portions of said thin oxide layer in areas where said first portions of said layer of polycrystalline silicon was etched away to expose first portions of said surface of said wafer;

diffusing impurities of a second conductivity type into said first portions of said surface;

providing a layer of thermal oxide on said surface of said wafer by using said second portions of said layer of silicon nitride as a mask for oxidation;

etching away said second portions of said silicon nitride layer extending beyond said polycrystalline silicon layer;

etching away portions of said thin oxide layer in areas where said second portions of said silicon nitride layer were etched away to expose a second portion of said surface of said wafer;

thermally oxidizing said wafer to form a thin oxide film on said second portion on said surface;

providing contact holes through said layer of thermal oxide; and

forming conductive interconnection layers extending into said contact holes.

4,322,882

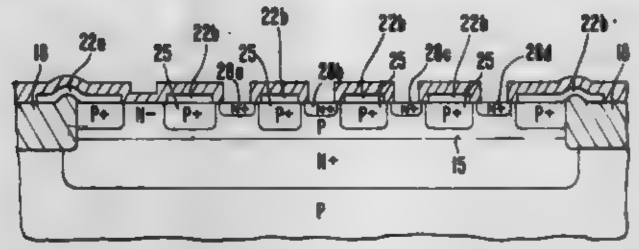
METHOD FOR MAKING AN INTEGRATED INJECTION LOGIC STRUCTURE INCLUDING A SELF-ALIGNED BASE CONTACT

Madhukar D. Vora, Los Gatos, Calif., assignor to Fairchild Camera & Instrument Corp., Mountain View, Calif.

Filed Feb. 4, 1980, Ser. No. 118,178

Int. Cl.³ H01L *21/22*

U.S. Cl. 29—571 16 Claims



1. A method for making an integrated injection logic device in a pocket of first conductivity type epitaxial layer separated from a substrate of opposite conductivity type by an intervening region of first conductivity type, the pocket surrounded by insulating material extending to contact said intervening region, the method comprising:

introducing an opposite conductivity type impurity into a first portion of the epitaxial layer;

depositing first material which includes opposite conductivity type impurity over a second portion of the epitaxial layer, the second portion including at least part of the first portion;

treating the first material to cause at least some of the opposite conductivity type impurity to enter the epitaxial layer; and

introducing first conductivity type impurity into a third portion of the epitaxial layer, the third portion including at least part of the first portion and none of the second portion.

4,322,883

SELF-ALIGNED METAL PROCESS FOR INTEGRATED INJECTION LOGIC INTEGRATED CIRCUITS

Shakir A. Abbas, Wappingers Falls, and Ingrid E. Magdo, Hopewell Junction, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 8, 1980, Ser. No. 167,173

Int. Cl.³ H01L *21/223, 21/302*

U.S. Cl. 29—578 13 Claims

1. A method for forming an integrated injection logic integrated circuit having a pattern of narrow dimensioned dielectric regions on a monocrystalline silicon body comprising:

providing said silicon body;

forming a first insulating layer on a major surface of said body;

removing said first insulating layer in areas designated to contain integrated injection logic devices of said integrated circuits;

forming over said major surface a highly doped polycrystalline silicon layer of conductivity type opposite to that of said body;

forming openings in said polycrystalline silicon layer by reactive ion etching in the areas designated as the base of the lateral injector transistor of said integrated circuit which results in the structure having substantially horizontal surfaces and substantially vertical surfaces;

forming a second insulating layer on both said substantially horizontal surfaces and said substantially vertical surfaces;

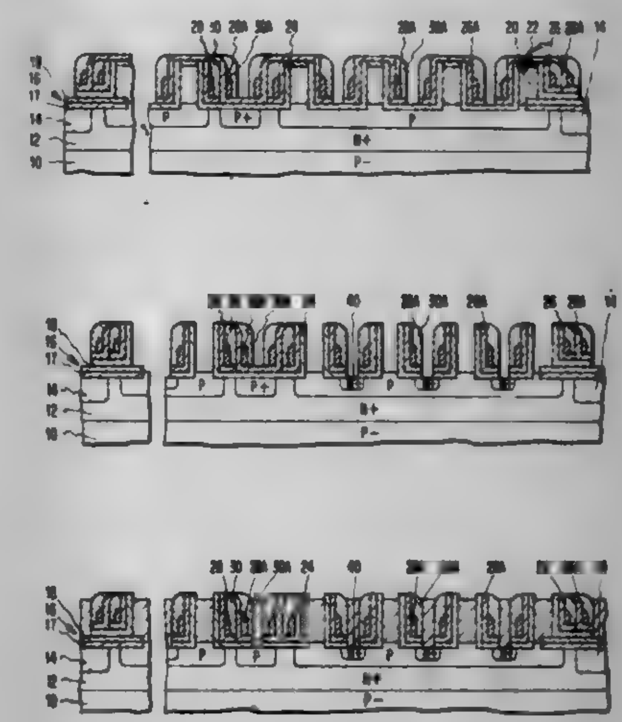
reactive ion etching said second insulating layer to substantially remove the said second insulating layer from said horizontal surfaces and to provide said narrow dimensioned dielectric regions on said silicon body in said areas designated the base of the lateral injector transistor;

forming said base of the lateral injector transistor;

annealing the structure to fully form the said base of the said injector transistor, and to drive into the said body the opposite type impurities from said polycrystalline silicon layer and thereby forming the base regions for the vertical transistors of said integrated injection logic integrated circuit;

forming additional openings in said polycrystalline silicon layer in areas designated as collector regions for said vertical transistors which results in the structure having substantially horizontal surfaces and substantially vertical surfaces;

forming a third insulating layer on both said substantially horizontal surfaces and said substantially vertical surfaces;



reactive ion etching said third insulating layer to substantially remove said third insulating layer from said horizontal surfaces and to provide additional said narrow dimensioned dielectric regions on said silicon bodies in said areas designated as collector regions for said vertical transistors;

forming said collector regions of said vertical transistors;

removing the remaining said polycrystalline silicon layer by etching to leave said pattern of narrow dimensioned on the said major surface; and

forming a conductive layer on said major surface of said body which has portions thereof electrically separated by said narrow dielectric regions for contacting in self-alignment the said base of the lateral transistor, said base and collector regions of said vertical transistor, and said silicon body.

4,322,884

METHOD OF INTRODUCING AN ANTI-MICROPHONY SPONGE INTO AN AIR-CORED COIL

Cesare Chiecchi, Castiraga Vidardo, Italy, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 15, 1979, Ser. No. 94,627

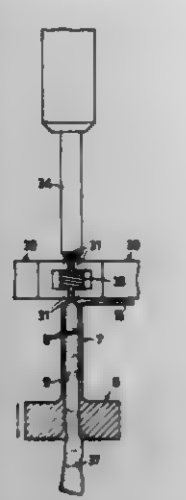
Claims priority, application Italy, Nov. 17, 1978, 29904 A/78

Int. Cl.³ H01F *41/00*

U.S. Cl. 29—602 R 3 Claims

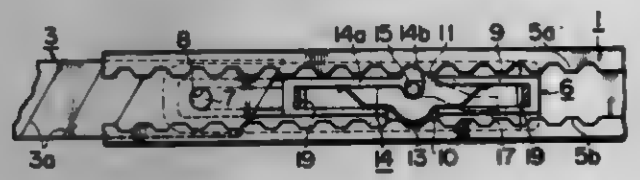
1. A method of introducing an anti-microphony sponge into an air-cored coil for television channel selectors which comprises, introducing a length of a spongy material into a sleeve so that an end portion of the length is enclosed by the sleeve,

sliding an air-cored coil having an inner diameter substantially equal to the outer diameter of the sleeve onto the sleeve, blocking the air-cored coil in the axial direction and clamping the end portion of the length on both sides of the air-cored coil, withdrawing the sleeve subsequently from the blocked air-cored coil and sliding it over the clamped length so that the



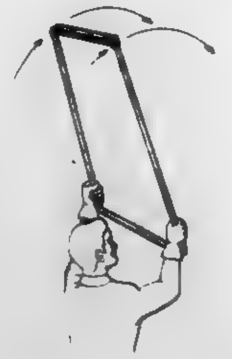
portion of the length enclosed by the sleeve is exposed and engages the inner circumference of the air-cored coil, separating the portion of the length which is enclosed by the air-cored coil from the portion of the length situated in the sleeve, and unblocking the air-cored coil and unclamping the sponge introduced into the air-cored coil so that the air-cored coil with anti-microphony sponge is released.

4,322,885
KNIFE APPARATUS
Hiroshi Osada, Seki, Japan, assignor to Kai Cutlery Center Co., Ltd., Seki, Japan
Filed Jun. 9, 1980, Ser. No. 157,869
Claims priority, application Japan, Jun. 23, 1979, 54-86188[U]
Int. Cl.³ B26B *1/08*
U.S. Cl. 30—162 **5 Claims**



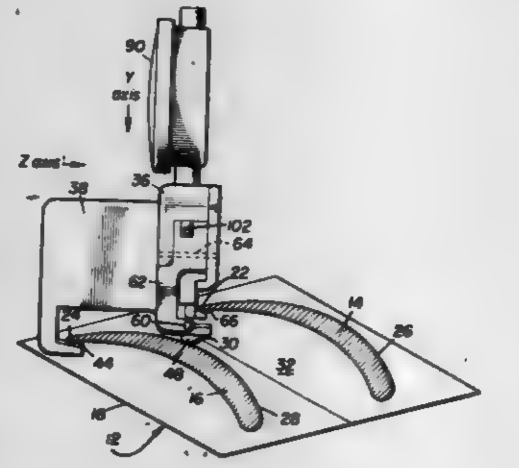
1. A knife apparatus comprising an elongated handle member having longitudinal edge portions bent in opposite to each other so as to form a groove in said handle, at least one of said longitudinal edge portions being formed with a series of teeth, a slide unit disposed longitudinally slidably within said groove of said handle, a blade slidably disposed in said groove in substantially longitudinal alignment with said slide unit and having a base portion connected to said slide unit, a locking member provided in said slide unit and adapted to be movable between a first position at which said locking member meshes with said tooth train to immobilize said slide unit and said blade and a second position at which said slide unit and hence said blade can be moved longitudinally in said groove, a manipulator member disposed on said slide unit over said locking member movably longitudinally relative to said locking member in a predetermined range, and control means provided in combination with said locking member and said manipulator member to selectively move said locking member to one of said first and second positions in response to corresponding operation of said manipulator member, said locking member being formed integrally with said slide unit and having a flexible arm and a lock portion formed at the free end of said flexible arm and adapted to disengageably mesh with said tooth train, said control means including a cam groove provided at the lower side of said manipulator member, and a cam follower stud formed in said lock portion and adapted to be guided by said cam groove.

4,322,886
TOOL FOR TRIMMING WILLOW TREES
Samuel Marcolongo, 131 Pond St., Stoneham, Mass. 02180
Filed Jun. 19, 1980, Ser. No. 160,949
Int. Cl.³ B26B *3/00*
U.S. Cl. 30—312 **5 Claims**



1. A tool for manually trimming willow trees and adapted for overhead use comprising a generally U-shaped frame having
- a base portion and
- two arms lying in a common first plane extending from said base portion, the distance between said arms at their midpoints being between 12 and 24 inches, and
- a cutting blade extending between the ends of said arms opposite from said base portion, said cutting blade having a sharpened edge and a planar surface extending therefrom lying in a second plane substantially perpendicular to said first plane, the space between said arms being free from obstructions thereby to enable the tool to be swung over the torso of the user.

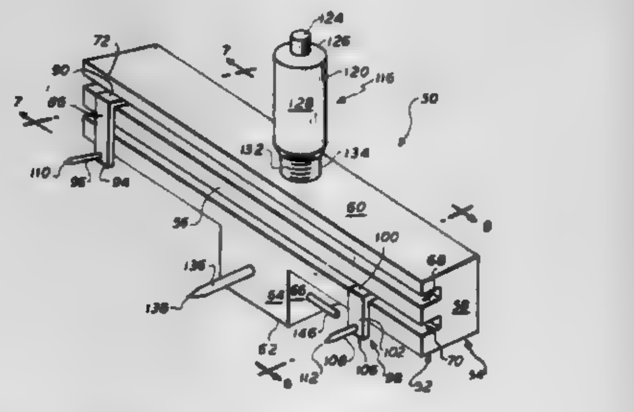
4,322,887
METHOD AND APPARATUS FOR OPEN FLOW AREA CLASSIFICATION
Clark R. Burton, Los Altos, Calif., assignor to Compair, Inc., Burlingame, Calif.
Filed Jul. 24, 1980, Ser. No. 171,747
Int. Cl.³ G01B *5/20*
U.S. Cl. 33—174 C **22 Claims**



1. A classification gauge for measuring open flow area of a vane assembly including a leading vane, a following vane and opposite end buttresses, the open flow area being defined by a trailing edge of the leading vane, a convex portion of an airfoil surface of the following vane opposite the trailing edge of the leading vane and inside surfaces of the opposite end buttresses, comprising
- a frame,

- means arranged on the frame for accurate positioning of the frame on the vane assembly and for locating one lateral end and one longitudinal side of the open flow area,
- first probe means for engaging an opposite longitudinal side of the open flow area,
- second probe means for engaging an opposite lateral end of the open flow area,
- a proportional means arranged for interaction with both the first and second probe means, and
- indicator means responsive to the proportional means for providing an indication of open flow area.

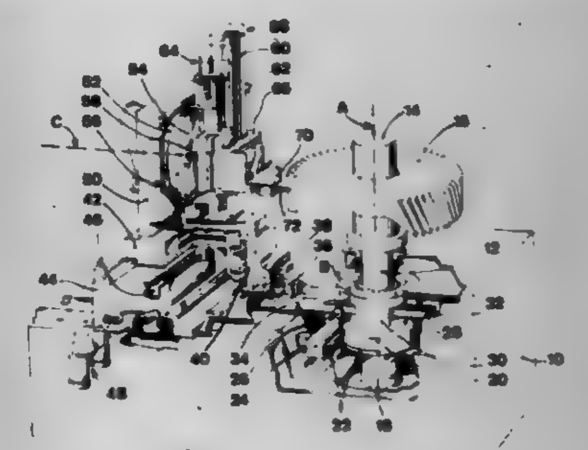
4,322,888
MULTI-PURPOSE GAUGE
Michael Garzione, 28 Barton St., Newburgh, N.Y. 12550
Filed Mar. 10, 1980, Ser. No. 129,177
Int. Cl.³ G01B *5/08*
U.S. Cl. 33—178 D **14 Claims**



1. A gauge comprising:
(a) a housing;
(b) first and second spaced probes secured to and movable with respect to said housing; said probes having free ends terminating in a plane;
(c) a third probe secured to and movable with respect to said housing and intermediate to said first and second probes;
(d) means secured to said housing for simultaneously positioning said first and second probes with respect to one another, such that said third probe remains equidistant from said first and second probes and said free ends remain in said plane; said simultaneous positioning means comprises means for releasably yielding, such that, upon said first or second probes contacting a resistant surface, said positioning means substantially disengaging from said first and second probes;
(e) means for moving said third probe substantially perpendicularly with reference to said plane; said means for moving said third probe comprises means for releasably yielding, such that, upon said third probe contacting a resistant surface, said means for moving the third probe substantially disengaging from said third probe; and
(f) indicia means for indicating the distance between said first and second probes and the distance of said third probe from said plane.

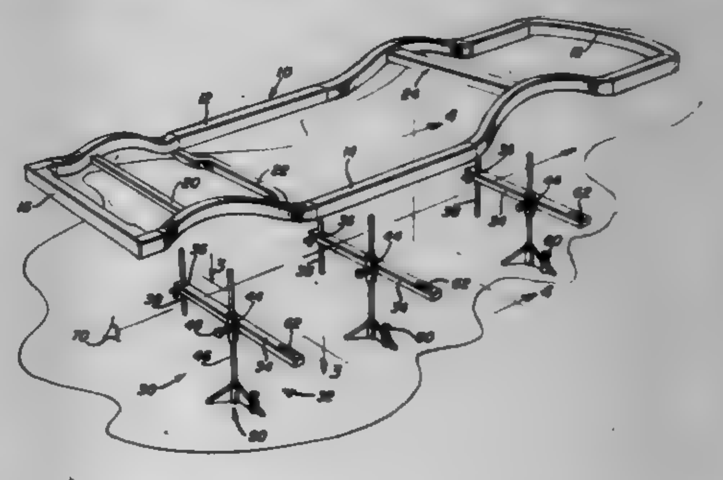
4,322,889
TESTING APPARATUS FOR INVOLUTE AND HELICAL GEAR TEETH
Erwin Guenter, Widen, Switzerland, assignor to Maag Gear-Wheel & Machine Co. Ltd., Zürich, Switzerland
Filed Sep. 15, 1980, Ser. No. 187,626
Claims priority, application Switzerland, Oct. 1, 1979, [illegible]811/79
Int. Cl.³ G01B *7/28*
U.S. Cl. 33—179.5 R **5 Claims**

1. A testing apparatus for involute and helical gear teeth comprising:
- a rotatable chucking device for a test piece which is to be tested;
- a feeler device containing a feeler which can be moved along two flanks of the test piece;
- a respective drive means for each said chucking device and said feeler device;
- a regulation device for at least one of said drive means;
- a mechanical transmission means arranged between said chucking device and said feeler device;
- said mechanical transmission means containing transmission elements;
- a displacement path transducer arranged between two transmission elements of said transmission means for measuring the relative movement of both of said transmission elements;



- an electric circuit for infeeding measuring signals of the displacement path transducer to the regulation device and for superimposing such measuring signals of the displacement path transducer upon measuring signals of the feeler device;
- an elastically deformable intermediate element for bridging the displacement path transducer; and
- said elastically deformable intermediate element interconnecting both said transmission elements in both of their directions of movement with one another and being structured powerfully enough in order to transmit the greatest moment which can be exerted by said drive means of said feeler device at one of said transmission elements, to the other transmission element.

4,322,890
DATUM LINE GAUGE SYSTEM
Davis R. Jarman, 612 Ward Dr., and Virgil H. Hinson, 206 Fairway Oaks Dr., both of Brunswick, Ga. 31520
Filed Mar. 17, 1980, Ser. No. 131,090
Int. Cl.³ G01C *15/12;* G01B *11/26*
U.S. Cl. 33—288 **6 Claims**

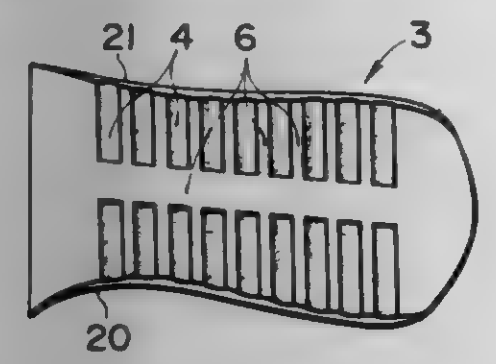


1. A system of gauges for checking and correcting vehicle frame location datum line distances, said system including at

least three gauges, each of said gauges including a horizontal arm, a vertical elongated measuring member guidingly supported from one end of said arm for adjusted vertical shifting relative thereto, first lock means operatively associated with said arm and measuring member for rleasably locking said measuring member in adjusted shifted position relative to said arm, a vertical standard, mounting means mounting said arm from said standard for adjusted shifting therealong and with said arm at right angles relative to said standard, second lock means operatively associated with said arm and standard for releasably locking said arm in adjusted shifted position relative to said standard, level means carried by said arm for indicating when said arm is horizontal, base means carried by the lower end of said standard for support of said standard from a generally horizontal support surface, said base means including means defining a pair of downwardly facing support surfaces spaced along a horizontal path normal to a radius of the center axis of said standard and spaced radially outwardly of said standard and a third downwardly facing and vertically adjustable support surface spaced on the other side of said center axis from said path, said mounting means including means operative to allow at least 180° angular displacement of said standard about its center axis relative to said arm.

4,322,891
SPORT SHOE SOLE

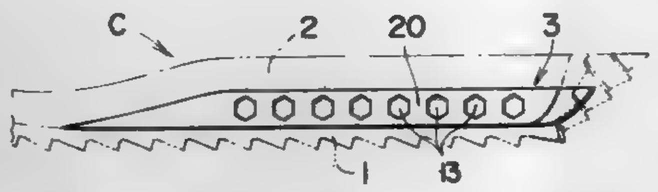
Masanobu Inohara, Akashi, Japan, assignor to Asics Corporation, Kobe, Japan
Division of Ser. No. 896,477, Apr. 14, 1978, Pat. No. 4,236,326.
This application Aug. 4, 1980, Ser. No. 174,890
Int. Cl.³ A43B *13/20, 21/28*
U.S. Cl. 36—29 **5 Claims**



1. A sole for use with sport shoes comprising a rigid abrasion-resistant ground sole, the ground sole having a heel portion, and arch portion, and a toe portion, a resilient and elastic interlayer body bonded to said ground sole, and a resilient and elastic interlayer sole bonded to said interlayer body, said interlayer body being extended over and bonded to the heel portion and the shoe arch portion of the ground sole and having uniform thickness at the heel portion and decreasing into a wedge shape toward the top of the shoe arch portion, the interlayer body being provided with a plurality of parallel, transversely extending grooves on the surface of said interlayer body from its one side to its center while disconnected at said center, the cross section of each groove being semi-circular so as to have uniform distribution of stress, preferred absorbing power of impact load, and a durable shape, the resilience of the interlayer body and the interlayer sole and the air in the grooves permitting preferred absorption of impact load exerted against the heel portion of the sole at the time of landing and good restoration and long durability of arched shapes.

4,322,892
SPORT SHOE SOLE

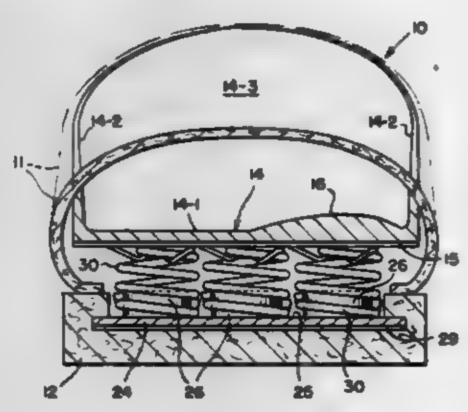
Masanobu Inohara, Akashi, Japan, assignor to Asics Corporation, Kobe, Japan
Division of Ser. No. 896,477, Apr. 14, 1978, Pat. No. 4,236,326.
This application Aug. 4, 1980, Ser. No. 174,892
Claims priority, application Japan, Dec. 28, 1976, 51-177169[U]
Int. Cl.³ A43B *13/20, 21/28*
U.S. Cl. 36—29 **5 Claims**



1. A sole for use with sport shoes comprising a rigid abrasion-resistant ground sole, the ground sole having a heel portion, an arch portion, and a toe portion, a resilient and elastic interlayer body bonded to said ground sole, and a resilient and elastic interlayer sole bonded to said interlayer body, said interlayer body being extended over and bonded to the heel portion and the shoe arch portion of the ground sole and having uniform thickness at the heel portion and decreasing into a wedge shape toward the top of the shoe arch portion, the interlayer bodying being provided with a plurality of parallel, transversely extending apertures between the upper and lower the surfaces of said interlayer body from its each side to its center, the cross section of each aperture being hexagonal so as to have preferred absorbing power of impact load, the resilience of the interlayer body and the interlayer sole and the air in the apertures permitting preferred absorption of impact load exerted against the heel portion of the sole at the time of landing.

4,322,893
INDEPENDENT INSOLE ASSEMBLY

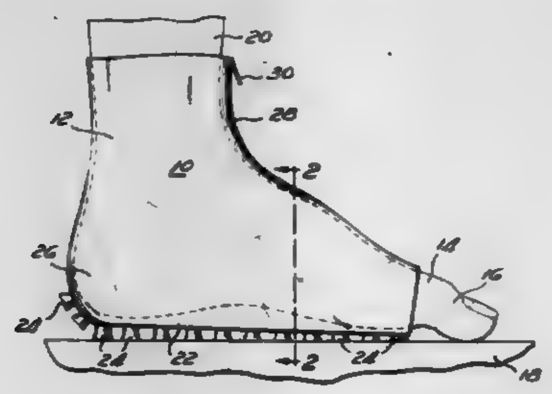
Norrine M. Halvorsen, 169 Sixth St., Rochester, N.Y. 12302
Filed Apr. 3, 1980, Ser. No. 136,893
Int. Cl.³ A43B *13/38, 17/06, 13/18*
U.S. Cl. 36—43 **7 Claims**



1. An insole assembly unit, for embodiment in an article of footwear including a sole and a shoe upper, comprising
- a semi-flexible insole attachment member disposed to form at least the foot-supporting portion of the insole of a shoe,
- a second, semi-flexible attachment member spaced from said insole attachment member and disposed to be secured to the sole of a shoe,
- a plurality of spaced, resiliently compressible elements secured to and extending between said members, and
- means for securing said second member to the sole of a shoe whereby said elements support said insole attachment member movably and resiliently above said sole in a finished shoe,
- one of said members having thereon spaced multiple clip means integrally arranged on a surface opposed to the other member, and said other member having thereon spaced, multiple, vertically disposed integral peg means aligned with and opposed to said clip means, and
- each of said resilient elements being releasably attached at one end to one of said clip means and being sleeved at its opposite end over one of said peg means, whereby said elements are disposed between and interconnect said attachment members.

4,322,894
SURFING FOOTWEAR

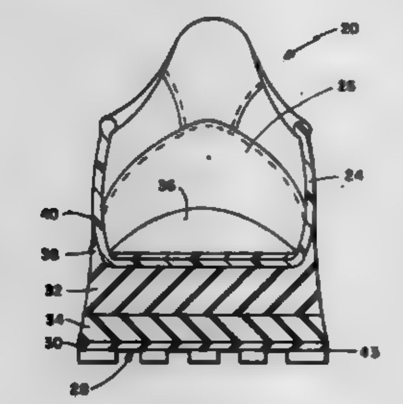
William E. Dykes, 23920 DeVille Way, Apt. D, Malibu, Calif. 90265
Filed Apr. 18, 1980, Ser. No. 141,325
Int. Cl.³ A43B *5/08*
U.S. Cl. 36—114 **2 Claims**



1. Novel surfing footwear, said footwear comprising, in combination:
- a. a flexible foot covering;
- b. surfboard traction-improving means secured to the bottom exterior of said foot covering,
- c. wherein said traction-improving means comprises a plurality of suction cups spaced along said bottom, and
- d. wherein said suction cups which are adjacent the front of said foot covering are of decreased depth relative to others of said cups.

4,322,895
STABILIZED ATHLETIC SHOE

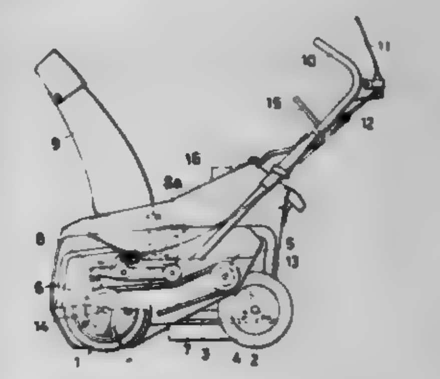
Stan Hockerson, 62 Vallejo St., Petaluma, Calif. 94952
Filed Dec. 10, 1979, Ser. No. 101,708
Int. Cl.³ A43B *5/00, 23/08*
U.S. Cl. 36—129 **3 Claims**



1. An Athletic Shoe comprising a sole having a midsole with a forefoot and heel portions, an upper mounted on the sole, the upper having a counter forming a heel cup having exterior sidewalls, a support band carried on the upper rim of the midsole and secured about the sidewalls of the heel cup, said band extending upwardly and merging with the vertical midspan of the heel cup for supporting and stabilizing the heel cup relative to the sole during contact of the sole onto a surface when in use, the opposite sides of the lower rim of the heel portion having a lateral width greater than the lateral width of the heel cup midspan, and the support band inclines upwardly from the lower rim of the heel portion to the heel cup midspan for resisting flexing of the side of heel cup relative to the sole during initial contact on the surface along one side of the sole.

4,322,896
SNOW BLOWING MACHINE

Takeshi Miyazawa, Wako, and Naotoshi Ono, Sayama, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Jul. 3, 1980, Ser. No. 165,681
Claims priority, application Japan, Jul. 7, 1979, 54-86065
Int. Cl.³ E01H *5/00*
U.S. Cl. 37—43 E **4 Claims**



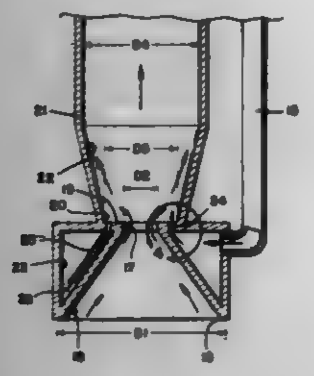
1. In a snow blowing machine of the type including a body, a drive motor mounted on said body, support members for said body, a snow discharge chute mounted on said body, a blower member associated with said chute, an auger having a shaft journalled for rotation on said body, said shaft carrying blade sections of opposite helix for collecting and feeding snow to said blower member, and a drive from said drive motor to said blower member and to said auger, the improvement comprising:
- said helical blade sections of the auger being spaced axially of each other on said shaft;
- said blower member being mounted on said shaft at a position intermediate said helical blade sections and having blades extending substantially axially of said auger shaft, said blades having edge members on the radially outermost edges of said blower member blades formed from a material having a low coefficient of friction,
- a drive from said motor to said auger shaft at a ratio such that said shaft is driven at a speed within the operating range of said blower,
- said auger having edge members on the peripheral edges of said helical blades formed from a material having a low coefficient of friction,
- said auger being in direct engagement with a ground surface and providing the sole ground engaging support for the front end of said body, and
- the residual friction between said edge members and said ground surface providing motive force for moving said snow blowing machine across said ground surface.

4,322,897
AIRLIFT TYPE DREDGING APPARATUS

Robert W. Brassfield, 144 Hayes Ave., Ventura, Calif. 93003
Filed Sep. 19, 1980, Ser. No. 188,685
Int. Cl.³ E02F *3/88*
U.S. Cl. 37—62 **5 Claims**

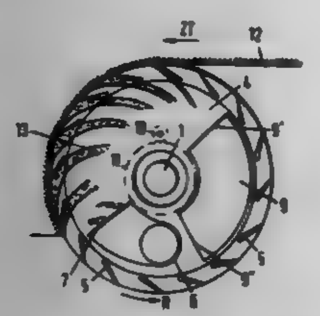
1. A dredging apparatus for raising fluid and debris from the ocean floor, including, in combination:
(a) a generally vertically oriented elongated hollow body having a lower opening of a first given internal diameter decreasing in an upward direction to terminate in a throat opening of a second given internal diameter to define a

venturi entrance, said throat opening immediately increasing in diameter at its exit end to a third given internal diameter to define an upwardly facing horizontal annular step lying in a plane normal to the vertical, said annular step having a plurality of vertical holes passing normally therethrough, the interior wall of said body extending upwardly from said step gradually increasing in internal diameter to an upper opening of a fourth given internal diameter to define a venturi diffuser;
(b) conveying means connected to said upper opening;
(c) means including a gas line and a plenum chamber surrounding the lower portion of said body defining said venturi entrance for introducing a flow of compressed gas



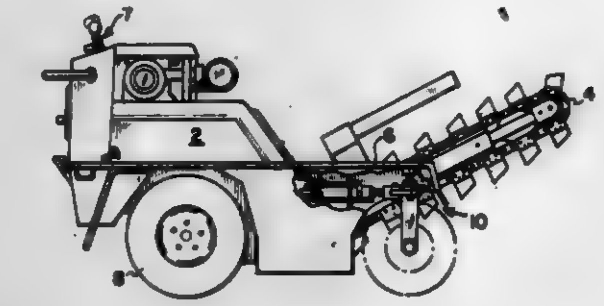
from the exterior of said venturi entrance upwardly through said plurality of vertical holes in said step to said venturi diffuser to draw into said lower opening and venturi entrance, fluid and debris from the ocean floor, said step resulting in cavitation of the flow of said fluid and debris past the exit end of said throat at the step area, to result in a reduced pressure at the step surface to facilitate said flow of gas upwardly through said holes in said step, said fluid and debris passing up said conveying means and
(d) at least one pipe section connected to one of said openings and extending downwardly into said plenum chamber to terminate short of the bottom of said chamber, for enabling removal of any liquid trapped in said plenum chamber.

4,322,898
CUTTER HEAD WITH ADJUSTABLE SUCTION NOZZLE
Wouter A. Bos, Av Dordrecht, Netherlands, assignor to Reba B.V., Wolweverhaven, Netherlands
Continuation-in-part of Ser. No. 37,520, May 11, 1978, abandoned. This application May 22, 1980, Ser. No. 152,412
Claims priority, application Netherlands, May 11, 1978, 7805114
Int. Cl.^{3} E02F *3/92*
U.S. Cl. 37—64 4 Claims



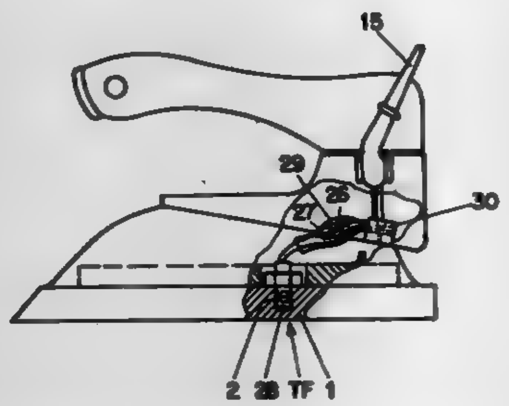
2. Rotary cutter head for a cutter dredger, said cutter head being provided with means for suspending said cutter head on a ladder arm of the dredger, means for connecting the cutter head to a control cylinder means for tilting movements of the cutter head and means for connecting a mixture-suction conduit, the cutter head being further provided with a rotatable ring of blades extending substantially in a cylindrical surface coaxial to the cutter head axis and a suction mouth which communicates with said suction conduit as well as a bottom plate at the lower end of the ring of blades, which bottom plate is rotatable for transferring soil loosened by said blades to the suction mouth, said suction mouth being positioned within the ring of blades with the entrance of the suction mouth substantially in a radial plane.

4,322,899
SELF-PROPELLED, NON-RIDING TRENCHING MACHINE WITH A STEERING MECHANISM
Charles A. Clune, Minster, Ohio, assignor to Midmark Corporation, New Bremen, Ohio
Filed May 9, 1980, Ser. No. 148,301
Int. Cl.^{3} E02F *5/06*
U.S. Cl. 37—86 13 Claims



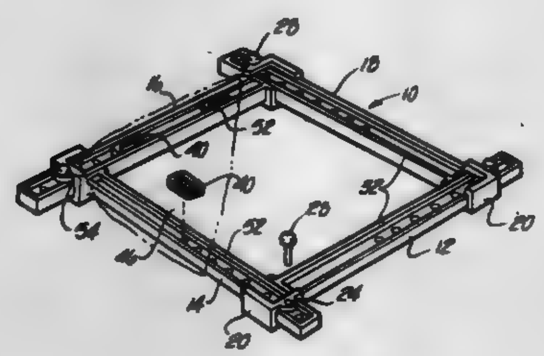
1. In a nonridable, trenching machine of the type having a chassis, a power source, a hydraulic pump driven by the power source, a reservoir supplying hydraulic fluid to the hydraulic pump, and a digging boom cantilevered outwardly from a front portion of the chassis; the improvement comprising:
front fender means extending outwardly from the front portion and being adjacent and parallel to the digging boom;
a front wheel assembly journaled into the fender means;
a double acting cylinder extending between the chassis and the front wheel assembly; and
manually operable valve means located on a rearmost portion of the chassis and communicating with the hydraulic pump and the cylinder such that hydraulic fluid is directed from the pump to the cylinder to selectively rotate the front wheel assembly.

4,322,900
IRONING DEVICE FOR INDUSTRIAL USE AND ASSOCIATED IRON
Kurt Hacker, Birkenwaldstrasse 155, 7000 Stuttgart, and Jiri Dokoupil, Hochstrasse 9, 6251 Gückingen, both of Fed. Rep. of Germany
Filed Jan. 10, 1979, Ser. No. 2,314
Claims priority, application Fed. Rep. of Germany, Jan. 11, 1978, 2801012; May 26, 1978, 2822930; May 26, 1978, 2822930
Int. Cl.^{3} D06F *75/02*
U.S. Cl. 38—77.6 24 Claims



1. An ironing device comprising an iron having an electrically heated and temperature regulated sole, at least one temperature sensor positioned in the vicinity of said sole, and a heater connected to an external supply of electrical current, temperature regulating means positioned remote from said iron for controlling the current supply to said heater and responsive to said temperature sensor, said temperature sensor having at least one temperature-dependent resistor, at least one compensating resistor connected with said temperature-dependent resistor, an actual-value input means for setting the desired temperature of said sole, said input means having a component whose resistance is variable to select the desired sole temperature, said temperature-dependent resistor further being connected to said actual-value input means, the overall value of resistance formed by said temperature-dependent resistor and said compensating resistor at a predetermined sole temperature being selected to correspond with the overall resistance of said actual-value input means when the resistance of said variable resistance component has been selected to correspond to said predetermined temperature.

4,322,901
NEEDLEWORK FRAME
Arthur Spitzke, Oxford, Mich., assignor to Schmelzer Corporation, Flint, Mich.
Filed May 27, 1980, Ser. No. 153,434
Int. Cl.^{3} D06C *3/08*
U.S. Cl. 38—102.6 7 Claims

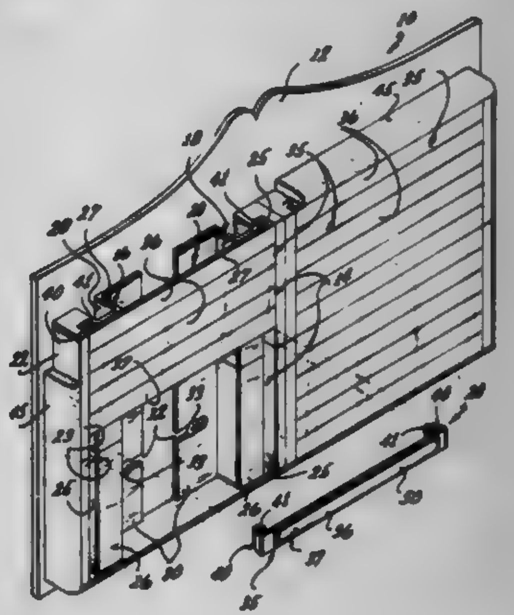


1. An adjustable frame assembly for releasably clamping four sides of a piece of fabric material, comprising; four frame members, each frame member including a head and an elongated body member extending from the head, the head of each frame member having an opening slidably receiving the body member of another frame member in transversely extending relationship thereto to form frame corner portions, fastening means detachably cooperating with each head opposite the associated body member and a slidably received frame member to hold adjacent frame members in selected position relative to each other to define four sides of the frame assembly, each body member having spaced apart walls forming a channel shaped groove therebetween and the top surfaces of said walls defining inner and outer borders, respectively of said frame assembly, a plurality of clamping elements each having opposed portions interfering with said spaced apart walls whereby fabric material disposed in said grooves is clamped in said grooves by said clamped elements, said head having portions aligned and engagable with the outer borders of adjacent body members and engaging top surfaces thereof and leaving the remainder of the head open to expose said grooves in said body member outwardly of the inner border of each of said frame members to receive said clamping elements.

4,322,902
INDICATORS FOR GARMENT HANGERS
Frank C. Leathall, Frankston, Australia, assignor to F. L. Plastics Industries Pty. Ltd., Victoria, Australia
Filed Apr. 16, 1979, Ser. No. 30,527
Int. Cl.^{3} G09F *3/00*
U.S. Cl. 40—322 16 Claims

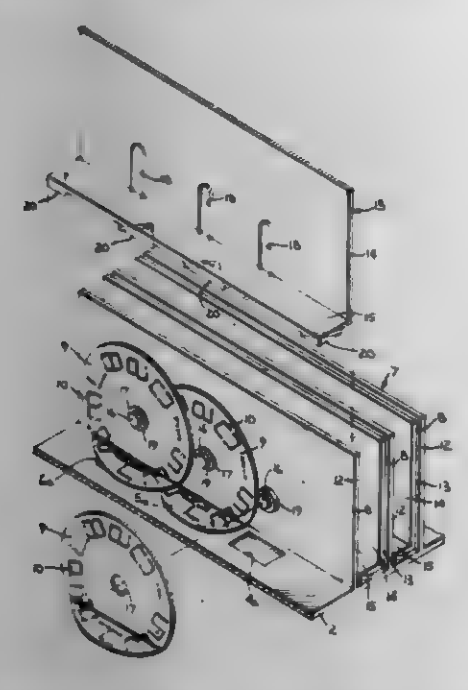
1. In combination, a hanger for garments and other articles comprising:
a hook adapted to engage a rail or other supporting means, said hook having an enlarged display portion extending from the hook such that it projects above the top contour of the hook; and
an indicating device attached to said display portion, said indicating device being readily visible when the hanger is in use by virtue of its position on said hook.

4,322,903
DIRECTORY ASSEMBLY
Kenneth E. Beckley, 13460 Highway 8, Bus. Space 120, Lakeside, Calif. 92040
Filed Mar. 30, 1981, Ser. No. 248,818
Int. Cl.^{3} G09F *11/00*
U.S. Cl. 40—409 6 Claims



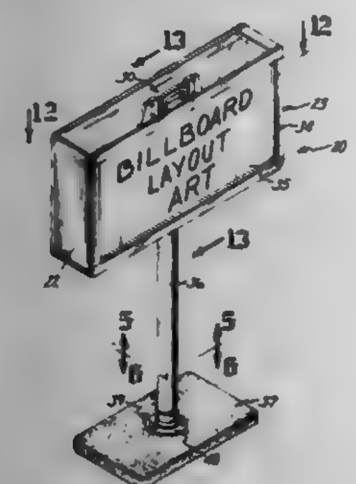
1. A directory assembly comprising:
at least one module having a left-side major frame member, a right-side major frame member, and a plurality of tab members;
said left-side major frame member having a longitudinal axis and a longitudinally extending channel in its top surface, said left-side major frame member having a tab member support surface located laterally adjacent said longitudinally extending channel;
said right-side major frame mamber having a longitudinal axis and a longitudinally extending channel in its top surface, said right-side major frame member having a tab member support surface located laterally adjacent said longitudinally extending channel; and
each of said tab members having an elongated body with downwardly extending resiliently compressible means on its opposite ends that are mateable with said longitudinally extending channels on said left-side and right-side major frame members.

4,322,904
INDICIA DISPLAY DEVICE
Kenneth J. Muderlak, Shorewood, Wis., assignor to KCS Industries, Inc., Milwaukee, Wis.
Filed Dec. 21, 1979, Ser. No. 106,002
Int. Cl.³ G09F *11/04;* G09D *3/08*
U.S. Cl. 40—495 **25 Claims**



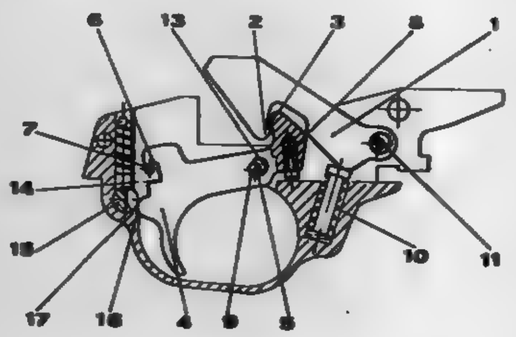
1. An indicia bearing device, comprising an enclosure having a wall with a viewing opening, a narrow non-planar guideway disposed behind the wall, said guideway having a portion aligned with said viewing opening, a sheet of transparent flexible material disposed within the guideway and conforming to the non-planar contour of said guideway, indicia disposed on said sheet, and mounting means for mounting the sheet for rotation within the guideway, and illuminating means disposed within said enclosure, the portion of said guideway disposed in alignment with said opening being translucent whereby the light from said illuminating means will illuminate the indicia exposed within the opening, the sheet adapted to be rotated to expose the indicia through said viewing opening to a viewer.

4,322,905
PORTABLE DISPLAY UNIT
Robert A. Kruse, 11108 Abbott La., Minnetonka, Minn. 55343
Filed Feb. 27, 1980, Ser. No. 125,224
Int. Cl.³ G09F *15/00, 7/02;* A47B *95/02, 97/04*
U.S. Cl. 40—606 **55 Claims**



1. A portable display unit convertible between a portable collapsed configuration and a display configuration for exhibition of at least one display card, comprising: a housing having a first display opening for exhibition of a display card located in the housing when said unit is in the display configuration, said housing having a first removable top wall for access into the interior thereof; said top wall having a handle grip opening; retractable handle means assembled in the housing and having a handle grip extendable out of the handle grip opening in the top wall for carrying the unit in the collapsed configuration; a second removable wall for covering said display opening when said unit is in the collapsed configuration; means to releasably secure the second wall in covering relationship to said opening when the unit is in the collapsed configuration; and a stand releasably secured to the housing to support the housing when the unit is in the display configuration.

4,322,906
TRIGGER MECHANISM FOR AUTOMATIC AND SEMIAUTOMATIC FIREARMS OF ANY TYPE
Bruno Civolani, Bologna, Italy, assignor to Benelli Armi S.p.A., Urbino, Italy
Filed Aug. 3, 1979, Ser. No. 63,180
Claims priority, application Italy, Oct. 27, 1978, 44022 A/78
Int. Cl.³ F41C *17/02*
U.S. Cl. 42—70 E **4 Claims**



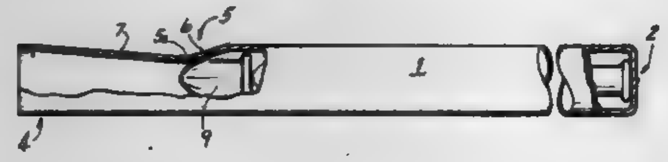
1. A trigger mechanism for a firearm comprising

an elongated hammer pivotally mounted at one end thereof on said firearm to be rotated in one direction from a cocked position to a firing position and subsequently to be rotated in the reverse direction to a safety position, said hammer at an intermediate portion having a first projecting dog formed thereon;

a trigger means having a forward portion and a rearward portion, said forward portion having a pivotal mounting on said firearm, and said forward portion including a second projecting dog formed thereon for selective engagement with said first dog in said cocked position and said safety position;

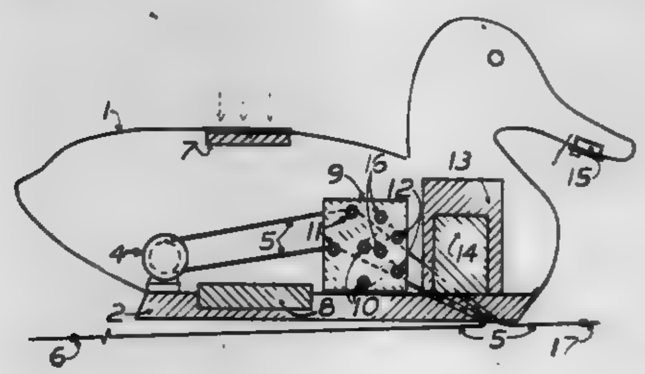
said rearward section of said trigger means including a notch having upper and lower edges engageable with a stop pin mounted on said firearm to provide limited rotation of said trigger means, said upper edge being in contact with said stop pin when said hammer and trigger means are in said cocked position, and said lower edge being in contact with said stop pin when said hammer and trigger means are in said firing position and said safety position.

4,322,907
SELF-CLOSING PROPELLANT CHARGE PACKAGE
John P. Rowe, Branford, Conn., assignor to Olin Corporation, New Haven, Conn.
Filed Mar. 3, 1980, Ser. No. 126,734
Int. Cl.³ F42B *39/00*
U.S. Cl. 42—88 **4 Claims**



1. In the combination of a loading device for a powder-actuated tool, a projecting tubular loading port insert adapted for passage of charges therethrough and a self-closing propellant charge package, wherein said loading port insert cooperates with said loading device for the passage of charges thereinto, said charge package comprising a substantially tubular body of a size to receive a plurality of charges in serial alignment, said body having one end at least partially closed to prevent passage of charges therethrough and one end open; the improvement comprising: a plurality of deformable, charge-retaining nodes, integrally formed in a portion of said body proximate said open end, said nodes being adapted for reformation between a first, undeformed, condition, wherein passage of charges through said body portion is prevented, and a second, deformed, condition admitting of ready passage of charges through said body portion, said body being adapted for telescoping emplacement on said loading port insert whereby said nodes are displaced to assume said second condition, allowing charges in said body to pass freely through said loading port insert, into said loading device, said nodes each being defined by a pair of intersecting planes, one of said planes being inclined approximately 15° relative to the longitudinal axis of said body, the other of said planes being inclined approximately 4° relative to said axis.

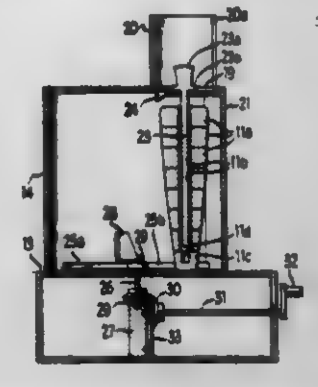
4,322,908
ANIMATED WILDFOWL DECOY
Roy E. McCrory, 4044 Bishops Bridge Rd., Memphis, Tenn. 38118
Filed Feb. 29, 1980, Ser. No. 125,927
Int. Cl.³ A01M *31/06*
U.S. Cl. 43—3 **10 Claims**



1. An animated wildfowl decoy comprising a floatable hollow body having a bottom with an opening therein; the hollow body being formed in the image of a wildfowl and housing therein a fixed capstan means; a length of tether line means with an intermediate portion thereof looped through the bottom opening and entrained about the capstan means, the end portions of the tether line means being adapted to be tautly secured; and an electric circuit including a battery and a motor attached to the capstan means for rotating the capstan means to pull the hollow body along the length of said tether line means.

4,322,909
TOY FOOD PROCESSOR
Edward T. Holahan, Chicago, and Burton C. Meyer, Downers Grove, both of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.
Filed Oct. 20, 1980, Ser. No. 199,006
Int. Cl.³ A63H *3/52*
U.S. Cl. 46—14 **12 Claims**

5. A toy food processor, comprising a housing having an opening in one side wall thereof, a door movable from an open position to a closed position to close said opening, a separable food slice module comprising a plurality of simulated slices of food product and holding means for releasably holding said slices in stacked relationship in a substantially vertical position, means for detachably supporting said module on said door, release means responsive to closing movement of said door for releasing said slices for gravity pull removal from said holding



means, and dispensing means for expelling the released slices from the toy.

4,322,910
CRYOGENIC DEFOLIATION
Paul W. Garbo, 48 Lester Ave., Freeport, N.Y. 11520
Filed Nov. 16, 1979, Ser. No. 94,945
Int. Cl.³ A01G *1/00*
U.S. Cl. 47—1.7 **1 Claim**

1. A process for defoliating cotton plants which comprises spraying said plants with liquefied carbon dioxide gas to reduce the temperature sufficiently to cause fatal injury to the leaves of said plants.

4,322,911
VINE SUPPORT FOR PLANTS
William D. Bach, 2141 Yancy Ave., Montgomery, Ala. 36107
Filed Aug. 1, 1980, Ser. No. 174,685
Int. Cl.³ A01G *17/06*
U.S. Cl. 47—45 **2 Claims**

1. A vine support for plants comprising:

(a) a plurality of pairs of upstanding wire-like members with the lower ends of the wire-like members of each pair being connected to each other and adapted to be anchored in the ground in spaced relation to each other with adjacent wire-like members of adjacent pairs extending upwardly across each other and terminating in spaced apart upper end portions,

(b) a sleeve-like element telescoping over the crossed portions of adjacent wire-like members of adjacent pairs restraining relative movement of said crossed portions,

(c) each of said upper end portions extending alongside the upper end portion of the next adjacent wire-like member of the next adjacent pair of wire-like members to define pairs of spaced apart upper end portions,

(d) a sleeve-like member telescoping over each said pair of upper end portions, and

(e) an elongated wire-like connector member extending between adjacent pairs of said upper end portions and having loop-like end portions which telescope over and

detachably connect said adjacent pairs of upper end portions.

4,322,912

SAFETY DEVICE FOR A VEHICLE DOOR ACTUATED BY A TURNABLE SHAFT

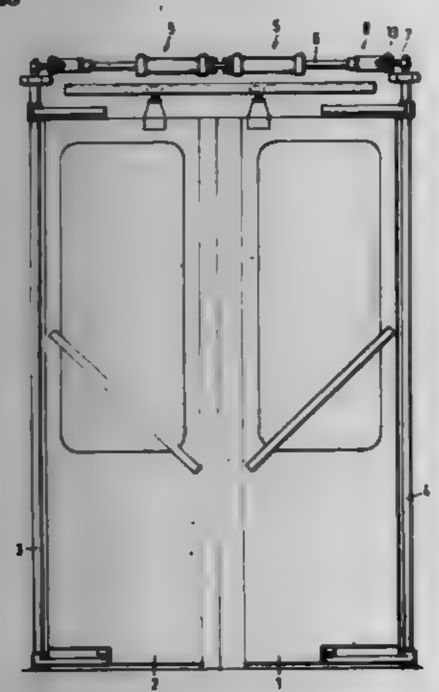
Siegfried Heinrich, Edermunde, Fed. Rep. of Germany, assignor to Gebr. Bode & Co., Kassel, Fed. Rep. of Germany

Filed Feb. 29, 1980, Ser. No. 125,757

Claims priority, application Fed. Rep. of Germany, Jul. 13, 1979, 2928315

Int. Cl.³ E05F *15/02*

U.S. Cl. 49—28 10 Claims



1. A safety drive apparatus for a vehicle door of the type actuated by a turnable shaft driven by a piston-cylinder unit having a piston rod, said drive apparatus comprising a lever arm fixedly mounted on the turnable shaft, a hinge bolt connected to said arm, a carrier connected to said hinge bolt and coupled thereby to said arm, said piston rod being connected with play to said hinge bolt and being slidable with respect to said carrier to enable said carrier and said piston rod to move relative to one another while being separately connected to said hinge bolt, switch means actuable when the door encounters an obstacle and is prevented from closing, said switch means comprising a switch element and a control element for operating said switch element, said carrier supporting one of said elements, said piston rod supporting the other of said elements.

4,322,913

AUTOMATIC DOOR FOR PETS

Robert D. Himmer, 500 N. Byfield, Westland, Mich. 48185

Filed May 8, 1980, Ser. No. 147,836

Int. Cl.³ E06B *7/28*

U.S. Cl. 49—168 5 Claims

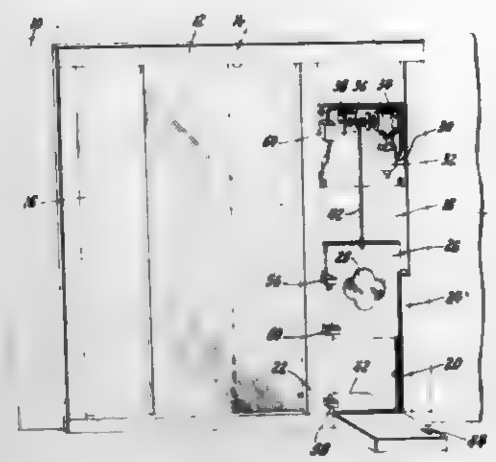
1. In a building having an opening, the combination comprising:

a first, larger door and a second, smaller door, collectively blocking said opening, and means supporting the larger door for motion toward a position in which it unblocks at least a part of said opening;

means mounting the smaller door for vertical sliding motion between a first position in which it unblocks a portion of said opening and a second position in which the smaller door blocks said portion of the opening;

power means connected to the smaller door so as to be operable to move the smaller door from said second position to said first position; and

a first floor-mounted pressure pad on a first side of said opening, and a second floor-mounted pressure pad on the opposite side of said opening, and means electrically connecting said pressure pads to said power means whereby



each of said pressure pads is operative to energize said power means to move said smaller door from said second position to said first position.

4,322,914

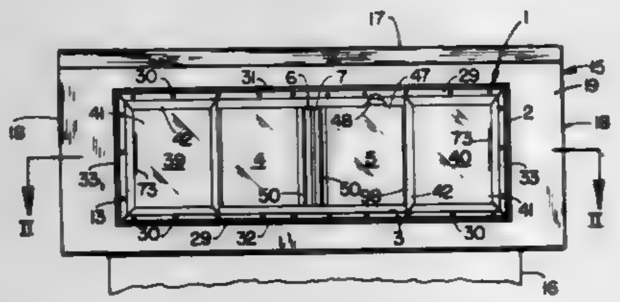
SLIDEABLE CLOSURE CONSTRUCTION

Donald C. McGaughey, Bristol, Ind., assignor to State Wide Aluminum of Indiana, Inc., Elkhart, Ind.

Filed Nov. 20, 1979, Ser. No. 96,192

Int. Cl.³ E06B *3/42;* E05D *13/04;* E06B *7/16*

U.S. Cl. 49—370 13 Claims



1. A slideable closure construction comprising:

a frame having a slide track therein;

first and second closures slideably mounted in said track and including interior end edges which abut in a closed position and are spaced apart in an open position;

a male latch member connected with one of said closure end edges and extending along the length thereof;

a female latch member connected with the other of said closure end edges and extending along the length thereof; said female latch member being shaped to selectively receive said male latch member therein and form a snap lock which securely interconnects said first and second closures in the closed position and simultaneously forms a weatherproof seal therebetween;

said male latch member comprising a bead having a plug portion with a bulbous transverse cross-sectional shape;

said female latch member comprising a channel including a pair of flanges spaced apart a distance adapted to receive said plug portion therebetween in an interference fit;

said female latch member including a base portion mounted in a first rigid frame with said flanges protruding therefrom; and

said female latch base portion being loosely mounted in said first frame in a manner which permits said female latch member to float in said first frame for smooth and reliable engagement with said male latch member.

4,322,915

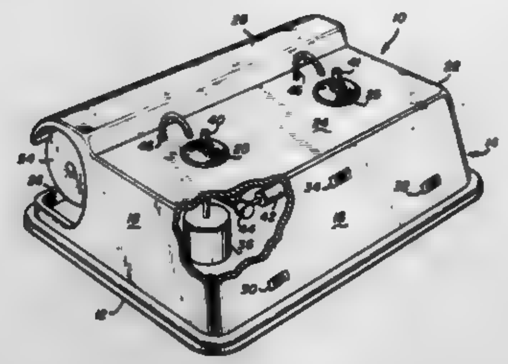
APPARATUS FOR BEVELING GLASS

Morris L. Kindig, 255 S. Rengstorff, Mountain View, Calif. 94040

Filed May 12, 1980, Ser. No. 149,029

Int. Cl.³ B24B *9/10*

U.S. Cl. 51—3 17 Claims



1. An apparatus for beveling glass or glass-like material comprising, in combination:

a flat rigid surface member supported above and parallel to the plane of the surface upon which the apparatus is situated for receiving and supporting a piece of material to be beveled, the flat rigid surface member having at least one aperture extending therethrough;

a beveling spindle projecting upward through each said aperture with its axis of rotation perpendicular to the plane of the flat surface member, the beveling spindle comprising an integrally formed member symmetrical about a vertical axis of rotation and including a flywheel ring section, a beveling cone section adjacent to said flywheel ring section, an edging ring section adjacent to said beveling ring section, a gripping ring section adjacent to said edging ring section and a stem section adjacent to said gripping ring section, the surfaces of said beveling cone section and said edging ring section being abrasive and together forming a grinding surface;

means for adjusting the relative height of each spindle with respect to the top of the flat surface; and

means for causing each beveling spindle to rapidly rotate about its axis of rotation whereby as a piece of material is urged over the flat rigid member towards the axis of the spindle, the edge of the material intersects said grinding surface and is ground.

4,322,916

APPARATUS FOR MAKING MULTIPLE RIB BELTS

Kenneth D. Richmond, Nixa, Mo., assignor to Dayco Corporation, Dayton, Ohio

Division of Ser. No. 886,206, Mar. 13, 1978, abandoned. This application Jul. 12, 1979, Ser. No. 56,786

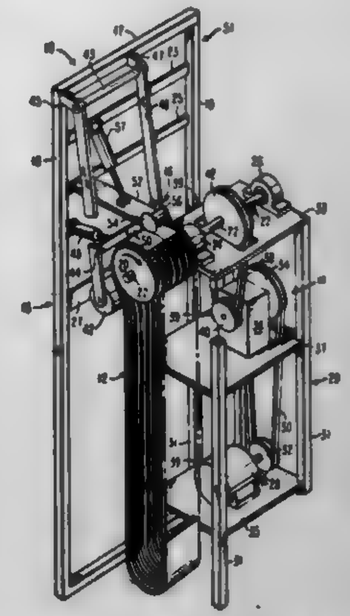
Int. Cl.³ B24B *7/02*

U.S. Cl. 51—78 10 Claims

1. An apparatus for separating a multiple rib endless power transmission belt made primarily of elastomeric material and having at least two pulley engaging ribs into smaller multiples of at least one pulley engaging rib, said apparatus comprising:

(a) a support frame;

(b) a belt holding and rotating assembly comprising, a multiple groove sheave rotatably mounted on said frame and being adapted to support said belt thereon so that a lower portion of said belt hangs free, said sheave having a plurality of alternating grooves and ribs therein with each of said grooves having a cross section which conforms to the cross section of each of said ribs of said belt being separated, means for rotating said sheave at a predetermined rotational speed, and a roller for contacting the outer surface of said belt and forcing said pulley engaging ribs into contact with an upstream portion of said sheave during rotation thereof to thereby assure positive alignment of said belt ribs with said sheave grooves; and,



(c) a cutting assembly mounted on said frame, said cutting assembly comprising cutting means for engaging said belt and cutting same completely therethrough between two of said pulley engaging ribs.

4,322,917

DOUBLE-HEAD AUTOMATIC GRINDING MACHINE

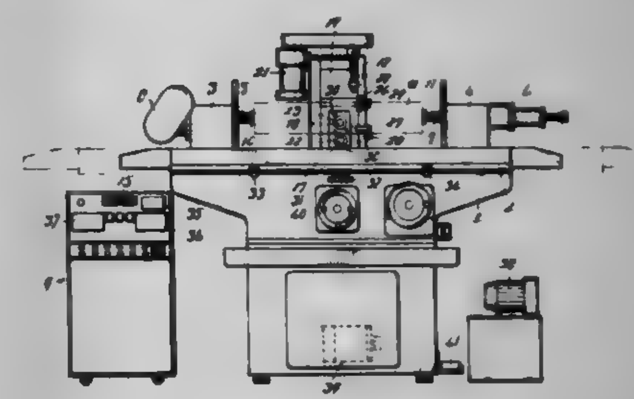
Minoru Ueda, Yamato, Japan, assignor to Ueda Giken Co., Ltd., Yamato, Japan

Filed Mar. 27, 1980, Ser. No. 134,466

Claims priority, application Japan, Apr. 5, 1979, 54-41504

Int. Cl.³ B24B *5/04*

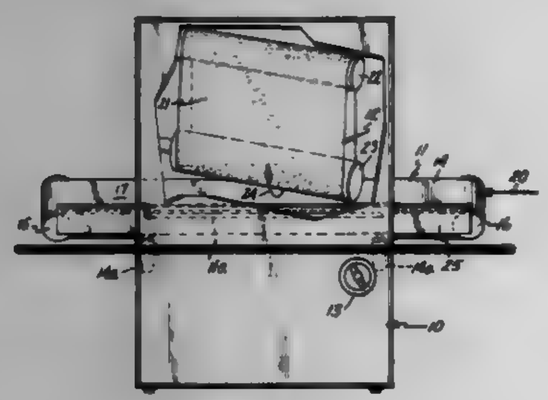
U.S. Cl. 51—123 R 2 Claims



1. In a double-head automatic grinding machine comprising: a stationary support base; a motor driven table supported on said support base for movement in the longitudinal direction of the support base; a main shaft support block mounted on said table and supporting a motor driven main shaft; a tail stock mounted on said table in opposition to said main shaft support block and supporting a work center abutment rod so as to pinch a workpiece between the main shaft and said rod; a motor driven grinding wheel support block mounted on said stationary support base for movement in a direction normal to the movement direction of said table; and cup-shaped coarser and finer grinding wheels mounted on said grinding wheel support block so that movement of said block displaces said cup-shaped coarser and finer grinding wheels at right angles to the center axis of the workpiece, whereby said workpiece rotating at a low speed is moved in the longitudinal direction of said support base as said table is moved in the same longitudinal direction by a motor, the improvement comprising said grinding wheel support block includes a threaded lifting block slidably received in the grinding wheel support block, two grinding wheel shafts rotatably mounted in said lifting block in vertically spaced relationship, means for finely adjusting said

grinding wheels with respect to said workpiece, a control board, and a linear scale secured to one side of said grinding wheel support block and operatively connected to said control board, each of said cup-shaped grinding wheels being mounted on each of said shafts so that the axes of the wheels are offset from the center axis of said workpiece by the distance corresponding to the effective radius of the wheels, and means to operate said lifting block so that the coarse and fine grinding wheels are automatically replaced by each other according to an optional cutting amount and frequency comprising a motor operatively connected to said lifting block and to said control board, said control board employing a digital limiter for selecting minimum and maximum cutting amounts.

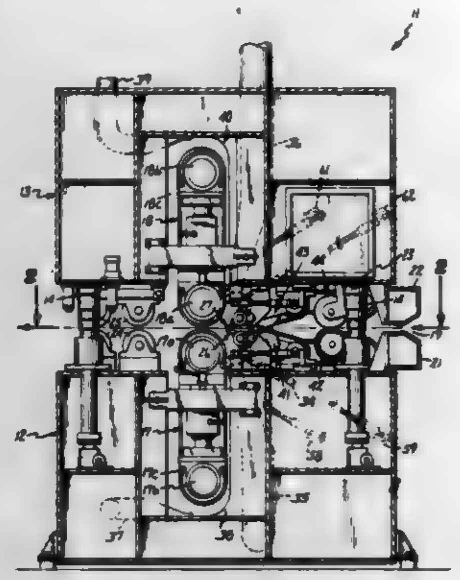
4,322,918
ABRASIVE GRINDING MACHINE
Clarence I. Steinback, Edina, Minn., assignor to Acrometal Products, Inc., Minneapolis, Minn.
Filed May 23, 1980, Ser. No. 152,799
Int. Cl.³ B24B *21/04*
U.S. Cl. 51—138 21 Claims



1. An abrasive grinding machine comprising:
(a) frame means;
(b) endless conveyor belt means carried by the frame means, the conveyor belt means having an upper flight which defines a substantially flat movable surface for carrying workpieces thereon, the movable surface having first and second edges and a predetermined longitudinal axis;
(c) means for driving the conveyor belt means so that the movable surface carries workpieces therealong;
(d) stationary fence means associated with the conveyor belt means and extending along the first edge of the movable surface for retainably guiding transported workpieces;
(e) an endless abrasive belt;
(f) means for mounting the abrasive belt for abrasive movement relative to said movable surface, the mounting means comprising a contact roller rotatably carried by the frame means in parallel, spaced relating to the movable surface, the contact roller having a rotational axis that is disposed at an acute angle relative to the longitudinal axis of the movable surface;
(g) and means for rotatably driving the contact roller so that during its abrasive movement the endless abrasive belt moves in a direction toward the fence means.

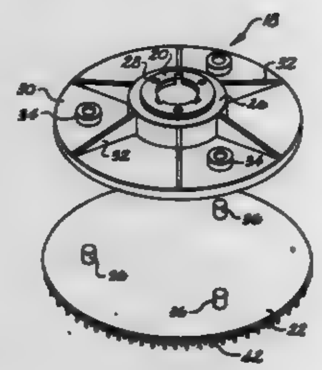
4,322,919
SELF-CENTERING FEED MECHANISM FOR AN ABRASIVE GRINDING MACHINE
Dennis J. Gerber, Minneapolis, Minn., assignor to Acrometal Products, Inc., Minneapolis, Minn.
Filed Jun. 27, 1980, Ser. No. 163,781
Int. Cl.³ B24B *21/04*
U.S. Cl. 51—139 46 Claims

1. Self-centering feed apparatus for an abrasive grinding machine having upper and lower sanding heads between which a center line extends along which workpieces are moved, the self-centering feed apparatus comprising first and second guide means disposed in opposed relation above and below the center line, each of said guide means comprising:
(a) a plurality of independently operable control arm mechanisms disposed in side-by-side relation;
(b) pivot means for supporting said plurality of control arm mechanisms for independent pivotal movement about a common pivot axis;
(c) each of said control arm mechanisms comprising
(i) a control arm pivotally mounted on said pivot means for movement toward and away from said center line:



(ii) workpiece drive means mounted on the control arm remote from the pivot means for engagably driving the workpiece along the center line;
(iii) first biasing means for resiliently urging the control arm and workpiece drive means toward the center line under a substantially constant force;
(iv) and second biasing means for resiliently urging the control arm and workpiece drive means toward the center line under a force that increases as a function of the amount of movement of a control arm away from the center line by a workpiece.

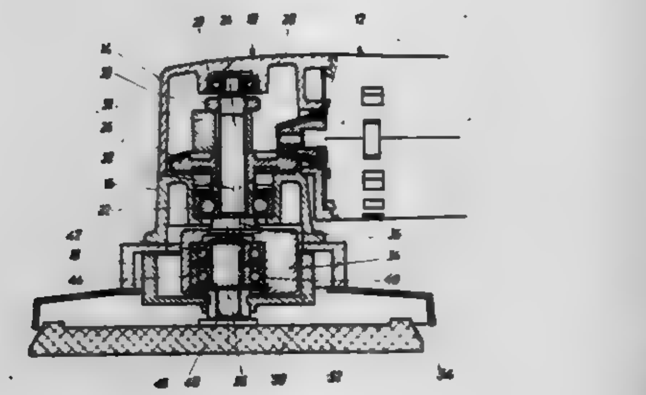
4,322,920
ROTARY FLOOR CONDITIONING MACHINE ATTACHMENT
Raymond E. Wells, Rte. 6, P.O. Box 929, Greer, S.C. 29651
Filed Oct. 29, 1979, Ser. No. 89,159
Int. Cl.³ B24D *17/00*; B24B *23/00*; A46B *13/02*
U.S. Cl. 51—168 1 Claim



1. An attachment for use on a rotary floor conditioning machine comprising:
a master block integrally molded of a urethane elastomer including;
(i) a centrally located hub;
(ii) a circular flange member extending radially from said hub having a generally planar bottom surface; and
(iii) a plurality of circumferentially spaced vertically extending tubular receivers carried on said circular flange;
a clutch plate secured to said hub;

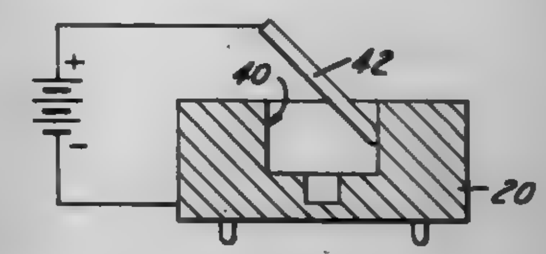
an attachment plate integrally molded of a urethane elastomer including;
(i) a circular disk having a generally planar top surface mating with said bottom surface of said flange member;
(ii) flexible torque-transmitting posts carried vertically extending on said disk at locations corresponding to the locations of said tubular receivers carried on said master block,
said posts having a diameter corresponding to the diameter of said tubular receivers so as to produce a snug connection between said posts and said tubular receivers when said posts are inserted therein for securing said attachment plate to said master block and transmitting torque while allowing flexing therebetween;
said circular flange member extending outwardly from a lower portion of said hub;
a plurality of circumferentially spaced radially extending stiffening ribs extending between said hub and said circular flange;
said circular disk including two superimposed layers of urethane elastomer material;
engagement means molded into and extending out the lower layer of said two superimposed layers for penetration and securing a scrubbing or polishing pad; and
said upper layer of superimposed layers being less flexible than said lower layer.

4,322,921
ECCENTRIC PLATE GRINDER
Peter Maier, Gerokstrasse 1, 7311 Neidlingen/Teck, Fed. Rep. of Germany
Filed Sep. 12, 1980, Ser. No. 186,771
Claims priority, application Fed. Rep. of Germany, Sep. 25, 1979, 2938704
Int. Cl.³ B24B *23/00*
U.S. Cl. 5—170 MT 6 Claims



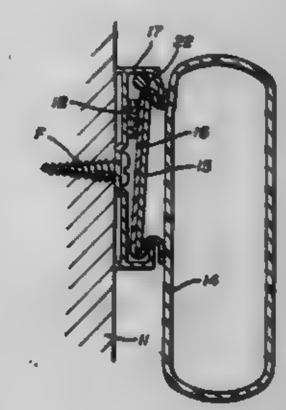
1. An eccentric plate grinder comprising:
a housing;
a drive shaft rotatably supported in said housing;
a grinding plate to be moved in a cycloidal path;
a male gear ring;
a female gear ring fixed to the grinding plate and driven by said male gear ring, the female gear ring having a greater number of teeth than the male gear ring, said male gear ring being fixed eccentrically to said drive shaft for rotation with said drive shaft and with respect to said housing and grinding plate, said male and female gear rings both being movable with respect to said housing.

4,322,922
METHOD OF FORMING ELECTRICAL DISCHARGE MACHINE TOOLS
Dennis D. Gilliam, 32721 Lancaster Dr., Warren, Mich. 48093
Filed Apr. 3, 1980, Ser. No. 136,821
Int. Cl.³ B24B *1/00*
U.S. Cl. 51—325 4 Claims



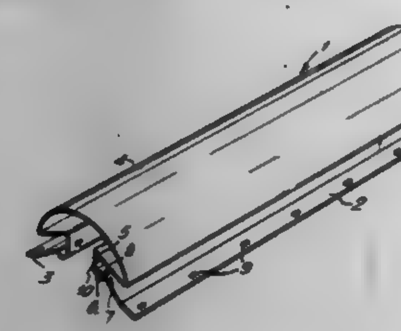
1. A method of forming graphite electrodes to be used in an electric discharge machining process which comprises:
(a) forming a master cutting block from a steel block by a mechanical machining process,
(b) coating the surfaces of the steel master, which are to cut a graphite electrode, with a hard material having rough surface characteristics which permit it cut the graphite when carried in an orbiting abrading machine and applied to the graphite,
(c) positioning the coated steel master block in an orbiting abrading machine, and
(d) moving the block into a graphite block to form a shaped graphite electrode.

4,322,923
MOUNTING FOR INFLATABLE DOCK SEAL
Larry O'Neal, 4953 Timbercrest Dr., Canfield, Ohio 44406
Filed Nov. 6, 1980, Ser. No. 204,459
Int. Cl.³ E06B *7/22*
U.S. Cl. 52—2 4 Claims



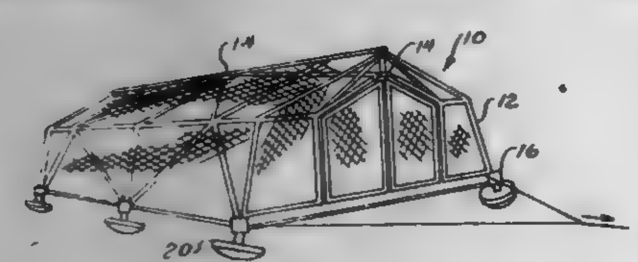
1. An inflatable dock seal and mounting therefor for positioning said dock seal on a wall above and beside a dock opening therein and comprising at least one flexible inflatable member arranged in an inverted U-shape having an upper horizontal section and a pair of spaced vertical sections, flexible channel members formed on the exteriors of said horizontal and vertical sections, elongated structural members of known widths positioned in said flexible channel members, rigid cross sectionally C-shaped channel members having opposed edges with the width of the opening between said opposed edges being less than the known width of said elongated structural members, said elongated structural members and said flexible channel members being movably engaged in said rigid cross sectionally C-shaped channel members, the arrangement requiring said elongated structural members to be moved edgewise when positioned therein.

4,322,924
ROOF RIDGE CAPPING
Christopher A. Cooper, Sittinghurst, England, assignor to Marley Tile AG, Zug, Switzerland
Filed Oct. 13, 1978, Ser. No. 951,300
Int. Cl.³ E04B *7/00*
U.S. Cl. 52—57 11 Claims



1. A tiled roof having a plurality of overlapping tiles, said tiles having downwardly projecting nibs adjacent their upper edges, and said tiles extending to a ridge on said roof, the ridge being provided with an elongate capping member comprising a pair of longitudinally extending flanges interconnected by a capping section which is connected to at least one of said flanges by a re-entrant portion defining with the said flange a longitudinally extending recess for receiving the upper edges of the roof tiles, the flange having a longitudinally extending abutment facing upwardly into the recess and over which the nibs are engaged, the nibs and the abutment having surfaces in contact so as to retain the tiles in position.

4,322,925
MOBILE STRUCTURE
Alfred J. Geisler, Jr., Rte. #1, P.O. Box 295A, Hampshire, Ill. 60140
Filed Mar. 30, 1978, Ser. No. 891,882
Int. Cl.³ E04B *1/34;* E04H *1/12*
U.S. Cl. 52—143 2 Claims



2. In a mobile structure, a flexible framework assembly comprising:

a. first and second beam members;

b. a first plate extension portion rigidly affixed to the first beam member and in juxtaposition with the second beam member, said first plate extension portion having a plurality of openings therein adapted to receive elongated fastener means;

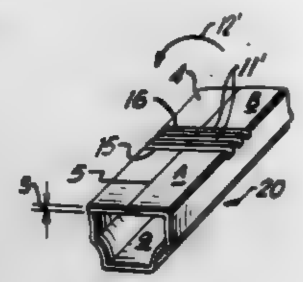
c. a second plate extension portion extending from the second beam member and affixed thereto, located in spaced relation to said first plate extension portion, and having a plurality of openings therein adapted to receive fastener means and positioned in alignment with cooperating openings in said first plate extension portion;

d. a substantially rectangular block member interposed said plate extensions, having elongated openings extending in a first direction parallel to said beam members defined therein, to allow fasteners to protrude through the aligned openings in said plate extensions and providing a close fit against the fasteners along a first direction while providing a loose fit along a second direction; and

e. fastener means extending through said aligned openings and said block member for securing said members into a joint assembly; and

f. means for supporting said structure comprising a plurality of freely rotatable dish members characterized by a broad curved rolling surface arranged to provide terrain contact along selected portions of said curved surfaces.

4,322,926
FRAME FOR SPACING GLASS PANES
Hermann Wölflingseder, and Werner Wölflingseder, both of Feldkirch, Austria, assignors to Seraphin Pumpell & Söhne KG, Feldkirch, Austria
Filed Dec. 17, 1979, Ser. No. 104,690
Int. Cl.³ E06B *7/12*
U.S. Cl. 52—172 5 Claims



1. A spacing frame for use in forming an insulated arrangement of spaced glass panes so that the frame in combination with the glass panes forms a closed space, comprising a continuous length of a tubular bar having a continuous hollow interior region containing a granular hygroscopic material, said tubular bar including a first wall section forming the inside border of said frame and defining the edges of the closed space, said first wall section having a passage extending in the length direction of said tubular bar for communicating between the closed space and the hollow interior region containing the hygroscopic material, a second wall section forming an outside border of said frame and a pair of side walls extending between said first and second wall sections, said side walls extending substantially integrally at the corners of said frame and forming frame corner sides which are substantially smooth, the inner surfaces of said first wall section, second wall section and side walls forming the hollow interior region, said tubular bar being bent to form said corners, the corners of the spacing frame each comprise a plurality of narrow cuts with opposite parallel surfaces formed in said first wall section and formed between said cuts, said cuts having a depth approximately equal to the thickness of said first wall section so that said cuts open into the hollow interior region and a width in the length direction of said tubular bar equal to or less than the size of the granular hygroscopic material so that the material does not flow through said cuts.

4,322,927
METHOD OF MAKING STAIRCASES AND STAIRCASE MADE THEREBY
Kenneth E. Scott, Rangiora, New Zealand, assignor to Kenscot Industries Limited, Canterbury, New Zealand
Filed Sep. 4, 1979, Ser. No. 71,924
Claims priority, application New Zealand, Sep. 25, 1978, 188525
Int. Cl.³ E04F *11/00*
U.S. Cl. 52—188 15 Claims

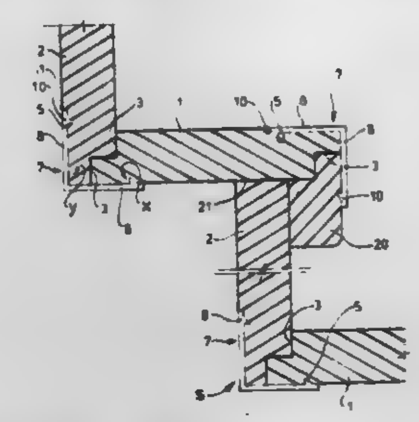
1. A method of making a step for a closed-tread staircase comprising the steps of:

providing a slab for the tread and a slab for the riser, each slab having formed thereon:

a first rebate across the width of one face of the slab, along one edge of said slab; a second rebate across the width of the other face of the slab, along the opposite edge of said slab; a first groove parallel to and adjacent said one edge on said other face of the slab; and a second groove parallel to and adjacent said opposite edge on said one face of the slab;

forming a step comprising a tread and riser pair, said pair being formed by mating one of the rebates on one slab with one of the rebates on the other slab to form a joint, said rebates being shaped and dimensioned such that the mated rebates fit closely to form a joint of predetermined angle;

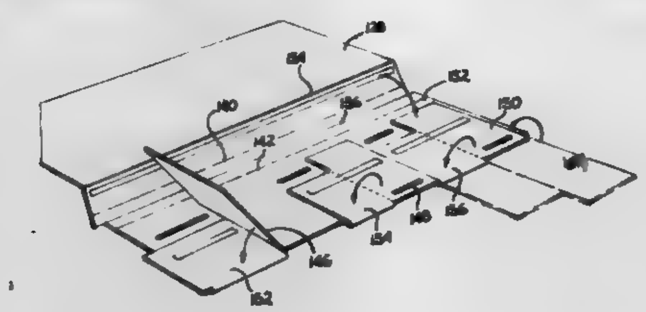
providing a joining strip which is V-shaped in cross section and has two sides, each formed with a flange adjacent the outer free end thereof protruding from the inside face of each side and the angle between said flange surface facing



the inside corner of the V and the plane of said corresponding side being equal to or less than 90°;

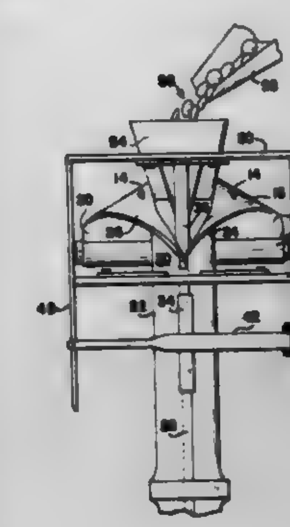
and securing said joint with said joining strip by engaging the flange on one side of the joining strip with the groove adjacent one side of the joint and forcing the flange on the other side of the joining strip into engagement with the groove adjacent the other side of the joint; the angle between the two sides of the joining strip when said strip is engaged with the joint being equal to the angle of the joint.

4,322,928
ASPHALT COMPOSITION SHINGLES
Bennie Freiborg, 4536 Indiana Ave., La Canada, Calif. 91011
Filed Mar. 31, 1980, Ser. No. 135,466
Int. Cl.³ E04D *1/20*
U.S. Cl. 52—521 18 Claims



1. A shingle comprising a unitary sheet of asphalt composition roofing material characterized by a substrate of asphalt saturated felt and a layer of granules on the top surface thereof bonded to the saturated felt by a layer of asphalt, said unitary sheet having an upper region, an intermediate region and a lower region, a first portion of said lower region being folded upward about a first fold line between said intermediate region and said lower region to lie flat against the top surface of said intermediate region, the remaining portion of said lower region being folded about at least one fold line approximately perpendicular to said first fold line to overlie, top surface up, said first portion of said lower region which in turn overlies a portion of said intermediate region.

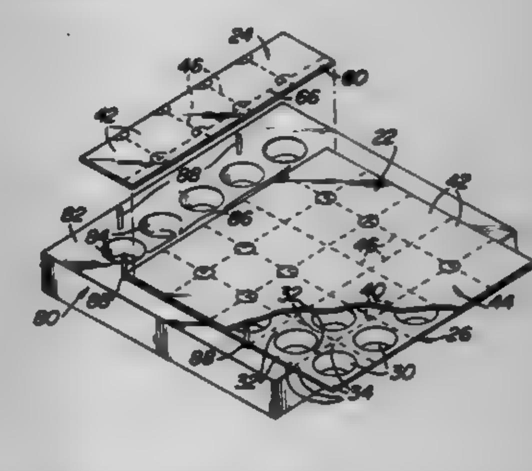
4,322,929
PACKAGING METHOD USING AN ADHESIVE COATED WEB
Robert G. Neumann, Dayton, Ohio, assignor to The Specialty Papers Company, Dayton, Ohio
Filed Mar. 12, 1980, Ser. No. 129,764
Int. Cl.³ B65B *9/08*
U.S. Cl. 53—451 2 Claims



1. In a method of continuously forming and filling packages of the type wherein an advancing web having opposing longitudinal edges is shaped into a tube in which the longitudinal edges overlap to form a longitudinal seam, the longitudinal seam is passed in between a shoe located externally of the tube and a tongue positioned internally of the tube proximate the longitudinal seam, and the longitudinal seam is sealed by heating the shoe and urging the shoe toward the tongue, a portion of the tube is compressed and heated by a pair of opposing dies whereby the tube is laterally sealed, and portions of the tube are filled with a product between the lateral seals, the improvement comprising:

utilizing a web having a side of the web coated with a hot melt coating compound such that a longitudinal strip adjacent a longitudinal edge remains uncoated whereby the longitudinal strip forms an inner inside-facing overlapped edge of the seam and abuts the tongue as the seam is laterally sealed so that the tongue remains free from accumulations of hot melt coating.

4,322,930
METHOD FOR FILLING AND ASSEMBLING EXTENDED DISPENSING DEVICE
Milton Braverman, 640 Wynmill Pl., Philadelphia, Pa. 19115
Filed Feb. 14, 1980, Ser. No. 121,354
The portion of the term of this patent subsequent to Jul. 8, 1997, has been disclaimed.
Int. Cl.³ B65B *7/28, 67/00*
U.S. Cl. 53—471 5 Claims



1. A method of assembling a multi-compartment medicinal dispensing device and a multi-compartment extender therefor

utilizing a fixture having a first predetermined number of openings therein arranged in an array of plural rows, said device comprising a base in the form of a plurality of article-holding units each having flanges detachably connected along predetermined weakened lines and a chamber depending from each flange, said units being arranged in a second predetermined number of rows of plural units and a cover sheet secured over the chambers and including weakened lines corresponding to the weakened flange lines to enable each unit to be separated from the others, said extender comprising at least one row of a third predetermined number of article-holding units and a cover sheet, said extender being constructed like said device and wherein the cover sheet of said extender includes a transversely extending tab for securement to the cover sheet of said device, said method comprising: (a) locating an assembled device in said fixture to leave exposed in said fixture a row of openings immediately adjacent said device, (b) disposing the base of said extender on said fixture with the chambers thereof being located within the exposed row of openings in said fixture, and with the tab of the cover sheet of the extender disposed over an edge of the cover sheet of the assembled device, and (c) applying pressure to said tab to secure it to the cover sheet of the device.

4,322,931

METHOD OF MANUFACTURING PACKS OF CIGARETTES AND PACK PRODUCED BY SUCH METHOD

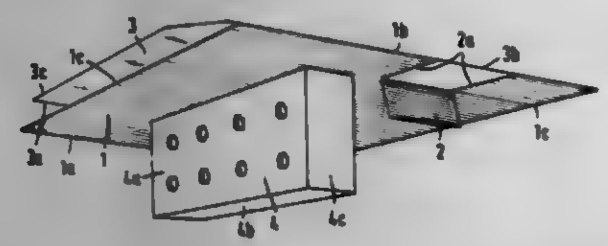
Otto Niepmann, Gevelsberg, Fed. Rep. of Germany, assignor to Maschinenfabrik Fr. Niepmann & Co., Gevelsberg, Fed. Rep. of Germany

Filed May 9, 1980, Ser. No. 148,310

Claims priority, application Fed. Rep. of Germany, May 12, 1979, 2919345

Int. Cl.³ B65B *11/58*

U.S. Cl. 53—449 7 Claims



1. A method of manufacturing a cigarette package from a foil wrapping which surrounds a block of cigarettes on all sides and from a printed paper wrapper, which leaves one end of the foil-wrapped block of cigarettes free and which is closed by a bottom fold at its other end, comprising the steps of

cutting at least one tab on a foil blank by two incisions in the region of the bottom fold to be subsequently produced,

bending the tab off approximately at right angles to the foil blank,

bringing the foil blank and a wrapper blank of substantially the same size together and connecting said blanks to each other in a manner such that corresponding edges of the two blanks coincide approximately on three of the corresponding edges and that said foil blank projects beyond said wrapper blank on a fourth edge,

feeding said connected blanks to a parallelpiped-shaped folding mandrel with the foil blank against the mandrel and in a position projecting beyond the long or wide sides of the folding mandrel and positioning the bent tab of the foil blank so as to cover at least a part of a smaller, bottom side of the folding mandrel,

folding the connected blanks around the long and wide sides of the folding mandrel so as to form long overlapping portions on at least one long or wide side of the folding mandrel,

gluing the overlapping portions at the at least one long or wide side,

at said other end folding narrow flaps (which constitute portions of both said foil blank and said wrapper blank which project beyond the long sides of the mandrel) in a direction toward the bottom side of the mandrel and then,

folding a first wide flap, which projects beyond a wide side of the mandrel opposite to an exposed projecting portion of the wrapper blank from which the tab has been bent-off, in a direction toward said tab, and then

folding a bottom flap which includes said exposed projecting portion of the wrapper blank against the last mentioned flap, said tab thereby lying on the bottom side of the folding mandrel, thereby producing the bottom fold and the cigarette package which is open at said one end,

withdrawing the cigarette package from the folding mandrel via said one end.

4,322,932

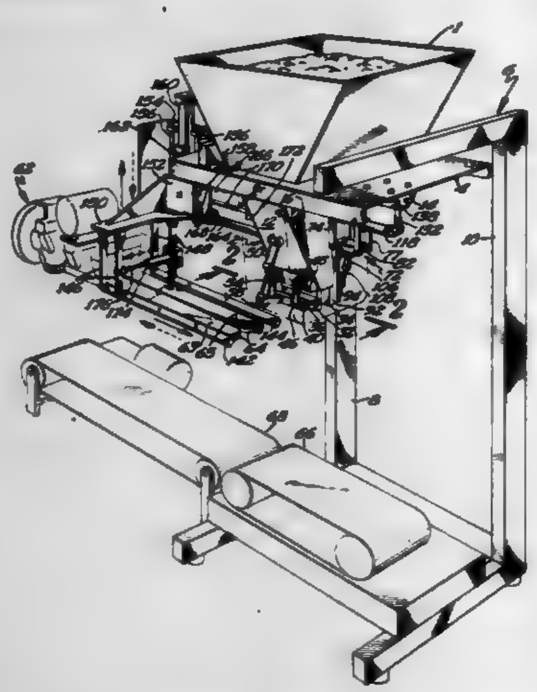
BAG FILLING AND HANDLING APPARATUS

Harold R. McGregor, 1444 Lincoln Ave., SE., Owatonna, Minn. 55060

Filed May 5, 1980, Ser. No. 146,303

Int. Cl.³ B65B *3/06*

U.S. Cl. 53—505 14 Claims



1. Apparatus for filling and handling bags comprising:

hopper means containing particulate material to be dispensed into bags;

a spout positioned to receive particulate material from said hopper, said spout having a discharge end operable between open and closed positions for the controlled discharge of particulate material into bags;

first power means positioned and arranged for opening and closing said discharge end of said spout;

clamp means on said spout for holding the mouth of a bag to be filled on said discharge end of said spout;

second power means operatively connected to said clamp means for moving said clamp means between bag clamping and bag release positions;

a pair of vertically oriented arm assemblies positioned on opposite sides of said spout at locations where they will extend inside of a bag mouth when a bag is clamped on said discharge end of said spout, said arm assemblies being laterally shiftable towards and away from each other in a direction generally perpendicular to the clamping path of movement of said clamp means to selectively engage and hold the opposed, upright sides of a bag in predetermined positions in coordination with the opening and closing of said clamp means for optimum distension and forming of a bag mouth during filling; and

third power means connected to said arm assemblies and operable to laterally shift said arm assemblies;

conveyor means positioned below said hopper means for the movement of filled bags to a bag closing station;

a pair of bag gripping and forming bars movably supported on guide means for up and down movement and for back and forth traversing movement in a direction generally parallel to said conveyor means between a rest position laterally displaced from said spout and a position under said spout in embracing juxtaposition to the top end of a bag being filled, said forming bars being further movable towards and away from each other for bag gripping and release;

drive means controllably operable for imparting said up and down and traversing movement to said forming bars in a predetermined sequence, and actuating means for moving said forming bars towards and away from each other, whereby said forming bars are moved from said rest position to said position under said spout at the conclusion of a bag filling operation in embracing juxtaposition to the top end of a filled bag, moved towards each other by said actuating means to firmly grip a filled bag and press its front and rear faces closed at the top end thereof, moved downwardly to controllably lower the filled bag onto said conveyor means and then transversely moved back towards said rest position along said conveyor means to deliver a filled bag with its top end held closed to a bag closing station.

4,322,933

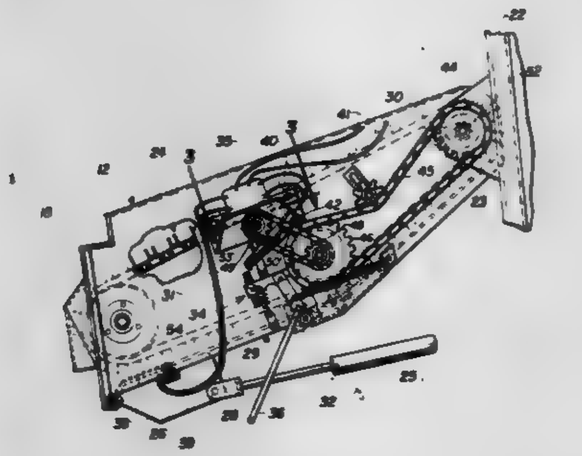
STONE TRAPDOOR TRIP MECHANISM

Shaun A. Seymour, New Holland, Pa., assignor to Sperry Corporation, New Holland, Pa.

Filed Aug. 25, 1980, Ser. No. 181,273

Int. Cl.³ A01F *12/10*

U.S. Cl. 56—10.2 6 Claims



1. In an infeed housing having:

(a) a rigid frame with an inlet end and an outlet end connected by a pair of opposing sides interconnecting a top covering and a floor, the floor further having a mounted door movable between a first closed position and a second open position;

(b) conveying means movably mounted within the infeed housing effective to convey crop material from the inlet end to the outlet end;

(c) shaft means rotatably mounted to the infeed housing connected to the conveying means;

(d) drive means connected to the shaft means effective to drive the conveying means;

(e) stone sensing means connectable to the infeed housing effective to detect the presence of stone-like objects among the crop material;

(f) control means cooperable with the stone sensing means to receive an input signal from the stone sensing means when a stone-like object is detected and to send an output signal;

(g) a solenoid fastened to the infeed housing connectable to the door and the control means so as to receive the output signal from the control means;

(h) release means movably mounted to the frame and cooperable with the door and the shaft means effective to selectively permit the door to move from the first closed position to the second open position; and

(i) a spring wound clutch mounted about the shaft means cooperable with the solenoid and the release means and movable between a first non-power transferring position and a second power transferring position so that upon receipt of the output signal by the solenoid the clutch is moved from the first non-power transferring position to the second power transferring position thereby causing the release means to release the door to move the door from the first closed position to the second open position.

4,322,934

LAWN MOWER

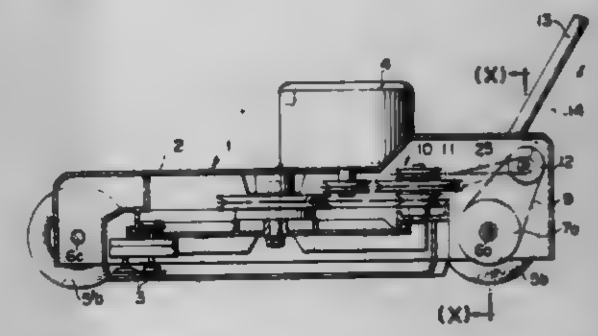
Hachiro Doi, Saitama, Japan, assignor to Fuso Keigokin Co., Ltd., Tokyo, Japan

Filed Jan. 31, 1980, Ser. No. 117,355

Claims priority, application Japan, Nov. 26, 1979, 54-153160

Int. Cl.³ A01D *69/06*

U.S. Cl. 56—11.1 8 Claims



1. A lawn mower comprising:

a lawn mower body frame including a motor and an operatively connected transmission means;

said lawn mower body frame being supported by front and rear wheel means, at least said rear wheel means being independently supported on separate first and second shaft means which are rotatably disposed with respect to said lawn mower body frame;

first and second pulley means concentrically positioned upon each of said separate first and second shaft means, respectively, in opposing, spaced apart relationship to define a gap therebetween;

belt means disposed in said gap and operatively connected to said motor means through said transmission means, said belt means being under a predetermined tension to normally impart rotation to said rear wheel means; and

said first and second pulley means, said separate first and second shaft means and said rear wheel means being positioned relative to each other to permit slippage between said first pulley means positioned on said first shaft means and said second pulley means positioned on said second shaft means when a predetermined load is applied to one of said rear wheel means to facilitate a change in the direction of said lawn mower.

4,322,935

LAWN MOWER INCLUDING A SAFETY CLUTCH AND BRAKE

Arthur G. Poehlman, West Bend, Wis., assignor to Outboard Marine Corporation, Waukegan, Ill.

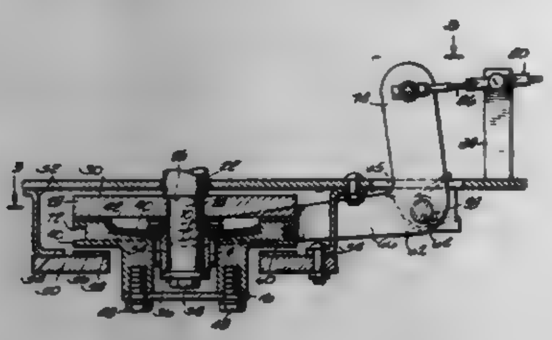
Filed Sep. 8, 1980, Ser. No. 185,332

Int. Cl.³ A01D *35/26*

U.S. Cl. 56—11.3 23 Claims

1. A lawn mower comprising a housing, an engine supported by said housing, a drive shaft driven by said engine, a clutch member driven by said drive shaft, a brake member spaced from said clutch member and fixedly connected to said housing, a drive member disposed between said clutch member and said brake member and movable between a drive position wherein said drive member frictionally engages said clutch

member and is rotatably driven by said clutch member and a brake position wherein said drive member frictionally engages said brake member and is restrained against movement, a cutter blade connected to said drive member and rotatably driven by said drive member, means for selectively moving said drive member between said drive position and said brake position,



and first spring means for forcing said drive member toward said drive position when said drive member is moved from said brake position toward said clutch member and past a position intermediate said drive position and said brake position, and for forcing said drive member toward said brake member when said drive member is moved from said drive position toward said brake position and past said intermediate position.

4,322,936

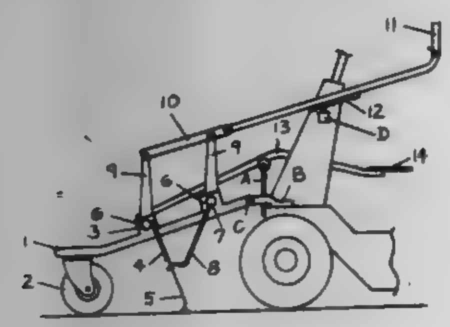
SELF CLEARING RAKING ATTACHMENT FOR MOWER

Sherwood W. Whitney, Rte. 6, Box 214-A, Okeechobee, Fla. 33472

Filed Feb. 9, 1981, Ser. No. 232,726

Int. Cl.³ A01D *7/00, 51/00*

U.S. Cl. 56—16.1 **3 Claims**



1. A self-cleaning raking attachment for the front end of a riding lawn mower or other powered vehicle comprising;

a generally U-shaped frame member having a forward end and a rearward end,

means at the rearward end for coupling said frame member to the front end of said mower or said vehicle,

a pair of swivel wheels mounted at the forward end of the frame member for supporting said attachment above the ground, a first and a second shaft member mounted transversely of the frame and mounted on said frame member spaced from each other in a forward and reward direction, a first set of tines attached to said first shaft member, a second set of rigid finger-like tines attached at right angles to said second shaft member to form a comb-like structure, each of said tines of said second set extending between the tines of the first set, means mounting said first and second shafts permitting partial rotation of said shafts, a first and second arm extending radially upward from each of said shafts, a third arm rotatably connected to each of said first and second arms by pins forming a parallel linkage with said frame member,

a handle extension arm connected to said third arm extending rearward for adjusting the degree of rotative angle of said shafts,

a lift arm secured to said frame member for raising the frame member, said lift arm extending rearward, a foot pedal mounted at the rear of the lift arm for control by an operator,

a fulcrum element mounted fixed relative to said mower or said vehicle and operably extending to said lift arm providing the fulcrum point for lifting said frame,

whereby upon lifting of said frame by said operator cleaning of the first set of tines is accomplished by said second set of tines.

4,322,937

HARVESTER WITH INTERNAL METAL DETECTOR

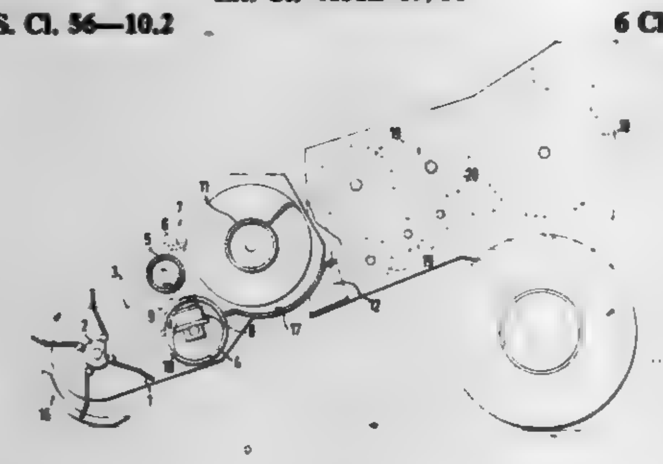
Bernd Hollmann, Bielefeld, Fed. Rep. of Germany, assignor to Claas OHG, Harsewinkel, Fed. Rep. of Germany

Filed Sep. 26, 1980, Ser. No. 191,190

Claims priority, application Fed. Rep. of Germany, Oct. 4, 1979, 2940201

Int. Cl.³ A01D *69/10*

U.S. Cl. 56—10.2 **6 Claims**



1. In a harvester of the type comprising a pick-up mechanism at one end of the harvester operative to gather harvested material from the ground, said harvester having a transverse spiral conveyor therein arranged adjacent said one end of said harvester immediately downstream of said pick-up mechanism to receive harvested material from said pick-up mechanism and to feed the same toward the other end of said harvester, the improvement wherein said harvester includes a metal detector located adjacent said one end of said harvester between said pick-up mechanism and said transverse spiral conveyor, said metal detector comprising a shield structure disposed adjacent the path of movement of material passing from said pick-up mechanism to said transverse spiral conveyor and providing a nonconductive surface over which said material passes, means for effecting movement of the said nonconductive surface of said shield structure to assist in the transport of said material from said pick-up mechanism toward said transverse spiral conveyor, and sensor means mounted at a fixed position on said harvester adjacent said shield structure, said sensor means being operative to produce a metal detecting field which penetrates said nonconductive surface and extends through the path of movement of material that is passing from said pick-up mechanism along said moving nonconductive shield surface to said transverse spiral conveyor.

4,322,938

DEFLECTOR MEMBER FOR A ROTARY LAWN MOWER

James F. Efflandt, Galesburg, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.

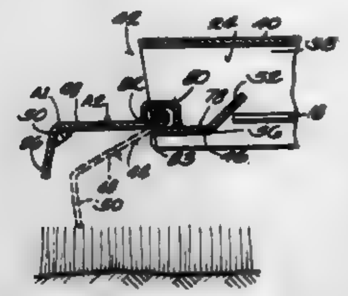
Filed Oct. 1, 1980, Ser. No. 192,864

Int. Cl.³ A01D *35/26*

U.S. Cl. 56—320.2 **13 Claims**

1. A lawn mower comprising a housing enclosing a rotary cutting blade and including a sidewall having therein an opening and a generally horizontal grass discharge passage extending from said opening, a member carried fixedly by said housing and extending in said grass discharge passage and including an inner edge portion located adjacently outside the periphery of the path of cutting blade rotation below the plane of cutting

blade rotation, and an oppositely spaced outer edge portion located below the plane of cutting blade rotation, and a lip



extending generally vertically downwardly from said outer edge portion.

4,322,939

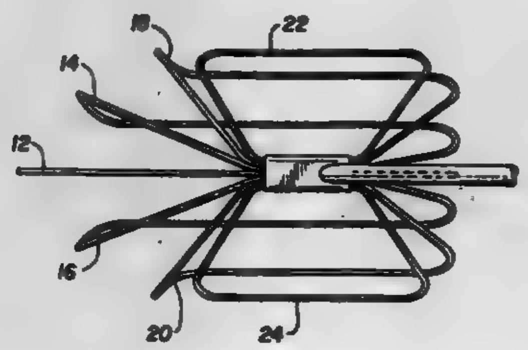
DEVICE FOR GATHERING FRUIT

Charles J. McDonald, Rte. 6, Box 136, Plant City, Fla. 33566

Filed May 23, 1980, Ser. No. 152,980

Int. Cl.³ A01D *51/00*

U.S. Cl. 56—328 R **5 Claims**



1. A gatherer device which comprises:

a plurality of separate tines each having an upper longitudinal portion and a lower longitudinal portion with curved rear end portions and curved front end portions,

each of said tines secured along their upper longitudinal portion in side-by-side relationship in the same plane,

one of said tines secured with its upper and lower longitudinal portions in the same vertical plane,

a first pair of separate tines secured on opposite sides of said vertically secured tine with their lower longitudinal portions equally spaced from said vertically disposed tine and in the same horizontal plane with said lower longitudinal portion of said vertically extending tine,

a second pair of separate tines secured outwardly of said first pair of tines with their lower longitudinal portions equally spaced from the lower longitudinal portions of each tine of said first pair of tines and in the same horizontal plane,

a third pair of separate tines secured outwardly of said second pair of tines with their lower longitudinal portion raised above the horizontal plane including the lower longitudinal portions of said first and second pairs of tines with the lower longitudinal portion of each tine of said third pair of separate tines on a vertical plane spaced from the lower longitudinal portions of each tine of said second pair of tines,

whereby the spacing between the front curved ends of said tines is sufficient to easily pass fruit to be gathered and the spacing between the lower longitudinal portions of each of said tines and the spacing between the curved rear portions of said tines is of a spacing through which gathered fruit will not pass.

4,322,940

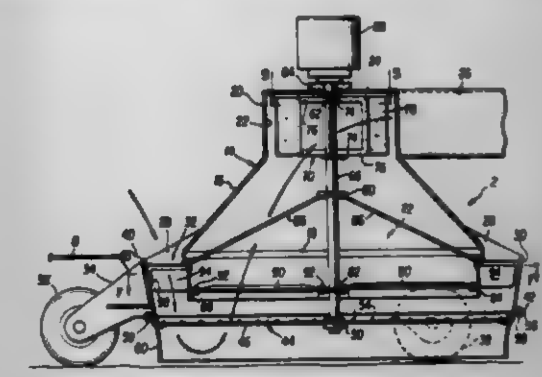
HARVESTING MACHINE FOR MACADEMIA NUTS

Henry J. White, White Sands Village, 77-6469 Alii Dr., Kailua-Kona, Hi. 96740

Filed Feb. 17, 1981, Ser. No. 234,475

Int. Cl.³ A01D *46/00*

U.S. Cl. 56—328 R **13 Claims**



1. A harvesting machine for macademia nuts, comprising:

a shroud having an open bottom, and arranged to be mounted for movement across the ground;

housing means mounted on said shroud, and including a discharge spout;

blower means associated with said housing means, and operable for establishing an upward air flow through said shroud and out said discharge spout;

annular director ring means mounted on the lower end of said shroud and extending substantially completely about the periphery thereof in annular spaced relationship;

impeller means carried by said shroud, and operable for establishing an annular flow of air downwardly through the annular space between said detector ring and the lower end of said shroud, said impeller means and said director ring being arranged and cooperating with each other so that said annular flow extends substantially completely about the lower end of said shroud, and said director ring being arranged to direct said downwardly flowing air inwardly and downwardly beneath substantially the entire periphery of said shroud for dislodging macademia nuts from crevices in the ground upon which said harvesting machine is operated, and said blower means being arranged to generate an upward air flow within said shroud sufficient to capture and ingest freed macademia nuts and discharge them through said discharge spout.

4,322,941

WIRE STRANDING MACHINE WITH MULTIPLE BOBBINS ALTERNATELY LOADED AND USED FOR STRANDING

Marcello Sarracino, Milan, Italy, assignor to Industrie Pirelli S.p.A., Milan, Italy

Filed Oct. 22, 1980, Ser. No. 199,423

Claims priority, application Italy, Oct. 31, 1979, 26952 A/79

Int. Cl.³ D07B *3/04*

U.S. Cl. 57—16 **14 Claims**

1. A stranding machine unit for supplying wire to a stranding station, said unit comprising:

a supporting stand;

a hollow shaft rotatably mounted on said stand and extending outwardly of two opposite sides of the stand;

drive means connected to said shaft for rotating said shaft;

a first bobbin for carrying wire rotatably mounted on said shaft at one of said sides of said stand;

a second bobbin for carrying wire rotatably mounted on said shaft at the other of said sides of said stand;

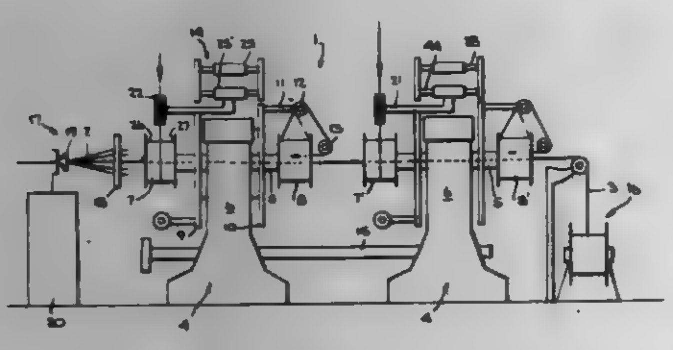
first wire paying-off means rotatably mounted on said shaft intermediate said first bobbin and said stand;

means for alternately connecting said first paying-off means to said shaft for rotation therewith and disconnecting said first paying-off means from said shaft;

second wire paying-off means rotatably mounted on said shaft intermediate said second bobbin and said stand;

means for alternately connecting said second paying-off means to said shaft for rotation therewith and disconnecting said second paying-off means from said shaft;

bobbin rotating means comprising a central shaft rotatably mounted intermediate said bobbins, drive means for rotating said central shaft, a first lateral shaft rotatably mounted on said first paying-off means at a position spaced from the axis of rotation of said first paying-off means, a second lateral shaft rotatably mounted on said second paying-off means at a position spaced from the axis of rotation of said second paying-off means, clutch means for alternately connecting each said lateral shaft to and disconnecting each lateral shaft from said central shaft, whereby a lateral shaft connected to the central shaft by



the clutch means is caused to rotate with the central shaft, means interconnecting said first lateral shaft with said first bobbin for causing rotation of the first bobbin with the first lateral shaft and means interconnecting said second lateral shaft with said second bobbin for causing rotation of the second bobbin with the second lateral shaft; and

a wire dispenser for alternately supplying wire to said first bobbin and to said second bobbin, said wire dispenser comprising guiding means for the wire including an arm mounted for movement in a plane parallel to the axis of said hollow shaft, whereby an end of said arm may be moved from adjacent the first bobbin to adjacent the second bobbin and vice versa, and reciprocating means connected to said arm for reciprocating said end thereof parallel to the axis of said hollow shaft and for thereby laying turns of wire on a bobbin in side-by-side relation.

4,322,942

OPEN-END SPINNING METHOD AND APPARATUS

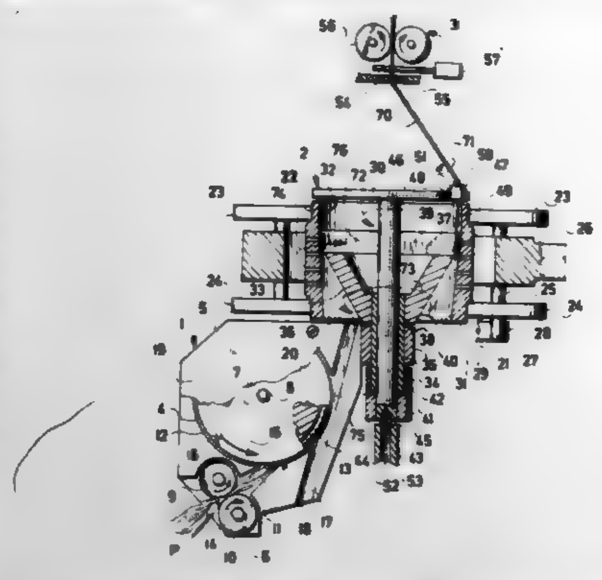
Ludvik Fajt, Prague; Stanislav Didek, Popradska; Jaromir Kasparek, Barcalova; Jaroslav Storek, Cihlarska; Jiri Andres, Dukla; Zelmira Borovcova, Rijnova; Marie Markova, Ceskotrebovska; Marketa Reymanova, Rijnova, and Miroslav Stepanek, Hlavni, all of Czechoslovakia, assignors to Vyzkumny ustav bavlnarsky, Usti nad Orlici, Czechoslovakia

Filed Jul. 29, 1980, Ser. No. 173,328

Int. Cl.³ D01H *1/135*

U.S. Cl. 57—411 23 Claims

7. An open-end spinning apparatus, comprising a fiber separating device, a spinning device, and a yarn take-off device, comprising a fiber spreading element, a fiber feeding duct directed toward the operating surface of the fiber separating device, a drum coaxial with said fiber spreading element, the drum being provided with an inner fiber deposit surface for receiving the spread fibers, further yarn twisting means radially disposed relative to the axis of said drum, and a thread guide preceding the yarn take-off device, at least one member



of the pair comprising the drum and the yarn twisting means being rotatable about the axis of the drum.

4,322,943

DEVICE FOR JOINING AN UPPER THREAD TO A LOWER THREAD

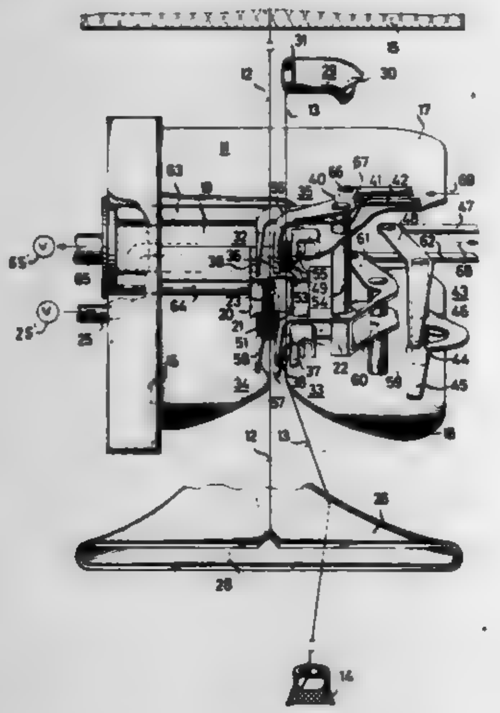
Joachim Rohner, and Heinz Zumfeld, both of Monchen-Gladbach, Fed. Rep. of Germany, assignors to W. Schlafhorst & Co., Monchen-Gladbach, Fed. Rep. of Germany

Filed Jan. 16, 1981, Ser. No. 225,635

Claims priority, application Fed. Rep. of Germany, Jan. 19, 1980, 3001918

Int. Cl.³ D01H *15/00*

U.S. Cl. 57—261 8 Claims



1. Device for joining an upper thread to a lower thread by splicing, comprising a splicing chamber for inserting and joining the threads, a compressed air canal ending inside said splicing chamber, a thread feeder being movable from a thread receiving position to a thread surrender position for inserting the threads into said splicing chamber, thread cutting means for cutting off ends of the upper and lower threads to produce shortened thread ends, a controllable and adjustable compressed air dosing valve being connected to said compressed air canal, first pneumatic means disposed above said splicing chamber for receiving the shortened thread end of the lower thread, second pneumatic means disposed below said splicing chamber for receiving the shortened thread end of the upper thread, and suction nozzles disposed on said pneumatic means

having screen-like perforated surfaces, said thread cutting means, dosing valve and pneumatic means being controllable as a function of the position of said thread feeder.

4,322,944

METHOD OF AND APPARATUS FOR BREAK SPINNING YARN

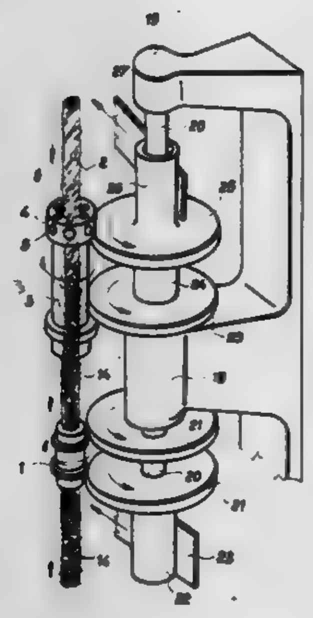
Stanislav Sraitr, and Hana Srejberova, both of Frydlant, Czechoslovakia, assignors to Elitex, koncern textilniho strojirenstvi, Liberec, Czechoslovakia

Filed Jun. 11, 1979, Ser. No. 47,039

Claims priority, application Czechoslovakia, Jun. 12, 1978, 3796-78; Aug. 16, 1978, 5325-78; Aug. 16, 1978, 5327-78

Int. Cl.³ D02G *1/20*; D01H *7/92*

U.S. Cl. 57—328 30 Claims



1. Method of break spinning yarn in a spinning machine having at least one spinning unit, comprising:

(a) continuously feeding at least one fiber ribbon to each spinning unit of the spinning machine, said ribbon consisting of staple fiber parallelized in the direction of yarn withdrawal to form a ribbon;

(b) imparting a false twist to said ribbon by a false twist imparting element, whereby the front ends of the separate staple fibers are directed in the false twist direction, and the rear ends thereof are directed in the opposite direction;

(c) lifting from the ribbon the staple fiber ends of the thus false twisted ribbon in a respinning twist imparting element which grips and partially releases the staple fiber ends in the false twist direction by a higher speed relative to the false twist imparting speed, the fiber ribbon being given a yarn forming true twist upon further passage through the respinning twist imparting element;

(d) the staple fiber front ends directed in the false twist direction remaining in the respinning twist imparting element in adjacent arrangement to the fiber ribbon;

(e) imparting an additional, true twist to the spun yarn by the remaining and regressively formed false twist; and

(f) winding the finished yarn onto a cross-wound bobbin.

4,322,945

FUEL NOZZLE GUIDE HEAT SHIELD FOR A GAS TURBINE ENGINE

Steven C. Peterson; Leonard W. Stevens, both of Vernon, and Ibrahim S. Tanrikut, Manchester, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Apr. 2, 1980, Ser. No. 136,633

Int. Cl.³ F02C *7/22*

U.S. Cl. 60—39.32 4 Claims

1. An annular combustor for a turbine type power plant having a toroidally shaped forward end portion relative to the flow of combustion products flowing therein, a plurality of fuel guide and heat shield members mounted in circumferentially spaced holes formed in said forward end portion for supporting, sealing and protecting fuel nozzles intended to supply fuel to the annular combustor, said fuel guide and heat shield members comprising a sleeve element having a forward flange extending beyond the opening, a flange element being U-shaped in cross section having an upstanding portion spaced from and parallel with said forward flange of said sleeve element, a first ring element and a second ring element being

joined in situ and having a U-shaped cross section with one leg of said first ring parallel to and abutting the face of said forward flange and the other leg of said second ring having a forward face for shielding the fuel guide and heat shield member from the flame in the combustor, a bulkhead having an extended flange parallel to and abutting said leg of said first ring, means for securing said sleeve, said first and second ring and said bulkhead so that said sleeve is in sliding relation to said bulkhead.

4,322,946

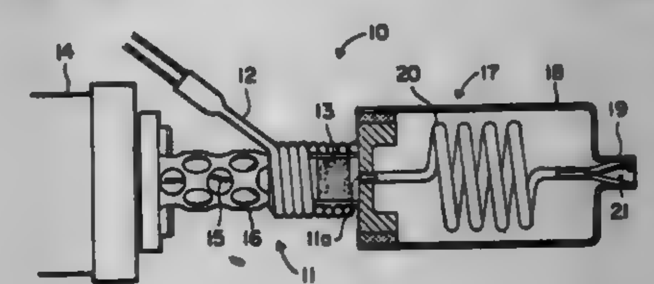
THERMAL THRUSTER WITH SUPERHEATER

Charles K. Murch, Rancho Palos Verdes, and Charles R. Hunter, Lomita, both of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Continuation of Ser. No. 543,195, Jan. 22, 1975, abandoned. This application Feb. 5, 1976, Ser. No. 655,361

Int. Cl.³ F02K *9/00*

U.S. Cl. 60—203.1 7 Claims



1. A process for producing thrust comprising the steps of:

(a) supplying a monopropellant liquid to a decomposition chamber,

(b) decomposing said liquid within said chamber into gaseous decomposition products at decomposition temperature,

(c) injecting the hot gaseous decomposition products from said decomposition chamber tangentially into a superheater chamber containing a heater on the chamber axis in radially spaced relation to the chamber wall and a nozzle on said axis at the other chamber end in a manner such that the gaseous decomposition products undergo vortical flow through said superheater chamber about and along said heater between the heater and said chamber wall and then exit from the latter chamber thru said nozzle to product thrust, whereby said decomposition products intercept and absorb heat radiating from said heater to said chamber wall during a prolonged residence time in said superheater chamber, and

(d) operating said heater at a temperature such that said decomposition products exit thru said nozzle at a temperature substantially exceeding said decomposition temperature.

4,322,947

CONTROL APPARATUS FOR A FUEL SUPPLY SYSTEM FOR MIXTURE-COMPRESSING, EXTERNALLY IGNITED INTERNAL COMBUSTION ENGINES

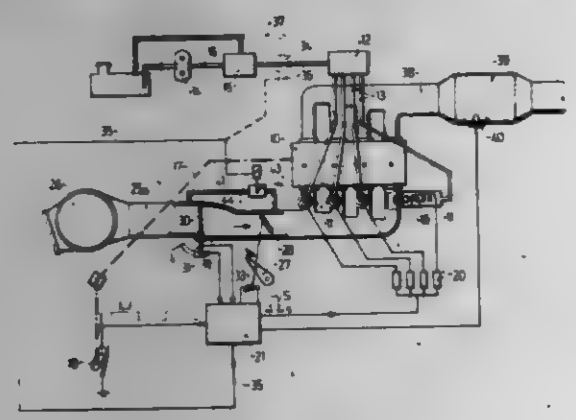
Günter Wössner, Esslingen, and Helmut Maurer, Schwieberdingen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation of Ser. No. 916,416, Jun. 16, 1978, abandoned. This application Apr. 8, 1980, Ser. No. 138,392

Claims priority, application Fed. Rep. of Germany, Jun. 23, 1977, 2728205

Int. Cl.³ F01N *3/00*

U.S. Cl. 60—285 8 Claims



1. A control apparatus of a fuel supply system for mixture-compressing, externally ignited internal combustion engines having a means supplying only fuel of a fuel/air mixture, an induction line and an exhaust line, a throttle member in said induction line, at least one catalytic converter situated in said exhaust line, a temperature sensor for sensing the temperature of said catalytic converter and control means responsive to the temperature of said temperature sensor, further wherein the control means is connected to the means for supplying only fuel, such that the control means interrupts the supply of fuel during overrunning of the internal combustion engine only when the minimum operational temperature of said catalytic converter is exceeded.

4,322,948

INTERNAL COMBUSTION ENGINE WITH AN EXHAUST-DRIVEN TURBOCHARGER

Klaus-Dieter Emmenthal, Wolfsburg, and Günter Hagemann, Gifhorn, both of Fed. Rep. of Germany, assignors to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Fed. Rep. of Germany

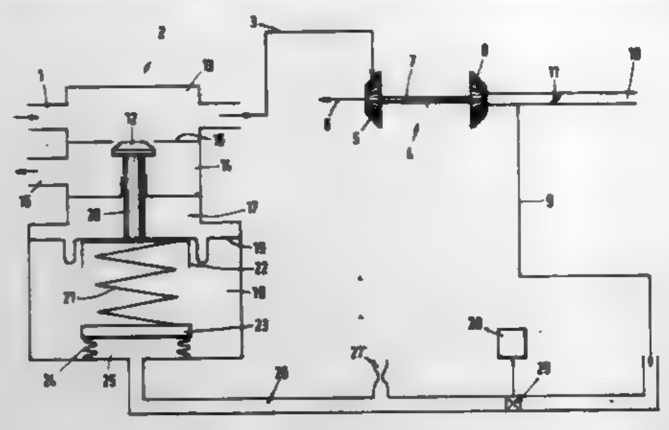
Filed Sep. 28, 1979, Ser. No. 80,008

Claims priority, application Fed. Rep. of Germany, Sep. 30, 1978, 2842685

Int. Cl.³ F02B *37/12*

U.S. Cl. 60—602 4 Claims

1. An internal combustion engine comprising an intake manifold, exhaust driven turbocharger means for generating a maximum boost pressure in said intake manifold, wherein said pressure is so high that knocking may occur, knock sensor means for detecting engine knocking, and valve means coupled to said knock sensor means for temporarily reducing said boost



pressure in response to the detection of engine knocking by said knock sensor means.

4,322,949

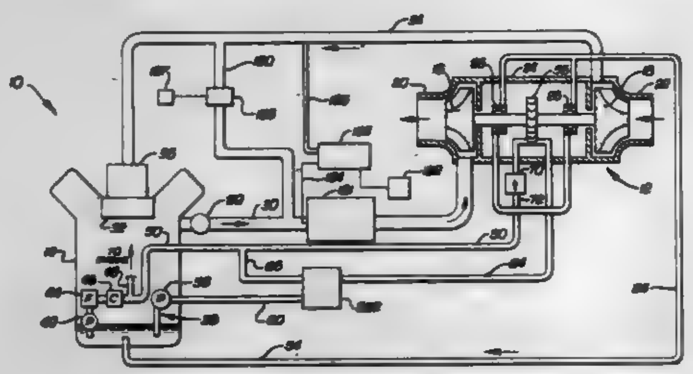
HYDRAULIC ASSIST TURBOCHARGER SYSTEM

Joe L. Byrne, Torrance; Robert J. Kobayashi, Rancho Palos Verdes, and James H. Nancarrow, Torrance, all of Calif., assignors to The Garrett Corporation, Los Angeles, Calif.

Continuation-in-part of Ser. No. 57,790, Jul. 16, 1979, Pat. No. 4,285,200. This application May 27, 1980, Ser. No. 153,566

Int. Cl.³ F02B *37/10*

U.S. Cl. 60—606 31 Claims



1. A turbocharger system for supplying charge air to a combustion engine, comprising a turbocharger including a turbine rotatably driven by engine exhaust gases, and a compressor rotatably driven by said turbine for supplying charge air to said engine; an engine hydraulic system including means for supplying hydraulic fluid to said turbocharger for lubrication thereof; an hydraulic turbine coupled directly to said turbocharger; means for selectively supplying a portion of the fluid from said hydraulic system to said hydraulic turbine at a relatively high pressure for rotatably driving said hydraulic turbine fully submerged; a combustor coupled between the engine and the turbocharger for passage of engine exhaust gases; fuel supply means for controllably supplying fuel to the combustor generally in inverse proportion to engine speed; and means for selectively and intermittently bypassing a portion of the turbocharger charge air flow around the engine to the combustor in response to engine operating conditions.

4,322,950

COMBINED INTERNAL COMBUSTION AND STEAM ENGINE

Marshall P. Jepsen, 237 San Ysidro Rd., Santa Barbara, Calif. 93108

Filed Sep. 22, 1980, Ser. No. 189,894

Int. Cl.³ F01B *29/04*

U.S. Cl. 60—712 5 Claims

1. An internal combustion engine that operates on alternating internal combustion and steam phases comprising:

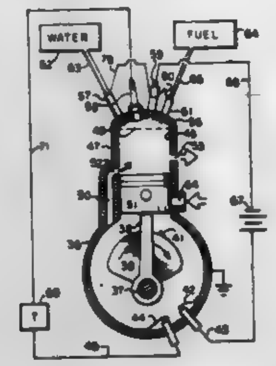
(a) metal defining a combustion chamber and a working chamber.

(b) a piston reciprocable within the working chamber;

(c) means for introducing fuel into the combustion chamber;

(d) means for introducing water into the combustion chamber;

(e) means for selectively actuating the fuel-introducing means or the water-introducing means;



(f) and a sensor for sensing the heat of the metal and connected to the selectively actuating means to actuate either the water-introducing means or the fuel-introducing means, whereby the engine may be operated automatically as a steam engine when the heat of the metal exceeds a predetermined temperature and may be operated as an internal combustion engine when the temperature of the metal is below a preselected minimum.

4,322,951

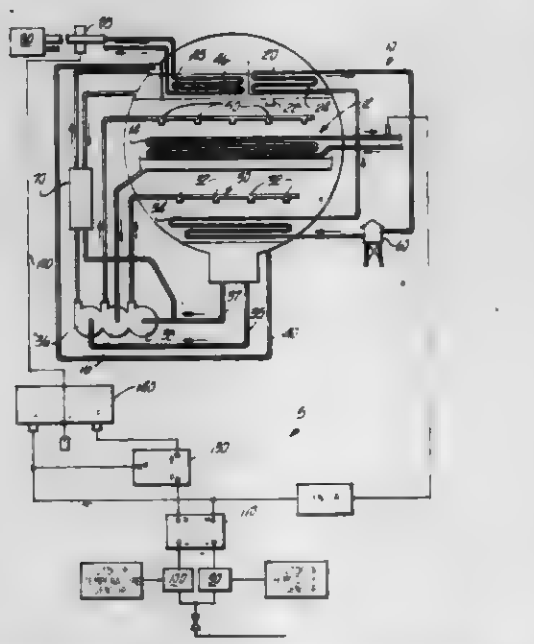
CONTROL DEVICE AND METHOD FOR CONSERVING FUEL IN AN ABSORPTION REFRIGERATION SYSTEM

Vincent J. Alfano, 15735 James, Southgate, Mich. 48195

Filed May 7, 1980, Ser. No. 147,603

Int. Cl.³ F25B *15/00*

U.S. Cl. 62—101 17 Claims



1. A control system for controlling the refrigeration capacity of a refrigeration system in operative relation to control the temperature of a fluid medium for the climate control of building air in response to outdoor air temperature and humidity variations, said refrigeration system comprises a refrigerant; an absorbent having an affinity for said refrigerant; evaporator means for bringing said refrigerant into heat transfer relationship with said fluid medium, said evaporator means having an inlet for receiving said fluid medium to be cooled and an outlet for discharging cooled fluid medium from said evaporator means; absorber means connected to said evaporator means for flow communication therebetween, said absorber means further removing refrigerant vapors from said evaporator means; means for supplying a concentrated absorbent-refrigerant solution to said absorber means; means for cooling said absorber means to maintain the pressure therein below the pressure in said evaporator means whereby said refrigerant vapor flows to said absorber means to combine with said concentrated solution to produce a dilute solution; concentrator means for heating and removing a portion of said refrigerant from said dilute solution to form a vapor so as to control the temperature of said fluid medium and to produce a concentrated solution for recirculation to said evaporator means, said concentrator means further having heat source means and valve means for controlling said heat source means, said valve means having an inlet signal port, said inlet signal port having operatively connected to said valve means to activate said valve means, means for generating a first signal responsive to variations in the temperature of said fluid medium; means for generating a second signal at a predetermined level; minimum position switch means connected to said inlet signal port for terminating the operative effect of said first signal when said first signal is less than said second signal; means for supplying dilute solution to said concentrator means for controlling the concentration of said concentrated solution supplied to said absorber means; said system further comprising:

means for generating a third signal responsive to variations in outdoor air temperature;

means for generating a fourth signal responsive to variations in outdoor air humidity; and

controller means, connected to said first, third and fourth signals for providing a fifth signal as a function of said first, third and fourth signals, said fifth and said second signals further being connected to said minimum position switch means further selecting the greater of said fifth and second signals dependent on its relative value as compared to the lesser of said fifth and second signals and providing a control signal indicative of said one selected signal, said control signal connected to said inlet signal port of said valve means to control said heat means in said concentrator in response to variations in sensed outside air temperature and humidity.

4,322,952

REFRIGERATING APPARATUS

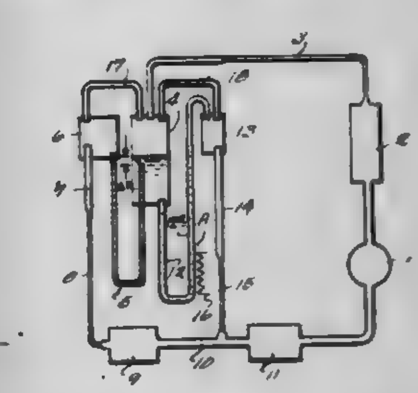
Noboru Nakagawa, Osaka; Toshiyuki Oonishi, Takatsuki; Masato Tsutsumi, Osaka, and Akira Kawamoto, Takatsuki, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed May 27, 1980, Ser. No. 153,133

Claims priority, application Japan, Aug. 8, 1979, 54-101089

Int. Cl.³ F25B *41/00, 39/02*

U.S. Cl. 62—198 5 Claims



1. Refrigerating apparatus comprising:

a compressor for compressing a refrigerant,

at least two evaporators which are controlled to a different temperature by evaporation of said refrigerant,

a tank for storing said refrigerant,

a plurality of conduits for conducting said refrigerant to said compressor, said evaporators and said tank,

a vapor bubble pump for pumping said refrigerant and for controlling the flow of said refrigerant to one of said evaporators, and

an accumulator which is located on the substantially same liquid level with said tank for delaying the flow of said refrigerant to the other of said evaporators when said vapor bubble pump begins pumping action thereof.

4,322,953

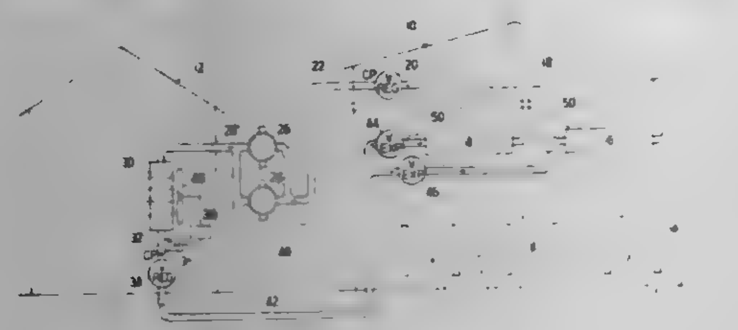
HEAT COLLECTION SYSTEM

Bryan L. Ramlow, Poynette, and Richard R. Steele, Waterloo, both of Wis., assignors to Atmospheric Energy Systems, McFarland, Wis.

Filed May 15, 1980, Ser. No. 150,200

Int. Cl.³ F25B *41/04;* **G05D** *23/00*

U.S. Cl. 62—217 **4 Claims**



1. A heat collection system comprising:
a first compressor;
a second compressor connected in parallel to the first compressor;
a condenser connected to receive compressed fluid from the compressors, the condenser being located in a space to be heated by heat transferred from the compressed fluid;
a fluid return line carrying fluid away from the condenser;
a fluid expansion valve located in the fluid return line;
at least a pair of evaporators connected in parallel at one end to receive the expanded fluid from the expansion valve and at the other end to supply fluid to the compressors, the evaporators being located in an animal husbandry enclosure, the evaporators both being oversized relative to the compressors so as to remain at a relatively high temperature to avoid extensive cooling of the animal husbandry enclosure;
a first pressure regulating valve connected between the evaporator and the compressor so as to maintain a constant pressure in the fluid transferred to the compressor so that the compressor is not overloaded and so that fluid flow through the evaporator is slowed; and
a second pressure regulating valve connected in the fluid return line adjacent to the condenser to maintain a constant pressure in the condenser so that the fluid temperature in the condenser is maintained at a high level;
the pressure regulating valves acting with the oversized nature of the evaporator to keep the evaporator at a relatively high temperature, while still heating the refrigerant fluid with excess heat from the animals in the enclosure, so that the enclosure is not overly cooled at localized spots, while at the same time maximizing the heat of the fluid at the condenser to provide maximum heat to the space to be heated.

4,322,954

PORTABLE COOLER FOR MEDICINE

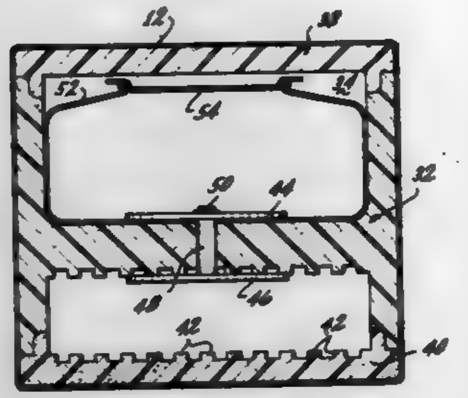
Laurence M. Sheehan, 17421 Lori Ann La., Cerritos, Calif. 90701, and John C. Sheehan, 1051 W. 185th St., Gardena, Calif. 90248

Continuation of Ser. No. 41,757, May 23, 1979, abandoned. This application Jun. 11, 1981, Ser. No. 272,645

Int. Cl.³ F25D *3/08*

U.S. Cl. 62—371 **7 Claims**

1. A portable cooler for storing medicine and the like at a desired storage temperature less than room temperature but greater than 0° C., comprising in combination:
body means of insulative material enclosing an upper ice compartment and a lower medicine compartment, and having a wall of insulative material separating the ice compartment from the medicine compartment;
heat tube means disposed within said insulative wall, having a first end extending into the ice compartment and having a second end extending into the medicine compartment, said heat tube being operative to unidirectionally transfer heat from said lower compartment to said upper compartment, when and only when the temperature in said medicine compartment has increased to or above said desired storage temperature;



said heat tube means comprising a sealed hollow tube containing a liquid normally resting at the bottom of the tube and in thermal contact with said medicine compartment, said liquid being selected to boil when the temperature of the medicine compartment exceeds a predetermined temperature so that heat is carried by the resulting vapor into the upper end of said tube extending into said ice compartment wherein said vapor is cooled and condensed and thus returns to the bottom of said tube.

4,322,955

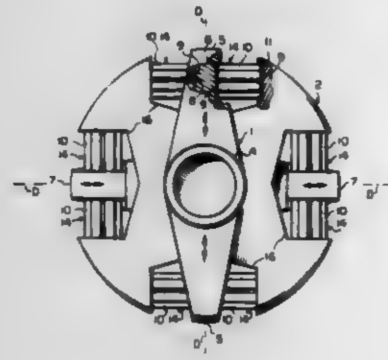
FLEXIBLE COUPLING

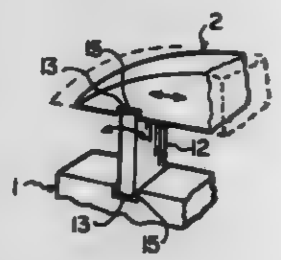
Albert P. Sfredda, 2106 Iris Pl., Bethlehem, Pa. 18018

Filed May 14, 1980, Ser. No. 149,757

Int. Cl.³ F16D *3/22, 3/64*

U.S. Cl. 64—16 **4 Claims**





1. A flexible coupling comprising: an axially rotatable drive member, an axially rotatable driven member, each said member having a pair of diametrically opposed lugs affixed thereto, two opposing sides of each said lug having flat portions that are parallel to the diametrical center line of said lugs and perpendicular to the axis of rotation, an axially rotatable floating member having a first pair of diametrically opposed grooves, a second pair of diametrically opposed grooves disposed generally 90 degrees relative to the first pair of grooves, each said groove having two opposed flat portions that are parallel to the grooves' respective diametrical center line and perpendicular to the axis of rotation, said floating member positioned between said drive and driven members in such a manner that the flat portions of each said lug of said driven member are generally centered in respective said grooves of the first pair of grooves, the flat portions of each said lug of said driven member are generally centered in respective said grooves of the second pair of opposing grooves, a plurality of elongated tilting elements, each said tilting element having rounded ends, at least one said tilting element disposed on each side of each said lug and being aligned perpendicular to the flat portions of said lugs, one said rounded end of each said tilting element contacting the respective said flat portion of the respective said lug, the opposite rounded end of each said tilting element contacting the respective said flat portion of the respective said grooves, retaining means for confining each said rounded end of said tilting element to the respective said flat portion of said lug and said groove.

4,322,956

WARP KNITTING MACHINE ARRANGEMENT

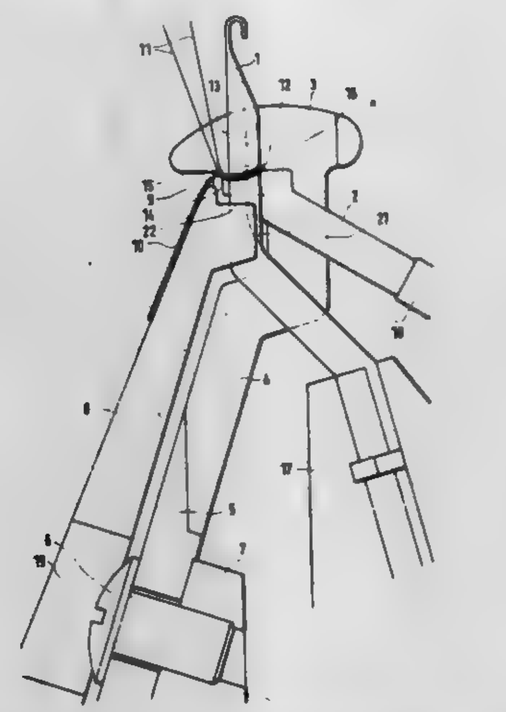
Roland Wunner, Bernstein, Fed. Rep. of Germany, assignor to LIBA Maschinenfabrik GmbH, Naila, Fed. Rep. of Germany

Filed Mar. 3, 1981, Ser. No. 240,149

Claims priority, application Fed. Rep. of Germany, Mar. 4, 1980, 3008276

Int. Cl.³ D04B *23/00, 27/00*

U.S. Cl. 66—203 **5 Claims**



1. A warp knitting machine arrangement which withdraws a fabric (10) over a fixed knock-over edge (9) of a knock-over bar (8), has a piercing comb including individual sinkers (3) movable to and fro between needles (1) that hold the fabric, a needle slider for moving each needle, said sinker (3) having a lower edge (15) extending approximately at right angles to the needles (1) in a specific position in relation to the knock-over edge (9), characterized in that the lower edge (15) forms one side of an approximately right-angled recess which has another side (14 or 20) on said sinker (3) extending away from such lower edge (15) and reaching at least to a level of the knock-over edge (9), and said another side (14) being adjustable by adjusting the setting of said sinker (3) relative to a back (13) of said needle (1).

4,322,957

APPARATUS FOR DRYING OF TUBULAR FABRICS

Andrzej N. Nowicki, Melton Mowbray, and David H. Smith, Queniborough, both of England, assignors to Samuel Pegg & Son, Limited, Leicester, England

Filed May 22, 1980, Ser. No. 152,157

Claims priority, application United Kingdom, May 30, 1979, 18778/79

Int. Cl.³ D06B *3/28, 15/02, 15/09, 23/04*

U.S. Cl. 68—13 R **9 Claims**

1. An apparatus for drying tubular fabric including a pair of drivable squeeze rollers forming a water expression nip, a freely rotatable supply roller resting against one of the squeeze rollers to form a fabric transportation nip, a transverse stretching device and air bubble forming means arranged below the water expression nip, a tube for receiving fabric from the fabric transportation nip at an upper end and a draining surface extending under the transverse stretching device and the lower end of the tube for receiving bundled fabric from the tube for passing to the transverse stretching device, and a means for supplying water to the tube for assisting downward fabric movement through the tube.

4,322,958

DOOR LOCK WITH SPRING BOLT AND DEAD BOLT

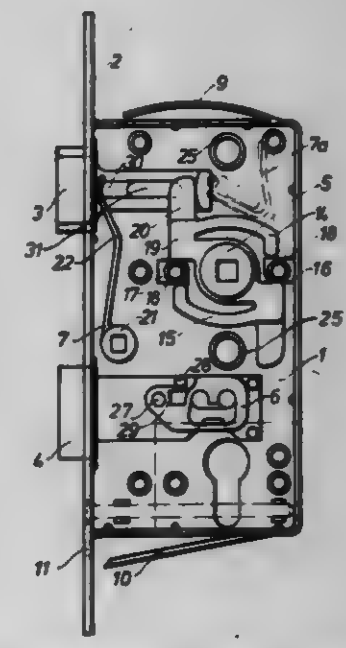
Willi Eigemeier, Friedrichshaller Strasse 66/1, D-7107 Bad Friedrichshall 1, Fed. Rep. of Germany

Filed Jan. 15, 1980, Ser. No. 112,153

Claims priority, application European Pat. Off., Dec. 20, 1979, 791052330

Int. Cl.³ E05B *59/00*

U.S. Cl. 70—107 **11 Claims**



1. A door lock with spring bolt and dead bolt made from

thermoplastic synthetic resin and comprising a box-shaped case part integrally joined to the forend plate and a lock case cover mounted parallel to the lock case bottom, a lock follower body mounted for rotation in the lock case bottom and in the lock case cover and, in inoperative position, resting against retaining pins with a plurality of legs extending from the lock follower body and moving the spring bolt laterally upon radial movement, and a dead bolt held in place by a tumbler, characterized in that

a plurality of legs (14) extend from the lock follower body (5) and rest without bias against retaining bolts (17, 18), that upon radial movement of the lock follower body a plurality of legs bend opposite to the movement of the lock follower body thereby developing spring action, and that a plurality of stops (17) limit the rotary movement of the lock follower body.

4,322,959

LOCKING MEANS FOR A TRUNK IN AN AUTOMOBILE

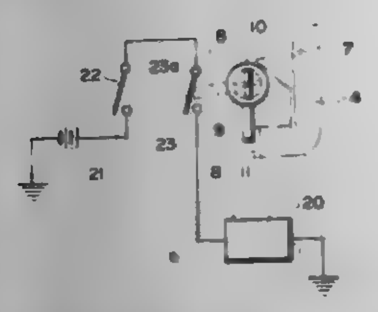
Haruo Mochida, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Kanagawa, Japan

Filed Mar. 24, 1980, Ser. No. 132,773

Claims priority, application Japan, Apr. 6, 1979, 54-46156[U]

Int. Cl.³ E05B *47/04, 65/19, 65/36;* H01H *27/06*

U.S. Cl. 70—241 **4 Claims**



1. In a locking means for a trunk in an automobile which can be unlocked by the rotation of a key inserted in a key cylinder of the trunk and which comprises a first switch provided at a proper location in a passenger room of the automobile to open and close a D.C. circuit including an actuator means for unlocking the locking means, the improvement wherein a second switch which is usually closed is provided in said D.C. circuit in such a way as to be opened by the rotation of said key inserted in the key cylinder of the trunk in a direction contrary to that for unlocking the locking means.

4,322,960

MACHINE FOR FORMING OF ROTATIONALLY SYMMETRICAL WORKPIECES

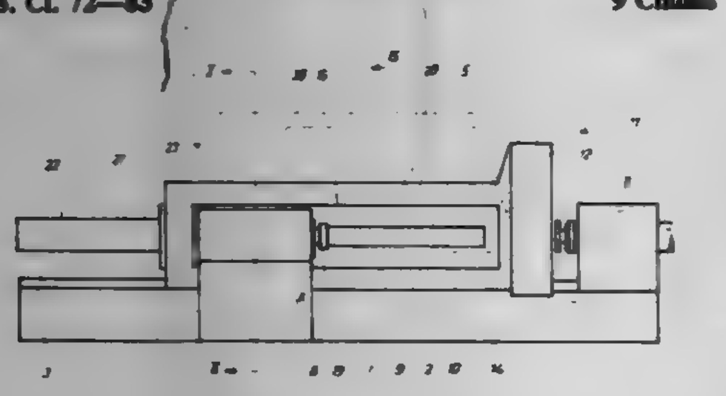
Walther Bosch, Ostfildern, Fed. Rep. of Germany, assignor to Bohner & Koehle GmbH & Co., Esslingen am Neckar, Fed. Rep. of Germany

Filed Nov. 21, 1979, Ser. No. 96,272

Claims priority, application Fed. Rep. of Germany, Nov. 28, 1978, 2851304

Int. Cl.³ B21D *22/16*

U.S. Cl. 72—83 **9 Claims**



1. In a machine for spinning or stretching of rotationally symmetrical workpieces, comprising a base on which is mounted a roller head carrier for a multi-roller head having plural shaping rolles which are angularly spaced from each other, a headstock supporting a tool for shaping a workpiece and a pressing tail spindle for a counterholder operatively supporting said workpiece, drive means for effecting a relative movement between said roller head carrier and said headstock for effecting a relative movement between said shaping rollers and said workpiece, one of said roller head carrier and said headstock being fixedly connected to said base and the other of said roller head carrier and said headstock being movably connected to said base, the improvement comprising wherein said roller head carrier has a framelike construction with two horizontal frame elements which are elongated in a longitudinal direction of said machine, a first of said frame elements facing said base and being arranged on said base, a second of said frame elements being spaced from said first frame element, said headstock being located between said two frame elements, said frame elements projecting from the side of said roller head facing said headstock, a recess which extends in the longitudinal direction of said machine, said headstock being arranged in said recess, wherein said two frame elements are fixedly connected to one another at their ends remote from said roller head through a vertical frame element which closes said recess, wherein said drive means on its one side engages said headstock by extending through a hole in said vertical frame and on its other side engages said vertical frame element, the axes of said roller head, said headstock and said drive means coinciding.

4,322,961

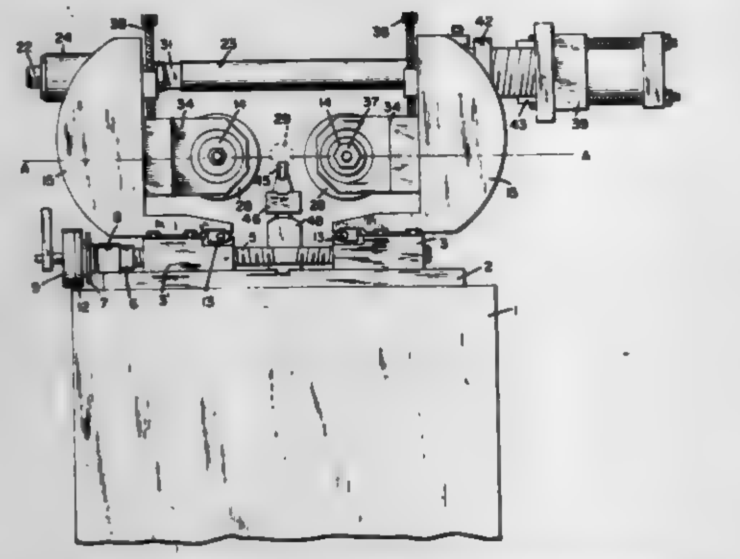
DIE ROLLING MACHINE

Howard A. Greis, Holden, Mass., assignor to Kinefac Corp., Worcester, Mass.

Filed Feb. 26, 1980, Ser. No. 124,916

Int. Cl.³ B21B *31/24*

U.S. Cl. 72—95 **26 Claims**



1. A die rolling machine comprising two cylindrical dies for rotating and forming a workpiece on an axis between the dies, means to rotate the dies, means for moving the dies toward each other, a separate die supporting arm for each die, said die supporting arms being pivotable on separate spaced pivot axes, means to pivot said die supporting arms,

the pivot axes for the die supporting arms being substantially parallel with the axis of workpiece rotation and below the latter axis, the means for moving the dies being above said axis.

4,322,962

METHOD OF PRODUCING H-BEAMS

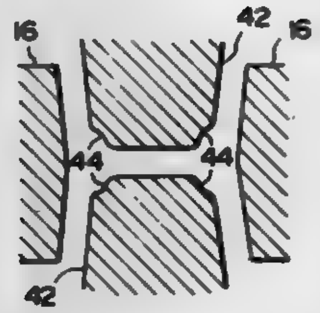
Teruyuki Nakanishi, Kibi, and Kiyoshi Hitomi, Kurashiki, both of Japan, assignors to Kawasaki Steel Corporation, Hyogo, Japan

Filed Sep. 11, 1979, Ser. No. 74,501

Claims priority, application Japan, Sep. 12, 1978, 53-112731

Int. Cl.³ B21B *1/12, 27/02*

U.S. Cl. 72—234 **3 Claims**



1. An apparatus for producing a steel H-beam having joints of a piece being rolled between a web and flanges having high mechanical strength and toughness, comprising:

a breakdown mill having breakdown rolls;

a first roughing universal mill having horizontal rolls each having concaves in cross-section at portions corresponding to portions at the inner side of each joint between the web and the flanges of the piece being rolled, and vertical rolls;

an edging mill;

a second roughing universal mill having vertical rolls each having a concave in cross-section at a portion corresponding to a portion in the vicinity of the outer side of the joint of said piece being rolled, and horizontal rolls;

a second edging mill; and

a finishing universal mill.

4,322,963

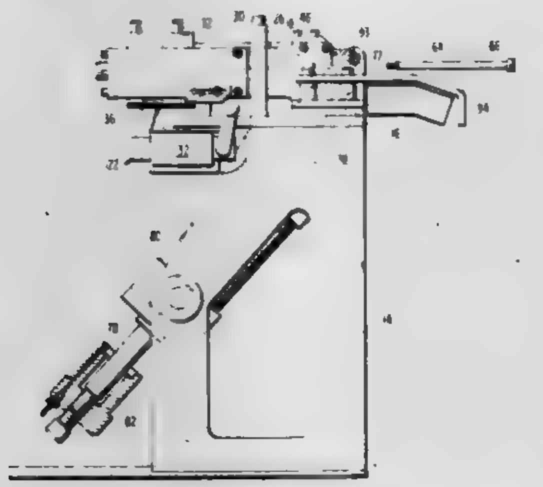
VALVE STEM BENDER AND/OR MARKER

Cecil C. Fitzpatrick, Clarksdale, Miss., and Jimmy C. Spurgat, Rawson, Ohio, assignors to Cooper Tire & Rubber Company, Findlay, Ohio

Filed Apr. 3, 1980, Ser. No. 137,475

Int. Cl.³ B21D *7/03;* B41F *17/22*

U.S. Cl. 72—387 **10 Claims**



1. An apparatus for bending/marking inner tube valve stems comprising a base member;

a housing secured to said base member;

a cylinder and piston secured to an end of said housing;

a yoke member secured to said piston with the leg portions of said yoke extending in spaced parallel relation to one another along opposite sides of said cylinder and housing;

a pair of side plates carried by said housing;

a clevis member pivotally mounted on the other end of said housing with an aperture in said clevis registering with the interior of said housing for receiving a valve stem;

the free ends of said leg portions having an eccentric shaft mounted therein;

means having indicia thereon carried by said shaft;

a cylinder and piston connected to said clevis;

a source of compressed air;

a pneumatic system connected to said cylinders and said source of compressed air for actuating said piston and yoke to initially move said leg portions and move said means into engagement with a valve stem in said housing and to then pivot said clevis to bend said valve stem.

4,322,964

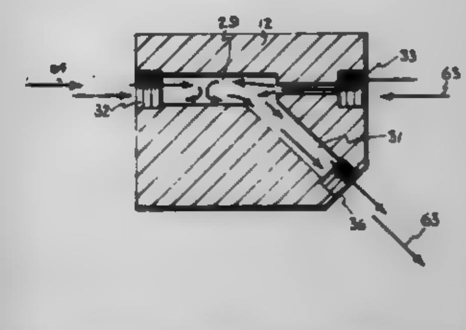
GAS ANALYZER CALIBRATION APPARATUS

Hans L. Melgaard, and Gary H. Mercier, both of Minneapolis, Minn., assignors to Despatch Industries, Inc., Minneapolis, Minn.

Filed Jan. 14, 1980, Ser. No. 112,135

Int. Cl.³ G01N *37/00*

U.S. Cl. 73—1 G **6 Claims**



1. In a gas analyzer calibration apparatus suitable for use with a gas analyzer, an improvement comprising a fluidic gate for selectively routing a test gas or a calibration gas to the analyzer, said fluidic gate including:

(a) first input means for receiving a test gas at a preselected rate of flow;

(b) second input means for receiving a calibration gas at a second preselected rate of flow that exceeds the first preselected rate of flow;

(c) output means for exiting gases from said fluidic gate to an analyzer;

(d) gate means for substantially blocking a flow of a test gas through said output means in response to a flow of a calibration gas through said second input means and for allowing such calibration gas to exit said fluidic gate through said output means at a rate of flow substantially equal to the first preselected rate of flow, without substantially altering pressure within said output means upon receiving a calibration gas within said second input means.

4,322,965

CALIBRATION TEST STAND AND METHOD FOR HYDRAULIC WRENCHES

John H. Bickford, Middletown, Conn., assignor to Raymond Engineering Inc., Middletown, Conn.

Filed Feb. 25, 1980, Ser. No. 124,282

Int. Cl.³ G01L *25/00*

U.S. Cl. 73—1 C **14 Claims**

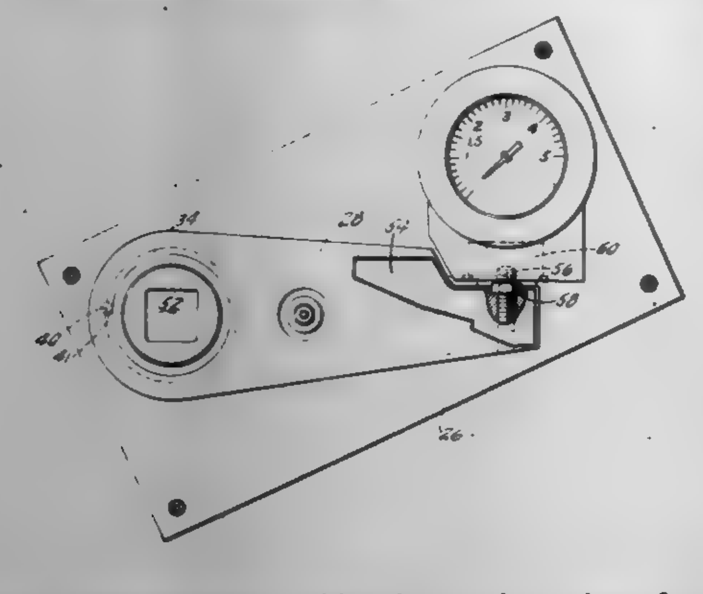
1. A calibration test stand for a fluid powered wrench, the test stand including:

base plate means;

pivot plate means pivotally mounted on said base plate means for supporting a wrench to be calibrated;

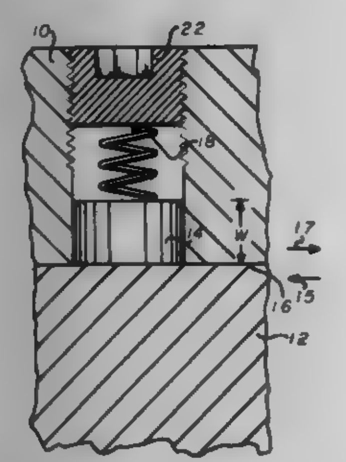
receiving means connected to said base plate means and fixed relative to said base plate means, said receiving means being shaped to receive an output from a wrench to be calibrated;

reaction means connected to said pivot plate means, said reaction means being adapted to receive a reaction surface of a wrench to be calibrated; and



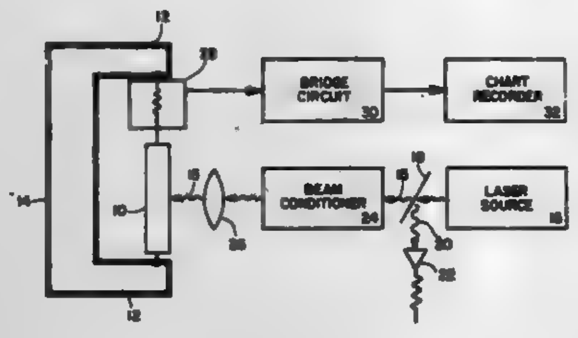
force measuring means positioned to receive an input from said reaction means, said force measuring means providing a measurement of the output of a wrench to be calibrated for a preselected input load to the wrench.

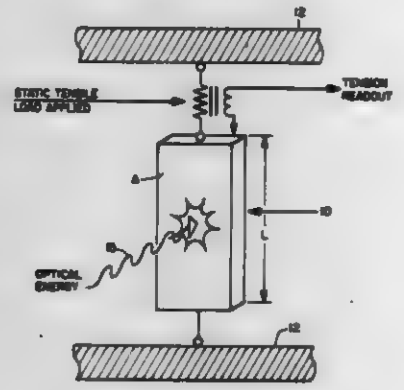
4,322,966
WEAPON CYCLE OR SHOT COUNTER
Robert S. Golabek, Montville, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed May 26, 1981, Ser. No. 267,143
Int. Cl.³ G01D *21/00*; G06M *1/00*
U.S. Cl. 73—7 7 Claims



1. A cycle counter for counting the number of repetitive movements of a first element relative to a second element, comprising:
 a. a wear member, said wear member adapted to erode at a predetermined rate correlatable with the number of said repetitive movements,
 b. a first element having means for receiving said wear member and a spring biasing means for urging said wear member towards a second element,
 c. a second element mounted for repetitive moving relationship to said first element and having a surface in contact with a surface of said wear member, whereby the number of said repetitive movements can be determined by the amount of wear of said wear member.

4,322,967
METHOD AND APPARATUS FOR MEASURING OPTICAL COUPLING COEFFICIENTS
Steven C. Seitel; James O. Porteus, both of Ridgecrest, and William N. Faith, China Lake, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Sep. 19, 1980, Ser. No. 189,401
Int. Cl.³ G01N *25/00*
U.S. Cl. 73—15.6 8 Claims



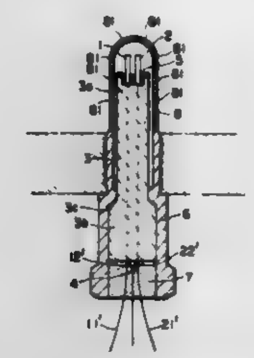


5. A method of measuring the optical coupling coefficient of a sample comprising the steps of:
tensioning said sample a predetermined amount;
illuminating said sample with light of known intensity for a predetermined length of time;
measuring the tension on said sample before, during, and after illumination by said light;
recording the change in tension on said sample due to said light illumination; and
calculating the optical coupling coefficient of said sample according to the equation

$$\alpha = -\frac{1}{E_o}\frac{\rho CA}{\Gamma}(\gamma_L + \gamma_s)\Delta F(t).$$

where:
α=optical coupling coefficient;
E_o=incident energy;
ρ=mass density of sample;
C=specific heat of sample;
A=sample area;
$\Delta F(t)$=tensile relaxation;
Γ=thermal expansion coefficient;
γ_L=elastic compliance;
L_o=unstretched length of sample; and
Y=Young's modulus.

4,322,968
TEMPERATURE COMPENSATED PLUG-IN TYPE OXYGEN DETECTOR FOR EXHAUST GAS
Akio Takami; Toshitaka Matsuura, and Tsutomu Saito, all of Nagoya, Japan, assignors to NGK Spark Plug Co., Ltd., Aichi, Japan
Filed Feb. 25, 1980, Ser. No. 124,023
Claims priority, application Japan, Feb. 23, 1979, 54-23191
Int. Cl.³ G01N *27/12*
U.S. Cl. 73—27 R 5 Claims

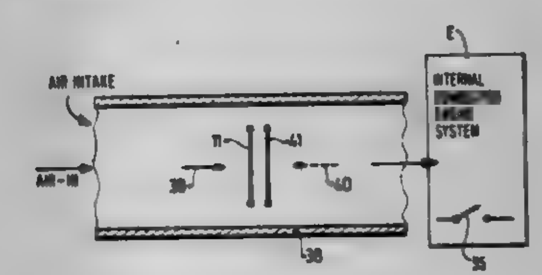


1. A plug-in type, temperature-compensated oxygen detector for detecting oxygen contained in exhaust gas comprising an N type sintered single oxide semiconductor pellet, a P type sintered single-oxide semiconductor pellet, said N type semiconductor and said P type semiconductor having temperature dependencies in the same direction, a ceramic column body for fixedly supporting at one end thereof said N type semiconductor pellet and said P type semiconductor pellet, means for connecting said N type semiconductor and said P type semiconductor in series and providing output terminals at the other end thereof, and a metal housing for fixedly supporting said ceramic column body therein.

4,322,969
GAS PRESSURE RELIEVING HYDROSTATIC TESTER
Frank C. Ball, Long Beach, and Edmund Wardle, Burbank, both of Calif., assignors to Hydro-Test, Inc., Long Beach, Calif.
Filed Sep. 22, 1980, Ser. No. 189,182
Int. Cl.³ G01M *3/08*
U.S. Cl. 73—40.5 R 2 Claims

1. In combination with a hydrostatic testing device of a structure that includes an elongate mandrel having a lower threaded end, an upper resilient packer mounted on said mandrel adjacent said lower end, a pressurized water inlet in said mandrel that communicates with a first passage that extends downwardly and longitudinally in said mandrel; an elongate member that has an upper threaded end, a lower resilient packer mounted on said elongate member below said upper threaded end, a bow spring and slips assembly mounted on said elongate member, a second longitudinal passage in said elongate member that communicates with an opening in the latter below said lower packer, the improvement for preventing said testing device being blown out of a tubular string when the latter extends downwardly in an oil well bore in which substantial gas pressure may develop, said improvement comprising:
 a. an elongate first body having an upper threaded portion that defines a valve seat and a lower threaded end that engages said upper threaded end of said elongate member, said elongate first body having a third longitudinal passage that extends between said valve seat and second passage;
 b. an elongate second body that has an upper threaded end that engages said lower threaded end of said mandrel and a lower threaded end that engages said threaded upper end of said elongate first body, said elongate second body having a cavity therein that communicates with said first passage and third passage, and with a pressurized water discharge opening in said second body above said valve seat;
 c. a ball in said cavity that may rest on said valve seat and seal therewith; and
 d. a stop in said cavity that limits the upward movement of said ball relative to said valve seat, said testing device when disposed in a tubular string having said upper and lower packers cooperating with the interior surface of the latter, with said ball on said valve seat, to define a confined space into which pressurized water may flow from said inlet, first passage and discharge opening to pressure test said tubular string after the latter has been manipulated relative to said slips and bow springs assembly to set said slips, and said device after a testing operation has been completed capable of remaining in a stationary position in said tubular string when the pressure of gas in said bore hole increases substantially, said gas entering said opening in said elongate member to flow upwardly in said second and third passage to dislodge said ball from said seat and continue to flow upwardly through said cavity and first passage to discharge to the ambient atmosphere through said pressurized water inlet.

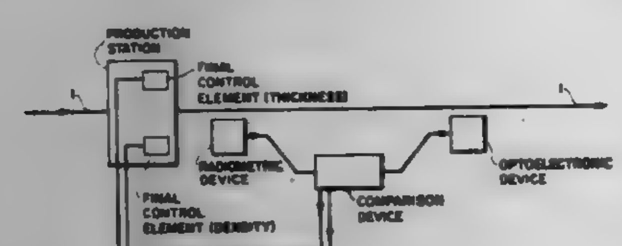
4,322,970
METHOD AND APPARATUS FOR CONTROLLING START-UP OF AIRFLOW MEASURING SYSTEMS IN AUTOMOTIVE VEHICLES
Cornelius Peter, Stuttgart, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany
Division of Ser. No. 944,587, Sep. 21, 1978, Pat. No. 4,196,622. This application Dec. 4, 1979, Ser. No. 100,050
Claims priority, application Fed. Rep. of Germany, Nov. 9, 1977, 2750050
The portion of the term of this patent subsequent to Apr. 8, 1997, has been disclaimed.
Int. Cl.³ G01M *15/00*
U.S. Cl. 73—118 11 Claims



1. Measuring system having
a sensing resistor (11) forming a sensing element and chang-

ing resistance in accordance with change of an external parameter to be sensed;
a controlled current source (25) connected to and supplying said sensing resistor with current;
a comparator (15) comparing an output signal representative of current flow through said sensing resistor with a reference (13, 14);
and start-up signal generating means (27, 28) connected to said comparator (15) and applying a minimum signal thereto for comparison with the reference to permit output to be obtained by said comparator and initially control said controlled current source (25) to supply the sensing resistor with current upon start-up of the system.

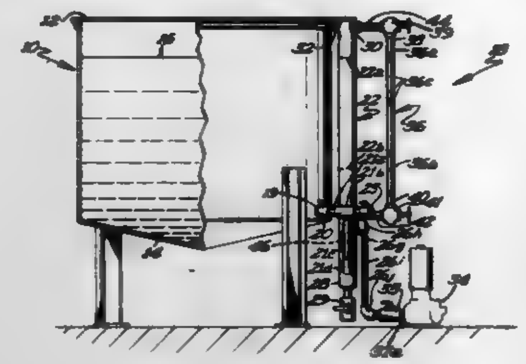
4,322,971
CONTROLLING THE THICKNESS OF MOVING WEBS OF MATERIAL
Heinrich Strobel, Hanover, Fed. Rep. of Germany, assignor to Frieseke & Hoepfner GmbH, Erlangen, Fed. Rep. of Germany
Filed Mar. 27, 1980, Ser. No. 134,434
Claims priority, application Fed. Rep. of Germany, Apr. 4, 1979, [illegible]
Int. Cl.³ G01B *15/02*
U.S. Cl. 73—159 4 Claims



1. Method of controlling the thickness of moving webs of material comprising the steps of passing the web through a production station containing a final control element for the thickness of the web, locating a radiometric device at the outlet from the production station, after the web leaves the production station moving the web past the radiometric device and, using the device, measuring the weight per unit area of the web, locating an optoelectronic device at a distance from the production station and radiometric device so that the optoelectric device is outside of the range where the web is affected by environmental influences, after the web passes the radiometric device moving the web past the optoelectronic device utilizing laser radiation and measuring the thickness of the web, comparing the measured values from the radiometric device and the optoelectronic device and correcting the measured value of the radiometric device based on the measured value of the optoelectronic device, and conveying the comparative corrected value to a control unit for actuating the final control device for the thickness of the web in the production station.

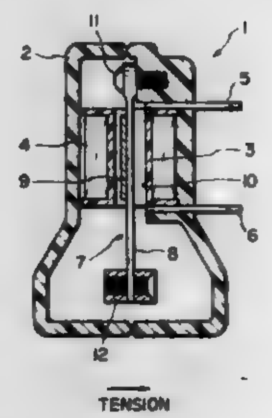
4,322,972
METHOD AND APPARATUS FOR FLOW-RATE VERIFICATION AND CALIBRATION
Arnold L. Karjala, Apartado 10159, Maracaibo, Venezuela
Filed Aug. 29, 1980, Ser. No. 182,602
Int. Cl.³ G01M *19/00*
U.S. Cl. 73—168 4 Claims

1. A flow-rate calibration device for use with a volumetric pump drawing liquid from a tank, the tank having a top and a bottom, the device comprising:
an effluent valve having an open position and a closed position, said valve being connected to the bottom of said tank;
a vertical column comprising:
a top;
a bottom;
an inlet, said inlet being connected to said effluent valve;
an outlet, said outlet being connected to said pump;
said column having a cross-section which is relatively small compared to said tank, said column extending from said tank top to said tank bottom, and said column top being connected to said tank top;
means for determining the level in said column; and



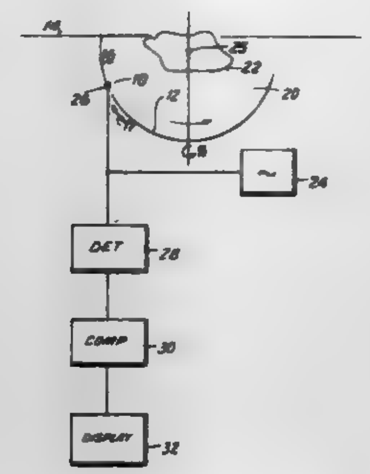
said inlet to said vertical column being positioned beneath said vertical column outlet and said column extending downwardly below said column inlet to define a sedimentation accumulation chamber in which sediment and other foreign matter may be received and retained before reaching said pump to thereby avoid interference with and unwanted variation of the flow rate of said pump and resultant error in the calibration of the pump.

4,322,973
ACCELERATION AND DECELERATION SENSOR
Shinichiro Iwasaki, Auburn Heights, Mich., assignor to Aisin Seiki Company, Limited, Kariya, Japan
Filed Aug. 29, 1980, Ser. No. 182,704
Int. Cl.³ G01D *15/11*
U.S. Cl. 73—517 R 6 Claims



1. A sensor for converting detected acceleration and deceleration into an electrical signal indicative thereof, comprising:
a casing;
a core disposed within said casing, said core including an elastic member with one end thereof being fastened to said casing and the other end thereof supporting a weight so as to force said elastic member into a swinging motion under the influence of acceleration and deceleration;
a magnetically soft member of amorphous metal integrally bonded to said elastic member adjacent the fastened end of said elastic member, said magnetically soft member being located on said elastic member such that tensile stress and compressive stress on said magnetically soft member are developed during deceleration and acceleration, respectively; and
an electrical coil wound around said core for sensing the stress values in said magnetically soft member and for providing these values to associated circuitry for conversion to deceleration and acceleration values.

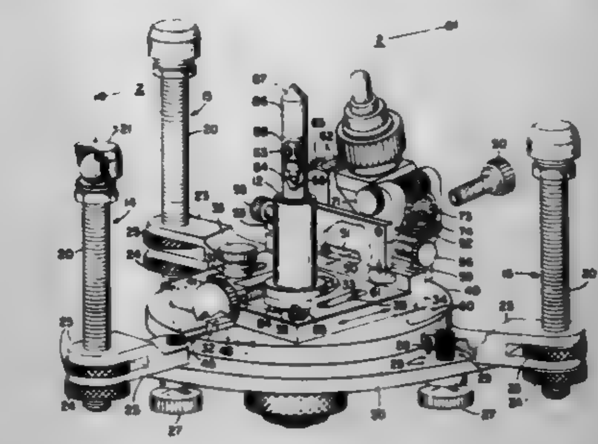
4,322,974
ULTRASOUND SCANNER
Manlio Abele, Garden City, N.Y.; Anthony M. Passalaqua, Glenridge, N.J., and Norman E. Chase, Yonkers, N.Y., assignors to New York University, New York, N.Y.
Filed Feb. 5, 1980, Ser. No. 118,866
Int. Cl.³ G01N *29/04*
U.S. Cl. 73—602 14 Claims



1. An ultrasonic scanner for scanning a medium for anomalies scattering acoustic waves, comprising ultrasonic transducing means positioned within scanning range of said medium, ultrasonic transmitting means coupled to said transducing means for providing a train of pulsed ultrasonic carrier signals, each pulsed carrier signal of said train having a constant and unique frequency, said train of pulsed carrier signals together covering a range of frequencies, said transducing means oriented to propagate said train along a path through said medium, means for repeatedly repositioning said transducing means for propagating further trains along a plurality of different paths through said medium, said plurality of different paths together defining a planar cross-section, means coupled to said transducing means and responsive to the steady state phase and amplitude of the received signal to thereby define the total scatter characteristic within said planar cross-section, means for calculating, from said scatter characteristic, a plurality of point characteristics of the acoustic property corresponding to said scatter characteristic, and means for comparing each of said point characteristics with respect to one another for said anomalies.

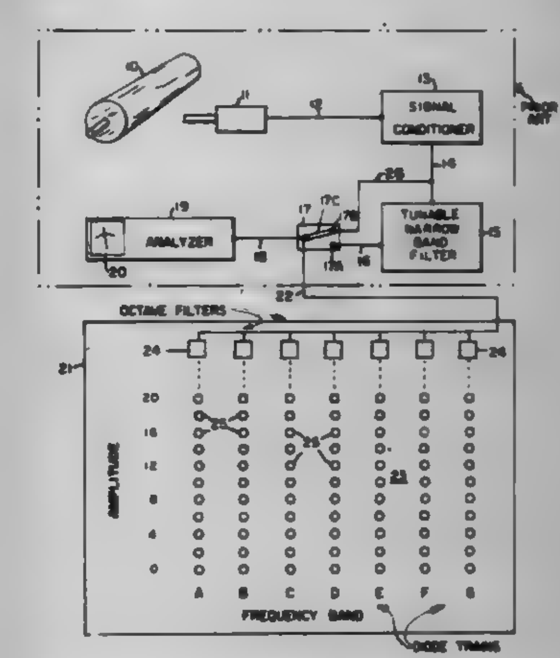
4,322,975
ULTRASONIC SCANNER
Robert A. Schmidt, Torrance, and Ewell E. Stevens, Northridge, both of Calif., assignors to Northrop Corporation, Hawthorne, Calif.
Filed Feb. 2, 1980, Ser. No. 126,304
Int. Cl.³ G01N *29/04*
U.S. Cl. 73—633 9 Claims

1. Hand-held ultrasonic scanner apparatus for detecting and measuring flaws in a structure comprising:
(a) a base plate member including adjustable leg means mounted thereto,
(b) a spindle means rotatably attaching a rotatable plate member to said base plate member, and
(c) an ultrasonic transmitter/receiver head assembly adjustably mounted on said rotatable plate member,
(d) wherein said leg means includes a plurality of legs, one end of each of said legs being provided with a swivel pad to protect the surface of said structure from damage and to compensate for any variation in the contour of said structure, and adjustment means on the other end of said leg



cooperating with clevis means for leg length and angular adjustment relative to said base plate.

4,322,976
MECHANICAL VIBRATION ANALYZER
Edwin D. Sisson, Worthington; Dean V. Stoutenburg, Westerville, and Glen H. Thomas, Worthington, all of Ohio, assignors to IRD Mechanalysis, Inc., Columbus, Ohio
Filed Apr. 4, 1980, Ser. No. 137,551
Int. Cl.³ G01N *29/04*
U.S. Cl. 73—659 6 Claims



1. A vibration analyzer comprising:
vibration detector means for converting mechanical vibrations into a corresponding cyclic electrical signal;
an electrical filter having an input for receiving said electrical signal and manually actuable for tuning within a wide range of electrical frequencies to select narrow band portions thereof for submittal at an output;
electrical circuit means having an input and including a visual readout for observing amplitude and frequency values within a said narrow band portion of said range of electrical frequencies selected by said filter actuation;
a visible display comprised of a plurality of light emitting diode trains mutually disposed in parallel adjacency to provide a spectral readout of amplitude and frequency substantially for said wide range of electrical frequencies;
a plurality of octave filters each selecting a unique band of said frequencies within said wide range thereof;
each said train of light emitting diodes corresponding to and responsive to one of said octave filters and each said train including means for illuminating at least one unique diode

in the train corresponding to the instantaneous amplitude of said selected unique frequency band; and

switch means for coupling said plurality of octave filters to receive said electrical signal and alternately for coupling said circuit means input and said plurality of octave filters with said filter output.

4,322,977

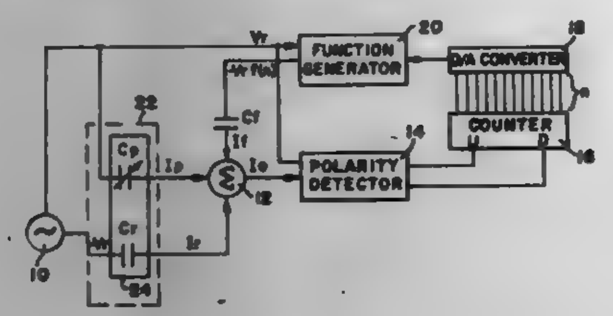
PRESSURE MEASURING SYSTEM

Robert C. Sell; John R. Sheler, both of South Bend, Ind., and John M. Juhasz, Niles, Mich., assignors to The Bendix Corporation, Southfield, Mich.

Filed May 27, 1980, Ser. No. 153,129

Int. Cl.³ G01L *9/12*

U.S. Cl. 73—701 **30 Claims**



1. A capacitance to digital conversion system comprising:

means for generating first and second alternating reference signals having a predetermined phase relationship therebetween;

a primary sensing capacitor for measuring a condition driven by one of said reference signals;

a digital-to-analog converter driven by one of said reference signals for converting a digital signal to a first alternating feedback signal;

means for generating a second alternating feedback signal having a predetermined phase relationship with the first alternating feedback signal;

a feedback reference capacitor driven by one of said feedback signals;

a feedback sensing capacitor sensitive to said condition driven by the other of said feedback signals;

means, connected to the primary and feedback capacitors, for generating an error signal related to the sensed condition when currents through the primary and feedback capacitors are other than equal and opposite; and

analog-to-digital converting means for converting said error signal to said digital signal wherein said digital signal is fed back to the digital-to-analog converter for conversion thereby to the first alternating feedback signal and is a measurement of said condition.

4,322,978

OPTICAL DEVICE FOR MEASURING SLIGHT PRESSURE DIFFERENCES BY MEANS OF LIGHT INTENSITY CHANGES

Ingrid Fromm, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

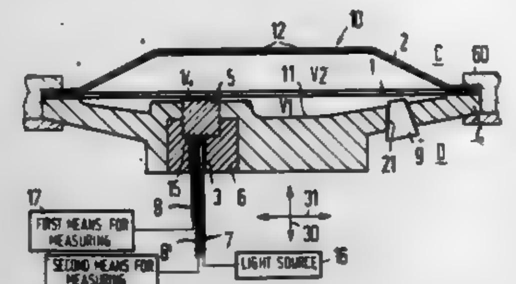
Filed Aug. 27, 1980, Ser. No. 181,697

Claims priority, application Fed. Rep. of Germany, Sep. 17, 1979, 2937511

Int. Cl.³ G01L *9/00*

U.S. Cl. 73—705 **19 Claims**

1. An optical device for measuring slight pressure differences by means of a light intensity change, said device comprising a housing part having a recess; a membrane being secured on said housing part to extend across said recess to form a first chamber of a first volume and having a partially reflective surface facing said first chamber; a protective cap having an opening engaging the other surface of said membrane and forming a second chamber of a second volume opposite said first chamber, said housing part including means for communicating the first chamber with an atmosphere of a desired pressure; a gradient lens with a lens length that amounts to one-fourth of the pitch length, said gradient lens having an axis, a first end face and a second end face; means mounting said gradient lens with the axis of the lens being eccentrically positioned relative to a center of said membrane and the second end face being positioned with a surface parallel to a portion of the reflective surface of the membrane while the membrane is in an idle position and at an interval which is slightly greater than the expected maximum excursion of the membrane; an input waveguide connected to a light source of a predetermined intensity and being coupled to the first end face of the lens at an input point; a first output waveguide being coupled to the first end face at a first point displaced from the



input point and the axis of said lens; first means for evaluating a light intensity being connected to the opposite end of the first output waveguide; a second output waveguide being coupled to the first end face at a second point displaced from the input point and between the axis of the lens and said first point, and a second means for evaluating a light intensity being connected to the opposite end of the second output waveguide, said input point and said first and second points being arranged relative to the lens axis so that when the membrane is at an idle position for a given predetermined pressure in the first chamber, a reflected image of the input point falls on the one end face between the first and second points and as the pressure increases in the second chamber relative to the pressure of the first chamber, the reflected image point moves toward the first point and with a pressure reduction in the second chamber relative to the pressure of the first chamber the reflected image point moves towards said second point.

4,322,979

OPTICAL DEVICE FOR MEASURING SLIGHT DIFFERENCES OF PRESSURE BY MEANS OF A CHANGE IN LIGHT INTENSITY

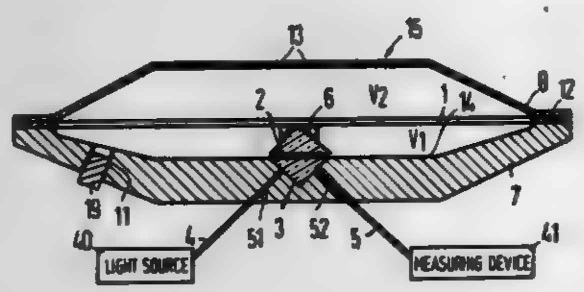
Ingrid Fromm, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Aug. 27, 1980, Ser. No. 181,696

Claims priority, application Fed. Rep. of Germany, Sep. 17, 1979, 2937484

Int. Cl.³ G01L *9/00*

U.S. Cl. 73—705 **10 Claims**



1. An optical device for measuring slight pressure differences by means of a light intensity change, said device com-

prising a housing part having a recess; a membrane secured on said housing part to extend across said recess to form a first chamber of a first volume; a protective cap engaging the other surface of said member and forming a second chamber of a second volume opposite said first chamber, said housing part including means for communicating the first chamber with an atmosphere of desired pressure; a right angle isosceles glass prism being mounted in said recess with the hypotenuse surface facing said membrane and extending parallel thereto; an input optical waveguide being coupled to one short side surface of said prism and extending to a light source of a given light intensity for coupling light from said source into said prism; an output optical waveguide being coupled to the other short side surface of the prism for output coupling light from said prism; a surface of the membrane opposite said hypotenuse surface being a light receiving surface, said membrane surface with the membrane in an idle condition being spaced at an interval so that approximately 50% of the coupled in light intensity is totally reflected by the hypotenuse surface; and means for measuring the light intensity being connected to the free end of the output waveguide, so that changes in the pressure in the second chamber relative to the pressure in the first chamber cause a deflection of said membrane to vary the optical light intensity being received by the means for measuring.

4,322,980

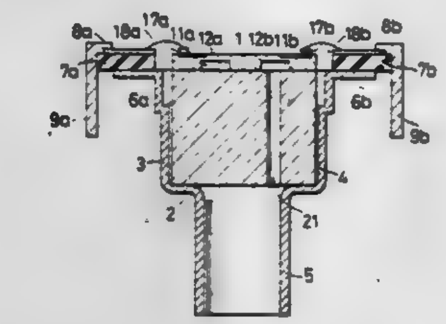
SEMICONDUCTOR PRESSURE SENSOR HAVING PLURAL PRESSURE SENSITIVE DIAPHRAGMS AND METHOD

Seikou Suzuki, Hitachiota; Motohisa Nishihara; Kanji Kawakami, both of Katsuta; Hideo Sato, Hitachi; Shigeyuki Kobori, Hitachi; Hiroaki Hachino, Hitachi, and Minoru Takahashi, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 8, 1979, Ser. No. 170,663

Int. Cl.³ G01L *9/06*

U.S. Cl. 73—727 **19 Claims**



1. A semiconductor pressure sensor comprising:

a single-crystal semiconductor chip on which at least two pressure sensitive diaphragms are formed;

strain gauge means constructed on the respective diaphragms of said chip to produce output signals, one of the output signals being produced in response to an absolute pressure of atmosphere and the other output signals being produced in accordance with relative values of pressures to be measured with respect to the atmosphere;

electrodes provided on said chip for electrical connection of said strain gauge means; and

an insulating substrate having a thermal expansion coefficient substantially equal to that of said chip and attached to said chip by an anodic bonding method to form chambers together with the diaphragms of said chip, one of the chambers being maintained at vacuum and the pressures to be measured being led to the other chambers.

4,322,981

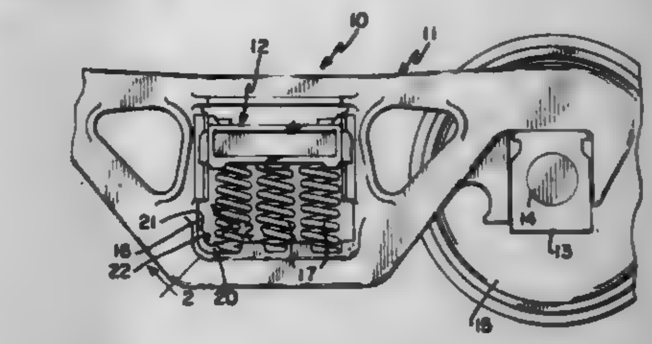
RAILWAY CAR TRUCK FATIGUE DETECTOR

Robert P. Radwill, Chicago, Ill., assignor to AMSTED Industries Incorporated, Chicago, Ill.

Filed Jul. 10, 1980, Ser. No. 167,239

Int. Cl.³ G01N *3/32*

U.S. Cl. 73—810 **21 Claims**



1. A railway car truck comprising a bolster means and a side frame means at the ends of said bolster means, a fatigue detector means located in an area in said truck wherein said bolster means and side frame means are subject to critical stresses, said fatigue detector means being constructed to assume a normal stress loading which may be assumed by said bolster means and said side frame means without fatigue failure but to fail by fracture under a stress loading less than that causing the failure of said bolster means and side frame means upon the application of said critical stress thereby to warn of potential failure of said truck.

4,322,982

FLOWMETER

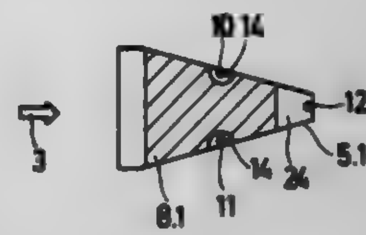
Stefan Müller; Gerhard Thun, both of Karlsdorf, and Wolfgang Glanner, Karlsruhe, all of Fed. Rep. of Germany, assignors to Kernforschungszentrum Karlsruhe GmbH, Karlsruhe, Fed. Rep. of Germany

Filed Feb. 11, 1980, Ser. No. 120,514

Claims priority, application Fed. Rep. of Germany, Feb. 10, 1979, 2905070

Int. Cl.³ G01F *1/32*

U.S. Cl. 73—861.22 **3 Claims**



1. In a flowmeter for measuring the flow of liquid metal in a conduit having a longitudinal axis; the flowmeter including a magnet for generating a magnetic field in the liquid metal whereby a potential difference is induced in the liquid metal as it flows through the magnetic field and electrodes for measuring said potential difference; the improvement comprising a tubular drag body projecting unilaterally through a wall of said conduit into said conduit in a diametral orientation with respect thereto for generating vortexes in the liquid metal flowing in said conduit; said tubular drag body having a closed surface within said conduit; said magnet and said electrodes being accommodated within said tubular drag body; said tubular drag body having apertures through which project ends of respective electrodes for direct exposure to the liquid metal in said conduit; said electrodes being bonded airtight to said tubular drag body; said tubular drag body further having a triangular cross-sectional shape and said magnet having a triangular cross-sectional shape conforming to the cross-sectional shape of said tubular drag body and substantially filling

the inner cross-sectional area defined by said tubular drag body.

3. In a flowmeter for measuring the flow of liquid metal in a conduit having a longitudinal axis; the flowmeter including a magnet for generating a magnetic field in the liquid metal whereby a potential difference is induced in the liquid metal as it flows through the magnetic field and electrodes for measuring said potential difference; the improvement comprising a tubular drag body projecting unilaterally through a wall of said conduit into said conduit in a diametral orientation with respect thereto for generating vortexes in the liquid metal flowing in said conduit; said tubular drag body having a closed surface within said conduit; said magnet and said electrodes being accommodated within said tubular drag body; said tubular drag body having apertures through which project ends of respective electrodes for direct exposure to the liquid metal in said conduit; said electroes being bonded airtight to said tubular drag.body; said tubular drag body further having, in the zone of said electrodes, an outwardly oriented, axially extending bulging portion for accommodating said electrodes and for intensifying the generation of vortexes.

4,322,983

METHOD FOR GENERATING ELECTRIC SIGNALS AND A PUSH-BUTTON SWITCH MEANS THEREFOR

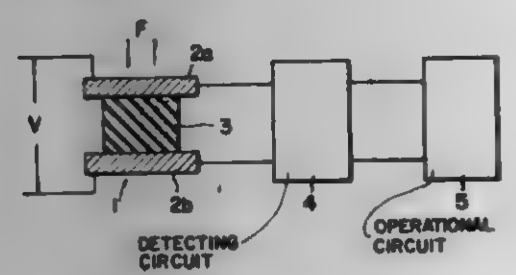
Ryoichi Sado, Saitama, Japan, assignor to Shin-Etsu Polymer Co., Ltd., Tokyo, Japan

Filed Jan. 25, 1980, Ser. No. 115,223

Claims priority, application Japan, Feb. 2, 1979, 54-11301

Int. Cl.³ G01L *1/18*

U.S. Cl. 73—862.68 **6 Claims**



1. A push-button switching means for producing an electric signal which comprises a resistor body formed of an electrically conductive rubbery elastomer capable of exhibiting an inversion of the electric resistivity thereof with a minimum value of the resistivity when a compressive force applied thereto is varied, at least two electrodes provided on the surface of the resistor body, and a detecting circuit electrically connected to the electrodes and capable of producing an electric signal in response to the maximum value in the electric current between the electrodes across the resistor body.

4,322,984

GYROSCOPE CAGE SYSTEM FOR HIGH G ENVIRONMENTS

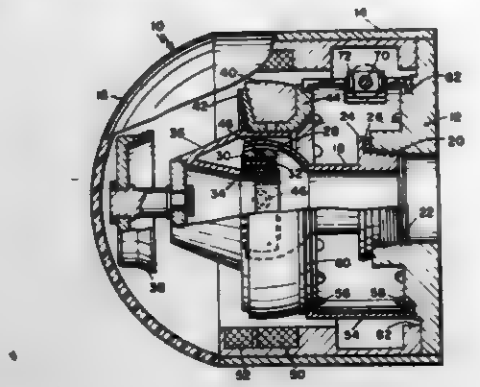
George Lasker, Claremont, and Paul G. Redman, Upland, both of Calif., assignors to General Dynamics, Pomona Division, Pomona, Calif.

Filed Nov. 15, 1979, Ser. No. 94,406

Int. Cl.³ G01C *19/24*

U.S. Cl. 74—51 **7 Claims**

1. A gyro cage system for supporting a gyro rotor during high g launch of an airborne vehicle; said cage comprising: annular clamping means for surrounding a portion of a gyro rotor for engaging and supporting said rotor and including preloading means for preloading the gyro rotor support bearings, said clamping means being movable between engaged and disengaged positions whereby the rotor is alternately held against rotation and free to rotate; and



actuating means for selectively moving said clamp between said engaged and said disengaged positions.

4,322,985

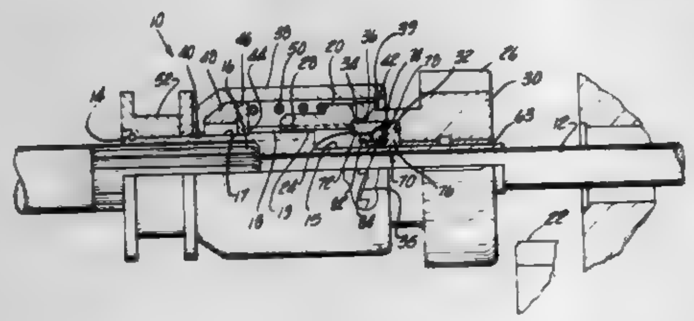
ENGINE STARTER WITH AN OVERRUNNING CLUTCH DEVICE

Harold R. Mortensen, Horseheads, N.Y., assignor to Facet Enterprises, Inc., Tulsa, Okla.

Filed Mar. 20, 1980, Ser. No. 132,012

Int. Cl.³ F02N *15/06;* **F16D** *43/06*

U.S. Cl. 74—6 **10 Claims**



1. An engine starter having a shaft comprising:

a sleeve member slidably and nonrotatably mounted to said shaft, said sleeve member having one end portion, an opposite end portion and an intermediate portion interposed said one end portion and said opposite end portion, said one end portion having a first outer diameter, said opposite end portion having a second outer diameter larger than said first outer diameter and said intermediate portion having helical splines formed thereon;

a pinion gear slidably journalled on said first outer diameter of the sleeve member for axial movement relative to said shaft, said pinion gear further adapted for movement into and out of engagement with the gear of the engine to be started;

a driving clutch member coaxially disposed with said shaft, said driving clutch member having one end and an opposite end, said one end portion having axially extending dentil clutch teeth, said opposite end being slidably mounted on said helical splines of the sleeve member;

an annular driven clutch member slidably mounted on said first outer diameter of the sleeve member and interposed said pinion gear and said driving clutch member, said annular driven clutch member having a first end secured to said pinion gear, and a second end opposite said first end, said second end having axially extending dentil clutch teeth to engage said clutch teeth on said driving member, said clutch teeth on said driving and driven clutch members further having inclined complimentary mutually engageable inclined teeth for transmitting torque between said driving and driven clutch members in one direction of relative rotation; and

means, mounted on said first outer diameter on said sleeve and interposed said driving clutch member and said driven clutch member, for centrifugally separating said driving member in a direction away from said driven member when said driven member rotates above a predetermined speed, said centrifugal separating means further comprising:

an annular ring member abutting said driving clutch member, said annular ring member having an inner radially inclined surface;

an annular retainer member secured to said driven clutch member and mounted adjacent said annular ring member, said annular retainer member having a plurality of recesses formed therein;

a plurality of spherical members annularly disposed in said recesses of said annular retainer member whereby said spherical members move radially in a direction outward from said shaft to move against said inner inclined surface on said annular ring member to cause said driving clutch member to move in a direction away from said driven clutch member and to separate and disengage said clutch teeth on the driving clutch from said clutch teeth on the driven clutch member; and

a ring member mounted to said annular retainer member for guiding said plurality of spherical members within said annular retainer member and for preventing said spherical members from moving axially within said annular retainer member.

4,322,986

VARIABLE RATIO RACK AND PINION GEAR

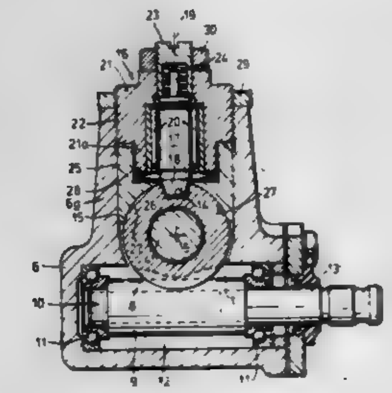
Frederick J. Adams, Clevedon, and Philip A. Downing, Bristol, both of England, assignors to Cam Gears Limited, Hertfordshire, England

Filed Nov. 19, 1979, Ser. No. 95,451

Claims priority, application United Kingdom, Nov. 27, 1978, 46122/78; May 31, 1979, 18997/79

Int. Cl.³ F16H *27/02, 29/20, 1/04*

U.S. Cl. 74—89.18 **18 Claims**



1. A variable ratio rack and pinion gear comprising a housing, a rack member displaceable relative to the housing, a pinion mounted in the housing for rotation about its axis and having teeth engaging with rack teeth on the rack member to displace the rack member upon rotation of the pinion, means for rotating said rack member during displacement of said rack member, said means comprising a non-rectilinear track associated with said rack member and extending in the direction of displacement of the rack and a track follower engaging said track during displacement of said rack member, the reaction between said track and said track follower imparting rotation to said rack member to vary the ratio of the gear, said housing having a portion arranged diametrically opposite to the position of engagement between the rack teeth and the pinion teeth, a support assembly located in said portion of said housing for supporting the rack member with its rack teeth in engagement with the pinion teeth, said support assembly comprising straddle means for restraining displacement of the rack member relative to the housing in opposite directions substantially parallel to the axis about which the pinion rotates, said straddle means having spaced surfaces slidably engaging said rack member at locations to restrain movement thereof in said opposite directions, said straddle means defining a cavity, said track follower at least in part being located in said cavity defined by said straddle means, and means for preventing movement of said straddle means longitudinally with said rack member.

4,322,987

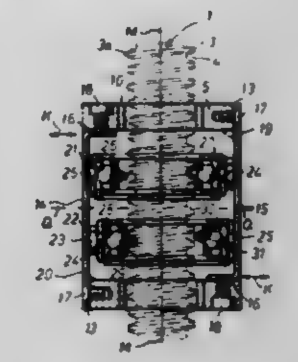
SCREW DRIVE

Robert Gürtner, Freiherr vom Stein Strasse 8, 6308, Butzbach Hessen, Fed. Rep. of Germany

Filed Mar. 13, 1980, Ser. No. 129,994

Int. Cl.³ F16H *1/18, 27/02*

U.S. Cl. 74—424.8 R **10 Claims**



1. A screw drive, which comprises in combination:

a threaded spindle;

a frame surrounding at least a portion of said spindle and including resilient parts;

a head plate;

a base plate, said spindle being adapted to pass through said head and base plates;

at least one collar bearing supported by said resilient frame parts, arranged eccentrically with respect to the axis of said spindle, and including a radially inner ring provided with an annular bead for engaging the thread of said spindle, said at least one collar bearing being pivotal about an axis located in the direction of the eccentricity of said bearing to said spindle axis; and

at least two leaf springs supported by said frame and forming at least a portion of said resilient frame parts, said at least one collar bearing surrounding a portion of said spindle and being journalled in said leaf springs at right angles to said spindle axis, the leaf springs being connected with the head and the base plates and the collar bearings being laterally displaceable at right angles to said spindle.

4,322,988

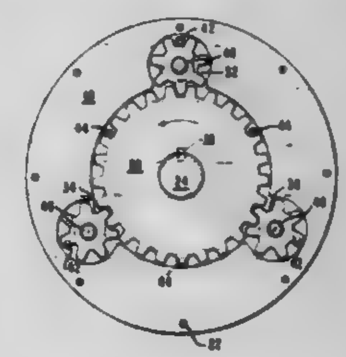
FLUID BRAKED PLANETARY TRANSMISSION

Charles S. Hill, 111 Foster Ave., Olney, Ill. 62450

Filed Feb. 5, 1980, Ser. No. 118,744

Int. Cl.³ F16H *3/44, 57/10;* **F16D** *31/04*

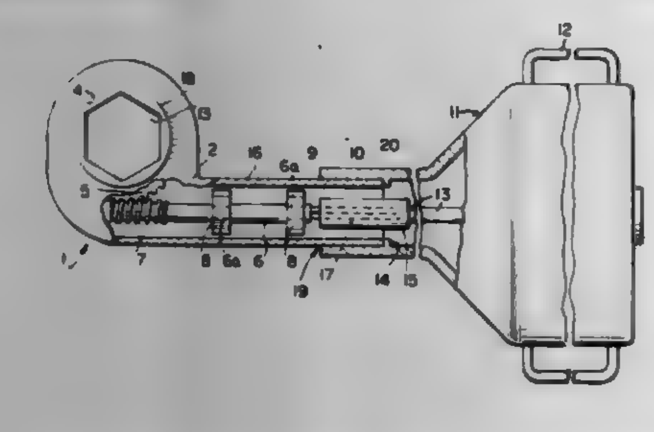
U.S. Cl. 74—774 **6 Claims**



1. A fluid braked planetary transmission comprising

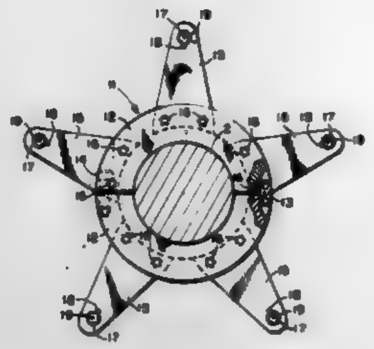
a housing,
rotary coupling means attached to the housing,
a sun gear rotatably supported within the housing,
a shaft attached to the sun gear,
a plurality of planet pinions rotatably supported within the housing in mesh with the sun gear whereby the pinions tend to rotate on their axes as the shaft rotates with respect to the housing,
hydraulic brake means for resisting rotation of the pinions whereby torque is transferred between the shaft and the housing,
means for recovering mechanical energy from the hydraulic brake means,
a gearset carrier that closely envelops the sun gear and the pinions to confine gaps between the teeth of both the sun gear and the pinions,
means for filling the gaps with hydraulic fluid,
the housing having an outlet port adjacent each pinion positioned so as to receive hydraulic fluid displaced from the gaps by meshing of the pinions with the sun gear whereby each pinion may act as a hydraulic pump,
the hydraulic brake means restricting flow from the pumps to create back pressure that resists rotation of the pinions,
wherein the means for recovering mechanical energy includes at least one positive displacement hydraulic motor in series with the pumps,
wherein the housing defines an inlet port adjacent the unmeshing junction of at least one of the pinions whereby each pinion having an inlet port acts as a hydraulic motor, and
wherein the number of pinions acting as hydraulic motors is less than the number of pinions acting as hydraulic pumps.

4,322,989
POWER-OPERATED GEAR-DRIVEN BOX WRENCH
Joseph J. Garolis, 1114 73rd St., North Bergen, N.J. 07047
Continuation-in-part of Ser. No. 864,838, Dec. 27, 1977, abandoned. This application Sep. 17, 1979, Ser. No. 75,960
Int. Cl.³ B25B *17/00*
U.S. Cl. 81—57.13 **4 Claims**



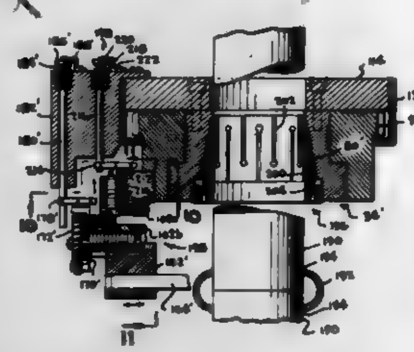
1. Power-operated gear-driven box wrench comprising an encased source of rotational power engaging one end of a first rotatable drive shaft, the other end of said first shaft bearing a first axial coupling member and being encircled by a first rigid coupling collar attached firmly to said power source case and a separate tool holder having a rigid housing retaining a rotatable work engaging gear ring tool and a second rotatable drive shaft, one end of said second shaft engaging said tool through a drive gear and the other end bearing a second axial coupling member and being encircled by a rigid second coupling collar attached firmly to said housing, said first and second axial coupling members being slideably engageable, said first and second coupling collars being slideably engageable, one said axial coupling member and one said coupling collar being sockets having openings with irregular radial dimensions and the other said axial coupling member and the other said coupling collar being mating plugs.

4,322,990
DEVICE FOR SETTING END WORKING TOOLS OF MULTIPLE SPINDLE AUTOMATIC BAR MACHINES
Milton L. Benjamin; Wilbur N. Miles, and Samuel Ecker, all of Chagrin Falls, Ohio, assignors to Erikson Tool Company, Solon, Ohio
Filed Mar. 10, 1980, Ser. No. 128,909
Int. Cl.³ B23B *25/06;* **B27G** *23/00*
U.S. Cl. 82—3 **2 Claims**



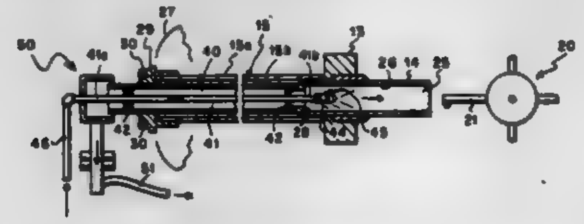
1. In a multiple spindle automatic machine having a spindle drum face, a spindle carrier extension, and an end cutting tool slide in which end cutting tools are axially adjustable to predetermined distances from said spindle drum face, the combination therewith of a device for facilitating such adjustment of said end cutting tools; said device comprising a split-clamp star wheel detachably clamped in a predetermined axial and angularly oriented position on said spindle carrier extension with a locating face thereof coinciding with said spindle drum face and with threaded holes at the points thereof coaxially aligned with the axes of the respective spindles and end cutting tools; and axially pre-adjusted screws in said holes extending axially toward the respective end cutting tools and having end surfaces spaced such predetermined distances from said coinciding locating and spindle drum faces for axial adjustment of said end cutting tools into abutting engagement with the respective end surfaces of said screws; said device, upon adjustment of said end cutting tools as aforesaid, being detached from said spindle carrier extension.

4,322,991
CANOPY CUTTING DEVICE
William C. Feamster, III, 4013 Nina Dr., Chesapeake, Va. 23321
Division of Ser. No. 884,245, Mar. 7, 1978, Pat. No. 4,236,428. This application Mar. 7, 1980, Ser. No. 128,370
Int. Cl.³ B23B *3/26*
U.S. Cl. 82—4 R **9 Claims**



1. A canopy cutting device for machining canopies and the like in constricted spaces, said device comprising a housing including a base plate, a bearing mounted on said housing and having an axis, means for retaining the axis of said bearing in a desired position, a ring gear mounted on said bearing for rotation about said bearing, a cutting tool mounted on and externally of said ring gear, a pinion gear mounted for rotation on said housing and engageable with teeth extending about the outer periphery of said ring gear, means for driving said pinion gear and means for advancing said cutting tool along a line parallel to said axis, means for advancing said cutting tool along a line perpendicular to said axis during rotation of the ring gear thereby permitting removal of a canopy or the like, wherein said means for advancing said cutting tool includes a cutting tool holder slidably mounted on the ring gear for axial and radial reciprocative movement and supporting the cutting tool, feed screw means for moving said cutting tool holder, indexing wheel means coupled to the feed screw means and extending outwardly beyond the perimeter of the ring gear and carried in a circular path about the axis during rotation of the ring gear and feed pin means positionable in said circular path of movement of the indexing wheel means to intercept and rotate the indexing wheel means through a selected increment for driving the feed screw means to advance the cutting tool holder through one step.

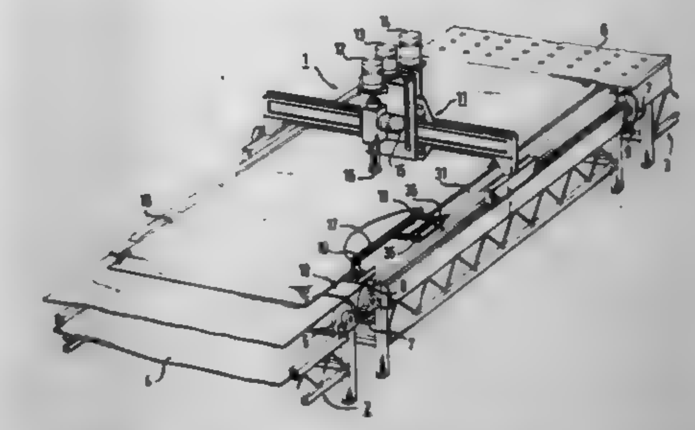
4,322,992
CHIP WASHING SYSTEM
Gerard J. Remillard, Lewisville; Frank Cruz, Sr., Dallas; Daniel W. Devoss, Jr., Mansfield, and Truman A. Miller, Lewisville, all of Tex., assignors to Otis Engineering Corporation, Dallas, Tex.
Filed May 2, 1980, Ser. No. 145,894
Int. Cl.³ B23B *3/36, 51/06*
U.S. Cl. 82—34 R **9 Claims**



1. A chip washing system for a lathe having a spindle, a chuck for holding a workpiece while being rotated by the spindle, and a longitudinal bore extending through the spindle, comprising:
a. a conduit disposed within the longitudinal bore of the spindle;
b. the conduit having one end extending from the spindle exterior to the lathe and the other end extending from the spindle into a longitudinal flow passage defined partially by the inside diameter of the workpiece;
c. means for preventing the conduit from rotating as the spindle rotates; and
d. means for discharging fluid into the one end of the conduit and out the other end of the conduit.

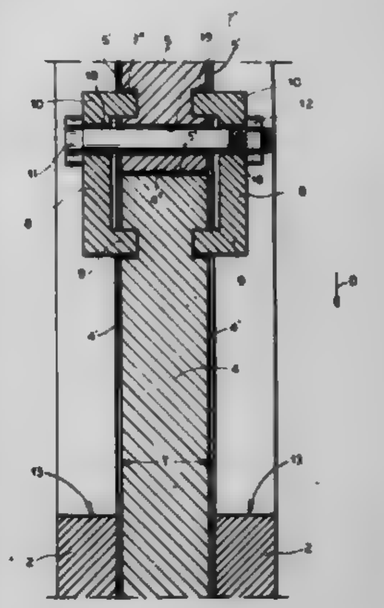
4,322,993
ARRANGEMENT IN A CUTTING APPARATUS FOR ENGAGING AND RETAINING A WEB-LIKE MATERIAL, PARTICULARLY SUPERPOSED MATERIAL WEBS
Günter O. Stumpf, Höhenweg 13, 7421 Mehrstetten, Kr. Münsingen, Fed. Rep. of Germany
Filed Mar. 6, 1980, Ser. No. 127,847
Claims priority, application Fed. Rep. of Germany, Mar. 6, 1979, 2908701
Int. Cl.³ D06H *7/24*
U.S. Cl. 83—422 **11 Claims**

1. In an arrangement for engaging and retaining a web-like material, particularly a plurality of superposed webs of cloth; a substantially air-impermeable foil covering the uppermost web of cloth, said arrangement being for a cutting-out machine adapted to be positioned intermediate a material infeed table and material take-off means; an endless bristle band, having an underlying bristle support carrying projection bristles, movable in the material-conveying direction of said cutting out machine; and means, coacting with a vacuum generator, for producing a suction pressure between the bristles of said bristle band acting on said web material; characterized in that the bristle band (10), up to that portion on which the webs of cloth (17) are located, is encompassed by an encompassing wall structure (27,28,31), with the encompassing wall structure (27,28,31) being sealed by sealing means positioned laterally along the side edges of the bristle support (25) for the bristle



band (10) along said material-conveying direction, and that the space defined between the encompassing wall structure (27,28,31) within which the bristle band moves is connected to a vacuum generator.

4,322,994
SHEAR HAVING U-SHAPED CLIPS CONNECTING DRIVE AND WORK PLATES
Richard Muhr, Attendorn, and Karl-Heinz Schulte, Lennestadt, both of Fed. Rep. of Germany, assignors to Muhr und Bender, Attendorn, Fed. Rep. of Germany
Filed Oct. 3, 1980, Ser. No. 193,666
Claims priority, application Fed. Rep. of Germany, Oct. 6, 1979, 2940635
Int. Cl.³ B23D *23/00*
U.S. Cl. 83—616 **7 Claims**



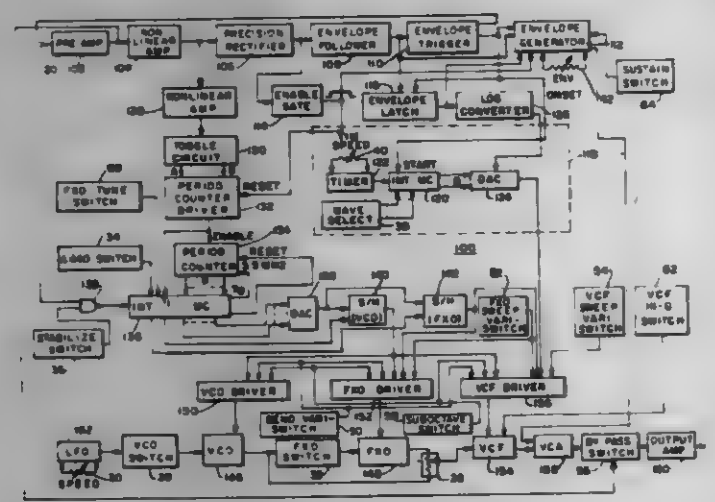
1. A profile-steel shear comprising:
a pair of relatively fixed, spaced-apart, and parallel frame plates;
a drive plate between and displaceable relative to said frame plates in a direction perpendicular thereto, said drive plate having a pair of opposite faces directed perpendicularly to said direction at said frame plates and an end edge generally perpendicular to said direction and to said frame plates, said drive plate being formed on each of said faces with a respective groove adjacent and generally parallel to said edge;
means including an actuator for displacing said drive plate in said direction relative to said frame plates;
a work plate between and displaceable relative to said frame plates in said direction, said work plate having a pair of opposite faces directed perpendicularly to said direction

at said frame plates and an end edge generally parallel to and confronting said end edge of said drive plate, said work plate being formed on each of its said faces with a respective groove adjacent and generally parallel to it said end edge;

respective rigid U-shaped elements each having one leg engaged in the respective groove of said drive plate and another leg engaged in the respective groove of the work plate, said legs being spaced apart in said direction so that said end edges abut when said legs are engaged in the respective grooves; and

means for releasably retaining said elements on said work and drive plates with said legs in the respective grooves.

4,322,995
MUSIC SYNTHESIZER
Donald L. Tavel, 233 W. Westfield Blvd., Indianapolis, Ind. [illegible]
Continuation of Ser. No. 46,198, Jun. 7, 1979, abandoned. This application Jan. 19, 1981, Ser. No. 226,196
Int. Cl.[3] G10H *1/055, 1/12*
U.S. Cl. 84—1.19 3 Claims



1. In a music synthesizer responsive to an input signal defining a musical note including means to generate a frequency signal and low pass filter means to which said frequency signal is applied, the improvement comprising:

feedback means, including switch means, for coupling the output of said filter means to the input of said filter means through a first lumped fixed resistance whenever said switch means is in one state and through a second, substantially larger, resistance whenever said switch means is in said second state;

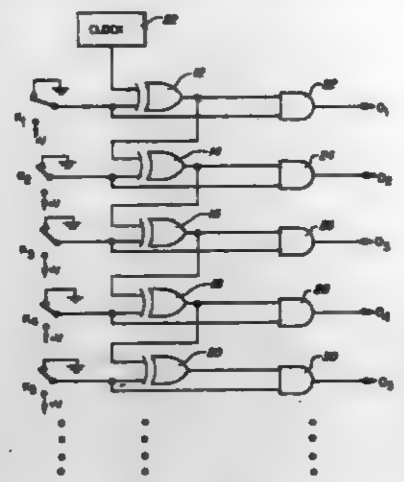
said switch means including latching means and first and second switches, said latching means changing between two states in response to each operation of said first switch and said second switch being closed each time said latching means is in one state and open each time said latching means in the other state, said second switch being connected serially with said first resistance and said first switch and first resistance being connected in parallel with said second resistance.

4,322,996
ALTERNATING REPEAT KEYING SIGNAL GENERATOR
William Wangard, Melrose Park, and David Starkey, Oak Park, both of Ill., assignors to Norlin Industries, Inc., White Plains, N.Y.
Filed Apr. 16, 1980, Ser. No. 140,802
Int. Cl.[3] G10H *1/30*
U.S. Cl. 84—1.24 12 Claims

1. In an electronic musical instrument having a plurality of playing keys and keying means associable with each of the keys, apparatus for producing alternating repeat keying signals comprising:

means for generating a clock signal;

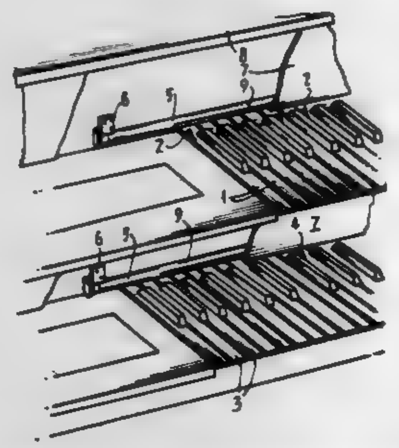
logic means responsive to said keys and to said clock signal for producing an alternating sequence of logic signals corresponding to each of said keys, the phase of the sequence corresponding to each undepressed key being the



same as the phase of the sequence corresponding to the previous key and the phase of the sequence corresponding to each depressed key being opposite that of the phase of the sequence corresponding to the previous key; and

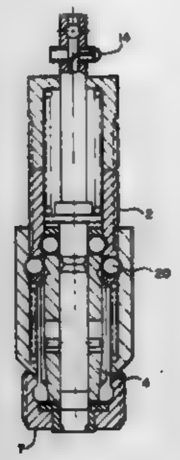
gate means for coupling a keying signal to the keying means associated with a depressed key in response to the logic signals of the corresponding sequence assuming a predetermined state.

4,322,997
KEYBOARD
Lawrence G. Anstis, Albury, Australia, assignor to Dorothy Isobel Anstis, New South Wales, Australia, a part interest
Filed Mar. 28, 1980, Ser. No. 134,926
Claims priority, application Australia, Mar. 30, 1979, PD8255
Int. Cl.[3] G09B *15/08;* G10C *3/12*
U.S. Cl. 84—479 A 3 Claims



1. A keyboard for a musical instrument comprising a plurality of keys, at least some of said keys having indicia at the exposed surface of the keys, said indicia being formed from a material which becomes visible when exposed to electromagnetic radiation emitted by an illuminating device arranged to direct said radiation onto at least that portion of the keys having said indicia, said indicia being applied to the exposed surface of the keys in an ink which is sensitive to ultra-violet radiation, said illuminating device comprising a low power actinic lamp secured to the instrument in overlying relationship with said keys to direct ultra-violet radiation onto said indicia.

4,322,998
INTEGRAL STORE SUSPENSION AND COMMUNICATION DEVICE
Steven E. Fowler; George N. Hennings; Joseph E. Hibbs; Stephen L. Redmond, and Richard M. Swenson, all of Ridgecrest, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Oct. 26, 1979, Ser. No. 88,494
Int. Cl.[3] F41F *5/02*
U.S. Cl. 89—1.5 D 7 Claims



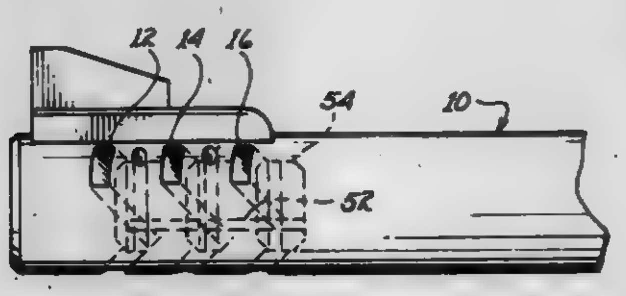
1. An integral store suspension and communication device, ISSCD, comprising:

an internal mechanical suspension means for the suspension of a store;

power transmitting means for supplying and transferring power to and from said store and including separation responsive contacts which charge electrical characteristics to permit sensing store separation; and

information transmitting means for receiving and transferring data to and from said store.

4,322,999
STABILIZING VENT SYSTEM FOR GUN BARRELS
Thomas M. Aston, 928 N. Third, Cottonwood, Ariz. 86326
Filed Aug. 13, 1979, Ser. No. 66,290
Int. Cl.[3] F41C *21/18*
U.S. Cl. 89—14 C 35 Claims



1. A stabilizing vent system incorporated in and as part of a barrel of a firearm for venting the barrel on discharge of the firearm, said vent system comprising in combination:

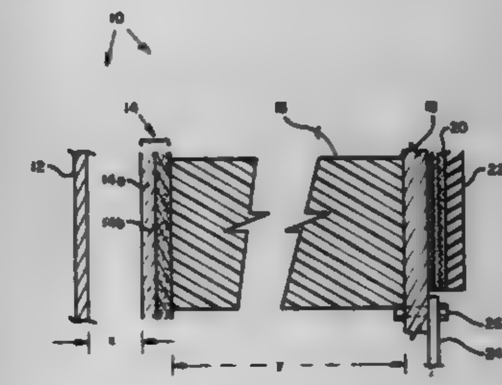
(a) three sets of vents disposed within the barrel and about the longitudinal axis of the barrel for balancing the force of the dissipating propellant gases in the lateral plane of the barrel each said set of vents including at least two vents in general alignment with each other along the longitudinal axis of the barrel;

(b) an equalizing chamber disposed within the barrel for interconnecting a vent of each set of vents and for equalizing the pressures of the propellant gases at the inlets of said vents, said equalizing chamber including an annular groove disposed in the bore of the barrel;

(c) at least one flute extending parallel with the longitudinal axis of the barrel, each said flute extending radially outwardly from the bore of the barrel to a depth greater than that of any rifling which may exist in the barrel; and

(d) thrust orifices distinct from the vents of said sets of vents and disposed in the upper half of the barrel for dissipating propellant gases generally upwardly.

4,323,000
ARMOR FABRICATION
Dwight L. Dennis, China Lake, Calif., and William A. Mannschreck, Fredericksburg, Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Jun. 9, 1977, Ser. No. 806,021
Int. Cl.[3] F41H *5/04*
U.S. Cl. 89—36 A 16 Claims



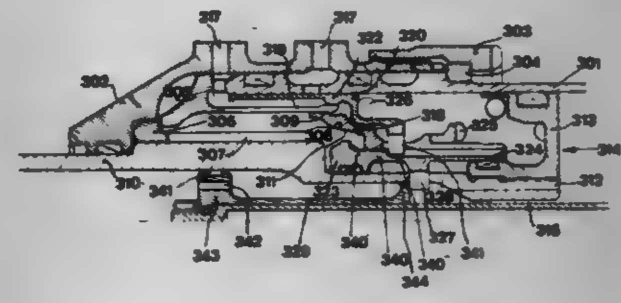
1. A defensive armor system for protection of vital areas of a vehicle or other closed volume comprising:

a first armor including a boron carbide layer and a polyester glass roving mat;

a second armor spaced from said first armor and including an inner layer of elastomeric sheet rubber, an aluminum plate, and about ten layers of ballistic webbing; and

urethane filler material located between said first and second armor.

4,323,001
OPERATING AND BRACING JACK HAVING AN INTERNAL LOCKING MECHANISM
Jean Masclet, Paris, and Jacques Veaux, Chatillon, both of France, assignors to Messier-Hispano-Bugatti, Montrouge, France
Filed Aug. 21, 1978, Ser. No. 935,575
Claims priority, application France, Sep. 8, 1977, 77 27240; Oct. 20, 1977, 77 31564
Int. Cl.[3] F15B *15/22*
U.S. Cl. 91—25 12 Claims



1. A jack, comprising

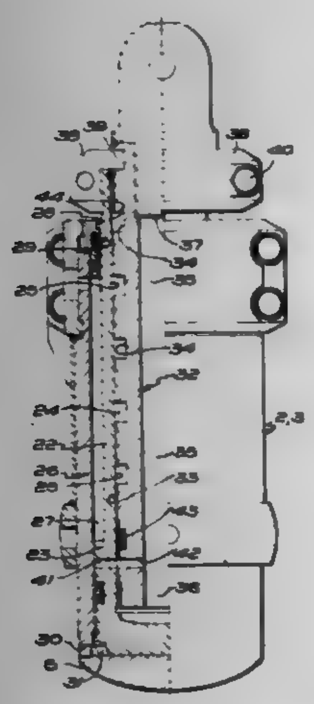
a cylinder;

a jack bar slidable in said cylinder from a bar extended position to a bar retracted position, said bar including a principal step;

a principal longitudinal catch associated with said jack bar and adapted to engage said principal step in the bar extended position, said catch having a free extremity forming a sloping face;

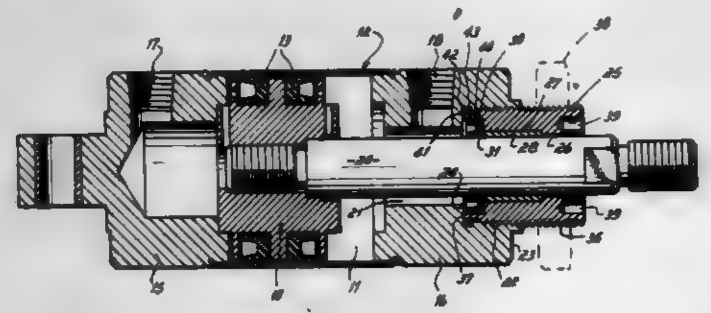
principal piston locking means cooperating with, said jack bar, said principal piston locking means including a bearing surface complementary to said sloping face and cooperating therewith to urge said principal catch into engagement with said principal step;
cooperating locking and releasing means between said cylinder and said principal locking piston means for urging said principal longitudinal catch into engagement with said principal step for holding said jack bar in the bar extended position and for permitting said principal longitudinal catch to become disengaged from said principal step and urging said jack bar to slide to its bar retracted position;
said locking and releasing means comprises:
an auxiliary step forming part of said principal piston locking means;
auxiliary piston locking means associated with said principal piston locking means and contained within said cylinder;
an auxiliary resilient longitudinal catch connected with said cylinder and operatively associated with said auxiliary piston locking means; and,
locking head means secured to said auxiliary piston means cooperating with said auxiliary resilient longitudinal catch for holding thereof in engagement with said auxiliary step in the bar extended position.

4,323,002
HYDRAULIC EQUIPMENT
Malcolm Wake, Wakefield, England, assignor to Fletcher Sutcliffe Wild Limited, West Yorkshire, England
Continuation of Ser. No. 919,291, Jun. 26, 1978, abandoned. This application May 16, 1980, Ser. No. 150,900
Claims priority, application United Kingdom, Aug. 10, 1977, 33507/77
Int. Cl.[3] F15B *15/22, 15/26*
U.S. Cl. 91—25 4 Claims



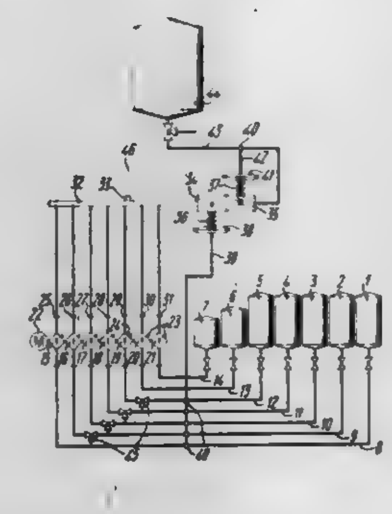
1. A hydraulically actuable piston and cylinder unit comprising a housing forming a cylinder, a piston rod having a hollow interior defined by an internal periphery, a piston head provided on said piston rod and operatively positioned in said cylinder, an outer end of said piston rod located remotely from said piston head, an elongate extension piece having a circular outer periphery, slidably housed, at least partially in a chamber formed by said hollow interior in said piston rod, means to connect said extension piece to said piston rod at an outer end of said piston rod remote from said piston head, said means to mechanically connect said extension piece to said piston rod includes a plurality of outer peripheral grooves axially spaced along said extension piece, a collar removably secured to the outer end of said piston rod, an inwardly projecting flange on said collar for engaging a selected peripheral groove, thereby securely connecting and locking said extension piece in the extended position against movement in either direction, at least one fluid passageway communicating between an outer surface of said piston head and said chamber of said piston rod, and a fluid seal carried by said extension piece and sealing in said chamber against said internal periphery of said piston rod, the arrangement being such that said seal always lies between said fluid passageway and said outer end of said piston rod, whereby said extension piece may be extended to effectively lengthen said piston rod.

4,323,003
FLUID CYLINDER WITH REPLACEABLE ROD SEAL AND GUIDE
William L. Clippard, III, Cincinnati, Ohio, assignor to Clippard Instrument Laboratory, Inc., Cincinnati, Ohio
Filed Mar. 24, 1980, Ser. No. 132,798
Int. Cl.[3] F01B *31/00;* F16J *15/18*
U.S. Cl. 92—87 7 Claims



1. In a fluid cylinder wherein a piston is pressure operated within a chamber and seal and guide bearing means are provided to seal and guide the movement of a piston rod extending from the piston through an axial bore in a cylinder head at the end of the chamber,
the improvement comprising,
a nose removably mounted in the bore of said head, said nose having means for removing it from said bore through the outer end thereof while the head is mounted to the body,
the nose having an axial opening in which is mounted a guide bearing for said rod, said bearing being mountable in said nose, when the nose is removed from the head, only from the inner end of the nose,
said nose also mounting a rod seal which is received and mounted in said opening axially inward of the bearing,
said nose projecting axially outwardly from an end face of the head,
said bearing at least in part extending to an axial position which is outwardly of the end face of the head, and
means providing a pressure seal between said nose and said cylinder head, wherein said nose has a cylindrical outer surface adjacent its inner end, and
wherein said head presents a peripheral groove in said bore and a ring seal is seated in said groove, the outer surface of said nose engaging and forming a seal with said ring seal.

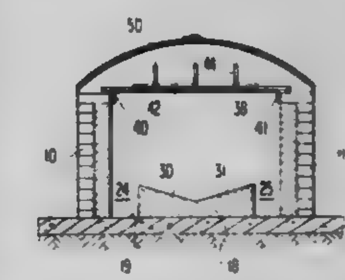
4,323,004
INSTALLATION FOR PREPARING MULTICOMPONENT LIQUID MIXES IN PRODUCTION OF STRONG ALCOHOLIC LIQUORS
Alexandr I. Sereda, ulitsa Dzerzhinskogo, 34, kv. 8, Yalta Krymskoi oblasti; Ivan F. Nyagu, ulitsa Lenina, 39, kv. 33, Beltsy Moldavskoi SSR; Igor N. Smirnov, ulitsa Narodnogo opolchenia, 20, kv. 363, Moscow; Grigory I. Russu, ulitsa Lenina, 1, kv. 63, and Izrail L. Yasinovsky, ulitsa Ostrovskogo, 46, kv. 12, both of Beltsy Moldavskoi SSR, all of U.S.S.R.
Filed Jun. 2, 1980, Ser. No. 155,608
Int. Cl.[3] B01F *15/04;* B67D *5/08*
U.S. Cl. 99—275 4 Claims



1. An installation for the preparation of multicomponent liquid mixes in the production of alcoholic liquors, comprising:
a plurality of feed tanks adapted to contain respective liquid components;
dispensing pump means including a plurality of dispensing pumps for feeding respective ones of the liquid components;
a plurality of suction pipings, each of said suction pipings communicating between a respective feed tank and a respective one of said dispensing pumps;
header means for collecting said liquid components;
a plurality of delivery pipings, each of said delivery pipings communicating between a respective dispensing pump and said header means;
a receiving tank adapted to receive the mixed liquid components;
a throttling mixer including normally closed hydraulically operated membrane valves arranged substantially at the outlet of said header means, each of said membrane valves being provided with a respective membrane actuator having an above-membrane chamber;
a common delivery pipe communicating between the outlet of said throttling mixer and said receiving tank;
pressure pickups installed on at least some of said suction pipings and on said common delivery pipe and an alcohol content pickup installed on said header means; and
means communicating said above-membrane chambers of said membrane actuators with said suction pipings and common delivery pipe, respectively.

4,323,005
UNIFORM BARBEQUE COOKING OF LARGE MEAT SECTIONS
Larry E. Sconyers, 2115 Windsor Spring Rd., Augusta, Ga. 30906
Filed Nov. 15, 1979, Ser. No. 94,748
Int. Cl.[3] A47J *37/04*
U.S. Cl. 99—400 13 Claims

1. Structure for providing uniformity in barbeque cooking of large sections of meat such as whole hams supported so as to be free of turning or attendant requirements over an extended cooking cycle and to provide for collection of renderings free of contamination of or by a source of heat, comprising
a pit structure with vertically oriented wall means extending upwardly from a pit floor defining an open pit free of flow obstructing compartmentation in the vertical direction,
such pit structure being generally rectangular in horizontal cross-section and having elongated side walls,
firebox heat source means located contiguous to pit floor level,
rendering collection surface means contiguous to pit floor level, such surface being dimensionally extended horizontally to provide for run-off of renderings from meat sections being barbequed,
such firebox heat source means comprising a narrow-width elongated firebox located contiguous to each such side wall with the rendering collective surface means being located intermediate fireboxes,
drain means communicating with such rendering collection surface means and including passage means for fluids extending between the interior and exterior of the pit structure,
rack means including vertically oriented meat support prongs, the latter being predeterminedly spaced and distributed horizontally,

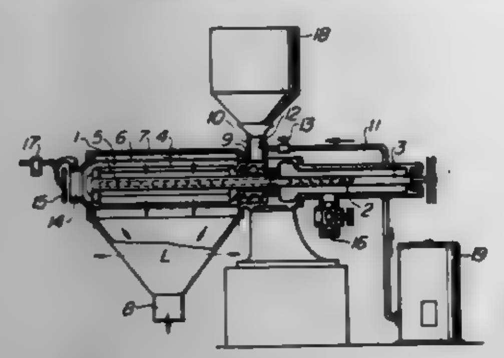


such rack means presenting an open structure to facilitate vertical movement of heated gases and passage of radiant heat within the pit structure,
rack support means for supporting the rack means within such open pit at a level above such heat source means, such rack support means providing for substantially unobstructed passage of heated gases and radiant heat within the pit structure,
such predeterminedly spaced distribution of meat support prongs locating such prongs for vertically oriented support of meat sections within an area defined by a vertical projection of the rendering collection surface means so as to deposit renderings on such rendering collection surface means, and
pit cover means having a configuration extending over and above meat sections supported on such upright prongs,
such cover means spanning the vertically oriented wall means of the pit structure to confine heat within such open pit and substantially limit escape of heated gases during cooking,
such cover means being movable to provide access to supported meat sections.

4,323,006
WHITENING APPARATUS FOR SUPER-GLOSSY WHITE RICE
Toshihiko Satake, Higashihiroshima, Japan, assignor to Satake Engineering Co., Ltd., Tokyo, Japan
Filed Jul. 28, 1977, Ser. No. 819,812
Claims priority, application Japan, Aug. 9, 1976, 51/95190
Int. Cl.[3] B02B *1/04, 3/12*
U.S. Cl. 99—519 5 Claims

1. A whitening apparatus for super-glossy white rice comprising a perforated bran removing and whitening cylinder, a whitening roll rotatably mounted in said cylinder and extending generally coaxially therewith so that said cylinder and said roll define a whitening chamber therebetween, means for

rotating said roll, means for introducing rice into said chamber at a first end of said cylinder, means for removing rice from said chamber at a second end of said cylinder opposite from said first end while maintaining a pressure on the rice within



said chamber, and means for moistening the rice to be whitened, the shortest length of said cylinder being more than twice but less than twenty times the largest diameter of said cylinder.

4,323,007

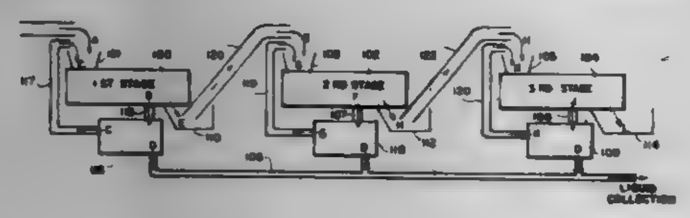
METHOD OF EXTRACTION OF JUICE FROM FRUIT

Arthur J. Hunt, and Arthur J. Hunt, Jr., both of 332 N. Halifax Dr., Ormond Beach, Fla. 32704

Division of Ser. No. 69,174, Aug. 23, 1979, abandoned. This application Feb. 23, 1981, Ser. No. 237,378

Int. Cl.³ B30B *9/16*

U.S. Cl. 100—37 **3 Claims**



1. A method of extracting clear juice from apples or the like comprising the steps of:

(a) introducing the fruit into the input of a first screw type press having a gradual continuous slope of the body of the feed screw;

(b) gently compressing the fruit in the screw type press to express juice and solids from the fruit;

(c) filtering the expressed juice and solids;

(d) separating and collecting the clear juice from the expressed solids; and

(e) reintroducing the separated expressed solids into the input of the screw type press.

4,323,008

VERTICAL BALING MACHINE FOR WASTE MATERIAL

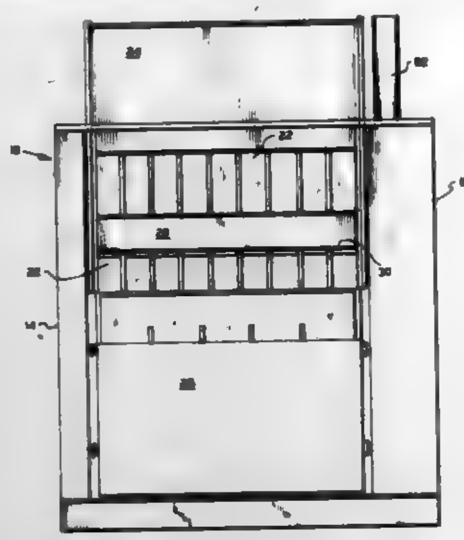
Frank C. Tea, #192 N. County Rd. 312, Bellevue, Ohio 44811

Filed Oct. 14, 1980, Ser. No. 196,695

Int. Cl.³ B30B *1/32*

U.S. Cl. 100—214 **3 Claims**

1. A baling machine comprising a cabinet having side walls, a rear wall, and an open front adapted to be partially closed by movable doors, walls inwardly spaced from said side walls providing closets on opposite sides; a vertically movable pressure platen having guide plates on opposite ends; vertical guide slots in each inwardly spaced wall receiving said guide plates, respectively; fluid pressure means disposed in one closet and operatively connected to said platen; and equalizing means responsive to platen movement to equalize the pressure on both sides of said platen and having parts in each closet, said equalizing means comprising a flexible cable means and sheave



arrangement disposed in said closets with the cable means extending from one closet to the other.

4,323,009

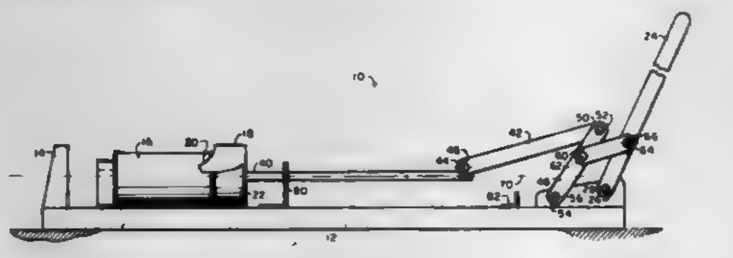
ARTICLE CRUSHING DEVICE

John E. Voigt, 20153 Santa Maria Ave., #21, Castro Valley, Calif. 94546

Filed Sep. 5, 1980, Ser. No. 184,490

Int. Cl.³ B30B *1/04, 9/32*

U.S. Cl. 100—240 **8 Claims**



1. An article crushing apparatus comprising
a base support,
an anvil bracket attached to said base support,
means defining a cylindrical housing having means defining an opening adapted to receive an article to crushed,
a piston disposed in said housing adapted to slidably move in said housing toward and away from said anvil bracket,
an operating handle pivotally connected to said base support, and
means connecting said operating handle to said piston for progressively increasing the ratio of force on said piston to moment-force on said operating handle as said piston approaches said anvil bracket, said last mentioned means comprising,
a first linkage member having one end connected to said piston,
a second linkage member having one end pivotally connected to the end of said first linkage member distal said piston,
a third linkage member having one end pivotally connected to the other end of said second linkage member, the other end of said third linkage member being pivotally connected to said base support, and
a fourth linkage member having one end pivotally connected to said third linkage member and with the other end of said fourth linkage member pivotally connected to said operating handle.

4,323,010

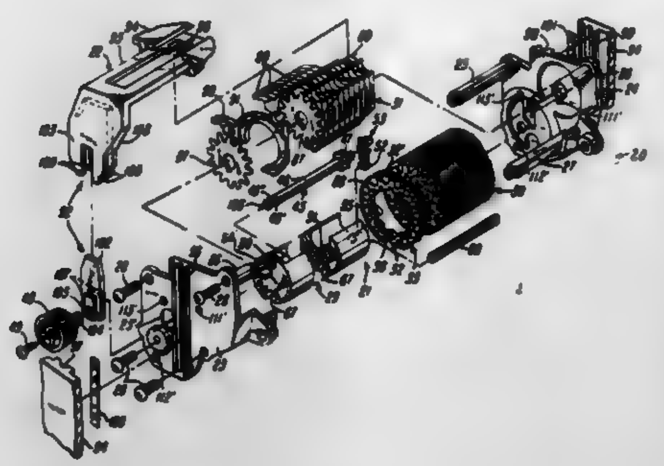
SELECTIVE PRINTING APPARATUS

Paul H. Hamisch, Jr., Franklin, Ohio, assignor to Monarch Marking Systems, Inc., Dayton, Ohio

Filed Nov. 19, 1979, Ser. No. 95,854

Int. Cl.³ B41J *1/22*

U.S. Cl. 101—110 **12 Claims**



1. A print head, comprising: a series of rotatably mounted wheels, a series of different printing elements for each wheel, each wheel having a generally central hole, a shiftable and rotatable selector shaft movable into the wheel holes and selectably engageable with each wheel for advancing a selected printing element to a printing position, a slide slidably mounted in the space within the wheel holes for supporting the selector shaft, and means coupling the slide and the selector shaft providing for shifting movement of the slide together with the selector shaft but enabling rotation of the selector shaft relative to the slide.

4,323,011

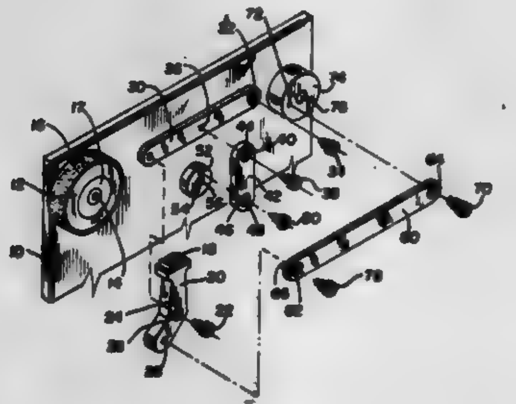
ACTUATING STAMP WITH FREE-TURNING INKING ROLLER

Joel A. Hamilton, 101 Hardenburgh Ave., Demarest, N.J. 07627

Filed Oct. 21, 1980, Ser. No. 199,230

Int. Cl.³ B41F *1/04*

U.S. Cl. 101—305 **12 Claims**



1. Apparatus for applying to a local area and at and with a precise movement an inked stamp reproduction, said apparatus including:

(a) a support means;

(b) a non-powered inking roller rotatably carried on and by a shaft secured to said support, said roller having a periphery adapted to receive, retain and transfer ink to a printing means when brough into contact therewith;

(c) a fourth bar having securing means at both ends thereof and an intermediate mounting means provided by said fourth bar, one end of said fourth bar pivotally mounted to the support means;

(d) a first bar having an extending end and a pivotal mounting means intermediate its ends, said pivotal mounting means attached to the other unsecured end of the fourth bar which is moved by said fourth bar as it is moved around said pivotally secured end, said first bar also having a securing means at the other end of the first bar;

(e) a first eccentric carried by said support means, said eccentric carried by a first shaft and rotated at a given and selected speed;

(f) a second bar having securing and pivoted means formed and provided at each end thereof, one end of said second bar secured to the first eccentric to move in a circular path as established by the eccentric, the other end of said second bar pivotally secured to the end of the first bar;

(g) a second eccentric carried by said support means, said eccentric carried by a second shaft and rotated at a speed that is at least twice the angular speed of the first eccentric;

(h) a third bar having securing and pivoted means formed and provided at each end thereof, one end of said third bar pivotally secured to said second eccentric so as to move in a circular path as established by said eccentric, the other end of said third bar pivotally secured to the intermediate mounting means of said fourth bar;

(i) a stamp having means for securing said stamp to the extending end of said first bar, and

(j) means to advance and move a product in way of said stamp when said stamp is moved by the eccentric toward and to the surface of the product, the movement of the stamp being in a prescribed path as controlled by the two eccentrics, the stamp rapidly and momentarily brought to the product to be marked, the stamp in its travel path also brought to wiping contact of the periphery of the inking roller whereat ink is applied to the stamp and the engagement of the stamp with the roller periphery during inking causing the roller to be inched forward rotationally to present a fresh surface to the stamp when next brought to the inking roller.

4,323,012

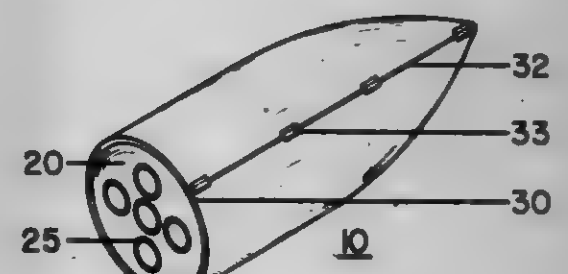
LASER-RESISTANT WARHEAD

George J. Driver, Jr., 2416 S. 10th Ave., Caldwell, Id. 83605

Filed Jan. 27, 1980, Ser. No. 163,638

Int. Cl.³ F42B *13/50*

U.S. Cl. 102—489 **8 Claims**



1. A laser-resistant warhead comprising:
a thermal insulative housing including one or more missile holding tubes; and
an ejectable outer shell of ablative composition encasing said housing.

4,323,013

MOBILE TRACK WORKING MACHINE

Josef Theurer, Vienna, Austria, assignor to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H., Vienna, Austria

Filed Oct. 22, 1979, Ser. No. 87,061

Claims priority, application Austria, Nov. 30, 1978, 8583/78

Int. Cl.³ B61B *29/04*

U.S. Cl. 104—7 B **5 Claims**

1. In a mobile machine for working on a track including two rails rastened to ties, each rail having a head and the rails

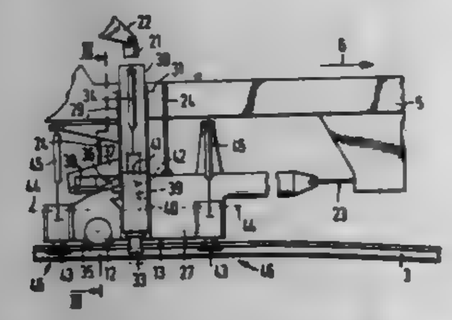
having outsides facing away from each other and insides facing each other in a direction transverse to the track, the machine including a frame and an apparatus for lifting and laterally moving the track in switch areas and open track areas, the apparatus comprising

(a) a tool carrier frame,

(b) power drive means connecting the tool carrier frame to the machine frame for vertically and laterally moving the tool carrier frame in relation to the machine frame,

(c) a single flanged wheel associated with each track rail and supporting the tool carrier frame for mobility on the track,

(1) each flanged wheel having a flange engaging the inside of the associated rail head and serving as a lateral rail



moving element upon lateral moving of the tool carrier frame,

(d) a transversely adjustable gripping hook associated with each flanged wheel and mounted on the tool carrier frame for gripping engagement with the associated track rail from the outside thereof, and

(e) a gripping roller associated with each gripping hook and mounted on the tool carrier frame for grippingly subtending the rail head of the associated track rail from the outside thereof, and for holding the associated track rail during vertical movement of the tool carrier frame,

(1) each flanged wheel being centered between the associated gripping hook and gripping roller in the direction of track elongation.

4,323,014

TIE TAMPER

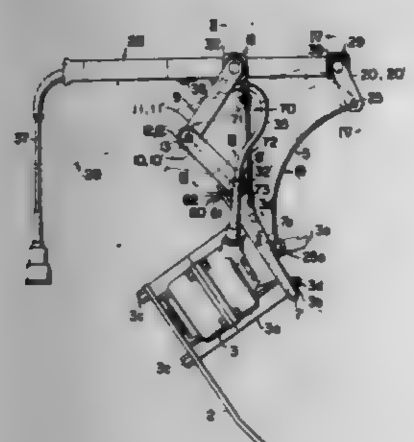
Kazuhide Yamazaki; Shigetoshi Ogawa; Atsushi Suma, all of Tokyo, and Maki Nakajima, Ayase, all of Japan, assignors to Nippon Kokuyu Tetsudo and Kabushiki Kaisha Shibaura Seisakusho, both of Tokyo, Japan

Filed Jul. 24, 1980, Ser. No. 171,814

Claims priority, application Japan, Jan. 17, 1980, 55/3087[U]

Int. Cl.³ B63F 3/02

U.S. Cl. 104—13 6 Claims



1. A tie tamper comprising:

a motor adapted to generate vibration as output;

a beater designed to be thrust at a distal end thereof into ballast gravel and rigidly fixed at its proximal end to the motor to be vibrated thereby;

a handle to be grasped by an operator of the tie tamper;

a link mechanism connecting an intermediate part of the handle to the motor and comprising

a first Neidhart damper secured to the motor and having a non-cylindrical shaft disposed therein,

a second Neidhart damper secured to said intermediate part of the handle and having a non-cylindrical shaft disposed therein,

a first link fixed at one end thereof to the shaft of the first Neidhart damper, and

a second link fixed at one end thereof to the shaft of the second Neidhart damper and pinconnected at the outer end thereof to the other end of the first link,

the first and second links always forming therebetween an angle less than 180 degrees;

a support mechanism connecting one end of the handle to the motor and comprising

a support spring connected at one end thereof to a part of the motor,

a third Neidhart damper, secured to said one end of the handle and having a non-cylindrical shaft disposed therein, and

a third link fixed at one end thereof to the non-cylindrical shaft and connected at the other end thereof to the other end of the support spring; and

a balance weight fixed to said other end of the second link.

4,323,015

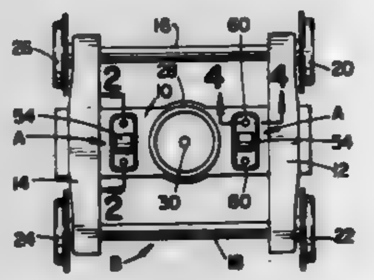
ROLLER SIDE BEARING MOUNTING SYSTEM AND METHOD

George M. Hess, Huron, and James A. Zils, North Royalton, both of Ohio, assignors to Russell, Burdsall & Ward Corporation, Mentor, Ohio

Filed Mar. 31, 1980, Ser. No. 135,480

Int. Cl.³ F16B 5/02, 31/02

U.S. Cl. 105—199 CB 14 Claims



1. An arrangement for mounting a roller side bearing assembly to a rail car truck assembly, said arrangement comprising in combination:

a truck assembly including spaced wheels adapted to rollingly support said rail car on a pair of parallel spaced apart tracks, said assembly including a top surface portion;

a side roller bearing assembly having an elongated generally U-shaped bearing cage including a bottom wall and a pair of spaced apart generally parallel side walls upstanding therefrom, said bottom wall having at least a pair of spaced apart openings extending therethrough in registry with at least a pair of openings in said truck top surface portion, said bearing cage side walls having at least one cylindrical bearing member extending therebetween adapted to supportingly engage an area of said rail car for reducing frictional forces generated during swivel movement between said car and truck assembly;

an elongated threaded fastener extending through each of said pairs of registered bottom wall and top surface portion openings, said fasteners each having a head and an elongated shank threaded along at least the outermost end section thereof wherein said head and shank interface with each other at a distinct fillet area, said head cooperating with said bottom wall and said shank extending through an associated pair of registered bottom wall and top surface portion openings with said threaded outermost end disposed in threaded engagement with a locknut disposed on the underside of said top surface portion, said threaded fasteners being placed in some desired clampload condition within predetermined upper and lower limits as a function of rotating said fasteners to secure threaded advancement thereof into said locknuts, said desired clampload being less than an amount which would cause failure in said bearing cage and greater than an amount which increases the potential for failure in said fasteners when said fasteners are subjected to bending loads resulting from loading of said roller side bearing assembly during rolling travel of said rail car along said track, said fasteners each further including means for limiting the torque applied thereto during fastener rotation into threaded advancement with said locknuts whereby the resultant fastener clamploads may not exceed said upper limit; and,

bearing means interposed between the head of each fastener and said bearing cage bottom wall to facilitate control of frictional forces occurring at said fastener heads during rotation thereof into threaded engagement with said locknuts, said bearing means further protecting the fillet areas of said fasteners from being imbedded by said bearing cage bottom wall at said bottom wall openings at least when said fasteners are subjected to said bending loads.

4,323,016

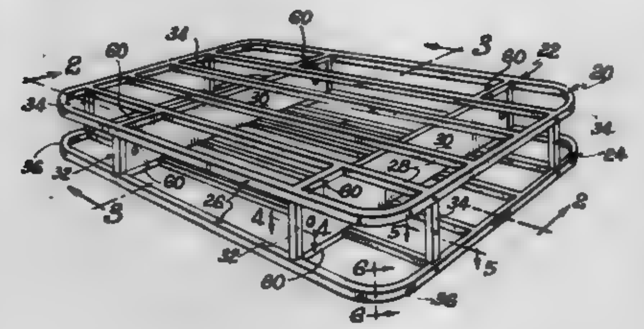
WAREHOUSE PALLET

Richard H. Flesher, 1178 Willits Dr., Corona, Calif. 91720, and Lewis E. Massie, 2218 13th St., Olivenhain, Calif. 92024

Filed Jan. 24, 1980, Ser. No. 114,840

Int. Cl.³ B65D 19/30

U.S. Cl. 108—51.1 13 Claims



1. A warehouse pallet comprising:

first tubular steel members comprising an upper grid platform including:

a tubular steel perimeter of generally rectangular cross section and including a first pair of straight sections defining sides of a rectangular outline and a second pair of straight sections defining ends of the rectangular outline, and

tubular steel stringers of generally rectangular cross section extending parallel to the first pair of straight sections of the perimeter and each welded to each of the second pair of straight sections, one surface of the perimeter and one surface of each of the stringers defining an upwardly facing upper plane;

a lower grid platform comprising a plurality of second tubular steel members of generally rectangular cross section and defining a downwardly facing lower plane parallel to the upper plane, at least spaced-apart areas of the second tubular members of the lower grid platform being aligned with and directly below areas of the first tubular members; and

a plurality of support members located between juxtaposed surfaces of the steel members of both of the platforms to hold the platforms in rigidly spaced relation, the support members including:

tubular steel spacer stanchions of generally rectangular cross section extending perpendicularly to the planes of the platforms in line between and welded to the spaced-apart areas of the second tubular steel members and the areas of the first tubular steel aligned therewith, and

additional tubular steel members of rectangular cross section welded to interior regions of the upper platform and to interior regions of the lower platform directly therebelow, the additional steel members and at least predetermined ones of the stanchions defining passageways below the upper grid platform to receive the prongs of a fork-lift to engage the upper grid platform transversely to the longitudinal direction of the stringers.

4,323,017

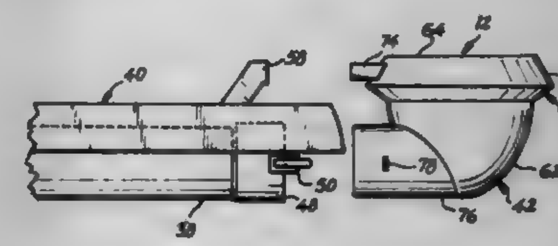
BURNER APPARATUS

Loren A. Harris, Rte. 1, Box 294, Montague, Calif. 96064

Filed Apr. 16, 1980, Ser. No. 140,712

Int. Cl.³ F23K 3/00

U.S. Cl. 110—110 1 Claim



1. Burner apparatus comprising:

an elongate fuel conduit having a metallic and thus heat conductive wall defining a passage for the supply of fuel,

an elongate air conduit extending in the direction of the fuel conduit, defining a passage for the supply of air, the metallic and heat conductive wall of the fuel conduit separating the fuel and air passages whereby they are in heat exchange relationship, the air conduit having an open end and the fuel conduit having an open end and said ends facing the same direction and being adjacent each other,

a burner unit including, as an integral assembly, a receptacle with an interior for holding fuel and an open top, a shell secured to and surrounding the receptacle defining an air chamber extending about the receptacle, and aperture means in said receptacle for venting air from said chamber into the receptacle,

first entrance-defining means on one side of the burner unit, defining an entrance which passes through said shell and communicates with said air chamber, and second entrance-defining means on the same side of the burner unit, defining an entrance which passes through said receptacle and communicates with the interior of the receptacle, the two entrances facing a common direction to one side of said burner unit,

a telescopic fit of said open end of the air conduit with said first entrance-defining means and a telescopic fit of said open end of the fuel conduit with said second entrance-defining means,

releasable means detachably locking the end of at least one conduit to the entrance-defining means with which it is telescopically fitted preventing relative axial displacement, and said air conduit extends along a side of said fuel conduit, said first entrance-defining means includes a collar joined to and projecting outwardly from said shell, said second entrance-defining means includes a collar joined to and projecting outwardly from said receptacle, and the releasable means detachably locks the end of said fuel conduit to the collar which is joined to the receptacle.

4,323,018

METHOD FOR GENERATION OF HOT GAS BY INCINERATION OF COMBUSTILE MATERIAL AND APPARATUS FOR GENERATION OF HOT GAS BY INCINERATION OF COMBUSTIBLE MATERIAL

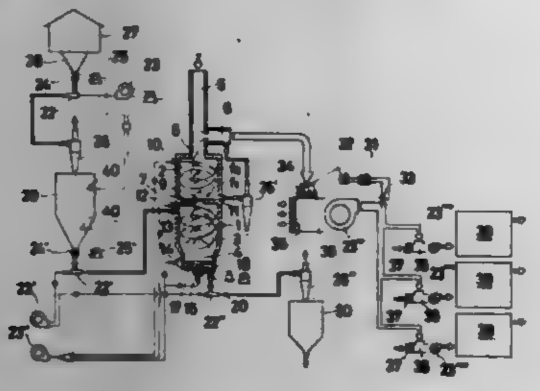
Yoshi Iwasaki, Date, Japan, assignor to Hokkaido Sugar Co., Ltd., Tokyo, Japan

Filed Apr. 14, 1980, Ser. No. 139,649

Claims priority, application Japan, Jun. 15, 1979, 54-74568

Int. Cl.³ F23B *5/04;* F23G *5/00*

U.S. Cl. 110—208 3 Claims



1. A furnace for the incineration of combustible material and the generation of hot gas, which comprises:

a vertical cylindrical furnace having a wall;

a partition wall provided in the center thereof with an aperture and disposed horizontally at one half of the entire height of the furnace so as to divide the interior of the furnace into an upper chamber and a lower chamber,

a stack annexed to the top of the furnace and provided with a side pipe,

a first inlet for air disposed in said wall at the upper end of said upper chamber and positioned so as to open in the direction tangential to said wall of the furnace,

an outlet for dust disposed in said wall at the lower end of the upper chamber and positioned so as to open in the direction tangential to said wall of the furnace and in the same directional sense as that of said first inlet of air,

a second inlet for air and an inlet for combustible material, both disposed in said wall at the upper end of said lower chamber and positioned so as to open in the direction tangential to the wall of the furnace and in the same directional sense as that of said first inlet for air in the upper chamber, and

means for supporting an incandescent layer of ash and an outlet for residue of combustion, both disposed in the bottom section of said lower chamber,

whereby the air and combustible material introduced through said second inlet and said inlet for combustible material form a first spirally descending current of burning material, and whereby a second spirally ascending second current is formed within said first current and passes through said aperture into said upper chamber, and further whereby the air introduced through said first inlet forms a third spirally descending current surrounding said second spirally ascending current in said upper chamber.

4,323,019

METHOD AND APPARATUS FOR PLANTING SEEDLINGS

William H. Haddock, Garner, N.C., assignor to North Carolina State University, Raleigh, N.C.

Filed Dec. 20, 1979, Ser. No. 105,766

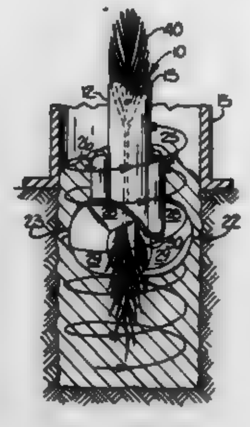
Int. Cl.³ A01C *11/02*

U.S. Cl. 111—3 10 Claims

1. A method of planting tree seedlings or the like in the soil and comprising the steps of

positioning generally vertically with respect to the soil an elongate tube having a cylindrical wall, an open lower end, and at least one radially outwardly extending blade pivotally mounted on an axis extending adjacent to the wall of the tube and in a direction skewed relative to the longitudinal axis of the tube for movement by engagement with the soil between a forward position closing the lower end and rearward position opening the lower end, then

rotating the tube in a forward direction abouts its longitudinal axis and advancing the tube into the soil with the blade at a penetration angle in the range of from about five degrees to about eighty-nine degrees while forming a cylindrical cavity in the soil and pulverizing with the blade the soil which immediately surrounds the cavity, then



depositing a seedling downwardly into the cavity and such that the foliage is above ground level and the roots are below ground level, and

rotating the tube in a rearward direction about its longitudinal axis and withdrawing the tube from the soil while moving the blade to the rearward position and opening the lower end and passing the seedling therethrough and compacting with the blade the soil which immediately surrounds the seedling roots.

4,323,020

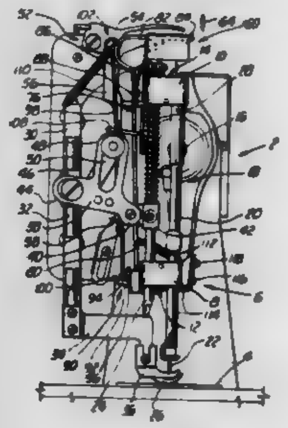
APPARATUS FOR OVERCOMING SEWING MACHINE NEEDLE BIND

Elmer R. Thompson, Lubbock, Tex., assignor to Datho Mfg. Inc., Lubbock, Tex.

Filed Sep. 8, 1980, Ser. No. 185,319

Int. Cl.³ D05B *27/24, 29/02, 15/00*

U.S. Cl. 112—61 12 Claims



1. An apparatus for limiting the displacement of a presser bar reciprocatingly mounted in a frame of a sewing machine, said apparatus comprising:

contact means for contacting the presser bar after the presser bar has moved a predetermined distance;

latch means, having said contact means associated therewith, for releasably engaging the frame so that said contact means is prevented from moving in the same direction as the presser bar; and

decoupling means for disengaging said latch means from the frame.

4,323,021

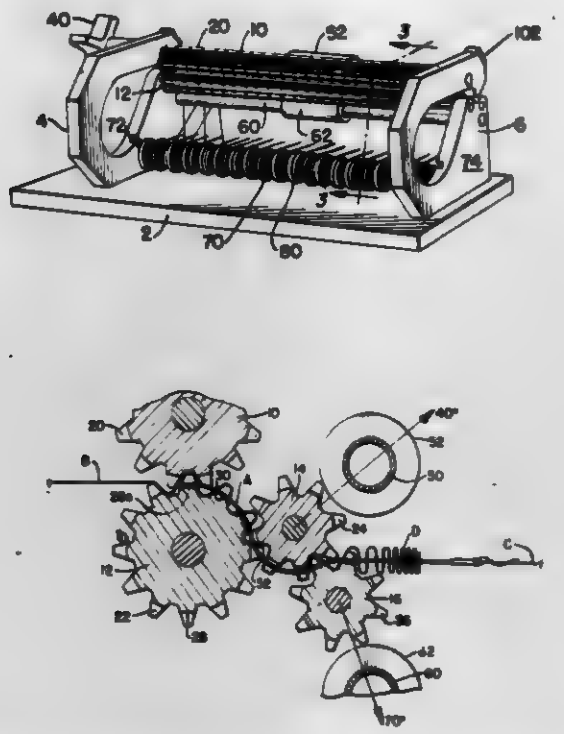
PLEATING AND SMOCKING MACHINE

Dianne R. Durand, 6709 Glen Brook Dr., Knoxville, Tenn. 37919

Filed Mar. 24, 1981, Ser. No. 247,096

Int. Cl.³ D05B *35/08, 1/04*

U.S. Cl. 112—133 5 Claims



1. A machine for pleating or smocking textile and like material comprising:

(a) a frame formed of a base and spaced parallel end members extending in the same direction from the base,

(b) a first pair of toothed rollers rotatably supported one above the other by end members with their teeth intermeshed,

(c) a second pair of toothed rollers rotatably supported one above the other by the end members with their teeth intermeshed,

(d) the upper roller of the second pair being also intermeshed with the lower roller of the first pair whereby material passed between the two pairs of rollers travels in an S-shaped path and is pleated,

(e) the teeth of each roller being provided at spaced intervals along their lengths with a plurality of aligned circumferential grooves, the aligned grooves of the four rollers forming a plurality of spaced sets of grooves extending throughout the length of the machine,

(f) an S-shaped needle positioned in each set of grooves and supported by the rollers, each needle having a pointed end adjacent the first pair of rollers and a thread receiving eye at its other end adjacent the second pair of rollers,

(g) and means forming part of the machine for preventing flexing of the rollers in the direction of the eye ends of the needles.

4,323,022

PATTERN SELECTING SYSTEM FOR ELECTRONIC SEWING MACHINE

Susumu Hanyu, and Kenji Kato, both of Hachioji, Japan, assignors to Janome Sewing Machine Co. Ltd., Tokyo, Japan

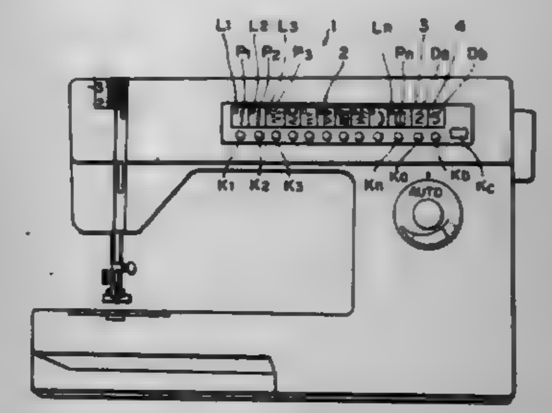
Filed Nov. 27, 1979, Ser. No. 97,871

Claims priority, application Japan, Dec. 6, 1978, 53/149998

Int. Cl.³ D05B *3/02*

U.S. Cl. 112—158 E 6 Claims

1. A pattern selection system for use with an electronic sewing machine with a memory, in order to allow patterns which have all pattern data stored in the memory to be selected by a user, when the patterns are divided into a first group and a second group, in which groups the patterns in the first group are more frequently used and the patterns in the second group are less frequently used, comprising: a plurality of first pushbuttons, each such first pushbutton being associated with a corresponding one of the patterns in the first group so as to bring the first pushbuttons and the patterns in the first group into one-to-one correspondence with each other; a like plurality of indicator panels, each indicator panel depicting a corresponding one of the patterns and being located adjacent the first pushbutton corresponding thereto; a like plurality of lamps, each lamp being associated with a corresponding one of the indicator panels in a manner that when one of the patterns in the first group has been selected by a user, the corresponding



ing panel will be illuminated; a display; at least one second pushbutton located adjacent the display and cooperating therewith in a manner that the display will indicate at least one numerical or alphabetical character identifying a pattern in the second group which has been selected by a user by operation of all such second pushbuttons; and means connected to the memory, all pushbuttons, all lamps, and the display and cooperating therewith in a manner that when a pattern in the second group has been selected by actuating the second pushbuttons, the sewing machine will be programmed to adjust needle movement and feed rate in a manner that the pattern in the second group so selected will be sewn by the machine irrespective of the actuation of the first pushbuttons.

4,323,023

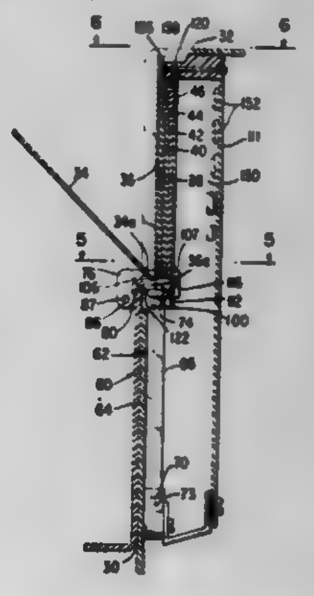
INSTRUCTIONAL FLIP PLATE INFORMATIONAL SYSTEM

Howard L. Beckerman, Middletown, and Allan M. Dob, Clifton, both of N.J., assignors to The Singer Company, Stamford, Conn.

Filed Oct. 20, 1980, Ser. No. 202,207

Int. Cl.³ D05B *3/02*

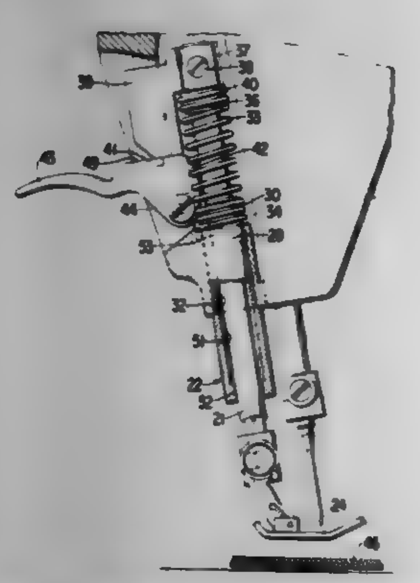
U.S. Cl. 112—158 F 11 Claims



1. In a sewing machine, a standard with a recess and a substantially flat outer surface adjacent thereto; a cover for the

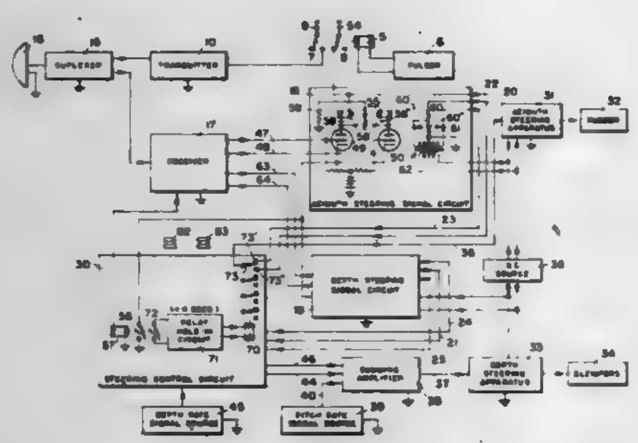
recess including substantially flat inner and outer surfaces; means mounting the cover for movement between a closed position over the recess in which the flat outer surface of the cover is substantially coplanar with the flat outer surface of the standard, and an open position wherein the flat outer surface of the cover lies opposite the flat outer surface of the standard, said mounting means including cover support means pivoted within the standard at a location remote from the bottom edge of the recess for movement about an axis substantially parallel thereto, and extending to a region within the recess in the standard where the support means includes support brackets extending toward the cover, said mounting means further including brackets extending from the inner surface of the cover, and axle means connecting the brackets from the support means with the brackets from the cover to render the cover pivotally movable on the support means about an axis parallel to the pivotal axis of the support means and said bottom edge of the recess; a plurality of information bearing plates in said recess; axle means supported in the brackets of the elongated support means and extending parallel to the pivotal axis of the cover but offset therefrom; support projections on the plates mounted on the offset axle means to extend perpendicularly therefrom to a first edge of the respective plate through a distance that increases from plate to plate by an amount enabling the plates when the cover is open to be stacked flat against one another either in said recess or against the inside surface of the cover, and moved sequentially between alloted positions in the stacks; a tab on each of at least selective ones of the pivoted informational plates on a second edge remote from the said first edge of the plate; and fixed members in said recess aligned with respective tabs and off-set from each other to engage the aligned tabs when the plates are stacked flat in said recess.

4,323,024
PRESSER BAR GUIDE
Gary D. Jones, Short Hills; Manfred R. Leidig, Whippany, and William Weisz, Tenafly, all of N.J., assignors to The Singer Company, Stamford, Conn.
Filed Apr. 21, 1980, Ser. No. 141,879
Int. Cl.³ D05B *29/02*
U.S. Cl. 112—237 4 Claims



1. In a sewing machine that comprises a loop-taker, a head spaced from the looptaker and having a round channel facing generally towards the looptaker, and a presser bar that extends longitudinally through the channel, presser bar support and guide means comprising:
a hollow presser bar guide bushing comprising a first portion adjacent a first end of the bushing, the first portion having a circularly cylindrical outer surface that extends through and substantially fills the channel, and a second portion between the first portion and the opposite end of the bushing;
a shoulder surface on said bushing extending outwardly beyond said channel at the end of the first portion proximal to the second portion;
guide means in the bushing to guide the presser bar for longitudinal movement relative to the bushing;
a first threaded sleeve at the end of the first portion of the bushing within the head and substantially coaxial with the axis of the first portion;
a helical tension spring, one end of which is screwed onto the first threaded sleeve to be held thereby with the axis of the helical spring substantially coincident with the axis of the first portion of the cylindrical outer surface of the bushing; and
attachment means attached to one end of the presser bar within the head and comprising a second threaded sleeve, the other end of the tension spring being screwed onto the second threaded sleeve to be held thereby with the axis of the second threaded sleeve coincident with the axis of the first threaded sleeve, wherein the tension spring pulls the shoulder surface of the bushing against the head.

4,323,025
TORPEDO STEERING CONTROL SYSTEM
Seth G. Fisher, and Stephen Kowalyshyn, both of Ellicott City, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Mar. 7, 1961, Ser. No. 94,095
Int. Cl.³ F42B *19/04*
U.S. Cl. 114—25 2 Claims



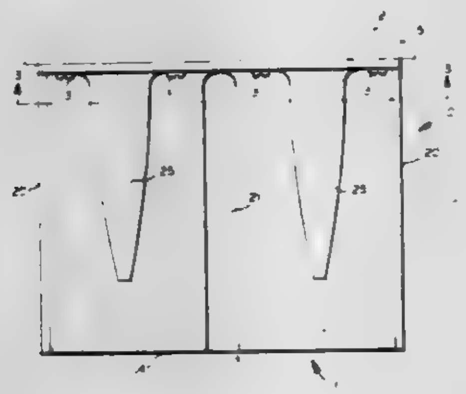
2. In a propulsive torpedo having depth-steering elevators, in combination, a depth control system comprising means for deriving a first signal having characteristics corresponding to the sense and magnitude of rate of change of torpedo depth, means for deriving a second signal having characteristics corresponding to the sense and magnitude of rate of change of torpedo pitch angle, means for combining only said first and second signals to provide a summation error signal, and depth-steering elevator control apparatus responsive only to said error signal to effect reduction of torpedo pitch angle rate and depth rate to substantially zero values, whereby to maintain said torpedo at substantially constant depth.

4,323,026
DRAG REDUCING STRUCTURE TO MINIMIZE VESSEL COLLISION DAMAGE
John J. Gallagher, 1000 Conn. Ave., NW., #1103, Washington, D.C. 20036
Filed Oct. 24, 1979, Ser. No. 87,738
Int. Cl.³ B63B *59/02*
U.S. Cl. 114—219 10 Claims

1. In a sea-going vessel having a drag reducing structure projecting from the forward end thereof generally below the water line, a means to reduce the damage caused by a bow collision of said vessel with other vessels by reducing the capability of said structure to penetrate another vessel and simultaneously absorb at least a portion of the energy of collision comprising:
collapsible walls forming said structure, a substantially flat structural wall intersecting said collapsible walls to define therewith a fluid-tight enclosure within said structure;
fluid filling said enclosure to support said structure under the normal forces of use; and

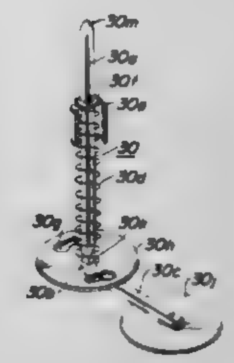
valve means communicative with said enclosure to release fluid therefrom and allow sacrificial collapse of said structure to said substantially flat structural wall upon impact of a predetermined magnitude therewith to thereby remove penetrating projections therefrom.

4,323,027
TRIM TAB FOR POWER BOAT
William H. Schermerhorn, R.D. #2, Hammond, N.Y. 13646
Filed Jan. 23, 1980, Ser. No. 162,302
Int. Cl.³ B63B *1/20*
U.S. Cl. 114—285 8 Claims



1. A trim tab for mounting to extend aft from a bottom region of a transom of a power boat, said trim tab comprising:
a. a single piece of tough and substantially rigid resin material formed with an approximately uniform thickness to provide an integral mounting plate and lifter;
b. said mounting plate being flat for fitting against said transom;
c. a forward region of said lifter extending straight aft from said mounting plate at about a right angle to said mounting plate;
d. said lifter curving downward in a trailing region aft of said forward region, and said downward curve of said lifter being formed around a transverse axis spaced aft from said mounting plate and said forward region and disposed below said lifter;
e. said forward region of said lifter having raised and spaced apart semitubular surfaces inclined to extend from an upper region of said mounting plate downward to join said downward curve of said trailing region of said lifter;
f. approximately parallel side edges of said lifter running straight aft from said transom being formed to extend downwardly; and
g. said lifter having a downwardly extending ridge running straight aft between said semitubular surfaces and approximately parallel with said side edges.

4,323,028
VISUAL INDICATING SYSTEM FOR TALL POLE CARRIER RAISING AND LOWING APPARATUS
John S. Garchinsky, Aldan, Pa., assignor to Union Metal Manufacturing Company, Canton, Ohio
Filed Jan. 28, 1980, Ser. No. 116,037
Int. Cl.³ G01D *11/00*
U.S. Cl. 116—285 5 Claims

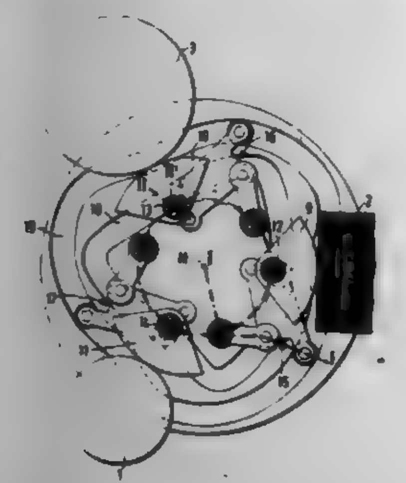


1. In a system for raising and lowering a carrier for luminaires and the like to and from the top portion of a pole, an assembly for providing a visual indication of the carrier reaching a predetermined position adjacent the top of said pole, said assembly including:
(a) a generally L-shaped member mounted on the carrier for limited axial and pivotal movement, said member having a vertical portion with an upper end and a horizontal portion with an enlarged position-indicating member mounted on an extended end thereof, said indicating member being movable between first and second positions, said first position providing a visual indication that the carrier reached said predetermined position adjacent the top of the pole;
(b) bracket means for mounting the L-shaped member on the carrier, said bracket means having an aperture through which the vertical portion of said L-shaped member projects;
(c) means for biasing the position-indicating member toward the second position; and
(d) the vertical portion of the L-shaped member having a twisted area engageable with the bracket means within the aperture whereby said vertical portion will rotate as it moves axially through the aperture of the bracket means upon the top end of said vertical portion contacting the top portion of the pole to pivot the horizontal portion and the position-indicating member to the first position to provide a visual indication that the carrier has reached the predetermined position.

4,323,029
LABELING MACHINE, ESPECIALLY FOR BOTTLES HAVING A FOUR-WAY TOGGLE MECHANISM AS A DRIVE
Heinz W. Knuppertz, Dusseldorf, and Hans Lederer, Meerbusch, both of Fed. Rep. of Germany, assignors to Jagenberg Werke AG, Dusseldorf, Fed. Rep. of Germany
Filed May 11, 1979, Ser. No. 38,374
Claims priority, application Fed. Rep. of Germany, May 19, 1978, 2821095
Int. Cl.³ B05C *1/02*; B65C *9/16*
U.S. Cl. 118—231 1 Claim

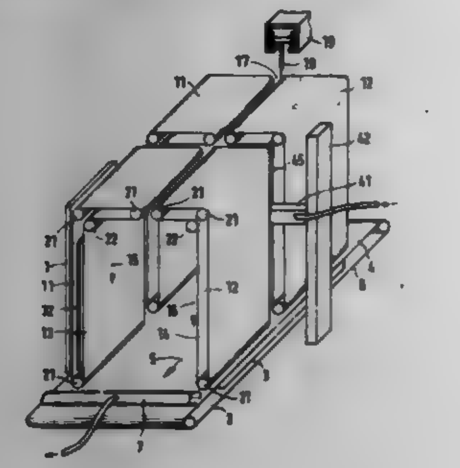
1. In a labeling machine for objects having a gluing station, a label-supply station and a label-transfer station consecutively arranged along a path, a rotatable carrier, at least one pickup element rotatably mounted on the carrier such that with each revolution of the carrier it is moved past the stations, each pickup element having an outwardly curved label receiving surface which rolls along the foremost label and along the other stations and a drive for each pickup element comprising a four-way toggle mechanism including a crank, a connecting

rod and a swinging link, the connecting rod being joined to the crank and swinging link at two respective joints, two cam followers connected to the connecting rod by lever arms and which are spaced a fixed distance apart, a curved track cam path for each cam follower to impart to the pickup element a rotary motion with constant direction of rotation the rotary motion being controlled by one of the followers when the



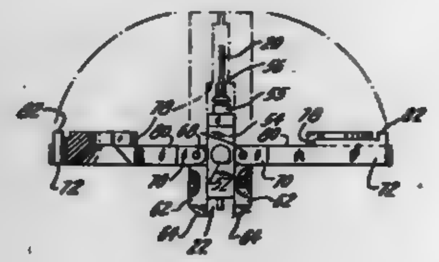
other follower is in a dead position, the improvement wherein the cam followers are disposed outside the joints of the swinging link and connecting rod on the one hand and the connecting rod and crank on the other hand, and the four-way toggle mechanism and the lever arms fixed to the connecting rod of the followers are adjusted to one another such that during a revolution of the carrier the field swept by the swinging link does not encompass the axis of rotation of the carrier.

4,323,030
SPRAY COATING DEVICE
Lehmann, Jr. Ernst, Boppartshofstrasse 35, CH-9014 St. Gall, Switzerland
Filed Jun. 18, 1980, Ser. No. 160,680
Claims priority, application Fed. Rep. of Germany, Jun. 28, 1979, 2926040
Int. Cl.³ B05L *15/00*
U.S. Cl. 118—309 30 Claims



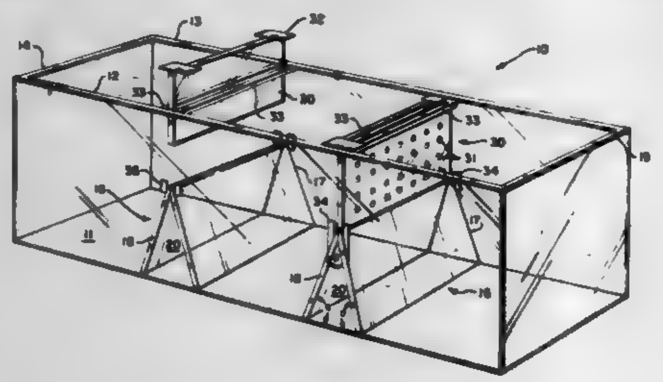
1. A spray coating device for spraying particulate coating material, comprising:
a spray chamber for containing articles to be spray coated; the chamber having a bottom;
a discharge device located at the chamber bottom for discharging from the chamber coating material that has accumulated on the bottom of the chamber;
the chamber being further defined by and being located inside inner walls, the inner walls being movable with respect to the chamber;
means for moving the inner walls for causing the inner walls to move to deliver coating material that has accumulated on the inner walls to the discharge device, and at least some of the inner walls moving downwardly toward the bottom of the chamber; the inner walls comprising endless movable belts having inner courses facing inwardly into the chamber for defining the inner walls and having outer courses that pass outside the respective inner courses; each endless belt being in the form of a loop, and a grounded metal plate being positioned inside the loop of at least one of the endless belts for screening off electric fields; and
a spray device directed to spray coating material inside the chamber for spraying an article therein, the spray device being further directed to spray coating material into the space between those of the inner walls that are moving down toward the chamber bottom.

4,323,031
CRYSTAL PLATING APPARATUS
Alan Kaplan, 2 Fairfield Ave., West Caldwell, N.J. 07006
Division of Ser. No. 34,780, Apr. 30, 1979, Pat. No. 4,236,487. This application Oct. 6, 1980, Ser. No. 194,560
Int. Cl.³ C23C *13/08, 13/12*
U.S. Cl. 118—720 2 Claims



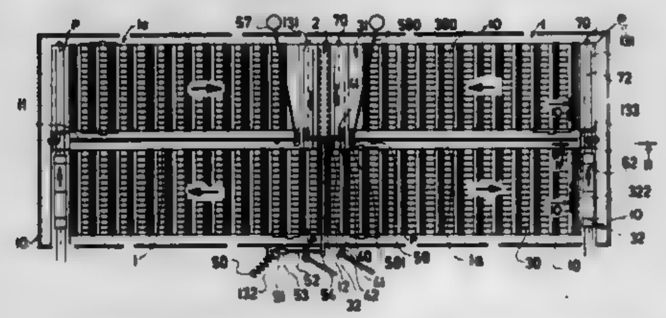
1. A crystal holder for plating crystals comprising:
(a) an insulating base;
(b) a pair of receptacle tubes extending upward from said insulating base to receive a pair of leads from the crystal and make electronical contact therewith, and to mount a crystal on said insulating base;
(c) a pair of opposing hinge plates pivotally connected to said insulating base;
(d) a mask holder disposed on each of said hinge plates;
(e) an apertured mask disposed in each hinge plate; and
(f) said opposed hinge plates coacting to bring said apertured masks into operative position with a crystal mounted on said insulating base.

4,323,032
FISH TANK AND AQUARIUM
Leon Halfon, 2146 Fargo St., Los Angeles, Calif. 90039
Filed Jul. 8, 1980, Ser. No. 166,819
Int. Cl.³ A01K *64/00*
U.S. Cl. 119—5 11 Claims



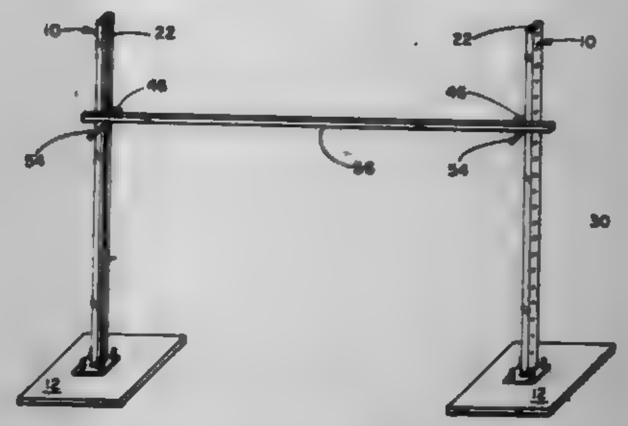
1. A substantially rectangularly shaped watertight tank having a longitudinal axis suitable for use as an aquarium or fish tank, comprising:
a bottom portion defined as a substantially flat surface;
four upwardly extending vertical side walls enclosing said bottom portion, each of said side walls being also substantially flat and disposed normally to each other and to said flat tank bottom portion; and
at least one V-shaped brace member formed in the bottom of said tank to open downwardly and extend transversely across said bottom portion of said tank between opposed ones of said vertical side walls substantially normal to the longitudinal axis of said tank, said at least one V-shaped brace member being formed by a pair of planar support members disposed substantially normal to said opposed side walls and joined in a watertight seal along their upper disposed edges and along their lower and end edges, respectively, to said tank bottom portion and opposed tank side walls, said opposed side walls between which said at least one V-shaped brace member extends being each made of a unitary plate of glass of selected uniform thickness and the ends of said at least one V-shaped brace member joined to said opposed side walls and extending from said tank bottom portion upwardly on said opposed side walls to a selected height below said tank's designed water surface level but above the water depth at which water pressure in said tank would otherwise break said opposed glass side walls thereby to surprisingly and significantly increase the water pressure supporting capability of said opposed glass side walls so that thinner, less expensive and lighter glass panes can be utilized.

4,323,033
MOBILE ARRANGEMENT FOR A GROUP STABLING AND HANDLING OF FARM ANIMALS
Josef Vosyka, Cernosice, and Jiri Skoda, Chocen, both of Czechoslovakia, assignors to Vyzkumny ustav zivocisne vyroby Uhrineves, Prague, Czechoslovakia
Filed Feb. 18, 1981, Ser. No. 235,745
Int. Cl.³ A01K *1/12*
U.S. Cl. 119—14.04 8 Claims



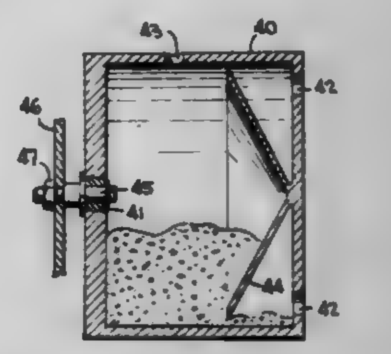
1. A mobile arrangement for the confining stabling and treatment of a plurality of milk producing farm animals, comprising an enclosure with two similar rectangular bays disposed in mirror relationship, each bay having two sets of longitudinally extending rails, the sets of rails of each bay being parallel to and spaced from each other, the two sets of rails extending normal to the imaginary plane separating the two bays from an inner terminus adjacent such plane and an outer terminus removed from such plane, a milking room extending along said plane, a plurality of elongated platforms each having a plurality of confining stalls thereon extending transversely of the length of the platform, means for advancing the platform in each bay transversely of their lengths along a first set of longitudinally extending rails in a direction outwardly away from said plane to the outer terminus of the first set of rails, means for transferring the platforms in the direction of their length from the outer terminus of the first set of rails to the outer terminus of the second set of rails, means for advancing the thus transferred platforms in a direction transversely of their lengths along the second set of rails in the direction inwardly to the inner terminus of the second set of rails, and means for moving the platforms at the inner terminus of the second set of rails in the direction of their lengths to the milking room and thereafter transferring them to the inner terminus of the first set of rails, the platforms retaining the same orientation in space throughout their travel from the first terminus of the first set of rails to their return to said first terminus of the first set of rails.

4,323,034
DOG JUMP APPARATUS
Bertyl W. Carlson, Minneapolis, Minn., assignor to Acme Machine Company, Minneapolis, Minn.
Filed Aug. 18, 1980, Ser. No. 178,770
Int. Cl.³ A01K *15/02;* A63B *5/02*
U.S. Cl. 119—29 8 Claims



1. A jump apparatus for the training of dogs, the apparatus comprising:
a pair of channel shaped legs having upper and lower ends;
a pair of base panels;
the upper end of each leg being open and the lower end of each leg being connected to one of the base panels so that the legs are positioned in a generally upright manner; and
the channel configuration of each of the legs forming a slot facing the other leg and being of a size for selectively accepting and retaining one of a pair of support devices for an unsecured cross bar and for selectively positioning one end of each of a plurality of high jump panels in a generally vertical plane.

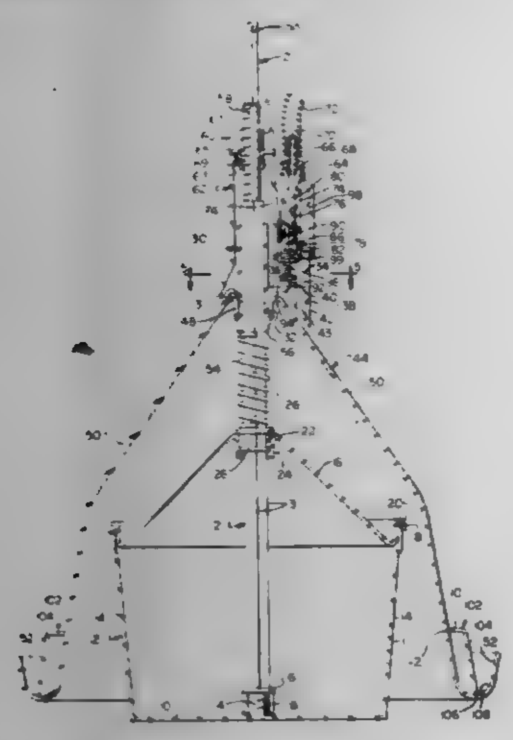
4,323,035
SQUIRREL-PROOF BIRD FEEDER
Abraham Plitch, 9618 Dilston Rd., Silver Spring, Md. 20903
Filed Feb. 6, 1980, Ser. No. 119,196
Int. Cl.³ A01K *39/01*
U.S. Cl. 119—51 R 7 Claims



7. A selective bird feeder comprising:
container means receiving and storing feed material for removal therefrom by birds, said container means including substantially imperforate peripheral wall defining a hollow interior, said peripheral wall surrounding and being radially spaced from a horizontally-extending longitudinal axis of said container means;
support means mounting said container means, with said axis horizontal, for free rotational movement of said peripheral wall about said longitudinal axis in response to application of a rotative force to said peripheral wall;
wherein said peripheral wall includes a sealable filler hole

defined therethrough for admitting bird feed into said hollow interior;
wherein said container means further includes at least one end wall disposed generally perpendicular to said axis, said end wall including at least one access opening defined therethrough and sized to permit birds smaller than a predetermined size to have access to said hollow interior;
and further comprising baffle means at least partially spaced from said end wall for restricting flow of bird feed toward said access opening from said baffle means to said end wall.

4,323,036
AUTOMATIC WATERING APPARATUS
Michael Salerno, 665 Blossom St., Fitchburg, Mass. 01420
Filed Apr. 22, 1980, Ser. No. 142,734
Int. Cl.³ A01K *39/02, 7/02*
U.S. Cl. 119—81 10 Claims



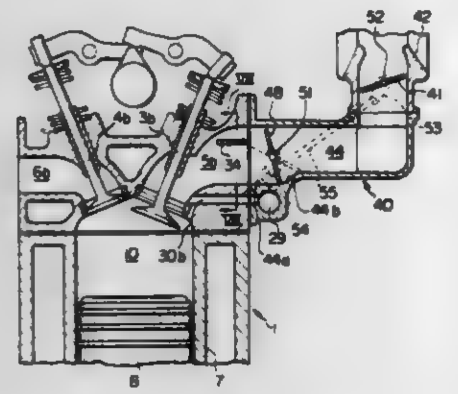
1. An automatic watering apparatus comprising a central post, means for supporting said post, a sleeve slidably but non-rotatably mounted on said post, a valve assembly, means for mounting said valve assembly on said post, a supply tube for connecting said valve assembly to a water source, said sleeve and said valve assembly being engageable to operate said valve assembly, a bell member rotatably mounted on said sleeve and having a channel for collection of water discharged from said valve assembly, and means for biasing said sleeve and bell member in a direction whereby said valve assembly is operated by said sleeve.

4,323,037
FLUIDIZED BED FIRING UNIT
Helmut Meyer-Kahrweg, Wuppertal, Fed. Rep. of Germany, assignor to Steag Aktiengesellschaft, Essen, Fed. Rep. of Germany
PCT No. PCT/DE79/00030, § 371 Date Nov. 18, 1979, § 102(e) Date Nov. 8, 1979, PCT Pub. No. WO79/00794, PCT Pub. Date Oct. 18, 1979
PCT Filed Mar. 19, 1979, Ser. No. 175,207
Int. Cl.³ F23D *19/02*
U.S. Cl. 122—4 D 2 Claims

1. A fluidized bed firing unit comprising:
a container having walls and a bottom with a plurality of spaced, generally vertical, pressurized air supply pipes extending therethrough;
a fluidized bed of comparatively inert material maintained in said container by said pressurized air from said supply nozzles;
fuel supply means for supplying a solid carbonaceous fuel in solid granular form to the lower portion of the fluidized bed for combustion;
additional pressurized air supply means extending into said container adjacent the periphery thereof for introducing a horizontal stream of air in said container coacting with the air from said vertical nozzles for causing the fluidized bed to circulate in a continuous horizontal circular path in said

container; and vertically arranged laterally spaced heat exchanger coils in the region of the fluidized bed, wherein the laterally spaced regions of the fluidized bed lying between the coils contain means for introducing off-center air causing horizontal circular path circulation of the fluidized bed within each of the regions of the fluidized bed between the coils.

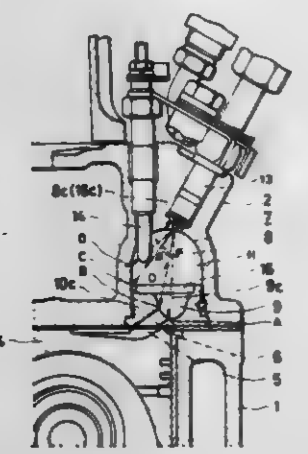
4,323,038
INTAKE SYSTEM OF A MULTI-CYLINDER INTERNAL COMBUSTION ENGINE
Katsuhiko Motosugi; Hiroshi Takahashi; Shuhei Toyoda, and Toshio Tanahashi, all of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan
Filed May 17, 1979, Ser. No. 40,045
Claims priority, application Japan, Aug. 10, 1978, 53-97603
Int. Cl.³ F02B *29/2*
U.S. Cl. 123—188 M 19 Claims



1. A multi-cylinder internal combustion engine having a plurality of cylinders, each having a combustion chamber and an intake valve which has a valve head, said engine comprising:
at least one mixture passage common to at least two cylinders and comprising a collecting portion having an inlet, and at least two branch mixture passages branched off from said collecting portion, each of said branch mixture passages having an upper wall and a bottom wall and being connected to said respective combustion chamber via said corresponding intake valve;
fuel supply means arranged in the inlet of said collecting portion;
a common connecting channel;
at least two channel branches each being connected to said common connecting channel and having an opening which opens into one of said respective branch mixture passages;
at least two rotatable throttle valves each being arranged in a respective one of said branch mixture passages at a location upstream of the opening of a corresponding channel branch and having a lower edge and an upper edge,

said upper edge cooperating with the upper wall of said corresponding branch mixture passage to form therebetween a mixture flow passage, the cross sectional area of which is increased as the throttle valve is rotated in accordance with an increase in the level of the load of said engine, the lower edge of each of said throttle valves cooperating with the bottom wall of said corresponding branch mixture passage to prevent flow between the lower edge of said throttle valve and the bottom wall of said corresponding branch mixture passage when said throttle valve is at least partly open; and
a guide plate arranged in each of said branch mixture passages at a position located downstream of and near a corresponding one of said throttle valves in the vicinity of the upper wall of said branch mixture passage.

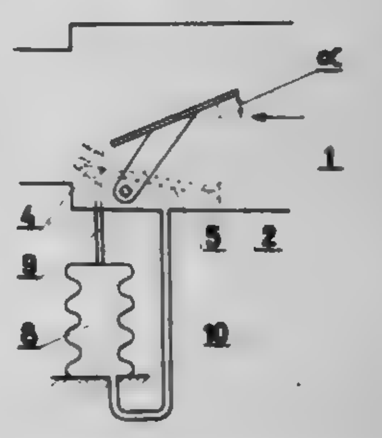
4,323,039
ANTECHAMBER SYSTEM DIESEL ENGINE
Takanori Tsugekawa; Tosio Banba, and Masakuni Matsui, all of Osaka, Japan, assignors to Yanmar Diesel Engine Co., Ltd., Osaka, Japan
Filed Jun. 3, 1980, Ser. No. 156,114
Claims priority, application Japan, Jun. 5, 1979, 54-76055[U]
Int. Cl.³ F02B *3/00*
U.S. Cl. 123—275 8 Claims



1. In a combustion chamber system Diesel engine including: a combustion chamber formed by a front chamber and a rear chamber inside a cylinder head; a communication port communicating said combustion chamber with a main combustion chamber defined in a piston; and a glow plug mounted in a glow plug insertion hole formed in said cylinder head and a fuel injection nozzle mounted in a nozzle insertion hole in said cylinder head, each positioned in said cylinder head, adjacent said rear chamber; the improvement wherein said combustion chamber includes said rear chamber formed integrally with said cylinder head inside said cylinder head and said front chamber formed on a sleeve member detachably fitted to said cylinder head and facing said rear chamber, wherein the axes of said front chamber and said rear chamber are parallel and offset with respect to each other and wherein the diameter of the portion of said front chamber facing said rear chamber is less than the diameter of the facing portion of the rear chamber.

4,323,040
PROTECTING AN INTERNAL COMBUSTION FUEL INJECTION ENGINE FROM OVERSPEEDING
Roman Blocki, Bielsko-Biala, Poland, assignor to Wytwornia Silnikow Wysokopreznych "PZL-Andrychow", Andrychow, Poland
Filed Dec. 17, 1979, Ser. No. 104,232
Claims priority, application Poland, Dec. 18, 1978, 211872; Sep. 22, 1979, 218455
Int. Cl.³ F02B *11/08*
U.S. Cl. 123—389 2 Claims

1. A device for protecting internal combustion fuel injection engines from overspeeding, wherein said device is arranged in an air supply conduit of an engine, said device comprising a closing member including a flap controlled by air that enters and flows through said supply conduit, and said flap being adapted to close said supply conduit at a predetermined air flow speed corresponding to the maximum permissible engine speed, said flap also being adapted to remain in its open position at speeds lower than the maximum permissible engine speed, and said flap being adapted to revolve about an axis which is disposed perpendicularly to yet spaced from the axis of said supply conduit,
wherein the closing member is said flap fitted on a shaft, said shaft being borne in openings in the walls of said supply conduit, the axis of rotation of said shaft being situated in

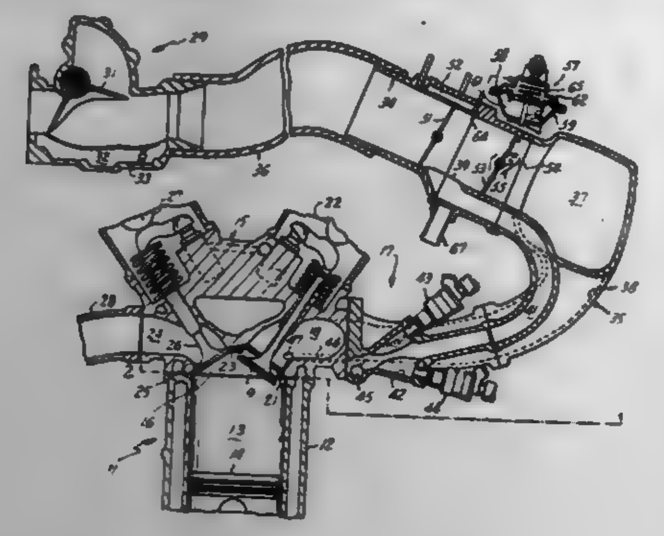


a plane perpendicular to the axis of said supply conduit and spaced from the axis of said supply conduit, and on said shaft there is also fitted a lever connected to a tension spring means to maintain said flap in the course of normal operation of the engine at an angle in relation to the axis of said supply conduit, and also to revolve said flap about said axis of said shaft, wherein the direction of the turning moment originated by the force exerted by said spring means on said lever during the initial phase of closing said supply conduit by said flap is opposite to the direction of the turning moment originated by the dynamic air pressure exerted on said flap, and in the final phase of closing of said supply conduit by said flap the directions of both of said turning moments are conformable.

4,323,041
MULTI-CYLINDER INTERNAL COMBUSTION ENGINE OF FUEL INJECTION TYPE
Yoshinori Endo, Hamamatsu, and Masaaki Yoshikawa, Iwata, both of Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan
Filed Jul. 12, 1979, Ser. No. 57,095
Claims priority, application Japan, Jul. 14, 1978, 53-85222
Int. Cl.³ F02M *32/00*
U.S. Cl. 123—432 14 Claims

1. An induction chamber of variable volume in which combustion occurs, a main induction passage terminating in main intake port for delivering a charge to said chamber, and an auxiliary induction passage terminating in an auxiliary intake port for delivering a charge to said chamber, the effective cross sectional area of said auxiliary induction passage being substantially less than that of said main induction passage so that a given mass flow of charge delivered to said chamber through said auxiliary induction passage will enter at a significantly greater velocity than the same charge delivered through said main induction passage, the improvement comprising a charge

forming device for delivering fuel to said chamber only through said auxiliary induction passage, said charge forming



device providing all of the chamber fuel requirements at all speed and load ranges.

4,323,042

FUEL CONTROL SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

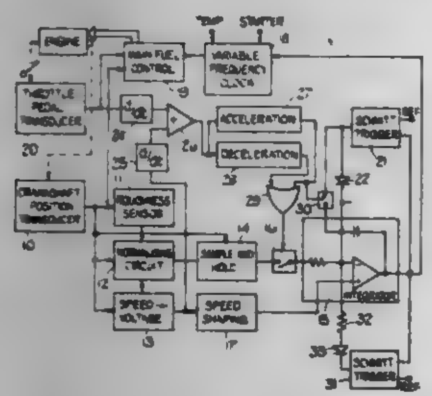
Richard G. Woodhouse, and Malcolm Williams, both of Birmingham, England, assignors to Lucas Industries Limited, Birmingham, England

Filed Feb. 27, 1980, Ser. No. 125,105

Claims priority, application United Kingdom, Mar. 14, 1979, [illegible]/79

Int. Cl.³ F02B *33/00;* F02M *7/00;* F02P *5/04*

U.S. Cl. 123—436 4 Claims



1. An internal combustion engine fuel control system comprising:

roughness sensor means for providing a normalized roughness signal, said roughness signal dependent upon the magnitude of fluctuations in engine speed divided by said engine speed;

speed compensation means, responsive to said engine speed, for providng a speed dependent reference signal;

means for producing a signal representative of a magnitude of difference between said roughness signal and said speed dependent reference signal; and

means, responsive to said representative signal, for adjusting fuel flow to said engine, said fuel flow adjustment proportional to said representative signal.

4,323,043

LIQUID FUEL PREHEATING MEANS

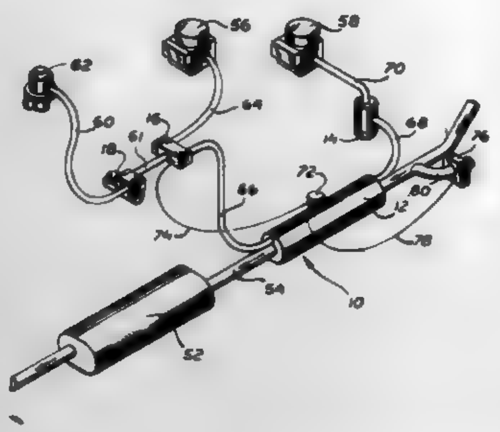
John M. Alderson, 21332 Bulkhead Cir., Huntington Beach, Calif. 92646

Division of Ser. No. 960,713, Nov. 14, 1978, abandoned, which is a continuation of Ser. No. 786,636, Apr. 11, 1977, abandoned.

This application Feb. 4, 1980, Ser. No. 118,795

Int. Cl.³ F02M *31/00*

U.S. Cl. 123—557 4 Claims



1. Liquid fuel preheating means particularly adaptable for use on a gasoline burning internal combustion engine equipped with a regular carburetor and a fuel pump, comprising:

heat exchanger means with first passage means for feed fuel to the engine and second passage means for a hot fluid incident to normal operation of the engine, the two passage means being so oriented that the concurrent flow of feed fuel and said hot fluid respectively therethrough results in heat transfer from the hot fluid to the fuel; and

accessory means for retaining the heat exchanger means in such position that feed fuel to said engine passes through said first passage means prior to carburetion of the fuel, when the engine is running, said accessory means including means for integration of said heat exchanger means into the entire exhaust system so that exhaust gas passes through said second passage means as said hot fluid to heat fuel passing through said first passage means and thereby vaporize the latter;

said heat exchanger means comprising an enclosed cylindrical housing, with an opening in each end for the passage of exhaust gas, and a coil of tubing, said coil being positioned within said housing and being adapted to receive liquid fuel for the engine at one end and discharge vaporized fuel at the other end, said coil being coaxially disposed within said housing;

said coil serving as said first passage means for said feed fuel and the space surrounding the coil within said cylindrical housing serving as said second passage means for said exhaust gas;

said liquid fuel preheating means including an accumulator and means for conducting the vaporized fuel from said heat exchanger means thereinto prior to carburetion of the fuel, said accumulator comprising a vessel for containment of a quantity of the vaporized fuel adapted to satisfy the fuel demands of the engine during operation thereof;

said accumulator being provided with valve and drain means and being adapted to trap nongaseous components of the vaporized fuel, whereby such nongaseous components collect as a sludge in the accumulator that can be periodically removed through said drain means;

said liquid fuel preheating means including a special carburetor adapted to receive vaporized fuel from said accumulator and feed the proper ratio of fuel and air to said engine for proper operation of the latter;

said liquid fuel preheating means also including air inlet means for admitting ambient air into said exhaust system upstream of the position of said heat exchanger means therein; a thermostatically-controlled valve in said air inlet means; a thermostatically-controlled three-way valve adapted to alternately admit said liquid fuel to said regular carburetor and to said heat exchanger means, said three-way valve being normally open to fuel flow to said regular carburetor and closed to fuel flow to said heat exchanger means; thermostat control means adapted to sense the temperature within said second passage means in said cylindrical housing of said heat exchanger means and open the three-way valve to fuel flow into said heat exchanger means at a first temperature level and to open said valve in said air inlet means at a second temperature level; whereby upon start-up of the cold engine, fuel first flows to said regular carburetor and continues that flow until said first temperature level is reached within said heat exchanger means whereat the thermostat control means actuates said three-way valve to switch the fuel flow into said heat exchanger means, and when the temperature within said heat exchanger means reaches said second level said thermostat control means opens said valve in said air inlet means to admit air into said exhaust system to cool the exhaust gas therein for improved operation of said engine.

4,323,044

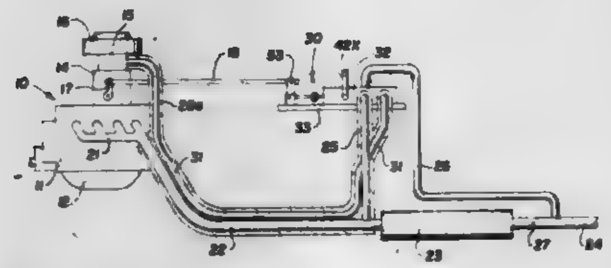
ENGINE FUEL VAPORIZING DEVICE AND SYSTEM

William L. Erwin, 1506 Barbera, Irving, Tex. 75060, and Addison B. Chamness, Jr., 2231 Lovers La., Dallas, Tex. 75235

Filed Aug. 11, 1980, Ser. No. 177,204

Int. Cl.³ F02M *31/00*

U.S. Cl. 123—557 8 Claims



1. A fuel charging device for an internal combustion engine having an intake manifold and a fuel-air throttle control at the intake manifold, said device comprising:

a housing having means defining a vaporizing and mixing chamber, and means for connecting a vaporized fuel conduit to said mixing chamber for conveying fuel to said engine;

said housing having a plurality of fuel flow channels; each of said channels comprising: a fuel liquid inlet passage, a valve chamber communicating with said inlet passage, a feed chamber communicating said valve chamber with said vaporizing chamber, and means for connecting a fuel liquid supply conduit to said fuel liquid inlet passage;

metering valve means disposed in each of said respective valve chambers, each including an actuator stem projecting from said housing;

actuator means connected to said valve stems for controlling the operation of said valve means, adapted for connection to the engine throttle control;

and heat exchange means in said vaporizing chamber, including exhaust gas conduit means for connection to the exhaust system of said engine.

4,323,045

FLOW CONTROL DEVICE FOR EXHAUST GAS RECYCLING SYSTEM

Ryuichi Yamashita, Hamamatsu, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

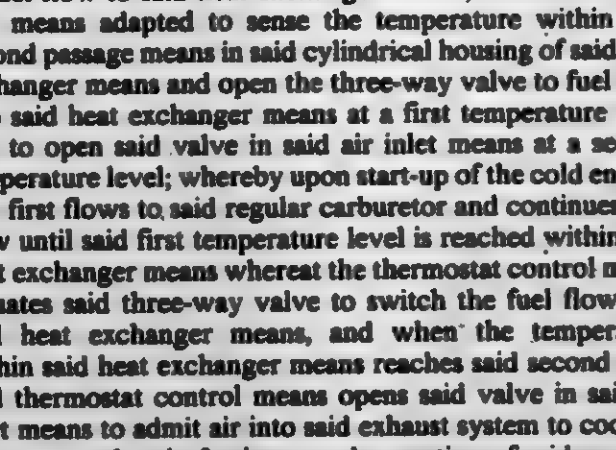
Filed Nov. 30, 1979, Ser. No. 98,867

Claims priority, application Japan, Nov. 30, 1978, 53-148080

Int. Cl.³ F02M *25/06*

U.S. Cl. 123—570 7 Claims

1. In an internal combustion engine having a chamber of variable volume in which combustion occurs, an induction system for delivering a charge to said chamber, an exhaust system for exhausting spent exhaust gases from said chamber, and an emission system for recycling at least a portion of products generated during the operation of said engine and



returning said products to said chamber, the improvement comprising means responsive to the load of said engine for cooling said products prior to return to the chamber.

4,323,046

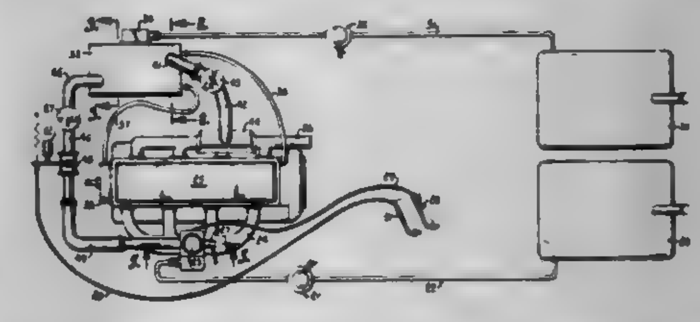
DUAL FUEL SYSTEM FOR AUTOMOBILES

Stanley Barber, 3310 S. 27th St., Fort Smith, Ark. 72901

Filed May 5, 1977, Ser. No. 794,099

Int. Cl.³ F02M *13/06, 31/18*

U.S. Cl. 123—575 6 Claims



1. A dual fuel system for an internal combustion engine having an intake manifold, said system comprising:

a first liquid storage tank for containing a petroleum fuel;

first delivery means connected to said first storage tank for supplying liquid fuel therefrom;

a carburetor interconnecting said first delivery means and said intake manifold to measuringly supply a mixture of air and petroleum fuel to said engine;

a second liquid storage tank for containing a non-petroleum fuel;

second delivery means connected to said second storage tank for supplying liquid fuel therefrom;

a vaporization chamber connected to said second delivery means to receive liquid non-petroleum fuel in the bottom thereof, said chamber equipped with level control means regulating the amount of liquid fuel within said chamber to define thereabove a vapor space;

a heating coil disposed within the bottom of said vaporization chamber for warming liquid fuel delivered thereto by said second delivery means to thereby generate non-petroleum fuel vapors;

an air intake port communicating with the vapor space of said chamber to maintain substantially atmospheric pressure within said chamber;

a vapor delivery conduit interconnecting the vapor space of said chamber directly with the intake manifold of the engine;

valve means associated with said vapor delivery conduit to measuringly supply the flow of mixed air and non-petroleum fuel vapors to the intake manifold; and

alternatively selectable, variable actuator means coupled to said carburetor for adjustably regulating the flow of air

and petroleum fuel mixture to the engine and coupled to said valve means for adjustably regulating the flow of air and non-petroleum fuel vapors to the engine, whereby one of the two fuels may be selected for operation of the engine.

4,323,047

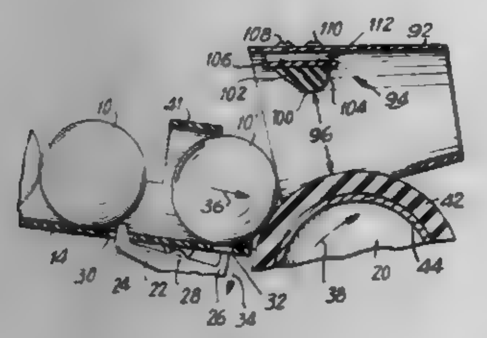
AUTOMATIC BALL PITCHING MACHINE

James K. McIntosh, Somerset, N.J., and M. Numata, Tokyo, Japan, assignors to Carolina Enterprises, Inc., New York, N.Y.

Filed Dec. 12, 1979, Ser. No. 102,651

Int. Cl.³ F41B *15/00*

U.S. Cl. 124—1 **16 Claims**



1. An apparatus for propelling spherical game balls sequentially along a path, said apparatus comprising:

(a) an inclined gravity-feed loading chute;

(b) means to load game balls into said loading chute;

(c) a flywheel adjacent the lower end of said loading chute, said flywheel having a flexible and resiliently deformable outer surface on its circumference;

(d) means to rotate said flywheel at high speed;

(e) a ball release assembly adjacent the lower end of said loading chute, to feed said game balls sequentially to said flywheel;

(f) a guide chute extending downstream of the path and being mounted above said flywheel, said guide chite having an upstream open end and a downstream open end, so that the game balls are passed sequentially by the rotating flywheel through the upstream open end into said guide chute and thereupon through the downstream open end;

(g) a stationary, flexible and resiliently deformable brake pad mounted in said guide chute between the open ends thereof and above said flywheel, said guide chute extending beyond said brake pad, said brake pad being spaced from said flywheel at a distance less than the diameter of said game balls, so that a constriction in the path of travel of the game balls is provided in the guide chute, and so that each game ball released by said release assembly from said loading chute first engages said rotating flywheel which moves the game ball against said pad, which temporarily holds fast the top of said game ball while the bottom of said game ball remains in contact with the rotating flywheel, which pulls the game ball past the constriction by squeezing the flexible and resiliently deformable pad and flywheel surface, so that once free of the constriotion, said flywheel propels the free game ball past said brake pad along said guide chute for a distance sufficient to guide the game ball along a predetermined trajectory, and thereupon said flywheel throws said game ball out of the downstream open end of said guide chute and comcomitantly imparts a backspin on said game ball, the backspin being of an opposite sense of rotation to that of said flywheel.

4,323,048

BALL SHOOTING MACHINE FOR VOLLEYBALL PRACTICE

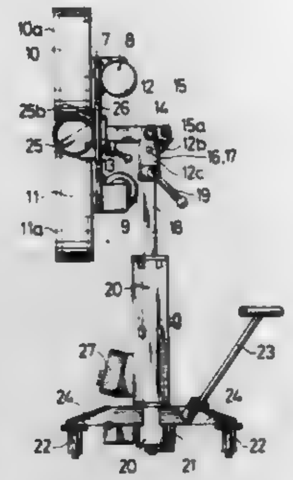
Retuno Saito, and Junji Nagase, both of Odawara, Japan, assignors to Kabushiki Kaisha Tokiwa Seisakusho, Japan

Filed Aug. 26, 1980, Ser. No. 181,624

Claims priority, application Japan, Jul. 17, 1980, 55-101167[U]

Int. Cl.³ F41B *3/04*

U.S. Cl. 124—78 **1 Claim**



1. A ball shooting machine for volleyball practice comprising: a volleyball shooting mechanism including a supporting plate, a pair of motors attached to said supporting plate, said motors being adjustable independently of each other for varying their operational speeds, and a pair of tire wheels rotatably attached to said supporting plate and opposing each other with a gap therebetween somewhat smaller than the diameter of the ball, said tire wheels being adapted to be rotatively driven by respective ones of said motors; supporting means including an intermediate rod in support of said supporting plate, a pillar supporting said intermediate rod and at least three radially extending legs for supporting said pillar in an upright position; ball shooting angle changing means including a rotatable couple between the center of said supporting plate and one end of said intermediate rod, and locking means provided in said couple to releasably lock said plate in a plurality of rotatable positions; ball course changing means including rotating means at the other end of the rod which is adapted for making said intermediate rod rotatable at an intermediate portion of the latter through substantially 90°, and locking means associated with said rotating means for changing the angle of inclination of said supporting plate between vertical and horizontal positions; ball shooting direction changing means including a rotatable couple connecting the other end of said intermediate rod and the upper end of said pillar and locking means associated with said couple for locking the rod against rotation; hydraulically operable shooting height changing means including a hydraulic cylinder between the lower end of said pillar and said legs and the lower end of said pillar received by said hydraulic cylinder; shooting position changing means including a transportation lever attached to one of said legs and casters attached to said legs; and ball charging means for feeding balls to the wheels, said ball charging means including a cylindrical portion opening to said gap between said two tire wheels from the rear side of the latter and a semi-cylindrical portion integral with said cylindrical portion, said ball charging means being mounted such that the outer surface of said semi-cylindrical portion is inclined at an angle of between 30° and 60° to the supporting plate.

4,323,049

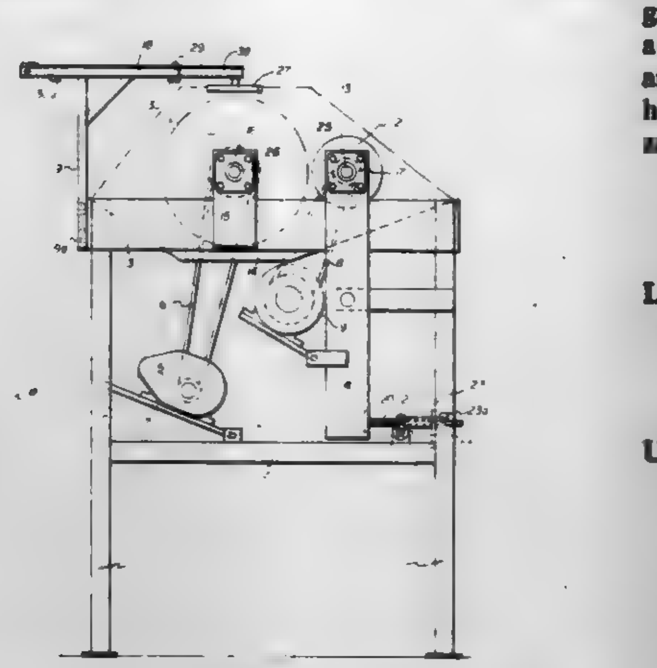
QUARTZ WAFERING MACHINE

Leland T. Sogn, Rte, 1, Box 21F, Mokelumne Hill, Calif. 95245

Filed Oct. 9, 1979, Ser. No. 82,480

Int. Cl.³ B28D *1/04*

U.S. Cl. 125—13 R **7 Claims**



1. In a wafering or sectioning machine comprising, in combination, a frame, a pair of spindles rotatably disposed on said frame in parallel relationship, means for rotating each of said spindles, a wheel on one of said spindles having an outer rim, means for mounting a plurality of crystal bars to be cut on said rim of said wheel in circumferentially spaced relationship, a series of spaced-apart saw blades mounted on the other of said spindles for wafering said crystal bars and means on said frame for pivoting moving said other spindle to advance said saw blades into cutting engagement with said crystal bars during the rotation of said wheel for wafering of said crystal bars during a plurality of revolutions of said wheel and adjustable means to alter the angle of said crystal bars with respect to said saw blades which includes support bars permanently affixed to said rim, transfer bars overlying said support bars having elongate slots along areas of interconnection so that the angular relationship between said transfer an support bars can be altered and then fixed, said transfer bar supports said crystal bar through an intermediate substance.

4,323,050

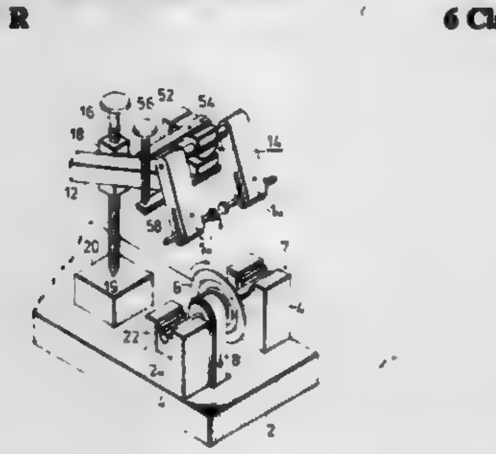
MACHINE FOR CUTTING PRECIOUS STONES

Joseph Averbuch, 10 Dizengoff St., Tel Aviv, Israel

Filed May 7, 1980, Ser. No. 147,085

Int. Cl.³ B28D *5/00*

U.S. Cl. 125—30 R **6 Claims**



1. A machine particularly useful for sawing diamonds or other precious stones, comprising: a stationary frame; a pair of horizontally spaced posts each having a socket open at its upper end for receiving and rotatably supporting the horizontal trunnions of a vertical sawing disc holder; a swingable arm pivotably mounted at one end to said stationary frame; a workpiece holder removably carried by the opposite end of said swingable arm and rotatable about the longitudinal axis thereof; a threaded pin fixed to said workpiece holder and rotatable therewith about the longitudinal axis of the swingable arm; and a stop member fixed to said swingable arm and engageable by said threaded pin to locate the workpiece holder at a predetermined angular position with respect to the swingable arm and to the vertical sawing disc holder when the workpiece holder is removed from, and then reapplied to, said swingable arm.

4,323,051

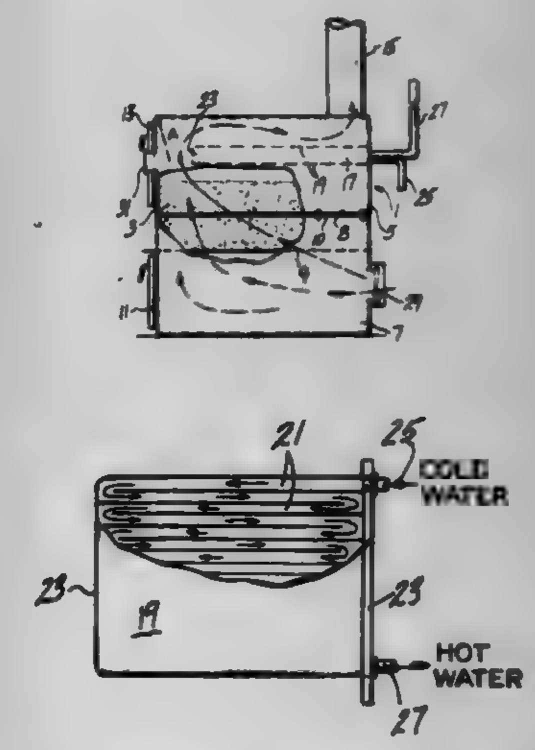
COAL-BURNING FURNACE OR BOILER

Les M. Auerbach, Madison, and William F. Ricker, Guilford, both of Conn., assignors to Old King Coal, Ltd., Madison, Conn.

Filed Jul. 8, 1980, Ser. No. 166,775

Int. Cl.³ F24C *1/14*; F24H *9/14*

U.S. Cl. 126—77 **4 Claims**



3. An improved coal-burning furnace comprising:

a. a right parallelspiped firebox consisting of upper and lower firebox halves having mating, outwardly turned flanges joined by mechanical fasteners, with the flanged joint lying substantially along the horizontal median lines of the walls thereof;

b. a grate, in said lower half of said firebox, adapted to support a bed of coal to be burned;

c. first air inlet means, in a first wall of said firebox, for controllably admitting a first stream of air into said firebox below said grate;

d. a heat transfer member, disposed (in said firebox,) above said grate, in said upper half of said firebox, and adapted to collect thereunder combustible gases from the primary combustion of coal on said grate, said heat transfer member comprising a pair of parallel plates, a plurality of parallel channel wall members extending perpendicularly therebetween, and a pair of parallel end walls, said channel wall members being alternately longitudinally offset, each contacting but one of said end walls;

e. second air inlet means in a second wall of said firebox, opposite said first wall, for admitting a second stream of air into said firebox, immediately below said heat exchange member, for burning of said combustible gases collected there; and

f. exhaust means in said upper half of said firebox, above said heat transfer member, adapted to draw the burned gases

over an upper surface of said heat exchange member before the same exit said firebox.

4,323,052

SOLAR ENERGY SYSTEM

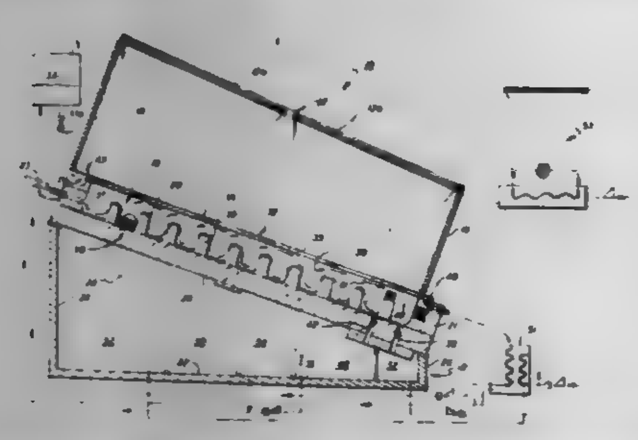
Virgil Stark, 936 Fifth Ave., New York, N.Y. 10021

Continuation-in-part of Ser. No. 1,175, Jan. 5, 1979, abandoned, which is a continuation-in-part of Ser. No. 915,001, Jun. 13, 1978, and Ser. No. 920,288, Jun. 29, 1978. This application Jun. 4, 1979, Ser. No. 44,901

The portion of the term of this patent subsequent to Jun. 2, 1998, has been disclaimed.

Int. Cl.³ F24J *3/02*; B01D *3/02*

U.S. Cl. 126—440 36 Claims



1. Apparatus for recovering energy from the sun comprising:

(a) means for conducting a first fluid comprising water to be distilled;

(b) linear lens means having a focal length f, said lens means located a distance less than f from said means for conducting and arranged so as to direct concentrated solar energy on said means for conducting with the focus of said lens means on or below said means for conducting;

(c) conduit means transparent to visible light interposed between said means for conducting and said lens means;

(d) means supplying a second fluid comprising a cooling fluid to said conduit means for assisting the condensation on said conduit means of water evaporated from said means for conducting;

(e) means for collecting the condensed water; and

(f) at least one array of photovoltaic cells disposed in said means for conducting at a location of the concentration of solar energy by said lens means.

2. Apparatus for recovering energy from the sun comprising:

(a) means for conducting a first fluid comprising water to be distilled, said means for conducting comprising an undulated plate system;

(b) linear lens means having a focal length f, said lens means located a distance less than f from said means for conducting and arranged so as to direct concentrated solar energy on said means for conducting with the focus of said lens means on or below said means for conducting, said lens means comprising at least one linear lens aligned so as to direct its energy onto said plate system;

(c) conduit means transparent to visible light interposed between said means for conducting and said lens means, said conduit means comprising a double plate conduit having an upper and a lower plate interposed between said linear lens and said undulated plate system,

(d) means supplying a cooling fluid comprising distilled water to said conduit means for assisting the condensation thereon of water evaporated from said means for conducting; and

(e) means for collecting the condensed water, the first fluid conducted over said means for conducting and said cooling fluid.

5. Apparatus for recovering energy from the sun comprising:

(a) means for conducting a first fluid comprising water to be distilled, said means for conducting comprising a first transparent tube;

(b) linear lens means having a focal length f, said lens means located a distance less than f from said means for conducting and arranged so as to direct concentrated solar energy on said means for conducting with the focus of said lens means on or below said means for conducting;

(c) conduit means transparent to visible light interposed between said means for conducting and said lens means comprising a second transparent tube surrounding said first transparent tube;

(d) means supplying a cooling fluid comprising distilled water to said second transparent tube, said cooling fluid being circulated between said tubes for assisting condensation of water being evaporated on the inside of said first tube; and

(e) means for collecting the condensed water, the first fluid conducted through said first transparent tube and said cooling fluid.

6. Apparatus according to claim 5 and further including means to cause said lens to track the movement of the sun, said means adapted to rotate said lens about an axis concentric with the axis of said first tube, said lens being adapted to direct its radiation along said tubes with its focal point below the bottom of said tube assembly.

4,323,053

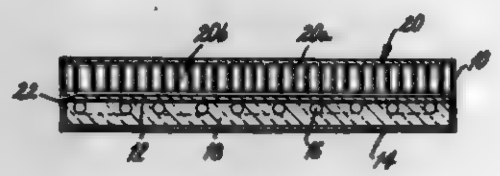
SOLAR HEATER WITH INTEGRAL HEAT TRAP GLAZING

Robert W. McCullough, Tarrytown, and Thomas A. Hewett, Chappaqua, both of N.Y., assignors to Union Carbide Corporation, Danbury, Conn.

Continuation of Ser. No. 824,103, Aug. 12, 1977, abandoned. This application Apr. 18, 1980, Ser. No. 141,328

Int. Cl.³ F24J *3/02*

U.S. Cl. 126—441 13 Claims



1. In a solar air heater comprising, in combination:

a housing having a light-transmitting front wall for passing incident solar radiation and including an inlet and an outlet for establishing a flow path for a gaseous medium to be heated,

a gas-permeable radiation absorbent collector element positioned across the flow path in said housing and arranged to accept incident solar radiation passing through said front wall and to transfer the absorbed heat to said gaseous medium passing along said flow path and through said collector element, and

a radiation trap disposed in said housing adjacent to the surface of said front wall facing said collector element, said radiation trap comprising a cellular honeycomb structure containing a multiplicity of open cells in communication with said flow path and having cell walls which are substantially perpendicular to said front wall and which serve as baffle elements to inhibit the flow of said gaseous medium through said radiation trap in a direction substantially parallel to the plane of said front wall, said cellular structure being maintained in at least firm mechanical contact with said front wall and being composed of a light-transmitting material which is opaque to infrared radiation emitted from said collector element in a direction toward said front wall; the improvement of integrally forming said light-transmitting front wall and heat trap as a unitary member thereby eliminating interfacial surfaces, joints or adhesive bonds therebetween which can act as scattering sites for incident light.

4,323,054

SOLAR ENERGY COLLECTION SYSTEM

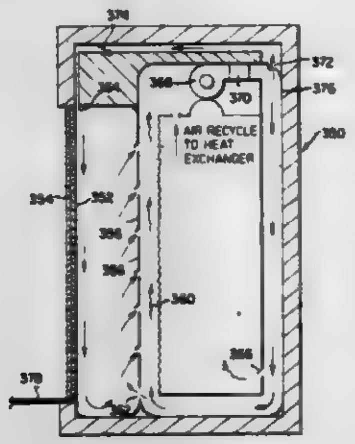
Richard L. Hummel, 87 Boulton Dr., Toronto, Ontario, Canada (M4V 2V5)

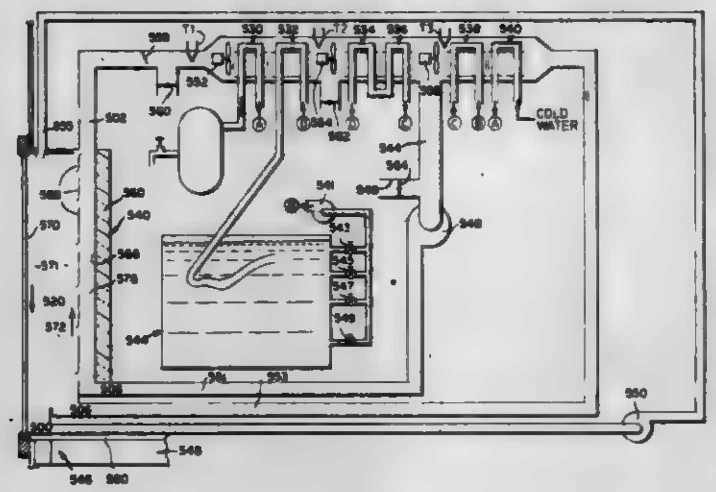
Continuation-in-part of Ser. No. 761,187, Jan. 21, 1977, Pat. No. 4,126,270. This application Nov. 20, 1978, Ser. No. 962,405

Claims priority, application United Kingdom, Jan. 23, 1976, 2595/76

Int. Cl.³ F24J *3/02*

U.S. Cl. 126—449 10 Claims





1. A solar energy collector in which air is the working fluid and which comprises: a solar energy absorbent body having a surface which is exposed to sunlight in use and from which solar energy absorbed by the body can be transmitted as sensible heat; a panel which is transparent to sunlight and which is disposed at the exterior of said body and spaced therefrom so as to define therewith a first air passageway in front of said body; means defining a second air passageway behind said body and having a heated air outlet adjacent an upper end thereof; and an inlet for air to be heated, communicating with said first air passageway;

said panel being spaced from said absorbent body by an amount sufficient to permit the formation of respective hot and cold boundary layers of air on opposed surfaces of said solar energy absorbent body and panel respectively and to allow for a buffer zone between said boundary layers for supressing convective heat transfer from the body;

and said body comprising a panel having an outer surface which defines said surface exposed to sunlight and which is coloured a selective dark colour to supress heat loss by radiation, said panel being intended to be disposed at an angle greater than about 80° to the horizontal when the collector is installed and being formed with a plurality of vertically spaced transverse openings defined by respective upper and lower edges, of which the upper edges are spaced outwardly of the lower edges so as to cause transfer from said first air passageway to said second air passageway of boundary layers of heated air formed on said outer surface of the panel in use, whereby said layers of air are not permitted to become large enough or turbulent enough to transfer significant amounts of heat to said buffer zone of substantially stagnant air in use.

4,323,055

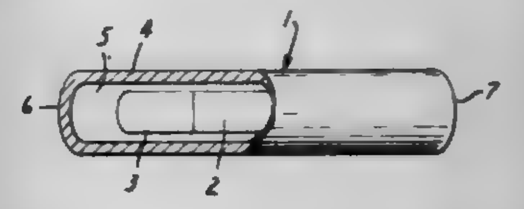
RADIOACTIVE IODINE SEED

David O. Kubiatowicz, White Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Apr. 8, 1980, Ser. No. 138,293

Int. Cl.³ A61K *27/04*

U.S. Cl. 128—1.2 6 Claims



1. In a radioactive iodine seed comprising a sealed container having an elongate cavity, a therapeutic amount of radioactive iodine within said cavity and a carrier body disposed within said cavity for maintaining said radioactive iodine in a substantially uniform distribution along the length of said cavity, the improvement wherein said carrier body is an elongate rod-like member formed of silver or a silver-coated substrate which is X-ray detectable, said carrier body containing a layer of radioactive iodide formed on the surface of said carrie body, said carrier body occupying substantial portion of the space within said cavity.

4,323,056

RADIO FREQUENCY INDUCED HYPERTHERMIA FOR TUMOR THERAPY

Nicholas F. Borrelli, Elmira; Albert A. Lederer, Corning, and Joseph N. Panzarino, Big Flats, all of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed May 19, 1980, Ser. No. 151,210

Int. Cl.³ A61K *9/14, 41/00*

U.S. Cl. 128—1.3 12 Claims

1. A method for reducing the mass of a tumor comprising localized magnetically-coupled, RF-induced hyperthermia mediated by a material which is non-toxic to animal tissue and which has incorporated therewithin magnetic iron-containing crystals of such size, composition, concentration, and magnetic properties to impart a coercive force of at least 200 oersteds to said material, and wherein the frequency of said RF magnetic field will not exceed about 10 kilohertz, allowing essentially only magnetic hysteresis heating to occur.

4,323,057

SELF RETAINING UTERINE ELEVATOR

David J. Jamieson, 1908 Coffee Rd., Modesto, Calif. 95355

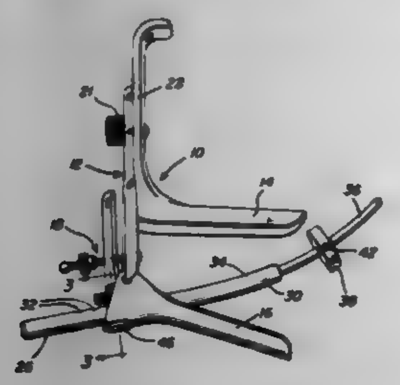
Filed May 27, 1980, Ser. No. 153,725

Int. Cl.³ A61B *1/32*

U.S. Cl. 128—17 9 Claims

1. A speculum for use in inverted position and for manually elevating a female uterus toward the abdominal wall, said speculum including first and second elongated transversely arcuate upper and lower blades opening toward each other and defining a longitudinal open ended housing therebetween, mounting structure connected between the first corresponding

ends of said blades relatively pivotally joining said blades for swinging of the second corresponding ends thereof toward and away from each other and adjustable lateral shifting of the axis of relative pivoting of said blades toward and away from one of said blades, said mounting structure including means operative to adjustably limit swinging of said second ends toward each other, an elongated rod disposed between said blades, extending through said housing and having a first base end cradled in the first end of the other blade, said first end of said rod being longitudinally shiftable relative to the other blade first end, clamp means releasably rigidly anchoring said first



rod end in adjusted longitudinally shifted position relative to said other blade, the second end of said rod being inclined away from the second end of said other blade and toward the second end of said one blade when said blades are generally parallel and a cervix engaging abutment carried by and shiftable along said second end of said rod, and retaining means operative to releasably retain said abutment in adjusted position on said rod, said second end of said one blade having one end of an elongated handle supported therefrom and disposed at generally right angles relative thereto with the other end of said handle projecting substantially directly away from said other blade.

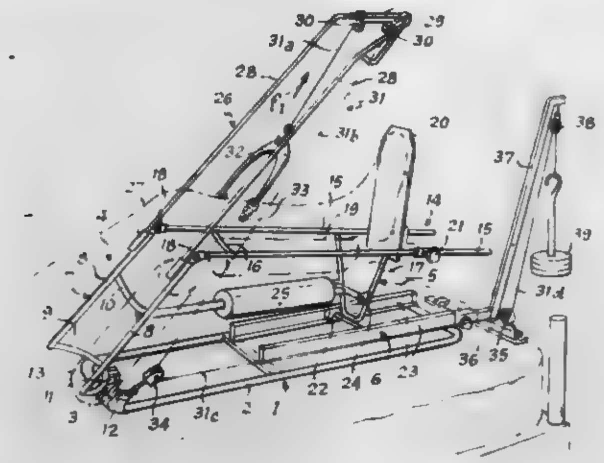
4,323,058
ANKLE BRACE
Garnett E. Detty, 525 General Muhlenberg Rd., King of Prussia, Pa. 19406
Filed Oct. 14, 1980, Ser. No. 196,224
Int. Cl.^{3} A61F *3/00*
U.S. Cl. 128—80 H 20 Claims

1. An ankle brace comprising a jacket, malleoli stabilization means and lift strap means, said jacket having a medial side portion and a lateral side portion, each having a bottom, top, front and rear edge and elastic means connecting said portions together at their rear edges and at their bottom edges, said front edges of said side portions being arranged to be secured together by lacing means, said jacket being arranged to fitable about the ankle and contiguous portions of the foot of a person, with the medial side portion of the jacket located over the medial side of the ankle and with the lateral side portion of the jacket located over the lateral side of the ankle, said malleoli stabilizing means comprising lateral stabilizing means secured to the lateral side portion of said jacket for surrounding the external malleolus and medial stabilizing means secured to the medial side portion of said jacket for surrounding the internal malleolus, said lateral and medial stabilzing means being arranged to be releasably secured together by lacing means, said lift strap means being an elongated member having a pair of ends, each arranged for securement to a respective side portion of said jacket, with the intermediate portion of said strap means being wrapped about the instep and the ankle of the person to provide an upward lifting force to the jacket.

4,323,059
ARTICULATED SPLINT FOR A KNEE JOINT
Andre Rambert, Les Fontanelles, 10, bis rue Docteur Bonhomme, Lyon 3e; Gilles Bousquet, Chemin de Marandon, Saint Etienne, and Francois Rigal, Hopital Interdepartemental, Hauteville, all of France
Filed Apr. 16, 1980, Ser. No. 140,704
Claims priority, application France, Apr. 19, 1979, 79 10960; Dec. 26, 1979, 79 32140
Int. Cl.^{3} A61F *3/00*
U.S. Cl. 128—80 C 11 Claims

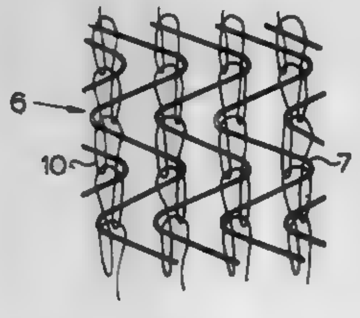
1. An articulated splint for a knee joint of the type having two symmetrical portions which are to be respectively placed on respective sides of a leg of a patient and held in place by upper and lower parts of a cast which has its central part absent to allow movement of a knee of a patient, the splint comprising said two symmetrical portions, each of said symmetrical portions including a first, upper, femoral upright and a second, lower, tibial upright, said first upright and said second upright being intended to be fastened with respective corresponding uprights of the opposite one of said symmetrical portions by the respective upper and lower parts of the cast; a first pin defining an axis of rotation of said rod with respect to one of said uprights and extending through said rod; and a second pin defining a point of movement of said rod with respect to the other of said uprights and extending through said rod, said second pin being positioned in an elongated aperture in the other of said uprights and said elongated aperture having its longitudinal axis oriented in the direction of said first pin, wherein, to limit rotation of said second, tibial upright to a single direction from its position in alignment with said first, femoral upright, said rod of each of said portions exhibits, along its edge opposite that of the direction of rotation of said second, tibial upright, a wing forming a stop for each of said uprights.

4,323,060
SPLINT
Jean-Claude R. Pecheux, 55, Avenue d'Arches, Charleville-Mezieres, France (08000)
Filed Apr. 18, 1980, Ser. No. 141,405
Claims priority, application France, Apr. 23, 1979, 79 11181; Nov. 5, 1979, 79 27622
Int. Cl.^{3} A24C *5/18*
U.S. Cl. 128—84 R 15 Claims



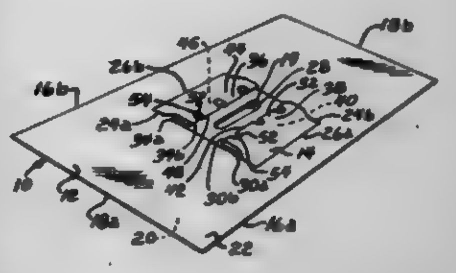
1. A splint for a lower limb comprising; a base, an assembly having a femoral support member pivoted to said base, a tibial support member pivoted to said femoral support member and having a portion resting on and movable relative to said base, and drive means extending between said femoral support member and said tibial support member for producing relative angular movement between said members and between said members and said base.

4,323,061
STIFF SUPPORTING BANDAGE
Koji Usukura, Saitama, Japan, assignor to Tokyo Eizai Laboratory Co., Ltd., Tokyo, Japan
Filed Sep. 28, 1979, Ser. No. 80,041
Claims priority, application Japan, Oct. 4, 1978, 53-122339
Int. Cl.^{3} A61F *5/04*
U.S. Cl. 128—90 1 Claim



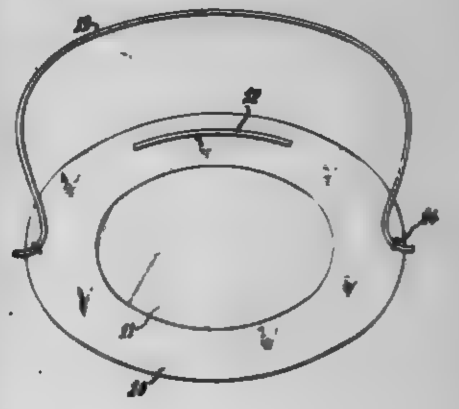
1. A fabric adapted to be impregnated with a selected, hardenable, stiffening material thereby forming an initially flexible bandage that can be coverted to a light weight, strong, rigid bandage by curing the stiffening material, said fabric comprising:
an amount of a first fiber and an amount of a second fiber combined together,
said first fiber is formed of glass fibers,
said second fiber is a fiber selected from a class containing cotton, flax, staple fiber, wool, acrylic resin, nylon, rayon and polyester,
said amount of said glass fiber has a weight selected from a range of 20% to 70% of the total weight of said fabric,
said first and second fibers are formed as first and second yarns and are woven together,
said second yarn is a compound yarn formed of said second fiber combined with a third fiber selected from said class.

4,323,062
SURGICAL DRAPE WITH RETAINING DEVICE
Herbert G. Canty, Ingleside, Ill., assignor to The Kendall Company, Boston, Mass.
Filed Nov. 28, 1980, Ser. No. 210,887
Int. Cl.^{3} A61F *13/00*
U.S. Cl. 128—132 D 22 Claims



1. A drape for performing a surgical procedure on a patient's body, comprising:
a main sheet for placement over the patient's body, said main sheet having an inner surface facing toward the patient's body after placement of the drape, and an outer surface facing away from the patient's body after placement of the drape; and
a pocket on the outer surface of said main sheet, said pocket being spaced from the site of surgical procedure and being positioned in the expected path of fluid runoff during the surgical procedure, said pocket having a flap defining a pouch and an outer edge defining an opening communicating with said pouch, said flap having an aperture extending through the flap, and an elastic strip extending across the aperture to engage against tubing or the like placed in the flap aperture.

4,323,063
MEDICAL FACE MASK
Jeanne M. Fisichella, 3716 SW. 30th St., Terrace Apt. 41B, Gainesville, Fla. 32608
Filed Apr. 21, 1980, Ser. No. 142,034
Int. Cl.^{3} A61B *19/00*
U.S. Cl. 128—139 3 Claims



1. A medical face mask comprising a head strap and mask to fit over the nose, mouth, and chin of the wearer and to conform at its edges reasonably closely to the face and neck of the wearer, the central portion of said mask adjacent the nose and mouth of the wearer being transparent to provide a view therethrough of the mouth of the wearer and being air-impermeable to inhibit air, moisture and bacteria from passing therethrough, and the remaining annular portion surrounding said central portion of said mask being made of air-permeable, bacteria-filtering material to permit breathing by the wearer said annular portion being connected to and along and termi-

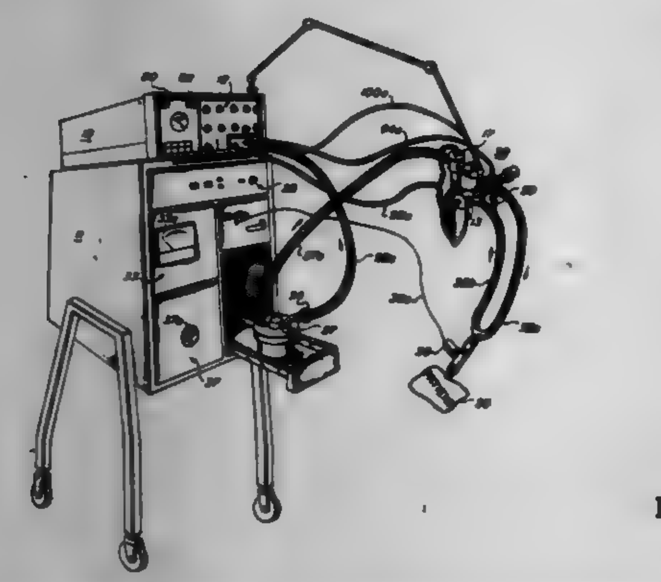
nating adjacent to the outer edge portions of said central portion.

4,323,064

VOLUME VENTILATOR

Richard J. Hoenig, Coopersburg, and James J. Klinikowski, Whitehall, both of Pa., assignors to Puritan-Bennett Corporation, Kansas City, Mo.

Continuation of Ser. No. 735,369, Oct. 26, 1976, abandoned. This application Jun. 1, 1979, Ser. No. 44,635
Int. Cl.³ A61M *16/00*
U.S. Cl. 128—204.21 44 Claims



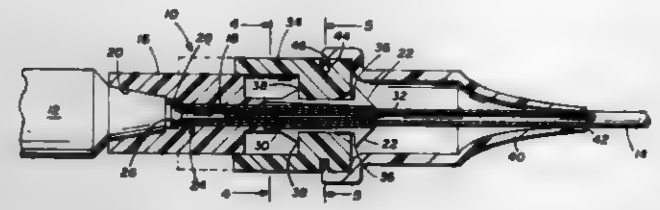
1. A ventilator system having patient connection means and a plurality of integrated modes of operation for providing a patient with a flow of breathing gas under pressure comprising
valve means for controlling said flow of gas to said patient connection means for inspiration and expiration,
mode selecting means for operating said ventilator system in at least one selected mode of operation;
adjustable setting means including a plurality of adjustable time setting means individually related to sigh inspiratory time, sigh expiratory time, inspiratory time, expiratory time and inspiratory pause time each corresponding to said integrated modes of operation with each of said time setting means producing a corresponding time related threshold signal,
signal means including time base means for producing a common time signal which increases in value with time at a predetermined linear slope for a predetermined time duration,
means for comparing and determining the crossing of each threshold signal with said common time signal for producing a plurality of control signals,
means responsive to said mode selecting means for selecting at least one control signal corresponding to a selected integrated mode and for resetting the time base means to begin a new time signal thereby to provide said predetermined time duration, and
means for applying said at least one selected control signal to said valve means for controlling the flow of gas to said patient connection means whereby each of said time setting means may be continuously adjusted to change one or more of said threshold signals without varying any of the other threshold signals.

4,323,065

ATTACHABLE CONNECTOR FOR CATHETER

John E. Kling, Dallas, Tex., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Jan. 17, 1980, Ser. No. 113,099
Int. Cl.³ A61M *5/00*
U.S. Cl. 128—214 R 7 Claims



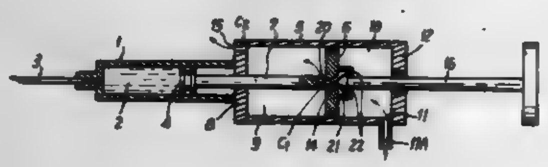
1. A connector for attachment to a section of tubing, such as a catheter or the like, comprising:
a hub having a distal end and a proximal end, and an axial bore extending therethrough sized for receipt of the tubing;
said hub including a tapered chamber at the proximal end thereof in fluid communication with the bore;
a plurality of resilient fingers extending outwardly from the distal end of said hub in surrounding relationship with the bore;
a slidable ring mounted for movement along said fingers from an unlocked position to a locked position wherein the connector and the tubing are secured together in fluid communication; and
said fingers each including a pair of oppositely facing barbs for eetaining said ring in the locked position to prevent disconnection of the connector from the tubing.

4,323,066

SYRINGE

Frederic Bourdon, 51, Aristide Briand St., 92300 Levallois, France

Filed Sep. 24, 1980, Ser. No. 190,259
Claims priority, application France, Nov. 6, 1979, 79 27275
Int. Cl.³ A61M *5/00*
U.S. Cl. 128—218 R 19 Claims



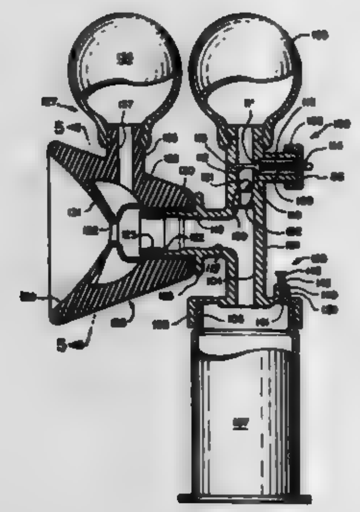
1. Apparatus for injecting or aspirating a fluid, including a liquid or paste, said apparatus comprising:
(a) a first piston adapted to be in direct contact with said fluid;
(b) a second piston comprising a shaft adapted to coact with said first piston, said second piston being slideably mounted in a cylinder, said cylinder being divided by said second piston into a first chamber situated on the fluid injection side of said cylinder and a second chamber situated on the opposite side of said cylinder, the cylinder being adapted to be in fluid communication with a positive or negative pressure;
(c) at least one communication channel positioned between said second chamber and the exterior of said cylinder, said at least one communication channel having a chamber orifice opening into the second chamber and an exterior orifice opening to the exterior; and
(d) blocking means for blocking said channel;
whereby a positive or negative pressure in said second chamber relative to said first chamber while said communication channel is blocked results in the controllable movement of said first piston.

4,323,067

COMBINATION BREAST PUMP AND GAVAGE FEEDING APPARATUS AND METHOD

Frank H. Adams, 1246 Indiana Ave., Salt Lake City, Utah 84104

Continuation-in-part of Ser. No. 807,773, Jun. 20, 1977, abandoned. This application Jun. 21, 1978, Ser. No. 917,552
Int. Cl.³ A61M *1/06*
U.S. Cl. 128—281 24 Claims



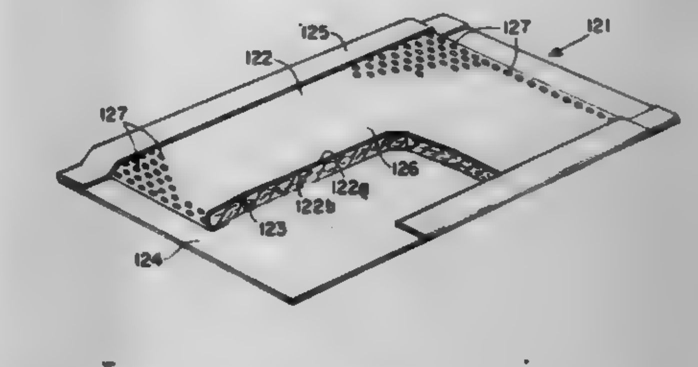
1. A combination breast pump and gavage feeding apparatus comprising:
a conduit;
a suction means connected to the conduit and operable to impose a negative pressure in the conduit;
a housing interconnected in fluid communication with the conduit, the housing being dimensionally configurated to engage a nipple in sealing relationship;
a removable insert means for the housing, the insert means selectively altering the effective internal diameter of the housing, the insert means being configurated as a cylinder fabricated from a resilient material to accommodate sealing engagement between the housing and the nipple, the outside diameter of the insert means corresponding to the inside diameter of the housing and the inside diameter of the insert means being preselected to correspond to the outside diameter of the nipple thereby providing an improved sealing relationship between the nipple and the housing;
means to gently squeeze and manipulate the base of the nipple and surrounding aerola during application of negative pressure to the nipple comprising a pulse unit including a shell having a large concave opening adapted to receive a breast and connecting to a tubular opening adapted to be fixed to and to open into the housing; resilient means in the shell adapted to encircle and to engage the base of the nipple comprising a resilient, breast-engaging membrane and means for sequentially inflating and deflating the resilient, breast-engaging membrane, the resilient means further comprising inwardly projecting, pointed fingers forming backing members spaced around the resilient, breast-engaging membrane; and means for causing said resilient means to squeeze and manipulate the base of the nipple and the surrounding aerola to stimulate lactation;
a coupling means attached to the conduit in fluid communication therewith; and
reservoir means removably coupled to the coupling means.

4,323,068

DIAPER WITH EMBOSSED TEXTILE SHEET

Mohammed I. Aziz, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 927,186, Jul. 24, 1978, abandoned. This application Feb. 25, 1980, Ser. No. 124,411
Int. Cl.³ A41B *13/02*
U.S. Cl. 128—287 5 Claims



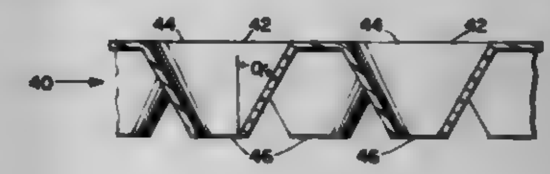
1. A disposable diaper comprising:
means for absorbing moisture;
a liquid impervious backsheet adjacent said means for absorbing moisture; and
a topsheet adjacent said means for absorbing moisture oppositely disposed from said backsheet, said topsheet comprising a porous coherent nonwoven thermoplastic sheet with improved high loads caliper wherein said topsheet is a generally planar sheet having disposed thereon a multiplicity of elevated bosses having side walls and a land wherein said land and said side walls have a thickness no greater than the thickness of the unembossed sheet, said side walls define embossed side wall angles of less than 28 degrees to the perpendicular of said planar sheet.

4,323,069

DISPOSABLE ABSORBENT ARTICLE HAVING AN INTERMEDIATE LAYER INTERPOSED BETWEEN THE TOPSHEET AND THE ABSORBENT CORE

Nicholas A. Ahr, Cincinnati, Ohio, and Douglas J. Smith, Woodbury, Minn., assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed May 12, 1980, Ser. No. 148,660
Int. Cl.³ A41B *13/02*
U.S. Cl. 128—287 10 Claims



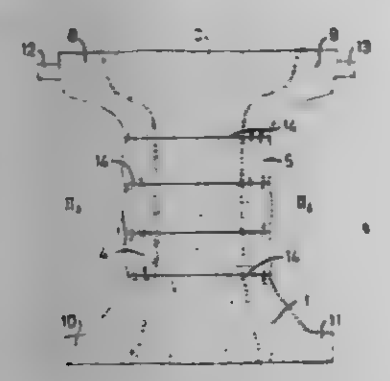
1. A disposable absorbent article comprising:
an absorbent core means for absorbing liquid, said absorbent core means having a first and a second opposed face;
a liquid impermeable backsheet overlaying said first opposed face of said absorbent core means;
a liquid permeable topsheet overlaying said second opposed face of said absorbent core means, said topsheet having an inner surface facing toward said absorbent core means;
a layer of fibers affixed to said inner surface of said topsheet, said layer of fibers comprising a multiplicity of individual fibers, said layer of fibers weighing at least about 1.5 grams of said fibers per square meter of said topsheet; and
an intermediate layer interposed between said layer of fibers and said absorbent core means, said intermediate layer having a multiplicity of tapered capillaries, each of said capillaries having a base opening in the plane of said intermediate layer and an apex opening remote from said plane of said intermediate layer, and having an angle of

taper of from about 10° to about 60°, said base opening dimension being from about 0.006 to about 0.250 inches and said apex opening dimension being from about 0.004 inches to about 0.100 inches, said base opening being in contact with said layer of fibers and said apex opening being in contact with said absorbent core means.

4,323,070
DISPOSABLE DIAPER

Ingela M. Ternström, Göteborg, and Lars E. Boman, Mölndal, both of Sweden, assignors to Molnlycke AB, Goteborg, Sweden

Filed Jan. 30, 1980, Ser. No. 116,808
Claims priority, application Sweden, Feb. 2, 1979, 7900938
Int. Cl.³ A41B *13/02*
U.S. Cl. 128—287 3 Claims



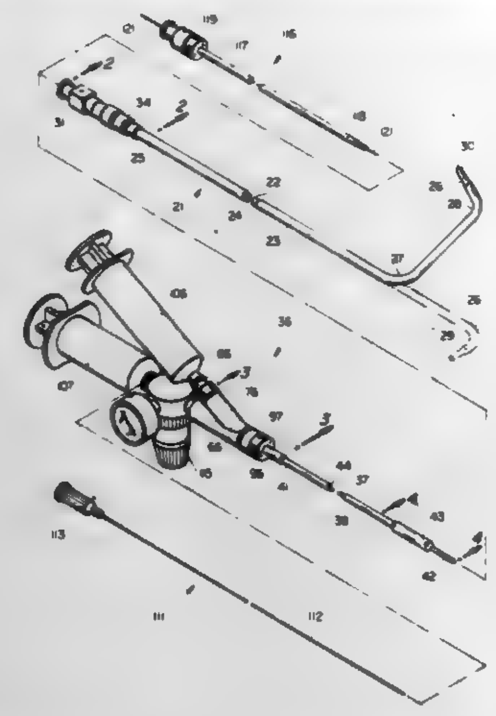
1. In a disposable diaper comprising a first outer layer of a liquid-permeable material and intended to abut the user's body, a second outer layer of a liquid-impermeable material and an intermediate layer of absorbent material arranged between said two outer layers; the improvement in which at least that portion of the diaper situated in the user's crotch is provided with elastic band or thread means extending between the two side edges of the diaper, said band or thread means being at least partially connected with pretension to the liquid-permeable layer and arranged prestressed on the liquid-permeable layer in order to preform said portion of the diaper to a bowl-like shape, whereby in use the marginal regions of the diaper in said crotch portion are forced against the user's body and thereby prevent lateral leakage, the parts of the two outer layers situated in the user's crotch extending transversely a distance beyond the absorbent intermediate layer and being mutually connected only on both sides of said intermediate layer within longitudinal areas along their outer edges, whereby the elastic band or thread means pull together the liquid-permeable outer layer which in turn pulls together sections of the liquidimpermeable layer around the edges of the absorbent intermediate layer.

4,323,071
VASCULAR GUIDING CATHETER ASSEMBLY AND VASCULAR DILATING CATHETER ASSEMBLY AND A COMBINATION THEREOF AND METHODS OF MAKING THE SAME

John B. Simpson, Menlo Park, and Edward W. Robert, Los Altos, both of Calif., assignors to Advanced Catheter Systems, Inc., Santa Clara, Calif.

Continuation-in-part of Ser. No. 123,713, Feb. 21, 1980, abandoned, which is a continuation of Ser. No. 899,061, Apr. 24, 1978, abandoned. This application May 19, 1980, Ser. No. 151,175
Int. Cl.³ A61M *29/00, 25/00*
U.S. Cl. 128—343 21 Claims

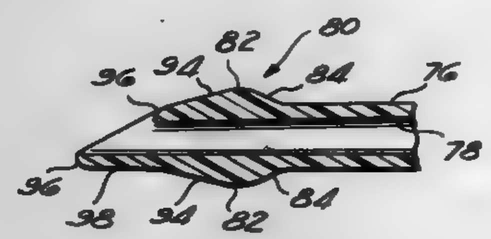
1. In a combination of a guiding catheter assembly and a dilating catheter assembly, the guiding catheter assembly comprising a first flexible tubular member formed of a material which has a low coefficient of friction, a second flexible tubular member encasing said first tubular member so that the first tubular member fits tightly in the second tubular member, said combined first and second tubular members having proximal and distal ends and a fitting mounted on the proximal ends, the dilating catheter assembly comprising a flexible tubular member, said tubular member of said dilating catheter assembly having proximal and distal ends and an inflatable annular portion formed integral with the tubular member of said dilating catheter assembly near the distal end thereof, a fitting mounted on the proximal end of the tubular member of the dilating catheter assembly, said dilating catheter assembly being disposed within said guiding catheter assembly and means for inflating and deflating said inflatable annular portion.



4,323,072
CANNULA FOR A VEIN DISTENTION SYSTEM

Robert F. Rosenbluth, Laguna Niguel, Calif., and Lawrence I. Bonchek, Milwaukee, Wis., assignors to Shiley, Incorporated, Irvine, Calif.

Division of Ser. No. 113,247, Jan. 18, 1980. This application May 8, 1980, Ser. No. 147,847
Int. Cl.³ A61M *25/00;* A61B *19/00*
U.S. Cl. 128—348 1 Claim

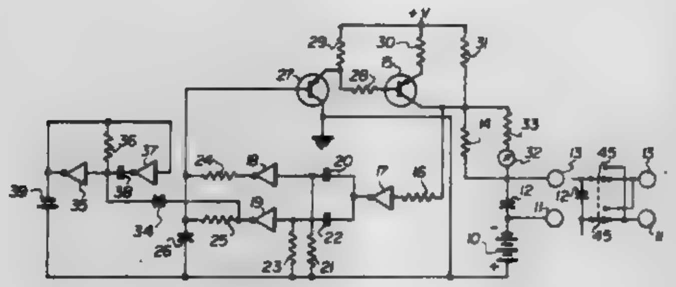


1. A cannula for use in testing a saphenous vein as a coronary or peripheral bypass graft, said cannula comprising:
a conduit for communicating fluid to said vein; and
a flat, elongate tip on the distal end of said conduit comprising:
a distal beveled portion having generally rounded edges;
a non-tapered section on the side of said tip opposite said beveled portion, said beveled portion and said non-tapered section providing means for forming a generally arcuate leading edge on said tip for facilitating insertion of said tip into said vein and preventing damage to vein tissue;
a tapered portion having a taper of about 7 to 15 degrees located proximally with respect to said beveled portion, said tapered portion forming a ridge to provide means for retaining said cannula within said vein; and
a shoulder having a taper of about 20 to 30 degrees located proximally with respect to and tapered in an opposite direction as said tapered portion to provide means for facilitating a sealing ligature around said vein.

4,323,073
APPARATUS AND METHOD FOR CONTROLLING THE APPLICATION OF THERAPEUTIC DIRECT CURRENT TO LIVING TISSUE

Harold Ferris, St. Eugene, Canada, assignor to COS Electronics Corporation, Lyn, Canada

Filed Aug. 21, 1979, Ser. No. 68,431
Claims priority, application Canada, Sep. 11, 1978, 311015
Int. Cl.³ A61N *1/20*
U.S. Cl. 128—419 R 23 Claims



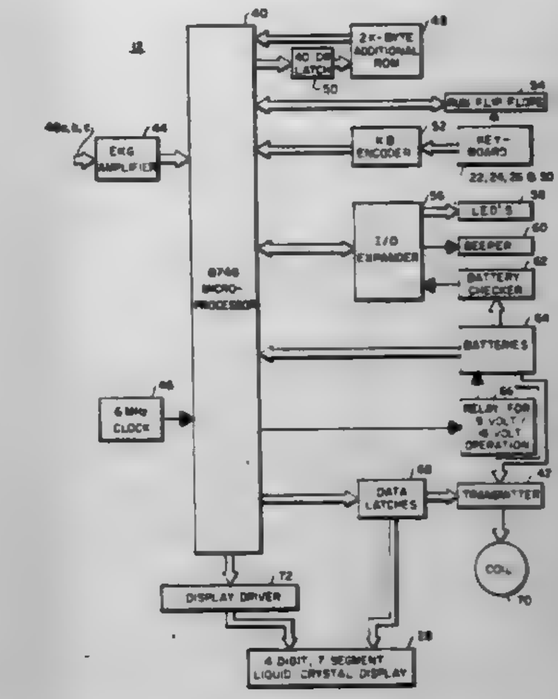
1. Apparatus for controlling the application of therapeutic direct current to living tissue comprising:
(a) means for increasing the amplitude of an applied direct current passing through the tissue from an insignificant level to a first predetermined higher level at a first controlled rate,
(b) means for changing the current level passing through the tissue to a second predetermined lower level and maintaining it for a predetermined controlled time period following attainment of the first predetermined current level, and
(c) means for decreasing the current level passing through the tissue to an insignificant level at a second controlled rate following the controlled time period,
the current levels being such as to generate voltage gradients in the tissue which are less than nerve stimulation voltage gradients.

4,323,074
PACEMAKER PROGRAMMING APPARATUS UTILIZING A COMPUTER SYSTEM WITH SIMPLIFIED DATA INPUT

George E. Nelms, Edina, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Mar. 12, 1979, Ser. No. 19,599
Int. Cl.³ A01N *1/36*
U.S. Cl. 128—419 PG 6 Claims

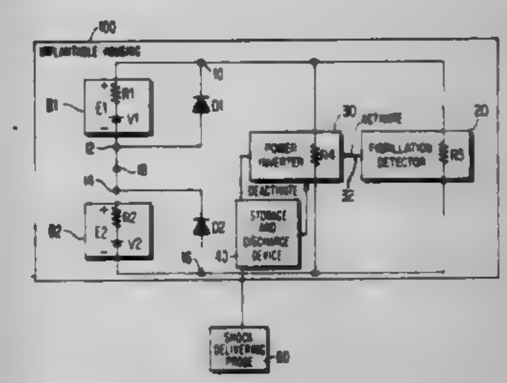
1. Apparatus for programming a pacemaker, said programming apparatus comprising:
(a) keyboard means for receiving and entering by operator manipulation manifestations controlling the operation of the pacemaker;
(b) transmitter means responsive to the manifestations entered via said keyboard means for encoding and transmitting corresponding signals to the pacemaker;
(c) means to be coupled to the patient's body for sensing the stimulating pulses applied by the pacemaker to the patient's heart; and
(d) processor means for executing a program to process data input via said keyboard means and including an interrupt input coupled to receive the sensed pacemaker's stimulating pulses from said sensing means, said processor means responsive to the operation of said transmitter means to enable its interrupt input to receive the sensed stimulating pulses for a period selected to tend to eliminate extraneous signals, and comprising means for detecting and calculating in response to the sensed pacemaker's stimulating pulses the rate and pulse widths of the stimulating pulses.



4,323,075
BATTERY FAILURE COMPENSATION FOR A POWER SUPPLY USED IN AN IMPLANTABLE DEFIBRILLATOR

Alois A. Langer, Pittsburgh, Pa., assignor to Mieczyslaw Mirowski, Owings Mills, Md.

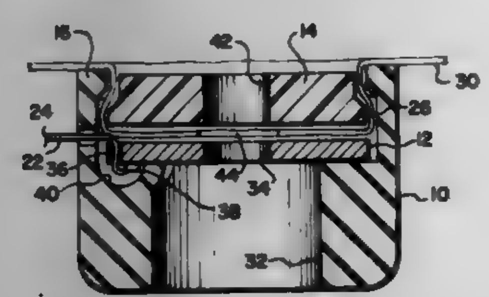
Filed Jul. 2, 1979, Ser. No. 53,733
Int. Cl.³ A61N *1/36*
U.S. Cl. 128—419 D 15 Claims



1. A fully implantable power supply for use in a fully implantable defibrillator having an implantable housing, a fibrillation detector for detecting fibrillation of the heart of a recipient, an energy storage and discharge device for storing and releasing defibrillation energy into the heart of the recipient and an inverter for charging the energy storage and discharge device in response to detection of fibrillation by the fibrillation detector, the inverter requiring a first level of power to be operational and the fibrillation detector requiring a second level of power different from said first level of power to be operational, said power supply comprising:
implantable battery means positioned within said implantable housing, said battery means including a plurality of batteries arranged in series, each of said batteries having a pair of output terminals, each of said batteries producing a distinctly multilevel voltage across its pair of output terminals, said voltage being at a first level when the battery is fully charged and dropping to a second level at some point during the discharge of the battery; and
implantable circuit means positioned within said implantable housing, said circuit means for creating a first conductive

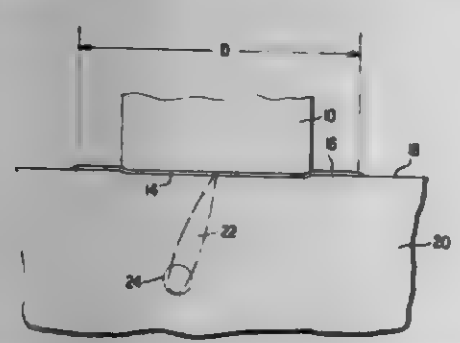
path betwen said serially-connected batteries and said fibrillation detector to provide said fibrillation detector with said second level of power, and for creating a second conductive path between said inverter and said battery means by placing only the batteries operating at said first level voltage in said second conductive path, and excluding the remaining batteries from said second conductive path to provide said inverter with said first level of power.

4,323,076
ELECTRODE CAP
Marvin W. Sams, Dallas, Tex., assignor to Electro-Cap, Inc., Dallas, Tex.
Filed Sep. 12, 1979, Ser. No. 72,611
Int. Cl.[3] A61B *5/04*
U.S. Cl. 128—644 8 Claims



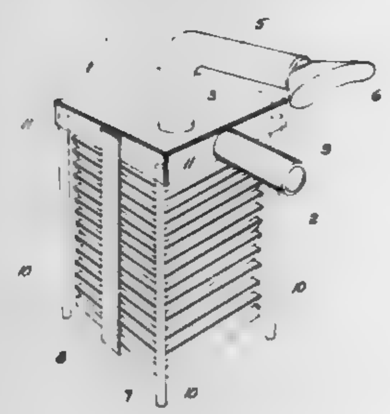
1. A biomedical electrode system comprising:
a fabric holder adapted for positioning at least one electrode assembly in contact with a patient's body; and
an electrode assembly including:
a bushing having an aperture passing from first to second ends of said bushing;
a conductive electrode positioned within said bushing aperture intermediate said first and second ends;
a retaining element carried in said bushing aperture at said first end, said bushing having means at said first end for providing a snap fit of said retaining element within said bushing aperture for retaining said conductive electrode within said bushing aperture and for securing said electrode assembly to said fabric holder with a layer of fabric positioned between said retaining element and said conductive electrode.

4,323,077
ACOUSTIC INTENSITY MONITOR
Lowell S. Smith, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.
Filed Mar. 12, 1980, Ser. No. 129,689
Int. Cl.[3] A61B *10/00*
U.S. Cl. 128—660 13 Claims



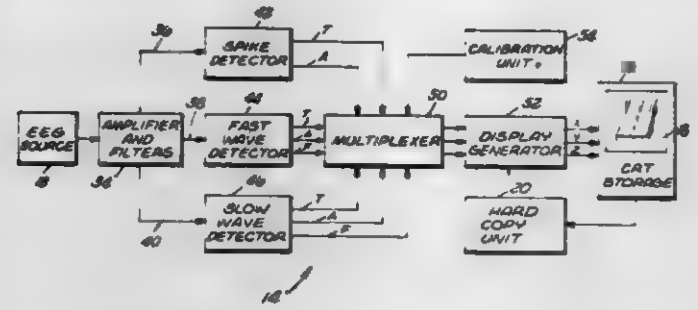
1. A method monitoring the acoustic intensity of energy applied to a body by an ultrasonic probe, comprising the steps of:
positioning a coupling medium between mutually facing, external surfaces of said body and said probe adapted to enhance acoustic coupling between said surfaces, said coupling medium incorporating therein a thermally sensitive agent adapted to provide an indication corresponding to the temperature to which said medium is subjected;
stabilizing said coupling medium to the initial temperature of said body surface;
placing said probe surface substantially in contact with a limited area of said body surface while said coupling medium is positioned therebetween;
radiating ultrasonic energy to said body by means of said probe, said radiated energy being adapted to dissipate heat on said limited area of said body surface; and
adjusting the acoustic intensity of said radiated energy when said temperature indication falls outside a predetermined range;
whereby the acoustic intensity of the ultrasonic energy applied to said body is monitored through the effect on said thermally sensitive agent produced by the heat dissipated on said limited body surface area;
wherein said thermally sensitive agent determines the color of said coupling medium in accordance with the temperature of the latter such that temperature changes to which said medium is subjected produce corresponding visually observable color changes; and
wherein the stabilization of said medium includes the step of stabilizing the color of said medium to a reference color determined by the initial temperature of said limited body surface area.

4,323,078
COLLAPSIBLE RESPIRATORY EXERCISER
Henry J. Heimlich, 17 Elmhurst Pl., Cincinnati, Ohio 45208
Filed Aug. 14, 1980, Ser. No. 177,988
Int. Cl.[3] A61B *5/08*; A63B *23/00*
U.S. Cl. 128—728 6 Claims



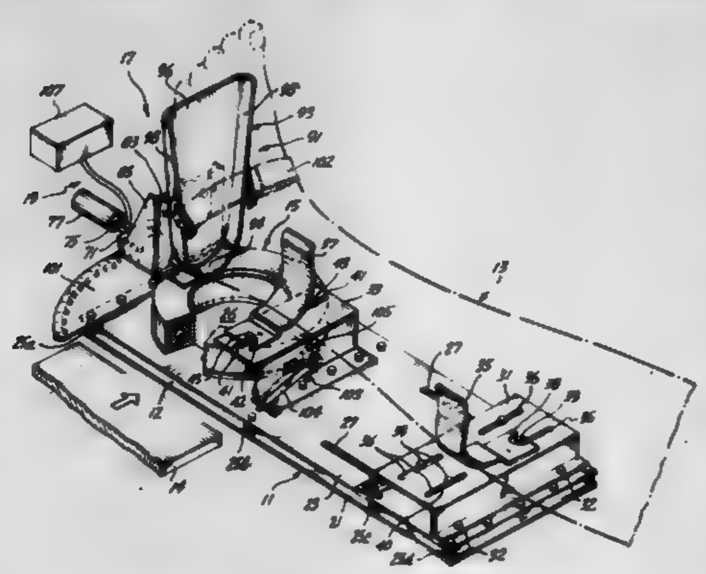
1. A collapsible respiratory exercising device consisting essentially of:
an upper plate having an orifice extending therethrough;
an inhalation tube detachably connected to said orifice;
a flexible tubular bellows attached to and suspended from said upper plate, said plate closing the upper end of said bellows with said opening in communication with said bellows;
a lower plate attached to and closing the lowermost end of said bellows, said lower plate having sufficient mass to fully expand said bellows and constituting the sole means for expanding said bellows; and
a flexible tape suspended from said upper plate externally of said bellows, said tape having calibrated indicia thereon for measuring the extent to which said bellows has been contracted upon inhalation by a user, and attachment means on said tape engagable with said lower plate, whereby said tape may be wrapped around and secured to said lower plate to restrain said bellows in a contracted position.

4,323,079
APERIODIC ANALYSIS SYSTEM, AS FOR THE ELECTROENCEPHALOGRAM
Mihai C. Demetrescu, Irvine, Calif., assignor to The Regents of the University of California, Berkeley, Calif.
Division of Ser. No. 973,423, Dec. 26, 1978, Pat. No. 4,215,697. This application Dec. 26, 1979, Ser. No. 107,204
The portion of the term of this patent subsequent to Aug. 5, 1997, has been disclaimed.
Int. Cl.[3] A61B *5/04*
U.S. Cl. 128—731 7 Claims



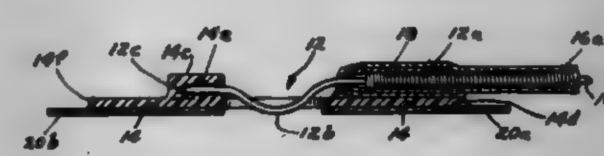
1. A system for recognizing and analyzing waves of an electroencephalogram manifest as an electrical signal comprising:
means adapted to receive said electrical signal for detecting peaks therein of either polarity;
means for storing the amplitude of at least one of said detected peaks of each polarity;
means for sensing a first time period lapsing between a largest peak of one polarity and a first subsequent peak of an opposite polarity;
means for sensing a second time period lapsing between said first subsequent peak and the following largest peak of said one polarity; and
means for additively combining said first and second time periods to provide a wave period signal indicative of the period of a wave recognized between successive largest peaks of the same polarity separated by at least one peak of opposed polarity.

4,323,080
ANKLE STRESS MACHINE
Albert H. Melhart, 1007 S. 296th Pl., Federal Way, Wash. 98003
Filed Jun. 23, 1980, Ser. No. 161,915
Int. Cl.[3] A61B *6/00*
U.S. Cl. 128—774 16 Claims



1. An ankle stress machine comprising:
a planar base;
calf restraining means mounted on said base for supporting a calf spaced from said planar base and restraining movement thereof in one direction in a predetermined plane;
a turntable, said turntable including a large cylindrical bearing mounted on said planar base so as to lie proximal to the ankle, when a calf is supported by said calf restraining means, said large cylindrical bearing having an axis of rotation lying orthogonal to said predetermined plane;
a foot support and stress assembly mounted on said turntable, said foot support and stress assembly including a foot cup positioned to receive a foot attached to a calf supported by said calf restraining means, said foot cup including a heel region for receiving the heel of said foot, a planar region for receiving the bottom of said foot and side walls for impinging on the sides of said foot, said planar and said side walls extending from said heel to the end of the metatarsal bones of said foot, said foot support and stress assembly also including an arm connected to said foot cup for rotating said turntable and, thus, said foot cup about the axis of rotation of said large cylindrical bearing; and,
stress measuring means connected to said arm for measuring the stress on said arm when said arm is stressed during the rotation of said turntable and, thus, said foot cup.

4,323,081
PACING LEAD
Wendy A. Wiebusch, White Bear Lake, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.
Filed Jun. 30, 1980, Ser. No. 164,421
Int. Cl.[3] A61N *1/04*
U.S. Cl. 128—785 12 Claims

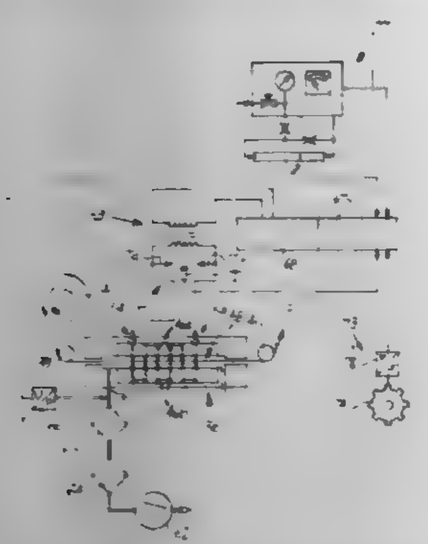


1. A body implantable lead comprising:
a conductor having a distal end;
an insulating sheath having a distal end fixedly attached to and covering said conductor;
an electrode having proximal and distal ends and having said proximal end fixedly attached to said distal end of said conductor; and
electrode support means fixedly attached to said distal end of said insulating sheath for disengaging attachment to said distal end of said electrode.

4,323,082
APPARATUS FOR MAKING HOLES IN WEBS OF WRAPPING MATERIAL FOR CIGARETTES OR THE LIKE
Adolf Helms, Hamburg, and Heinz-Christen Lorenzen, Wentorf, both of Fed. Rep. of Germany, assignors to Hauni-Werke Körber & Co. KG., Hamburg, Fed. Rep. of Germany
Filed Aug. 19, 1980, Ser. No. 179,422
Claims priority, application Fed. Rep. of Germany, Aug. 23, 1979, 2934045
Int. Cl.[3] A24C *5/60*
U.S. Cl. 131—281 13 Claims

1. Apparatus for making holes in a running web of wrapping material in a machine for the manufacture and/or processing of cigarettes or other rod-shaped articles which constitute or form part of smokers' products, comprising a housing defining a passage for the running web; means for transporting the web through said housing; first and second electrode means installed in said housing and defining at least one spark gap forming part of said passage so that the running web advances through said gap; means for applying high voltage impulses to said electrode means and for thereby inducing the flow of a current across said gap with attendant generation of sparks which burn holes in the running web and cause the development of dust and ozone; means for drawing a stream of atmo-

spheric air through said passage whereby the stream cools the electrode means and removes dust and ozone from said passage, including conduit means having an intake end communi-



cating with said passage and a discharge end and suction generating means connected to said discharge end; dust intercepting means installed in said conduit means; and ozone separating means installed in said conduit means.

4,323,083

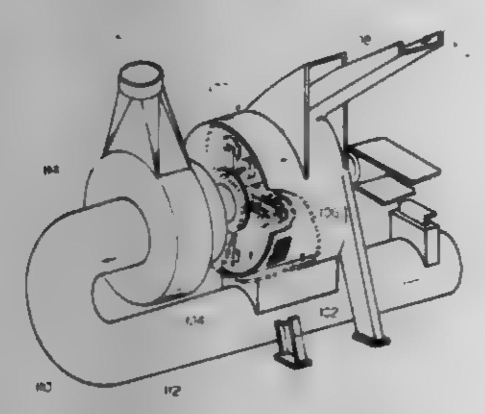
METHOD FOR SEPARATING VEINS FROM LAMINA OF TOBACCO LEAF

Philip H. Cogbill, II, Pineville, N.C., assignor to Brown & Williamson Tobacco Corporation, Louisville, Ky.

Division of Ser. No. 47,424, Jun. 11, 1979, Pat. No. 4,248,253. This application Oct. 27, 1980, Ser. No. 200,848

Int. Cl.[3] A24B *3/02*

U.S. Cl. 131—305 **11 Claims**



1. A process for removing the veins from bulk strip tobacco, including lamina and veins, comprising the steps of: hammermilling said bulk strip tobacco through a discharge screen having openings therein from 5/16 to ¼ inch; and, separating the veins from the lamina.

4,323,084

METHOD AND APPARATUS FOR TOBACCO LEAF DESTEMMING

Carl B. Jenkins, Jr.; Harry S. Porenski, Jr., both of Louisville, Ky., and Paul N. Turner, Kettering, Ohio, assignors to Brown & Williamson Tobacco Corporation, Louisville, Ky.

Division of Ser. No. 899,768, Apr. 24, 1978, Pat. No. 4,237,909. This application Nov. 17, 1980, Ser. No. 207,314

Int. Cl.[3] A24B *5/06*

U.S. Cl. 131—319 **13 Claims**

1. A continuous process for destemming tobacco leaves, which comprises:

(a) providing destemming apparatus which comprises;

a first pair of rotatable rollers, each of said rollers being disposed in a face-to-face relationship with the other of said rollers so that a nip is formed between said rollers;

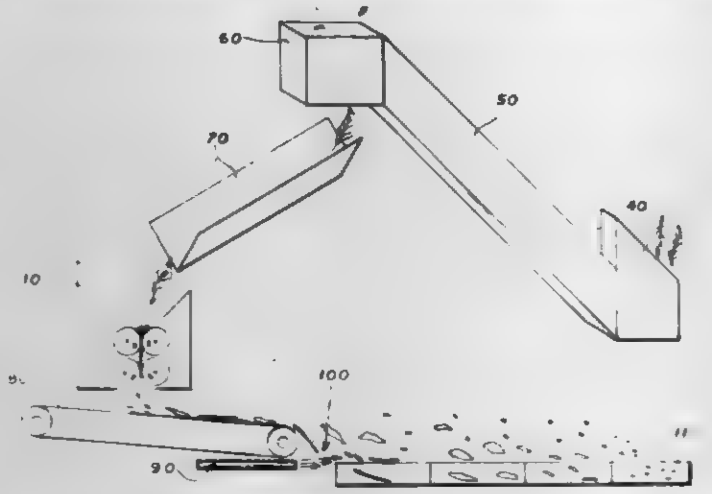
a second pair of rotatable rollers, each of said rollers of said second pair being disposed in a face-to-face relationship with the other of said rollers so that a nip is formed between said second pair of rollers;

said rollers being faced with an elastomeric, gripping material;

means of adjusting the nip between the rollers of each pair of rotatable rollers;

means for mounting the first pair of rollers in tandem relationship with said second pair of rollers whereby the nip of said first pair of rollers is in axial alignment with the nip of said second pair of rollers;

means for rotating one roller of each pair in a clockwise direction and the other roller of each pair in a counterclockwise direction, said directions being such that a leaf



introduced into the nip of said first pair of rollers will be carried to the nip of said second pair of rollers and upon entry into the nip of said second pair of rollers from said first pair will be carried away from said first pair of rollers; and

means for controlling the speed of rotation of said rollers so that the speed of said second pair is faster than the speed of said first pair;

(b) providing tobacco leaves;

(c) causing the rollers of said apparatus to rotate as decribed above;

(d) feeding said tobacco leaves to the nip of said first pair of rollers whereby they are engaged by said first pair and the stem is yanked by said second pair of rollers causing a stripping of the leaf lamina from the stem of the tobacco leaves; and

(e) sorting the separated laminae from the stems of the tobacco leaves.

4,323,085

HAIR DYEING APPARATUS

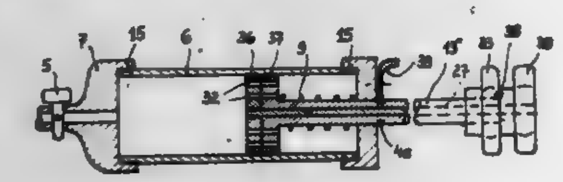
Fritz Röhm, Rechte Brandstr. 49, 8900 Augsburg, Fed. Rep. of Germany

Continuation of Ser. No. 955,183, Oct. 27, 1978, abandoned. This application Aug. 6, 1980, Ser. No. 175,919

Claims priority, application Fed. Rep. of Germany, Nov. 2, 1977, 2749074; Jun. 3, 1978, 2824525

Int. Cl.[2] A45D *24/22*

U.S. Cl. 132—113 **8 Claims**



1. In a hair-treating apparatus utilizing a treatment liquid which is a mixture of a plurality of components, comprising a cylindrical container, a piston with a rod carrying a piston head in said container biased toward one end of the latter and locking means engageable with said piston for holding said piston head in a retracted position remote from said one end to enable introduction of treatment liquid through said one end into said container, said one end being closable by an attachment forming a tube with lateral apertures communicating with the interior of said container whereby said treatment liquid can be discharged through said apertures by the advancing piston head under the biasing force thereof upon a release of said locking means,

the combination therewith of a perforated agitator disc received in said container between said one end thereof and said piston head, said disc being provided with a stem passing axially through a bore in said rod and terminating outside said container in a manipulating knob for axially reciprocating said disc and intermixing the components of said liquid by forcing same to flow through the perforations of said disc.

4,323,086

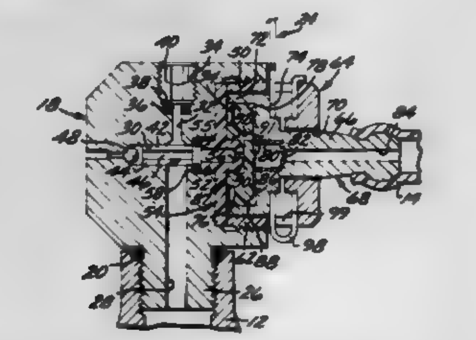
PRESSURE RESPONSIVE FLOW CONTROL APPARATUS FOR BREATHING SYSTEM

Donald R. Gaeiding, Fullerton, Calif., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Mar. 11, 1980, Ser. No. 129,369

Int. Cl.[3] F16K *31/14*

U.S. Cl. 137—495 **6 Claims**



1. Pressure responsive flow control apparatus for connection between a source of emergency breathing gas and a hood adapted to fit about a wearer's head for receiving the breathing gas at a controlled flow for inhalation and for receiving the exhalations of the wearer, said flow control apparatus comprising:

a valve body having a first chamber adapted to receive breathing gas from said source to develop a source pressure;

flow control valve means mounted to said valve body and including a valve portion defining a primary flow passage in communication with said first chamber;

a control housing mounted to said valve body and including a secondary flow passage adapted to discharge breathing gas to said hood;

a pressure regulating valve located adjacent said valve portion of said flow control valve means and defining a second chamber with said control housing, and including a through passage providing communication between said primary flow passage and said second chamber, said pressure regulating valve tending to move toward said valve portion in closer proximity to said primary flow passage in response to pressure in said second chamber thereby to reduce the rate of flow of gas through said primary flow passage;

first bias means tending to resist movement of said pressure regulating valve into said closer proximity to said primary flow passage; said valve portion of said flow control means tending to move toward said pressure regulating valve in response to said source pressure in said first chamber thereby to reduce the rate of flow of gas through said primary flow passage, said flow control means including second bias means tending to resist movement of said valve portion of said flow control means toward said pressure regulating valve whereby said flow control valve means effects an increase in the rate of flow of gas through said primary flow passage in substantially inverse proportion to a decrease in said source pressure thereby to compensate for increased concentration of carbon dioxide in said hood resulting from cumulative said exhalations;

a retainer mounted to said valve body and receiving said control housing for movement toward and away from said pressure regulating valve, said retainer and control housing including complemental faces movable away from and toward each other in correspondence to said movement of said control housing toward and away from said pressure regulating valve, respectively; and

a release element receivable in said retainer in wedging relationship between said complemental faces and forcing said pressure regulating valve firmly against said primary flow passage to block the passage of gas therethrough.

4,323,087

CONTROL VALVE

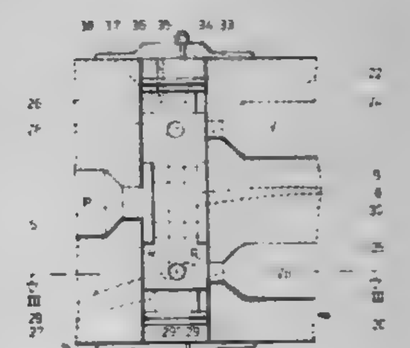
Rudolf Brunner, Baldham, Fed. Rep. of Germany, assignor to Heilmeier & Weinlein, Fabrik fur Oel-Hydraulik GmbH & Co. KG, Munich, Fed. Rep. of Germany

Filed Jan. 29, 1980, Ser. No. 116,480

Claims priority, application Fed. Rep. of Germany, Feb. 2, 1979, 2904034

Int. Cl.[3] F15B *13/04*

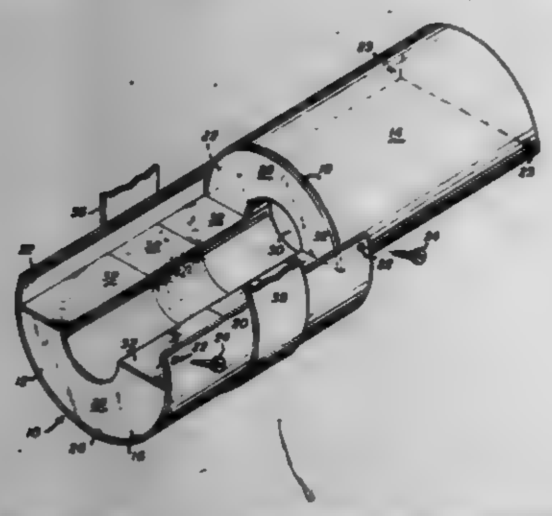
U.S. Cl. 137—625.68 **8 Claims**



1. A control valve for a pressure medium system, particularly a high pressure hydraulic system, with a housing through which a valve hole passes, and with a piston slide-valve displaceable from a neutral position into two control positions, with an intake opening to the valve hole connected with a pump connection, with at least one consuming device connection staggered in the longitudinal direction of the hole relative to the intake opening, and with a return flow connection associated with the consuming device connection, connected with a return flow channel, there being provided in the piston slide-valve in front of the intake opening a pocket extending in the longitudinal direction to guide the flow, which pocket, in the first control position, connects the intake opening with the consuming device connection, provision being made on the piston slide-valve for at least one sealing disc section which, in the first control position, seals off the return flow connection from the consuming device connection, and which in the second control position releases a passage from the consuming device connection to the return flow connection, characterised in that the consuming device connection (6;24,25; V) and the return flow connection (7, R) are disposed along the same radial plane—relative to the valve hole (3, 23)—though staggered at an angle relative to each other, in that in the piston slide-valve (4, 21) a channel (10, 15, 26, 27) is provided, extending in a radial plane and bridging at least the angular staggering between the consuming device connection and the return flow connection, said piston slide-valve channel being located in the neutral position (N) of the valve a distance from the consuming device connection and return flow connection which corre-

sponds to the valve stroke from the neutral position (N) to the second control position (B), in that the sealing disc section (11) on the piston slide-valve extends in its neutral position between the return flow connection and the consuming device connection, in that the piston slide-valve (21) is secured in the valve hole against rotation and further characterized in that the consuming device connection (6) and the return flow connection (7) are staggered relative to each other by 90°, whilst the inlet or supply (5) lies in a common plane with the consumer device connection, which plane is perpendicular to the plane of the return flow connection (7).

4,323,088
INSULATING PIPE SUPPORT
William F. McClellan, San Jose, Calif., assignor to Pipe Shields, Inc., San Jose, Calif.
Filed Nov. 20, 1979, Ser. No. 95,900
Int. Cl.³ F16L *3/12, 59/08*
U.S. Cl. 138—106 **5 Claims**

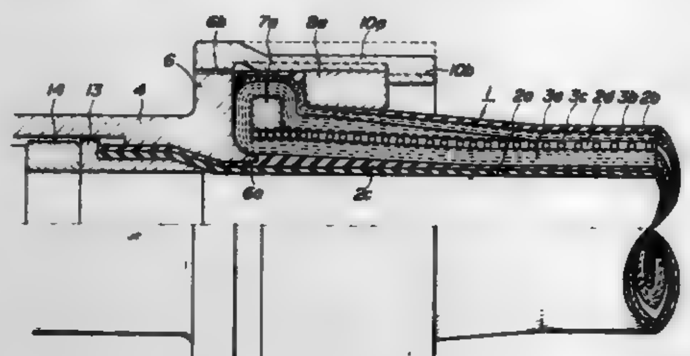


1. An insulating pipe support device comprising a first insulating support member adapted to slidably engage a second insulating support member so as to form therewith a cylindrical solid having an axial hole therethrough for receiving a pipe, each insulating support member including an exterior frame and a plurality of insulating inserts abutting each other along the common longitudinal axis of the members, at least one, but fewer than all, of said insulating inserts being constructed of a strong compression resistant material; and

means for engaging the first member with the second member coaxially with a pipe such that the pipe is enclosed between the first and second members and is insulated and supported thereby, the means for slidably engaging the members including a pair of arcuate extensions to said frame of the first member extending with said frame to complete an arc of a circle of greater than 180° such that the second member may be slidably inserted from the end of the first member such that said extensions hold the second member tightly to the first member and restrict relative movement of the members except for sliding movement along the axis thereof.

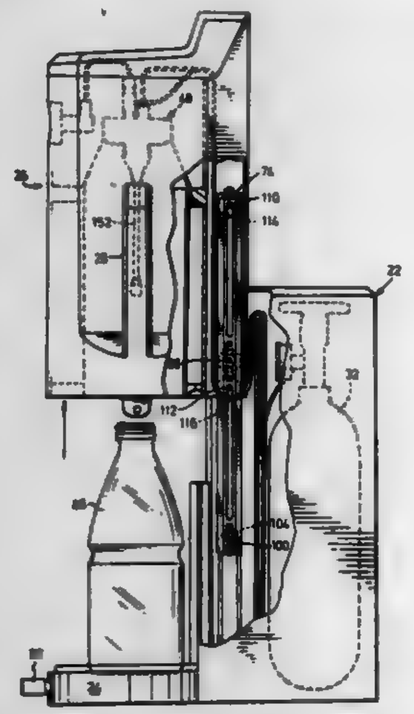
4,323,089
HOSE END CONSTRUCTION
Mamoru Kadono, and Tetsuji Saigusa, both of Yokohama, Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan
Filed Oct. 16, 1979, Ser. No. 85,347
Claims priority, application Japan, Oct. 31, 1978, 53-133160
Int. Cl.³ F16L *11/12, 9/00;* F32B *31/00*
U.S. Cl. 138—109 **3 Claims**

1. In a hose end construction comprising a hose main body and a connection metal fitting secured to the end portion of said hose main body, the improvement comprising a hose main body composed of a resilient rubber portion including an inner surface rubber, an annular bead located near the end surface of said hose main body and embedded in said resilient rubber portion and a reinforcing cord layer having an end portion wound around said annular bead to form a turn-back portion and embedded in said resilient rubber portion, a nipple constituting said connection metal fitting and provided at its outer periphery with a rib, the end surface of the end portion of said hose main body being urged against said rib while said turn-back portion being located inside an inner end of said nipple with respect to the axial direction of said hose main body and said inner surface rubber being extended along the inner pe-



ripheral surface of said nipple, and a clamping member composed of a clamping ring for circumferentially tightening that portion of the outer surface of said hose main body which is nearer to the center portion thereof than said annular bead to said nipple, and a ferrule having one end threadedly engaged with the outer periphery of said rib and another end forming a reduced diameter portion and slidably engaged with said clamping ring.

4,323,090
APPARATUS FOR AERATING LIQUIDS
Hugo Magi, Unionville, Canada, assignor to Bronardi Inc., Markham, Canada
Filed May 19, 1980, Ser. No. 151,528
Int. Cl.³ B65B *55/00;* C02D *1/00*
U.S. Cl. 141—70 **18 Claims**



1. Structure for aerating a potable liquid in a container such as a bottle and the like, the structure comprising:

a rear portion;

a movable front portion;

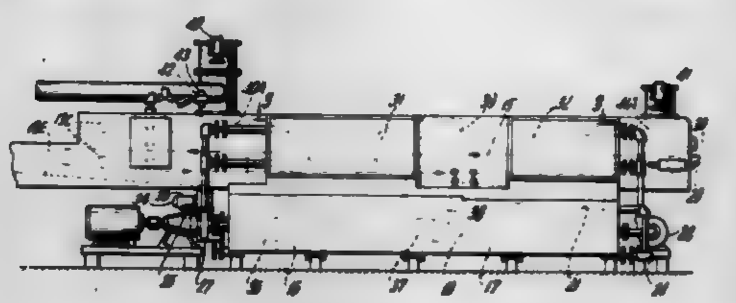
traveller means coupling the front portion to the rear portion for vertical movement of the front portion between a lowered position for accommodating the container in the structure during aeration, and an elevated position providing access into the structure to place the container in the structure before aeration and to remove the container after aeration;

a connector assembly coupled to the front portion for engaging the container and operable by pneumatic pressure to seal the container during aeration;

tubing means for conveying carbon dioxide from a pressurized source to the connector assembly; and

a controller coupled to the tubing means between the pressurized source and the connector means for selectively either directing pressurized carbon dioxide to the connector means with the container in place in the structure to thereby activate the connector assembly to seal the container and to contemporaneously aerate the liquid, or exhausting pressure build up in the connector means and container to permit removal of the container with the aerated liquid.

4,323,091
PAN WASH ENERGY
Robert K. Nolte, Chatham; Robert E. Rath, Morristown, and Michael F. Jarvis, Berkeley Heights, all of N.J., assignors to Metalwash Machinery Corp., Elizabeth, N.J.
Filed May 27, 1980, Ser. No. 153,513
Int. Cl.³ B08B *3/02*
U.S. Cl. 134—60 **6 Claims**



1. In an article washer having a pair of coacting reservoir tanks disposed in side-by-side relationship, means for filling said tanks with a liquid, a spray chamber disposed above each of said tanks, and means for conveying the articles to be washed successively through each of said spray chambers, means for passing high temperature gases through only one of said tanks to heat the liquid contents therein, means for transferring only a limited portion of said gas heated liquid contents to the other tank, means individual to each spray chamber for passing the heated liquid contents from its respective reservoir tank into its respective spray chamber, and means for routing said high-temperature gases from one tank upwardly from said reservoir tank to the spray chambers above both of said tanks, and means adjacent the second spray chamber and distant from the first spray chamber for venting at least a portion of said gases out of said washer.

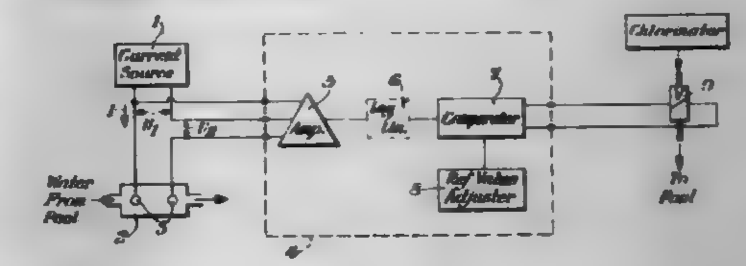
4,323,092
APPARATUS AND PROCESS FOR DETECTING FREE CHLORINE
Bernd G. Zabel, Rottweil, Fed. Rep. of Germany, assignor to Corvinus & Roth GmbH, Altenstadt, Fed. Rep. of Germany
Filed Sep. 19, 1980, Ser. No. 188,607
Int. Cl.³ G05D *11/08*
U.S. Cl. 137—5 **6 Claims**

4. A process for measuring and monitoring the free chlorine content of an aqueous solution comprising:

(a) providing a direct current source to at least two electrodes housed in a sample sell, at least one electrode being of the composition, comprising an alloy of gold and a metal selected from the group consisting of nickel, copper or iron, wherein gold is contained in an amount of about 90% to about 97% by weight and said nickel, copper or iron is contained in an amount of about 10% to about 3% by weight,

(b) flushing said electrodes in said cell with a sample of said aqueous solution,

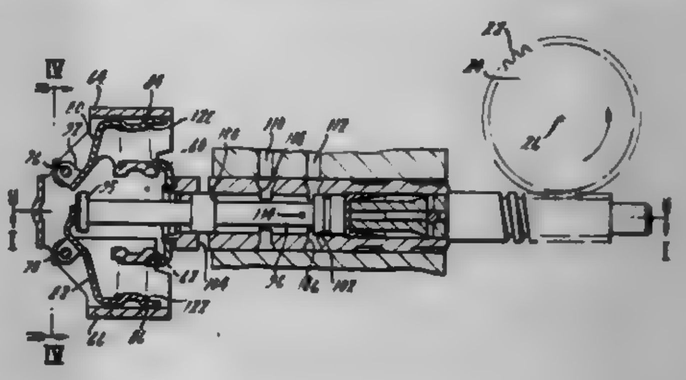
(c) amplifying the output signal from said electrodes, this signal being proportional to the free chlorine content of said aqueous solution;



(d) comparing said amplified signal to an adjustable reference signal, the difference in value of the measured signal and reference value being proportional to the free chlorine content of said aqueous system,

(e) utilizing said difference to regulate a valve adjusting the flow of additional chlorine to said aqueous solution.

4,323,093
MULTIPLE STAGE FLUID PRESSURE GOVERNOR HAVING TWO BREAK POINTS
Douglas A. Whitney, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Sep. 23, 1980, Ser. No. 189,992
Int. Cl.³ G05D *13/38*
U.S. Cl. 137—56 **4 Claims**



1. A triple stage fluid pressure governor comprising:

a governor body, a valve opening in said body, a supply pressure passage and a governor pressure passage in said body in communication with said valve opening;

a governor valve sleeve in said valve opening, said sleeve having a pressure supply port, a governor pressure port and an exhaust opening;

means for driving said sleeve rotatably in said valve opening;

a governor valve spool slidably disposed in said sleeve and having spaced valve lands that register with said supply pressure passage and said exhaust opening whereby said lands provide controlled communication between said governor pressure passage and said supply port and exhaust opening to establish a governor pressure in said governor pressure passage, a pressure area on said valve spool being in communication with said governor pressure port whereby a feedback pressure force acts on said valve spool in one direction;

a first set and a second set of primary and secondary flyweights pivotally mounted on said valve sleeve for movement away from said valve spool, each secondary flyweight having a lever portion extending toward said valve spool and adapted to transmit a valve actuating force thereto that opposes said pressure force;

first spring means having a first spring rate for holding the primary and secondary flyweights of said first set in engagement for pivotal movement in unison at speeds less

than a first break-point speed, and second spring means having a second spring rate that is higher than said first spring rate for holding the primary and secondary flyweights of said second set in engagement for pivotal movement in unison at speeds less than a second break-point;
and stop means for limiting the extent of outward movement of said primary flyweights;
the lever portions of each secondary flyweight engaging said valve spool and transferring a force thereon in the direction of its axis at speeds in excess of said second break-point.

4,323,094

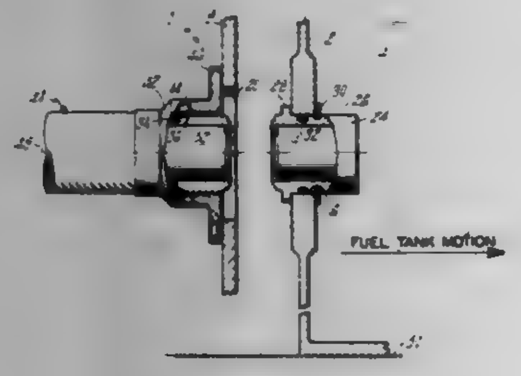
CRASHWORTHY AIRCRAFT FUEL STORAGE SYSTEM

George J. Paulis, Trumbull, and Joseph D. DeCarlo, Bridgeport, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Nov. 14, 1980, Ser. No. 207,555

Int. Cl.³ F16K *13/04*

U.S. Cl. 137—68 R 2 Claims



1. Crashworthy aircraft fuel storage system comprising:
a fixed bulkhead having an aperture therein;
a fuel tank adapted to abut said bulkhead during normal operation and having a fuel inlet port therein in register with said bulkhead aperture;
a fuel shut-off valve assembly comprising:
a frangible sleeve member having a first end connected to the fuel tank inlet port and extending therefrom through said bulkhead aperture with clearance therebetween and having a second end with threads thereon located on the opposite side of said bulkhead from said fuel tank, and further having a circumferential groove therein positioned between said threads and said first end to provide a weak section in said sleeve member to induce sleeve member fracture therearound in response to sleeve member tension loading beyond design limits, and
automatic sealing means positioned within said sleeve member and operable to permit fluid flow through said valve when said sleeve member is intact and to prevent fluid flow through both ends of said sleeve member when separated following sleeve member fracture,
a flexible hose member having an end fitting threadably engaging said frangible sleeve member threads and having a circumferential end flange extending therefrom in spaced relationship to said bulkhead so that said fuel tank, valve and hose member so assembled are in free floating relationship to the bulkhead except for said fuel tank-to-bulkhead abutments and said end flange sized so that it cannot pass through said bulkhead aperture, so that under crash load conditions said fuel tank will move away from said bulkhead and cause said fitting end flange to forceably impact said bulkhead thereby causing said frangible sleeve member to fracture and said automatic sealing means to seal off both ends of the sleeve member so fractured.

4,323,095

BALANCED VALVE WITH UNIDIRECTIONAL OLEO-DYNAMIC UNLOCKING, IN PARTICULAR TO ALLOW A NUMBER OF HYDRAULIC ACTUATORS TO BE SERIES CONTROLLED AT HIGH PRESSURE

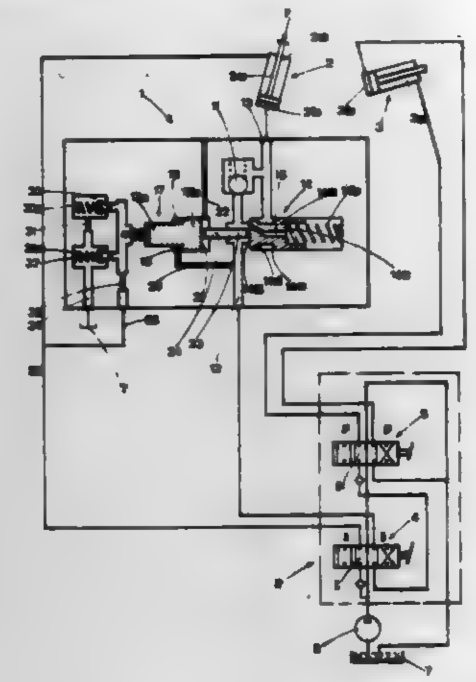
Leo Acerbi, Modena, Italy, assignor to Oil Control S.r.l., Modena, Italy

Filed Jul. 8, 1980, Ser. No. 166,829

Claims priority, application Italy, Jul. 11, 1979, 40086 A/79

Int. Cl.³ F15B *13/01*

U.S. Cl. 137—87 6 Claims



1. An improved balanced valve with unidirectional hydraulic unlocking, in particular to allow a number of hydraulic actuators to be series controlled at high pressure, of the type comprising: a check valve (11) actuated by the pressure of the fluid entering from a first orifice (12) and exiting from a second orifice (13); and a unidirectional valve (14) with hydraulic unlocking that operates in the opposite flow direction of the fluid to that of the said first valve, said unidirectional valve (14) comprising closing mechanism (14*a*) which is subjected, in the closing direction, to the elastic thrust of a first pre-loaded spring (14*b*); and in both directions, to the pressure existing in the said first orifice (12) and, in the opening direction, to the pressure existing in the said second orifice (13) which is operative only on a first surface of a pre-established area with which the said closing mechanism is provided, the said closing mechanism being thrust, on the opening direction, by the front part of a pilot piston (17) driven by the pressure in a delivery pipe (25) of the fluid exerting an effect on the rear part of the said piston (17); various features of the valve being such that the said pilot piston is subjected, on a second surface of a pre-established area, to the pressure existing in the said first orifice which determines, on the said pilot piston, a thrust that acts in the opening direction of the closing mechanism, the front part of the said piston being connected to atmospheric pressure and exerting on effect on the closing mechanism of the said second valve through the interposition of a stem (23); and means for regulating and limiting the pressure, interposed between the said delivery pipe (25) and the said pilot piston (17) including means (30) to supply to the said piston (17) a control pressure that is identical to the pressure in the delivery pipe (25) up to a minimum pre-established delivery pressure value, including means (31), (31*a*), (33) to provide a variable pressure, in accordance with a pre-established law of proportionalities, from the said minimum value to a maximum pre-established delivery pressure valve, and including means (32) to provide an approximately constant delivery pressure for values greater than the said maximum value.

4,323,096

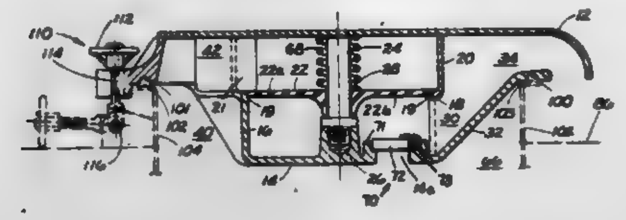
COMBINATION VACUUM RELIEF VALVE AND PRESSURE RELIEF VALVE WHICH ARE PROTECTED FROM THE ATMOSPHERE

Richard H. Dugge, St. Louis, and Dallas W. Rollins, St. Charles, both of Mo., assignors to ACF Industries, Incorporated, New York, N.Y.

Filed May 16, 1980, Ser. No. 150,469

Int. Cl.³ F16K *17/26*

U.S. Cl. 137—350 10 Claims



1. A combination vacuum relief valve and pressure relief valve assembly comprising:
a top cover plate closing an opening in a container to the atmosphere; a bottom plate located below said top cover plate; a vacuum relief valve mounted horizontally and spaced below said top cover plate and above said bottom plate; means biasing said vacuum relief valve into closed position engaging a vacuum relief valve seat located below said top cover plate and below said vacuum relief valve and having a vacuum relief valve opening therein; said vacuum relief valve in said closed position closing communication between the inside of the container and the outside atmosphere, and in open position allowing communication between the container and the outside atmosphere; a plurality of first passageways providing fluid communication between the lower surface of said vacuum relief valve and the outside atmosphere; a plurality of second passageways spaced from said first passageways providing fluid communication between the inside of the container and the upper surface of said vacuum relief valve when said valve is in closed position; said first and second passageways being located below said top cover plate; the cross sectional area of said first passageways throughout their length being at least substantially equal to the cross sectional area of said vacuum relief valve opening and the cross sectional area of said second passageways through their length being at least substantially equal to the cross sectional area of said vacuum relief valve opening; whereby when the pressure inside the container becomes less than atmospheric pressure, atmospheric pressure will cause said vacuum relief valve to move upwardly away from its seat and allow air to enter the container and whereby when the pressure in the atmosphere and in the tank are substantially equalized, said vacuum relief valve will return to the seated position; and whereby for a given available valve cross sectional area the volume of air flow into the container from the atmosphere is maximized for a given pressure drop from the atmosphere into the container; a pressure relief valve opening provided in said bottom cover plate between the interior of the tank and said first passageways; a pressure relief valve seat surrounding said opening; a pressure relief valve mounted for movement between open and closed positions relative to said pressure relief valve seat; the cross sectional area of said pressure relief valve being substantially less than the cross sectional area of said vacuum relief valve; whereby in open position pressure from said tank is vented through said first passageways; said pressure relief valve being protected from the atmosphere by said top cover plate.

4,323,097

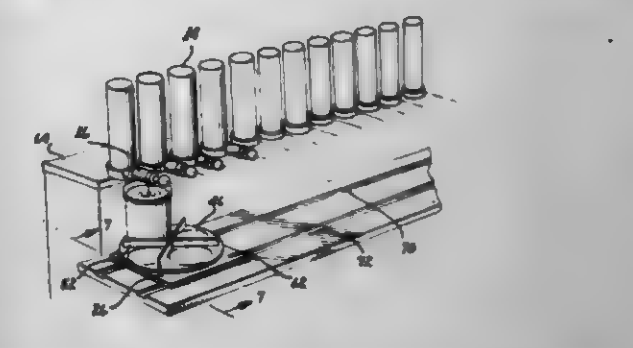
TURNTABLE FOR COLORANT DISPENSERS

John J. Achen, 1901 5th Ave., Yuma, Ariz. 85364

Division of Ser. No. 25,185, Mar. 29, 1979, Pat. No. 4,258,759. This application Nov. 6, 1980, Ser. No. 204,500

Int. Cl.³ B65B *43/60*

U.S. Cl. 141—168 4 Claims



1. A platform for locating each paint container of a set of paint containers in sequential operating relationship with a colorant discharge unit of a colorant dispenser, said platform comprising in combination:
(a) a tray for supporting the set of paint containers;
(b) divider means mounted on said tray for defining a plurality of radially expanding delineations upon said tray and for accommodating any sized circular paint container within a predetermined size range, said divider means including means for channeling and guiding the paint containers into a predetermined position on placement of the paint containers thereon, said channeling and guiding means including means for restraining tipping of the paint containers and spilling of the contained paint;
(c) a base locatable beneath at least one of the discharge units of the colorant dispenser said base including means for rectilinearly translating said tray to rectilinearly reposition the set of paint containers as a unit from one discharge unit to another;
(d) means for rotatably supporting said tray on said base to position each of the paint containers in sequence beneath each selected one of the discharge units;
whereby, each selected colorant is dispensed sequentially into all of the containers of the set of containers to enhance uniformity of color of the paint in the set of containers.

4,323,098

METHOD FOR CONTROLLING POSITION OF A PLURALITY OF MACHINING SHAFTS EACH INCLUDING A MACHINE TOOL FITTED THERETO

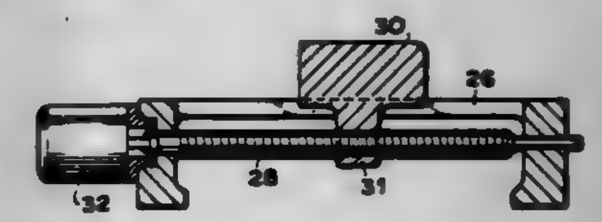
Yukitomo Suzuki, 19861-83, Shijimizuka-cho, and Masakazu Honda, 123-1, Aoi-cho, both of Hamamatsu-shi, Shizuoka-ken, Japan

Division of Ser. No. 960,605, Nov. 14, 1978, Pat. No. 4,257,103. This application Nov. 1, 1979, Ser. No. 90,105

Claims priority, application Japan, Nov. 16, 1977, 52/137717; Jan. 26, 1978, 53/7906; Apr. 18, 1978, 53/45622

Int. Cl.³ B31B *1/20*; B27C *9/00*

U.S. Cl. 144—2 R 4 Claims



1. A method of controlling the position of a plurality of machine shafts for a wood working machine, each shaft including a machine tool fitted thereto and supported by a movable block engaged with a screw threaded rotary shaft driven by a servomotor and movable in the axial direction of the screw threaded shaft when the screw threaded shaft is rotated to

thereby control the position of the machine shaft supported by the movable block, comprising:

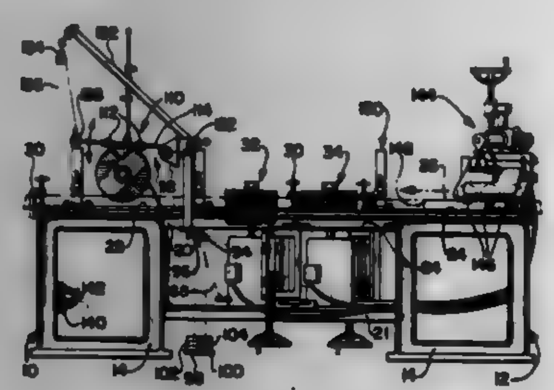
a first step of rotating said screw threaded rotary shaft at a first rotation speed through a first distance which is larger than backlash between said screw threaded rotary shaft and said movable block so as to move said movable block and machine shaft in the backward direction;

a second step of rotating said screw threaded rotary shaft at a second rotation speed so as to move said machine shaft up to an intermediate position spaced apart from a final position of said machine shaft in the backward direction and located near said final position;

a third step of rotating said screw threaded rotary shaft at a third rotation speed so as to move said movable block along said screw threaded shaft at a low speed from said intermediate position to said final position, said third rotation speed being lower than the second rotation speed of said screw threaded shaft, and being sufficient to prevent occurrence of overshoot of said movable block beyond said screw shaft; and

the amount of rotation of said screw threaded shaft in said first step being equal to that of said screw threaded shaft in said third step.

4,323,099
WOOD FINISHING MACHINE
Benjamin S. Bost, Box 321, Conover, N.C. 28613
Filed Mar. 21, 1980, Ser. No. 132,455
Int. Cl.³ B27M *3/00;* B27C *9/04*
U.S. Cl. 144—3 R 7 Claims



5. A wood finishing machine, comprising:

a frame structure;

a stationary table secured to said frame structure and having an upper horizontal surface for supporting a workpiece thereon;

a first means for finishing a workpiece, including:

a first finishing wheel disposed for rotation about a vertical axis adjacent a side portion of a workpiece,

a first drive means supporting said first wheel and for causing rotation thereof,

a first member supporting said first wheel and first drive means and pivotally mounted to said frame structure for swinging movement about a vertical axis so that said first wheel can move toward and away from said side portion of a workpiece,

means interconnecting said first drive means and said first frame member for providing vertical adjustment of said first wheel relative to said side portion of a workpiece, and

means engaging said first frame member for biasing said first wheel against said side portion of a workpiece with constant force to follow the contour of said side portion of the workpiece;

a second means for finishing a workpiece, including:

a second finishing wheel disposed for rotation about a vertical axis adjacent an opposite side portion of a workpiece from that of said first finishing means,

a second drive means supporting said second wheel and for causing rotation thereof,

a second frame member supporting said second wheel and second drive means and pivotally mounted to said frame structure for swinging movement about a vertical axis so that said second wheel can move toward and away from said opposite side portion of a workpiece,

means interconnecting said second drive means and said second frame member for providing vertical adjustment of said second wheel relative to said opposite side portion of a workpiece, and

means engaging said second frame member for biasing said second wheel against said opposite side portion of a workpiece with constant force and independently from said first biasing means to follow the contour of said opposite side portion of the workpiece;

a third means for finishing a workpiece, including:

a third finishing wheel disposed for rotation about a horizontal axis adjacent an upper surface of a workpiece;

a third drive means supporting said third wheel and for causing rotation thereof,

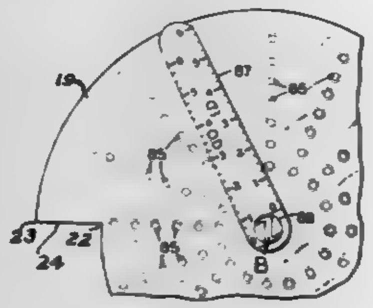
a third frame member supporting said third wheel and third drive means and pivotally mounted to said frame structure for swinging movement about a horizontal axis so that said third wheel can move toward and away from said upper surface of a workpiece,

means interconnecting said third drive means and said third frame member for providing horizontal adjustment of said third wheel relative to said upper surface of a workpiece, and

means engaging said third frame member for biasing said third wheel against said upper surface of a workpiece with constant force and independently of said first and second biasing means to follow the contour of said upper surface of the workpiece; and

means for feeding a workpiece over said upper surface of said table so as to pass by and be acted upon by each of said finishing means.

4,323,100
ROUTER GUIDE
Howard Silken, 8676 Bridle Path Ct., Davie, Fla. 33328
Division of Ser. No. 129,175, Mar. 10, 1980, Pat. No. 4,291,735. This application Jun. 18, 1981, Ser. No. 275,066
Int. Cl.³ B27C *5/10*
U.S. Cl. 144—134 D 4 Claims

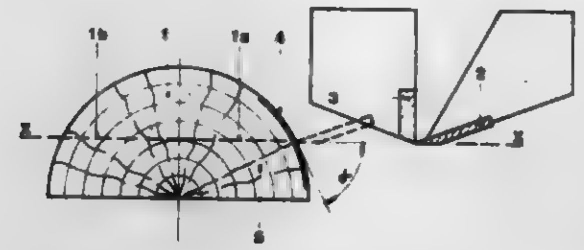


1. For use with a router having a motor-driven bit, the improvement which comprises:

a flat guide plate for attachment to the router having a central opening for passing the router bit and having a series of openings spaced apart along a spiral of progressively increasing radius which has said central opening as its center;

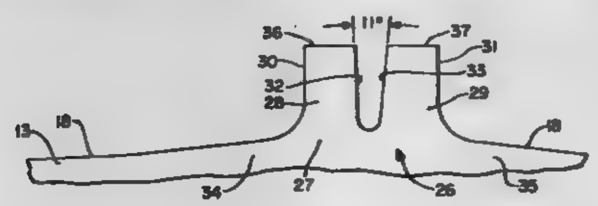
and a pivot member having an end which is releasably insertable into a selected one of said series of openings and having a pointed opposite end for insertion in a workpiece at the center for a circular groove to be cut in the workpiece by rotating said guide plate about said pivot member.

4,323,101
LOG SLICING PROCESS TO PRODUCE VENEER
Angelo Cremona, V.le Lombardia 275, Monza (Milano), Italy (20052)
Filed Sep. 6, 1979, Ser. No. 73,112
Claims priority, application Italy, May 16, 1979, 22692 A/79
Int. Cl.³ B27L *5/00*
U.S. Cl. 144—323 5 Claims



1. A process for slicing logs to produce a veneer comprising passing a log to be sliced through a curved cutting path about a fixed axis, varying the radius of curvature of said path about the fixed axis, contacting said log with a cutting means for slicing a veneer therefrom, wherein the step of passing said log through a curved cutting path includes moving said log radially away from said axis, moving said cutting means radially toward said axis, and wherein said steps of moving said log away from said axis and moving said cutting means radially toward said axis are performed simultaneously.

4,323,102
DIRT SEAL FOR REMOVABLE RUBBER BELTS
Robert E. Hall, Stow, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Continuation of Ser. No. 872,529, Jan. 26, 1978, abandoned. This application Sep. 10, 1979, Ser. No. 73,591
Int. Cl.³ B60C *27/06, 27/00;* B62D *55/08*
U.S. Cl. 152—175 13 Claims



1. A removable annular belt for use in a track tire assembly which assembly includes a plurality of track members on the radially outer surface of said belt at circumferentially spaced-apart positions, said belt having on its radially outer surface a plurality of circumferentially spaced-apart sealing members,

each of said sealing members being of resilient material and extending tranversely of the circumferential direction of said belt,

each of said sealing members being integrally formed with the radially outer surface of said belt,

each of said sealing members including circumferentially extreme first and second legs projecting radially outwardly from the radially outer surface of said belt,

said first leg being joined to the radially outer surface of said belt by a first curved edge portion,

said second leg being joined to the radially outer surface of said belt by a second curved edge portion,

said first leg having connected to said first curved edge portion a first radial planar sealing face,

said second leg having connected to said second curved edge portion a second radial planar sealing face,

said first and second legs of each sealing member in their undeformed state being spaced-apart from one another in the circumferential direction of the belt defining a gap between them extending from their radially outermost ends radially inwardly an amount substantially equal to the radial dimension of said legs,

whereby the radial planar sealing face of each leg of each sealing member is adapted for sealing engagement with a corresponding one of said plurality of track members.

2. A removable track for an annular resilient tire comprising:

(a) an annular belt having a radially outer surface, and

(b) a plurality of track members mounted on said radially outer surface at circumferentially spaced-apart positions, each of said track members including a generally planar leading edge surface connected by a first curved surface to a belt engaging surface, and at its circumferentially opposite end, a generally planar trailing edge surface connected by a second curved surface to said belt engaging suface, said belt including

a plurality of sealing members integrally formed with the radially outer surface of said belt, one of said sealing members being disposed between each adjacent two of said track members,

each of said sealing members being of resilient material and extending transversely of the circumferential direction of said belt and having circumferentially opposite first and second curved edge portions at its juncture with said radially outer belt surface for engagement with the corresponding first and second curved surfaces of the corresponding adjacent track members,

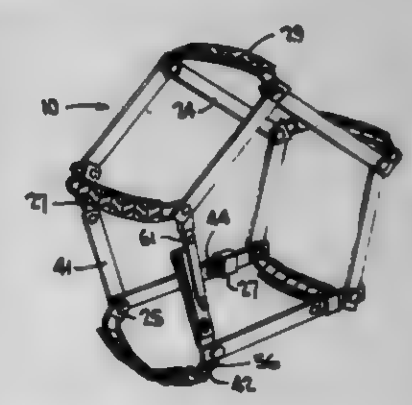
each of said sealing members having adjacent its circumferential ends first and second legs projecting radially outwardly from said radially outer surface of said belt,

said first leg having a first generally radial planar sealing face on one circumferential side for engagement with the leading edge surface of the corresponding one of said track members, said sealing face being joined to the radially outer surface of said belt by said first curved edge portion,

said second leg having a second generally radial planar sealing face on the circumferentially opposite side for engagement with the trailing edge surface of the corresponding one of said track members, said sealing face being joined to the radially outer surface of said belt by said second curved edge portion,

said first and second legs of each sealing member prior to installation of the respective track members on said belt being spaced-apart in the circumferential direction of said belt defining a gap between them extending from their radially outermost ends radially inwardly an amount substantially equal to the radial dimension of said first and second legs.

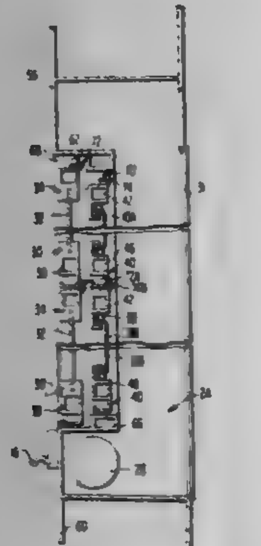
4,323,103
ANTI-SKID TIRE GUARD
Yoobong Kim, 5401 Rubelt Rd., Cincinnati, Ohio 45211
Continuation-in-part of Ser. No. 108,498, Dec. 31, 1979, abandoned. This application Aug. 1, 1980, Ser. No. 174,644
Int. Cl.³ B60C *27/00, 27/20*
U.S. Cl. 152—213 A 11 Claims



1. An anti-skid tire guard for a vehicle tire which is adapted to be quickly mounted upon and dismounted from the tire

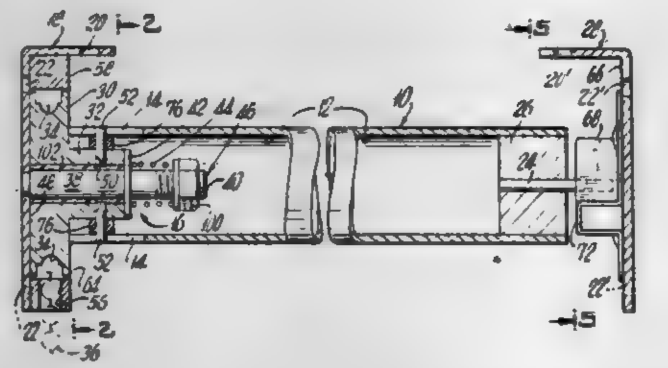
when said vehicle is positioned on the ground or similar support surface, said guard comprising:
(a) a first component comprising two generally parallel flexible strips spaced apart by a plurality of tread members positioned in a direction generally transverse to said strips, each of said strips having two ends and connectors at said ends;
(b) a second component comprising a third flexible strip having two ends, said ends comprising mating connectors adapted to be attached to the connectors on one of said two parallel strips, and a tread member having a first end attached to said third strip and a second end adapted to be connected to a latching member, said tread member adapted to extend transverse to said third flexible strip; and
(c) a third component comprising a latching member having a fourth flexible strip, said fourth flexible strip having a plurality of hinged slats, two mating connectors adapted to be connected to the connectors on the other of said two parallel strips, means for retaining said second component tread member and means for retaining two of said hinged slats in superposed folded relation, whereby said three components are attached by connecting said mating connectors, said guard being securely positioned about said tire by folding said two hinged slats in superposed relation.

4,323,104
PROTECTIVE MEANS FOR DOOR AND WINDOW OPENINGS
Milton Guttman, 1719 Miami Gardens Dr., N. Miami Beach, Fla. 33162
Continuation of Ser. No. 663,215, Mar. 2, 1976, abandoned, which is a continuation-in-part of Ser. No. 466,798, May 3, 1974, abandoned. This application Feb. 26, 1980, Ser. No. 124,769
Int. Cl.³ E06B *3/30, 3/36*
U.S. Cl. 160—92 **5 Claims**



1. Apparatus for providing protection against unauthorized entry through a movable louver window of the awning type having a plurality of rectangular window panels pivotally carried at their upper ends by linkage means for swinging upwardly and exteriorly of the window, the panels and linkage means being supported and at least partially surrounded by a window frame, comprising:
a separate support frame supported by, and secured wholly within the confines of, said window frame and situated laterally adjacent at least a portion of said linkage means, said support frame having adjoining top, bottom, and side frame members and having exterior dimensions sufficiently small to avoid interference with the movement of said panels and said linkage means during their operation;
at least one substantially intrusion-proof sash having a security panel secured therein, said sash being supported within said support frame; and
lock means for locking said sash within said support frame from the interior side of said window, said lock means comprising at least one slot in at least one of the side frame members of said support frame and a latch element secured to said sash for sliding through said slot, said at least one side frame member having a receptacle surrounding the portion of said latch element extending through said slot when said sash is locked within said support frame.

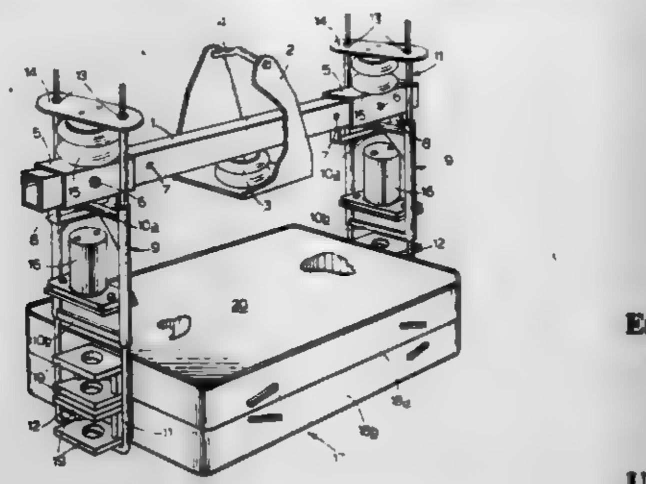
4,323,105
WINDOW SHADE ROLLER ASSEMBLY
Joel Berman, 1470 Hewlett Ave., Hewlett, N.Y. 11557, and Stephen D. Weinreich, Parlin, N.J., assignors to Joel Berman, Long Island City, N.Y.
Continuation-in-part of Ser. No. 716,153, Aug. 20, 1976, Pat. No. 4,223,714. This application Mar. 8, 1979, Ser. No. 18,763
The portion of the term of this patent subsequent to Sep. 23, 1997, has been disclaimed.
Int. Cl.³ E06B *9/20*
U.S. Cl. 160—309 **5 Claims**



1. A window shade roll assembly comprising in combination:
a shade roll;
a first support apparatus organized at a first and of the shade roll, a second support apparatus for supporting rotatably a second end of the shade roll;
an operator system on said first support apparatus including:
a mounting plate on said first support apparatus having a pin extending therefrom axially of the shade roll and into the shade roll,
a wheel mounted rotatably about the pin on said first support apparatus and having a face arranged in juxtaposition to the mounting plate,
the wheel having a hub of a diameter smaller than the shade roll and projecting therefrom opposite the face,
means for connecting detachably the hub that is on said first support apparatus to the shade roll,
biasing means connected to the hub for causing frictional contact of the face of the wheel against the mounting plate,
and a wheel turner mechanism;
the window shade roll assembly characterized in that all of the elements of said operator system are mounted on the first support apparatus.

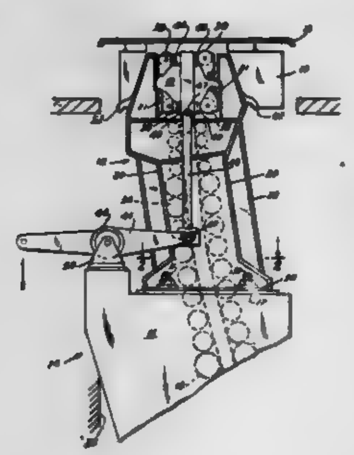
4,323,106
KNOCK-OUT SYSTEMS FOR FOUNDRIES
Colin R. Bayliss, Redditch, England, assignor to BCIRA, Birmingham, England
Filed Mar. 17, 1980, Ser. No. 130,719
Claims priority, application United Kingdom, Mar. 27, 1979, 10556/79
Int. Cl.³ B22D *29/00*
U.S. Cl. 164—260 **3 Claims**

1. An apparatus for displacing a metal casting from a box formed of at least two relatively movable box frames positioned on top of each other and containing the casting in a mold of particulate material, said apparatus comprising in combination, suspension means by which the apparatus can be suspended from above, clamp means for clamping together the uppermost and lowermost of the box frames to render them incapable of relative movement, vibratory means for vibrating the box so as to shake the metal casting and particulate material



out of the box, and resilient means for opposing transmission of vibrations to said suspension means, said clamp means comprising abutment means for the uppermost box frame, two clamp frames for engaging opposite ends of the lowermost box frame, and a respective lifting device for raising each of said clamp frames whereby the lowermost box frame can be lifted towards said abutment means to clamp together the box frames.

4,323,107
CONTINUOUS CASTING INSTALLATION
Joseph Pietryka, Paris, France, assignor to Fives-Cail Babcock, Paris, France
Continuation of Ser. No. 914,440, Jun. 12, 1978, abandoned. This application Sep. 17, 1979, Ser. No. 75,975
Int. Cl.³ B22D *11/04, 11/12*
U.S. Cl. 164—416 **10 Claims**



1. An installation for casting molten ferrous metal into a continuous strand, which comprises a support structure, an oscillatory mold receiving the molten ferrous metal and discharging the continuous strand, and a guiding device arranged to receive the continuous strand from the mold and to guide the strand, the guiding device being comprised of an upper section including a frame and a lower section including a frame having a top adjacent the upper guiding device section frame, wherein
(a) the upper guiding device section frame is supported on, and affixed to, the top of the lower guiding device section frame,
(b) the upper guiding device section frame carries means for supporting and guiding the mold for oscillation,
(c) the lower guiding device section frame is mounted on the support structure of the installation,
(d) the lower guiding device section frame carries means for oscillating the mold, the oscillating means comprising
(1) an arm mounted for pivoting on the top of the lower guiding device section frame and remote from the mold,
(2) an actuating rod connecting the arm to the mold for oscillating the mold in response to the pivoting of the arm, and
(3) respective pivoting means connecting the actuating rod to the arm and to the mold, one of the pivoting means being readily detachable, and
(e) the upper guiding device section and the mold constitute a demountable and replaceable unit.

4,323,108
TUNDISH AND PROCESS FOR CASTING FROM CHARGE TO CHARGE IN CONTINUOUS STEEL FOUNDRY
Emil Fürjes, and Istvan Kecskes, both of Ozd, Hungary, assignors to Ozdi Kohaszati Üzemek, Ozd, Hungary
Filed Apr. 28, 1980, Ser. No. 144,372
Claims priority, application Hungary, May 2, 1979, OI225
Int. Cl.³ B22D *11/10*
U.S. Cl. 164—488 **7 Claims**

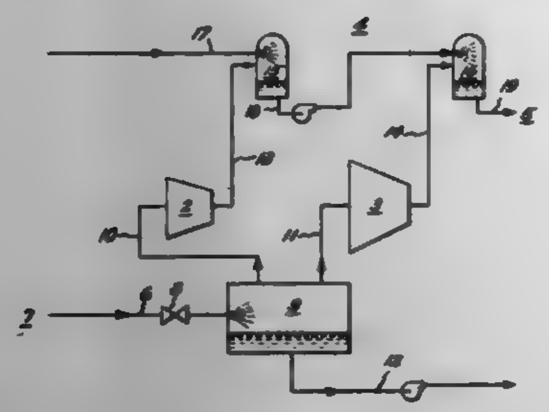
6. Process for pouring continuously a steel melt from a tapping ladle to a mold, which comprises the steps of:
(a) providing a tundish which comprises an elongated box-like container with a plurality of openings at the bottom thereof and an elongated pouring gate extending from one extremity thereof, a recess in said pouring gate and an upwardly sloping and upwardly broadening runner section connecting said recess to said container and having a sharp sloping wall at the end thereof opposite said recess;
(b) pouring said melt from a first charged tapping ladle into an intermediate section of said tundish;
(c) moving a second charged tapping ladle in position next to said first tapping ladle before the pouring from said first ladle is completed;
(d) pouring the melt from said second tapping ladle into said recess of said pouring gate of said tundish, thus causing said melt to flow through said upwardly sloping runner section of said tundish and into said intermediate section of said tundish; and
(e) alternating the pouring of said melt from a tapping ladle between said intermediate section of said tundish and said recess of said pouring gate.

4,323,109
OPEN CYCLE HEAT PUMP SYSTEM AND PROCESS FOR TRANSFERRING HEAT
Heinz Jaster, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.
Filed Aug. 27, 1979, Ser. No. 69,776
Int. Cl.³ F28C *3/08*
U.S. Cl. 165—1 **4 Claims**

1. An open cycle heat transfer system for transferring heat from a heat source to a heat sink comprising:
a means cooperating with said heat source for supplying source vapor;
a plurality of compressor means in parallel-arranged vapor communication with said source vapor supply means, with individual ones of said compressor means having predeterminately different capacities with respect to each other for raising the temperature and pressure of source vapor flowing therethrough;
means for conveying source vapor from said compressor

means, said conveying means being in flow communication with said heat sink;

wherein said source vapor conveying means includes a plurality of mixing chambers, with individual ones of said chambers each being in vapor communication with the exhaust of a cooperating one of said compressor means and being in flow communication with a means for supplying fluid of substantially the same liquid base as said source vapor, said mixing chambers being so arranged as to provide for the direct contacting of said fluid and said source vapor therein; and



wherein said plurality of mixing chambers are in flow communication with said means for supplying fluid in order of increasing capacity of the compressor means cooperating therewith.

4,323,110

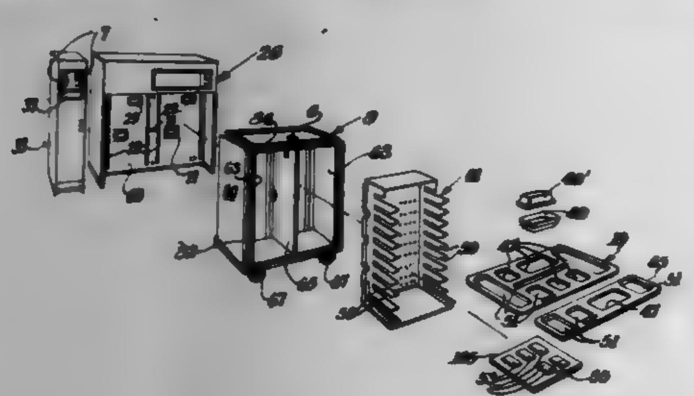
FOOD PREPARATION PROCESS

Harry A. Rubbright, Lancaster, Ohio, and Donald A. Springer, North Ridge, Calif., assignors to Anchor Hocking Corporation, Lancaster, Ohio

Continuation-in-part of Ser. No. 758,454, Jan. 11, 1977, abandoned. This application Feb. 21, 1979, Ser. No. 13,661

Int. Cl.[3] F25B *13/00*

U.S. Cl. 165—2 **23 Claims**



12. A method for preparing meals for hospitals, airlines and similar consumers comprising placing containers with lids and holding various types of food on a food tray, inserting a plurality of such food trays in vertical alignment on supports in an insulated food and beverage cabinet, closing the doors of said cabinet to create a closed compartment for the food trays, circulating chilled air in a first closed loop pattern in a plenum chamber having a chilled air source therein with normally closed inlets and outlets, coupling the food and beverage cabinet to the plenum chamber to open its inlets and outlets for creating flow communication between the plenum chamber and the food and beverage cabinet to provide a larger second closed loop therewith, continuously circulating the chilled air from the air source through the plenum chamber and the food and beverage cabinet uniformly around and over each of the food trays and then back to said chilled air source in the larger second closed loop, cooling the walls and the lids of the containers with the chilled air, selectively heating certain of the food containers, controlling the temperature of the food being heated, and continuing the circulation of the chilled air during the selective heating step.

4,323,111

TEMPERATURE CONTROL DEVICE FOR AUTOMOBILE AIR CONDITIONER

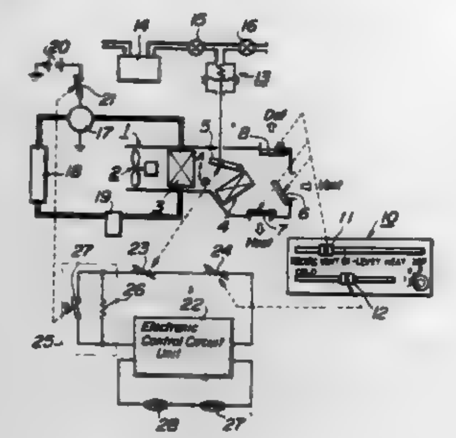
Tetsuya Iijima, Tokyo, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed May 2, 1980, Ser. No. 146,111

Claims priority, application Japan, May 10, 1979, 54-56330

Int. Cl.[3] F25B *29/00*

U.S. Cl. 165—25 **4 Claims**



1. A temperature control device for an automobile air conditioner including a plurality of outlets, an outlet-selecting means for selecting said outlets, a temperature regulating means, a temperature setting means, a first variable resistor whose resistance value changes with movement of said temperature regulating means, a second variable resistor whose resistance value changes with the movement of said temperature setting means, a sensor detecting air temperature in an automobile, an actuator for operating said temperature regulating means, an electronic control circuit for operating said actuator so as to obtain that air temperature in the automobile which is set by said temperature setting means while using inputs from said first and second variable resistors and the sensor detecting the air temperature in the automobile, a cooling unit, and an air conditioner switch for actuating a compressor of said cooling unit so as to make the automobile air conditioner usable for cooling and heating, said device characterized by having an adjusting means for adjusting virtual characteristics of one of the first and second variable resistors and said sensor in response to ON-OFF of said air conditioner switch, whereby the set temperature in the automobile is obtained irrespectively of operation and unoperation of said compressor during heating operation.

4,323,112

NO ENERGY BAND TEMPERATURE CONTROL

Howard C. Nordeen, Glenview, Ill., assignor to Mark Controls Corporation, Skokie, Ill.

Filed Mar. 6, 1979, Ser. No. 17,926

Int. Cl.[3] F25B *29/00;* **G05D** *23/12*

U.S. Cl. 165—27 **8 Claims**

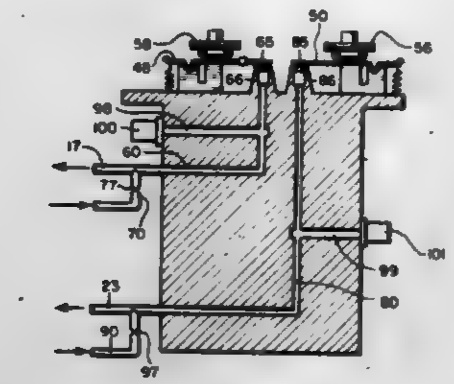
1. A system for controlling the temperature in an enclosed volume comprising:

heating means;

cooling means; and

a pneumatic thermostat including: a heating-control set point, a cooling-control set point, first means for sensing the temperature of the enclosed volume and the heating control set point and for generating a first pressure signal in response to the temperature in the enclosed volume and in response to the heating control set point, said first pressure signal activating or adjusting the operation of said heating means whenever the sensed temperature is

below the heating-control set point, and second means for sensing the temperature of the enclosed volume and the cooling control set point and for generating a second pressure signal in response to the temperature in the enclosed volume and in response to the cooling control set point, said second pressure signal activating or adjusting the operation of said cooling means whenever the sensed temperature is higher than the temperature in the enclosed volume, said first means and said second means continuously independently and simultaneously generating said first pressure signal and said second pressure signal respectively, the heating set point being lower than the cooling set point so as to define a no energy band of sensed temperatures at which neither heating means nor cooling means is operating.



4,323,113

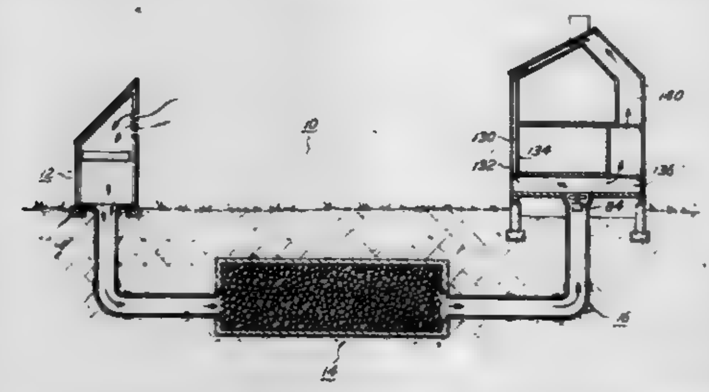
UNDERGROUND AIR TEMPERING SYSTEM

LeRoy S. Troyer, 3019 Essex, South Bend, Ind. 46615

Filed Oct. 31, 1980, Ser. No. 202,587

Int. Cl.[3] F24J *3/02*

U.S. Cl. 165—45 **24 Claims**



1. An open underground air tempering system for providing fresh makeup air to a building ventilation system from air outside the indoor building climate, comprising a heat exchanger disposed beneath the ground through which fresh outdoor air passes to be warmed during the winter and to be cooled during the summer by the ground temperature as modified by the flywheel phenomenon, said heat exchanger having a housing and heat transfer material substantially filling said housing for sufficiently increasing the surface area within said heat exchanger to transfer heat between the ground surrounding said housing and the air passing therethrough, a portion of said housing defining an air inlet opening through which the untempered fresh, outdoor air enters said heat exchanger and a second portion of said housing defining an air outlet opening through which tempered air flows from said heat exchanger, an air supply means connected to said air inlet opening for providing untempered air from said fresh, outdoor air to the tempering system, an air distribution network connected to said air outlet opening for bringing tempered air from said heat exchanger to the building ventilation system, and air circulation means for creating an air flow through said air supply means, said heat exchanger and said air distribution network.

4,323,114

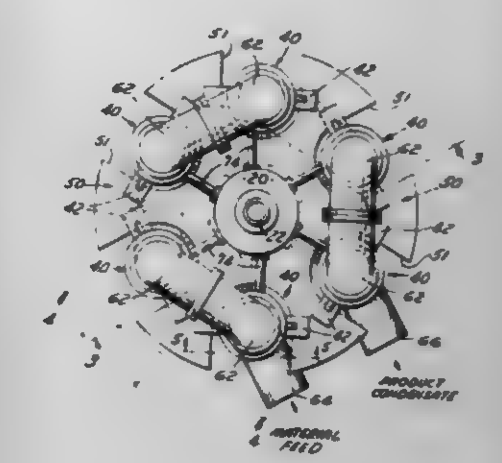
CLUSTER HEAT EXCHANGER

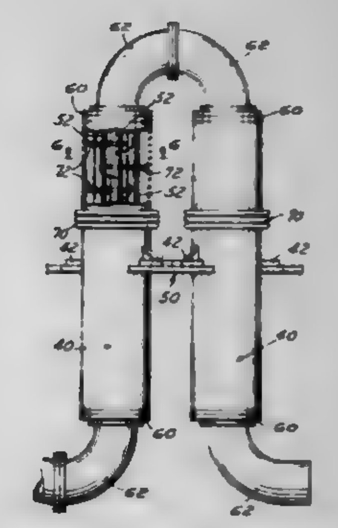
Gerald D. Corey, Hermosa Beach, Calif., assignor to Fansteel Inc., North Chicago, Ill.

Filed Mar. 26, 1979, Ser. No. 23,734

Int. Cl.[3] F28F *9/26, 7/00*

U.S. Cl. 165—78 **1 Claim**





1. A heat exchanger apparatus for transferring heat from one fluid to another which comprises:

(a) a supported elongate first vertical central chamber divided laterally into a top inlet chamber for a heated treating fluid and a bottom condensate chamber for condensed treating fluid,

(b) a circular support rack positioned around said first vertical chamber having a plurality of radially extending segments forming a plurality of circumferentially spaced support recesses open to the periphery of said rack,

(c) a plurality of secondary symmetrical, invertible vertical elongate chambers having mounting extensions substantially centrally located intermediate the ends thereof to cooperate with said segments of said rack to removably support said secondary chambers in upright and invertible position as a circular cluster in said circumferentially spaced support recesses, said secondary chambers each having one or more first longitudinal passages for a treated fluid surrounded by a second essentially longitudinal, baffled passage for a treating fluid,

(d) said secondary chambers having identical and symmetrical flow connections at each end to said first and second passages respectively,

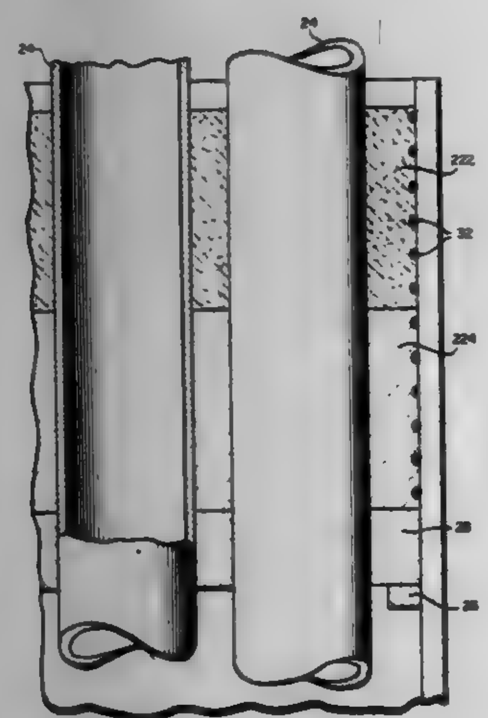
(e) means connecting the flow connections of said second passages at the tops and bottoms respectively of said invertible secondary chambers in parallel with the top and bottom chambers of said first vertical chamber to permit flow of treating fluid from said inlet chamber of said first

vertical chamber through each of said second passages of said secondary chambers and back to said condensate chambers, and

(f) means connecting the flow connections of said first passages in said secondary chambers alternately at the top and bottom of adjacent secondary chambers to permit series flow of treated material through said secondary chambers, wherein the flow of treating and treated material is essentially circular around said circular support and said first vertical chamber.

4,323,115
SHELL AND TUBE HEAT EXCHANGER WITH POLYMERIC TUBE SHEETS

Donald C. Stafford, Hinsdale, and Vincent F. Allo, Warrenville, both of Ill., assignors to Chicago Bridge & Iron Company, Oak Brook, Ill.
Filed Sep. 26, 1980, Ser. No. 191,357
Int. Cl.^{3} F28F *9/16*
U.S. Cl. 165—79 **2 Claims**

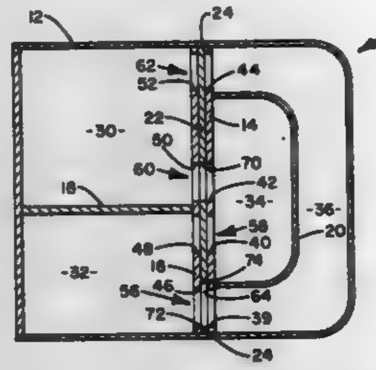


1. A heat exchanger comprising:
a plurality of spaced apart tubes;
a shell around the tubes;
a pair of spaced apart molded in place tube sheets of solid polymeric material bonded to the tubes and to the shell interior surface and providing the primary support for the tubes;
at least one tube sheet having a high tensile strength layer of polymeric material and a high compressive strength layer of polymeric material;
means to deliver a heat exchange fluid around the tubes inside of the shell between the tube sheets; and
means to deliver a liquid feed stream into a feed box partially defined by one of the tube sheets.

4,323,116
FLOW CONTROL APPARATUS

Charles J. Zimmerman, Monroe, Mich., assignor to Carrier Corporation, Syracuse, N.Y.
Filed Dec. 17, 1979, Ser. No. 104,512
Int. Cl.^{3} F28F *27/02*
U.S. Cl. 165—97 **5 Claims**

1. A flow control apparatus for use with a heat exchanger having a plurality of heat exchange tubes, the flow control apparatus comprising:
a housing;
means dividing the housing into a first compartment for communication with a first set of heat exchange tubes, a second compartment for communication with a second set of heat exchange tubes, an inlet compartment for connection to an external fluid source, and an outlet compartment for discharging fluid from the housing;
the dividing means defining a first port for transmitting fluid between the first and outlet compartments, a second port for transmitting fluid between the first and inlet compartments, a third port for transmitting fluid between the second and inlet compartments, and a fourth port for transmitting fluid between the second and outlet compartments;
flow control gate means having a normal flow position closing the first and third ports and allowing fluid flow through the second and fourth ports, and a reverse flow



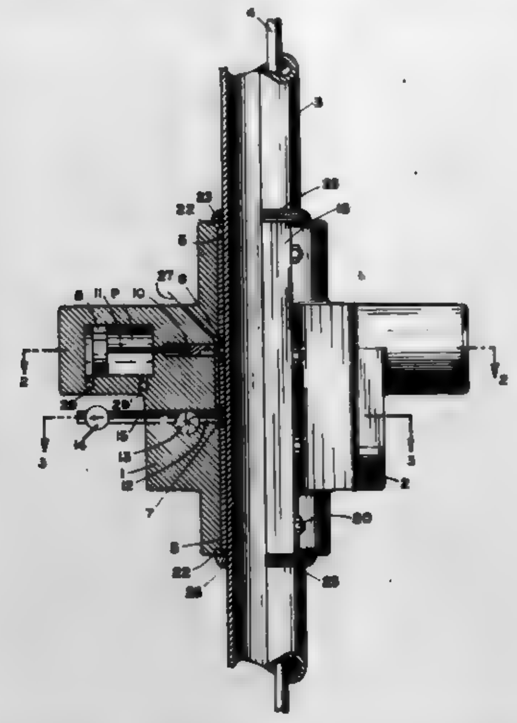
position closing the second and fourth ports and allowing fluid flow through the first and third ports;
the dividing means inclusing a first wall member, and the flow control gate means including a second wall member generally parallel to the first wall member and slidably disposed adjacent thereto, with the second wall member slidably moved relative to the first wall member to change the flow control gate means between the normal and reverse flow positions;
wedges for moving the second wall member into fluid tight, abutting contact with the first wall member as the second wall member slides relative thereto; and
means for sliding the second wall member relative to the first wall member.

4,323,117
METHOD AND MEANS FOR EMERGENCY SHEARING AND SEALING OF WELL CASING

Laurance Pierce, 4652 Tonywatha Trail, Monona, Wis. 53716
Filed Apr. 23, 1980, Ser. No. 143,023
Int. Cl.^{3} E21B *29/08, 33/06*
U.S. Cl. 166—55 **10 Claims**

1. Apparatus for being applied externally to a well casing to girdle it for emergency shearing of the casing to terminate uncontrolled flow from a well comprising
a longitudinally split body structure configured for being operably fastened to girdle a well casing,
ram means housed in said body actuatable to traverse said casing transversely to the axis of said casing for sealing said casing against uncontrolled flow therethrough,

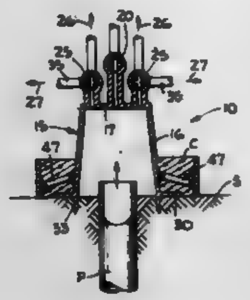
shaped charge explosive means provided in said body structure disposed for being actuated to ring said casing with



perforations at an elevational level substantially the same as that of said ram means.

4,323,118
APPARATUS FOR CONTROLLING AND PREVENTING OIL BLOWOUTS

Conrad E. Bergmann, 1365 Lincoln Ave., San Jose, Calif. 95125
Filed Feb. 4, 1980, Ser. No. 118,578
Int. Cl.^{3} E21B *33/037*
U.S. Cl. 166—96 **7 Claims**

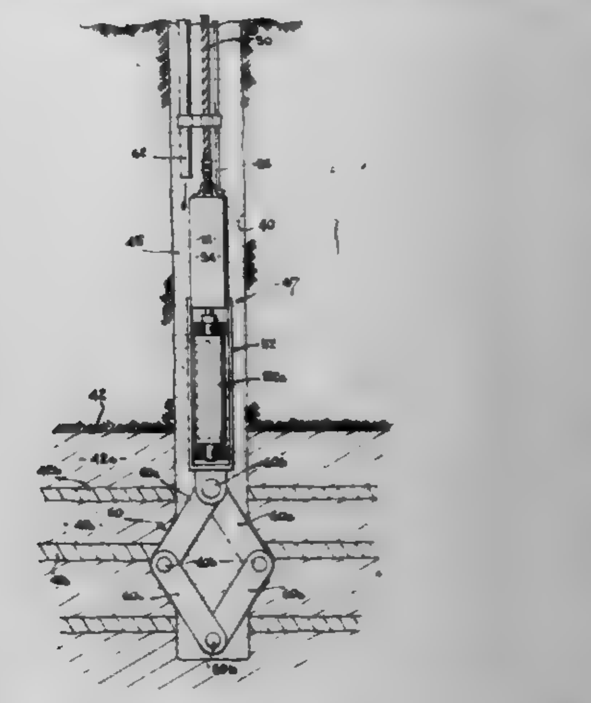


1. Apparatus for controlling oil blowouts in oil rigs, oil wells and the like comprising a hollow dome having an exterior wall, means providing a plurality of discharge openings in said wall, a valve communicating with each of said openings and adapted to control the flow of fluid through the openings, and a pair of conduits connected to each valve, one conduit leading to a storage facility and the other conduit providing a blow off passage, each valve being movable between a first position establishing communication between the associated storage conduit and the associated discharge opening and a second position communicating the discharge opening with said blow-off passage.

4,323,119
VIBRATORY APPARATUS FOR MINING SHALE OIL OR THE LIKE

Albert G. Bodine, 7877 Woodley Ave., Van Nuys, Calif. 91406
Division of Ser. No. 12,669, Feb. 16, 1979, Pat. No. 4,252,189. This application Nov. 24, 1980, Ser. No. 209,527
Int. Cl.^{3} E21B *43/00;* E21C *37/20*
U.S. Cl. 166—177 **4 Claims**

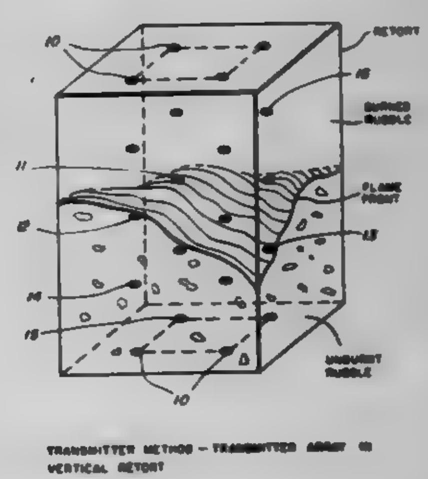
1. Apparatus for in situ removal of kerogen or the like from oil shale deposits from a well including such deposits along the side walls of the well bore comprising:
sonic radiator means,
means for suspending the sonic radiator means in said well adjacent to said deposits,
means for flowing a carrier liquid into the well in contact with said deposits,
means for providing high level sonic energy to said radiator means for driving said radiator means against the side



walls of the well and comminuting the oil shale along said side walls to shale and kerogen particles, the kerogen particles rising toward the top of said liquid with the shale particles falling to the bottom of said liquid, the bore of the well being laterally enlarged as the oil shale is comminuted, and
means for removing said liquid from the well.

4,323,120
METHOD FOR CONTROLLING UNDERGROUND COMBUSTION

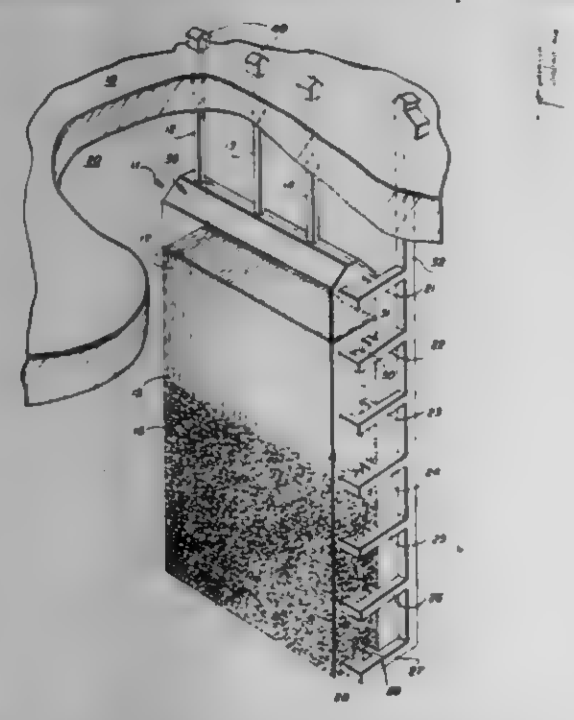
Irwin Ginsburgh, Morton Grove, and Robert D. Hall, Wheaton, both of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.
Division of Ser. No. 925,181, Jul. 17, 1978, Pat. No. 4,271,904. This application Aug. 1, 1980, Ser. No. 174,602
Int. Cl.^{3} E21B *43/247, 47/06, 47/12*
U.S. Cl. 166—251 **2 Claims**



1. In the in-situ combustion of a subterranean carbonaceous stratum, a method of controlling an underground flame front comprising
(a) monitoring the extent and movement of said flame front to determine the location of one or more segments of the flame front which exhibit unfavorable combustion characteristics by means of the Transmitter Method, wherein

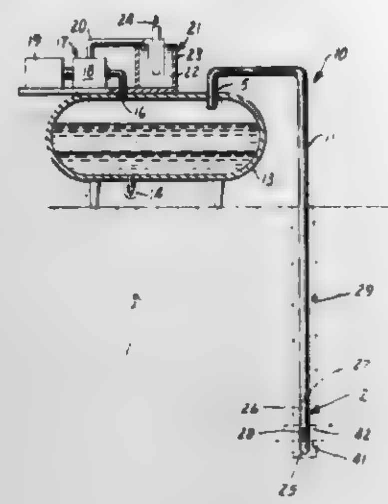
one or more transmitters are placed within a retort capable of sensing and transmitting information concerning at least one of the properties of temperature, gas pressure, mechanical pressure, gas flow rate, gas composition, and directional mechanical force, and
(b) injecting and controlling the flow of one or more gases into the vicinity of one or more of said segments to control and optimize the combustion in said segment.

4,323,121
METHOD FOR CONTROLLING UNDERGROUND COMBUSTION
Irwin Ginsburgh, Morton Grove, and Robert D. Hall, Wheaton, both of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.
Division of Ser. No. 925,181, Jul. 17, 1978, Pat. No. 4,271,904. This application Aug. 1, 1980, Ser. No. 174,603
Int. Cl.³ E21B *43/247, 47/12*
U.S. Cl. 166—251 2 Claims



1. In the in-situ combustion of a subterranean carbonaceous stratum, a method of controlling an underground flame front comprising
(a) monitoring the flame front to determine the location of one or more segments of the flame front which exhibit unfavorable combustion characteristics by means of the Sound Detection Method which comprises
detecting at a plurality of known positions relative to said oil shale retort the acoustic energy generated by said flame front by moving a pair of matched hydrophones separated by a fixed known distance through a well bore which is liquid-filled and which has been drilled such as to traverse, at a known distance thereto, a sidewall of said retort of which the flame front is intended to pass along during the in-situ combustion,
determining the position of the source of the acoustic energy from the received signals by leading the outputs from said pair of matched hydrophones to a differential amplifier and recording the resulting difference as a function of the position of said pair of matched hydrophones in said well bore such that a minimum in said resulting difference corresponds to the position of the flame front in said oil shale retort, and
(b) injecting and controlling the flow of one or more gases into the vicinity of one or more of said segments to control and optimize the combustion in said segment.

4,323,122
PROCESS FOR RECOVERING ORGANIC LIQUIDS FROM UNDERGROUND AREAS
Dwayne L. Knopik, P.O. Box 33427, St. Paul, Minn. 55133
Filed Jan. 2, 1980, Ser. No. 155,307
Int. Cl.³ E21B *43/00, 43/34*
U.S. Cl. 166—267 2 Claims



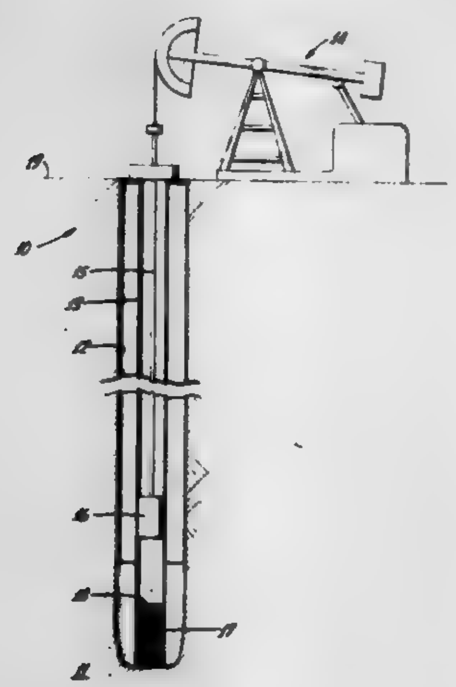
1. A process for recovering organic liquids such as gasoline from the surface of the water table in underground areas, said process comprising the following steps:
(1) providing an opening in the ground from the ground surface to a point beneath the upper surface of the water table;
(2) positioning within said opening a conduit having a lower end in fluid-tight relationship with a collection head having a closed liquid impermeable lower end portion, an open upper end fitted onto the lower end of said conduit, and a liquid permeable wall portion intermediate said liquid impermeable lower end portion and said upper end;
(3) positioning said collection head so that the liquid permeable wall portion is just above the surface of the water table and the liquid impermeable lower end portion of said collection head is just below the surface of the water table;
(4) connecting the upper end of said conduit to an inlet of a collection vessel having a vapor outlet to permit the removal of air and other gaseous materials but not substantial amounts of liquid from said vessel; and
(5) exhausting air and other gaseous materials from said vessel through said vapor outlet to create less than atmospheric pressure in said vessel whereby to draw organic liquids from the surface of the water table through said conduit into said vessel.

4,323,123
GELLED COMPOSITIONS AND WELL TREATING
Billy L. Swanson, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.
Division of Ser. No. 925,357, Jul. 17, 1978, Pat. No. 4,246,124. This application Aug. 6, 1980, Ser. No. 175,811
The portion of the term of this patent subsequent to Oct. 25, 1994, has been disclaimed.
Int. Cl.³ E21B *43/26*
U.S. Cl. 166—302 9 Claims

1. A process for hydraulically fracturing a subterranean formation penetrated by at least one well which comprises:
injecting into the formation under pressure sufficient to fracture the formation a gelled polymer-containing composition comprising
(a) water,
(b) a water-thickening amount of a water-dispersible polymer selected from the group consisting of cellulose ethers, polyacrylamides, and biopolysaccharides or heteropolysaccharides produced by the action of bacteria of the genus Xanthomonas upon carbohydrates,

(c) a small, but effective amount in the range of 0.02 to 2 weight percent; of at least one aldehyde component selected from the group consisting of aliphatic monoaldehydes having from 1 to about 10 carbon atoms per molecule, glyoxal, glutaraldehyde, and terephthaldehyde, and
(d) a small, but effective amount in the range of 0.005 to 2 weight percent of at least one phenolic compound selected from the group consisting of phenol, catechol, resorcinol, phloroglucinol, pyrogallol, 4,4'-diphenyl, 1,3-dihydroxynaphthalene, 1,4-benzoquinone, hydroquinone, quinhydrone, and quebracho which amounts of aldehyde (c) and phenolic compound (d) are sufficient to cause gelation of an aqueous dispersion of polymer (b) and form said gelled composition,
maintaining said composition in said formation in contact therewith for a period of time sufficient to significantly increase formation permeability, and
fracturing said formation to stimulate the production of fluids therefrom.

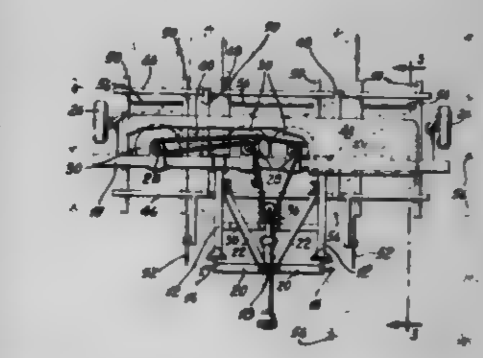
4,323,124
METHOD OF INHIBITING GRAVEL PACK AND FORMATION SANDSTONE DISSOLUTION DURING STEAM INJECTION
Philip G. Swan, Fountain Valley, Calif., assignor to Sigma Chemical Corporation, Santa Ana, Calif.
Filed Sep. 2, 1980, Ser. No. 183,147
Int. Cl.³ E21B *43/22, 43/24*
U.S. Cl. 166—303 23 Claims



21. A method of inhibiting dissolution or erosion of a silicious material subject to aqueous fluids at elevated temperatures produced concurrently with steam comprising:
coating said silicious material with a chemical composition, the active ingredient in which is lecithin.

4,323,125
ROTARY WEEDING MACHINE
Normand Pronovost, 256, Rte. 159, St-Tite, Co. Laviolette, Prov. of Quebec, Canada (G0X 3H0)
Filed Jan. 28, 1980, Ser. No. 116,240
Int. Cl.³ A01B *33/06, 39/08*
U.S. Cl. 172—59 1 Claim

1. A rotary weeding machine for removing weeds and working the soil between spaced rows of plants, comprising:
(a) a transverse tool bar adapted to be attached at its central portion to the regular three-point hitch of a tractor end of a length for extending above several rows of plants transverse to the direction of travel;
(b) two ground-engaging wheels mounted one at each end of said tool bar for supporting said tool bar above the ground;
(c) a plurality of vertical shafts mounted for rotation on said tool bar and each supporting a soil-working device adapted to cut the weeds and work the soil between the rows of plants, said soil-working devices arranged to form a central pair of adjacent devices to work the soil between two rows of plants, and two spaced outermost devices arranged to work half the width of the soil on the outside of said two rows of plants;
(d) each soil-working device comprising a disc attached to the lower end of each shaft and a number of tines extending downwardly from each disc, the lowermost end of each tine being bent over so as to extend at least to a small inclination to the horizontal for cutting the weed, all of said soil-working devices being of the same size;
(e) means for adjustably mounting the height of said bar with respect to the axis of the wheels so as to vary the working depth of said soil-working devices;

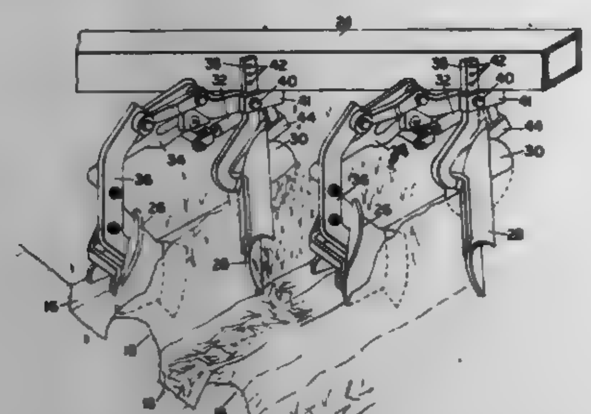


(f) two longitudinally-spaced transverse beams secured to and extending below said tool bar, and a plurality of vertical longitudinal plates secured to said transverse beams and extending transverse to said tool bar, on each side of said central pair of soil-working devices and on each side of each of said outermost soil-working devices, for confining earth and weeds displaced by said soil-working devices;
(g) a transverse vertical plate secured between adjacent vertical longitudinal plates at the back of said soil-working devices for levelling the soil after the passage of said soil-working devices;
(h) vertical rotary discs carried by one of said transverse beams and each located ahead of, and in line with, one of said vertical longitudinal plates for cutting the soil ahead of the plates;
(i) means for coupling said shafts to the regular power take-off of the tractor, said means driving the shafts of said cental pair of devices in opposite direction; and
(j) wherein the lower edge of said plates and of said rotary discs is substantially at the same level and slightly lower than the lowermost ends of said tines.

4,323,126
RIDGE MULCH TILLAGE METHOD AND APPARATUS
Larry F. Stikeleather, New Berlin, and David S. Totten, Greendale, both of Wis., assignors to Allis-Chalmers Corporation, Milwaukee, Wis.
Filed Dec. 31, 1979, Ser. No. 108,838
Int. Cl.³ A01B *13/14*
U.S. Cl. 172—147 13 Claims

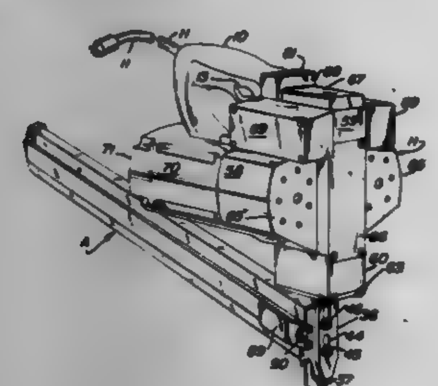
1. Apparatus for preparing a field having rows of crop residue for subsequent row crop planting comprising:
a diagonal horizontal plow frame;
a plurality of furrow cutting and ridge forming moldboards affixed to said plow frame and spaced apart a distance approximately equal to the spacing between said crop

rows so as to cut furrows between crop rows and turn the soil lifted form the furrows onto surfaces not worked by said moldboards, thereby leaving unfilled the furrows created by the moldboards; and



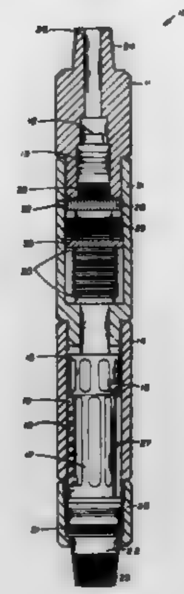
a plurality of trash boards affixed to said plow frame in alternating relation to said moldboards and spaced apart a distance approximately equal to the spacing between said crop rows and adapted to transport the unplowed crop residue into said furrows cut by said moldboards.

4,323,127
ELECTRICALLY OPERATED IMPACT TOOL
James D. Cunningham, 2100 Topaz, Boulder, Colo. 80302
Continuation-in-part of Ser. No. 799,092, May 20, 1977, abandoned. This application Mar. 9, 1979, Ser. No. 19,073
Int. Cl.³ B25C *1/06*
U.S. Cl. 173—53 27 Claims



1. In an impact tool for producing an impact against an object:
(a) elongated ram means mounted for movement along a longitudinal path, in opposite directions;
(b) a pair of oppositely rotating bodies for storing energy and mounted on opposite sides of said ram means for movement toward and away from said ram path, each said body having an axis of rotation generally perpendicular to the direction of movement of said ram means;
(c) means for moving said bodies substantially simultaneously toward and into engagement with said ram means on the respective side thereof, whereby said rotating bodies impart linear movement to said ram means;
(d) said moving means including force multiplying means and means for moving said force multiplying means;
(e) said means for moving said force multiplying means being electrically actuated;
(f) means for moving said bodies away from the path of said ram means; and
(g) means for returning said ram means to its initial position.

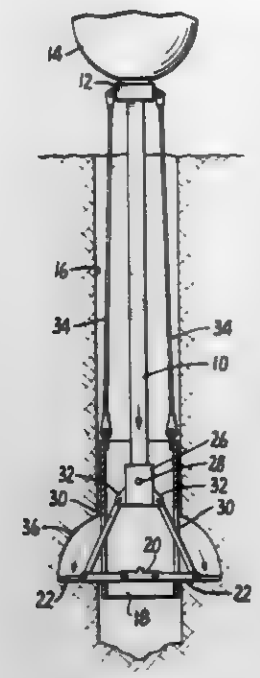
4,323,128
SPRING ADJUSTMENT SYSTEM FOR DRILL STRING TOOL
James W. Young, Irving, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.
Continuation of Ser. No. 710,754, Aug. 2, 1976, abandoned. This application Feb. 16, 1978, Ser. No. 878,200
Int. Cl.³ E21B *17/07*
U.S. Cl. 175—57 2 Claims



1. A method of earth boring, comprising the steps of:
providing a torque transmitting well tool having an outer member, an inner member with said outer member and said inner member being telescopically arranged, an upper seal between said outer member and said inner member, a lower seal between said outer member and said inner member, a fluid between said upper seal and said lower seal, spline means between said outer member and said inner member for transmitting torque, spring means connected with said outer member and connected with said inner member with said spring means including a multiplicity of disc spring units, a central passage extending through said well tool, and connection means for connecting said well tool to drill pipe;
providing a threaded spring adjustment member connected with said disc spring units for axial movement in said well tool upon relative rotation;
providing a removable plug in said well tool to provide access to said threaded spring adjustment member and to seal said well tool from loss of said fluid;
removing said plug;
rotating said threaded spring adjustment member with an adjustment tool until the desired change of position of said disc spring units has been accomplished;
replacing said plug; and
connecting said well tool to drill pipe for rotation and earth boring.

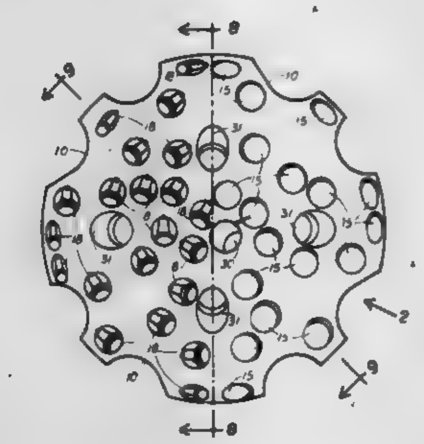
4,323,129
HOLE DIGGING APPARATUS AND METHOD
William J. Cordes, 330 F St., Bakersfield, Calif. 93304
Filed Feb. 25, 1980, Ser. No. 124,537
Int. Cl.³ E21B *10/32*
U.S. Cl. 175—285 5 Claims

1. Apparatus for belling a drill hole comprising in combination with a Kelly bar, Kelly nut and drive means therefor a pair of pivotally mounted bell-cutting blades, first means including cable means interconnecting said Kelly nut and first pivotal axes of said blades operable to maintain the level of said axes a fixed distance above the bottom of the drill hole while said blades are rotated about said fixed level axes as centers of rotation into and out of bell-cutting positions, and second means comprising said Kelly bar connected to second pivotal axes of said blades and operable to vertically move the same to



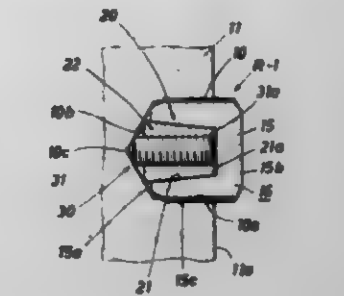
effect movement of said blades into and out of bell-cutting positions.

4,323,130
DRILL BIT
Mahlon Dennis, Houston, Tex., assignor to Strata Bit Corporation, Houston, Tex.
Filed Jun. 11, 1980, Ser. No. 158,389
Int. Cl.³ E21B *9/02*
U.S. Cl. 175—329 16 Claims



1. A drill bit comprising
a drill body having a hollow tubular body adapted to be connected to a drill string,
said drill body having an exterior peripheral stabilizer surface and an end cutting face,
said end cutting face having a plurality of cylindrical recesses spaced therearound in a selected pattern,
each of said recesses having an offset cylindrical counterbore extending for a depth of a fraction of the depth of the adjacent recess,
a plurality of cutting elements, one for each of said recesses,
said cutting elements each comprising a cylindrical supporting stud of sintered carbide having an angularly oriented supporting surface with a disc shaped element bonded thereon comprising a sintered carbide disc having a cutting surface comprising polycrystalline diamond,
said disc shaped elements on said cutting elements have a peripheral bevel on said diamond cutting surface,
each of said cutting elements being positioned in one of said recesses by an interference fit with said disc shaped element partially recessed in said counterbore,
said counterbores being positioned to orient said discs with their cutting surfaces facing the direction of rotation of the bit and being of a size relieving stresses on said supporting studs during cutting operation.

4,323,131
REMOVABLE ANTI-WEAR INSERT
Jimmy L. Allee, Houston, Tex., assignor to Baker Service Company, Inc., Houston, Tex.
Filed Sep. 8, 1980, Ser. No. 185,152
Int. Cl.³ E21B *10/62, 17/10, 17/12*
U.S. Cl. 175—413 12 Claims

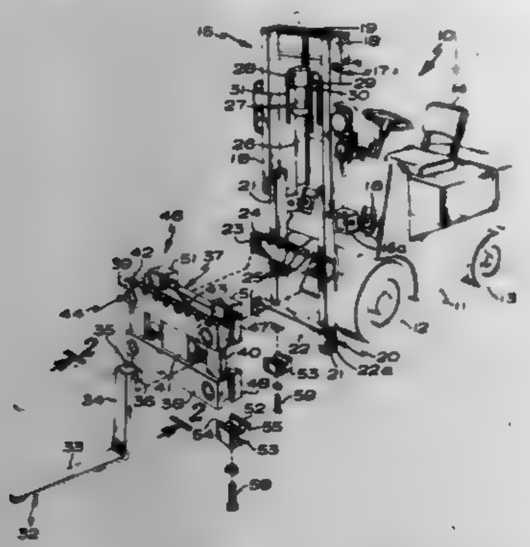


1. A removable anti-wear insert adapted to be mounted in a bore of a tool body and which can be removed after wear with minimal damage to the tool body, comprising:
a wear resistant insert body having first and second end surfaces and a side surface configuration therebetween adapted to substantially conform to the configuration of a bore in a tool body, said first surface of said insert being positionable within said tool body bore, said insert having a bore located in said first surface and extending into said insert body, said second surface of said insert body and a portion of said body forming a wear portion adapted to protrude outwardly of said tool body bore to provide a predesignated wear surface to increase the life of said tool body, the remainder of said insert body formed by said first end surface and said side surface providing an initially unexposed portion adapted to be positioned in said tool body; and
extractor means mounted in said insert body bore and being adapted to be located with said initially unexposed portion of said insert body in said tool body bore, said extractor means being exposed upon wear of said wear portion of said insert for extracting said insert from tool body bore.

4,323,132
MOUNTING ADAPTER FOR A FORK LIFT TRUCK
Richard S. Bradley, Fairmont, Minn., assignor to Weigh-Tronix, Inc., Fairmont, Minn.
Continuation-in-part of Ser. No. 180,802, Aug. 25, 1980. This application Apr. 6, 1981, Ser. No. 251,061
Int. Cl.³ G01G *19/08, 23/00*
U.S. Cl. 177—139 3 Claims

1. A mounting adapter for mounting an electro-mechanical scale on a fork lift truck having a lift frame structure and having lifting forks, the scale including a scale frame, having a pair of horizontal frame elements, for supporting the lift forks and a plurality of deformable members on the scale frame, and a plurality of electrical resistant strain gages mounted on each deformable member to sense the deformation of the latter, circuit means producing output signals caused by deformation of the deformable members means and means for converting the output signals into a perceptive weight readout, said mounting adapter including,
a pair of transverse frame members secured to the scale frame elements by the deformable members and clamping means on said frame members including a plurality of clamping elements engaging said transverse members and

the lift frame structure, and means securing said clamping elements to one of said frame members to permit quick



attachment and detachment of the mounting adapter and scale frame on the lift frame structure.

4,323,133

FOLDING FRAMEWORKS AND WHEEL-CHAIRS

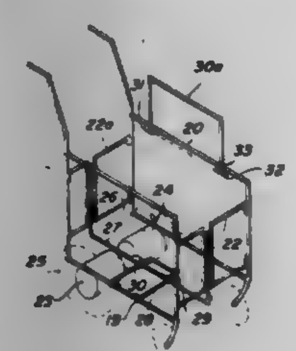
Patrick Y. Williams, Golden Eagles Flats, 6 Fawcett St., Ballina, New South Wales, Australia (2478)

Filed Feb. 29, 1980, Ser. No. 125,881

Claims priority, application Australia, Mar. 5, 1979, PD7895; Apr. 5, 1979, PD8294

Int. Cl.³ B60K *1/02*; B62B *7/06*; A61G *5/02*

U.S. Cl. 180—65 R 10 Claims



1. In a motorized folding wheelchair comprising side frames mounting respective front and rear wheels, the rear wheels each having an electric motor connected thereto, the structure being adapted to carry an electric battery to drive the motors and control equipment for controlling the motors, front and rear toggle braces each comprising two hingeably connected arms extending between the front and rear ends of the side frames, a linking element interconnecting the front and rear toggle braces at the region of central hinges thereof, the improvement comprising the hinges being similarly offset relative to the fore/aft central plane of the vehicle, a latching arm hingeably mounted to one of the side frames about an axis substantially parallel to the linking element, the linking element carrying latch means engageable with the arm when it is in a downwardly displaced locking position to hold the toggle braces in an extended and locked position in normal use, and a diagonal bracing element pivotally connected adjacent opposite corners of the structure and extending below the linking element and latching arm, whereby folding of the wheelchair is initiated by upward displacement of said latching arm which engages with the latch means of the linking element to displace the linking element rearwardly thereby causing said toggle braces to commence folding.

4,323,134

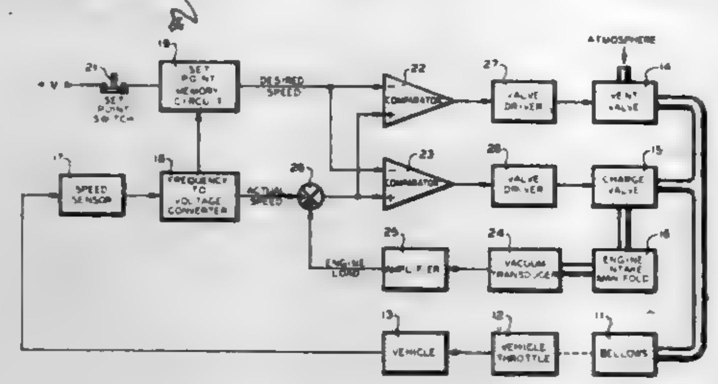
VEHICLE SPEED CONTROL CIRCUIT

Larry O. Gray, Greens Fork, Ind., assignor to Dana Corporation, Toledo, Ohio

Filed Feb. 28, 1979, Ser. No. 16,020

Int. Cl.³ B60K *31/00*

U.S. Cl. 180—176 9 Claims



1. In a vehicle having an engine and an associated throttle control means, a speed control circuit for automatically maintaining the speed of the vehicle at a desired speed, comprising:

a source of an electrical signal representing the actual speed of the vehicle;

a source of an electrical signal representing the desired speed of the vehicle;

a source of an electrical signal representing the load on the engine of the vehicle; and

means responsive to said actual speed signal, said desired speed signal and said engine load signal for generating a control signal to the throttle control means to maintain the speed of the vehicle at the desired road speed, said control signal generating means including means responsive to said actual speed signal and engine load signal for generating a composite feedback signal and a comparator means responsive to said composite feedback signal and said desired speed signal for generating said control signal.

6. In a vehicle having an engine including an associated intake manifold and a throttle control means, a speed control circuit for automatically maintaining the speed of the vehicle at a desired speed, comprising:

a source of a signal representing the actual speed of the vehicle;

a source of a signal representing the desired speed of the vehicle;

a source of a signal representing the magnitude of the intake manifold vacuum pressure;

means responsive to said actual speed signal and said manifold vacuum pressure signal for generating a composite feedback signal; and

means responsive to said desired speed signal and said composite feedback signal for generating a control signal to the throttle control means to maintain the speed of the vehicle at the desired road speed.

4,323,135

STRUCTURE FOR SUPPORTING A MOTORCYCLE ENGINE

Nobuyoshi Tominaga, Hamamatsu; Nobuyoshi Kurai, Iwata; Hajime Ueno, and Sadahide Suzuki, both of Shizuoka, all of Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

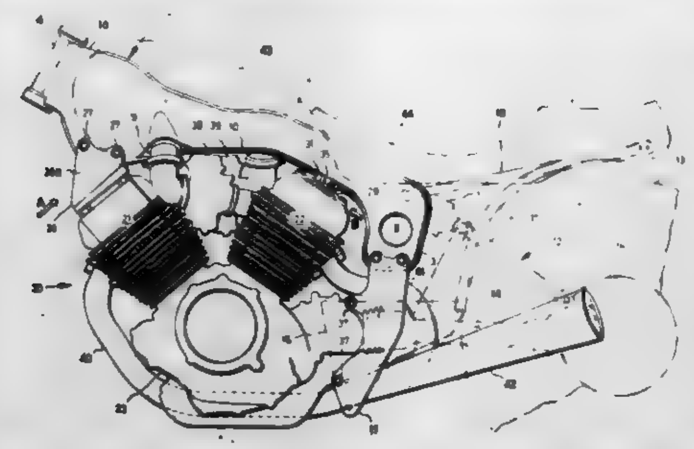
Filed Mar. 11, 1980, Ser. No. 129,330

Int. Cl.³ B60K *5/12*

U.S. Cl. 180—228 3 Claims

1. In combination: a V-shaped internal combustion engine having a front cylinder, a rear cylinder, and a crankcase joining said cylinders in a V-shaped array, said crankcase having a substantial dimension extending rearwardly of said front cylinder, and forming a generally V-shaped structure with it; a motorcycle frame having a portion overhanging said cylinders,

and a rear portion rearward of said engine forming a generally V-shaped structure, said frame having an axis of forward motion, said engine being mounted to said frame with the top of said front cylinder rigidly mounted to said frame portion, said crankcase being rigidly connected to said rear frame portion, the said structures forming a generally diamond-shaped rigid



array, said rear cylinder extending toward said frame; and elastic means elastically attaching said rear cylinder to said frame enabling said rear cylinder to change its orientation relative to said front cylinder and crankcase without distortion of said engine caused by the interconnection of the top of said rear cylinder and said frame.

4,323,136

MOVEMENT STOPPING SAFETY DEVICE FOR AGRICULTURAL MACHINE

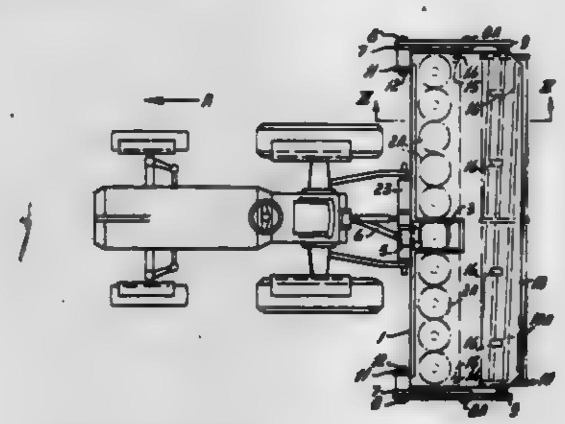
Cornelis van der Lely, Zug, Switzerland, and Ary van der Lely, Maasland, Netherlands, assignors to C. van der Lely N.V., Maasland, Netherlands

Filed Dec. 4, 1979, Ser. No. 100,269

Claims priority, application Netherlands, Dec. 8, 1978, 7811965

Int. Cl.³ B60R *21/00*

U.S. Cl. 180—271 9 Claims



1. An agricultural machine comprising a rotary member that is moved during operation of said machine, a protective mechanism operatively associated with said member and positioned to prevent the movement of the same responsive to the actuation of monitor means, said monitor means being sensitive to a proximate external object to interrupt the movement of said rotary member, drive means connected to operate said machine through an overload coupling and said mechanism comprising a control device which interrupts drive to said machine upon actuation of said monitor means, said control device including a blocking member and the actuation of said monitor means causing said blocking member to retard the movement of a rotary shaft of said drive means whereby said overload coupling disengages the drive to the machine.

4,323,137

WORK VEHICLE

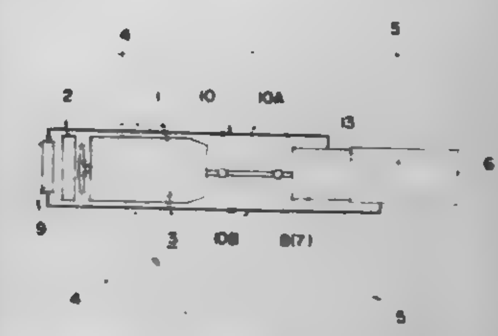
Niro Bando, Sakai; Junji Miyata, Koaza-yakimachi; Masatsugu Tone, Hashimoto, and Haruo Watanabe, Izumi, all of Japan, assignors to Kubota, Ltd., Osaka, Japan

Filed Feb. 29, 1980, Ser. No. 126,067

Claims priority, application Japan, Mar. 9, 1979, 54/30694[U]

Int. Cl.³ B60K *17/10*

U.S. Cl. 180—305 3 Claims



1. A work vehicle, comprising:

an engine (1),

a hydrostatic transmission (7) operatively connected to said engine (1) and disposed within a first housing (8),

a second housing (6) integrally connected to said first housing (8) and containing therein a transmission gearing, said second housing (6) serving as a reservoir for actuating oil for said hydrostatic transmission (7),

pump means (7C) for feeding actuating oil from said second housing (6) to said first housing (8),

a cooling circulation system (10) for cooling the actuating oil for said hydrostatic transmission (7), said cooling circulation system (10) including a cooler (9), a supply conduit (10A) for supplying the actuating oil heated by said hydrostatic transmission (7) to said cooler (9) from said first housing (8), and a return conduit (10B) for returning the actuating oil cooled by said cooler (9) to said second housing (6) from said cooler (9), and

a bypass (12) disposed independently of said cooling circulation system (10) and having a relief valve (13), said bypass (12) being formed to pass through a connection wall portion (11) of said first housing and a connection wall portion (11') of said second housing

whereby the actuating oil in said first housing (8) is directly returned to said second housing (6) from said first housing (8) without passing through said cooling circulation system (10) when the oil pressure in said first housing (8) exceeds a predetermined value.

4,323,138

AUTOMOTIVE LOUD SPEAKER ENCLOSURE

Larry D. Horner, Houston, Tex., assignor to Horner Industries, Houston, Tex.

Filed May 5, 1980, Ser. No. 146,256

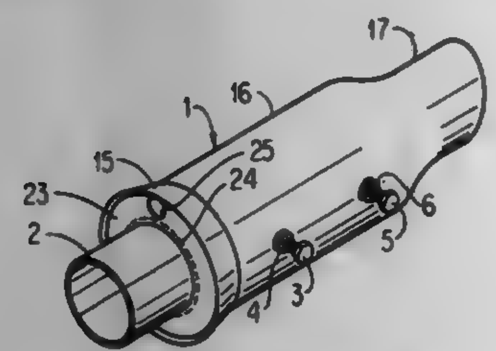
Int. Cl.³ H05K *5/00*

U.S. Cl. 181—147 8 Claims

1. For use in an automobile having a package shelf opening into the passenger compartment with a space below the pack-

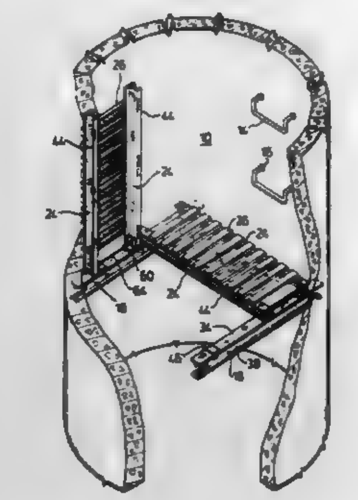
age shelf, a loud speaker enclosure which comprises an axially open enclosure housing having an oval opening at one end with a mounting means located at that end to be mounted to a package shelf at an opening cut in the package shelf to match the oval opening thereat, and further wherein said housing includes an upper portion which tapers downward from said oval opening and a lower portion which flares to a generally circular, open end for receiving thereon a speaker having a diameter sufficiently large that it cannot be mounted directly at the package shelf and wherein said housing extends from said mounting means downwardly when installed below said package shelf to support a speaker which directs speaker-made sound through said housing and out through the oval opening at the package shelf.

4,323,139
ENERGY SAVING EXHAUST SIPHON
Nealy B. Baldwin, 8915 University Blvd., North Charleston, S.C. 29405
Filed Oct. 1, 1980, Ser. No. 192,919
Int. Cl.³ F01N *1/14*
U.S. Cl. 181—263 7 Claims



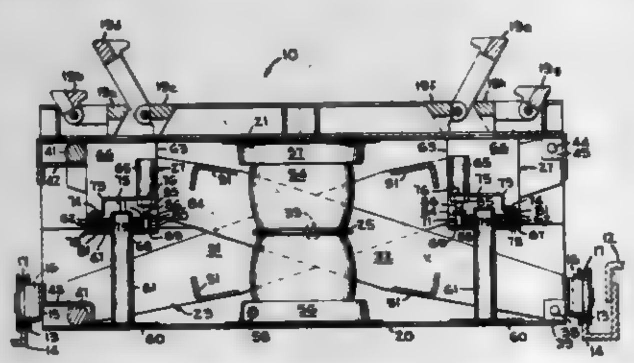
1. A device for attachment to the tailpipe of an exhaust system of a vehicle comprising:
a. a body portion adapted to be placed around said tailpipe, but spaced apart from said tailpipe, in a manner that air may easily flow between said body portion and said tailpipe when said vehicle is moving in a forward direction;
b. a narrowing portion secured to said body portion and adapted to be located in the area of the outer end of said tailpipe, said narrowing portion having a circumference equal to said body portion at one end and a circumference smaller than the circumference of said body portion at the end furtherest away from said body portion, whereby said air, flowing between said tailpipe and said body portion when said vehicle is moving in a forward direction, will be compressed;
c. an exhaust discharge portion connected to said narrowing portion and operative for the exhaust from said tailpipe and said air to be discharged therethrough;
d. a flared portion connected to said body portion on the side opposite from said narrowing portion, said flared portion having a circumference equal to said body portion at one end and a circumference larger than the circumference of said body portion at the end furtherest away from said body portion, whereby said flared portion aids in the flow of said air when said vehicle is moving in a forward direction; and
e. mounting means adjustably secured into the outer surface of said body portion, and adapted to hold said body portion spaced apart from said tailpipe.

4,323,140
SAFETY LANDING
Anthony Foscarini; John Foscarini, and Corrado Comello, all of 17 Malley Rd., Scarborough, Ontario, Canada (M1L 2E4)
Filed Jul. 18, 1980, Ser. No. 170,115
Claims priority, application Canada, May 9, 1980, 351629
Int. Cl.³ E04G *3/14, 1/36*
U.S. Cl. 182—128 13 Claims



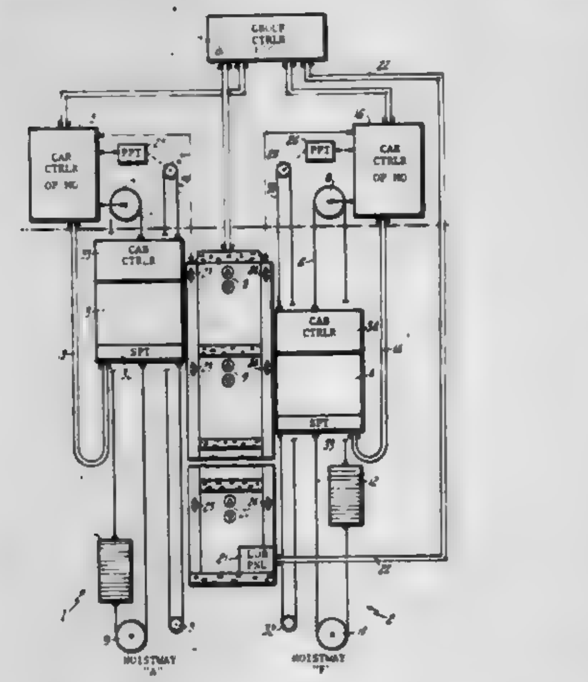
1. A safety platform for use in a vertical shaft defined by a wall, said platform comprising:
(a) a pair of support beams, each support beam having two ends which are mounted in the inner surface of said wall;
(b) at least one panel which extends across the shaft and which bridges said support beams;
(c) a moveable securing means adapted to releasably secure one end of the at least one panel to one of said support beams; and
(d) a pivotting means adapted to pivotally secure the other end of the at least one panel to the opposite support beam.

4,323,141
RAIL-MOUNTED VEHICLE JACK
Marshall P. Ragan, Mayflower, and Peter H. Sytsma, Greenbrier, both of Ark., assignors to FMC Corporation, Chicago, Ill.
Filed Mar. 11, 1980, Ser. No. 129,306
Int. Cl.³ B66F *7/18*
U.S. Cl. 187—8.47 11 Claims



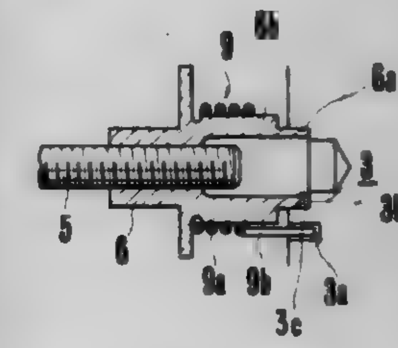
1. A mobile vehicle jack for use with a vehicle lift including spaced runways for supporting the wheels of an automotive vehicle, said jack comprising a frame structure extending between said runways, means mounting the jack for travel along said runways, a platform mounted to said frame structure for movement toward and away from said frame structure while maintaining a parallel relationship thereto, vehicle supporting shoes mounted upon said platform, fluid-actuated lifting means secured between said frame structure and said platform for moving said platform upwardly to cause said shoes to engage the undersides of a vehicle, an upright post mounted upon said frame structure and a pivotable latch plate secured to said platform, said latch plate having an aperture therethrough received about said post and causing the latch plate to bind on the post when it is urged to move downwardly relative to the post for preventing an elevated platform from being lowered, a fluid-actuated mechanism for pivoting the latch plate to place the aperture in alignment with the post for permitting relative movement therebetween to permit the platform to be lowered, and fluid-actuated control means for blocking the flow of fluid pressure to said means for releasing, said control means communicating with said pressure in said lifting means so that when such pressure drops below a predetermined level as would properly control the descent of the platform said control means is caused to block the flow of fluid pressure to said means for releasing.

4,323,142
DYNAMICALLY REEVALUATED ELEVATOR CALL ASSIGNMENTS
Joseph Bittar, Simsbury, Conn., assignor to Otis Elevator Company, Farmington, Conn.
Filed Dec. 3, 1979, Ser. No. 99,945
Int. Cl.³ B66B *1/18*
U.S. Cl. 187—29 R 7 Claims



1. An elevator system including a group of elevators for servicing a plurality of floor landings in a building, comprising:
group controller means, including hall call means for registering calls for up and down service at each of said landings, for exchanging signals with each of said elevators, and for controlling the operation of said elevators in response to said hall call means and signals received form said elevators;
each of said elevators including a car, car motion means for providing and arresting the motion of said car, means registering for calls for service required by passengers therein, and a car controller means for providing signals indicative of conditions of said car, for controlling said car motion means to cause said car to move in a selected up or down direction and to stop in response to said signals indicative of conditions of said car and to signals received from said group controller means;
characterized by said group controller means comprising signal processing means operative, within each one of a repetitive series of cycles occurring several times per second, in response to said signals indicative of conditions of each car and to all hall calls registered at said floor landings for assigning each hall call to one of said cars in dependence on the floor landing and direction of such hall call and the conditions of each car, as indicated during the cycle in which such assignment is made, for removing from each car, after making the assignment of any hall call in any cycle, the assignment of such hall call made to such car in a previous cycle which is assigned to a different car during such cycle, and for issuing a stop command to any car at the end of any cycle in which said signals indicative of conditions of such car indicate that its committable position coincides with the landing of a hall call assigned to it.

4,323,143
AUTOMATIC GAP ADJUSTING DEVICE FOR DISC BRAKE INCORPORATING MECHANICAL BRAKE MECHANISM
Akio Negishi, Hanyu, Japan, assignor to Akebono Brake Industry Co., Ltd., Tokyo, Japan
Filed Nov. 15, 1979, Ser. No. 94,458
Claims priority, application Japan, Nov. 21, 1978, 53-143834; Nov. 21, 1978, 53-143835
Int. Cl.³ F16D *65/56*
U.S. Cl. 188—71.9 2 Claims

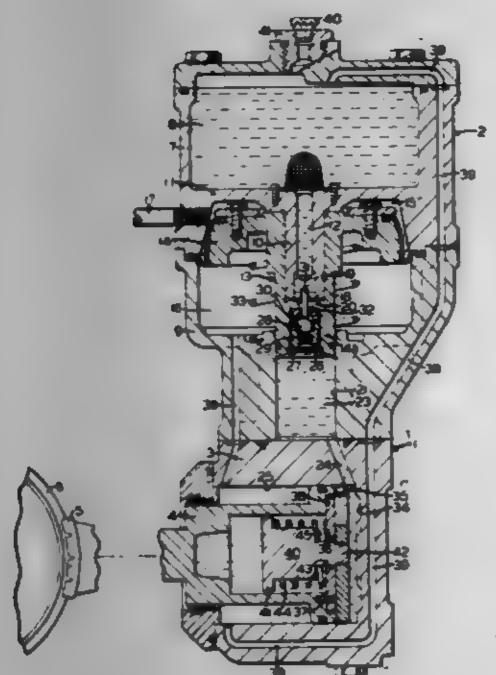


1. An automatic gap adjusting device for a disc incorporating a mechanical brake mechanism said device comprising in combination:
a hydraulic operating piston arranged to push a friction pad against a disc rotor;
a spindle arranged to be driven by an external force;
a sleeve nut which is disposed between said spindle and said piston and is screwed to said spindle;
a clutch spring arranged to prevent said sleeve nut from making inward screwing rotation;
a slot formed in fixed relation to said piston to extend in the axial direction of said piston, said slot being arranged to have one end of said clutch spring which extends in the direction of diameter thereof being inserted in said slot, and
a tubular sleeve guide is secured to the inside of said piston; and said slot is formed in said sleeve guide.

4,323,144
HYDRO-PNEUMATIC BRAKE ACTUATOR ARRANGED TO MAINTAIN A CONSTANT BRAKE SHOE CLEARANCE
Robert B. Morris, N. Huntingdon, and Quentin T. Clemmons, Irwin, both of Pa., assignors to American Standard Inc., Wilmerding, Pa.
Filed Jul. 16, 1980, Ser. No. 169,256
Int. Cl.³ F16D *65/54*
U.S. Cl. 188—196 A 11 Claims

1. For use on a vehicle having a friction braking surface, a hydro-pneumatic brake actuator comprising:
(a) brake means for engaging said friction braking surface to brake said vehicle,
(b) a power actuator portion including:
(i) a bore formed in the casing of said actuator portion; and
(ii) a power piston operably connected with said brake means and coaxially disposed in said bore to form in cooperation therewith a first hydraulic chamber, said power piston being arranged to force said brake means in a brake application direction in response to the supply of fluid pressure to said first hydraulic chamber, to thereby effect engagement of said brake means with said friction braking surface;

(c) a converter portion including:
(i) a casing having formed therein a second hydraulic chamber connected to said first hydraulic chamber, a reservoir in which said hydraulic fluid is stored, and a pneumatic control chamber;
(ii) a hydro-pneumatic converter unit including:
1. a control piston operatively disposed in said control chamber for actuation from a release position to an application position in response to the supply of pneumatic pressure thereto;
2. a first return spring acting on said control piston to urge movement thereof toward said release position;
3. an input piston integral with said control piston and operatively disposed in said second hydraulic chamber, to which the fluid in said reservoir is connected, to transmit fluid pressure from said second hydraulic chamber to said first hydraulic chamber in consequence of movement of said control piston from said release position toward said application position, thereby effecting said engagement of said brake means with said friction braking surface;



wherein the improvement comprises:
(d) a second return spring to urge said power piston toward a brake release position;
(e) friction means engageable with said bore and displaceable therealong to different axial positions, for providing a stop with which said power piston is engageable to accordingly establish said brake release position thereof; and
(f) a lost-motion connection between said power piston and said friction means via which said friction means is axially displaced along said bore in said brake application direction following movement of said power piston a predetermined distance in said brake application direction, whereby subsequent movement of said power piston in said brake release direction is limited by engagement with said stop following movement of said power piston said predetermined distance, to accordingly maintain a constant clearance between said brake means and said braking surface corresponding to said predetermined distance.

4,323,145

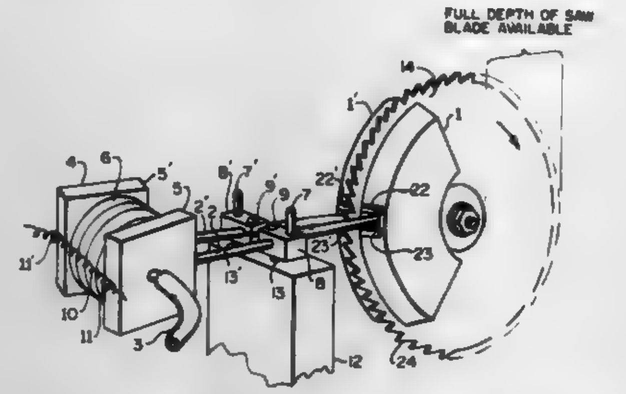
VIBRATION DAMPING METHOD AND MEANS HAVING NON-CONTACTING SOUND DAMPING MEANS

Clayton H. Allen, 651 Concord Ave., Cambridge, Mass. 02138

Continuation-in-part of Ser. No. 738,486, Nov. 3, 1976, abandoned, and Ser. No. 899,223, Apr. 24, 1978, abandoned. This application Aug. 3, 1979, Ser. No. 63,536

Int. Cl.³ F16F *15/00;* G10K *11/02*

U.S. Cl. 188—322.11 31 Claims



1. Apparatus for damping vibrations in a vibrating surface having significant vibrational energy in the audio-frequency range above 100 Hz comprising,
damping means for absorbing vibrational energy in the audiofrequency range above 100 Hz,
means for supporting said damping means in close proximity to but normally slightly spaced from said vibrating surface and extending over a substantial portion of the area of said vibrating surface to embrace at least one of the highly vibrating areas of every significant mode to significantly reduce the audible sound energy radiated by said vibrating surface as compared with the audible sound energy radiated by said vibrating surface without said damping means,
said damping means having a mating member with a mating face facing said vibrating surface,
said mating face having cross dimensions comparable with the wavelength in the vibrating surface of at least some of the vibrational frequencies.

4,323,146

COASTER BRAKE HUB WITH A GEAR-TRANSMISSION

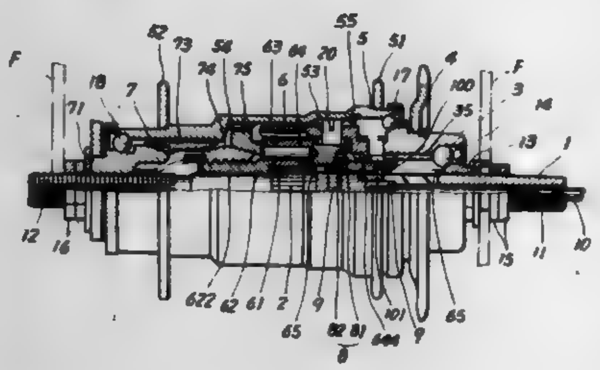
Seiji Fukui, Sakai, Japan, assignor to Shimano Industrial Company, Limited, Osaka, Japan

Division of Ser. No. 900,862, Apr. 28, 1978, Pat. No. 4,240,533. This application Jan. 14, 1980, Ser. No. 111,980

Claims priority, application Japan, May 6, 1977, 52-52284

Int. Cl.³ F16D *41/30;* F16H *5/10*

U.S. Cl. 192—6 A 1 Claim



1. A coaster brake hub having therein a gear-transmission and a back-pedalling braking mechanism comprising:
a fixed shaft;

a driving member having a sprocket and rotatably supported to one axial end of said fixed shaft;
a brake cone rigidly fixed to the other axial end of said fixed shaft;
a hub shell rotatably supported between said driving member and said brake cone;
a multiple stage gear-transmission housed within said hub shell for changeably transmitting the forward driving force from said driving member to said hub shell when said driving member rotates in a forward direction, said gear-transmission comprising a sun gear provided on said fixed shaft, a cylindrical gear frame including a plurality of planetary gears in mesh with said sun gear and a subordinate cam means which is driven to rotate said gear frame, a ring gear including inner teeth in mesh with said planetary gears and grooves which are driven to rotate said ring gear, first transmitting members for transmitting rotating movement of said gear frame to the inner periphery of said hub shell, second transmitting members for transmitting rotating movement of said ring gear to the inner periphery of said hub shell and, means for selectively coupling the forward driving force from said driving member to one of the subordinate cam means of said gear frame and the grooves of said ring gear and comprising a cylindrical, axially movable clutch, spline coupled at one axial end to said driving member and having a prime cam means, said clutch being movable to transmit driving force from the prime cam means to one of the subordinate cam means of said gear frame and the grooves of said ring gear;
a braking mechanism housed within said hub shell comprising at least two semi-cylindrical brake shoes, actuators for radially expanding said brake shoes pressing them against the inner periphery of said hub shell, and means for supporting said actuators to said gear frame so that said actuators are operated by reverse rotation of said gear frame; and,
a change-over mechanism provided between said clutch and said gear frame, said change-over mechanism operating to forcibly intercept the force transmitting route from said driving member to said gear frame when said driving member is reversely rotated and to establish a force transmitting route from said driving member to said ring gear causing said gear frame to be reversely rotated by said ring gear, said ring gear, upon reverse rotation, operating said actuators to press said brake shoes against the inner periphery of said hub shell, said change-over mechanism comprising engaging faces provided at said prime and subordinate cam means operable upon reverse rotation of said driving member to forcibly separate said prime and subordinate cam means from driving engagement with one another such that said clutch is disengaged from driving said gear frame, said prime cam means engaging with said grooves when moved out of a range where said prime and subordinate cams are in driving engagement to cause said clutch to drivingly engage with said ring gear.

4,323,147

COIN-OPERATED DISPENSING DEVICE REFLECTING THE SELLING PRICE OF ITEMS TO BE DISPENSED

Richard Kolbl, and Bernd Mehlan, both of Herrieden, Fed. Rep. of Germany, assignors to Sielaff GmbH & Co., Fed. Rep. of Germany

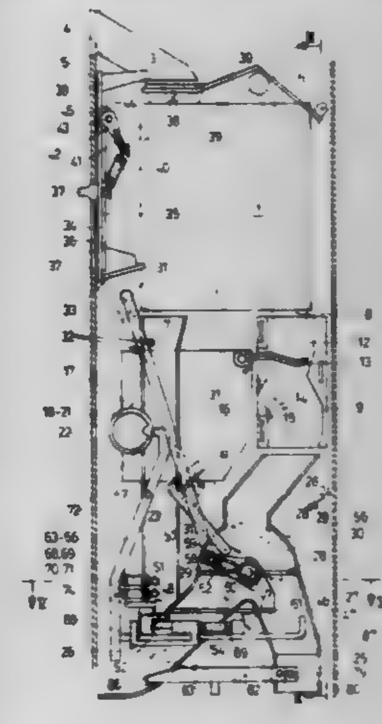
Filed Mar. 24, 1980, Ser. No. 132,766

Claims priority, application Fed. Rep. of Germany, Mar. 24, 1979, 2911634; Apr. 9, 1979, 2913432

Int. Cl.³ G07F *5/08*

U.S. Cl. 194—48 10 Claims

1. In a coin-operated dispensing device of the type having a plurality of counting cams which can be set to reflect the selling price of items to be dispensed and are rotated in response to the insertion of coins into the device, control rods for setting the selling price of the desired items, a dispensing device for the selected items, and a blocking rod movable from a normal blocking position to a release position permitting dispensing of the selected items in response to the insertion of coins having a value corresponding to the selected selling price, a combination comprising a plurality of movable sensing members each cooperating with one of said cams; a slide member normally holding said blocking rod in said blocking position and being movable to a disengaging position by any one of said sensing members; and a plurality of control levers each connected with one of said control rods and being pivotable thereby in front of said slide member into and out of the path of movement of a respective one of said sensing members; means for counting the inserted coins, including a sum-forming shaft; and means for rotating said cams in response to the insertion of coins, including a plurality of advancing levers,



retarding elements each associated with one of said advancing levers and each including a retarding wheel, mechanical energy-storing means coupled to at least one of said wheels, a plurality of transmissions each coupling one of said advancing levers with said sum-forming shaft and said transmissions having relative to one another respective transmission ratios corresponding to the value ratios of coins which can be accepted by said device, and means for furnishing mechanical energy to said energy-storing means for storage by the same, said energy-storing means driving and operating said wheels and levers when actuated by said coins, said coins having kinetic energy less than the amount required to drive and operate said wheels and levers, the energy required for driving and operating said levers being supplied by said energy-storing means.

4,323,148

COIN SELECTOR FOR VENDING MACHINE

Susumu Nichimoto, Tenri; Isao Shinoda, Ikoma; Shigeo Nakamura, and Haruhide Tsumura, both of Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 5, 1980, Ser. No. 127,421

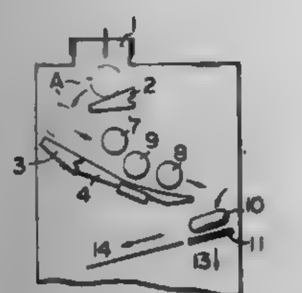
Claims priority, application Japan, Mar. 12, 1979, 54-29158; Jul. 9, 1979, 54-86770; Jul. 9, 1979, 54-86791

Int. Cl.³ G07F *3/02*

U.S. Cl. 194—100 A 6 Claims

1. A coin selector apparatus, comprising a coin shape detecting sensor, a coin thickness detecting sensor and a coin material detecting sensor disposed along a coin passage along which a coin thrown-in the coin selector is moved; oscillator circuits provided for detecting shape, thickness and material of the coin, respectively, each of said oscillator circuits incorporating coil means of the associated one of said sensors for producing an output frequency signal which varies in dependence on the individual coins passing by each of said associated sensors; and

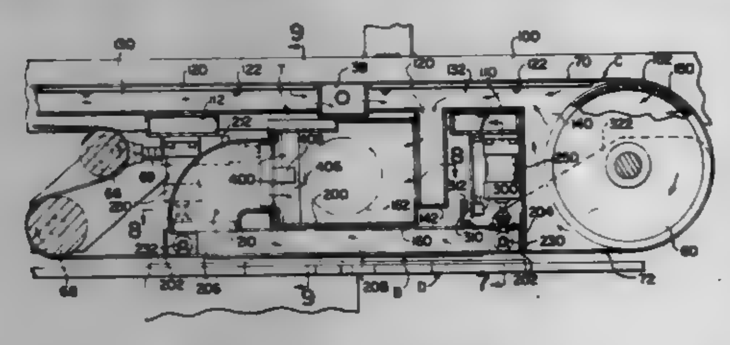
discriminator means for identifying the shape, thickness and the material of said coin by determining whether maximum values of variation in the output frequencies of said oscillators fall within respective predetermined ranges of threshold values preset for the shape, the thickness and materials of the coins authorized to be used, whereby the coin is determined as an authorized coin when affirmative results are obtained from all of said determinations, wherein the material of a coin is determined to be an authorized one when the range of coin thick-



ness in which the coin is determined as the authorized one in the thickness determination coincides with the thickness range in which the coin is determined as the authorized one in the material determination, a selected one of said coin thickness sensor and said coin material sensor being so arranged that the coil gap of said selected sensor is changed in association with closing and opening of the coin passage, whereby a variation in the output frequency of the corresponding oscillator circuit is detected to produce a coin rejection signal in dependence on the magnitude of said frequency variation.

4,323,149
TRANSFER APPARATUS FOR NATURAL TOBACCO LEAVES

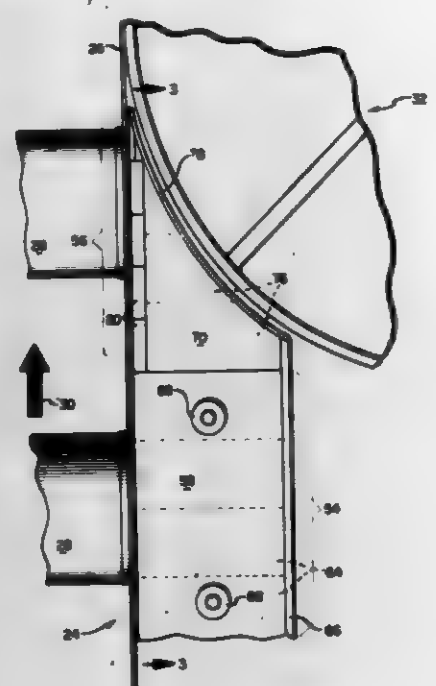
Robert J. Pavone, South Windsor, Conn., assignor to Gulf & Western Corporation, New York, N.Y.
Filed Mar. 13, 1980, Ser. No. 129,894
Int. Cl.³ B65G *37/00, 17/46;* **B65H** *9/08*
U.S. Cl. 198—471 **17 Claims**



1. An apparatus for transferring a natural tobacco leaf from a continuous, flexible conveyor belt to a generally flat leaf receiving member at a preselected position in the normal path of travel of said belt, said belt having a known width, a first surface facing away from said receiving member at said preselected position, a second surface facing toward and generally parallel to said receiving member at said preselected position and a plurality of apertures forming pressure equalizing passages between said first and second surfaces, said apparatus comprising: a plenum box having a pressure opening defined by a peripheral edge of said box, said edge lying in a plane parallel to said first surface at said preselected position; means for maintaining a seal between said edge and said belt; means for creating a vacuum in said box and communicated with said opening; means for forcing said belt and box edge at said preselected position from said normal belt path in a direction toward said receiving member and into a transfer position with a leaf on said second surface lying against said receiving member, and means for creating a positive pressure in said box at said preselected position only when said second surface and a leaf thereon are forced against said receiving member.

4,323,150
MAGNETIC RAIL CONSTRUCTION

Wallace W. Mojden, Hinsdale, Ill., assignor to Fleetwood Systems, Inc., Countryside, Ill.
Filed May 2, 1980, Ser. No. 146,161
Int. Cl.³ B65G *15/58*
U.S. Cl. 198—690 **5 Claims**



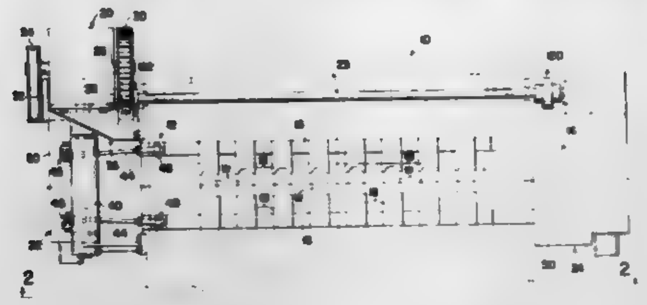
1. In a magnetic conveyor system which includes a traveling endless conveyor means having an outer surface for engaging and transporting a series of containers, a magnetic rail system including pole plates and permanent magnets disposed opposite said container-engaging surface, and a rotatable transition roll adjacent one end of said rail system and cooperating with said conveyor means in defining a directional transition zone, the combination comprising: magnetically permeable pole plate means disposed in said directional transition zone, spaced from said belt and aligned with the pole plates of said rail system generally in the direction of belt travel; permanent magnet means interjacent said pole plate means for inducing opposite polarities therein; said pole plate means proximate said transition zone having the upper surface thereof recessed with respect to said conveyor means and magnetic elements of comparatively larger magnetic moment per unit volume than said permanent magnets disposed in the space between said conveyor means and the upper surface of said pole plate means whereby to concentrate the available lines of magnetic flux in said transition zone.

4,323,151
ARTICLE TRANSFER MECHANISM

Ralph L. Andrews, Hastings, Mich., assignor to Gulf & Western Manufacturing Company, Southfield, Mich.
Continuation of Ser. No. 754,082, Dec. 23, 1976, abandoned. This application May 18, 1978, Ser. No. 907,125
Int. Cl.³ B65G *25/02*
U.S. Cl. 198—740 **13 Claims**

7. An article transfer mechanism comprising, a pair of laterally spaced apart feed bars having cooperable feed fingers therebetween, feed bar support members each supporting one of said feed bars for longitudinal reciprocation, means supporting said support members for linear reciprocation laterally toward and away from one another, means to reciprocate said feed bars longitudinally relative to said support members, means to reciprocate said support members laterally toward and away from one another including rotatable cam means

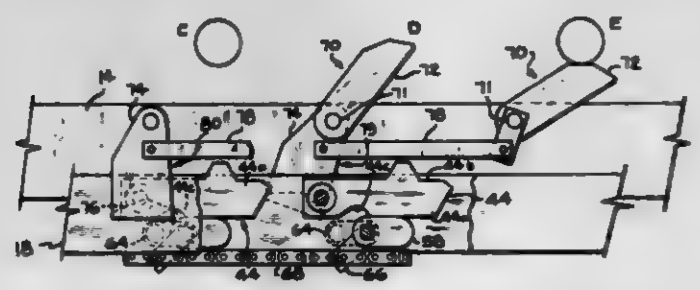
between said support members and follower means between said cam means and each support member, each said follower means interengaging said cam means and the corresponding support member for said follower means to displace said support members laterally in response to rotation of said cam means, said follower means including means biasing said sup-



port members laterally toward one another, said cam means displacing said support members laterally away from one another against said bias, pivotal cam means between said feed bars selectively operable independent of said rotatable cam means to displace said feed bars and support members laterally away from one another against said bias, and means to pivot said pivotal cam means.

4,323,152
ACCUMULATING CONVEYOR

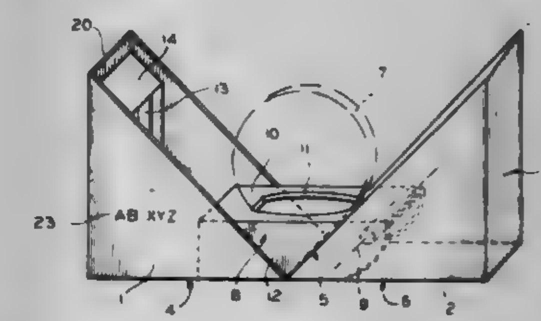
Douglas D. Wiknich, Davisburg, Mich., assignor to LaSalle Machine Tool, Inc., Troy, Mich.
Filed Apr. 28, 1980, Ser. No. 144,561
Int. Cl.³ B65G *25/02*
U.S. Cl. 198—751 **12 Claims**



1. An accumulating conveyor comprising an elongated support along which a plurality of articles are movable through a series of longitudinally spaced apart stations, a transfer bar mounted for reciprocal movement longitudinally of said elongated support, and for up and down reciprocal movement relative to said elongated support, a plurality of independently movable feed members on said transfer bar movable between idle and feed positions, means for moving said transfer bar up and down and for reciprocating said transfer bar back and forth through a work transfer cycle commencing with the transfer bar in a start position for moving said feed members from one station to the next adjacent station to advance workpieces on said elongated support to fill any empty stations, a plurality of feed member setting units on said transfer bar operatively associated with said feed members and movable between rest and operative positions, each of said feed member setting units being operable when moved to the operative position to move an associated one of said feed members to the feed position, each of said feed member setting units comprising a cam member, a follower member and means pivotally mounting said cam and follower members on said transfer bar for simultaneous movement to the operative position, connecting means connecting adjacent ones of said feed member setting units, and sensing means at each station for sensing the absence of an article, each of said sensing means being operatively associated with a corresponding feed member setting unit that is associated with the feed member at the next following station, said sensing means at an empty station causing the movement of a corresponding feed member setting unit to the operative position upon initial upward movement of said transfer bar from a start position to move the feed member at the station next following said empty station to the feed position, said connecting means acting in response to the movement of said corresponding feed member setting unit to the operative position to move all feed member setting units behind said corresponding feed member setting unit to operative positions to move all feed members associated therewith to feed positions, each of said sensing means comprising an actuator member movable between an inoperative position when an article is located at a corresponding station and an actuating position when said corresponding station is empty, said follower member of one of said feed member setting units engaging an associated actuator member in the actuating position thereof upon upward movement of said transfer bar thereby pivoting said follower member to pivot said cam member into engagement with an associated feed member to move said feed member to the feed position.

4,323,153
DISPLAY CASE FOR A LUXURY ARTICLE

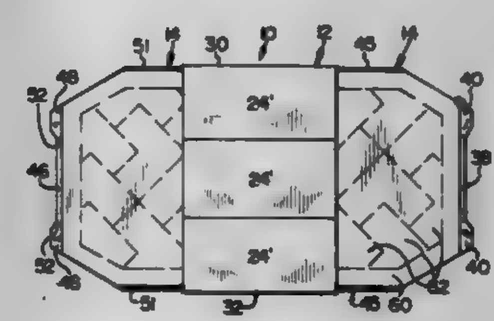
Gerard C. L. Courtin, 43, Avenue George V, 75008 Paris, France
Filed Jul. 30, 1979, Ser. No. 61,889
Claims priority, application France, Jul. 31, 1978, 78 22643
Int. Cl.³ B65D *5/50, 85/00;* **A47B** *88/04*
U.S. Cl. 206—45.13 **9 Claims**



1. Display case, particularly for luxury articles, such as a perfume bottle, jewel, or lighter, which comprises: two parts integral with one another, the one called "immobile" comprising a plane base acting as a support for the case when closed and the other being mobile in relation to the first; a support used for displaying the article mounted on the inside of the case being articulated on said mobile part and able, during movement of this mobile part, to slide in the first part, approximately in horizontal translation, so as to remove said support from the first part of the case and expose it to view between the two parts of the case.

4,323,154
FOLDED BOX WITH PUZZLE

Carl Brandenfels, Rte. 1, Box 1208, St. Helens, Oreg. 97051
Filed Mar. 3, 1980, Ser. No. 126,555
Int. Cl.³ B65D *77/00, 69/00*
U.S. Cl. 206—216 **1 Claim**

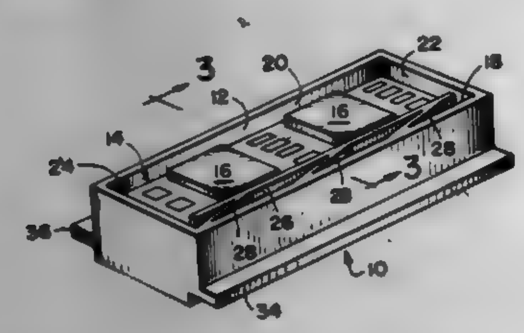


1. A novelty item comprising:

(a) a prepared blank for a box having a plurality of side panels, said prepared blank including:

(1) a flat sheet having a medial portion, said medial portion having a pair of opposed edges and defining a portion of the side panels of said box;
(2) a first end portion of said sheet, attached to said medial portion and defining a top member of said box;
(3) a second end portion of said sheet, attached to said medial portion and defining a bottom member of said box;
(4) flap means, defining the remainder of the side panels of said box, connected to said medial portion along one of said opposed edges, said flap being connected with the other of said opposed edges so as to overlie said portion of the side panels, said flap means and said medial portion together defining a passageway therebetween;
(b) a card extending through said passageway, said card having generally the same shape as said prepared blank and being no larger than said prepared blank;
(c) wherein said prepared blank and said card each have a generally octagonal shape, including a first pair of parallel sides, a second pair of parallel sides approximately perpendicular to said first pair of parallel sides, and four oblique sides interconnecting mutually perpendicular ones of said first and second pairs of parallel sides.

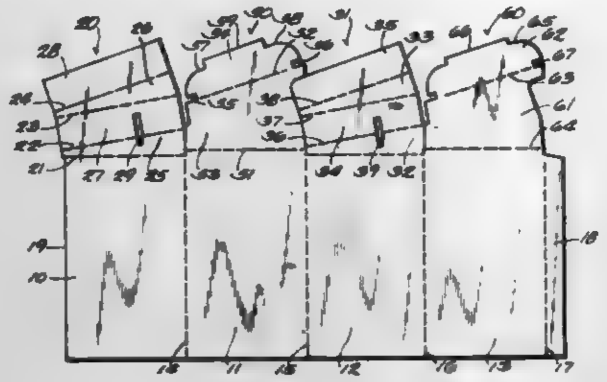
4,323,155
INTEGRATED CIRCUIT CARRIER
Jarrett B. Kling, 8 Oak La., Rochester, N.Y. 14610
Filed Jan. 21, 1980, Ser. No. 113,918
Int. Cl.³ B65D *73/02, 85/42*
U.S. Cl. 206—328 **6 Claims**



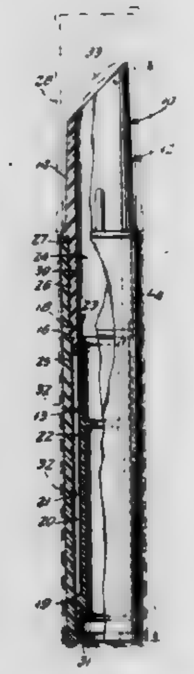
1. A carrier for an integrated circuit package of rectilinear shape which comprises a housing having a generally rectilinear opening extending between opposite ends thereof for receiving said package when inserted into said opening from one of said ends thereof, said housing having first and second pairs of walls facing each other which defines said opening, at least one plate in said opening adjacent one of said first pair of walls and facing the other of said first pair of walls which narrows the distance across said opening between that first pair of walls, means providing a resilient mounting for said plate on said one of said first pair of walls which applies forces via said plate which tend to clamp and retain said package in said housing, at least said one plate and at least one of said first pair of walls being closer to each other at said one of said ends of said opening then at the other end of said opening to define a tapered receptacle for said package.

4,323,156
BATTERY CONTAINER
Bevan E. Grueneberg, Cedarburg, Wis., assignor to Pioneer Container Corp., Cedarburg, Wis.
Filed Jan. 15, 1981, Ser. No. 273,542
Int. Cl.³ B65D *73/02, 85/68*
U.S. Cl. 206—333 **5 Claims**

1. A storage battery container formed of paper material and comprising:
integral pairs of side walls and end walls that form the body of the container,
the side walls each having an integral flap extending from a horizontal score line that determines the top edge of the wall, said flaps each having other score lines that are at an angle relative to the horizontal score line to thereby define a first triangular section, a first rectangular section, a second triangular section and a second rectangular section, said sections being foldable on the score lines to dispose the first triangular section horizontally, the first rectangular section vertically, the second triangular section horizontally and congruent to the first triangular section, and the second rectangular section vertically and at an angle relative to the first rectangular section to thereby form tapered hollow beams for bearing on opposite sides of the top of a battery case to prevent a load imposed on the battery from being transmitted to components of the battery which extend above its top.

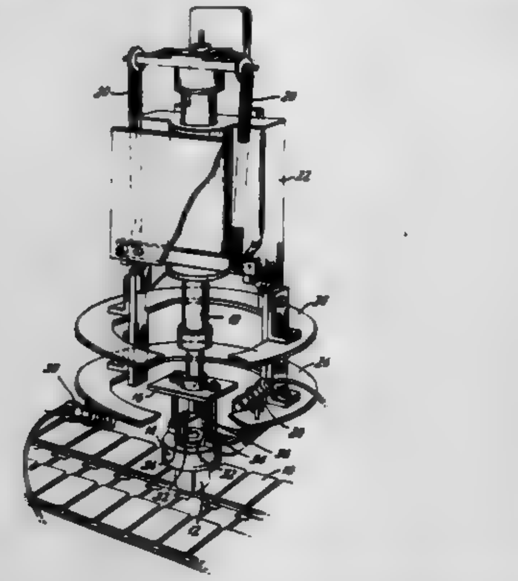


4,323,157
BOTTOM-FILLABLE LIPSTICK OR THE LIKE CONTAINER
Eric J. Idec, Madison, Conn., assignor to Eyelet Specialty Co., Inc., Wallingford, Conn.
Filed Oct. 17, 1980, Ser. No. 197,809
Int. Cl.³ B65D *85/72*
U.S. Cl. 206—385 **14 Claims**



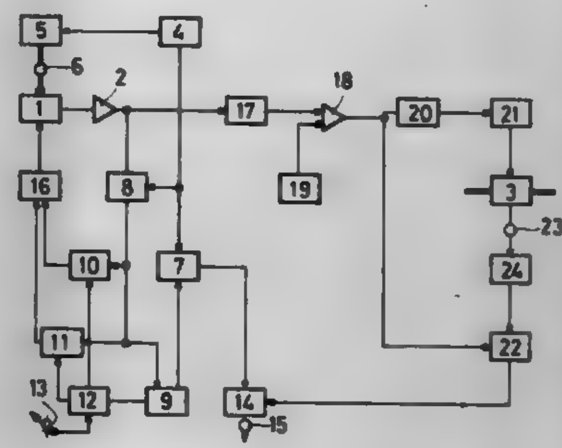
1. A bottom-fillable lipstick or the like container, comprising inner and outer elongate relatively rotatable tubular members extending between a lower base end and an upper dispensing end, said members having interengaging means retaining an axially overlapping relation of said members, said inner member having a tubular upper end which extends upwardly beyond the upper end of said outer member for manual actuating grasp and which defines the dispensing end of the container, an elongate tubular carrier member slidable within said inner tubular member and having radially outward cam-follower means at its lower end, said carrier member having internal pomade-supporting platform means near its upper end, cam formations including (a) an elongate slot in said inner tubular member and of longitudinal extent such that said carrier fully covers the upper end of said slot when said cam follower is at its lowermost position in said slot and (b) internal threads in said outer tubular member and engaged to said cam follower, said platform means and the base ends of said tubular members being open to an extent permitting removable insertion of a bottom-fill tube, whereby for the retracted position of said carrier member, the volume defined within the upper ends of said carrier member and of said inner tubular member can be bottom-filled with tube-extruded pomade without danger of pomade entry into said slot.

4,323,158
BOTTLE NECK FINISH INSPECTION APPARATUS
Frank H. Wheaton, III, Millville, and Curtis C. Houghton, Elmer, both of N.J., assignors to Wheaton Industries, Millville, N.J.
Filed Jul. 3, 1980, Ser. No. 165,623
Int. Cl.³ B07C *5/342*
U.S. Cl. 209—524 **8 Claims**



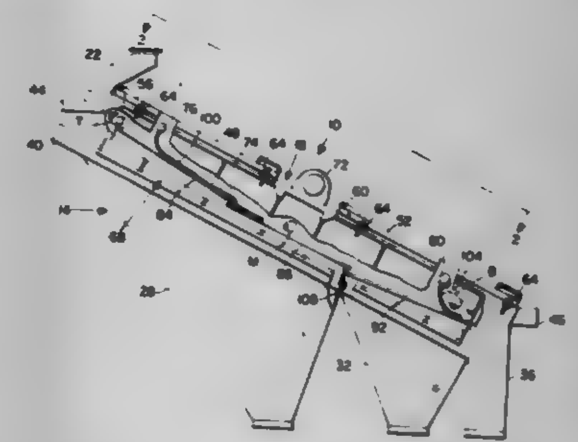
1. In an apparatus for detecting defects in the neck portion of each bottle in a succession of glass bottles delivered to a bottle test location, said apparatus including:
means for receiving, holding and rotating each of said bottles as it is delivered to said test location,
optical illumination and detecting means focused at one point on the neck of a bottle retained at said test location for detecting defects therein as said bottle is rotated and means responsive to a defect signal output from said illuminating and detecting to reject the bottle then retained at said test location,
the improvement wherein said bottle receiving, holding and rotating means comprises:
an annular bottle gripping member adapted to fit around and to grip the neck finish of a bottle to be checked,
means for lowering said annular gripping member from a raised position to a lowered position in which it is adapted to engage a bottle disposed in said bottle test location,
means for rotating said annular gripping means in said lowered position, and
means for raising said gripping member back to said raised position.

4,323,159
MONITORING LIGHT SENSITIVE ELECTRONIC COMPONENTS
Peter Wolf, Edenvale, South Africa, assignor to Gunson S.A. (Proprietary) Limited, Johannesburg, South Africa
Filed Oct. 30, 1979, Ser. No. 89,363
Claims priority, application South Africa, Oct. 31, 1978, 78/6121
Int. Cl.³ B07C *5/342*
U.S. Cl. 209—548 **12 Claims**



1. Apparatus for monitoring a light sensitive electronic detector component used with a device for detecting light pulses of a specified character comprising:
a light source having means adapted to direct light at a light sensitive electronic detector component, the source being operatively connected to a pulse generator which is also connected to set an alarm monitor and to operate a switch which has its input connected to the detector component and its output connected to a voltage sensitive device for resetting the alarm monitor if a signal received from the switch is above a predetermined minimum voltage and the alarm monitor being adapted to activate an attention drawing device if not reset.

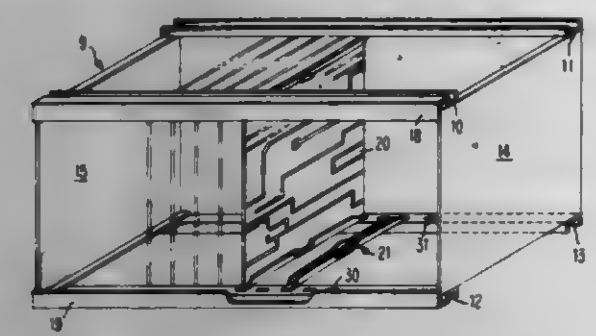
4,323,160
USE OF A VIBRATING SCREEN TO SEPARATE SMALL LIVE INSECTS FROM AGRICULTURAL COMMODITIES
Ronald H. Cowgill, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio
Filed Apr. 30, 1980, Ser. No. 145,285
Int. Cl.³ B07C *5/04*
U.S. Cl. 209—632 **10 Claims**



1. A method for separating substantially all small live insects from an agricultural commodity having a size similar to that of green coffee beans, said method comprising the steps of:
(a) placing the commodity on a screen having an insect separating portion provided with a multiplicity of apertures sized smaller than the commodity but larger than the small insects; and
(b) vibrating the screen at a frequency of at least about 60

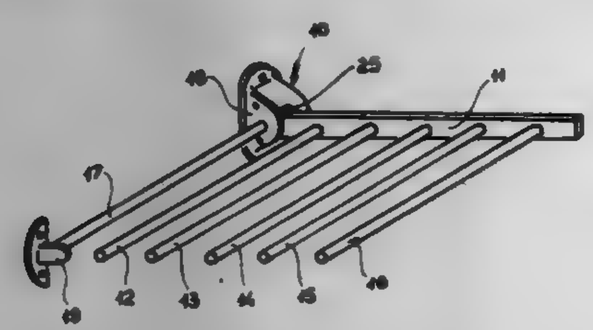
cycles per second, and an amplitude of from about 1/64 to ⅛ inches to separate the small insects, the frequency and amplitude being selected to avoid excessive bouncing of said commodity.

4,323,161
PRINTED CIRCUIT CARD RETAINER AND RACK ASSEMBLY
Joseph Marconi, 428 S. Jensen Rd., Vestal, N.Y. 13850
Filed Dec. 22, 1978, Ser. No. 972,242
Int. Cl.³ H02B *1/02*
U.S. Cl. 211—41 1 Claim



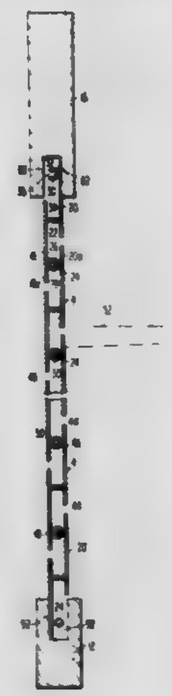
1. A retaining guide for a printed circuit card, said retaining guide extending horizontally between, and being supported by spaced parallel support members of a generally oblong frame, said retaining guide comprising:
- a resilient arcuate channel member having a flat bottom and upstanding thin side walls, ends of said bottom extending as lips which engage said parallel support members to support said retaining guide in said frame while allowing said retaining guide to flex in the vertical direction; and
- a saddle shaped flared out alteration of said channel member generally at the center of said channel member, said saddle shaped flared out portion of said channel member decreasing the height of said side walls and correspondingly increasing the width of said bottom to thereby increase the stiffness of said retaining guide against bending in the horizontal direction while increasing the flexibility of said retaining guide in the vertical direction.

4,323,162
MULTIPLE-TROUSER-HANGER
Jiri Steinhilber, P/zza Duomo, 20 Milano, Italy
Filed Aug. 20, 1979, Ser. No. 68,055
Claims priority, application Italy, Sep. 11, 1978, 27500 A/78; Sep. 28, 1978, 28084 A/78
Int. Cl.³ A47F *7/19*
U.S. Cl. 211—100 7 Claims



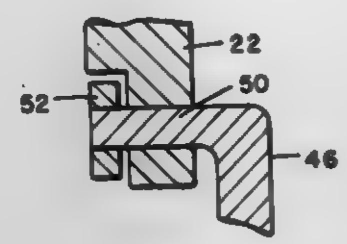
1. A household trouser-hanger comprising a plurality of parallel horizontal elongated hanging bars; a supporting arm connected to said bars and disposed normally to said elongated bars; a joint connected to said arm and adapted to pivotally support said arm at one of said bars at one end thereof; and a wall-mountable bracket arranged to receive said joint and having a substantially cylindrical chamber and an outwardly extending horizontal pin, said joint including a cylindrical member and a disc coaxially mounted on said pin and disposed within said chamber, said disc being formed with a cut and said cylindrical member having a longitudinal slot at an outer surface thereof, a pawl supported on said bracket and a spring arranged to press said pawl against said cylindrical member and said disc; said joint being pivotally movable on said pin within said chamber due to a swivelling movement of said supporting arm between a vertical position in which said arm is held vertically downwards by gravity and a horizontal position in which said pawl is arrested within said slot of said member and pressed against said cut of said disc to thereby provide two terminal self-locking positions of the trouser-hanger for hanging over and taking off several pairs of trousers.

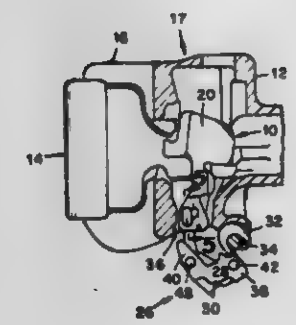
4,323,163
ARTICLE DISPLAY UNITS AND MEMBERS FOR FORMING THEM
Robert L. Johns, 927 Azalea La., Vero Beach, Fla. 32960
Filed Mar. 12, 1980, Ser. No. 129,686
Int. Cl.³ A47F *7/14*; E04C *1/10, 1/30*
U.S. Cl. 211—189 8 Claims



1. A member for use in forming an article display panel containing a plurality of parallel slots in an exterior surface thereof by interlocking together a plurality of said members which comprises:
- a first rectangular web having a length substantially greater than its width defined by a first pair of longitudinal edges and a first pair of substantially shorter transverse edges,
- a second rectangular web of size and shape substantially equal to said first rectangular web defined by a second pair of longitudinal edges and a second pair of substantially shorter transverse edges,
- a longitudinally elongated columnar element fixed to said first web at a position remote from said first longitudinal edges by a short, integral, dependent leg,
- a longitudinally, elongated tubular element fixed to said second web substantially parallel to said columnar element at a position remote from said second longitudinal edges by a short, integral, dependent leg,
- a longitudinal slot in said tubular element along the entire length thereof diametrically opposed to said leg thereof, the width of said slot being less than the width of said columnar element,
- said first and second webs being spaced apart parallel to each other with only a minor portion of said first web overlapping an equivalent portion of said second web, and
- a third web integral with said first and second webs and perpendicular thereto fixing said first and second webs in said spaced apart parallel position,
- said columnar element depending from said first web toward said second web, and
- said tubular element depending from said second web toward said first web,
- said columnar element and said tubular element being spaced apart from each other a distance such that when a plurality of said members are interlocked into a panel by having columnar elements of said members enveloped by tubular elements of adjacent members, adjacent longitudinal edges of said members are spaced apart forming parallel slots in both exterior surfaces of said panel.

4,323,164
LOCKING SYSTEM FOR A TRAIN CAR COUPLER
Ben E. Sutherland, Rte. 2, Cherokee Dr., Seymour, Tenn. 37865
Filed Feb. 19, 1980, Ser. No. 122,580
Int. Cl.³ B61G *3/06*
U.S. Cl. 213—145 6 Claims

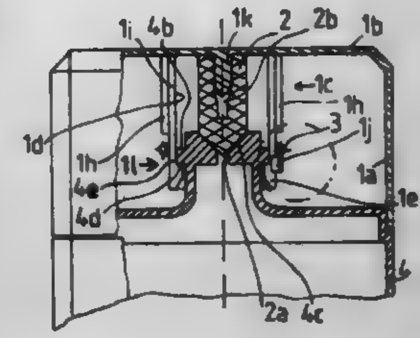




1. In a locking system for a railway car coupler including a gravity lock member defining a slot and locklifter means including a trunnion extending through said slot and terminating at a distal end, said trunnion being freely pivotable within said slot the improvement comprising elongated flange means centrally secured to said trunnion at said distal end, said flange means preventing withdrawal of said trunnion from said slot unless a predetermined orientation therebetween is achieved, said predetermined orientation being achievable only when said coupler is in a partially dismantled condition.

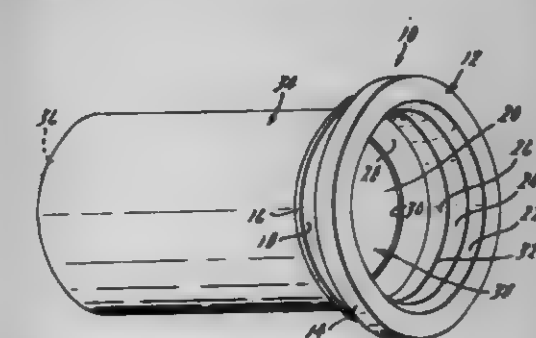
4,323,165
BOTTLE CLOSURE
Heinz H. Weick, Geneva, Switzerland, assignor to Herkules AG, Menziken, Switzerland
Filed Jul. 2, 1980, Ser. No. 165,288
Claims priority, application Switzerland, Jul. 6, 1979, 6323/79; Nov. 28, 1979, 10560/79
Int. Cl.³ B65D *41/30*
U.S. Cl. 215—320 9 Claims

1. A bottle closure comprising a closure cap which can be pushed onto a bottle, comprising a bowl-shaped main body of any configuration in plan, to the inside of the end portion of which there is secured at an approximately central position a rubber-elastic member which serves for sealingly bearing against the edge of the mouth of the bottle, and further comprising a plurality of resilient blade portions which are formed on the inside of the end portion of the cap and which concentrically surround the rubber-elastic member in the manner of a longitudinally slotted hollow cylinder, which blade portions have detent portions formed thereon on the inside thereof in the region of their free ends, for resiliently engaging below an annular projection on the neck of a bottle, characterised in that the sealing member (2) is in the form of a peg-like member which in the closure condition bears sealingly with its free end surface (2*a*) against the end edge (4*c*) of the mouth of the bottle, the length of the peg-like member corresponding at least to half the distance measured in the longitudinal direction



thereof between the end portion (1*b*) of the cap and the detent surfaces (1*n*) of the projecting detent portions (1*e*), and that the free end regions of the resilient blade portions (1*d*) are surrounded by a resilient ring (3) which is retained in position in the longitudinal direction of the blade portions, on both sides, by portions (1*h*, 1*j*) formed thereon.

4,323,166
FILLER PIPE SEAL WITH FILL CONTROL SKIRT
Bruce J. Maeroff, Dearborn, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Oct. 9, 1979, Ser. No. 83,013
Int. Cl.³ B65D *25/20*
U.S. Cl. 220—86 R 6 Claims



1. A fuel tank filler pipe seal comprising;
- a resilient deformable annular body for use between a fuel tank and a filler pipe intruding into said fuel tank through an opening;
- said annular body coaxially mountable about said filler pipe within said opening of said fuel tank;
- means on said annular body for making a seal between said pipe and fuel tank;
- a downwardly depending tubular skirt portion of predetermined length extendable into said tank with a lower end of said skirt extendable below the end of said filler pipe such that said lower end of said skirt controls the amount of fuel into said fuel tank before said filler pipe becomes filled with said fuel.

4,323,167

INSULATING CONTAINER FOR COOKING FOOD

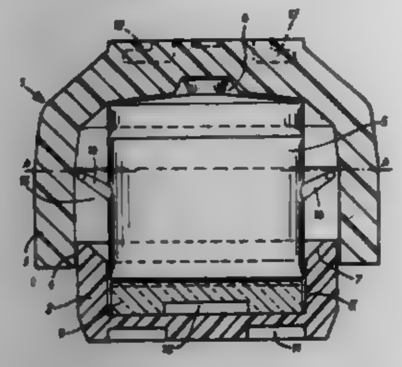
Rudolf F. Zirn, Franz-von-Ried-Str. 6/VII, 8960 Kempten, Allg., and Erich Karlsen, Untere Eberhalde 70A, 8992 Wasserburg, both of Fed. Rep. of Germany

Filed Dec. 10, 1979, Ser. No. 102,155

Claims priority, application Fed. Rep. of Germany, Apr. 10, 1979, 2940346

Int. Cl.³ A47J 36/36; B65D 25/28

U.S. Cl. 220—408 6 Claims



1. An insulating container assembly for holding a pot containing cooking food, which comprises;

a tubular cover made from a thermally insulating material and having a first closed end, a second open end and a bore communicating between the ends;

a tubular insert made from a thermally insulating material and having a first open end, a second closed end and a bore communicating between the ends thereof;

said insert having a smaller outer diameter than the diameter of the bore of said cover whereby when a cooking pot is received in the bore of the insert and the first open end of the insert is inserted into the second open end of the cover until the cover seats on the pot, a slot is formed between the open end of the insert and the open end of the cover; said slot communicating between the bore of the cover and outside of the container; at a point on the open end of the tubular container and below the open end of the insert;

said bores being adapted by size and configuration to receive a cooking pot.

4,323,168

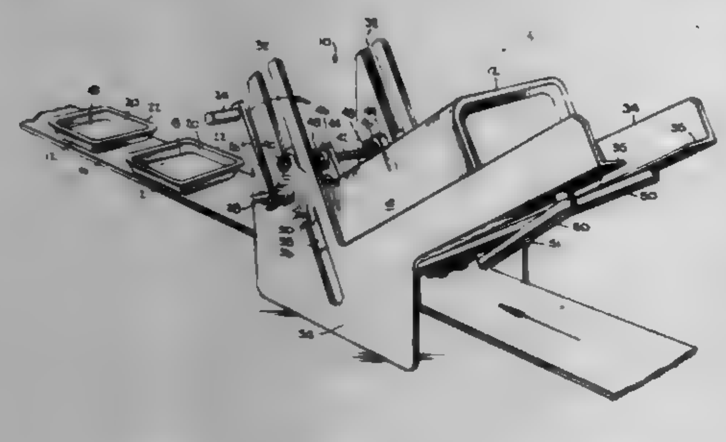
METHOD AND APPARATUS FOR DISPENSING FLEXIBLE TRAYS

Kevin M. Callahan, Philadelphia, Pa., assignor to International Paper Company, New York, N.Y.

Filed Jun. 13, 1980, Ser. No. 159,239

Int. Cl.³ B65H 3/00

U.S. Cl. 221—42 9 Claims



1. Apparatus for dispensing trays one at a time from the bottom of a nested stack of flexible, flanged trays, each tray having a sidewall, said apparatus comprising:

(a) first and second supports spaced at a distance less than the length of the bottommost tray in the stack to permit the flange of that tray to rest on the supports and support the stack;

(b) means to compress the bottommost tray lengthwise sufficiently by pushing on its sidewall so that the tray can pass downwardly between the supports; and

(c) means to impart a downward movement to the bottommost tray.

4,323,169

DISPENSER FOR DISPENSING FROZEN GOODS

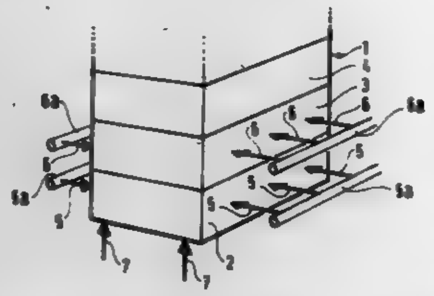
Jean Guigan, 9, rue Jean Mermoz, 75008 Paris, France

Filed Jan. 22, 1980, Ser. No. 114,218

Claims priority, application France, Jan. 29, 1979, 79 02199

Int. Cl.³ B65G 59/06

U.S. Cl. 221—124 24 Claims



1. Apparatus for dispensing a package of frozen goods from one end of an aligned plurality of contiguous packages maintained in a below freezing environment, the apparatus including means for releasably grasping a package next adjacent to the package at one end of such an aligned plurality of packages, means for separating said end package from the next adjacent package by applying a force against at least one side of the end package while said grasping means is actuated, means for supporting said grasping means and said separating means to permit selective engagement and disengagement thereof with the corresponding packages, and means for selectively actuating said grasping means and said separating means to engage the corresponding packages, wherein the improvement comprises:

said grasping means and said separating means having resiliently deformable contact surfaces for directly contacting said next adjacent package and said end package, respectively, and means for deforming said contact surfaces convexly toward the respective packages by an amount sufficient, when said grasping means and said separating means are actuated, to break away any ice which may have formed on said surfaces between dispensing operations, whereby the packages will not adhere to said contacting surfaces during a dispensing operation.

4,323,170

CLEANING MATERIAL SUPPLYING APPARATUS WITH CLEANING MATERIAL STORING VESSEL CONTROLLED BY LID POSITION

Yoshio Ikeda, Aichiken, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jun. 4, 1980, Ser. No. 156,346

Claims priority, application Japan, Jun. 26, 1979, 54-080494; Sep. 10, 1979, 54-115869

Int. Cl.³ B67D 5/08

U.S. Cl. 222—70 8 Claims

1. An apparatus for dispensing cleaning material into a washing apparatus comprising:

a housing having an opening for receiving cleaning material;

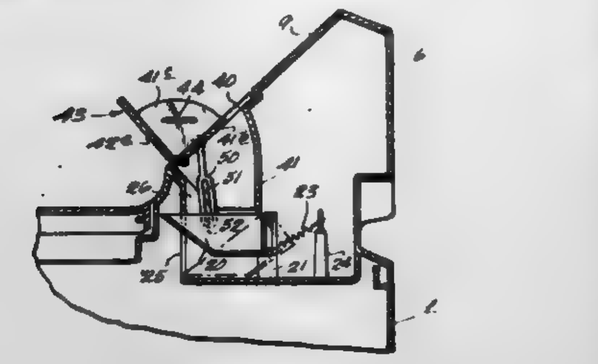
a vessel mounted in said housing for receiving and storing cleaning material passing through said opening;

means for pivotably mounting said vessel for movement between a horizontal position storing said material and a dispensing position in which material in said vessel is dispensed;

resilient means connected to said vessel for urging said vessel toward said dispensing position;

latch means engagable with said vessel for maintaining said vessel in said horizontal position when engaged with said vessel;

means for releasing said latch means during operation of said washing apparatus so that said vessel moves into said dispensing position;



lid means pivotably mounted on said housing for movement between a closed position closing said opening and an open position in which said material can be placed in said opening; and

means connecting said lid and vessel for returning said vessel to said horizontal position when said lid is moved to said open position.

4,323,171

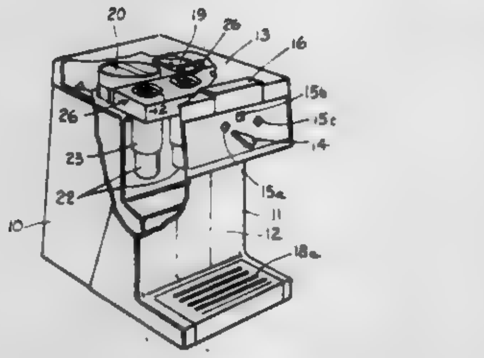
BEVERAGE DISPENSING DEVICE AND CONTAINER THEREFOR

Robert B. Whorton, III, Spartanburg, S.C.; Samuel C. Crosby, Jr., Decatur, Ga.; Frank M. Iannelli, Spartanburg, S.C.; James Denmark, Ilkley, and Edward L. Jeans, Hereford, both of England, assignors to Tannetics, Inc., Erie, Pa.

Filed Jul. 2, 1979, Ser. No. 54,304

Int. Cl.³ B67D 5/54, 5/56

U.S. Cl. 222—82 9 Claims



1. Carbonated liquid dispensing apparatus of the type which includes a liquid container, a rigid receptacle to removably receive the liquid container, and a piercing device carried by said receptacle for piercing said liquid container when inserted in said receptacle in an operating position, said apparatus comprising:

an outwardly protruding profiled lobe portion carried by said liquid container;

said lobe portion having a penetratable wall portion;

a hollow cavity portion defined within the interior of said profiled lobe for accommodating said piercing device;

arcuate guide means formed in said receptacle for receiving said lobe portion and guiding said lobe portion to said piercing device as said lobe is rotated therein;

opening means formed in said receptacle accommodating the shape of said profiled lobe portion affording access of said lobe portion to said arcuate guide means;

whereby said liquid container may be received in said receptacle and rotated to cause said lobe portion to be guided and pierced by said piercing device and be properly connected in said operating position.

4,323,172

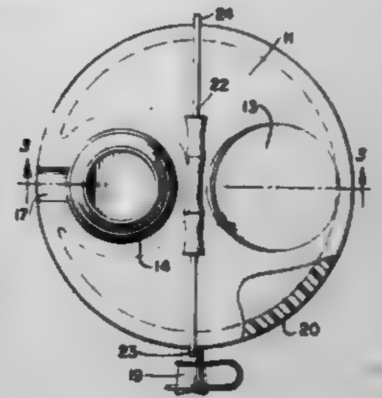
LIQUID CONTAINER WITH CUP HOLDER

Ho S. Lim, 4109 Metzerott Rd., College Park, Md. 20740

Filed Jan. 21, 1980, Ser. No. 114,130

Int. Cl.³ B67D 5/62

U.S. Cl. 222—130 6 Claims



1. A liquid container for carrying of liquid having a supply of cups therewith comprising

a walled container having a liquid holding compartment positioned with the center of gravity of liquid therein off-center from the center axis of said walled container,

a closable opening extending into said liquid holding compartment,

a well within the periphery of said walled container but outside of said liquid holding compartment for holding the supply of cups in nested relationship,

a closable spout near the bottom of said walled container connected into said liquid holding compartment,

carrying means to adjust for changes in the distribution of the weight of the volume of liquid and cups in said container for ease of carrying said container with at least one end of said carrying means being selectively engagable in horizontal positions to said walled container,

and a downwardly extending finger slot in a wall of said well extending substantially from the top to the bottom of said well.

4,323,173

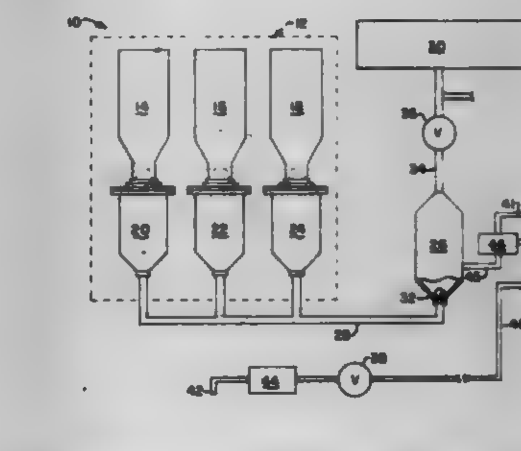
BEVERAGE DISPENSER PUMPING SYSTEM TO MAINTAIN LIVE PRESSURE AFTER SHUT OFF

Joseph W. Shannon, Kent, Ohio, assignor to American Beverage Control, Mogadore, Ohio

Continuation of Ser. No. 742,693, Nov. 17, 1976, Pat. No. 4,274,557. This application Feb. 19, 1981, Ser. No. 235,589

Int. Cl.³ B67D 5/56

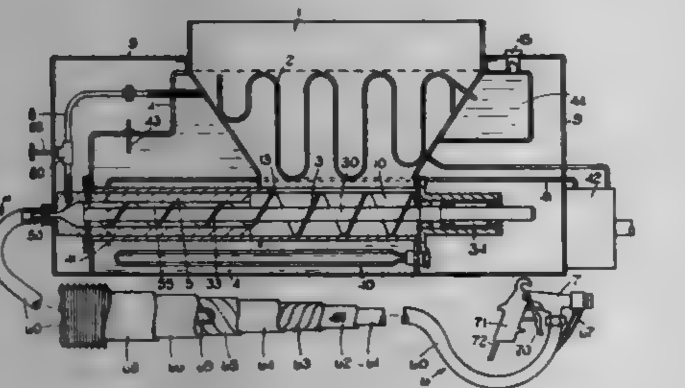
U.S. Cl. 222—136 5 Claims



1. A beverage dispenser pumping system for dispensing

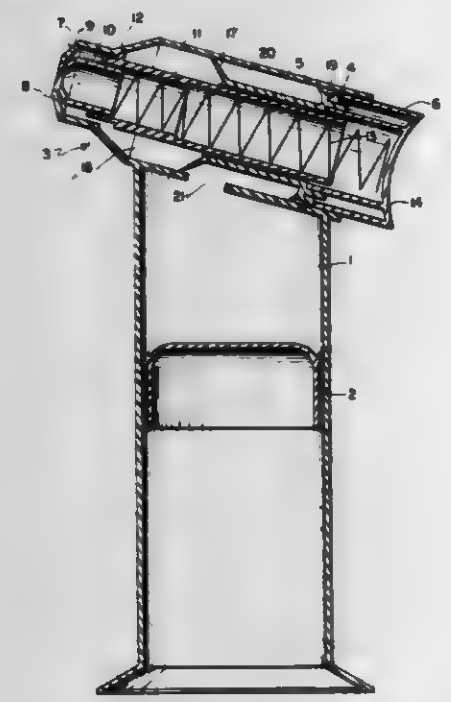
beverages from their original containers and out of a pouring head, comprising:
an elastic dispensing line connected at one end thereof with the pouring head;
pump means connected to said dispensing line at another end thereof for receiving and forcing the beverages toward the pouring head under pressure;
first valve means interposed in said dispensing line at the pouring head for enabling the flow of the beverages from the pouring head when open at the beginning of the dispensing cylce and prohibiting such flow when closed at the end of such cycle; and
second valve means interposed in said dispensing line between said pump means and first valve means for prohibiting the flow of beverage from said dispensing line and into said pump means, and wherein said second valve means closes after the closing of said first valve means following a dispensing cycle, closing of said first valve means expanding said elastic dispensing line under pressure of said pump means and closing of said second valve means maintaining beverage under pressure within said dispensing line between said first and second valve means, said pressure being generated by maintained expansion of said elastic dispensing line.

4,323,174
APPARATUS FOR DISPENSING MASTIC MATERIAL
Thomas J. Wood, 25, Chalfont Close, Bedworth, Near Nuneaton, Warwickshire, England
Filed Oct. 6, 1980, Ser. No. 194,392
Claims priority, application United Kingdom, Oct. 11, 1979, 35379/79
Int. Cl.³ B67D *5/62*
U.S. Cl. 222—146 H **8 Claims**



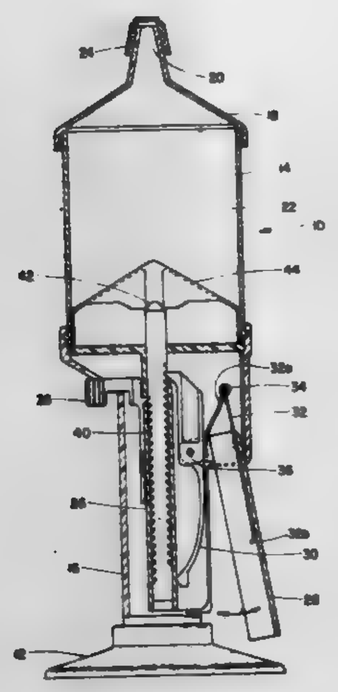
1. Apparatus for dispensing mastic material comprising;
(a) a longitudinal receptacle for receiving mastic material;
(b) a hopper coupled to said longitudinal receptacle for receiving cold mastic material in block or granular form;
(c) a barrel having a bore communicating at one end with said longitudinal receptacle and providing an outlet therefrom at its other end;
(d) heating means in said hopper for initially softening cold mastic material in the hopper for gravity flow of the softened mastic material down into said longitudinal receptacle;
(e) a closed tank for containing a heat conductive liquid such as oil and housing at least the longitudinal receptacle and barrel;
(f) thermostatically controlled electric immersion heater means in said tank for heating the liquid therein for in turn heating the longitudinal receptacle and barrel in order to maintain mastic material in said receptacle and barrel in a required softened condition;
(g) a shaft along the interior of the longitudinal receptable and extending co-axially within and along the barrel, said shaft also extending exteriorly of the receptacle for driven rotation;
(h) a feed screw carried fast about the shaft in said receptacle for feeding softened mastic material therein to the barrel, a reduced diameter co-axial continuation of the feed screw having a close working fit in the bore of the barrel and being of corresponding bore size for forced feed of the softened mastic material along the bore and pressurized discharge thereof at the outlet end of said bore.

4,323,175
DISPENSER UTILIZING A FOLLOWER AND DELIVERY DEVICE FOR DISPENSING PASTES, CREAMS, ETC.
Josef Eckert, Sahlestrasse 69, D-8744 Mellrichstadt, Fed. Rep. of Germany
Filed Apr. 21, 1980, Ser. No. 142,052
Claims priority, application Fed. Rep. of Germany, Apr. 19, 1979, 2916206
Int. Cl.³ G01F *11/00*
U.S. Cl. 222—256 **9 Claims**



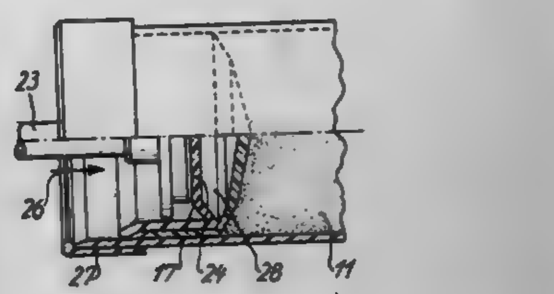
1. Dispenser for cream, sauces, jelly, pastes, syrups or the like comprising a main cylinder having an intake passage through the wall thereof and continuously communicating with a container, and an outlet opening in the forward end thereof, the rearward end being open; a guide cylinder disposed within said main cylinder and being coaxial therewith; an annular cylinder space defined by the inner wall of said main cylinder and the outer wall of said guide cylinder; a displacement piston slidingly supported by said guide cylinder and having a packing seal at the forward end and a sealing ring at the rearward end, said packing seal and sealing ring contacting said inner wall of said main cylinder, said packing seal thereby dividing said cylinder space into a rear feed space communicating with said intake passage, and a forward delivery space communicating with said outlet opening; actuating means slidingly disposed in said open end of said main cylinder and in operating engagement with said piston; closure means juxtaposed with said outlet opening and arranged for sliding movement in said guide cylinder; and means normally biasing said closure means against said outlet opening and said actuating means in its rearmost position.

4,323,176
MANUALLY-OPERABLE RATCHET TYPE DISPENSER FOR COMESTIBLES
John R. Sartain, Irvine, Calif., assignor to Taco Bell, Irvine, Calif.
Filed Jul. 11, 1980, Ser. No. 168,060
Int. Cl.³ B65D *88/54*
U.S. Cl. 222—326 **4 Claims**



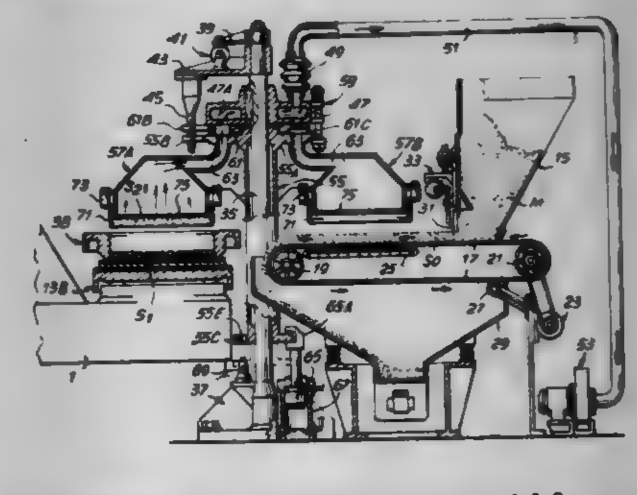
1. An apparatus for discretely dispensing predetermined quantities of a comestible comprising:
a. a container having an open bottom and a quantity of comestible disposed therein; said container having a dispensing orifice; a piston head having a substantially conical shape positioned along the open bottom of said container in order to retain the comestible within the container; a means for moving said piston head upwardly into the container;
b. a casing having said container removably mounted thereon; a frame slidably received within said casing, said frame positioned immediately below said piston head to provide support therefor, an elongate ratchet member axially and slidably arranged in said frame; said ratchet extending upwardly through the frame so as to contact said piston head; and
c. an actuating means comprising a flexible pawl connected to said ratchet; a handle pivotally connected to said casing, said pivotal connection including a pin and a spring means positioned between and interconnecting said handle and said pawl so as to enable the movement of the handle to flex the flexible pawl whereby upon such flexing the pawl incrementally advances said ratchet member towards the piston head and displaces the head upwardly into the container so as to dispense a quantity of comestible corresponding to the displaced volume in said container, said frame having a latch means, said latch means comprising a pawl having a tab extending from within the casing, said pawl being attached to pegs extending from said frame, said pawl being positioned on the opposite side of the ratchet relative to said handle, said pawl having a tooth which engages said ratchet on the opposite side that the flexible pawl engages the ratchet to restrain the ratchet from movement away from the container.

4,323,177
PISTON FOR EJECTING A VISCOUS OR PLASTIC MASS
Ole S. M. Nielsen, Bakkefaldet 36, DK.2840 Holte, Denmark
PCT No. PCT/DK79/00009, § 371 Date Nov. 14, 1979, § 102(e) Date Nov. 13, 1979, PCT Pub. No. WO79/00758, PCT Pub. Date Oct. 4, 1979
PCT Filed Mar. 13, 1979, Ser. No. 190,324
Claims priority, application Denmark, Mar. 14, 1978, 1149/78
Int. Cl.³ B67D *5/46*
U.S. Cl. 222—386 **6 Claims**



1. A piston assembly for ejecting a viscous or plastic mass from a cylindrical dispensing container, said assembly comprising a piston member having an open end, a peripheral skirt and being closed on the other end by a piston top arched in a direction away from said open end, a separate piston actuating member received within said piston member skirt and engaging with the periphery of said piston top, said actuating member including a transverse wall portion which is arched in a direction opposite to that of said piston top, said piston top being deformable whereby when inserted into said container under the influence of an inwardly directed axial force applied to the central part thereof its effective diameter is reduced to allow trapped air to pass between said skirt and the container wall, and whereby the effective diameter will increase to seal the skirt against the container wall when axial force is applied to the periphery of said piston top by said actuating member.

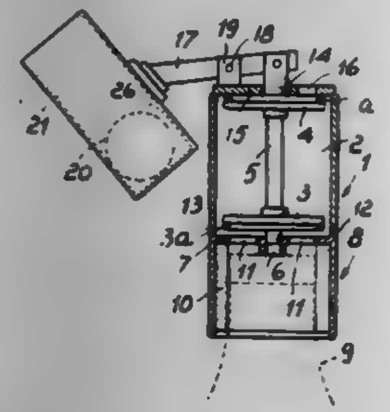
4,323,178
APPARATUS TO PROVIDE AN EVEN LAYER OR LOOSE MATERIAL TO A SUCTION CONVEYOR
Alfredo Longinotti, Florence, Italy, assignor to Centro Di Ricera Enrico Longinotti Firenze S.p.A., Italy
Filed Dec. 14, 1979, Ser. No. 103,504
Claims priority, application Italy, Dec. 21, 1978, 9675 A/78
Int. Cl.³ G01F *11/18*
U.S. Cl. 222—415 **7 Claims**



1. An apparatus for supplying loose material for preparing tile-size dosages of the material comprising, a conveyor for receiving a continuous layer of the loose material, loose material supply means associated with said conveyor for supplying a continuous layer of loose material to said conveyor, first drive means connected to said conveyor for intermittently driving said conveyor for intermittently moving the layer into a drawing position, at least one material drawing bell having a

porous diaphragm and a peripheral edge extending outwardly therefrom for receiving a tile-size dosage of the material, second drive means connected to said material drawing bell for moving said bell toward said conveyor to receive a tile-size dosage of the material from the continuous layer of loose material on the conveyor when said conveyor is not being driven, and suction means connected to said material drawing bell for establishing an underpressure in the bell to support the tile-size dosage of material against the porous diaphragm, said conveyor comprising an endless belt conveyor.

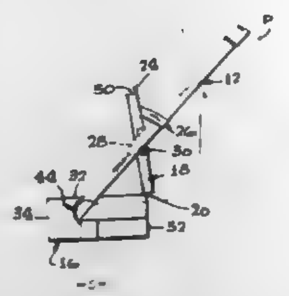
4,323,179
METERING DEVICE FOR LIQUIDS, IN PARTICULAR ALCOHOLIC LIQUORS OR SPIRITS
Carlo Crespi, Via Bertinorò, 9-Milano, Italy
Filed May 14, 1980, Ser. No. 149,806
Int. Cl.³ G01F *11/28*
U.S. Cl. 222—449 **6 Claims**



1. An automatic metering device for liquids, in particular alcoholic liquors, for application to a liquid container, comprising a metering chamber, means for sealingly attaching the device to said liquid container, at least one inlet opening and at least one delivery opening at opposite ends of said metering chamber, rigidly interconnected valve means for alternately shutting off said openings, gravity-operated control means associated with said valve means and effective to hold said valve means in a first position where said metering chamber is in communication with said liquid container and shut to the outside environment when said liquid container is standing upright or inclined to a predetermined inclined position where the bottom of said liquid container is at a higher level than said openings, and to suddenly bring said valve means to a second position where said metering chamber is separated from said liquid container and open to the outside environment upon said liquid container reaching an inclination exceeding said predetermined inclined position, wherein said gravity-operated control means comprise a stem interconnecting said valve means axially and having one end projecting out of said metering chamber in sealed relationship therewith and arranged in the proximity of said at least one delivery opening, and a control lever journalled to the metering device, said control lever having one end pivotally connected to said projecting end of said stem and another end supporting at least one weight, said control lever being movable in an oscillation plane between two stable equilibrium positions in accordance with the orientation of the metering device, said positions corresponding to said first and second position of the metering device.

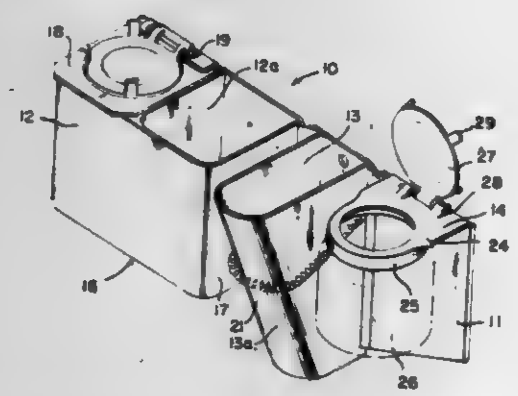
4,323,180
CAMERA SHOULDER CASE
Conrad B. Sloop, 9092 Bermuda Dr., Huntington Beach, Calif. 92646
Filed Mar. 26, 1980, Ser. No. 134,183
Int. Cl.³ A45F *5/00*
U.S. Cl. 224—202 **9 Claims**

1. An instrument case apparatus that can be carried on the shoulder and opened while still on the shoulder, comprising:
a lower case part having opposite side walls, and having a front, rear, bottom, and open top;
a cover pivotally mounted to the rear of the lower case part, to open and close over the top of the lower case parts;
a shoulder strap having opposite ends mounted to said opposite side walls of said lower case part; and



fastener means operable after the cover has been opened, for fastening together locations on said strap and cover to prevent movement of said strap relative to said cover in a direction which would close the cover, so that stiffness of the strap against compression along its length when the strap is under tension by carrying it on the shoulder, can be utilized to prevent the cover from closing.

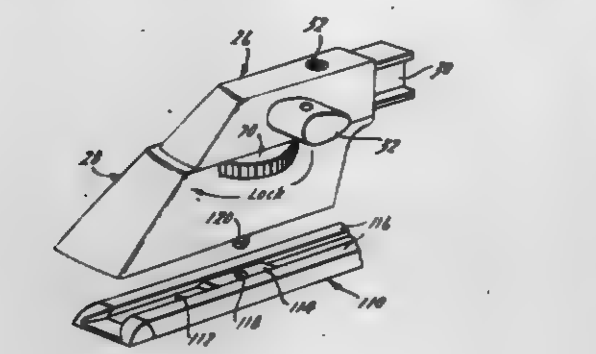
4,323,181
BELT-MOUNTED FISHING TACKLE CARRIER
John Spasoff, P.O. Box 5757, Renton, Wash. 98031
Filed Jan. 19, 1981, Ser. No. 226,213
Int. Cl.³ A45F *5/00*
U.S. Cl. 224—253 **6 Claims**



1. A belt-mounted tackle carrier comprising:
a body fabricated of a suitable, semi-rigid sheet material and having belt loops on one side;
a fishing-rod support compartment issuing in an upstanding orientation from the body on the side opposite the belt loops, the compartment being a substantially rigid pocket open at its upper end;
a utility compartment having a hingedly mounted cover; and
a bait-jar mounting bracket having a threaded jar coupling and a hingedly mounted cover.

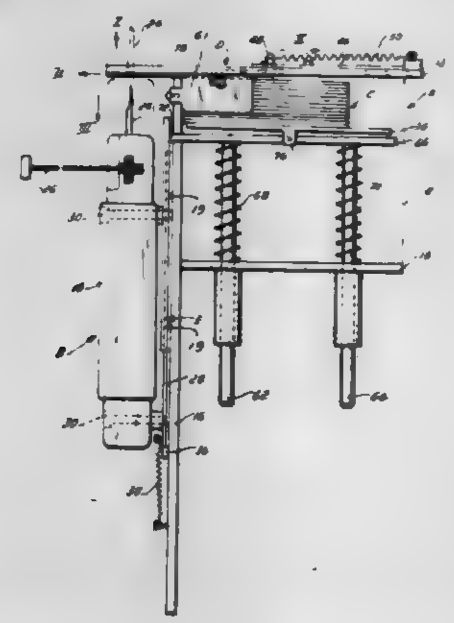
4,323,182
LUGGAGE CARRIER ASSEMBLY
John A. Bott, 931 Lakeshore Dr., Grosse Pointe Shores, Mich. 48236
Division of Ser. No. 845,846, Oct. 27, 1977, Pat. No. 4,162,755. This application Jul. 27, 1979, Ser. No. 61,380
The portion of the term of this patent subsequent to Jul. 11, 1995, has been disclaimed.
Int. Cl.³ B60R *9/04*
U.S. Cl. 224—321 **9 Claims**

1. A luggage carrier assembly for an automotive vehicle or the like, comprising
a pair of spaced parallel article constraining members and a pair of stanchion elements associated with each of said members,
each of said stanchion elements having means defining a passage arranged at generally right angles to the surface of the vehicle upon which the assembly is mounted, at least one of said stanchion elements having means defining an opening arranged generally parallel to the surface of the vehicle upon which the assembly is mounted,
cooperable mounting means associated with said vehicle,
a fastening member disposed in part within each of said passages and having a lower end portion adapted for



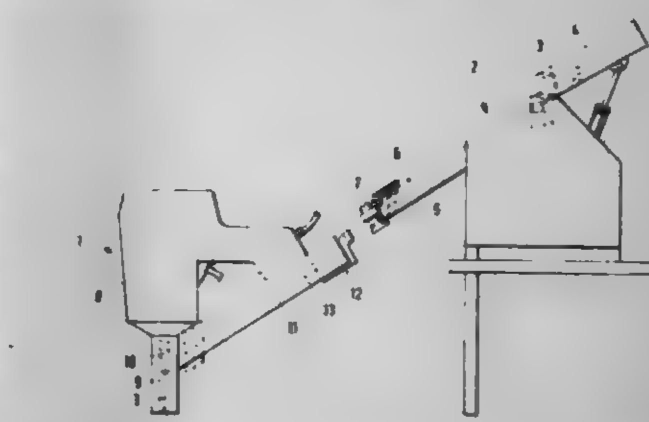
detachable engagement with said cooperable mounting means on the vehicle, and
manually engageable wheel means cooperable with the upper end of each of said fastening members, whereby said fastening member may be manually biased between engaged and disengaged relationship with said mounting means on said vehicle for selectively securing said stanchion elements and said article constraining members to said vehicle, and for detaching the same from said vehicle,
said at least one stanchion element having said opening having said wheel means disposed in said opening wherein said opening provides access to said wheel means.

4,323,183
TAG DISPENSER FOR HAND-HELD ATTACHER
Daniel Duchin, 1374 Blue Spruce La., Wantagh, Long Island City, N.Y. 11793
Filed Jan. 24, 1980, Ser. No. 114,955
Int. Cl.³ B31F *7/00*
U.S. Cl. 227—3 **35 Claims**



1. In combination, a hand-held manually actuated fastener attacher of the type having a hollow needle designed to penetrate a tag and an article to be tagged and through which a fastener is dispensed and a portable tag feeding device, the device comprising: a support; means for mounting a stack of tags on said support; tag transfer means; means for mounting said transfer means on said support for movement along a first position, aligned with said stack mounting means wherein a tag is engaged, and a second position, wherein a tag is aligned with the needle; means for mounting said support to the fastener attacher for relative manual movement therebetween, between an initial position, wherein said needle is spaced from said plane, and a second position, wherein said needle intercepts said plane; means for biasing said tag transfer means toward said first position; and means for latching said tag transfer means in said second position.

4,323,184
APPARATUS FOR FILLING THE MAGAZINE OF A FASTENER DRIVER
Werner Maurer, Nuertingen-Zizishausen, Fed. Rep. of Germany, assignor to Firma Karl M. Reich Maschinenfabrik GmbH, Nuertingen, Fed. Rep. of Germany
Filed Apr. 15, 1980, Ser. No. 140,431
Claims priority, application Fed. Rep. of Germany, Apr. 25, 1979, 2916633
Int. Cl.³ B25C *5/06*
U.S. Cl. 227—120 **5 Claims**

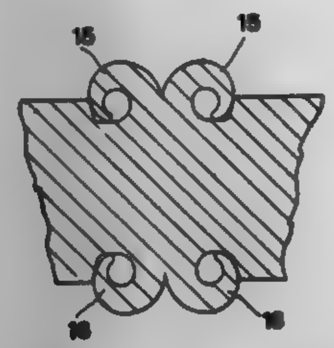


1. An apparatus for supplying fasteners into a magazine means of a fastener driver, comprising magazine means for supplying fasteners to a fastener driver, slide pusher means slidable in said magazine means for pushing fasteners in said magazine toward said fastener driver, fastener supply chute means including gate means at the discharge end of said supply chute means, said slide pusher means being arranged for actuating said gate means when said magazine means is brought into a cooperating position relative to said fastener supply chute means when the slide pusher means is in a gate opening position.

4,323,185
FRICTION WELDING PROCESS FOR MAKING HOLLOW BODIES SUCH AS ROLLERS AND SIMILAR ARTICLES
Walter Grilli; Emidio Manicardi, both of Modena, and Ivano Ferrari, Castelnuovo Rangone, all of Italy, assignors to Italtractor I.T.M. S.p.A., Castelvetro, Italy
Filed Feb. 5, 1980, Ser. No. 118,968
Claims priority, application Italy, Feb. 14, 1979, 40022 A/79
Int. Cl.³ B23K *20/12*
U.S. Cl. 228—114 **4 Claims**

1. A friction welding process, in particular for making hollow bodies such as rollers and similar articles, essential features of which process include the preparation of the edges of the two bodies to be head-on united, said process comprising: precisely shaping said edges along an axial cutting plane in which a front part of a preset gage and length visibly projects with respect to a rear part of a greater gage, the said front part being joined to the said rear part on at least one of the sides by means of a fillet comprising a concave surface section contacting, at a predetermined angle, the adjacent surface that laterally delimits the said rear part; carefully finishing the friction surface of the said front part of each edge with a finish whereby it becomes smooth, flat and free of any dent, chamfer

or radius at the corners, and has a low roughness coefficient; rotating said bodies, one with respect to the other, around a common axis, while pressing one against the other in the region of their respective front surfaces, whereby said bodies are



friction welded together and a burr is formed on each body as a result of the friction welding operation, which burr is folded back over itself and is spread out until it has been arranged tangentially in contact with the said fillet, in proximity of its edge of contact with the said adjacent surface.

4,323,186

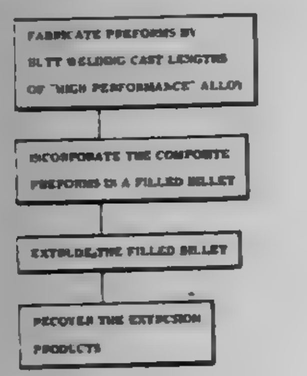
MANUFACTURE OF HIGH PERFORMANCE ALLOY IN ELONGATED FORM

James G. Hunt, Terrace Park, Ohio, assignor to Polymet Corporation, Cincinnati, Ohio

Filed Aug. 18, 1980, Ser. No. 178,946

Int. Cl.[3] B23P *17/00*

U.S. Cl. 228—173 E 5 Claims



1. A method of manufacturing wire and other components having a high length to cross section ratio, comprising the steps of

fabricating "high performance" alloy, extrusion preforms of a length greater than can be obtained by casting the "high performance" alloy,

said fabricating step including the steps of (a) selecting at least two lengths of "high performance" alloy in an "as cast" condition, the combined lengths of which are greater than the desired length of the preform, (b) squaring the ends of such lengths of "high performance" alloy which would abut when they are aligned to form a preform of the desired length, (c) welding such abutting ends to form joints between said lengths having a microstructure no coarser than the microstructure of the "as cast" lengths,

positioning a plurality of these composite preforms into a can in parallel relation with each other and parallel to the axis of the can,

closing off one end of said can with a cap,

introducing powdered filler material into said can to fill the spaces between said composite preforms and between the preforms and the interior surface of said can, said filler material being generally spherical with a diameter of less than 0.010 inch, said filler material being further characterized by an extrusion constant within approximately 40% of the extrusion constant of said rods,

compacting said filler material to a relative density of at least 0.33,

attaching a cap to the other end of said can to thus complete a filled billet in which the preforms are incorporated,

heating said filled billet to a temperature approximating the forging temperature of said preforms for a period of time sufficient for all portions of the billet to reach such temperature,

placing said preheated, filled billet in an extrusion press and extruding said billet at a pressure between approximately 30 and 120 tons/inch^2 at a rate between about 50 and 250 inches per minute through a die affecting an area reduction in the cross section between 3 and 45 times,

allowing the extruded filled billet to cool, and

removing the extruded "high performance" alloy preforms from the can and filler material.

4,323,187

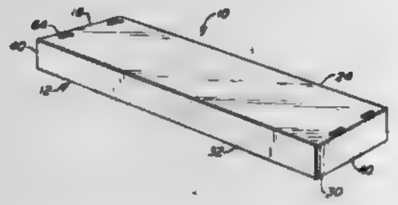
TELESCOPIC CARTON ASSEMBLY

Raymond A. Gillie, Walnut Creek, Calif., assignor to Arvey Corporation, Chicago, Ill.

Filed Apr. 17, 1978, Ser. No. 896,797

Int. Cl.[3] B65D *5/22, 5/30, 5/68*

U.S. Cl. 229—34 R 10 Claims



1. A telescopic carton assembly for use in connection with pre-sorted mail and the like, comprising:

a first carton;

a second carton for telescopically receiving and engaging said first carton;

one of said cartons providing the top part of said telescopic carton assembly and the other of said cartons providing the bottom part of said telescopic carton assembly;

each of said cartons having

a generally rectangular outer panel defining a plurality of tab-receiving apertures,

upright walls extending from said outer panel, said upright walls including a pair of elongated longitudinal side flaps integrally hinged to opposite sides of said outer panel, and a pair of lateral end flaps integrally hinged to opposite ends of said outer panel, said longitudinal side flaps and said lateral side flaps being generally rectangular in shape,

said upright walls further including pairs of longitudinally opposed auxiliary side flaps integrally hinged to said longitudinal side flaps, and auxiliary end flaps integrally hinged to said end flaps opposite said outer panel, said auxiliary side flaps and said auxiliary end flaps being generally rectangular in shape and said auxiliary end flaps being positioned adjacent said lateral end flaps within the interior of the carton to define lateral interior pockets for snugly receiving said auxiliary side flaps,

each of said auxiliary end flaps having a pair of laterally opposed tabs for interlockingly engaging said tab-receiving apertures to permit said carton to be erected without the use of glue, staples, gum tape or other auxiliary fasteners,

a first longitudinal pivotable flap integrally hinged to one of said longitudinal side flaps along an edge of said longitudinal side flap generally opposite said outer panel, said first pivotable flap being generally rectangular in shape and generally of the same size and shape as said longitudinal side flap and said first longitudinal pivotable flap being movable to a side flap engaging position bearing against said longitudinal side flap within the interior of said carton,

a generally rectangular movable panel integrally hinged to said first pivotable flap along an edge of said first pivotable flap generally opposite said longitudinal side flap, said movable panel and said first pivotable flap together being about the same size as said outer panel,

a second longitudinal pivotable flap integrally hinged to said movable panel along an edge of said movable panel generally opposite said first pivotable flap, said second pivotable flap and said movable flap being movable together to an outer panel-engaging position bearing against said outer panel within the interior of said carton and together occupying about the same interior surface area as said outer panel,

said second pivotable flap having a concave finger-gripping portion defining an arcuate access opening generally midway along an outer edge of said second pivotable flap for facilitating gripping of said second pivotable flap, and said second pivotable flap having rounded corners for resisting interference with said upright walls during movement of said second pivotable flap, and

each of said cartons being adapted to provide a separate self-contained shipping container when telescopically separated from the other carton with said first pivotable flap and said movable panel providing the top of said self-contained shipping container and said second pivotable flap providing a closure flap for said self-contained shipping container.

4,323,188

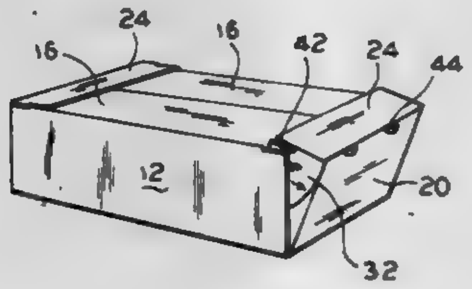
COLLAPSIBLE CONTAINER

Robert B. Dickerson, Salem, N.C., assignor to Container Corporation of America, Chicago, Ill.

Filed Oct. 16, 1980, Ser. No. 197,499

Int. Cl.[3] B65D *5/36, 5/72, 5/18*

U.S. Cl. 229—41 R 4 Claims



1. A collapsible container constructed from a one-piece blank of foldable material which is cut and scored, said container comprising:

(a) a bottom panel;

(b) side wall panels connected along fold lines to opposed front and rear side edges of said bottom panel and being folded up at right angles to said bottom panel, said side wall panels having cut-outs disposed along portions of their outer edges;

(c) top cover flaps connected along fold lines to upper edges of said side wall panels and being folded down in parallel relationship to said bottom panel; and

(d) end wall panels connected along fold lines to opposed end edges of said bottom panel and folded upwardly therefrom;

(e) a pair of end wall extension flaps hingedly attached to opposed side edges of said end wall panels and being folded inwardly at right angles to said end wall panels and disposed adjacent respective side wall panels;

(f) end cover flaps connected along fold lines to upper edges of said end wall panels;

(g) a pair of locking closure tabs connected to opposed side edges of said end cover flaps and being disposed between said side wall panels and said extension flaps, said closure tabs having cut-outs along portions of their inner edges;

(h) said closure tab cut-outs being positioned into a releasable interlocking relationship with said side wall panel cut-outs to maintain the container in a closed position; and

(i) said extension flaps being pivotable outwardly with said end panels relative to the fold lines connecting said end wall panels to said bottom panel when the container is opened for dispensing.

4,323,189

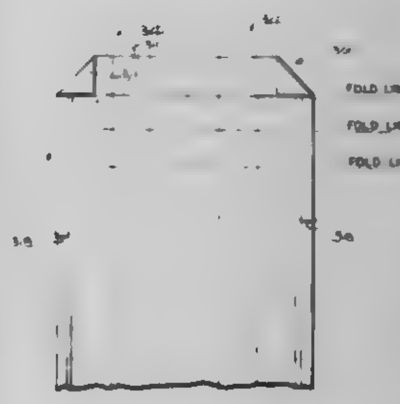
CLOSABLE POUCH

Joseph Regenstein, Jr., Chicago, Ill., assignor to Arvey Corporation, Chicago, Ill.

Filed May 27, 1980, Ser. No. 153,715

Int. Cl.[3] B65D *33/16, 33/18, 33/20*

U.S. Cl. 229—62 8 Claims



1. A two-ended, gusseted pouch sealed inwardly of a first end and having an opening that is foldingly self-sealed at a second end, said pouch comprising:

first and second opposing webs;

said webs having substantially coterminous opposed side edges defining side edges of the pouch, said second web having a transverse dimension greater than the first web, said second web further having first and second spaced parallel gusset fold lines adjacent each side edge to produce an inwardly extending first portion and an outwardly extending second portion in overlapping relation whereby a gusset is formed in said second web adjacent each side edge thereof;

means for adhering said first web to said second web to form a seal across said pouch inwardly of said first end and adjacent the side edges of said pouch;

said first web having a configuration before being foldingly self-sealed at said second end wherein at least one generally straight end edge of said first web defines a portion of the self-sealed pouch opening at said second end;

said second web having a configuration before being foldingly self-sealed at said second end wherein at least one generally straight end edge of said second web is orientated generally parallel to and in registry with said first web one generally straight end edge to define a portion of said self-sealed opening at said second end;

an adhesive sealing strip having a strip-like configuration carried on said first web parallel with and spaced inwardly from said first web one generally straight end edge, said adhesive sealing strip having two generally parallel, straight margins, said adhesive sealing strip extending transversely across said first web, said adhesive sealing strip defining a closure first fold line along the margin of the strip that is parallel to and nearest said first web one generally straight end edge, said strip defining a closure second fold line along the margin of the strip that is paral-

lel to and furthest from said first web one generally straight end edge;

two pharmacy folds of said webs at said second end of said pouch, one of said pharmacy folds being located at one side of said pouch and the other of said pharmacy folds being located at the other side of said pouch, each said pharmacy fold including a corner portion of said pouch folded inwardly along a substantially 45 degree fold line relative to said pouch side edges, said 45 degree fold line intersecting one of said pouch side edges at said first fold line; and

said pouch being foldingly self-sealed at said second end with said webs being folded away from said first web along said closure first fold line, then being folded along said closure second fold line, and then being folded along a closure third fold line that is in registry with the repositioned closure first fold line thus orienting the adhesive sealing strip against an adjacent region of the second web to form a self-sealed closure at said pouch second end.

4,323,190

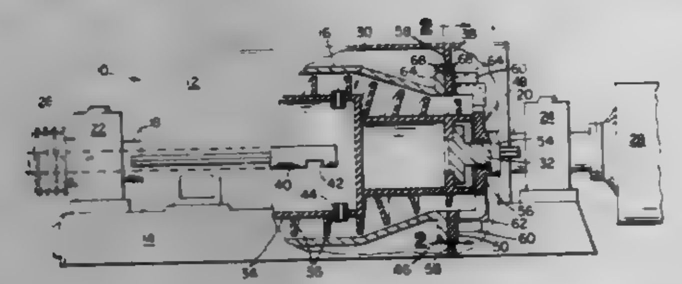
CENTRIFUGE BOWL END ATTACHMENT FLANGES

Norman F. Bessette, Somerset, Mass., assignor to Bird Machine Company, Inc., South Walpole, Mass.

Filed May 21, 1980, Ser. No. 152,043

Int. Cl.³ B04B *11/00, 7/08*

U.S. Cl. 233—46 11 Claims



1. The combination of a rotary centrifuge bowl having an end with a radially projecting flange and a bowl end member having a radially projecting flange for attachment to said bowl flange, at least one of said flanges comprising:

a series of regularly spaced cavities extending transversely therethrough near the periphery thereof, each said cavity opening through the flange periphery to provide a slot of lesser width than the cavity extending transversely across said flange periphery, the peripheral spacing of the center lines of said slots being less than 15 inches; and

a series of plugs secured in said cavities with a portion thereof protruding through the said cavity slot to project above the flange periphery, said portion being of lesser width than the remainder of said plug and having abrasive wear resistance at least approximately equal to that of 90% aluminum oxide ceramic.

4,323,191

HUMIDIFYING APPARATUS FOR AN AIR-CONDITIONING EQUIPMENT

Tsuneyuki Chiyoda, and Masami Ohtani, both of Higashimatsuyama, Japan, assignors to Diesel Kiki Co., Ltd., Tokyo, Japan

Filed Mar. 12, 1980, Ser. No. 129,677

Claims priority, application Japan, Mar. 13, 1979, 54-31187[U]

Int. Cl.³ B01F *3/02;* B05B *1/08*

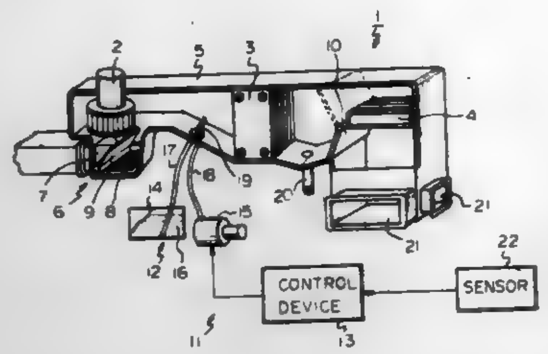
U.S. Cl. 236—44 A 5 Claims

1. An apparatus for humidifying the air of a vehicle, comprising

means including a humidity sensor adapted to be disposed at a given position within the vehicle for producing a detecting signal indicating the humidity at said position has attained a predetermined value;

a humidifying device for humidifying air within said vehicle;

a pulse generator for producing a repetitive pulse signal having a predetermined period at predetermined intervals; and



control means receiving said detecting signal and said pulse signal for operating said humidifying device periodically in accordance with said predetermined period of said pulse signal when the humidity at said location is below said predetermined value.

4,323,192

CONTROL ARRANGEMENTS FOR HEATING CIRCUITS

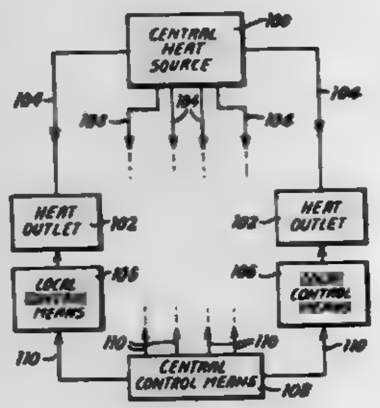
Harold E. Jackson, Winchester, England, assignor to Plympton Patents Limited, Hampshire, England

Filed Jan. 22, 1980, Ser. No. 114,343

Claims priority, application United Kingdom, Jan. 23, 1979, 02395/79

Int. Cl.³ F23N *5/20;* F24D *3/00*

U.S. Cl. 236—46 R 10 Claims



1. In a control arrangement for a heating system having a plurality of heat outlets, the control arrangement comprising a central control means disposed remote from the heat outlets and including a time switch operative to cause the heat outlets to provide different heat outputs during different parts of a predetermined period of time, and respective thermostat means for each heat outlet to control the heat output thereof, the improvement comprising:

each thermostat means being capable of actuating the associated heat outlet at different temperatures;

said time switch being operative to cause said thermostat means to actuate the heat outlets at different temperatures at different times to provide the different heat outputs during different parts of the predetermined period of time; and

said central control means including, for each heat outlet, a manual switch coupling said time switch to the associated heat outlet via the associated thermostat means to manually set the heat output of the associated heat outlet, said time switch and each manual switch cooperating in such a manner that at least one may override the other so that the area heated by each heat outlet may be maintained at an appropriate temperature.

4,323,193

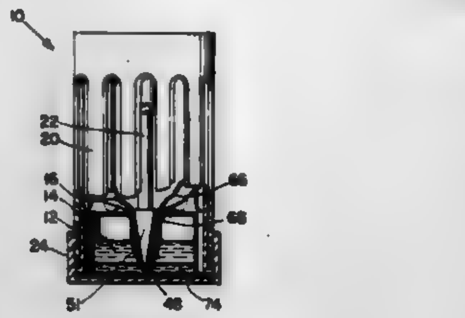
WICK-TYPE SLOW DIFFUSION DISPENSER

Donald B. Compton, Montgomery; William P. Lewis, West Chester, and Toan Trinh, Maineville, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 92,169, Nov. 7, 1979. This application Nov. 9, 1979, Ser. No. 92,905

Int. Cl.³ A24F *25/00*

U.S. Cl. 239—44 6 Claims



1. A liquid perfume dispenser comprising a supply of a volatizable multi-component liquid perfume to be dispensed at a desired diffusion rate, a reservoir which maintains said perfume supply in isolation from ambient air, and a sheet form wick having a foot portion which contacts said isolated liquid perfume supply and wherein said wick has a remote portion providing an evaporative surface in contact with the ambient air, wherein:

A. said remote portion has a retention weight no more than 10 milligrams of said perfume per square centimeter of said evaporative surface; and wherein said remote portion has an absorptive capacity of from about 1.75 to about 4.25 times its weight of said perfume and wherein the basis weight of said remote portion is from 15 to 50 grams per square meter; and wherein said remote portion has a vertical wicking height of at least 5 centimeters; and

B. wherein said liquid perfume supply comprises a multi-component liquid selected from the group consisting of high, low and moderate volatility materials, wherein 50% to 100% by weight of said perfume supply materials is of low and moderate volatility; wherein the total weight of said low volatility materials in said perfume supply is no more than 34% of the holding capacity of said remote portion of said wick, and

wherein said dispenser and said multi-component perfume to be dispensed maintains in said remote portion a relatively constant composition of said multi-component liquid, and wherein said multi-component liquid evaporates at a relatively steady rate over the life of the dispenser.

4,323,194

SPINNER WATER DRIVE SYSTEM AND CONTROL

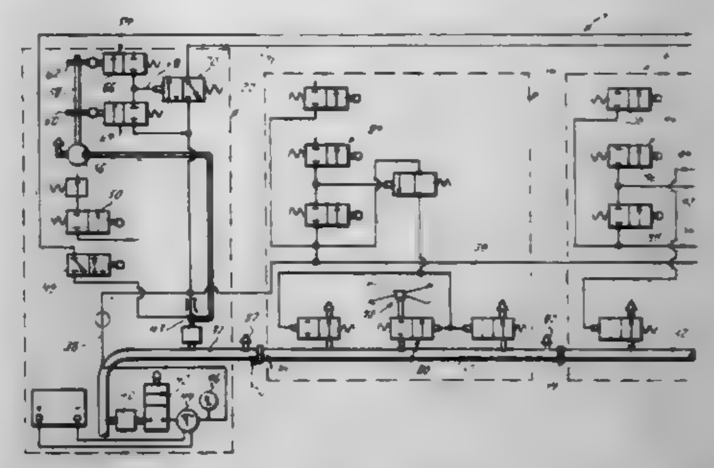
Don Newbold, Fremont, and Owen W. Sherwin, Omaha, both of Nebr., assignors to Valmont Industries, Inc., Valley, Nebr.

Filed Dec. 18, 1979, Ser. No. 104,956

Int. Cl.³ A01G *25/09*

U.S. Cl. 239—177 19 Claims

1. A center pivot irrigation system comprising a main conduit, a plurality of sprinklers spaced along the conduit for applying water to a field, a plurality of support towers spaced along said conduit, a spinner drive at each support tower for powering its associated support tower and the conduit, each spinner drive having at least one associated sprinkler, means to control each spinner drive and its associated sprinkler so that said associated sprinkler is sequenced on whenever the spinner drive is off, each spinner drive and its associated sprinkler having a sufficient water delivery so that the portion of field irrigated by each spinner drive and sprinkler combination



receives substantially the same application of water as other portions of the field being irrigated.

4,323,195

ROTARY-TYPE MELT APPLICATOR

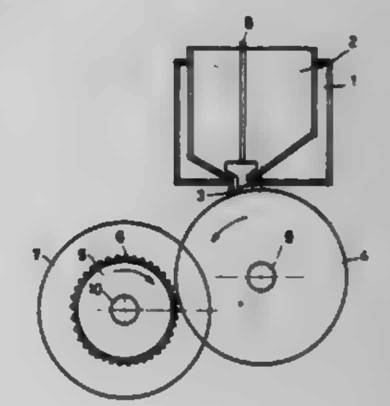
Mutsuo Okajima, Narashino, and Hideo Hisada, Tokyo, both of Japan, assignors to Shinto Paint Co., Ltd., Amagasaki, Japan

Continuation of Ser. No. 949,101, Oct. 6, 1978, abandoned. This application Jul. 2, 1980, Ser. No. 165,236

Claims priority, application Japan, Oct. 14, 1977, 52/123899

Int. Cl.³ B05B *3/02*

U.S. Cl. 239—215 5 Claims



1. A rotary-type melt applicator for applying a molten marking composition to a road surface to form traffic or pavement markings on a road comprising:

(a) only one composition applicator roller rotatable in a direction to apply molten marking composition to said surface and having a multiplicity of sharp peripheral teeth extending radially therefrom;

(b) only one smooth-surface feeder roller rotatable in a direction of rotation opposite from that of the applicator roller and disposed adjacent thereto for feeding molten marking composition to the applicator roller; and

(c) only one hopper containing the molten marking composition disposed above the feeder and applicator rollers, the hopper having a marking composition outlet for feeding marking composition to the feeder roller and a plug-shaped closure member fitted to said outlet, the outlet having top and bottom portions with the bottom portion having the same radius of curvature as the feeder roller and said closure member having a bottom portion having the same radius of curvature as the feeder roller.

4,323,196

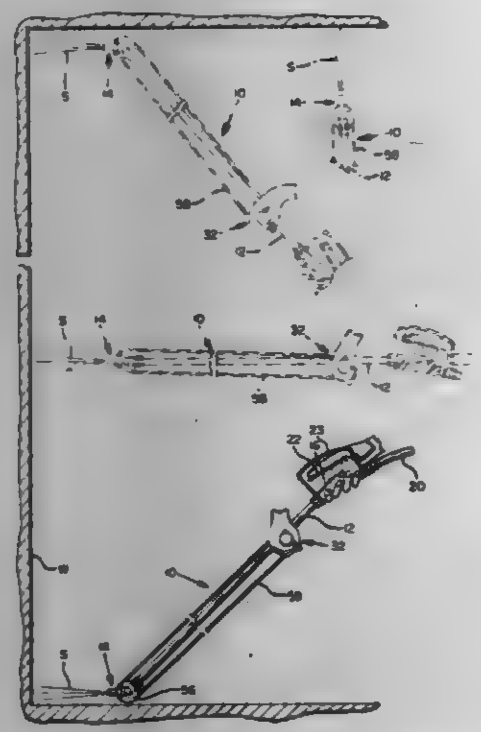
PAINT SPRAYING APPARATUS

Gerald W. Logue, 3566 Aldous Ave. S., Salem, Oreg. 97302, and Rudolph R. Schnepel, 4596 Thrush Dr. NE., Salem, Oreg. 97301

Filed Feb. 22, 1980, Ser. No. 123,658

Int. Cl.³ B05B *15/08*; B08B *3/02*

U.S. Cl. 239—532 **4 Claims**



1. In spraying apparatus for discharging fluid under pressure including an elongate tube having a nozzle pivotally mounted adjacent one end thereof and a handle mounted adjacent the other end operable for delivering fluid under pressure from a source through the elongate tube and the nozzle, the improvement comprising:

orienting means including a manually rotatable member mounted adjacent the handle operable for rotation about an axis extending generally transversely to the longitudinal axis of the elongate tube and coupled to the nozzle operable for selectively pivoting the nozzle, relative to the elongate tube, about a nozzle pivot axis extending generally transversely to the longitudinal axis of the elongate tube;

a block member detachably clamped to the elongate tube adjacent the handle for rotatably journalling said rotatable member;

first pulley means concentrically mounted on said rotatable member and second pulley means connected to the nozzle, said first and second pulley means being interconnected by a cable means trained on each pulley means, said second pulley means being detachably mounted on the nozzle; and

clamping members clamped on the nozzle for providing a mount for said second pulley means.

4,323,197

ROTARY TYPE ELECTROSTATIC SPRAY PAINTING DEVICE

Teru Morishita, Shizuoka; Matsuyoshi Sugiyama, Susono, and Toshikazu Suzuki, Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Jul. 11, 1980, Ser. No. 168,631

Claims priority, application Japan, Feb. 18, 1980, 55/17892

Int. Cl.³ B05B *5/04*; F16C *27/00, 32/06*

U.S. Cl. 239—703 **21 Claims**

1. A rotary type electrostatic spray painting device comprising:

a metallic housing;

a metallic rotary shaft rotatably arranged in said housing and having a front end and a rear end;

a cup shaped metallic spray head fixed onto the front end of said rotary shaft and having a cup shaped inner wall;

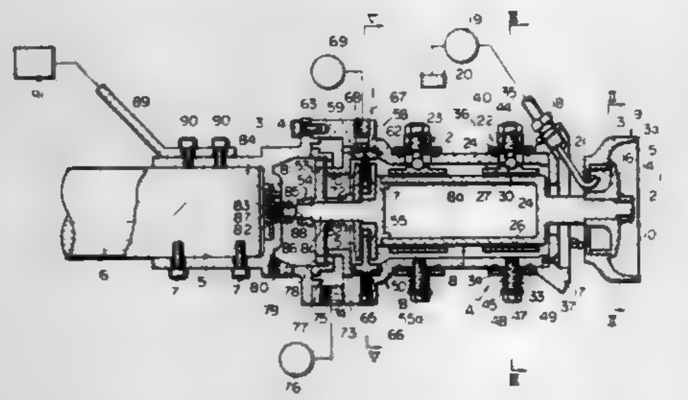
feeding means for feeding a paint onto said cup shaped inner wall;

drive means cooperating with said rotary shaft for rotating said rotary shaft;

a generator generating a negative high voltage and having an output connected to said housing;

electrode means arranged in said housing and electrically connecting said output to said spray head;

non-contact type thrust bearing means arranged in said housing and cooperating with said rotary shaft for axially supporting said rotary shaft under a non-contacting stage, and;



non-contact type radial air bearing means arranged in said housing and cooperating with said rotary shaft for radially supporting said rotary shaft under a non-contacting state, said radial air bearing means comprising a bearing support frame mounted on an outer wall of said housing via O rings, a plurality of pads, each having an inner face which extends along a circumferential outer wall of said rotary shaft and each being arranged to be spaced from the circumferential outer wall of said rotary shaft by a slight distance, a plurality of support pins, each being connected to said bearing support frame and pivotally supporting said corresponding pad, and a connecting member interconnecting said bearing support frame to said housing for preventing the relative rotation therebetween.

4,323,198

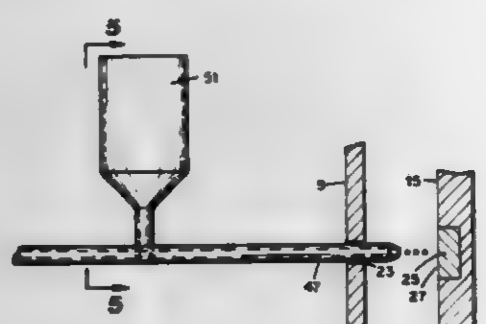
METHOD FOR FRACTURING SILICON-CARBIDE COATINGS ON NUCLEAR-FUEL PARTICLES

Lloyd J. Turner, Oak Ridge; Melvin G. Willey, Knoxville; Sue M. Tiegs, Lenoir City, and John E. Van Cleve, Jr., Kingston, all of Tenn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Division of Ser. No. 70,365, Aug. 28, 1979, abandoned. This application Sep. 29, 1980, Ser. No. 191,613

Int. Cl.³ B02C *19/12*

U.S. Cl. 241—5 **4 Claims**



1. In the art of processing particles, the improved method comprising:

providing a chamber containing an impaction surface,

introducing to said chamber and impinging on said surface a stream of carrier gas containing serially entrained similar spheroidal particles, each having a carbon core which contains nuclear-fuel material and has a silicon-carbide coating, said stream having a volumetric flow rate which is at substantially a minimum value effecting fragmentation of said coating by impingement on said surface, to generate a gas stream containing particulates resulting from said impingement,

directing said gas stream containing particulates through a channel of gradually decreasing cross-sectional area to accelerate its rate of flow,

providing a vortex-flow type of separator having an inlet, and

tangentially introducing to said inlet the gas stream issuing from said channel to remove entrained particulates therefrom.

4,323,199

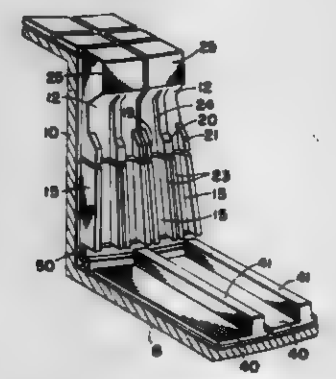
MILL LINER FOR DRY AUTOGENOUS MILLS

Colin D. Jardine, Newfoundland, Canada; Sooi Chong, Cleveland, Ohio; Rodney H. Coles, and Stephen Hebb, both of Newfoundland, Canada, assignors to The Hanna Mining Company, Cleveland, Ohio

Filed Feb. 27, 1980, Ser. No. 182,417

Int. Cl.³ B02C *17/22*

U.S. Cl. 241—284 **25 Claims**



1. In a dry autogenous mill construction including a shell and opposite ends with central feed and discharge openings therein through which material is fed into the mill and subsequently discharged therefrom, said shell and ends being lined, the improvement comprising low profile end liner means covering such mill ends, said end liner means including radially extending rib means for obtaining a lifting action of the material within the mill during the grinding operation, and said end liner means also including head portions at the radial inner ends thereof adjacent said central discharge and feed openings which protrude axially beyond said radially extending rib means to protect said rib means against undue wear and restrict the axial spacing between the ends of said mill through which the material falls as the material is carried upwardly during rotation of the mill, said end liner means including a single row of low profile inner head liner members adjacent said central feed and discharge openings at opposite ends of said mill, and a single row of outer head liner members radially outwardly of said row of inner head liner members, said radial rib means extending the entire length of said outer head liner members, and extending from the radial outermost ends of said inner head liner members for a portion of the length of said inner head liner members providing a continuation of the rib means on said outer head liner members, each of said inner head liner members providing a common base for a plurality of said radial rib means, and each of said head portions being on said inner head liner members radially inwardly of a plurality of said rib means thereon.

4,323,200

APPARATUS AND METHOD FOR WINDING AN ELONGATE MEMBER ONTO A BODY UNDER TENSION

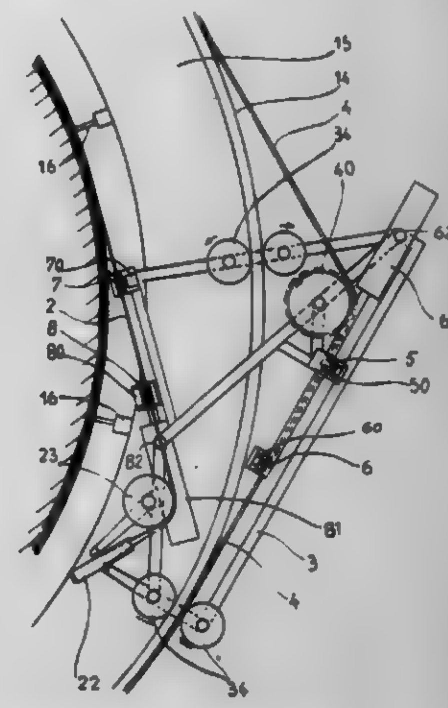
Gaston Desoer, and Georges Thillet, both of Grenoble, France, assignors to B.V.S., Grenoble, France

Continuation-in-part of Ser. No. 805,607, Jun. 10, 1977, abandoned. This application Apr. 25, 1979, Ser. No. 33,220

Claims priority, application France, Sep. 17, 1976, 76 28032

Int. Cl.³ B21F *17/00*

U.S. Cl. 242—7.21 **14 Claims**



1. A device for winding an elongate member under tension onto a body, said device comprising:

a frame;

guide means for guiding the elongate member to the body;

means mounting said guide means on said frame;

means for maintaining said frame at a constant distance from the body;

means for displacing said frame around the body to wind said elongate member onto the body; and

means for controlling the tension in the elongate member as it is wound on the body;

said frame displacing means including:

a belt surrounding said body and fixed against rotation relative thereto;

first and second means for selectively engaging or releasing said belt, each of said first and second means being selectively movable relative to said belt when released from said belt,

means mounting said first belt engaging means on said frame in fixed relation thereto; and

means mounting said second belt engaging means on said frame for moving said second belt engaging means relative to said frame in the direction of winding of said elongate member when said first belt engaging means engages said belt and in the opposite direction when said second belt engaging means engages said belt.

4,323,201

AUTOMATIC FILM DE-SPLICER AND WINDER

Joe Gonzalez, Rte. 12, Box 1163, Tallahassee, Fla. 32304

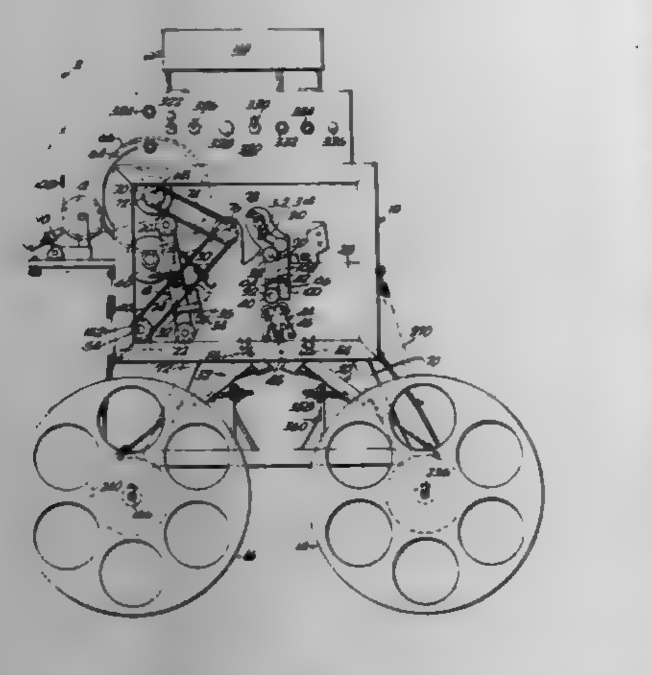
Filed Jul. 14, 1980, Ser. No. 167,838

Int. Cl.³ B65H *19/20*

U.S. Cl. 242—56 R **18 Claims**

1. Apparatus for severing separate lengths from a main continuous length of film which is marked with adhesive metallic tape at the spliced points and sequentially winding the separate lengths on spearate reels, including, a main frame, a main drive means, a pair of reels removably suspended beneath the frame in a spaced coplanar relation, film guide track means

for each reel, pivotally attached at an upper end to the frame and including an angularly extended lower end, normally in contact with a hub of the reel between side plates thereof; means to guide the main film length into the apparatus, means to tension the main film length, sprocket means engaged with an existing sprocket hole track in the length of film to drive the



length of film through the apparatus, means to drive said sprocket means from said main drive means, cutter means to sever the film, means to sense each piece of metallic tape and to operate said cutter means in direct response thereto to sever the film, and means to selectively guide the film onto a hub portion of one of the pair of reels and to redirect the next separate length onto the other of said pair of reels.

4,323,202

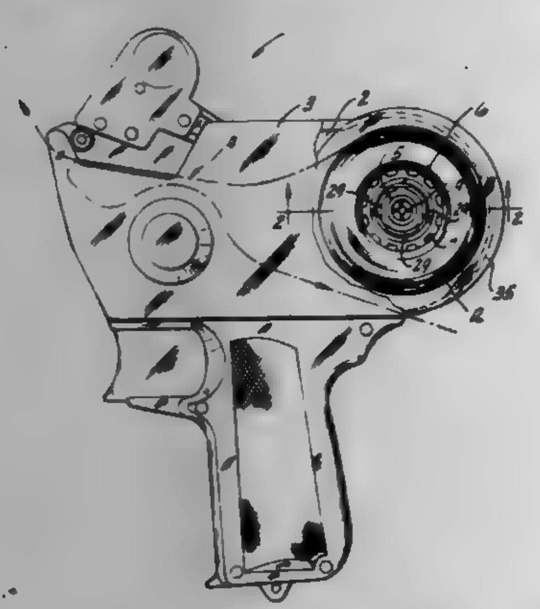
ADAPTOR CORE

Gerald C. Laverty, Santa Clara, Calif., assignor to Cosco Industries, Inc., Spring Valley, N.Y.

Filed May 1, 1979, Ser. No. 34,966

Int. Cl.^{3} B65H *75/02*

U.S. Cl. 242—68.5 **4 Claims**



1. An adaptor core for rotatably mounting a coreless roll of labels or the like of the spindle of labeling apparatus, such as a labeling gun, of the type adapted for receiving only cored rolls of labels, said adaptor core comprising a hollow generally cylindrical body of one-piece construction having a generally cylindrical main body portion relatively large in diameter, a generally cylindrical hub portion of smaller diameter at one end of the main body portion, an annular shoulder portion joining the main body and hub portions, said hub portion having a central circular opening therein for receiving said spindle, and a series of relatively thin resilient fingers formed integrally with the body and extending radially outwardly therefrom at the periphery of the body, said core being adapted to be placed in the central opening of a coreless roll of labels with said fingers engaging the roll and being adapted to be sprung inwardly by the roll, the outward springing force exerted by the fingers against the roll being sufficient to secure the body in place relative to the roll with the opening in the body generally concentric with the opening in the roll for receiving said spindle thereby to rotatably mount the adaptor core and roll on the spindle.

4,323,203

SELECTIVE ANTI-REVERSE MECHANISM

Henry L. Neufeld, Tulsa, Okla., assignor to Brunswick Corporation, Skokie, Ill.

Filed Dec. 22, 1980, Ser. No. 218,923

Int. Cl.^{3} A01K *89/01, 89/02*

U.S. Cl. 242—84.2 A **5 Claims**

1. In a spinning reel having a body portion of a deck plate with a first portion having a cylindrical wall projecting transverse to the deck plate and a second portion having a cylindrical wall projecting from the deck plate opposing the first portion, spaced apart aligned bearing means mounted in the cylindrical wall of the second portion and extending from the interior of the wall to the exterior of the wall, and a crank assembly rotatably mounted in the bearing means and extending therebetween having a crankshaft operable by a crank handle, and a gear mounted upon the shaft whereby rotation of the crank handle turns the gear to retrieve or to pay out fishing line, a selective anti-reverse device comprising:

a ratchet mounted upon the shaft for rotation therewith;

pawl means mounted upon the deck plate to pivotally engage the ratchet and prevent the pay out of fishing line and disengage the ratchet to permit both retrieval and pay out of the fishing line;

an anti-reverse drag means pivotally mounted upon the shaft having a lug in contact with the pawl means to pivot the pawl means in response to the pivoting of the anti-reverse drag means, and having a pair of diverging first and second arms;

an actuator means extending through the first portion between the first and second arms, the actuator means having a cam contacting the second arm to pivot the anti-reverse drag means in response to operation of the actuator means which, in turn, pivots the pawl means for engagement and disengagement of the ratchet; and

bias means interconnected between the shaft and the first arm to bias the pivoting of the anti-reverse drag means in the direction of shaft rotation thereby maintaining the engagement between the cam and the second arm.

4,323,204

BELT CLAMPS FOR VEHICLE PASSENGER RESTRAINT BELTS

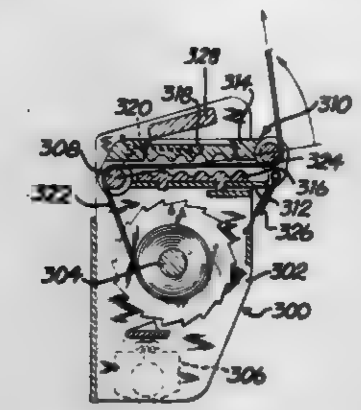
Juichiro Takada, 3-12-1, Shinmachi Setagayaku, Tokyo, Japan

Continuation-in-part of Ser. No. 21,634, Mar. 19, 1979, abandoned. This application Dec. 26, 1979, Ser. No. 107,161

Claims priority, application Japan, May 15, 1978, 53-63959; Jun. 8, 1978, 53-077235

Int. Cl.^{3} A62B *35/02;* **B65H** *75/48*

U.S. Cl. 242—107.2 **7 Claims**



1. A belt clamp for a vehicle occupant restraint system which includes a restraint belt and a belt retractor onto and from which the belt is selectively wound and unwound and having a pair of jaws, one on either side of the belt, mounted on a lever which is mounted to pivot about an axis spaced apart from the jaws, one of the jaws being mounted on the lever for movement toward the other jaw, in that there is a spring urging the movable jaw in a direction away from the other jaw and in that there is a fixed abutment positioned to be engaged by the movable jaw upon pivoting of the lever in response to a high pull-out force on the belt, thereby to move the movable jaw into engagement with the other jaw, at least one of the jaws having a multiplicity of closely spaced teeth lying transversely to the direction of movement of the belt, each tooth being of generally uniform cross section along its length in the transverse direction, and the other jaw having a multiplicity of recesses, each of which generally matches a corresponding tooth on the other jaw and receives such corresponding tooth and a widthwise strip of the belt upon engagement of the belt between the jaws, each such strip of the belt being formed into a smoothly curved loop by being tucked by a tooth into a corresponding recess of the other jaw and being gripped under pressure between opposed gripping surfaces of the teeth and recesses.

4,323,205

SAFETY SEAT-BELT RETRACTOR

Noboru Tsuge, Kariya; Satosi Kuwakado, and Toshiaki Shimogawa, both of Aichi, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Jun. 26, 1980, Ser. No. 163,265

Claims priority, application Japan, Jul. 19, 1979, 54-100419[U]

Int. Cl.^{3} A62B *35/02;* **B65H** *75/48*

U.S. Cl. 242—107.4 A **5 Claims**

1. In a retractor for safety seat-belt to be fitted on a passenger, for use in vehicles, comprising:

a fixed frame;

a winding shaft rotatably mounted on said frame, said seat-belt having one end thereof secured to said shaft and partly wound therearound;

a toothed member mounted on said winding shaft for relative rotation thereto;

locking means operative in response to a predetermined deceleration of a vehicle to engage with said toothed member for locking the same against rotation relative to said fixed frame; and

an elongated energy-absorption member having one end thereof secured to said winding shaft,

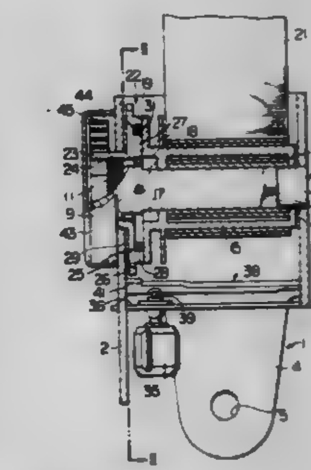
the improvement which comprises:

a projection on an axial end face of said toothed member and radially outwardly spaced from said winding shaft to define a first gap between said projection and said shaft;

said elongated energy-absorption member having the other end free and extending through said first gap and around said projection in U-shape engaging therewith;

confining means spaced radially outwardly from said projection to define a second gap between said confining means and said projection, said confining means cooperating with said projection to confine said elongated energy-absorption member in said second gap so as to cause said elongated energy-absorption member to extend around said projection in U-shape having a constant radius;

said elongated energy-absorption member having imparted thereto a resistance against being drawn when said winding shaft is rotated relative to said toothed member to draw said elongated energy-absorption member through said first and second gaps while maintaining said elongated energy-absorption member in U-shape having a



constant radius around said projection by said confining means; and

said elongated energy-absorption member being drawn through said first and second gaps by said winding shaft and wound therearound to absorb a tension on said seat-belt when said toothed member is locked against rotation relative to said fixed frame by said locking means and the tension on said seat-belt exceeds said resistance imparted to said elongated energy-absorption member,

wherein said elongated energy-absorption member has a circular cross-section and has a free end portion extending around said shaft between the same and said confining means, and

wherein said winding shaft is axially movably mounted on said fixed frame and has a threaded portion, and said toothed member has a threaded portion threadedly engaging with said threaded portion on said winding shaft, said winding shaft being axially movable relative to said toothed member upon the rotation of said winding shaft relative to said toothed member when said toothed member is locked against rotation by said locking means and the tension on said seat-belt exceeds said resistance imparted to said elongated energy-absorption member.

4,323,206

REEL HOLDER HAVING BRAKE ACTION

Larry W. Dickey, Hackettstown, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

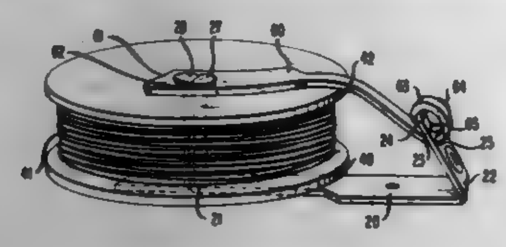
Filed Sep. 29, 1980, Ser. No. 192,075

Int. Cl.^{3} B65H *49/00, 59/16*

U.S. Cl. 242—129.6 **6 Claims**

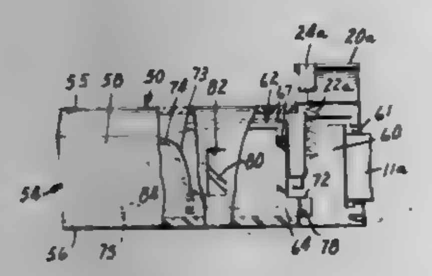
1. Apparatus (10) for mounting a reel (40) having a material (41) wound thereon comprising:

a rigid support member (20);
a first projection (21), extending generally perpendicularly from said support member, for holding said reel; characterized in that said apparatus further includes;
a second projection (22) spaced apart from said first projection and extending outwardly from said support member; and



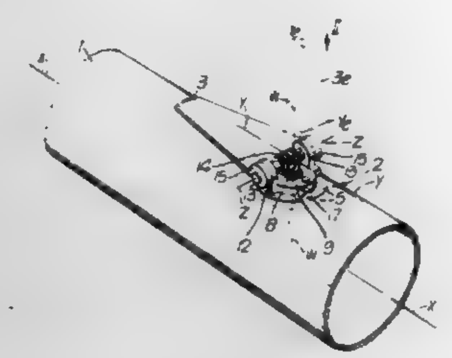
means (60,61,62,63,64,65), fastened to said second projection and frictionally engaging an edge (42) of said reel to said first projection, for providing a braking action to said reel as said material is drawn therefrom.

4,323,207
LATCH ASSEMBLY FOR A VIDEO TAPE CASSETTE
Charles D. Gebeke, White Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed May 11, 1977, Ser. No. 795,867
Int. Cl.^{3} G03B *1/04;* **G11B** *15/32*
U.S. Cl. 242—198 **1 Claim**



1. In a video tape cassette comprising a length of magnetizable recording tape, two reels each supporting a different helically wound end portion of said tape, a generally rectangular housing enclosing and supporting said reels for rotation to transfer tape between said reels, said housing including an outer front wall having a generally planar end portion, a recessed portion and means for guiding tape between said reels through said outer wall and across said recessed portion to provide a tape access area, a door, a hinge pivotably mounting said door on said housing for movement between a closed position over said tape access area and an open position spaced from said tape access area, means for biasing said door to said closed position, and latch means for releasably retaining said door in said closed position comprising a channel on the edge of said door opposite said hinge adjacent said planar end portion, a movable member slidably mounted in said housing for straight line movement along said planar end portion between engaged and disengaged positions, said movable member including a projection adapted to enter said channel when said door is in said closed position to retain said door in said closed position and a cam surface adapted for engagement through said planar end portion to move said movable member to said disengaged position, and means for biasing said movable member to said engaged position, the improvement wherein said movable member and said means for biasing said movable member to said engaged position are an integral unit of flexible resilient polymeric material with said movable member being a relatively rigid movable portion of said unit, and said means for biasing being an elongate portion of said unit having one end joining said movable portion, an opposite end adapted to engage said housing, and an arcuate generally U-shaped part which is resiliently bent to bias said movable portion toward said engaged position.

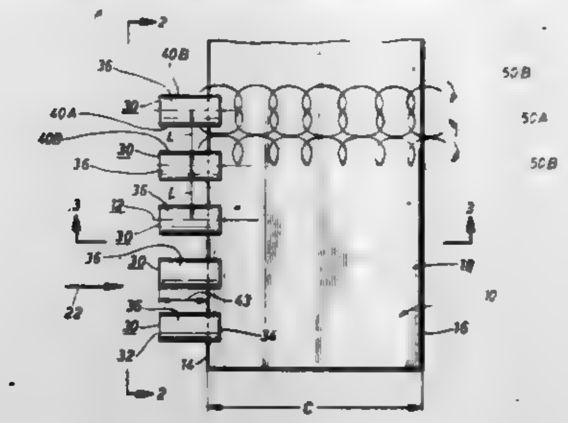
4,323,208
FOLDING FINS
James Ball, Bristol, England, assignor to British Aerospace, Weybridge, United Kingdom
Filed Feb. 1, 1980, Ser. No. 117,640
Int. Cl.^{3} F42B *13/32, 15/16*
U.S. Cl. 244—3.28 **4 Claims**



1. A flight vehicle having a generally elongate body with a fore and aft axis and at least one folding fin assembly, said assembly including a base member attached to said body, a fin having a generally chordwise axis which extends from the leading edge towards the trailing edge of the fin when in use and a generally spanwise axis which extends generally perpendicular to said chordwise axis and from said tip towards said base of said fin, a turntable member for turning relative to said base member, spigot means extending from said base member through said turntable member, turntable bearing means carried by said spigot means by which said turntable is rotatably located, fin bearing means on said turntable member by which said fin is pivotably carried on said turntable member for pivotable movement about its chordwise axis, transmission means having a first part fixedly associated with said spigot means and a second part fixedly associated with said fin and coupled with said first part whereby pivotal movement of said fin about its chordwise axis from a position in which its spanwise axis lies generally parallel to said fore-and-aft axis and with said fin lying generally flat alongside said body of said flight vehicle with its chordwise axis lying generally transverse thereto, to a position in which said spanwise axis of said fin lies generally perpendicular to the fore-and-aft axis causes the second part of said transmission means to rotate bodily around said first part whereby the turntable member is turned with respect to said base member and the chordwise axis of said fin lies generally parallel to said fore-and-aft axis.

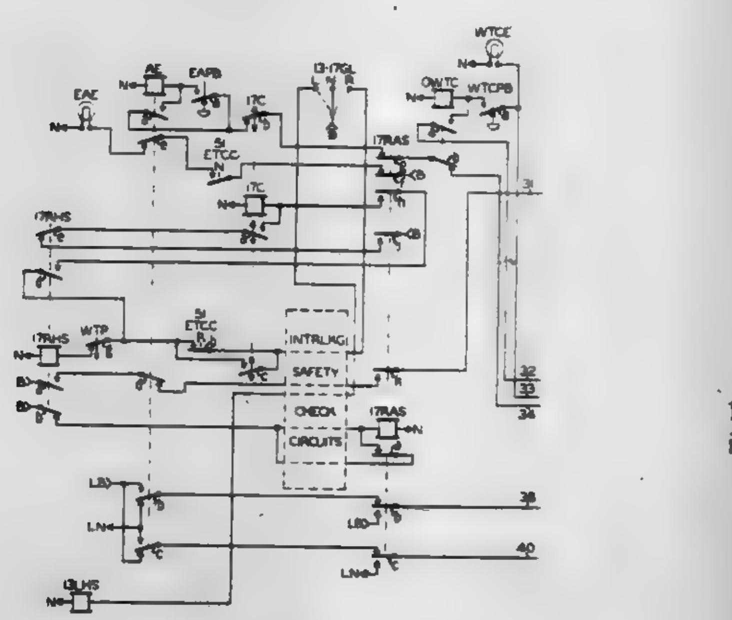
4,323,209
COUNTER-ROTATING VORTICES GENERATOR FOR AN AIRCRAFT WING
Roger A. Thompson, 7606 Joplin, Apt. 2, Houston, Tex. 77087
Continuation-in-part of Ser. No. 816,732, Jul. 18, 1977, abandoned. This application Nov. 13, 1978, Ser. No. 960,221
Int. Cl.^{3} B64C *23/06*
U.S. Cl. 244—199 **13 Claims**

1. Apparatus for increasing the lift generated by an aircraft wing, having upper and lower surfaces, while propelled through a fluid medium comprising:
a finger mounted adjacent to the leading edge of the wing and extending forwardly therefrom, said finger having a first dimension measured with respect to the forward direction and a second dimension measured in a direction transverse thereto, said finger having lateral edges thereon;
said finger being mounted on the wing such that as the wing is propelled through the fluid medium impingement of the fluid medium on said finger produces, by flow around said lateral edges, a first and a second vortex trailing rearwardly from said finger over the wing in the direction of the fluid flow, each of said vortices being in contact with and counter-rotating with respect to the other;



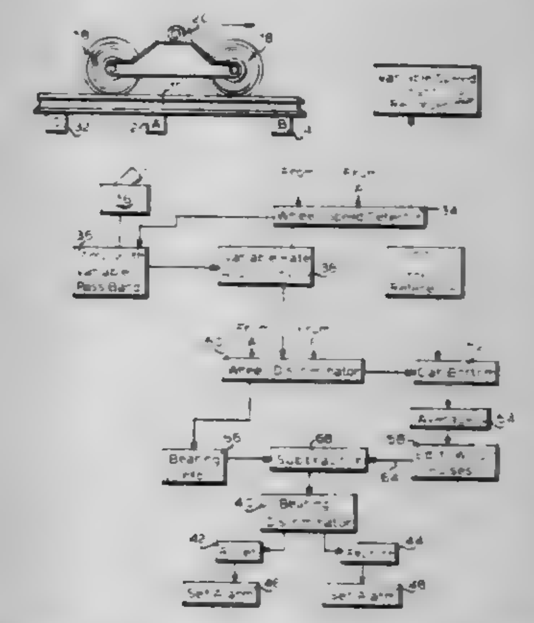
said finger being sized such that each vortex produced thereby is of sufficient size and strength to modify the flow pattern above the boundary layer on the wing upper surface so as to effect an increase in the lift; and
mounting struts for supporting said finger above the surface of the wing at the leading edge thereof.

4,323,210
MANUAL BLOCK TRAFFIC CONTROL AND SIGNALING SYSTEM FOR RAILROADS
J. Calvin Elder, Penn Hills, Pa., assignor to American Standard Inc., Swissvale, Pa.
Filed Sep. 4, 1980, Ser. No. 183,906
Int. Cl.^{3} B61L *21/04*
U.S. Cl. 246—26 **6 Claims**



1. A traffic control and signal system for a single track railroad over which trains move in either direction between first and second stations, under authority of wayside departure signals at each station, comprising,
(a) a communication channel coupling said first and second stations,
(b) request means at each station coupled to said communication channel and manually operable for transmitting to the other station a first signal requesting a train movement from the associated station to the other station,
(c) a register means at each station coupled to said channel for receiving said first signal and manually operable, in response to the reception of said first signal, for transmitting to the other station a second signal acknowledging and accepting said train movement request,
(d) a wayside signal control means at each station enabled by the transmission of said first signal and responsive to the subsequent reception of said second signal for actuating the associated departure signal to authorize said requested train movement to the other station,
(e) said communication channel further controlled in response to a train departure from the associated station for inhibiting the transmission of any first or second signal from either station while said train traverses the single track stretch,
(f) a detection means at each station coupled to the track and responsive only to the arrival of an inbound train from the other station for registering that train's arrival,
(g) each detector means coupled to said communication channel and manually operable for transmitting a third signal to the other station, when a train arrival is registered, to confirm the completed train movement and to actuate a reset of both stations and said communication channel to enable preparation of the system for a subsequent train movement in either direction.

4,323,211
SELF ADJUSTING WHEEL BEARING HEAT SIGNAL PROCESSING CIRCUIT
Joseph E. Bambara, North Babylon, and W. Woodward Sanville, Brentwood, both of N.Y., assignors to Servo Corporation of America, Hicksville, N.Y.
Filed Apr. 28, 1980, Ser. No. 144,770
Int. Cl.^{3} G08B *21/00;* **B61L** *3/00*
U.S. Cl. 246—169 A **12 Claims**

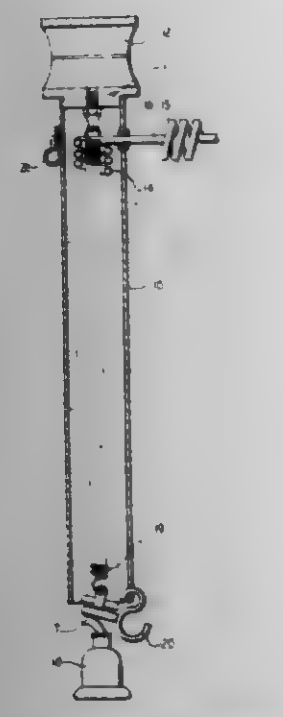


1. A railroad car hot box detector system comprising:
infra-red responsive scanner means positioned along a section of track and adapted to scan passing railroad cars within a sensing zone along said track and to generate a signal in response thereto, said signal including portions thereof having an amplitude and waveform indicative of the passing of a wheel bearing and the temperature and type thereof;
variable circuit means for digitally processing samples of said signal to determine the condition of said bearing; and,
conditioning circuit means for detecting physical conditions of said car including car speed and for varying said processing circuit in response to said car conditions.

4,323,212
MOUNTING DEVICES
John G. Macaulay, Beaconsfield, England, assignor to Toppy's Salons Limited, London, England
Filed Mar. 31, 1980, Ser. No. 135,221
Int. Cl.^{3} F16L *3/00*
U.S. Cl. 248—51 **21 Claims**

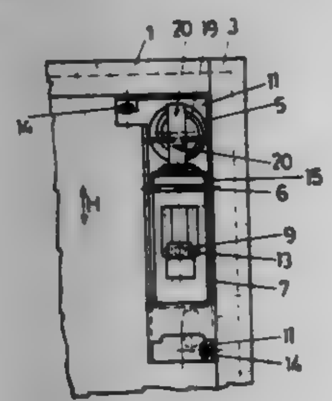
1. A device for mounting a hair drier or other electrical device, the mounting device comprising an elongate tube, suspension means to suspend the tube from a support, with the tube extending in a downward direction, an extendable electric

lead for the electrical device, the lead being urged into the tube by biasing means, but being capable of being withdrawn from the tube against the action of the bias when the lead is extended, and means for releasably attaching the electrical device to the tube, the mounting device being such that when the tube is suspended from a support and an electrical device is



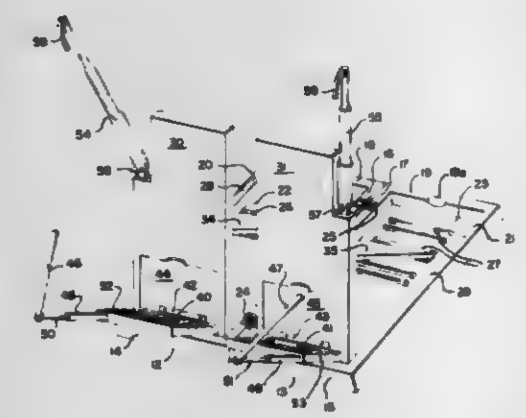
connected to the lead, the electrical device can be released from the tube and moved away from the tube when it is to be used, the extendable lead being drawn out of the tube against the action of the bias, and when use of the electrical device is over, it can be returned to a storage position by attaching it to the tube again, the lead returning within the tube.

4,323,213
SUSPENSION FITTING FOR CABINETS
Erich Röck, and Josef Brunner, both of Höchst, Austria, assignors to Julius Blum Gesellschaft m.b.H., Höchst, Austria
Filed Nov. 6, 1980, Ser. No. 206,854
Claims priority, application Austria, Nov. 19, 1979, 7340/79
Int. Cl.³ E04G *5/06*
U.S. Cl. 248—222.1 **5 Claims**



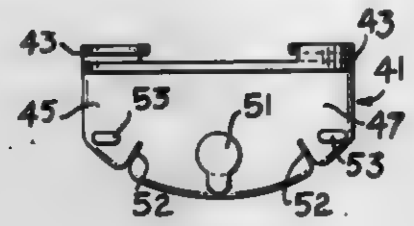
1. A suspension fitting for mounting a piece of furniture on a wall, said fitting comprising:
a supporting member adapted to be fastened to a body of a piece of furniture, said supporting member including a plate adapted to extend generally parallel to the plane of a wall of the body of the piece of furniture, said plate having wherein a hole;
a hook member mounted on said supporting member for relative vertical movement therebetween, said hook member having at a lower portion thereof means for mounting said hook member, and thereby said supporting member and the piece of furniture, in a mounted position in a suspension rail to be fastened to a wall;
means for adjusting the relative vertical position of said supporting member with respect to said hook member, said vertical adjusting means comprising a disc having a pin rotatably positioned in said hole in said plate of said supporting member, said disc having extending therefrom, on a side thereof opposite said pin, a spiral projection, a rack having teeth meshing with said spiral projection, said rack having a lower portion in engagement with an upper portion of said hook member, such that rotation of said disc with respect to the center of said hole causes said spiral projection to move said disc, and thereby said supporting member, vertically relative to said rack and said hook member; and
means for adjusting the position of the piece of furniture in the direction of the depth of the piece of furniture, said depth adjusting means comprising an adjusting screw extending through said plate of said supporting member and threaded into a threaded portion of said hook member, whereby rotation of said adjusting screw causes relative movement in said direction of depth between said hook member and said supporting member.

4,323,214
BOOK READING REST
Nicholas E. DeLuca, 125 Susan Dr., Pittsburgh, Pa. 15220
Filed Jul. 21, 1980, Ser. No. 170,524
Int. Cl.³ A47B *97/04*
U.S. Cl. 248—452 **4 Claims**



1. A reading rest device for presenting the open pages of a book as a substantially flat surface comprising:
two rectangular box sections, each section having a flat bottom and four upright sides, said box sections being arranged with an edge of one in juxtaposition to an edge of the other;
hinge means connecting said adjacent edges whereby the box sections may be rotated relatively between an open position and a closed position in which the openings of the box sections are facing to form a closed box;
separate rest means pivotally connected to the box sections in substantially side-by-side relationship, one rest means being associated with each box section;
prop means extending between the rest means and box sections for adjustable sloping the rest means;
shelf means extending from each rest means adjacent the pivotal axis thereof and being foldable into a recess in the associated rest means;
rest means pivotally connected by an axially telescoping member to the shelf means associated with each rest member for rotation in a plane substantially parallel to the plane of the rest member whereby the pages of a book may be restrained from turning with adjustment for thickness of the pages; and
telescoping arm means associated with each rest member and extensible in the plane of the rest member whereby the effective size of the rest member may be increased to accomodate books of larger size.

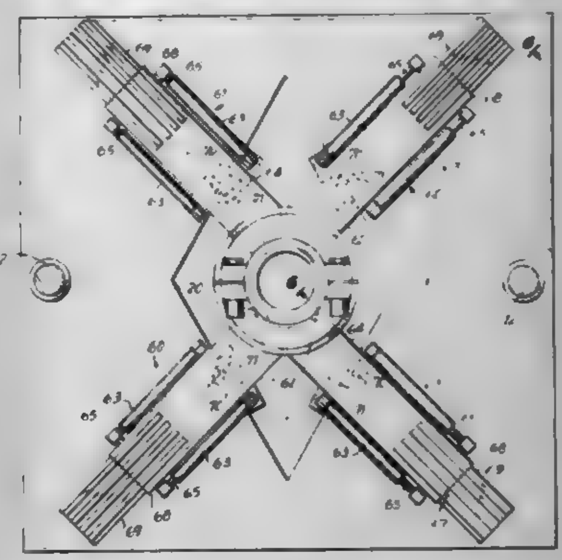
4,323,215
HANG-UP FIXTURE
Sol J. Berger, 3186 Doolittle Dr., Northbrook, Ill. 60062
Filed Mar. 10, 1980, Ser. No. 128,542
Int. Cl.³ F16M *13/00*
U.S. Cl. 248—544 **6 Claims**



1. A fixture adapted for installation in position to be suspended from the base of an overhead horizontal beam such as inverted "T" shaped beam at the ceiling of a store, said fixture having a top portion with an upper surface adapted to bear against the base of such beam and when the fixture is twisted about a vertical axis while it is being held against the base of the beam the fixture is brought into an installed position where it is secured to the beam and from which position the fixture is releasable by initially and solely twisting it in the reverse direction about the same axis, said fixture including a pair of projections extending upwardly from said upper surface at the periphery thereof, each of said projections having a fin extending therefrom over said upper surface, the free end of each fin at the portion thereof facing the top of said upper surface of the fixture being tapered outwardly away from said top surface of the fixture, said projections being spaced apart to embrace opposite edges of the base at locations spaced longitudinally of the beam when the fixture has been twisted to its installed position, and when the fixture is thus twisted to its installed position with its upper surface engaging the base of the beam the underside of each fin engages over the top surface of the base of such beam to effectively lock the fixture to the base of such beam, said fixture having means whereby it may be twisted to and from its installed position with respect to such beam, said twisting means comprising a flange integral with and projecting at right angles from the lower side of said top portion and extending substantially completely across said lower side of the top portion, and said twisting flange including means for facilitating hanging of an object from it.

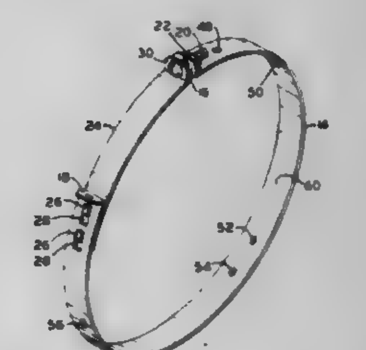
4,323,216
BALANCED SUPPORT PLATES
John P. Latimer, Newport News, Va., assignor to Deepsea Ventures, Inc., Gloucester Point, Va.
Filed Jan. 10, 1980, Ser. No. 111,165
Int. Cl.³ A47H *1/114*
U.S. Cl. 248—550 **13 Claims**

1. Support means for supporting relatively heavy weights from a horizontally extending, downwardly facing surface, the means comprising:
(a) a primary support platform;
(b) a plurality of load support members;
(c) connecting means for movably connecting the members to the primary support platform; and
(d) balancing means for substantially proportionately distributing the load among the plurality of support members, said balancing means comprising load-responsive connecting means operatively connected between at least one support member and the primary support platform, and sensing means for determining the instantaneous load applied to each support member, the load responsive connecting means causing the vertical movement of the support member, until the load is evenly distributed



among the support members, whereby net transverse stress is minimized on an object being supported.

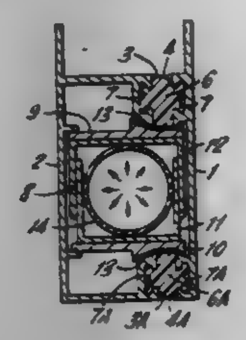
4,323,217
MOTOR MOUNTING ASSEMBLY INCLUDING EXTENDABLE BAND
Richard W. Dochterman, Fort Wayne, Ind., assignor to General Electric Company, Fort Wayne, Ind.
Continuation of Ser. No. 116,745, Jan. 30, 1980. This application Feb. 27, 1980, Ser. No. 125,037
Int. Cl.³ F16F *15/04*
U.S. Cl. 248—604 **11 Claims**



1. A mounting assembly for a motor comprising:
a flexible band capable of assuming a generally circular shape and having an inner circumferential surface,
a plurality of mounting arms interfitting with said band such that an end portion of each of the arms is disposed against the inner circumferential surface of the band and wherein the arms are circumferentially adjustable on said band,
locating means on each of said arms, and
locating means on said band capable of interfitting with the locating means on said arms for locating the arms on said band in various predetermined circumferential positions,
a first set of said locating means on said band having a first predetermined angular spacing when said band is disposed in a circular shaped having a first circumferential size and a second set of said locating means on the band having the same predetermined angular spacing when said band is disposed in a circular shape having a second circumferential size different than the first circumferential size, whereby said arms can be positioned at the same angular spacings for both circumferential sizes of said band.

4,323,218
INFLATABLE CORE FOR USE IN FORMING A THERMAL BREAK IN A METAL FRAME FOR A DOOR OR WINDOW

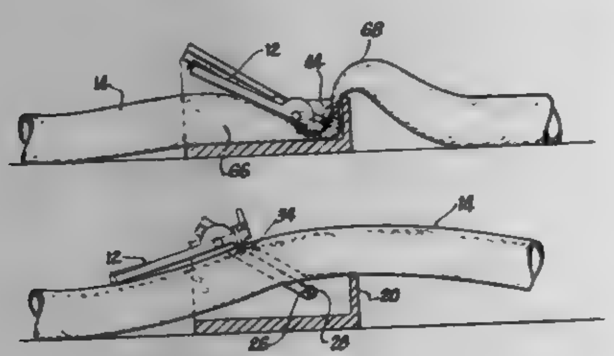
Douglas B. Plum, Nazeing, England, assignor to E & E Kaye Limited, England
Filed Aug. 22, 1980, Ser. No. 180,417
Int. Cl.³ B29C *1/12, 27/00*
U.S. Cl. 249—65 9 Claims



1. A jig for use in securing two elongate sections together by two spaced thermal barriers to form a hollow member, comprising a pair of elongate members to be located side-by-side within the sections between the locations where the thermal barriers are formed, each elongate member having mould base means extending along an outer side thereof to form with spaced opposing parts of the two elongate sections, mould cavities to receive thermal barrier material means to expand the pair of members of the jig laterally to engage the mould base means with the sections to form the required mould cavities and locating means on the members of the jig for engaging co-operating locating means on the sections on either side of the mould cavities to adjust the spacing of the sections in response to said lateral expansion of the jig to a requisite distance to create, after filling of the mould cavities with thermal barrier material, a hollow member of the required cross-sectional size.

4,323,219
AUTOMATIC HOSE CLAMP

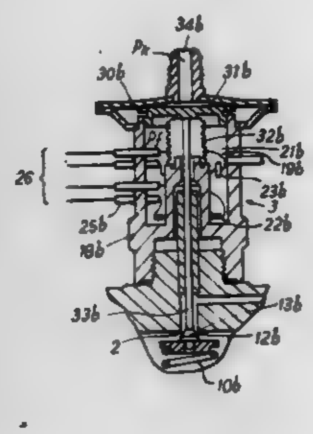
Jack M. Carlin, RFD Box 135, Del Mar, Calif. 92014
Filed May 19, 1980, Ser. No. 151,317
Int. Cl.³ F16L *55/14*
U.S. Cl. 251—5 12 Claims



1. An automatic hose clamp for engaging a hose, comprising:
(a) a clamp assembly for said hose defining upstream and downstream hose portions adjacent thereto and being operable between a first position substantially restricting the flow of fluid through said hose and a second position substantially clear of said hose;
(b) release means adjacent to the downstream portion of said hose and responsive to the expansive pressure of same as it changes from a flaccid to a turgid state to move said clamp assembly into its second position substantially clear of said hose to permit free flow there through;
(c) said clamp assembly including a casing defining a hose corridor and a clamp bar movable to compress said hose against said casing in said first position; and
(d) said bar defining two end portions and a central gate, and including an actuator for displacing said gate relative to said end portions to permit the trickling of a fluid through the hose adjacent said gate.

4,323,220
ACTUATING APPARATUS FOR ADJUSTING A MOVABLE ELEMENT, PARTICULARLY THE CLOSURE MEMBER OF A VALVE

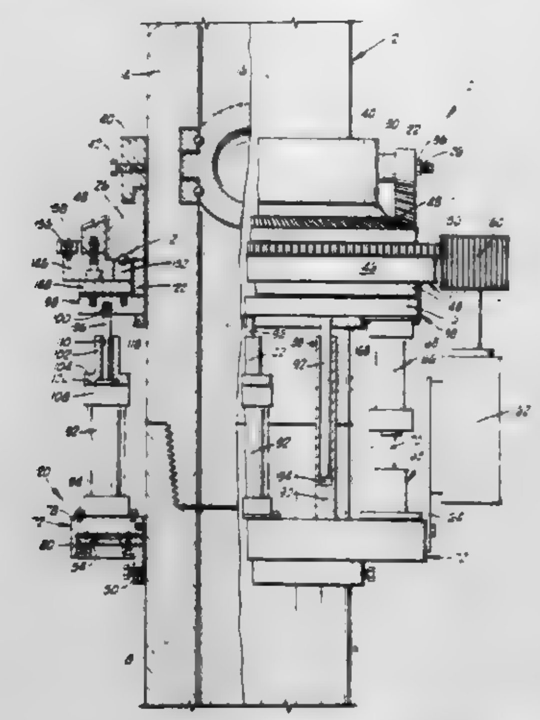
Zbigniew R. Huelle, Sonderborg, and Leif Nielsen, Nordborg, both of Denmark, assignors to Danfoss A/S, Nordborg, Denmark
Division of Ser. No. 956,573, Nov. 1, 1978, Pat. No. 4,258,899. This application Dec. 8, 1980, Ser. No. 214,567
Int. Cl.³ F16K *31/02;* F03G *7/06*
U.S. Cl. 251—11 1 Claim



1. A valve assembly, comprising a housing defining an inlet and an outlet and a valve opening therebetween, a closure element for said valve opening, said housing and said closure element forming an expansible operating chamber, bypass passage means in said housing having a first section extending from said inlet to said operating chamber and a second section extending from said operating chamber to said outlet, throttle means in said first section, pilot valve means including a valve element for modulatingly controlling fluid flow through said second section from said operating chamber to said outlet, said housing defining an expansible control chamber having an upper movable wall formed by a flat diaphragm, said control chamber having a cylindrically shaped upper internal surface, a piston plate attached to the underside of said diaphragm and slidingly and sealing engaging said upper internal surface of said control chamber, rod means extending between said piston plate and said valve element, sealing means between said rod means and the interior of said control chamber, a liquid/vapor type filling for said control chamber biasing said diaphragm in a direction to expand said control chamber and move said valve element in a closing direction, port means in said housing for admitting pressurized control fluid to the upper side of said diaphragm for contracting said control chamber and moving said valve element in an opening direction, electric heating means and temperature sensor means in said control chamber, electric contact means extending from outside said housing to the interior of said control chamber connected to said heating means and said temperature sensor means, and resilient biasing means in said operating chamber between said closure element and said valve element to provide a supplementary force relative to the pressure in said operating chamber, and control means connected to said electric control means for reading the temperature of said filling and for selectively turning on said heating means to cause said pilot valve means and said closure element to assume predetermined intermediate positions of stable equilibrium corresponding to a controlled range of pressures in said control chamber.

4,323,221
POWER ACTUATED VALVE

Hubert D. Krober, P.O. Box 338, Cheyenne, Okla. 73628, and Thomas Kelly, 1729 Westminster Pl., Oklahoma City, Okla. 73120
Continuation-in-part of Ser. No. 26,340, Apr. 2, 1979. This application Apr. 24, 1980, Ser. No. 143,328
Int. Cl.³ F16K *31/122, 31/53*
U.S. Cl. 251—58 21 Claims

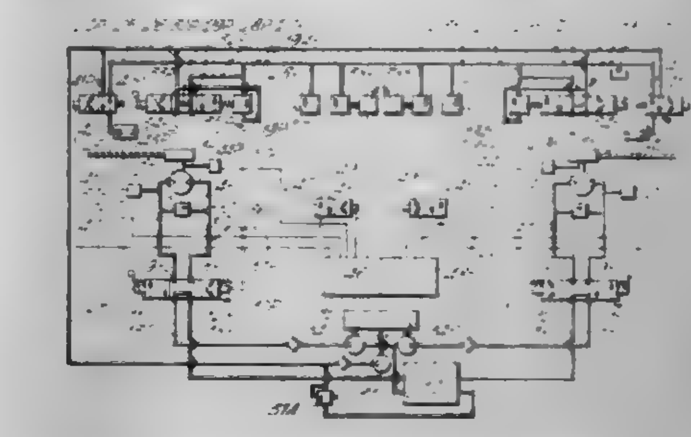


1. An actuator for a valve, said valve including a valve body having a valve member disposed in said valve body with a first gear attached to said valve member, said actuator comprising:
a second gear means for drivingly engaging said first gear to operate said valve;
moving means for selectively moving said second gear means into and out of engagement with said first gear;
power means for driving said second gear means;
support member means constructed for attachment to said valve body;
frame means, rotatingly connected to said support member means so that said valve body may rotate relative to said frame means, said frame means also being attached to said moving means; and
locking means for selectively locking said frame means to said support member means prior to the operation of said valve to prevent said support member means from rotating relative to said frame means, said locking means including biasing means for biasing said locking means toward an unlocked position.

4,323,222
CONTROL SYSTEMS FOR HYDRAULICALLY OPERATED ELEMENTS CIRCUITS OR SYSTEMS

David F. Dempster, 1 Coniston Ave., Fleetwood, Lancashire, and John J. Wilson, 68 Church Rd., Thornton-Cleveleys, Lancashire, both of England
Filed Jun. 12, 1979, Ser. No. 47,739
Claims priority, application United Kingdom, Jun. 13, 1978, 26823/78
Int. Cl.³ B66D *1/08, 1/50*
U.S. Cl. 254—274 10 Claims

1. A control system for controlling hydraulically operated winch assemblies whose cables, wires or the like are intended to be connected with the same trawl or other form of net used for sea fishing or for use with other objects or in situations in which it is required to maintain predetermined tensions in the cables, wires or the like, the control system including means for enabling a number of reference pressure levels each indicative of a particular required operational condition for the cables, wires or the like; such as paying-out, continuous pull, hauling-in; separate means for monitoring the operational conditions of the winch assemblies; means for comparing the results of the monitoring with an associated one of said reference pressure levels thereby to provide associated operational condition indication signals; and control means so responsive to such signals as to cause independent corresponding variation of the operational conditions of the relevant winch assembly; said control system further comprising interference response means responsive to interference to a required movement of the common object, the interference responsive means including means for enabling paying-out of a predetermined additional length of cables, wires or the like; means for detect-



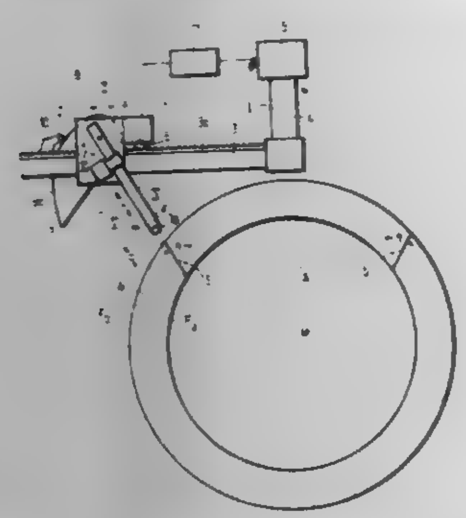
ing whether the interference still persists following the pay-out of the additional length of the cables, wires or the like and for arresting any such additional pay-out thereby to permit the tension conditions in the cables, wires or the like to increase to a predetermined higher level to enable application of increased force on the object connected thereto for the purposes of attempting forcibly to free the said object from the interference; and means for causing adjustment of the control means to allow further paying-out of the cable, wire or the like if said interference still persists so as to prevent said higher level being exceeded, and to provide an alarm signal indicative that the predetermined higher level had been attained and that the interference still persists.

4,323,223
APPARATUS FOR FORMING A CLOSED CUT SURFACE IN A WALL OF A WORKPIECE

Hans Noll, Leverkusen, Fed. Rep. of Germany, assignor to Maschinen- und Armaturen- J & W Müller, fabrik GmbH, Leverkusen, Fed. Rep. of Germany
Filed Mar. 23, 1981, Ser. No. 246,450
Claims priority, application Fed. Rep. of Germany, Mar. 24, 1980, 3011256
Int. Cl.³ B23K *7/04, 7/10*
U.S. Cl. 266—54 12 Claims

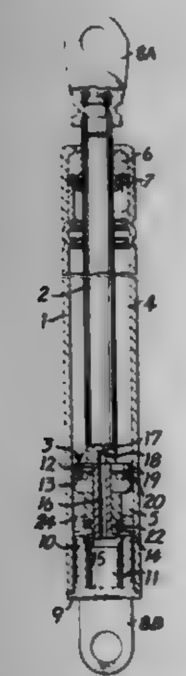
1. An apparatus for cutting a hole in a wall of a workpiece, said apparatus comprising
a carrier mounted for rotation about an axis perpendicular to said carrier;
a burner adjustably mounted on said carrier and having a tip at one end;
first means for moving said burner along said carrier radially of said axis;
a computer connected to said means for controlling said means as a function of the rotation of said burner about said axis; and
second means for tilting said burner in a predetermined

program in a plane coincident with said carrier and said axis as a function of the radial movement of said burner



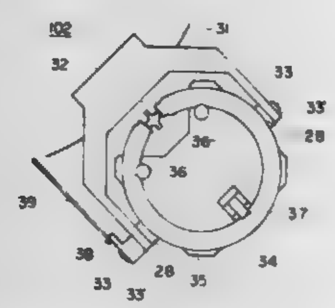
relative to said carrier whereby said tip is held at a constant distance from a surface of the workpiece wall.

4,323,224
GAS SPRING WITH MEANS FOR IMPEDING PISTON MOVEMENT AWAY FROM ONE TERMINAL POSITION
Herbert Freitag, Koblenz-Metternich, and Klaus Schnitzius, Rheinbrohl, both of Fed. Rep. of Germany, assignors to Stabilus GmbH, Koblenz-Neuendorf, Fed. Rep. of Germany
Continuation-in-part of Ser. No. 938,228, Aug. 30, 1978, abandoned, which is a division of Ser. No. 791,011, Apr. 26, 1977, Pat. No. 4,166,612. This application Jul. 9, 1979, Ser. No. 55,826
Claims priority, application Fed. Rep. of Germany, Apr. 30, 1976, 2619176
Int. Cl.³ F16F *9/10*
U.S. Cl. 267—64.12 **18 Claims**



1. A cylinder-and-piston device, comprising:
(a) a cylinder having an axis and defining a sealed cavity therein;
(b) a piston assembly axially movable in said cavity towards and away from a terminal position, and including:
(1) a piston axially dividing said cavity into first and second compartments;
(2) means defining a first passage extending axially across said piston for connecting said compartments when said assembly is remote from said terminal position;
(3) a piston rod fastened to said piston for joint movement therewith and extending from the piston through said first compartment and axially outward of said cavity;
(4) means defining a second passage extending axially across said piston for connecting said compartments; and
(5) valve means for closing said second passage, said valve means operating to close said second passage only in response to movement of said piston assembly away from said terminal position, said valve means opening said second passage in response to movement of said piston assembly towards said terminal position; and
(c) locking means carried in part by said cylinder in said cavity and in part by said piston assembly for closing said first passage when said piston assembly approaches said terminal position so that once said piston assembly is adjacent said terminal position, movement of said piston assembly away from said terminal position closes said second passage, thereby preventing fluid communication between said first and second compartments and thereby retaining said piston assembly adjacent said terminal position.

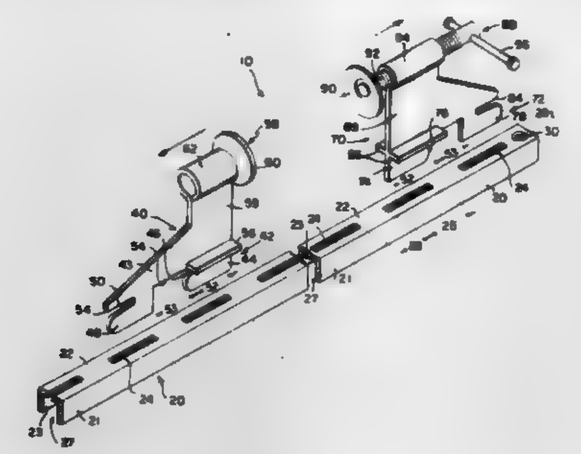
4,323,225
CIRCULAR FLUORESCENT LAMP MANUFACTURING APPARATUS
Shigeaki Saito, and Manabu Nakaoka, both of Ohme, Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Jun. 2, 1980, Ser. No. 155,161
Claims priority, application Japan, Aug. 24, 1979, 54-107263
Int. Cl.³ B25B *1/20*
U.S. Cl. 269—43 **6 Claims**



1. A circular fluorescent lamp manufacturing apparatus comprising: a turntable supported for intermittent rotation at a fixed pitch; a plurality of bearing supporters bi-furcated at their outer ends, each outer end containing a bearing, said bearing supporters equi-distantly arranged on the outer circumferential part of said turntable; a rotary shaft means supported for rotation in said bearings between said bi-furcated outer ends in each bearing supporter; a pair of circular glass tube supporters arranged in parallel back to back and joined to each of said rotary shaft means so as to be rotable therewith; holding means for holding a circular glass tube on each of said circular glass tube supporters; and rotating means for intermittently rotating each of said rotating shafts in its bearings to thereby rotate said circular glass tube supporters through a plurality of stop positions.

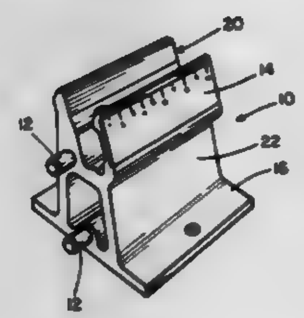
4,323,226
CLAMP ASSEMBLY
Sam Close, R. R. #5, Box 312, Lebanon, Ind. 46052
Filed Nov. 23, 1979, Ser. No. 96,831
Int. Cl.³ B25B *1/02*
U.S. Cl. 269—208 **21 Claims**

1. An assembly for clamping a workpiece comprising a bracket including a plurality of equally spaced perforations in parallel relationship to each other and two workpiece-retaining members, each retaining member including means cooperating with the perforations for removably securing the members to the bracket in one of a plurality of spaced relationships, the securing means of each retaining member including first and second fingers provided in a single plane and spaced apart in a relationship corresponding to the spaced relationship of the perforations, and two additional fingers, the two additional fingers being provided generally perpendicular to the plane of



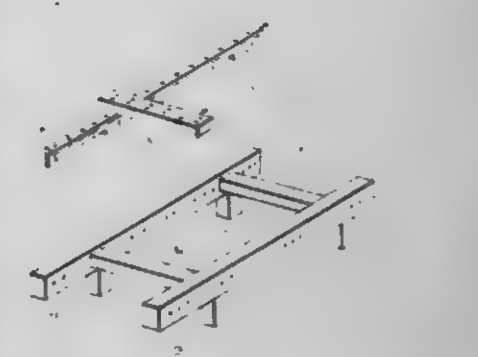
the first and second fingers on one side of the retaining members and being spaced apart in a relationship corresponding to the spaced relationship of the perforations to allow the retaining member to be secured generally perpendicular to the plane of the perforations of the bracket.

4,323,227
CONNECTOR FIXTURE
James A. Turek, LaGrange, Ill., assignor to Panduit Corp., Tinley Park, Ill.
Filed Feb. 22, 1980, Ser. No. 123,583
Int. Cl.³ B25B *1/00*
U.S. Cl. 269—254 R **8 Claims**



1. The combination of a fixture for holding a mass termination connector and said connector; said connector including a housing having a front wall and a back wall and further including a series of regularly spaced metal contact elements disposed intermediate said walls each of which comprises a substantially vertically disposed slotted plate extending generally parallel to said walls for displacing insulation of a conductor corresponding to said plate thereby to electrically terminate said conductor, said housing including first retention means disposed on the side of said plates remote from said back wall and second retention means disposed on the side of said plates remote from said front wall, said first and second retention means and said plates firmly retaining conductors prior to their termination by holding said conductors bent from their as-manufactured axial direction; said fixture comprising:
a base for mounting on a wiring board or the like; and
a channel-shaped holder joined to said base for holding said connector, said holder disposed tilted with respect to said base so that said plates are inclined relative to said wiring board whereby movement of a tensioned conductor extending between two connectors is resisted by corresponding inclined plates indenting the insulation of said conductor, said holder comprising a relatively rigid back support and a resilient front arm joined by a web, said front arm and back support holding said connector in an interference fit, said connector front wall including a plurality of spaced vertical ribs, said holder front arm carrying an inwardly directed tooth sized to fit between adjacent ribs to preclude substantial sideways movement of the mounted connector.

4,323,228
STRAIGHTENER FOR MOTOR VEHICLES
Horst Lutz, Ditzingen, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany
Filed Mar. 6, 1980, Ser. No. 127,635
Claims priority, application Fed. Rep. of Germany, Mar. 6, 1979, 2908672
Int. Cl.³ B21D *1/12;* **B23Q** *3/00*
U.S. Cl. 269—296 **10 Claims**

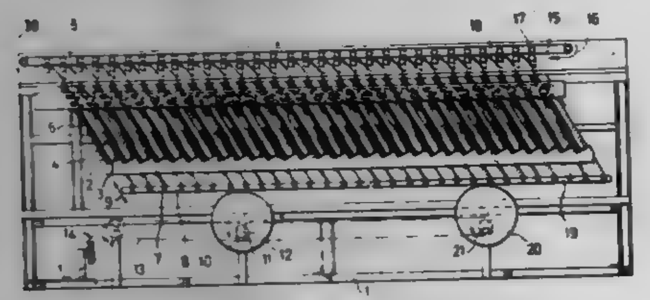


1. A straightener for motor vehicles, the straightener including a bench frame having a pair of spaced longitudinal support members interconnected by at least a pair of spaced transverse members, intermediate support members of a length at least substantially equal to that of the longitudinal support members, and cross support members constructed for supporting vehicle aligned adaptor elements, wherein said longitudinal support members are provided with a first hole pattern with a plurality of mounting holes provided at spaced intervals along the length of at least one lateral side thereof for enabling mounting of at least one of the cross support and intermediate support members, wherein said intermediate support members comprise an angle member having a first arm and a second arm disposed at a right angle with respect to each other, wherein said first arm of the intermediate support is provided with a plurality of holes arranged in said first hole pattern for mounting the intermediate support members parallel to the longitudinal support members and said second arm is provided with a plurality of holes arranged in a second hole pattern for enabling attachment of the cross support members thereto.

4,323,229
MACHINES FOR ASSEMBLING SHEETS OF LAMINAR MATERIAL SUCH AS PAPER
Roger R. Meus, Heusy, Belgium, assignor to Ordibel Sprl, Dolhain-Limbourg, Belgium
Continuation of Ser. No. 890,477, Mar. 27, 1978, abandoned, which is a continuation of Ser. No. 722,375, Sep. 13, 1976, abandoned. This application Dec. 5, 1979, Ser. No. 100,495
Claims priority, application Belgium, Sep. 15, 1975, 833436; Mar. 23, 1979, 839934
Int. Cl.³ B65H *39/04*
U.S. Cl. 270—58 **8 Claims**

1. In a machine for assembling sheets into bundles, said machine comprising:
a plurality of adjacent receptacles, for receiving a plurality of packets of sheets, arranged substantially parallel with each other, each of said packets contributing one of its sheets for each bundle to be assembled;
a plurality of reciprocating drive members for reciprocating in first and second reciprocating directions, each drive member being associated with one of said receptacles, each of said drive members for partially driving an upper sheet out of each of said packets received in said receptacles when moving in said first and second directions;

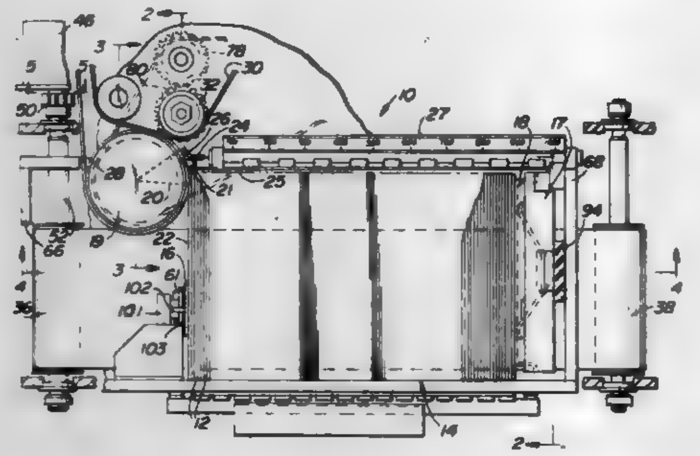
a single drive means for operating said plurality of reciprocating drive members;
a collecting member for simultaneously collecting said upper sheets when they have been partially driven out of said receptacles, said collecting member collecting said sheets as a train;
a receiving member for receiving said train of sheets and stacking said train as a bundle of assembled sheets, said machine being characterized by:
means dividing said plurality of drive members into at least two groups, said means including control means for selectively engaging said drive members in first, second and third alternative operating modes, in said first mode said control means engaging all groups of driving members with said drive means for simultaneous operating, in said second mode said control means engaging all groups of said drive members with said drive means for non-simultaneous operation, in said third mode said control means engaging less than all groups of said drive members with said drive means for operation, said non-simultaneous operation resulting in the provision of sub-trains of sheets for collection by said collecting member;



wherein each drive member has a longitudinal axis and a leading end, said leading end provided with a slider which is articulated on said leading end for rotation about a first axis substantially parallel to said longitudinal axis of said drive member and for rotation about a second axis substantially perpendicular to said longitudinal axis, said rotation about said second axis being between a contact position in which a part of said slider contacts said upper sheet when said drive member moves in said first direction and a non-driving position when said drive member moves in said second direction; and
wherein said part of said slider includes a friction member of rough material extending beyond said slider on a side remote from said drive member, and an electric nonconducting bulb fixed to said drive member, said bulb containing an electric switch comprising two metal blades, said slider further comprising an arm provided with a magnet, said arm rotating with said slider about said second axis, said magnet closing said switch by causing said blades to contact when said drive member is in said contact position and, alternatively, said switch being open and said blades not in contact when said drive member is in said non-driving position.

4,323,230
MACHINE FOR SEPARATING BILLS AND COUPONS
Robert P. Rising, Trumbull, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.
Filed Dec. 10, 1979, Ser. No. 102,184
Int. Cl.³ B65H *3/08*
U.S. Cl. 271—12 **13 Claims**

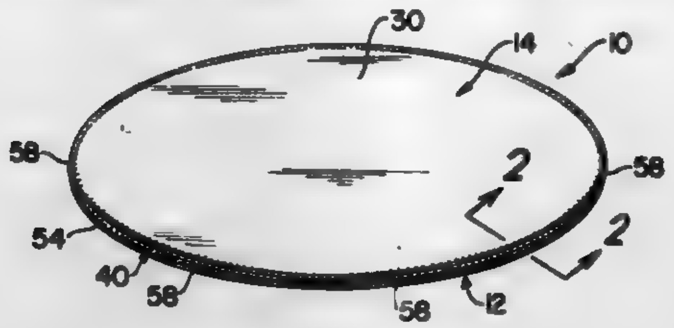
1. Apparatus for separating at high speeds one at a time bills and the like from a stack comprising:
means for holding a stack of bills including a first end element disposed to contact a portion of the outermost bill to be separated from said stack with the remaining portion having an exposed top portion allowing substantially zero force between the bills in said top portion of said stack to permit the application of a force thereto and a second end element disposed against the innermost bill of said stack and movable relative to said first end element,
means for maintaining said stack under low pressure as bills are removed therefrom including first and second pulleys, a belt disposed about said first and second pulleys, said belt having a first set of ends secured to opposite sides of said second element, and a second set of ends, spring means securing said second set of ends to each other, a source of electrical power, a pressure sensitive switch mechanically connected to said first end element actuated on when pressure exerted by said first end element falls

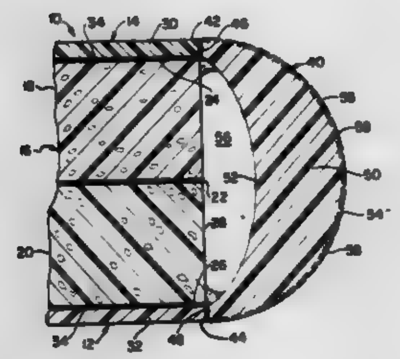


below a predetermined amount and off when pressure exerted by said first end element rises above said predetermined amount, motor means, said pressure sensitive switch electrically connected between said motor means and said source of electrical power for moving said second end element toward said first end element until said pressure sensitive switch is turned off,
means for applying a force only to said exposed portion of said outermost bill to separate it from said stack, and
means for transporting the separated bill away from said stack.

4,323,231
JUMPING BOARD
Robert M. Wilson, Vanceboro, N.C., assignor to Jump for Joy Ltd., Vanceboro, N.C.
Filed Nov. 7, 1980, Ser. No. 205,005
Int. Cl.³ A63B *5/18*
U.S. Cl. 272—65 **25 Claims**

1. A jumping board comprising:
a resiliently deformable member of foam material having first and second oppositely disposed planar surfaces and a peripheral edge surface joining said first and second surfaces about the periphery of said deformable member;
first and second planar sheet members disposed in surface contact with and secured to said first and second surfaces of said deformable member, said first and second planar sheet members each having peripheral edge portions;
a resiliently deformable peripheral edge member for the periphery of said deformable member, said peripheral edge member having first and second spaced end edge portions and an intermediate body portion intermediate said first and second end edge portions, said first and second end edge portions being joined to said peripheral edge portions of said first and second planar sheet members, respectively, about the entire periphery thereof, and said intermediate body portion being spaced from said peripheral edge surface of said deformable member to define a hollow area between said peripheral edge surface of said deformable member and said edge member about the periphery of said deformable member, said intermediate body portion being sufficiently rigid to maintain a substantially planar configuration for said jumping board when a person jumps thereon and being resiliently deformable to collapse and provide cushioning when a person jumps on said edge member of said jumping board.

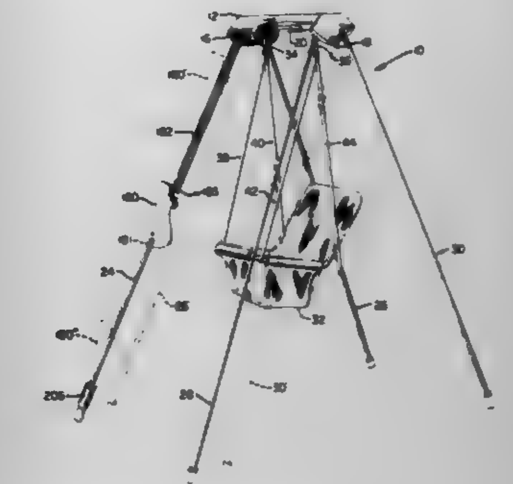




4,323,232
EXERCISING METHOD
George I. Terpening, Telford, Pa., assignor to Acro Matic, Inc., Warrington, Pa.
Filed Sep. 26, 1977, Ser. No. 836,401
Int. Cl.³ A63B *21/18, 21/30, 69/36, 69/38*
U.S. Cl. 272—68 **4 Claims**

1. A method of increasing the strength of a participant's grip involved in such activities as tennis or golf, by the application of localized pressure to the flexor capri ulnaris muscle at such participant's wrist just above the hand, comprising the steps of positioning a flexible, non-stretch strap about said wrist, which strap is provided with a protrusion mounted upon the inside of said strap for applying said localized pressure, applying pressure on said muscle by securing said strap in tension, and maintaining said tension by securing the free ends of said strap about said wrist during participation in said activities.

4,323,233
PENDULUM SWING
Albert W. Gebhard, Boulder, Colo., assignor to Gerico, Inc., Denver, Colo.
Continuation of Ser. No. 884,472, Mar. 8, 1978, abandoned. This application Aug. 6, 1980, Ser. No. 176,062
Int. Cl.³ A63G *9/16*
U.S. Cl. 272—86 **18 Claims**

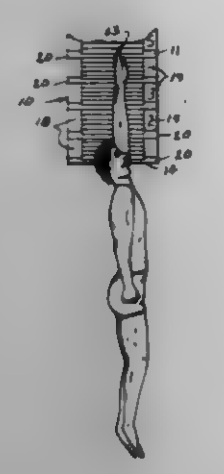


14. Swing apparatus, comprising:
a structural frame and support means for supporting said frame;
a main shaft extending transversely from the right to the left ends of said frame and journaled therein for rotation;
a right swing hanger and a left swing hanger, both of which are mounted between said ends of said frame, and a swing seat suspended from said right and left hangers;
actuator means for moving said swing in a pendulum motion, including weight-biased drive means having a drive weight for urging said shaft to rotate, escapement means for governing the rotation of said shaft, unidirectional clutch means for engaging said drive means with said shaft, and automatic rewind means for urging said drive means in a reverse rotational direction automatically in response to repositioning of said drive means to a position of potential energy usable for driving said swing; and
said drive means, escapement means, clutch means, and rewind means all being mounted concentric to a common longitudinal axis which is also common with the longitudinal axis of said main shaft.

4,323,234
JUMP REACH PHYSICAL TRAINING SYSTEM
Edna R. Glaese, 2243 Lakeside Dr., Moses Lake, Wash. 98837
Filed Sep. 2, 1980, Ser. No. 182,977
Int. Cl.³ A63B *5/16;* **G06G** *1/02*
U.S. Cl. 272—93 **4 Claims**

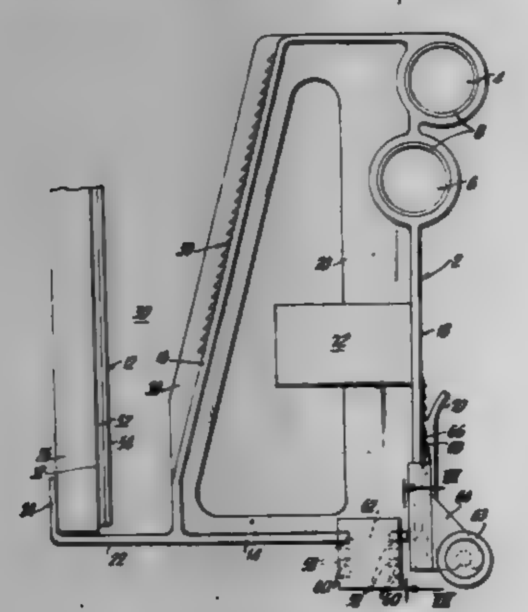
1. A physical training system for measuring vertical distance jumped by an individual observed by a recorder between a reference point reached by the individual from an erect standing position adjacent an elevated support and the highest point observed by the recorder that is reached by the individual upon jumping upwardly, comprising:
a board having a front surface extending between end edges;
means on the board for attaching the board to the elevated support;
a visually perceptible full size scale on the front surface of the board arranged in vertical equally spaced successive groups of individual color coded increments with a reference character for each successive group, intermediate the end edges;
wherein the individual colored increments of one group match the colored increments of the remaining groups;
calculator means adapted to be held and operated by the recorder, including a base member and an indicator mem-

ber mounted thereto, with a proportionally reduced scale on one of the members in generally spaced groups of increments of matching color and reduced proportion from the full size scale on the board and with reference characters thereon matching the reference characters on the board, for recording an increment corresponding to



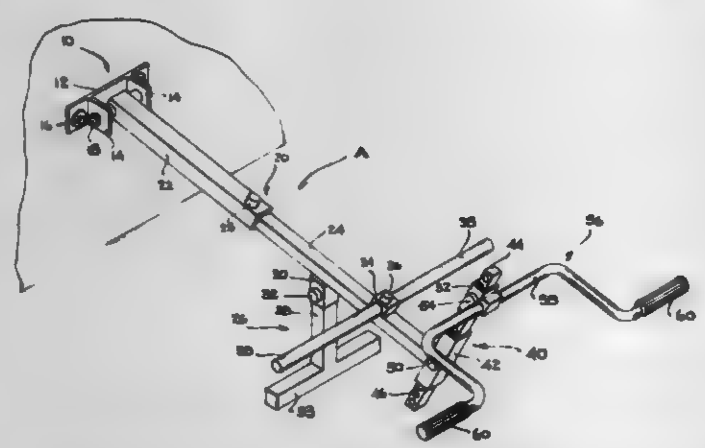
the increment on the board adjacent the reference point reached by the individual from the standing position, and for indicating to the recorder the vertical distance jumped as the recorder observes the highest increment on the board reached at the peak of the individual's jump and notes a corresponding increment on the calculator scale.

4,323,235
PHYSICAL TRAINING APPARATUS FOR HOLDING A PERSON'S FEET WHEN PERFORMING SIT-UPS
Gu ter Schwarz, Steinacherstr. 67, CH-8804 Au ZH, Switzerland
Filed Nov. 25, 1980, Ser. No. 210,291
Claims priority, application Switzerland, Feb. 14, 1980, 1109/80
Int. Cl.³ A63B *23/02*
U.S. Cl. 272—93 **14 Claims**



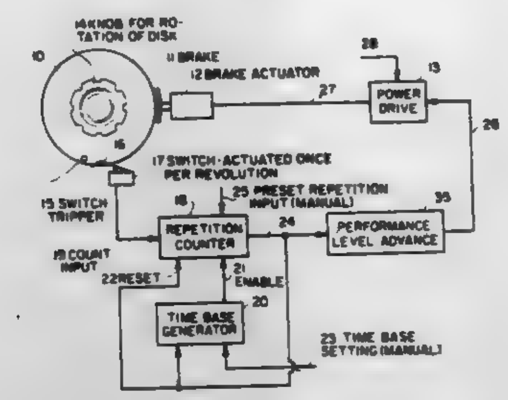
1. Physical training apparatus for holding a person's feet while the person lies on a horizontal floor to perform sit-ups and the feet are facing a closed, vertically extending door which forms an elongated opening between the bottom surface of the door and the floor, the apparatus being arranged to be fixed to the door, comprising a bar support member including a base portion which has a generally planar horizontal bottom surface to face the floor, said bar support member also having a first surface which extends vertically from the base portion and a second surface which is upwardly inclined from said base portion and converges toward said first surface to define an acute angle with a vertically extending line and to form a wedge-like space between said bar support member and the upwardly extending surface of the door, means on said bar support member for enabling at least one horizontally extending bar to be inserted in said bar support member to engage a person's feet, extension means extending horizontally from said second surface parallel to said bottom surface to pass through the opening between the door and the floor to engage the door for preventing movement of said bar support member in the direction away from the door, and a locking member for insertion in the wedge-like space to engage said second surface of said bar support member to fix the bar support member against movement in the direction toward the door when said locking member is at a locking position.

4,323,236
BODY EXERCISING WEIGHT APPARATUS
William Szabo, 8138 Foothill Blvd., Sunland, Calif. 91040
Filed Sep. 26, 1979, Ser. No. 79,095
Int. Cl.³ A63B *21/06*
U.S. Cl. 272—117 **14 Claims**



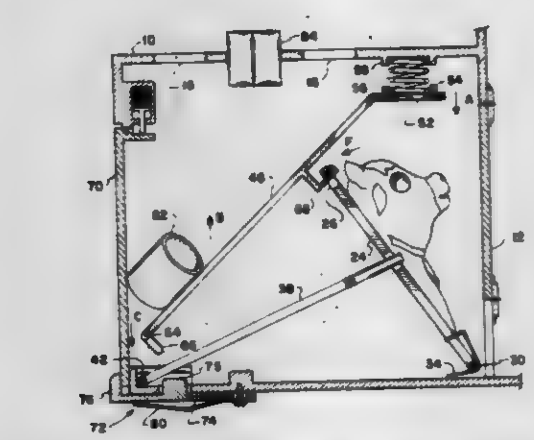
1. A wall mountable body exercising apparatus comprising:
(a) a lever arm having first and second opposite ends;
(b) mounting means on a first end of said lever arm for pivotally mounting only said lever arm of said apparatus to a permanent relatively vertically positioned wall, said mounting means being the only portion of said apparatus mounted to any permanent structure such that the apparatus is pivotally mounted through only one pivot point,
(c) weight retaining means on said lever arm for removably retaining bar-bell type weights;
(d) a leg member depending from said lever arm and being engagable with a permanent relatively horizontally positioned floor to control the lowermost limit of movement of said lever arm;
(e) adjustable positioning means at the second end of said lever arm, and
(f) handle means secured to said adjustable positioning means at the second end of said lever arm for engagement by the hands of a user of said body exercising apparatus so that a user may attempt to lift the second end of the lever arm about the pivot point at the mounting means against one or more bar-bell type weights placed on said weight retaining means, said adjustable positioning means permitting the height of said handle means to be adjustably positioned relative to said lever arm.

4,323,237
ADAPTIVE EXERCISE APPARATUS
Bernard R. Jungerwirth, Rego Park, N.Y., assignor to Coats and Clark, Inc., Stamford, Conn.
Filed Aug. 30, 1979, Ser. No. 71,057
Int. Cl.³ A63B *21/24*
U.S. Cl. 272—131 **13 Claims**



1. An adaptive method for subjecting an individual to progressive exercise, comprising the steps of:
establishing the number of repetitions of an exercise to be performed against a resistance means in a desired time interval;
setting the magnitude of said resistance means and the length of said desired time interval at predetermined initial values;
sensing performance by said individual;
generating a level met signal as a function of sensed performance to indicate a first level of accomplishment if and when said established number of repetitions is performed within said desired time interval;
setting a higher level performance objective responsive to said level met signal by incrementally increasing the magnitude of said resistance means to a predetermined value greater than said initial value; and
thereafter repeating said level met signal generating and resistance means magnitude increasing steps to indicate and set successively higher levels of accomplishment and performance objectives respectively.

4,323,238
ACTION TOY REQUIRING SPACE PERCEPTION AND EYE/HAND COORDINATION
Hans E. I. Jernstrom, Barrington; Thomas L. Long, Arlington Heights, and Ronald Liedtke, Addison, all of Ill., assignors to Jernstrom Design Workshop, Inc., Palatine, Ill.
Filed Feb. 23, 1981, Ser. No. 236,790
Int. Cl.³ A63F *9/06*
U.S. Cl. 273—1 G **11 Claims**



1. A toy comprising an enclosure pierced by a plurality of holes of distinctive geometry, a plurality of objects shaped to pass through individually associated ones of said distinctive holes, balance means inside said housing for receiving said objects as they pass through said holes, said balance means balancing the total weight of the received objects against a spring bias, and means responsive to a cumulative weight of all objects on said balancing means exceeding said bias for performing a surprise function with said toy.

12. A method of entertaining comprising the steps of:
(a) cocking a toy against at least one spring bias;
(b) matching distinctive geometrical shapes of a plurality of different objects and holes;
(c) detecting when a predetermined number of said shapes are matched;
(d) releasing said cocked toy to enable movement responsive to said spring bias; and
(e) performing a surprising display function responsive to said movement.

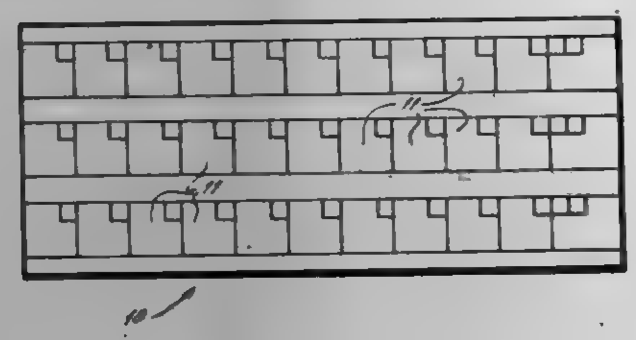
4,323,239
BASEBALL BAT
Junichi Ishii, 3073, Kamihongo, Matsudo City, Japan
Filed Apr. 8, 1980, Ser. No. 138,042
Claims priority, application Japan, Apr. 17, 1979, 54-46981
Int. Cl.³ A63B *59/06*
U.S. Cl. 273—72 A **7 Claims**

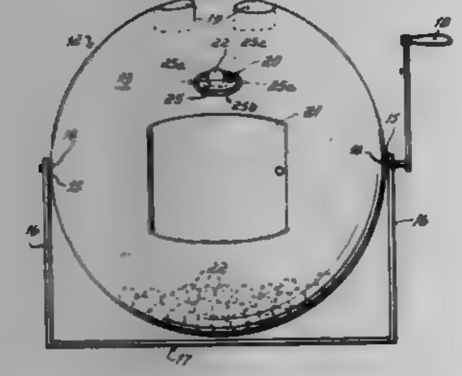
1. In a hollow baseball bat made of a rigid material and having an impact portion, a grip portion and a flexible bending portion positioned between said impact and grip portions and joining these two portions, the improvement comprising; a circular sectional reinforcing member having a tapered cavity extending along its longitudinal axis from an end face of said member on a side of said impact portion of said baseball bat toward said grip portion, said reinforcing member having a slightly bulged surface formed at its outer circumference on an end portion on the side of said impact portion, and the wall thickness of an end portion of said reinforcing member formed having said tapered cavity gradually reducing toward said impact portion in conjunction with said tapered cavity, said reinforcing member being disposed in said grip and flexible bending portions such that said reinforcing member is in close contact with at least an inner surface of said grip portion but forms a gap gradually diverging toward said impact portion between at least a part of an inner surface of said bending portion and an outer circumference of the end portion of said reinforcing member.

4,323,240
BOWLING GAME
Charles G. Stewart; Nellie R. Stewart, both of 8465 Village Dr.; Floyd E. Hicks, and Maxine Hicks, both of 43 New Uri, all of, Florence, Ky. 41042
Filed Aug. 20, 1980, Ser. No. 179,776
Int. Cl.³ A63F *7/06, 3/06*
U.S. Cl. 273—85 R **3 Claims**

1. A bowling game comprising:
a variety of color-coded scorecards having a format similar to the format of a scoresheet for scoring a game of bowling, one of said scoresheets being distributed to each player among a group of players;
a number of tokens, ten of said tokens being colored each of said variety of different colors, each of said tokens of the same color being numbered with one of the numerals "1" to "10";
a bin into which said tokens are deposited for enabling a caller to randomly select said tokens from said bin for calling the color and number of each said randomly selected token;

whereby each time that the color called corresponds to the color of a player's scorecard, said player writes the number called as the first or second ball in a frame of one game on said player's scorecard, said game being ended when one player completes all frames of said game, all other players being required to complete unscored and partially scored frames by marking gutter balls, each player total-





ing the score of said game in accordance with the rules of bowling, so that the player with the highest score wins said game; and

pegs and a tot board having holes into which said caller inserts said pegs for recording the colors and numbers of said randomly selected tokens as said game is played so that players' scorecards can be verified.

4,323,241

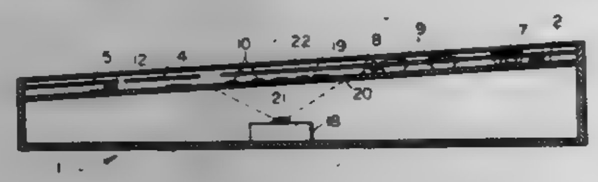
PINBALL GAME APPARATUS

Reinhard Deutsch, Gräfstrasse 47, 6000 Frankfurt am Main, Fed. Rep. of Germany

Filed Jun. 15, 1980, Ser. No. 178,288

Int. Cl.³ A63F *7/00*

U.S. Cl. 273—121 A **4 Claims**



1. A pinball game apparatus with a housing of which the upper face is designed as a playing area with targets for a playing ball, at least one movable target being provided, an electrical system, said target forming the actuation means of an actuation switch in said electrical system, the playing area having an opening sealed by a matte pane, an image reproducing means, said image reproducing means being within said housing and including means for projecting different images onto said matte pane and a change stepper motor, said motor being in said electrical system and being adapted to change the image projected, each step of said motor being actuated by said switch.

4,323,242

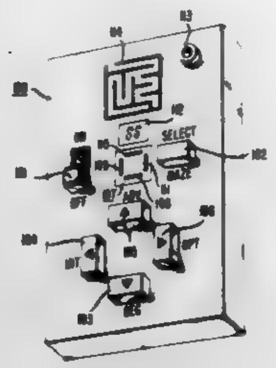
ELECTRONIC MAZE GAME

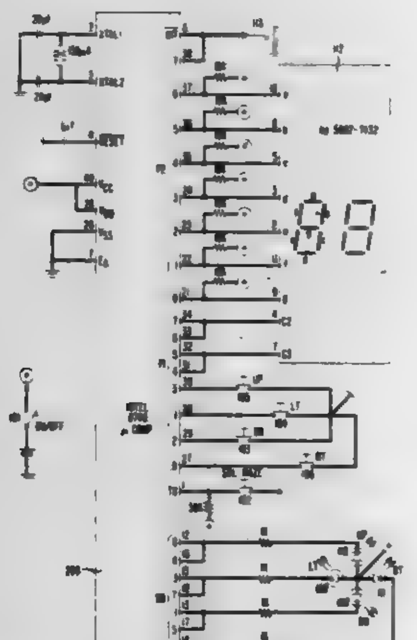
Peter E. Rosenfeld, 149 Mountain Ave., Berkeley Heights, N.J. 07922

Filed Sep. 23, 1980, Ser. No. 189,583

Int. Cl.³ A63F *9/06*

U.S. Cl. 273—153 R **8 Claims**





1. An electronic maze game comprising:

means for storing an electronic representation of a maze of at least two dimensions;

means for storing an electronic representation of a player's present position in said maze;

means coupled to said means for storing an electronic representation of a maze for displaying for said present position the presence or absence of a wall in the forward direction and the backward direction for each dimension of the maze said displaying means including an array of pairs of display elements, one pair for each dimension of the maze;

means for moving from said present position to an adjacent position in said maze; and

means for testing for the validity of a move by testing for the presence of a wall in the direction of the move.

8. A method of operating an electronic maze game comprising the steps of:

storing an electronic representation of a maze of at least two dimentions;

storing an electronic representation of a player's present position in said maze;

displaying for said present position the presence or absence of a wall in the forward direction and the backward direction by an array of pairs of display elements, one pair for each dimension of the maze;

signifying an intended move from said present position to an adjacent position in said maze; and

testing for the validity of said intended move by testing for the presence of a wall in the direction of the move.

4,323,243

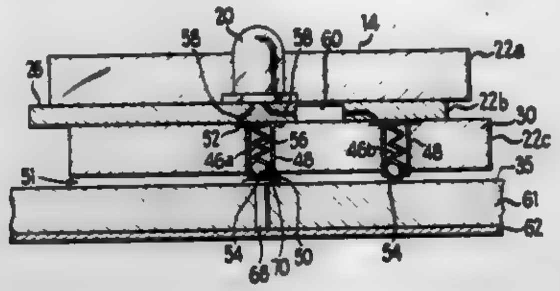
ELECTRICAL BOARD GAME DEVICE

Steven P. Hanson, Rancho Palos Verdes, Calif.; Howard J. Morrison, Deerfield, and Douglas P. Montague, Chicago, both of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Oct. 20, 1980, Ser. No. 199,013

Int. Cl.³ A63F *9/08*

U.S. Cl. 273—153 S **11 Claims**



3. A board game device comprising:

a housing having a playing surface with an electrical circuit including a plurality of separated electrical contact pairs located at spaced positions across said playing surface, a source of potential being connectable across said contact pairs;

a plurality of elements retained on said playing surface on said housing in an abutting matrix for sliding movement relative to said housing and to each other along said surface in only two perpendicular paths, each element including an actuator means uniquely arranged on said element for changing the state of conduction across a contact pair when the element is located in a predetermined position on the playing surface; and

indicating means responsive to the changed state of conduction for indicating when each said element has been located in said predetermined position on said playing surface.

4,323,244

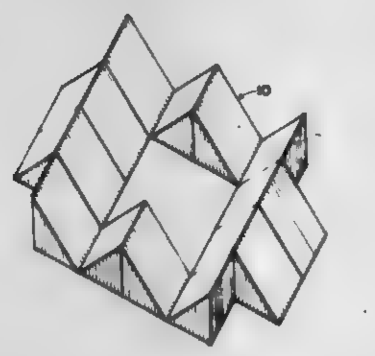
SOLID GEOMETRICAL PUZZLE METHOD OF ASSEMBLING MEANS

David W. Busing, 169 Mamaroneck Ave., White Plains, N.Y. 10601

Continuation-in-part of Ser. No. 947,465, Dec. 2, 1978, abandoned. This application Dec. 17, 1979, Ser. No. 103,901

Int. Cl.³ A63F *9/08*

U.S. Cl. 273—155 **6 Claims**



1. The method of assembling a solid geometrical puzzle comprising the steps of:

providing a puzzle surface of separate suitable configurations comprising a plurality of puzzle components and placing said puzzle components in a positioning jig,

applying a preprinted film to said surface to form hinges in predetermined locations between said components and specific graphic representations on the surface of said components, and

cutting the connection between particular components where hinges are not required and removing said puzzle from the jig in an assembled condition.

4. A solid geometrical puzzle comprising:

sixteen basic components, each having two triangular faces and three rectangular faces and hinged along two edges to adjacent components to form a continuous, closed chain of components in a configuration as illustrated in FIGS. 3 and 4 and wherein the rectangular faces comprise a square lower face, a square rear face at 90° to the lower face and an elongated rectangular face joining the free edges of the lower and rear face and the triangular faces comprise end isosceles triangles joining the free edges of the square and rectangular faces, said component size and hinging being such that the components may be folded to form a cube, an elongated rectangular solid, a flat rectangular solid and numerous irregular solids and wherein the components may be folded so that normally outside faces of the cube configuration may be totally concealed internally by folding to another rectangular solid form.

4,323,245

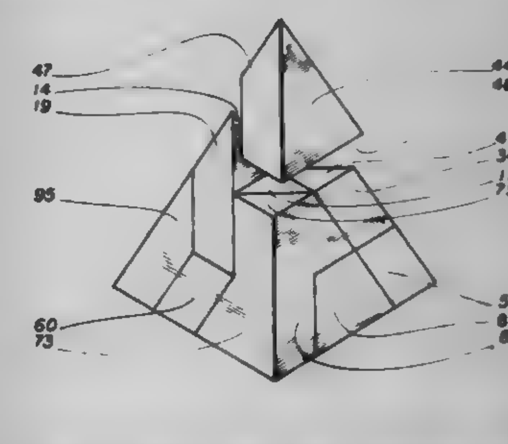
AMUSEMENT DEVICE FORMED OF A PLURALITY OF DIFFERENTLY SHAPED INTERFITTING MODULAR UNITS

Robert D. Beaman, 608 Beech Dr., Newport News, Va. 23601

Filed Feb. 24, 1981, Ser. No. 237,662

Int. Cl.³ A63F *9/12*

U.S. Cl. 273—157 R **29 Claims**



1. A three-dimensional amusement apparatus comprising a first plurality of three-dimensional modular units, each having a different shape defined by a plurality of exterior planar surfaces and being formed by an integral combination of at least one equilateral solid tetrahedron in face to face contact with at least one equilateral solid octrahedron, the planar faces of each said solid tetrahedron having the same size and shape as the planar faces of each said solid octrahedron, said plurality of modular units being shaped to permit their interengagement to form a first tetrahedron having a predetermined size.

4,323,246

GOLF PRACTICE PUTTING AID

George M. Nehrbas, Jr., 218 Pershing Ave., Bethpage, N.Y. 11714

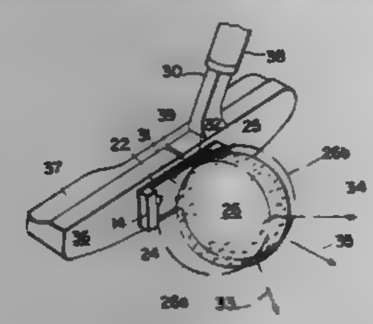
Filed Sep. 28, 1979, Ser. No. 79,835

Int. Cl.³ A63B *69/36*

U.S. Cl. 273—186 A **13 Claims**

1. A golf practice putting aid for removably attaching to the substantially flat striking surface of the putter head of a putter normally used in playing a round of golf comprising a transversely extending backing member, the backing member having transversely spaced first and second end portions, spaced top and bottom portions and front and rear surfaces, first and second spaced upright rail means carried by the said front surface of the backing member and running continuously between the said top and bottom portions of the backing member, the first rail means extending substantially uniformly outward from the said front surface on the first end portion of the backing member, the second rail means extending substantially

uniformly outward from the said front surface on the second end portion of the backing member, the first rail means including elongated upright first angular surface means and the second rail means including elongated upright second angular surface means, the first and second angular surface means extending continuously between the said top and bottom portions of the backing member and being spaced substantially uniformly outward from the said front surface of the backing member, the first and second angular surface means also being substantially parallel and spaced outward from the front surface of the backing member at substantially the same distance, the first and second angular surface means being spaced apart transversely a distance sufficient to provide an upright medial surface area on the said front surface between the first and second rail means of a width which may be contacted with the circumferential surface of a golf ball without also contacting either of the first and second angular surface means, the said medial surface area on the front surface extending between the said top and bottom portions of the backing member and having a width between 3/16 inch and ⅜ inch, the first and second angular surface means being positioned on the first and second rail means respectively whereby the circumferential surface of



a golf ball contacting the said front surface outside of the said medial surface area also contacts at least one on the first and second angular surface means, the said rear surface of the backing member and the said medial surface area being substantially flat and parallel whereby the said rear surface conforms to the substantially flat striking face of a putter head and the said medial surface area serves as an extension of the striking face of the putter head that is visible to a golfer when practice putting, the said first and second angular surface means being substantially parallel to the said rear surface and also substantially the same distance therefrom and from each other whereby the width of the said medial surface area does not vary substantially, a tacky pressure sensitive adhesive carried by the said rear surface for securely but removably attaching the entire rear surface area thereof to the said striking face of a putter head whereby the attached putting aid does not noticeably vibrate and has a solid feel when the geometric center of the said medial surface area is struck by a golf ball, and the said putting aid being sufficiently light in weight so that it does not added noticeable weight to the said putter head and also does not noticeably change the center of gravity of the said putter head.

4,323,247
GOLF BALL COVER
Leonidas A. Keches, New Bedford; Sharon R. Goggin, Acushnet; Edward J. Isaac, Westport, and Ronald J. Rogers, New Bedford, all of Mass., assignors to Acushnet Company, New Bedford, Mass.
Filed Jan. 19, 1981, Ser. No. 226,170
Int. Cl.³ A63B *37/12*
U.S. Cl. 273—235 R 10 Claims

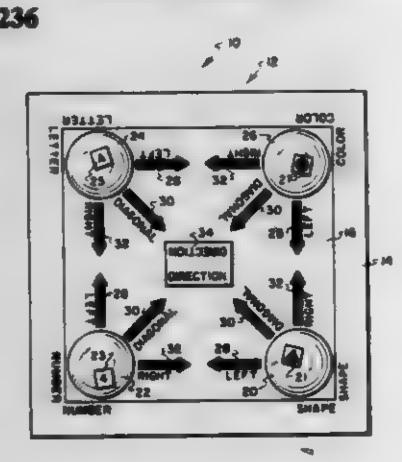
1. In a golf ball comprising a core and a cover, the improvement comprising at least about 90% of said cover being composed of a triblend as follows:

(a) a first ionomer resin which is a copolymer of ethylene with methacrylic acid and having 34.8% free acid, about 9.5% total acid, about 2.1% sodium ions and an average melt flow index of about 0.9, said first resin being present in an amount of about 35% to about 60% by weight of the triblend;

(b) a second ionomer resin which is a copolymer of ethylene with methacrylic acid with about 48.9% free acid, about 1.8% zinc and an average melt flow index of about 0.7, said second resin being present in an amount of from about 15% to about 50% by weight of the triblend; and

(c) a third ionomer resin which is a copolymer of ethylene with methacrylic acid having about 96.5% free acid, about 1.2% zinc and an average melt flow index of about 14, said third resin being present in the amount of from about 5% to about 35% by weight of the triblend.

4,323,248
BOARD GAME EMPLOYING CHANCE-TAKING MEANS
Salvatore L. Zingale, 12529 Longmead St., Cleveland, Ohio 44135
Filed Jan. 17, 1980, Ser. No. 113,063
Int. Cl.³ A63F *3/00*
U.S. Cl. 273—236 6 Claims



1. Game apparatus comprising, in combination:

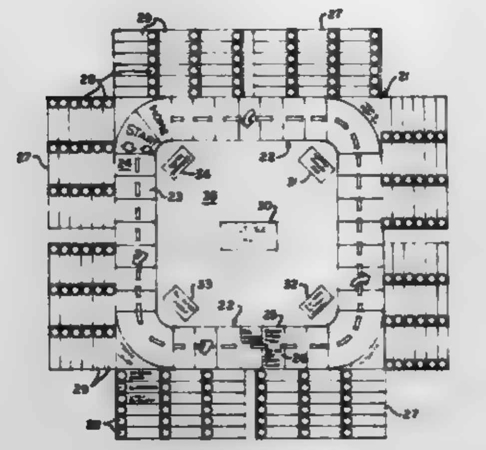
(a) a planar game board having four corners, the board having direction-indicating indicia for indicating possible player movements to be made away from the corners of the board, the direction-indicating indicia including, at each corner of the board, first and second arrows pointing to each adjacent corner of the board, and a third arrow pointing to the diagonally opposite corner of the board, the first, second, and third arrows being separately identified;

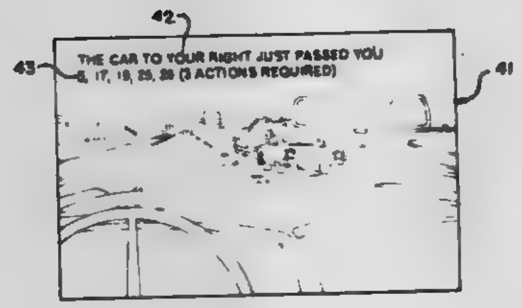
(b) direction-ordering apparatus for directing player movements away from the corners of the board in a given direction, the direction-ordering apparatus including a plurality of so-called directional cards placed at or near the center of the board, each directional card having indicia corresponding to one of the direction-indicating indicia, a total of 36 directional cards being provided;

(c) chance-taking means included as part of the board, a separate chance-taking means being positioned at or near each corner of the board and adjacent the direction-indicating indicia, each chance-taking means permitting items within a different category of shape, number, letter, or color to be displayed at random, a given chance-taking means displaying different items within the same category, each chance-taking means including a die having six surfaces, each surface having a different indication of a common category of shape, number, letter, or color; and,

(d) a plurality of play cards having indicia on one surface, the indicia corresponding to the indications of shape, number, letter, and color included as part of the chance-taking means, a total of 48 play cards being provided for possible indicated items determined by the chance-taking means, two play cards corresponding to the items displayed on each die surface.

4,323,249
BOARD GAME APPARATUS
Hugh D. Brady, P.O. Box 607, Prescott, Ariz. 86301
Filed Jun. 16, 1980, Ser. No. 159,966
Int. Cl.³ A63F *3/00, 9/18*
U.S. Cl. 273—249 10 Claims





1. Board game apparatus comprising:

(a) one or more playing boards including playing areas;

(b) means dividing said playing areas into at least two sectors;

(c) the first said sector being a "driving" track around the center of a said board, said driving track including a plurality of "driving" lanes;

(d) first means partitioning each said driving lane into a plurality of first discrete areas, the number of said first discrete areas in each said lane being equal;

(e) second means partitioning the second said sector into a plurality of second discrete areas;

(f) a plurality of second indicia means that identify each said second discrete area, each said second indicia means including a unique tactic number in association with a unique described "defensive driving" tactic;

(g) a first plurality of illustrations, each said illustration depicting a unique vehicle traffic driving situation from the point of view of the driver, and, in association with each said illustration, a listing of the corresponding preferred "defensive driving" tactics called for by said unique vehicle traffic driving situation;

(h) at least two pluralities of game instruction cards, each plurality being adapted to be shuffled and stacked;

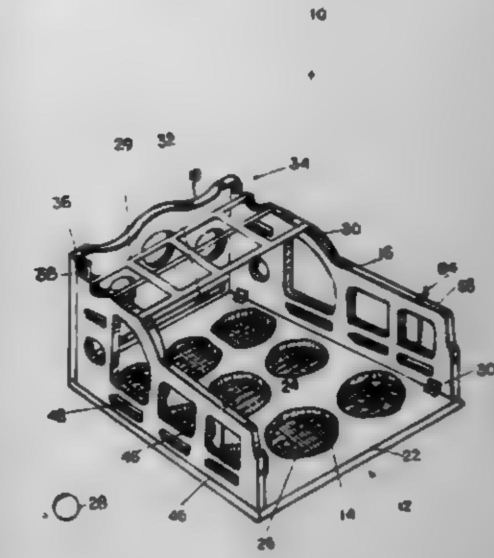
(i) a plurality of playing pieces adapted to be received in said first discrete areas, each said playing piece being visually distinguishable from each other said playing piece;

(j) a plurality of tokens adapted to be received in said second discrete areas;

(k) token indicia means for uniquely identifying and numbering each said token consecutively; and

(l) at least one die.

4,323,250
TARGET GAME
Delbert B. Lansberry, 211 S. Trask, Tampa, Fla. 33609
Filed Dec. 18, 1978, Ser. No. 970,452
Int. Cl.³ A63F *7/00*; A63B *63/04*
U.S. Cl. 273—400 19 Claims



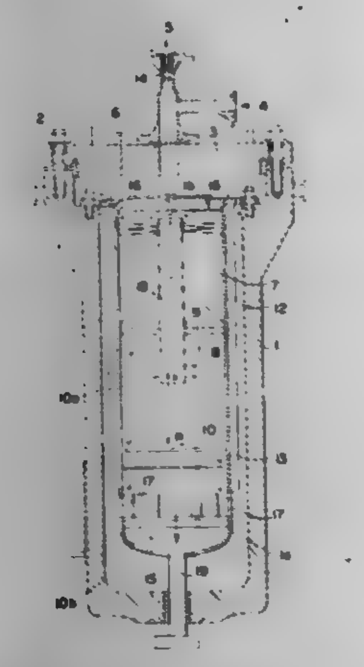
1. A target game comprised of ball missiles and a target element divided into a plurality of scoring sectors; a mesh attached to the underside of said scoring sectors; side frame members movable between an open and closed position attached to opposite sides of said scoring sectors a rear gate assembly movable between an open and closed position attached to the rear of said plurality of scoring sectors; and a first lock means to secure said side frame members to said rear gate assembly when said side frame members and said rear gate assembly are in said open position, said side frame members and said rear gate assembly cooperatively forming a retainer means to secure said ball missiles therein when said side frame members and said rear gate assembly are in said closed position, said retainer means comprises a plurality of apertures formed in said side frame members to form a seat to receive the lower portion of said ball missiles and a corresponding plurality of apertures formed in said rear gate assembly to receive the mid-portion of said ball missiles when in said closed position.

4,323,251
TARGET HOLDER
William A. Loveland, 904 66th. Ave. West, Bradenton, Fla. 33507; James S. Dukes, 8403 Byron La., Sarasota, Fla. 33580, and Gregory W. Sparks, 3701 19th St. West, Bradenton, Fla. 33505
Filed Feb. 13, 1980, Ser. No. 121,059
Int. Cl.³ F41J *1/10*
U.S. Cl. 273—407 2 Claims

1. A target holder for mounting a target comprising:
an elongated pole having one end terminating in a pointed end portion;

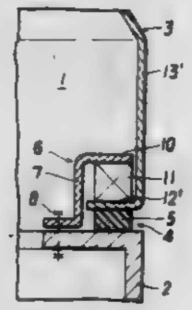
a cap secured to the other end of the elongated pole, said cap having two openings at a top end thereof;
a substantially circular metal frame with two radially outwardly projecting arm sections terminating in a bent end portion, said outwardly projecting end members disposed through the openings in said cap and restrained by the tension provided by the substantially circular frame; and
a plurality of means for securing the target, each means for securing being slidably mounted on the circular metal frame when the target is not secured, and being frictionally fixed to the circular metal frame when the target is secured, and said means for securing also having an integral piece of material having a first projecting member, a helical section that is wound around the frame with a predetermined minimal clearance at a predetermined level of compression, and a second projecting member, said first and second members being disposed on the same side of the frame and capable of being angularly displaced when the target is mounted so that the first projecting member originates below a plane defined by the target and terminates above the plane, and said second projecting member originates above the plane and terminates below the plane whereby the two projecting members are compresssed against the target by a spring force generated by the helical section and the helical section is reduced in inside diameter and is frictionally fixed to the frame, whereby targets of different sizes can be mounted by sliding each means for securing to a desired position prior to mounting the target.

4,323,252
GLAND SEAL SYSTEM FOR USE WITH A METHANATION REACTOR
Vincenzo Lagana', Milan; Francesco Saviano, Segrate, and Stanislad Ferrantino, San Donato Milanese, all of Italy, assignors to Snamprogetti S.p.A., Milan, Italy
Division of Ser. No. 893,347, Apr. 4, 1978, Pat. No. 4,252,771. This application May 8, 1980, Ser. No. 148,193
Claims priority, application Italy, Apr. 15, 1977, 22499 A/77
Int. Cl.³ F16J *15/14;* B01J *8/02;* C07C *29/16*
U.S. Cl. 277—12 **1 Claim**



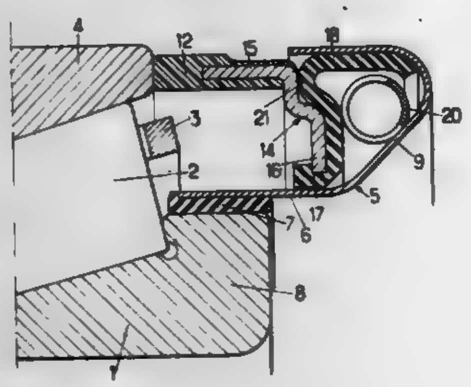
1. In a methanation reactor having a reactor casing, an opening at one end of said casing, a discharge tube positioned within said opening for passing reacted gases from the interior of the reactor casing to the exterior thereof and seal means for sealing said tube at its point of passage through said reactor opening, the improvement of seal means comprising upper sealing means positioned in encircled relationship around the discharge tube at the exit point of said tube through the opening in said casing to form a tight seal between the opening and the tube, lower sealing means encircling said discharge tube in spaced relationship from said upper sealing means, bushing means in encircling relationship around said tube and positioned between said upper and lower sealing means, said bushing means having channel means formed therein through which water can enter and thereafter pass through and exit from said bushing means at a pressure greater than the internal pressure within the reactor casing and means for maintaining said upper and lower sealing means and said bushing means in a compressed state between the reactor casing opening and the discharge tube.

4,323,253
NOISE-INSULATING ENCLOSURE SEAL
Colin T. Pomfret, Graz, Austria, assignor to Hans List, Graz, Austria
Filed Jul. 21, 1980, Ser. No. 169,516
Claims priority, application Austria, Aug. 6, 1979, 5383/79
Int. Cl.³ F16J *15/06;* B65D *53/06*
U.S. Cl. 277—12 **10 Claims**



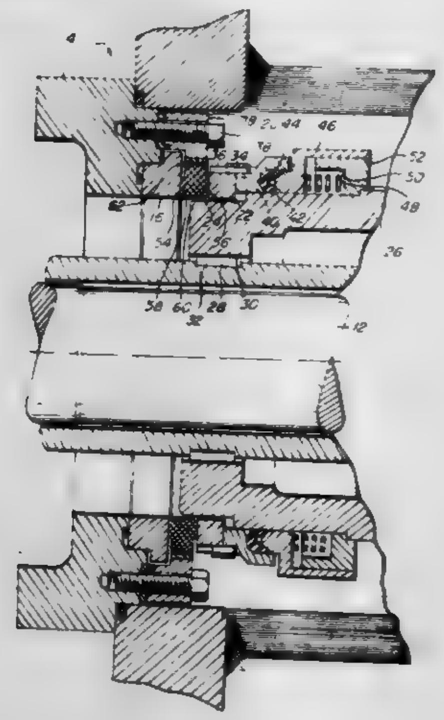
1. A sealing element for a dividing gap between two parts which at least partly enclose a sealed space, comprising an elastic gasket element fitted in said gap, and a connecting device for connecting said two parts together, wherein an elastic initial tension element is provided between said connecting device and at least one of said two parts which at least partly enclose said sealed space, and said connecting device as well as said initial tension element is arranged within the interior of said sealed space.

4,323,254
SEALS OF THE TYPE DESIGNED TO ENSURE FLUID-TIGHTNESS BETWEEN TWO RINGS OF CONICAL BEARINGS
Jacques Bertin, Asnieres, France, assignor to Hutchinson-Mapa, Paris, France
Filed Apr. 14, 1980, Ser. No. 140,143
Claims priority, application France, Apr. 12, 1979, 79 09377
Int. Cl.³ F16J *15/34*
U.S. Cl. 277—40 **8 Claims**



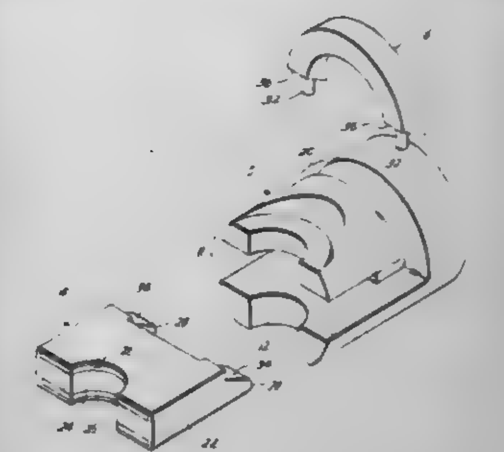
1. Seal for ensuring the fluid-tightness between first and second coaxial members one of which is rotatable with respect to the other around the common axis of the two members and whose relative axial positions are not determined with exactitude in advance, said seal comprising two coaxial annular elements, namely a first annular element fast to the first member and a second annular element mounted on the first element so as to be axially movable with respect to the latter, means for applying said second element axially against the second member and means for ensuring fluid-tightness between the two elements, whatever their relative axial position, said means for applying the second element against the second member comprising a frustoconic bearing surface or the like fast to one of the two elements, the half-angle at the apex of the frustoconic bearing surface of the like being between 30° and 45° with respect to the seal axis, another bearing surface fast to the other element, and an annular spring mounted with extension on the frustoconic bearing surface and supported axially against the other bearing surface so as to urge these two bearing surfaces constantly into relative axial separation and to be rollable or slidable on the frustoconic bearing surface by changing in diameter during the relative axial movements of the two said bearing surfaces, said first annular element comprising a cylindrical section adapted to be sealingly engaged around an outer collar of an inner ring of a conical roller bearing, and joined thereto, a frustoconic section flared outwardly like the mouth of a trumpet, said frustoconic bearing surface being a surface of said frustoconic section, and said second element being mounted so as to be slidable with play along the cylindrical section of the first element.

4,323,255
MECHANICAL SEAL WITH ECCENTRIC SEAL FACES
Winfred J. Wiese, Los Angeles, Calif., assignor to Borg-Warner Corporation, Chicago, Ill.
Filed Aug. 13, 1979, Ser. No. 65,784
Int. Cl.³ F16J *15/34*
U.S. Cl. 277—81 R **3 Claims**



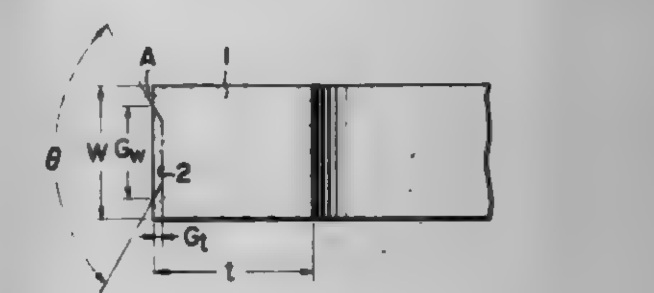
1. In a mechanical seal assembly adapted to be associated with a rotatable shaft and a housing having a rotatable seal ring, a stationary seal ring and a central seal ring between the stationary and rotatable seal rings, the central seal ring having spaced faces which engage respectively a face of the stationary seal ring and the rotatable seal ring, the central seal ring being centered in a peripheral bearing therefor, the improvement which comprises:
one seal face of one of said engaging seal faces being eccentric to the other engaging seal face.

4,323,256
FRONT PACKER SEAL FOR RAM BLOWOUT PREVENTER
Tosh Miyagishima, and Calvin Motoda, both of Los Angeles, Calif., assignors to Hydril Company, Los Angeles, Calif.
Filed Apr. 30, 1980, Ser. No. 145,248
Int. Cl.³ E21B *33/06*
U.S. Cl. 277—126 **15 Claims**



1. An improved sealing means for a blowout preventer ram of the type which can be reciprocally moved into and out of engagement with a well conduit position in the blowout preventer and includes intersecting recesses formed in the outer surfaces of the ram body for accommodating resilient sealing means for forming a fluid pressure-tight seal around the well conduit and between the ram and a portion of a housing in which the ram moves when the ram operab... ..gages the well conduit, the improvement comprising:
a front seal having a face with a curved portion shaped to engage the well conduit including a body portion formed of an elastomeric material shaped to fit within one of the recesses in the ram; and
an insert formed of a deformable material with low friction properties and positioned in the body portion to engage the well conduit when the ram is in the well conduit engaging position, the insert being held between a pair of rigid retainer-plates oriented perpendicular to the well conduit and embedded within the body portion of said front seal.

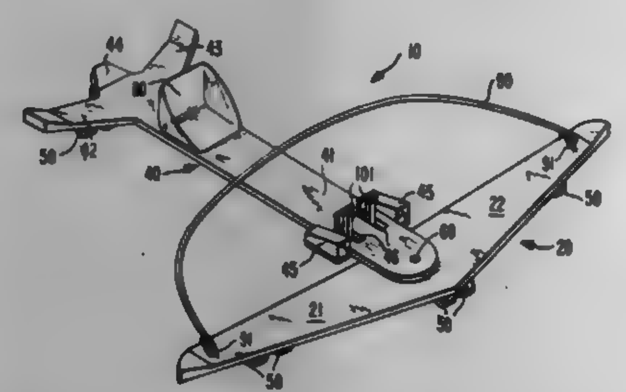
4,323,257
PISTON RING WITH A CR-C-FE INLAID RING IN ITS OUTER SURFACE, AND A METHOD OF MAKING IT
Katsumi Kondo; Yoshio Huwa, and Syouzi Miyazaki, all of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan
Filed Aug. 2, 1979, Ser. No. 63,037
Claims priority, application Japan, Nov. 20, 1978, 53-143000
Int. Cl.³ F16J *9/00*
U.S. Cl. 277—224 **2 Claims**



1. A piston ring for use with a piston in an internal combustion engine prepared according to the process which comprises providing a cast iron piston ring preform having a circumfer-

ential groove dividing its cylindrical outer surface into two cylindrical parts, said groove having a configuration such that the side walls slope outward from the bottom of said groove to the outer cylindrical surface of said preform so as to establish an angle between said side walls of 100° or more, plasma-spraying said piston ring preform with a deposit of an alloy comprising 55–70% Cr, 3–9% C and the balance substantially Fe so that the groove is filled up, and machining the outer surface of the ring so that any deposit of alloy on the cylindrical outer surface of the preform is removed and the deposit of the alloy in the groove is made flush with the cylindrical outer surface of the preform, said alloy being substantially free of any significant carbide.

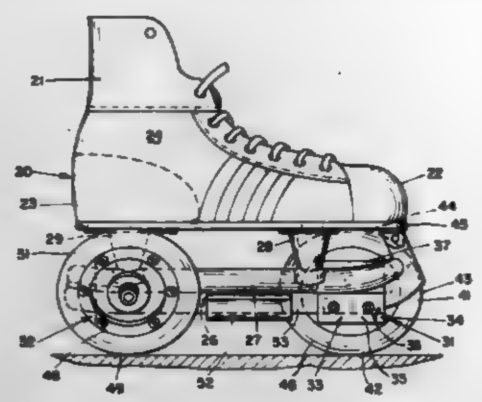
4,323,258
CONVERTIBLE COASTER HAVING RUNNERS OR WHEELS
Michael L. Culpeper, 804 Greenfield Dr., Apt. 23, Lynchburg, Va. 24501
Filed Jan. 29, 1980, Ser. No. 116,589
Int. Cl.³ B62B *13/18*
U.S. Cl. 280—7.12 **6 Claims**



1. A moveable pivoted platform for supporting a rider in a variety of positions comprising;
a V-shaped front portion,
a generally T-shaped rear portion, comprising an elongated central member, having two opposed foot rests disposed proximate its forward end, and two opposed swept wing elements disposed proximate its rearward end,
wherein said rear portion supports a plurality of brake mechanisms, and the said front portion is pivotally connected to said rear portion at a position forward of said footrests, so that the pivoted arc of said front portion with respect to said rear portion is determined by the location of the foot rests which form an abutment on the elongated central member, and
said platform is supported by a plurality of removable wheel elements disposed on said portions.

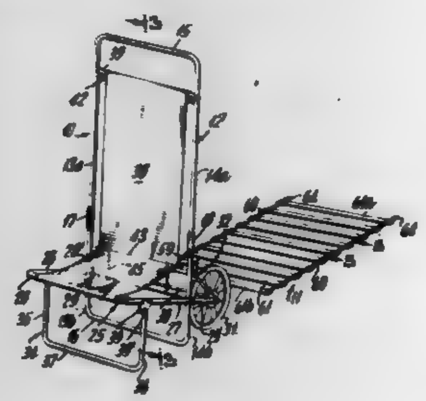
4,323,259
TWO WHEEL ROLLER ICE SKATE
Robert J. Boudreau, 176 Linden Ave., Malden, Mass. 02148
Continuation of Ser. No. 6,337, Jan. 25, 1979, abandoned. This application Oct. 3, 1980, Ser. No. 193,487
Int. Cl.³ A63C *17/06, 17/18*
U.S. Cl. 280—7.13 **2 Claims**

1. In combination with an ice shoe skate having an ice blade a two wheel roller ice skate attachment for converting said shoe ice skate into a roller skate:
said attachment comprising a pair of identical bracket clamps each having an elongated slot for receiving a portion of the blade of said skate;
clamp means on each said bracket clamp for detachably affixing one said bracket proximate the toe of said blade and the other said bracket proximate the heel of said blade;
an integral axle support arm on each said bracket extending upwardly and away from the slot therein at a predetermined angle;
an axle extending away from each said arm and normal thereto;
and a pair of rubber tired wheels, each rotatable on one of said axles;
one said bracket clamp being affixed along the toe portion of



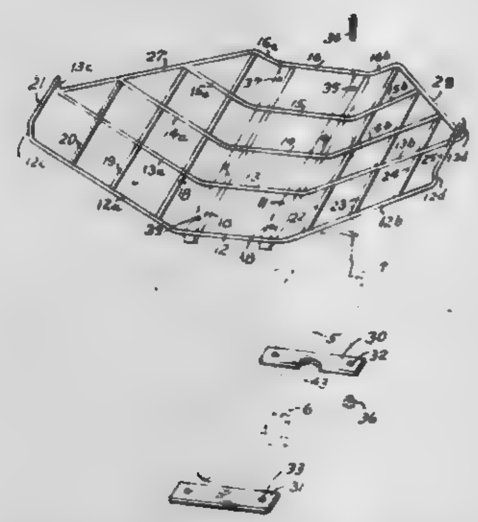
an ice skate blade with the wheel thereof canted outwardly on the inward side of the shoe and the other said bracket being affixed reversely along the heel portion of said ice skate blade with the wheel thereof canted outwardly on the outward side of the shoe;
the treads of said wheels overlapping laterally and defining a ground engaging path directly beneath and parallel to the longitudinal centre line of said shoe.

4,323,260
FOLDING CHAIR AND CART
Adalbert W. Suchy, 118 Saratoga Ave., Yonkers, N.Y. 10705
Filed Sep. 10, 1979, Ser. No. 74,245
Int. Cl.³ B62B *1/02*
U.S. Cl. 280—47.25 **8 Claims**



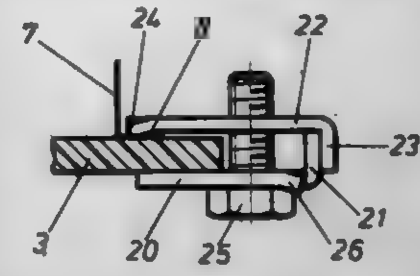
1. A folding chair and cart structure comprising a substantially vertical rectangular frame having interconnected top, bottom and vertical elements, an inclined U-shaped member having rearwardly extending legs, means pivoting said member to said frame at points spaced from the ends of said legs of said member to points on said vertical frame spaced from the bottom thereof, wheels carried by and inside the ends of said legs, foldable support means pivoted solely to the forward portion of said U-shaped frame member and extending downwardly therefrom, means coupling each leg of the first said U-shaped member to said vertical frame by a longitudinally adjustable diagonally disposed bracket comprising adjustable telescoping portions with one portion removably secured to the vertical frame and the other portion pivotally secured to a leg of said U-shaped member to permit the vertical frame to be adjusted to any one of a plurality of inclined positions, and a sheet of flexible material secured at one end to the upper portion of said vertical frame and at the other end to the forward portion of the first said U-shaped member to form a seat, said structure functioning as a cart when said vertical frame is tilted

to the horizontal position with the top of the frame functioning as a handle, said wheels being carried by an axle extending between the legs of the first said U-shaped member, said diagonally disposed brackets each comprising a first cylindrical portion having a plurality of notches therein, a second cylindrical portion having a transverse slot slidably engaging the first cylindrical portion and a rotatable U-shaped spring having a pair of legs and a substantially straight portion extending from the end of one leg of said U-shaped spring toward the other leg and a hook carried at the end of said other leg of said U-shaped spring and engaging said straight portion, said straight portion being disposed in said slot and engaging a selected notch, said spring means being rotatable to disengage and engage selected notches to adjust the length of the associated bracket.

4,323,261
FRAME FOR SKATE BOARD
Harold Samuelson, 708 N. Valley Forge Rd., B-7, Lansdale, Pa. 19446
Filed Jul. 16, 1980, Ser. No. 169,299
Int. Cl.³ B62D *11/00*
U.S. Cl. 280—87.04 A **7 Claims**

1. A framework for removable attachment to a skate board which comprises two spaced apart parallel bars to receive a board between them, a plurality of parallel transverse rods having their mid portions fastened to said bars to form a flat bed for a skater to ride on and having upwardly and outwardly inclined side portions to define a shallow channel, a plurality of longitudinal rods disposed parallel to said bars and connected to and tieing together the inclined portions to thereby form a grid, and means for temporarily attaching the frame to a skate board.

4,323,262
UNIVERSAL MUDGUARD FLAP AND CLAMP FOR MOTOR VEHICLES
Knut Arenhold, Westend 7, 2000 Hamburg 52, Fed. Rep. of Germany
Filed Nov. 21, 1979, Ser. No. 96,403
Claims priority, application Fed. Rep. of Germany, Nov. 30, 1978, 2851748; Feb. 15, 1979, 2905753
Int. Cl.³ B62D *25/16*
U.S. Cl. 280—154.5 R **20 Claims**

1. In a combination of a universal mudguard flap for motor vehicles and at least one clamp for attaching the flap to the fender fold of the vehicle, wherein the mudguard flap comprises a main body flap, an adapter protrusion at the top thereof to align the mudguard flap with the contours of the vehicle chassis, and an upper edge on the main body flap which joins with an inner edge of the adapter protrusion, and wherein the clamp has an open end, which is engagable with the said upper edge of the main body flap and an adjacent portion of the fender fold, and a closed end spaced from the open end, the improvement comprising a clamp having generally two parallel clamping jaws held together by at least one bolt, the closed end having a first crosspiece projecting generally perpendicularly from the end of one of the jaws and abutting the end of the other jaw and a second crosspiece projecting generally



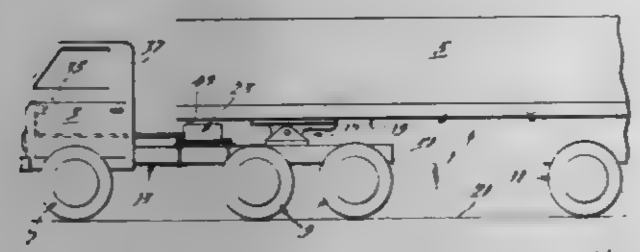
perpendicularly from the end of the other jaw and disposed in a contacting and generally overlapping parallel relationship with the said first crosspiece, and at least one jaw at the open end having at least one bent over corner end area wherein the direction of the bend is toward the other jaw.

4,323,263
BICYCLE FRONT FORK ASSEMBLY
Craig A. Cook, 4810 Park Newport, Newport Beach, Calif. 92627, and Gary B. Cook, 26871 Avenido Domingo, Mission Viejo, Calif. 92675
Filed Feb. 15, 1980, Ser. No. 121,876
Int. Cl.³ B62K *21/14*
U.S. Cl. 280—279 **2 Claims**

1. A bicycle front fork and handlebar support assembly comprising:
a bicycle front fork having an elongated cylindrical steer tube joined at its lower end to a pair of spaced downwardly extending legs for receiving the front wheel of a bicycle;
a bicycle frame head tube rotatably supported on said steer tube with the upper end of said steer tube extending above said head tube;
clamp means surrounding and connected to the upper end of said steer tube, said clamp means including a clamp-like bracket positioned on the upper end of said steer tube having a cylindrical portion that surrounds most of said steer tube and terminates in a pair of spaced jaw-like portions, and a pair of vertically spaced threaded fasteners for drawing said jaw-like portions towards each other to grip said steer tube and securely hold the bracket on the steer tube; and
a pair of support bosses formed on said bracket integral with said cylindrical portion having recesses defining a horizontal axis for receiving a horizontal portion of a handlebar, retainer means connected to said bosses for clamping said handlebar to said bracket, said support bosses being located on said bracket spaced from said jaw-like portions so that the handlebar is positioned on the opposite side of the steer tube from said jaw-like portions, said bosses including portions extending laterally from said bracket

cylindrical portion on opposite sides of the cylindrical portion to straddle said steer tube such that the horizontal axis defined by said recesses is located close to the vertical axis of said cylindrical portion thus enabling the handlebar to be mounted close to said steer tube.

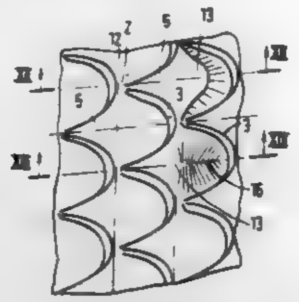
4,323,264
TRAILER LOAD SUPPORTING ASSEMBLY
Michael F. Paielli, 4070 Longtin, Lincoln Park, Mich. 48146
Filed Apr. 3, 1980, Ser. No. 136,494
Int. Cl.³ B62D *53/04*
U.S. Cl. 280—405 A **3 Claims**



1. A trailer load supporting device for mounting on the longitudinal side rails of a truck tractor frame in a position ahead of the fifth wheel and adapted to selectively engage the bottom of a trailer connected to the fifth wheel and exert a selected support load against it comprising a housing having a base member to rest on top of said side rails and a top member to engage the bottom of said trailer, said base member including transverse arms to extend along the side rails and providing means for securing the housing in fixed position on said side rails, said top member being in the form of an inverted pan with peripheral side walls and a first horizontal wall extending between the side walls and providing a closed top side, said top member having an open bottom side receiving the base member so that the base member is telescoped inside of the top member, said base member having a second horizontal wall parallel to said first horizontal wall, the space between said horizontal walls and the overall vertical dimension of the housing varying in height in accordance with telescopic movement of the top member on the base member, and said space being substantially closed by said members during telescopic movement thereof, and inflatable air bag means in the space between the top and bottom housing members for applying a selected pressure to the horizontal walls of the respective members tending to separate them and increase the height of said space and housing and to provide means for applying a lifting load to the bottom of a trailer, said bottom member having a channel-like H-shaped cross section with a web extending between side legs thereof and forming said horizontal wall.

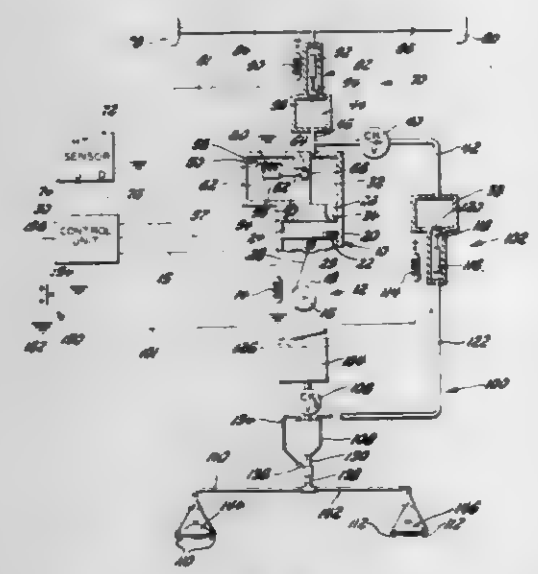
4,323,265
CROSS COUNTRY SKI
Wolfgang Benner, Kirchberg, Fed. Rep. of Germany, assignor to Benner Ski KG, Kirchberg, Fed. Rep. of Germany
Filed Mar. 20, 1979, Ser. No. 22,350
Claims priority, application Fed. Rep. of Germany, Jun. 6, 1978, 2824714
Int. Cl.³ A63C *7/06*
U.S. Cl. 280—604 **12 Claims**

1. A cross country ski having a running surface profiled along at least a central portion of the length thereof, the profiling comprising a plurality of indentations in a scale-like pattern, said indentations being arranged in transverse offset rows and having essentially curved edges with the apex of the curved edge toward the point of the ski, the bottom surfaces of the indentations extending in relation to the running surface plane such that said indentations have the greatest depth in the area of the apices of the curved edges, the bottom surfaces of said indentations having sections with different inclination such that at least the areas of the section adjacent to the apices of the curved edges have substantially the same depth as the apex of the curve, the bottom surface of each indentation having a front area transverse to the length of the ski comprising a bucket-shape (9) connecting to the apex of a curved edge



(3), and wherein the deepest point is approximately $\frac{1}{3}$ to $\frac{1}{2}$ the length of said indentation, and wherein a straight or convex rear area on the bucket-shaped area connects to the running surface plane (5).

4,323,266
MOTOR VEHICLE PRIORITY CONTROL SYSTEM FOR OPERATING LEVELING AND WASHING SYSTEMS FROM A SINGLE SOURCE OF COMPRESSED AIR
Jack W. Savage, Centerville, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed Feb. 13, 1981, Ser. No. 234,368
Int. Cl.³ B60G *11/26*
U.S. Cl. 280—707 **4 Claims**



1. In a motor vehicle, a controller for operating a pressurized washer system and a leveling system from a single electrically energizable air compressor wherein compressed air in said leveling system is adapted to be exhausted to atmospheric pressure through the air intake of said compressor, said controller comprising:

supply lines connecting said compressor to said leveling system and to said washer system;

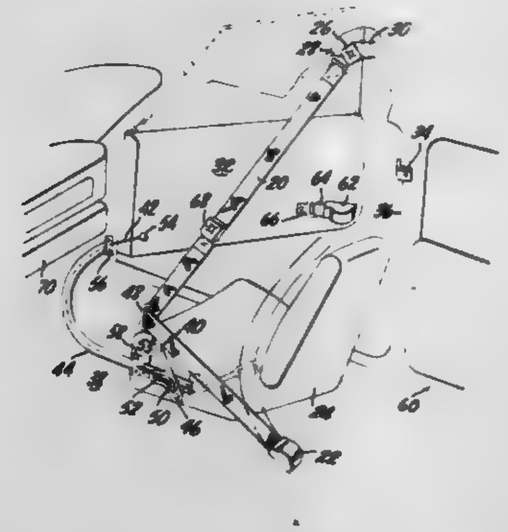
electrically energizable blocker valve means in the supply line between said compressor and said leveling system effective to control the connection of said compressor to said leveling system;

first control means responsive to the level of the sprung mass of said motor vehicle for generating up or down commands for said leveling system, said leveling system being operative at times to energize said compressor and open said blocker valve means in response to an up command to raise the level of said vehicle, and to deenergize said compressor and open said blocker valve means in response to a down command to lower the level of said vehicle by exhausting air through the air intake of said compressor;

second control means selectively actuable to generate a wash command for said washer system, said washer system being operative at times to energize said compressor in response to a wash command for dispensing a cleansing solution onto a motor vehicle surface; and

means for controlling the energization of said blocker valve means and said compressor as a function of the commands generated by said first and second control means in a manner to service said commands according to a predetermined priority wherein either said blocker valve means or said compressor is disabled in response to a command that is given priority so that said leveling system and said washer system will not interact when a down command and a wash command are generated concurrently.

4,323,267
PASSIVE VEHICLE SEAT BELT SYSTEM
Juichiro Takada, 3-12-1 Shinmachi Setagayaku, Tokyo, Japan
Filed Mar. 31, 1980, Ser. No. 135,993
Claims priority, application Japan, Mar. 29, 1979, 54-039995[U]
Int. Cl.³ B60R *21/02*
U.S. Cl. 280—803 **8 Claims**



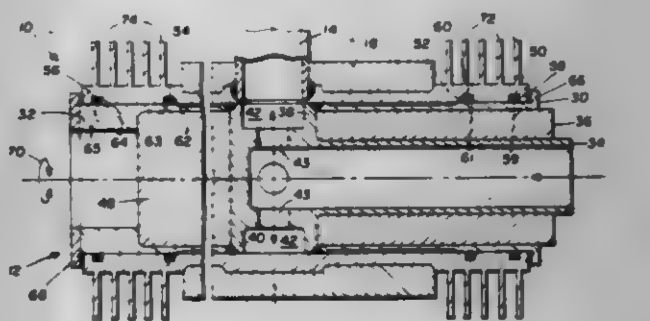
1. A passive vehicle occupant restraint system comprising a first emergency locking belt retractor affixed adjacent the lower rear of the inboard side of the vehicle seat; a shoulder belt leading from the first retractor upwardly and outwardly across the seat and fastened to the upper rear corner portion of the door and thus being adapted to shift between a restraining position when the door is closed and a releasing position when the door is opened; coupling receiving means secured to the shoulder belt at a location such that it is located adjacent the rear of the inboard side of the seat when the shoulder belt is in the restraining position; a second emergency locking retractor affixed adjacent the lower rear of the outboard side of the seat, at least when the vehicle door is closed; a waist belt wound onto the second retractor; and coupling means on the waist belt for releasably connecting the waist belt to the coupling receiving means on the shoulder belt while the shoulder belt remains connected between the first retractor and the vehicle door.

4,323,268
ROTARY PIPE JOINT
Lee E. Wilson, Dallas, Tex., assignor to E-Systems, Inc., Dallas, Tex.
Division of Ser. No. 912,489, Jun. 5, 1978, Pat. No. 4,234,215. This application Apr. 7, 1980, Ser. No. 138,138
Int. Cl.³ F16L *53/00*
U.S. Cl. 285—41 **24 Claims**

1. A rotary pipe joint having a cooled pressure seal, comprising:

(a) a first tubular member having,
(i) a fluid transmission port disposed through the wall of said first tubular member,
(ii) a first set of heat transfer fins joined to the exterior of said first tubular member,
(iii) a second set of heat transfer fins joined to the exterior of said first tubular member and disposed at the opposite end of said first tubular member from said first set of heat transfer fins,

(b) a second tubular member disposed substantially within said first tubular member comprising,
(i) an outer tubular member disposed adjacent the interior surface of said first tubular member,
(ii) an inner tubular member spaced inside of and coaxial with said outer tubular member,
(iii) a first flange joining said outer tubular member to said inner tubular member,
(iv) a second flange joined to said first flange to form an annular cavity in fluid communication with said first fluid transmission port in said first tubular member,
(v) fluid communication means transversely disposed

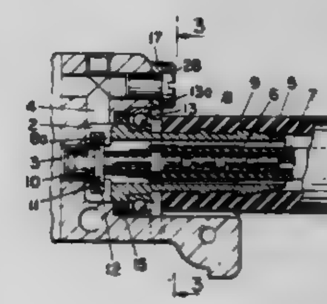


through said inner tubular member for connecting the interior of said inner tubular member to said annular cavity,
(vi) a third tubular member joined to said second flange, coaxial with said outer tubular member, and adjacent the interior surface of said first tubular member,

(c) a first sealing ring disposed between the inner surface of said first tubular member and the outer surface of said second tubular member, coaxial with said first tubular member and disposed essentially adjacent said first set of heat transfer fins, and

(d) a second sealing ring disposed between the inner surface of said first tubular member and the outer surface of said second tubular member, coaxial with said first tubular member and disposed essentially adjacent said second set of heat transfer fins.

4,323,269
COAXIAL COUPLING SYSTEM
Roger Pellenc, Pertuis, France, assignor to Etablissements Pellenc & Motte, Pertuis, France
Filed Mar. 6, 1979, Ser. No. 18,038
Claims priority, application France, Mar. 9, 1978, 78 07383
Int. Cl.³ F16L *39/00*
U.S. Cl. 285—133 R **19 Claims**

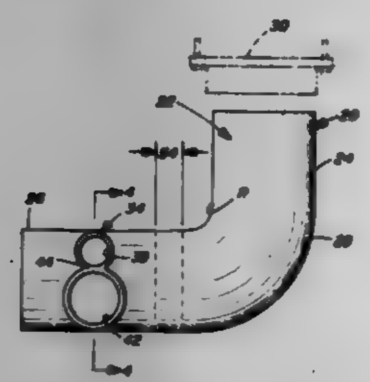


1. A secure and easily dismountable coupling system for use with a hydraulically powered device, said device being adapted to be operated by a high pressure hydraulic fluid, said coupling system permitting the rotation of said device relative to said system, said coupling system comprising:

(a) an outer hose pipe adapted to have a hose attached

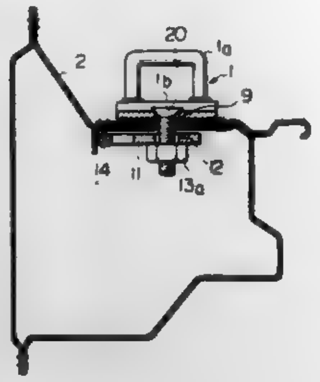
thereto on one end of said outer hose pipe, and adapted to be fitted within a body associated with said device, journal means adapted to permit rotation of the entire outer hose pipe relative to said device disposed around the outside of said outer hose pipe and adapted to be positioned between said outer hose pipe and said body;
(b) an inner hose pipe adapted to have a hose attached to one end thereof, wherein said inner hose pipe is held within said outer hose pipe by means of a circlip;
(c) at least one lateral port in said outer hose pipe positioned between said one end of said inner hose pipe on which said hose is to be attached and said circlip, said port being adapted to permit fluid to pass therethrough; and
(d) means for attaching said coupling system to said hydraulically powered device.

4,323,270
PIPE FITTING DEVICE FOR PLUMBING SYSTEMS
James A. Brock, 2166 West Blvd., Cleveland, Ohio 44102
Filed Jun. 26, 1980, Ser. No. 163,107
Int. Cl.³ F16L *41/02*
U.S. Cl. 285—153. 4 Claims



1. A plumbing fitting device for use in carrying waste materials from lavatories, bath tubs, sinks or the like comprising a one-piece body member made from a polymeric material having an inlet end and an outlet end with the inlet end adapted to be removably connected to a water closet or the like and with the outlet end adapted to be connected to a vent stack or the like, said body member being of a generally L-shaped configuration having an upright straight portion and a horizontally extending portion connected integrally together by a bend portion, said body member including a transversely extending hub section made integral in said horizontal section and having a transverse cross-section so as to be disposed within the peripheral confines of said horizontal section, said hub section including two pair of oppositely disposed ports, said ports being disposed entirely within the transverse dimensions of said hub section, said hub section being circular in transverse section and including transversely extending web portions that define passageways that terminate outwardly of said hub section in said ports, each of said oppositely disposed pairs of ports including an enlarged diamater lower port and a reduced diameter upper port, said upper and lower ports together defining a generally figure-eight configuration inside elevation, said upper ports being disposed above the longitudinal center line of the horizontal portion of said fitting with said lower ports being disposed below said center line such that said upper ports can be adapted as a vent to prevent siphoning of the system.

4,323,271
STRUCTURE FOR MOUNTING A STRIKER ON A VEHICLE BODY
Tomio Taniguchi, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan
Filed Jun. 30, 1980, Ser. No. 164,914
Claims priority, application Japan, Jul. 11, 1979, 54-94496[U]
Int. Cl.³ E05C *13/00*
U.S. Cl. 292—341.18 5 Claims

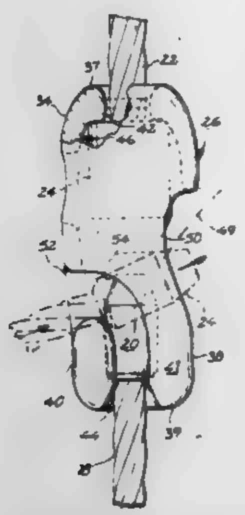


1. A structure for mounting a striker on a body of a vehicle, said striker cooperating and engaging with a door lock mechanism of said vehicle so that the door is locked, wherein said structure comprises,
said vehicle body having at least two bolt insert apertures at the striker mounting position;
a plate member having at least two apertures at the positions corresponding to the positions of said bolt insert apertures, said plate member having nuts welded thereto around said bolt insert apertures and at least one weld position which is distanced from said bolt insert apertures and at which position said plate member is welded to the striker mounting position of said vehicle body;
said plate member being provided with at least one deformable portion which connects said weld position to said nut positions of said plate member, so that said striker mounting position can be adjusted by the deformation of said deformable portion when said striker is mounted on said vehicle body by means of bolts which are engaged with said nuts.

4,323,272
EXCREMENT PICKUP DEVICE
J. Paul Fortier, 6220 Dartmouth Ave. N., St. Petersburg, Fla. 33710
Filed Feb. 15, 1980, Ser. No. 121,677
Int. Cl.³ A01K *29/00*
U.S. Cl. 294—1 BA 11 Claims

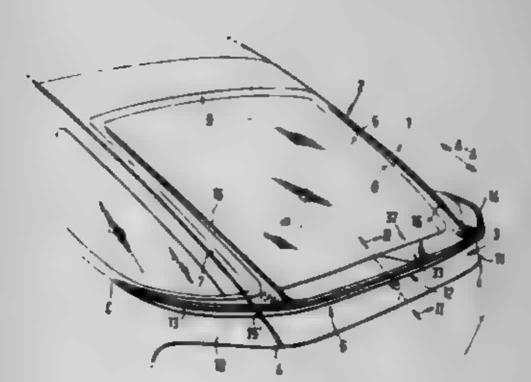
1. In a hand portable device for picking up and transporting animal excrement and the like, the combination of
(a) a pair of rods fixed sufficiently close together at one end to form a handle portion for grasping with one hand about both said rods and normally extending outwardly in the form of a V with capacity for deflection toward each other by pressure of said hand against said rods at said handle portion,
(b) a bag support member extending from the other end of and transversely to each of said rods and adapted for mounting thereto the respective sides of a bag in a manner that the closed bag end will extend beyond said bag support members on the handle portion side of said support members and and adjacent to the support member side of said rods and with the open end of said bag terminating at the side of said support members opposite said handle portion,
(c) each of said bag support members having two substantially parallel width portions and two opposed length portions, one of said length portions being a straight edge portion at the respective bag support member's most distant extremity from said handle portion and extending transversely from the associated rod to form said bag open end terminating side of the respective support member opposite said handle portion, said straight edge portion and width portions being in substantially a single plane and said plane of at least one of said support members being at an angle with respect to its associated rod, and
(d) each of said straight edge portions being substantially parallel to each other and moveable toward each other to make line contact with each other by deflection of said rods in response to pressure of said hand against said handle portion for thereby closing said open end of said bag.

4,323,273
LINE ENDER
Alexander F. Sword, P.O. Box 27, Vernonia, Oreg. 97064
Filed Aug. 18, 1980, Ser. No. 179,067
Int. Cl.³ B66C *1/14*
U.S. Cl. 294—78 R 4 Claims



1. A line ender for use in connecting a hauling line terminating at a nubbin and another line terminating at a nubbin, said ender comprising
an elongate body,
an elongate chamber extending axially within said body,
the walls of said chamber adjacent an upper end of said body being substantially circumferentially continuous and shaped to define an upper cup-shaped seat for the nubbin located at the end of the hauling line, said body having an upper bore extending axially therethrough connecting with the base of said seat through which the hauling line is adapted to pass,
the walls of said chamber adjacent the lower end of said body being shaped to define a lower seat for the nubbin located at the end of the other line, said body having a lower bore extending axially therethrough connecting with said lower seat through which, the other line is adapted to pass,
a first opening in one side of said body connecting with said chamber and being of a size enabling the nubbin of the hauling line to move therethrough in the process of seating such nubbin in said upper seat,
a second opening in the opposite side of said body connecting with said chamber, transversely aligned with a lower portion of said first opening, said second opening and the lower portion of said first opening being of sizes enabling the nubbin of the other line to be passed transversely through said body, with the nubbin of the hauling line seated in said upper seat, and
an entry slot on the lower portion of said body extending from one of said openings to said lower bore in a path extending along the side of said body which revolves substantially about a quarter of the circumference of the body, said slot connecting said chamber with the exterior of said body and providing entry of the other line into said lower bore.

4,323,274
REAR FOR A PASSENGER CAR
Richard Söderberg, Möglingen; Steven Winter, Hemmingen, and Hermann Burst, Rutesheim, all of Fed. Rep. of Germany, assignors to Dr. Ing. h.c.F. Porsche Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany
Filed Apr. 28, 1980, Ser. No. 144,276
Claims priority, application Fed. Rep. of Germany, Apr. 27, 1979, 7912264[U]
Int. Cl.³ B62D *37/02*
U.S. Cl. 296—1 S 4 Claims



1. Rear for passenger automobiles comprising a pivotable hatch inserted in an opening of a vehicle body, said body extending in a smoothly flowing line toward the rear, said hatch including a window, a transversely extending lower frame of the hatch, adjoining the window, being bounded by lateral body parts extending obliquely to the driving direction, characterized in that an aerodynamic device is provided on the lower frame of the hatch, said device having sections extended laterally from the hatch along the lateral body parts, wherein the aerodynamic device is comprised of an elastic member, wherein the elastic member has a recess on a side facing the lower frame of the hatch, this recess being delimited at least along certain sections by a bracket, said bracket being provided with a holding fixture serving for attaching the aerodynamic device to the lower frame, characterized in that the holding fixture has a generally hat-shaped profile in cross section.

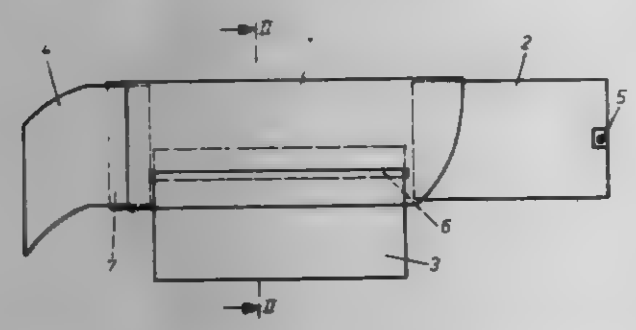
4,323,275
SUN VISOR WITH AUXILIARY VISORS
Rainer M. Lutz, Reichberg 29 - (Postfach 32), D-7827 Löffingen, Fed. Rep. of Germany
Filed Aug. 8, 1979, Ser. No. 65,007
Int. Cl.³ B60J *3/00*
U.S. Cl. 296—97 G 12 Claims

1. In a supplemental glare shield assembly adapted for association with a motor vehicle sun visor pivotally mounted for

rotation about a generally horizontal axis and selectively positionable for shielding the head region of a person occupying the front seat of the vehicle, the combination of:

a housing being detachably connected to the sun visor and swingable therewith and having a hollow interior with groovings in the interior walls and having slotted end and front walls,

a primary outboard auxiliary visor storable within the housing interior and being selectively withdrawable laterally from the housing interior via the grooving and through the slot of one of the housing end walls and having a curvature for projection to a desired extended position over a side of the vehicle for supplementing the shielding of the occupant forwardly and at one side thereof,



a secondary inboard auxiliary visor storable within the housing interior and being selectively withdrawable laterally from the housing interior via the grooving and through the slot of the other of the housing end walls for projection to a desired extended position toward the center of the front of the vehicle for supplementing the shielding of the occupant forwardly thereof, and

a tertiary auxiliary visor storable within the housing interior and being selectively withdrawable vertically downwardly from the housing interior via the grooving and through the slot in the housing front wall for projection to a desired extended position intercepting the occupant's zone of visibility downwardly of the sun visor.

4,323,276

VEHICLE ROOF STRUCTURE

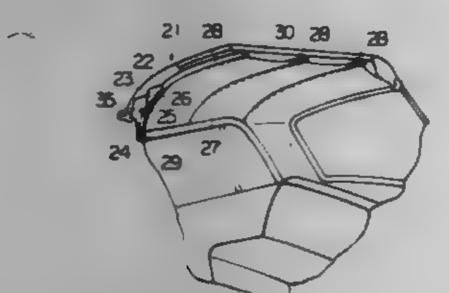
Kazumi Hira, Fijisawa, and Masao Tasho, Kamakura, both of Japan, assignors to Nissan Motor Company, Limited, Kanagawa, Japan

Filed Aug. 13, 1980, Ser. No. 177,827

Claims priority, application Japan, Aug. 17, 1979, 54-113697[U]

Int. Cl.³ B62D *25/06*

U.S. Cl. 296—214 8 Claims



1. A vehicle roof structure comprising:

a roof panel having a pair of spaced, parallel marginal portions each formed with a plurality of openings which are disposed at spacings from each other in a direction substantially parallel with said marginal portions;

at least one set of anchors arranged on one of said marginal portions;

a plurality of listing wires spaced apart substantially in parallel from each other and anchored at their opposite end portions to said marginal portions with said anchors interposed between at least one end portions of said listing wires and one of said marginal portions of said roof panel; and

a head lining suspended by said listing wires underneath said roof panel;

each of said anchors including a bored portion formed with an axial bore which is open at one end of the bored portion and which has one end portion of each of said listing wires fitted thereinto, an abutment portion formed at the other end of said bored portion in abutting engagement with said marginal portion, a non-circular portion disposed adjacent to said abutment portion and having a non-circular cross section shaped substantially in conformity to and in mating engagement with said opening, and a projecting portion protruding from said non-circular portion.

4,323,277

VEHICLE ROOF WITH A CUTOUT TO ACCEPT A COVER AND METHOD FOR ITS MANUFACTURE

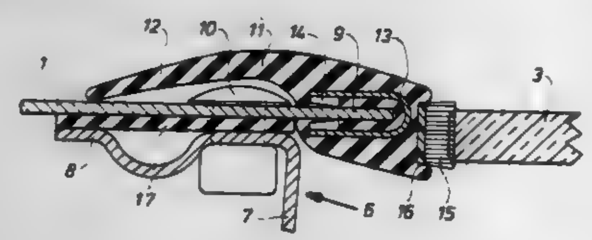
Johann Rengstl, Munich, and Alfons Lutz, Emmering, both of Fed. Rep. of Germany, assignors to Webasto-Werk W. Baier GmbH & Co., Munich, Fed. Rep. of Germany

Filed Oct. 17, 1979, Ser. No. 72,473

Claims priority, application Fed. Rep. of Germany, Sep. 1, 1978, 7825982[U]

Int. Cl.³ B60J *7/00*

U.S. Cl. 296—216 7 Claims



1. Vehicle body panel assembly comprising a vehicle body panel having a cutout for receiving a movable cover, a frame fastened to an underside of the vehicle body panel by fasteners and surrounding the cutout at a position located outwardly from an edge of said body panel defining the cutout, said frame being of an angular cross-section with an edge of the frame adjoining the body panel, and a rubber gasket, said gasket surrounding the edge of the body panel so as to cover the fasteners on an outer side of the vehicle body panel, and being constructed for providing a leak-proof sealing of the cutout by engaging a cover when the latter is in a position closing said cutout.

4,323,278

SEAT FOR VEHICLES, IN PARTICULAR TWO-DOOR PASSENGER AUTOMOBILES

Wolfgang Sukopp, Wolfsburg; Holger Schmidt, Brechtorf, and Wilfried Schwanz, Ahnsen, all of Fed. Rep. of Germany, assignors to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Fed. Rep. of Germany

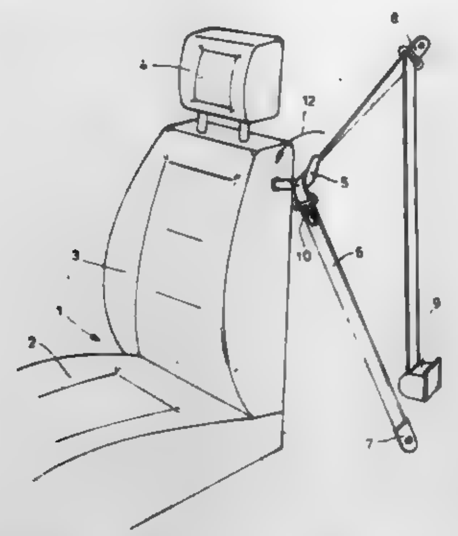
Filed Feb. 22, 1980, Ser. No. 123,571

Claims priority, application Fed. Rep. of Germany, Mar. 5, 1979, 2908558

Int. Cl.³ A62B *35/00*

U.S. Cl. 297—481 3 Claims

1. A seat for vehicles, such as two-door passenger automobiles, with a backrest which is tiltable relative to a seat surface, an actuating element for releasing a backrest locking mechanism, which actuating element is arranged at the side of the backrest facing the vehicle door, and an associated three-point safety belt which is provided with a winding device, said safety belt having a portion associated with the shoulder of the vehicle occupant and running over a guide fitting arranged behind the backrest on the vehicle frame adjacent the door, characterized in that the actuating element is also designed as a guide element for guiding the safety belt on retraction into a reposi-



tory position where a part of it is along side the backrest and can be easily grasped by the vehicle occupant.

4,323,279

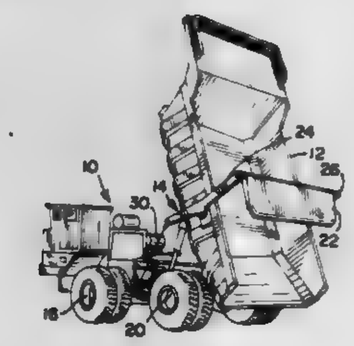
AUTOMATIC TAILGATE FOR A DUMP TRUCK

E. A. Domes, Carpentersville; Forrest C. Taylor, Northlake; Dusan M. Vacval, Buffalo Grove, and Lawrence A. Venere, Wood Dale, all of Ill., assignors to International Harvester Company, Chicago, Ill.

Filed May 5, 1980, Ser. No. 146,976

Int. Cl.³ B60P *1/26*

U.S. Cl. 298—23 DF 4 Claims



1. In an off highway dump truck having a frame supported on a front and a rear axle, a dump body pivotally supported on said frame, said body having left and right sidewalls, a floor and an open end, said body capable of being pivoted from a transport mode to a dumping mode, an automatic tailgate comprising:

a pair of anchor cable outriggers attached to said frame, one of said pair of anchor cable outriggers located on the left side of said dump truck and a second of said pair of anchor cable outriggers located on the right side of said dump truck;

a pair of anchor cables, one of each of said pair attached to one of each of said anchor cable outriggers;

a left side support arm having a cable attachment point at one end thereof, a second end, and an attachment fitting between said first and second ends to which one of said anchor cables is attached;

a first pivot pin intergral with a plate attached to the exterior of said left sidewall of said dump body, said left side support arm pivotally supported through said attachment fitting to said first pivot pin;

a right side support arm having a cable attachment point at one end thereof, a second end and an attachment fitting between said first and second ends to which a second of said pair of anchor cables is attached;

a second pivot pin integral with a plate attached to the exterior of said right sidewall of said dump body, said right side support arm pivotally supported through said attachment fitting to said second pivot pin;

a tailgate carried by said left and right side support arms at said second ends thereof, said tailgate having a transverse beam affixed at each end thereof to said left and right support arms respectively, a plate fastened to said transverse beam and having a bottom edge and side edges, said side edges significantly inboard of said ends of said transverse beam, whereby said tailgate projects into said body inboard of said sidewalls.

3. An anchor cable outrigger attached to the frame of a dump truck for providing an attachment point for attaching an anchor cable for use in operating a tailgate, said anchor cable outrigger comprising:

an upper wishbone link having an attachment point at an outboard end thereof and horizontal holes through the inboard ends of said wishbone link;

a pair of lower links having outboard ends attached to the outboard end of said upper wishbone link and holes through inboard ends of each lower link;

a plurality of pinned connectors fastened to said frame for accommodating inboard ends of each link of said anchor cable outrigger, each pinned connector having a removable pin passing through said connector and through respective holes of said links for attaching said anchor cable outrigger to said frame in a removable manner.

4,323,280

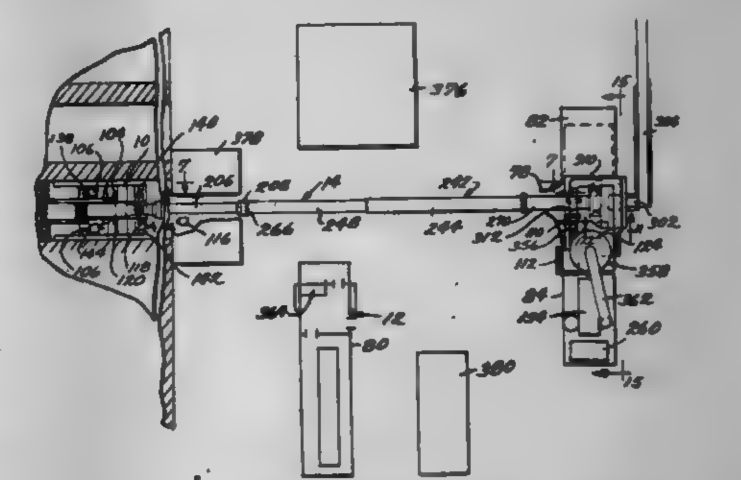
REMOTE CONTROLLED HIGH WALL COAL MINING SYSTEM

John B. Lansberry, Woodland; Jerome Apt, Jr., Pittsburgh, and Joseph D. Dury, Jr., Sewickley, all of Pa., assignors to Conlex, Inc., Woodland, Pa.

Continuation of Ser. No. 746,190, Nov. 30, 1976, abandoned. This application Mar. 27, 1979, Ser. No. 24,371

Int. Cl.² E21C *27/24*

U.S. Cl. 299—1 23 Claims



1. A remote controlled coal mining system comprising:

a continuous mining machine having power driven means thereon for moving said machine through successive coal cutting cycles which include an advancing movement along a mined entry in a direction toward the working face,

cable means extending from said continuous mining machine to a remote control station,

light means carried by said continuous mining machine for illuminating portions of the space surrounding said continuous mining machine including the mine seam face disposed forwardly thereof and adjacent portion of the mined entry rearwardly thereof,

television camera means carried by said continuous mining machine for establishing electromagnetic signals indicative of the appearance of the illuminated space within the coal mine seam,

means for transmitting the electromagnetic signals estab-

lished by said television camera means to said control station,

television receiver means at said control station operatively connected with said transmitting means for converting said signals to a continuous picture of the appearance of at least a selected portion of the illuminated coal mine space,

means for moving a laser beam from a position adjacent said control station along at least two angularly related lines disposed within a common vertical plane perpendicular to the working face of the coal seam,

first laser beam detector means carried by said continuous mining machine adjacent the rearward portion thereof,

second laser beam detecting means carried by said continuous mining machine adjacent the forward portion thereof,

said first and second detectors each including a central laser sensing area aligned respectively in the direction of said vertical plane but displaced vertically with respect to one another, so that said moving laser beam will strike the same along said lines so long as the advancing movement of said continuous mining machine is aligned with said vertical plane,

said first and second detectors each including left and right-hand laser sensitive areas disposed horizontally to opposite sides of the associated central area,

means for transmitting from said detectors to said control station signals indicative of the laser sensitive areas in the lines of said moving laser beam, and

means at said control station connected with said cable means for enabling an operator at said control station to control the coal cutting cycle of said continuous mining machine based on the pictures provided by said television receiver means and the signals indicative of the laser sensitive areas in the lines of said moving laser beam whereby the coal cut during a cycle is cut between the mine roof and floor and the advancing movement is maintained in the direction of said vertical plane.

22. A continuous mining machine including

a track frame,

left and right-hand independently power driven endless track assemblies on said track frame for moving the same in either direction along a mine entry floor and for guiding the same during such movement,

a sump frame mounted on said track frame for power driven horizontal reciprocating movement with respect to said track frame and track assemblies,

coal cutting and gathering means carried by said sump frame for cutting the coal in a coal seam and for gatheringly moving the cut coal to a discharge position located at the central portion of the machine,

an inlet vacuum air duct fixed to said sump frame having a forward inlet opening disposed at said discharge position and a rear end portion of constant cross-sectional configuration,

a cooperating duct section fixedly carried by said track frame having a forward end position of constant cross-sectional configuration disposed in telescopic relation with respect to the rear end portion of said inlet duct,

and means for sealingly connecting said telescopically arranged portions while permitting telescopic movement to take place in response to the power driven movement of said sump frame.

4,323,281

METHOD OF SURFACE MINING

Edward H. Greenwald, Sr., McMurray; Edward H. Greenwald, Jr., and Frederick R. Bonci, both of Pittsburgh, all of Pa., assignors to Eavenson, Auchmuty & Greenwald, Coraopolis, Pa.

Filed Feb. 19, 1980, Ser. No. 122,394

Int. Cl.³ E21C *41/00*

U.S. Cl. 299—1 11 Claims

1. A method of developing, mining and restoring mining property having at least one mineral bearing rock seam which comprises:

(a) collecting three-dimensional topographic control data and physical site conditions, such as water flow data;

(b) collecting mineral bearing rock seam location data and overburden stratification and constituency data;

(c) displaying said topographic control data in the form of a topographic map;

(d) displaying said mineral bearing rock seam data on the said topographic map;

(e) establishing an access road to said mineral bearing rock seam by using the data displayed on said topographic map by said steps of collecting;

(f) establishing environmental control facilities, topsoil storage areas and head of hollow overburden disposal sites by

using the data displayed on said topographic map by said steps of collecting;

(g) producing a series of topographic map means using said topographic map to depict mining operations by sequential phases such that an initial mining operation is depicted on a first of said series of topographic map means development, succeeding mining and restoring operations are each depicted on others of said topographic map means;

(h) removing mineral bearing rock from said mineral bearing rock seam to complete the first of said sequential phases of the actual mining operation;

(i) completing a succeeding sequential phase of removing mineral bearing rock from said mineral bearing rock seam; and

(j) restoring the disturbed portions of the mining property.

4,323,282

CONVEYING TROUGH WITH MINING MACHINE CUTTER GUIDE SURFACES

Ernst Braun, and Gert Braun, both of Essen-Heisingen, Fed. Rep. of Germany, assignors to Halbach & Braun, Fed. Rep. of Germany

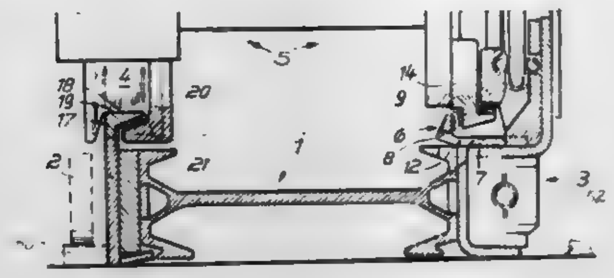
Filed Jul. 11, 1980, Ser. No. 168,330

Claims priority, application Fed. Rep. of Germany, Jul. 11, 1980, 2927962

Int. Cl.³ E21C *35/08*

U.S. Cl. 299—43 9 Claims

1. A conveying trough for use in a coal mining seam, having a coal mining sidewall and a waste sidewall, opposite to, and spaced from, the winning sidewall, comprising, a guideplate adapted to be secured to the waste sidewall, a base frame adapted to be located adjacent the winning sidewall at a spaced location from the guideplate, a gantry-like cutter having one side with a track wheel having a running surface associated with said guideplate and spanning across the space between said guideplate and said base frame, an angle bar having a first substantially horizontal fixing leg portion secured to said base frame and having an upright guide leg portion affixed to said



horizontal portion, a tracking bar carried by said cutter and having an edge in cooperative engagement with said guide leg portion, said tracking bar and said guide leg portion having substantially vertical interengageable slide surfaces.

4,323,283

TRACK ADJUSTING AND RECOIL APPARATUS FOR USE WITH CRAWLER VEHICLES

Ei-ichi Muramoto, Hirakata, and Motomu Matsui, Ibaragi, both of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Aug. 22, 1980, Ser. No. 181,390

Claims priority, application Japan, Aug. 29, 1979, 54/117789[U]

Int. Cl.³ B62D *55/30*

U.S. Cl. 305—10 5 Claims

1. A track adjusting and recoil apparatus comprising:

(a) a cylinder having wall means defining first and second chambers;

(b) a first piston reciprocably accommodated within said first chamber and defining a first sealed chamber between said first piston and said wall means;

(c) a second piston reciprocably accommodated within said second chamber for movement by a track idler means and defining a second sealed chamber between said second piston and said wall means;

(d) a rod disposed through said wall means between said first and second pistons in a manner such that said rod always comes into contact with both the pistons;

(e) means for biassing said first piston inwardly;

(f) a cylindrical cover fitted to the distal end of said cylinder so as to restrict the reciprocal movement of the second piston;

(g) a track tension adjusting means for maintaining a predetermined track tension by adjustment of an idler wheel connected to the distal end thereof, said track tension adjusting means including a cylindrical member reciprocably inserted into said cylindrical cover and a piston defining an adjusting pressure chamber between said cylindrical member and said piston, said piston being provided on the opposite side of said pressure chamber with an integral piston rod abutting against said second piston on the opposite side of said rod; and

(h) passage means for allowing the fluid communication between said first and second sealed chambers through a relief valve and a check valve provided in said passage means with parallel relation to said relief valve.

4,323,284

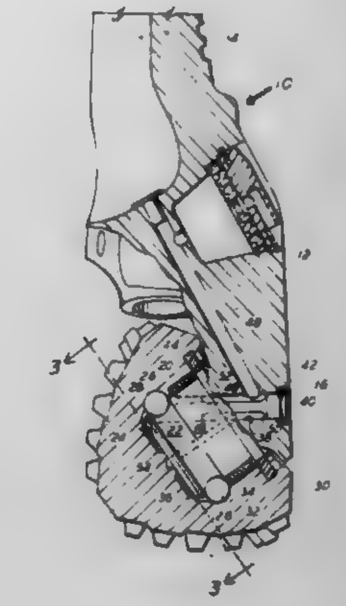
THRUST FACE BEARING STRUCTURE FOR ROLLING CUTTER DRILL BIT

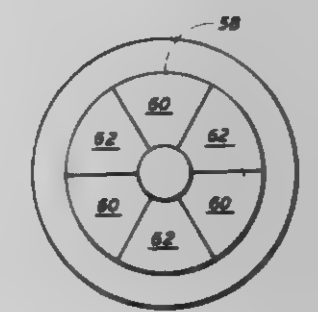
John S. Childers, and Terry H. Mayo, both of Houston, Tex., assignors to Reed Rock Bit Company, Houston, Tex.

Filed Oct. 17, 1980, Ser. No. 197,835

Int. Cl.³ F16C *17/12*

U.S. Cl. 308—8.2 6 Claims





1. In a rolling cutter drill bit of the type having at least one downwardly extending leg with a downwardly extending cantilevered bearing shaft thereon, and a rolling cutter rotatably mounted on said bearing shaft by radial bearing means and axial bearing means; the improvement comprising:

said axial bearing means comprising a relatively flat multi-segmented thrust bearing surface;

said multi-segmented surface having at least two segments of differing metallic compositions, one of said segments being a metal composition having low coefficient of friction at low temperatures and the other of said segment metal compositions having low coefficient of friction at high temperatures.

4,323,285

DUAL THRUST BEARING FOR A SHAFT

Dale P. Gilson, Bellflower, Calif., assignor to Kobe, Inc., Commerce, Calif.

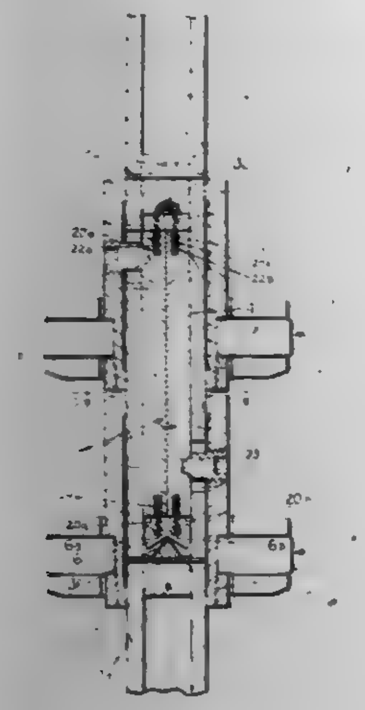
Filed Mar. 14, 1980, Ser. No. 130,280

Int. Cl.³ F16C *17/06*

U.S. Cl. 308—160 10 Claims

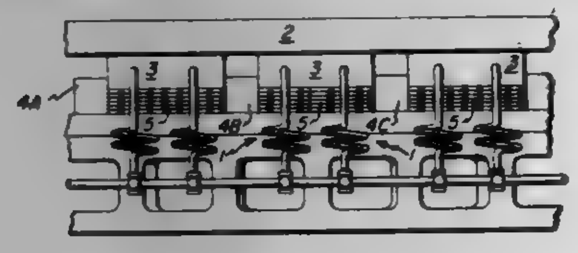
1. A dual thrust bearing support for a shaft comprising: a pair of axially adjacent thrust bearings, each bearing having a stationary annular thrust absorbing element adapted to be secured to a housing and an annular thrust receiving rotary element; a shaft rotatable in said annular thrust receiving rotary elements but axially shiftable relative thereto, said shaft having a hollow central portion; a first thrust transmitting member mounted in said hollow central shaft portion for relative axial movements; means for rigidly securing said first thrust transmitting member to one of said rotary thrust transmitting elements to transmit

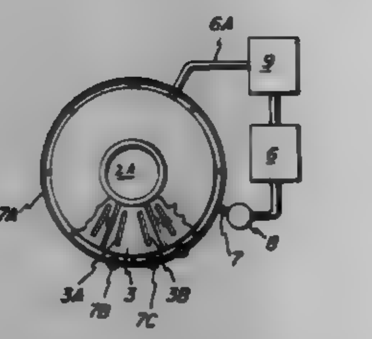
thrust force to the associated thrust absorbing element; a second thrust transmitting member mounted in said hollow central shaft portion for relative axial movements; means for rigidly securing said second thrust transmitting member to said



other rotary thrust transmitting element to transmit thrust force to the associated thrust absorbing element; and means inter-connecting said shaft and each of said thrust transmitting members to transmit thrust force on said shaft equally to said thrust transmitting members.

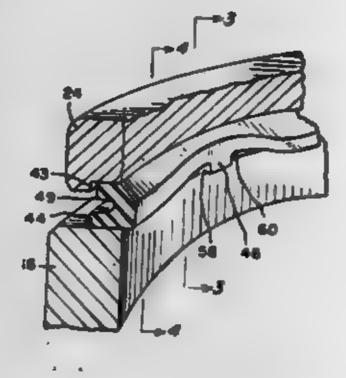
4,323,286
THRUST BEARING COOLING APPARATUS
John H. Vohr, Schenectady, N.Y., assignor to General Electric Co., Schenectady, N.Y.
Filed Jul. 28, 1980, Ser. No. 172,904
Int. Cl.³ F16C *17/06*
U.S. Cl. 308—160 8 Claims





1. A bearing cooling apparatus for a high pressure, lubricant-flooded thrust bearing, which bearing comprises an annular runner with a substantially flat bearing surface, a plurality of bearing pads each including a substantially flat bearing surface, a retainer for holding all of said pads is a generally circular array with their bearing surfaces facing, respectively, arcuately-spaced portions of the bearing surface of said runner in sliding relationship therewith, and a plurality of resilient means disposed, respectively, between each of said pads and the retainer to resiliently bias the pads toward the runner; said cooling apparatus comprising a source of coolant, a plurality of wall means each define at least one elongated groove in the bearing surface of each of said pads, conduit means for conducting coolant from said source to each of said grooves, and high pressure pumping means operatively connected to pump a predetermined volume of coolant at high pressure through said conduit means and into said grooves thereby to force coolant to flow between the annular runner and each bearing surface of the respective pads, said predetermined volume being sufficient to produce between the runner and pad bearing surfaces a flow rate of coolant in a range between $\frac{1}{3}$ and $\frac{1}{2}$ of the flow rate of lubricant developed between said bearing surfaces, from the lubricant flooding the bearing, responsive to sliding movement of the runner relative to said pads.

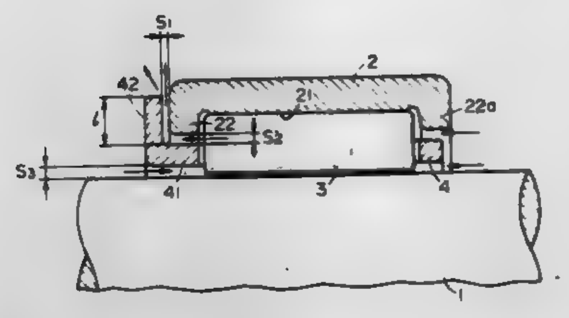
4,323,287
BEARING SEAL
Leo Stella, Bristol, and America E. Marola, Torrington, both of Conn., assignors to The Torrington Company, Torrington, Conn.
Filed Oct. 3, 1979, Ser. No. 81,524
Int. Cl.³ F16C *33/78*
U.S. Cl. 308—187.1 2 Claims



1. In a bearing having a first member and a second member with an annular space between said first member and said second member: an annular seal extending across said annular space, said annular seal having an annular lip portion normally in contact with one of said members around the entire circumference of the seal to keep lubricant in the annular space between said first member and said second member behind said annular seal, the annular seal having radial protrusions located behind the lip portion in contact with said one member and at circumferentially spaced locations on the annular seal, said protrusions being in contact with the same member as the lip and adapted to keep the back portion of the annular seal adjacent each side of the protrusion spaced from the member the lip contacts.

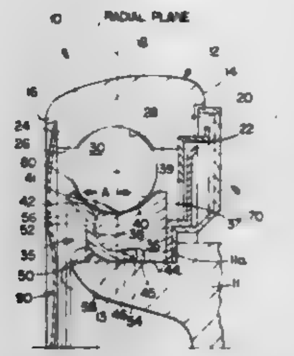
4,323,288
BEARING UNIT WITH IMPROVED INNER RACE
Harvey E. Smith, Sr., Grand Rapids, and Siegfried K. Weis, Byron Center, both of Mich., assignors to C. L. Frost & Son, Inc., Grand Rapids, Mich.
Filed Feb. 25, 1980, Ser. No. 124,556
Int. Cl.³ F16C *33/60*
U.S. Cl. 308—196 16 Claims

1. A bearing assembly which is especially useful as a conveyor trolley wheel comprising:
a plurality of anti-friction ball members;
outer race means including an outer raceway for supporting said ball members;
inner race means including an inner raceway having a minimum diameter and spaced radially inwardly of said outer race means for supporting said ball members opposite to said outer race means;
said assembly including a radial plane extending through the centers of said ball members and said minimum diameter of said inner race means;
said inner race means including an annular, first inner race part having a central aperture therethrough, a raceway shoulder on one side of said radial plane, a curved raceway portion extending from said shoulder to at least said minimum diameter at said radial plane, and an extension beyond said radial plane on the other side thereof;
said inner race means also including an annular, second inner race part stamped from sheet metal, engaged with said first inner race part on said other side of said radial plane, and having a curved shoulder forming another curved



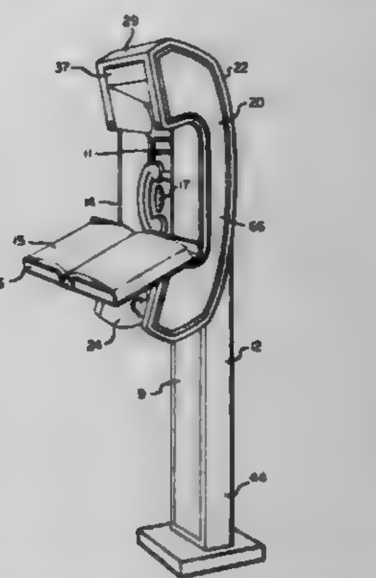
portion of said inner raceway and extending beyond said extension of said first inner race part on said other side of said radial plane to guide and retain said ball members in said inner and outer raceways; and
flange means formed in one piece with said second inner race part for retaining said second inner race part to said first inner race part and recess means formed in said central aperture of said first inner race part generally opposite said minimum diameter of said curved raceway portion for receiving said flange means, said flange means being received in said recess means for retention of said inner race parts together.

4,323,289
ROLLER BEARING HAVING A FORCIBLE LUBRICATION FUNCTION
Toshio Suzuki, Chigasaki, Japan, assignor to Nippon Seiko Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 23, 1980, Ser. No. 143,006
Claims priority, application Japan, Nov. 15, 1979, 54-141436[U]
Int. Cl.³ F16C *19/49*
U.S. Cl. 308—202 2 Claims



1. A bearing assembly for a rotating element, including an outer race having a rib extending radially inwards from an end portion thereof, a plurality of rollers held within said race for rotational movement about the rotating element, a cage engaging said rollers for movement therewith, and means for forcibly circulating lubricant through the bearing assembly, said means including a first clearance formed between the outer surface of said cage and the inner surface of said race, a second clearance formed between the inner surface of said cage and the outer surface of the rotating element, and a ring portion carried by said cage and extending axially outward from said rib with a third clearance therebetween, said clearances being sufficient to cause lubricant to be extracted from the bearing assembly through said first and third clearances by the centrifugal forces applied to the lubricant by the rotation of said rotating element and to be drawn into the bearing assembly through said second clearance.

4,323,290
TELEPHONE ENCLOSURE ASSEMBLY AND DIRECTORY HOLDER APPARATUS
John S. Hickman; John B. Olson, both of Milwaukee, and Richard L. Jeanson, Watertown, all of Wis., assignors to Utility Products, a division of Reliable Electric Co., Milwaukee, Wis.
Filed Dec. 31, 1979, Ser. No. 108,822
Int. Cl.³ A47B *63/00*; B42D *17/00*; E04H *1/14*
U.S. Cl. 312—100 4 Claims

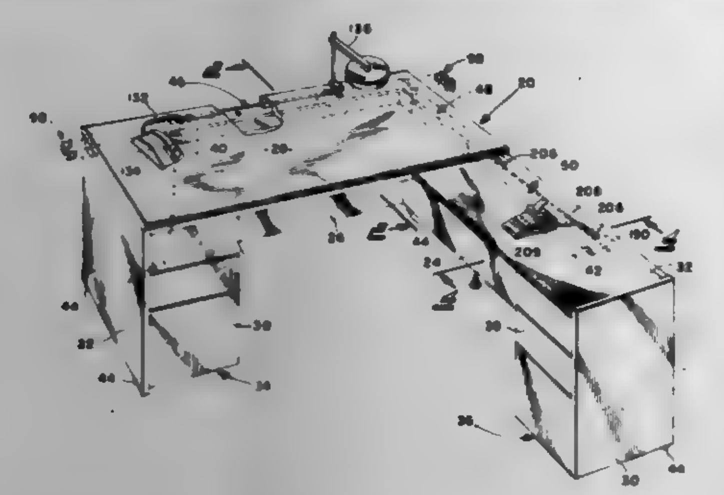


1. A housing enclosure and directory holderassembly for use with a telephone unit, said assembly comprising:
a one-piece housing shell which at least partially encloses a telephone unit:
a directory holder assembly connected to said housing shell and including means for pivoting and swiveling said holder from a closed position to an open position;
said housing shell includes a pair of spaced side walls, a top wall and a back wall, said back wall having an opening with the edges of the opening being complimentary to the edges of a telephone unit adapted to be inserted in said opening, and an inclined wall surface located below said shell opening adapted to receive said telephone unit; and
wedge means for securing said shell to a wall or pedestal mounting means, said wedge means including a tapered wall adapted to seat on said inclined shell wall and securing means for securing said wedge means to said telephone mounting means and wedging said wedge means below the telephone unit to lock said shell to each said wall or pedestal mounting means.

4,323,291
DESK OR THE LIKE WITH WIRE MANAGEMENT
Douglas C. Ball, Quebec, Canada, assignor to Hauserman Ltd., Waterloo, Canada
Filed Jun. 8, 1979, Ser. No. 46,779
Int. Cl.³ A47B *17/00*, *13/02*
U.S. Cl. 312—194 33 Claims

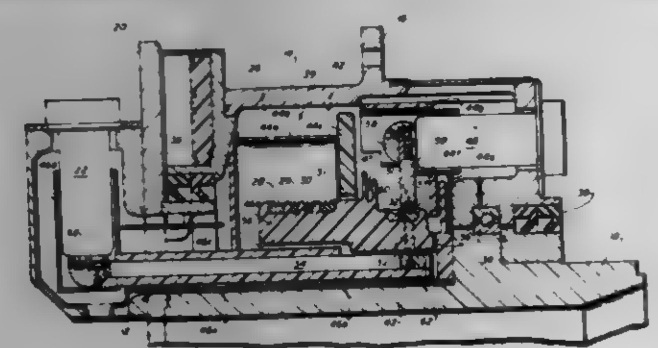
1. A desk or like unit comprising a vertical support panel, a horizontal top panel mounted on and forming a corner with said vertical support panel, and enclosure means secured to

said vertical and top panels at said corner for defining with such corner an elongate wiring duct extending parallel to said



vertical and top panels, said enclosure means and panels cooperating to form the walls of said wiring duct.

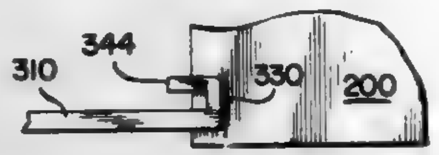
4,323,292
HIGH VOLTAGE SLIP RING ASSEMBLY
Norris E. Lewis, Christiansburg, and Herbert C. Walker, Blacksburg, both of Va., assignors to Litton Systems, Inc., Blacksburg, Va.
Filed May 12, 1980, Ser. No. 148,707
Int. Cl.³ H01R *39/00*
U.S. Cl. 339—5 M 10 Claims



1. A high voltage slip ring assembly adapted to be filled with an insulating fluid comprising:
a rotor and a stator for defining a cavity therebetween,
seal means for operatively sealing said cavity for retaining the insulating fluid therein,
said rotor and said stator being at ground potential,
anode coupling means within said cavity,
cathode coupling means within said cavity,
said anode and cathode coupling means each including Faraday shielding means, and
dielectric barrier means within said cavity for blocking line of sight particulate paths, when the slip ring assembly is transferring power, between said anode means and said cathode means, between said anode means and said rotor and stator, and between said cathode means and said rotor and stator,
whereby operational short circuiting and arcing within said cavity is prevented.

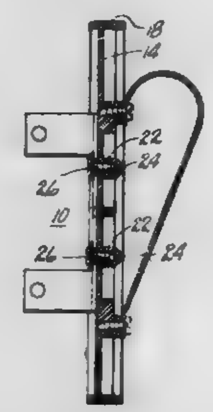
4,323,293
TERMINAL LEAD WITH LABYRINTHINE CLIP
Joseph R. DeRouen, Banning, and Ronald E. Smith, Sunnymead, both of Calif., assignors to Bourns, Inc., Riverside, Calif.
Filed Jun. 30, 1980, Ser. No. 164,760
Int. Cl.³ H01L *23/48*
U.S. Cl. 339—17 CR 5 Claims

1. In an electronic device, of the type having a component deposited onto a substrate, metallized contact areas on said substrate to provide an electrical path for said component, and a molded housing encasing said substrate, an improved terminal lead for attachment to said substrate, comprising:
an elongate metal strip having first and second ends; and
clip means formed in said strip proximate one of said ends,



said clip means comprising first and second contiguous orthogonal loops, whereby said first and second loops are each in contact with a different opposing surface of said substrate when said clip means is attached to said substrate.

4,323,294
METER SOCKET COVER ASSEMBLY
Darrell Robinson, Milford, Mich., assignor to Ekstrom Industries, Inc., Farmington Hills, Mich.
Filed Dec. 14, 1979, Ser. No. 103,464
Int. Cl.³ H01R *31/08*
U.S. Cl. 339—19 2 Claims

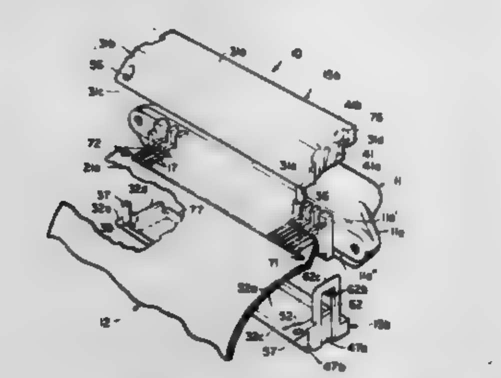


1. A cover for a meter socket adapted to receive jumpers for completing a circuit between meter socket terminals, said cover comprising a disc formed of insulating material, said disc having a peripheral flange having a diameter and thickness substantially the same as that of a retaining flange of a meter intended for assembly into said meter socket, a central portion substantially thinner than the width of said flange, and a series of cylindrical walls extending from said central portion, said walls being closed at the forward end on the forward side of the disc and open at the other end on the rear side of the disc forming a pocket, said walls being dimensioned to receive a fastening device from the rear side for attachment of a jumper without exposure of the fastening device on the forward side of the disc.

4,323,295
TWO-PIECE STRAIN RELIEF AND CONNECTORIZED FLAT CABLE ASSEMBLY FORMED THEREWITH
Dwight M. Davis, Jr., Pickerington, Ohio, assignor to Western Electric Company, Incorporated, New York, N.Y.
Filed May 29, 1980, Ser. No. 154,549
Int. Cl.³ H01R *13/58*
U.S. Cl. 339—107 22 Claims

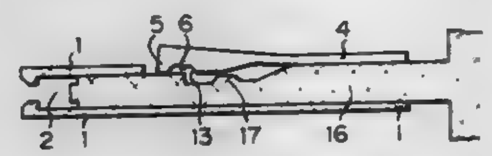
1. A strain relief member for a connectorized flat cable, comprising:
two complementary molded plastic sections, each section including:
a. forward and rearward elongated planar wall portions, the latter being angularly oriented relative to the former, and extending in a direction toward the complementary wall portion of the other section when they are assembled;

b. a pin-receiving bore formed in one side of said member section near one end thereof;
c. an integral pin extending outwardly from said one side, and near the other end, of said member section, and being oriented for insertion into said bore in the other complementary section;
d. an integral locking detent extending outwardly from said one side of said member section, and located at the other end thereof;
e. a boss extending perpendicularly outward from said one side of said forward wall portion, said boss being adapted to be received within an accommodating recess of an associated connector when said member sections are subsequently assembled in interlocked relationship therewith, and



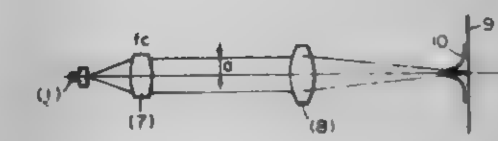
f. a locking latch extending outwardly from said one end and side of said member section, said latch in each section being adapted to snap into locking engagement with the detent of the other section when said complementary sections are brought into close mutually disposed relationship, with only the thickness of a terminating section of an associated cable interposed therebetween, such that the pin of each section is inserted within said bore of the other member section, while the boss of each section is nested within a receiving recess of an associated connector, said pins being further adapted, when said member sections are interlocked, to also extend through respectively aligned pre-formed apertures formed along opposite border regions of an interposed terminating section of cable so as to reliably anchor the latter to an associated connector.

4,323,296
CONNECTOR
Ikuhiro Andoh, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan
Filed Feb. 4, 1980, Ser. No. 118,216
Claims priority, application Japan, Feb. 7, 1979, 54-14714[U]
Int. Cl.³ H01R *13/506, 13/516*
U.S. Cl. 339—217 S 10 Claims



1. A connector comprising:
a molded connector housing including insertion holes which can be formed by using a molding core and which receive female connector elements which may be inserted therein; and
flexible abutment members which are located in the corresponding insertion holes and which are molded integrally with the connector housing, said flexible abutment members being provided with separate free ends which provide large contact areas between the flexible abutment members and the corresponding female contact elements which are to inserted in the insertion holes, said free ends being oriented so as to tend to prevent the female contact elements from coming out of the corresponding insertion holes, each of said flexible abutment members also being provided with a recessed groove having an inclined surface at one end thereof which enables all of the members to be flexed while permitting the molding core to be withdrawn from the connector housing to form the insertion holes after the completion of the connector housing molding operation.

4,323,297
IMAGE FORMING OPTICAL SYSTEM USING A SEMICONDUCTOR LASER
Naoto Kawamura, Inagi; Koichi Masegi; Isao Hakamada, both of Yokohama; Haruo Uchiyama, Kawasaki; Takashi Kitamura, Yokohama, and Masaaki Ishii, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 24, 1980, Ser. No. 133,316
Claims priority, application Japan, Mar. 30, 1979, 54-39075
Int. Cl.³ G02B *27/17*
U.S. Cl. 350—6.8 6 Claims



1. An image forming optical system using a semiconductor laser, comprising:
a semiconductor laser having different diverging points and divergence angles of the beam thereof in orthogonal directions;
a scanned surface on which the beam from said semiconductor laser is condensed; and
a spherical surface optical system disposed between said semiconductor laser and said scanned surface for condensing the beam from said semiconductor laser on said scanned surface, said spherical surface optical system being formed by a first spherical surface image forming optical system and a second spherical surface image forming optical system as viewed from said semiconductor laser side, the focal length f_c of said first spherical surface image forming optical system being

$$f_c^2 = \frac{\gamma}{\sqrt{\alpha_x \cdot \alpha_y}}\left\{1 + \frac{S_x^2}{2\left(1 + \sqrt{\frac{\alpha_x}{\alpha_y}}\right)}\right\}$$

$$0.7 < \gamma < 1.4$$

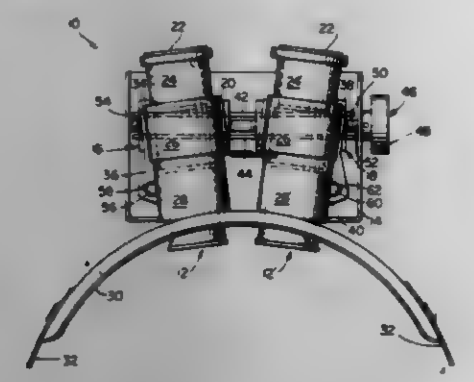
$$S_x = \frac{\pi}{\lambda} \sin^2\theta_{ox} \cdot A_s$$

$$\alpha_x = 0.97 \cdot \frac{\sin^2\theta_{ox}}{a^2}$$

$$\alpha_y = 0.97 \cdot \frac{\sin^2\theta_{oy}}{a^2}$$

where γ is a constant, λ is the wavelength of said semiconductor laser, A_s is the interval between the diverging origins of the semiconductor laser, θ_{ox} is the angle of expanse of the location whereat the energy of the beam is $1/e^2$ in the x-direction expanse of the beam from said semiconductor laser, θoy is the angle of expanse of the location whereat the energy of the beam is $1/e^2$ in the y-direction expanse of the beam from said semiconductor laser and a is an exit pupil radius of said first spherical surface optical system.

4,323,298
WIDE FIELD OF VIEW GOGGLE SYSTEM
Thomas M. Brennan, Cambridge, Mass., assignor to Baird Corporation, Bedford, Mass.
Continuation of Ser. No. 967,273, Dec. 7, 1978, abandoned. This application Jun. 6, 1980, Ser. No. 157,018
Int. Cl.³ G02B *23/12, 23/18*
U.S. Cl. 350—36 **2 Claims**



1. An optical viewing device in the form of a night vision goggle system and having a wide field of view, said system comprising:

(a) a frame;

(b) adjusting means mounted to said frame and including a first channel support and a second channel support, said first channel support having a first base and a first body, said second channel support having a second base and a second body, said first base and said second base constrained to said frame for relative lateral movement, said first body mounted to said first base for pivoting movement relative thereto, said second body mounted to said second base for pivoting movement relative thereto, first means for controlling said relative lateral movement of said first base and said second base to effect interpupillary adjustment over an interpupillary distance of from about fifty-five mm. to about seventy-two mm., and second means for controlling said pivoting movement of said first body and said second body, said second means being fixed once said pivoting movement of said first and second body relative to one another has been effected;

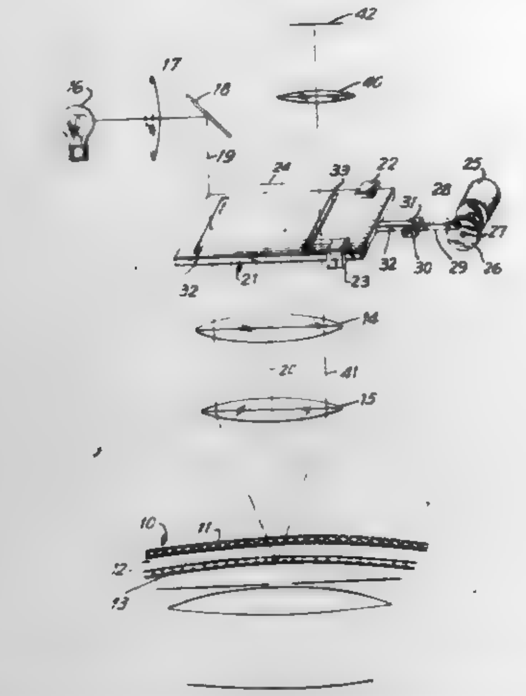
(c) a first optical channel with a narrow field of view and having a first optical axis, said first optical channel mounted to said first channel support of said adjusting means;

(d) a second optical channel with a narrow field of view and having a second optical axis, said second optical channel mounted to said second channel support of said adjusting means, the angular magnitude of said field of view of said first optical channel being the same as the angular magnitude of said field of view of said second optical channel;

(e) said first optical axis and said second optical axis constrained for relative angular movement with respect to one another in a common plane to provide an increased wide field of view characterized by having a common overlap and an angular resolution equal to that provided by said field of view of said first and second optical channels, said first optical axis and said second optical axis intersecting one another at an angle of about twenty degrees.

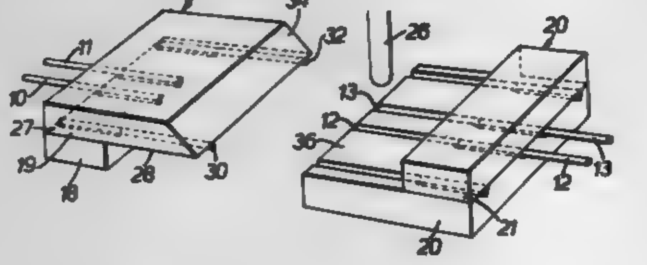
4,323,299
WIDE FIELD SPECULAR SCANNING DEVICE
Calvin W. Roberts, 160 E. 88th St., New York, N.Y. 10028
Filed Jul. 3, 1980, Ser. No. 165,568
Int. Cl.³ G02B *21/06;* A61B *3/12*
U.S. Cl. 350—91 **9 Claims**

1. A specular microscope having wide field scanning for the examination under magnification of a selected generally planar area within the cornea of an eye, said microscope comprising a lens system including a converging lens and an objective lens, observation means, opaque masking means positioned in a plane normal to the optical axis of said microscope between said lens system and said observation means, said masking means including first and second spaced parallel linear slit portions extending therethrough and disposed at opposite sides of said optical axis, means for oscillating said masking means in said plane in a direction normal to the length of said slit portions at a desired rate, illuminating means for directing a beam



of light through said first slit portion, said converging lens and said objective lens, to illuminate a narrow elongate area within the cornea of an eye positioned behind said objective lens on one side of said masking means, said observations means being positioned on the other side of said masking means to receive light reflected from said elongate area and passing through said objective and converging lenses and said second slit portion in the direction of said optical axis of said microscope.

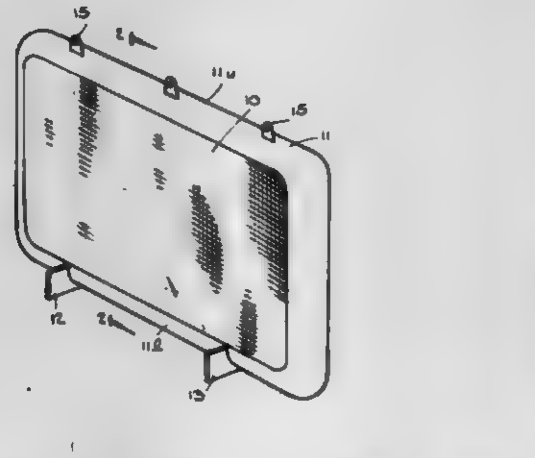
4,323,300
OPTICAL FIBRE CONNECTORS
William J. Stewart, Fritwell; John A. Robinson, and Richard Carpenter, both of Northampton, England, assignors to Plessey Handel und Investments AG, Zug, Switzerland
Filed Dec. 21, 1979, Ser. No. 106,040
Claims priority, application United Kingdom, Dec. 16, 1978, 48828/78
Int. Cl.³ G02B *7/26*
U.S. Cl. 350—96.21 **5 Claims**



1. An optical fibre connector comprising a first member and a second member, each of said first and second members having a flat plane surface formed thereon and each said flat plane surface having a groove formed therein, first and second optical fibres, said first optical fibre being located in and extending along the full length of said groove formed in said flat plane surface of said first member, and said second optical fibre being located in and extending along the full length of said groove formed in said flat plane surface of said second member, a third member, said third member having a flat plane surface of

greater area than that of said first member, said third member being mounted to clamp said first optical fibre in said groove, said first and second members abutting together with their flat plane surfaces lying in the same plane and said first and second optical fibres being in axial alignment with their ends abutting, and said flat plane surface of said third member overlapping said flat plane surface of said second member, a cam surface formed on said third member, said cam surface reacting with a fixed member to urge said third member towards said flat plane surface of said second member to clamp said second optical fibre in said groove, and resilient means for urging said first and second members together in an axial direction.

4,323,301
COLLAPSIBLE REAR/FRONT PROJECTION SCREEN ASSEMBLY
Donald Spector, 380 Mountain Rd., Union City, N.J. 07087
Filed May 14, 1980, Ser. No. 149,740
Int. Cl.³ G03B *21/56*
U.S. Cl. 350—117 **6 Claims**



1. A collapsible and portable screen assembly capable of acting, when erected as a rear or front projection screen in conjunction with an optical projector, said assembly comprising:

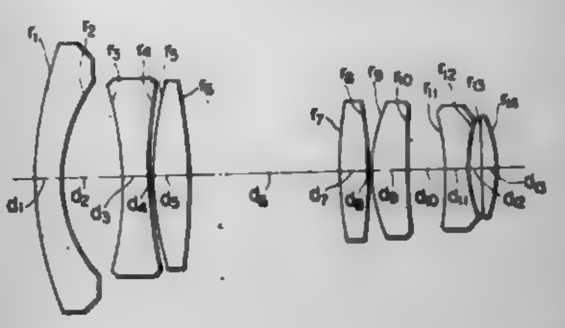
A. a frame consituted by an inflatable tubular loop formed of flexible plastic material having a rectangular formation and provided with valve means to effect inflation or deflation thereof; and

B. a screen sheet formed of thin flexible translucent plastic material whose margins are secured to said frame, said sheet having fine particles of titanium oxide dispersed therein to impart whiteness thereto and to function as a diffusion agent, said sheet being thermally embossed to define thereon myriad white reflective facets which cause light scattering in all directions, thereby causing the sheet to be both reflective and transmissive and to have light scattering characteristics, whereby when the loop is inflated the sheet assumes a planar form and functions either as a front or rear projection screen, and deflated loop and screen being foldable into a compact package.

4,323,302
WIDE-ANGLE ZOOM LENS SYSTEM
Tadashi Kimura, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan
Filed Feb. 27, 1980, Ser. No. 125,050
Claims priority, application Japan, Mar. 2, 1979, 54/24901
Int. Cl.³ G02B *15/14*
U.S. Cl. 350—426 **10 Claims**

1. A wide-angle zoom lens system comprising a front lens group comprising a first negative meniscus lens component having a convex surface on the object side, a second negative lens component and a third positive lens component, and a rear lens group comprising a fourth positive lens component, a fifth positive meniscus lens component having a convex surface on the object side, a sixth negative lens component and a seventh positive lens component; said lens system being so adapted as to permit changing focal length of the entire lens system as a whole by varying the airspace reserved between said front and rear lens groups and satisfy the conditions enumerated below:

(1) $1.68 < n_1, n_2$



(2) $n_4, n_5 < 1.65$

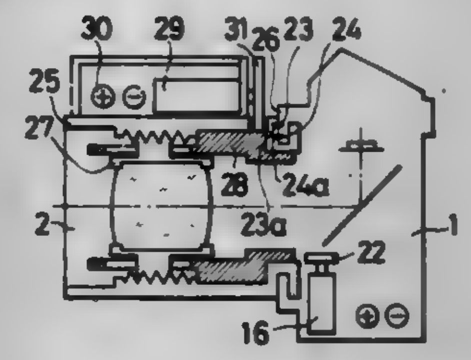
(3) $1.75 < n_6$

$$0.43 < \frac{d_1 + d_2 + d_3}{f} < 0.82 \tag{4}$$

(5) $1.6 < |r_6|/f$

wherein the reference symbols n_1, n_2, n_4, n_5 and n_6 represent refractive indices of the first, second, fourth, fifth and sixth lens components respectively, the reference symbols d_1 and d_3 designate thicknesses of the first and second lens components respectively, the reference symbol d_2 denotes the airspace reserved between the first and second lens components, the reference symbol r_6 represents radius of curvature on the image side surface of the third lens component and the reference symbol f designates focal length of the entire lens system as a whole at the wide position.

4,323,303
AUTOMATIC FOCUSING CAMERA
Shigeo Enomoto, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Jan. 25, 1980, Ser. No. 115,327
Claims priority, application Japan, Feb. 28, 1979, 54-23024
Int. Cl.³ G03B *3/10*
U.S. Cl. 354—25 **5 Claims**



1. In an automatic focusing still camera in which a focus control member of a first type of interchangeable lens is driven by a first focusing electric motor provided on a camera body of said still camera, the improvements comprising:

a circuit for controlling rotation of said motor to move a lens of said first type along an optical axis thereof to a focus point;

said camera body having first signal contacts provided on a lens mounting mechanism thereof, said signal contacts being coupled to receive an output signal of said circuit; and

a second type of interchangeable lens comprising a focus control member, a second focusing electric motor, and second signal contacts the rotation and stopping of said second focusing motor being controlled in accordance with said signal received through said second signal

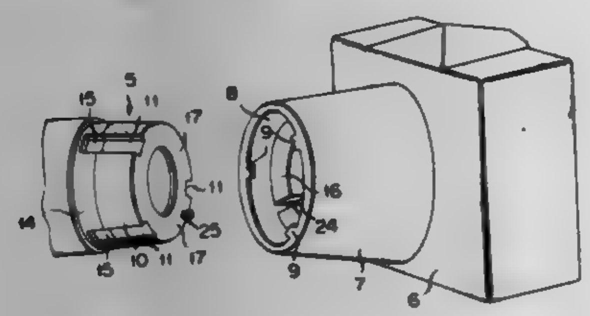
contacts from said first signal contacts, and means for supplying current to said second focusing electric motor, wherein said focus control member of said second type of interchangeable lens is driven by said second electric motor for focalization.

4,323,304

DEVICE FOR FITTING AN ATTACHMENT TO AN ENDOSCOPE OCULAR SECTION

Fumiaki Ishii, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Dec. 12, 1980, Ser. No. 215,755
Claims priority, application Japan, Dec. 24, 1979, 54-167775
Int. Cl.³ G03B *29/00*; A61B *1/06*
U.S. Cl. 354—62 7 Claims



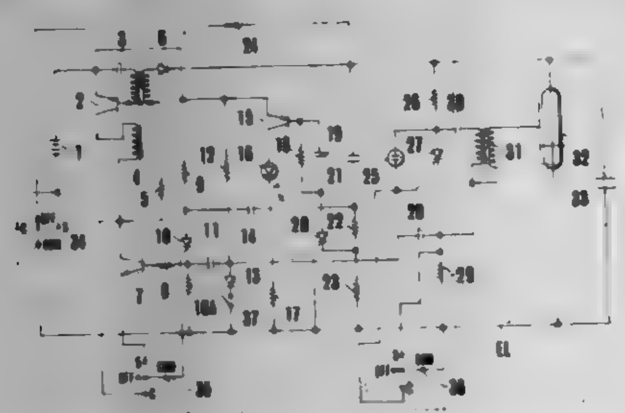
1. A device for fitting an ocular section attachment to an ocular section of an endoscope which comprises:
a cylindrical receptacle which has a first end face and is provided on an endoscope ocular section;
an adapter which is provided on an ocular section attachment to be fitted around the cylindrical receptacle by being rotated;
a coupling ring rotatably disposed in the adapter and having a second end face abuttable against the first end face of the receptacle; and
connection means for connecting the coupling ring and cylindrical receptacle together in a state preventing their relative movement.

4,323,305

DEVICE FOR INSERTING DATA INTO PHOTOGRAPHS

Toshihiko Satoh, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 30, 1980, Ser. No. 173,691
Claims priority, application Japan, Jul. 30, 1979, 54-97765
Int. Cl.³ G03B *17/24, 17/20*
U.S. Cl. 354—106 3 Claims



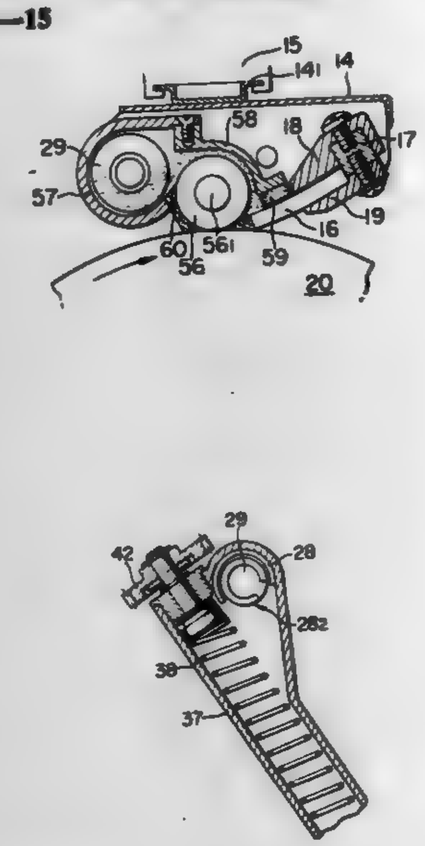
1. A data inserting device having a flash discharge tube employed as a light source required for data insertion, said data inserting device comprising:
a capacitor for supplying said flash discharge tube with an electric energy, said capacitor having a particular recycle time;
display means for displaying completion of data insertion; and
driving means for driving said display means for a predetermined period of time in response to a flashing action of said flash discharge tube, said predetermined period of time being longer than the recycle time of the capacitor.

4,323,306

DEVELOPER CLEANING DEVICE FOR ELECTROPHOTOGRAPHY

Yoshio Ito; Katuhiko Yamada; Tadayuki Kitajima, all of Yokohama; Koichi Miyamoto, Tokyo; Hiroo Kobayashi, Tokyo, and Yoshikuni Mohvama, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 934,688, Aug. 17, 1978, Pat. No. 4,218,131, which is a continuation of Ser. No. 648,821, Jan. 13, 1976, abandoned. This application Nov. 5, 1979, Ser. No. 91,483
Claims priority, application Japan, Jan. 17, 1975, 50/7528
Int. Cl.³ G03G *21/00*
U.S. Cl. 355—15 27 Claims



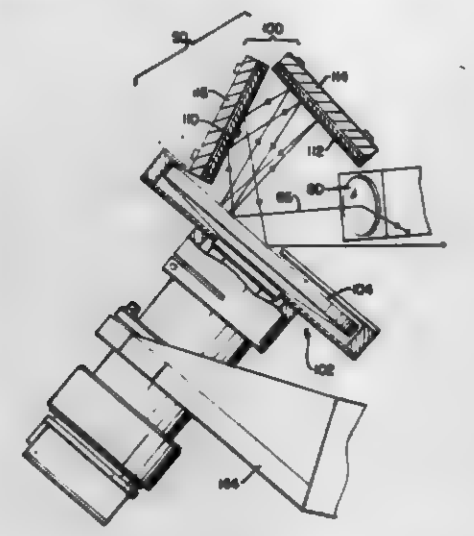
1. A cleaning device for use with an electrophotographic machine having a movable image bearing member for bearing a developed image formed in accordance with an electrostatic image, the image bearing member being reusable after the developed image is used and the image bearing member is cleaned, said device comprising:
cleaning means for removing developer from a surface of the image bearing member, said means including a cleaning member which extends transversely with respect to the direction of movement of the image bearing member;
means for transporting the developer removed by said cleaning means away from the image bearing member along said transverse direction thereof;
means defining a passage for leading the developer transported by said transporting means to means for collecting developer; and
means for preventing the deposition of the removed developer on said passage means, said preventing means including a helical member rotatable about an axis extending substantially along said passage means.

4,323,307

LIGHT BEAM SCANNING APPARATUS

Douglas A. Seeley, High Bridge, N.J., assignor to American Hoechst Corporation, Somerville, N.J.

Filed Jun. 6, 1980, Ser. No. 157,147
Int. Cl.³ G03B *27/48, 27/50, 27/70*
U.S. Cl. 355—51 19 Claims



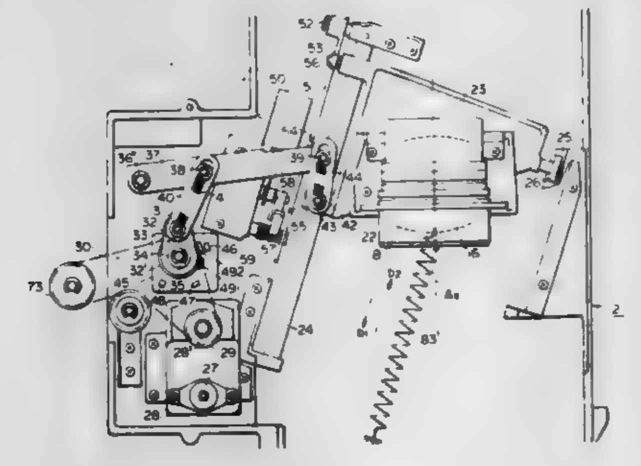
1. Beam scanner apparatus which comprises
(a) rotatable reflective means having an axis of rotation normal thereto; and
(b) at least one planar reflective segment positioned on said reflective means at a tilt angle which is off normal to said axis of rotation; and
(c) means for rotating said reflective means about the axis of rotation; and
(d) a roof mirror arrangement which comprises a first planar reflective surface and a second planar reflective surface, said first and second reflective surfaces are disposed in fixed positions relative to each other and said reflective means; and
(e) means for supporting said reflective means in the path of a light beam such that said beam is reflected 4n times by said reflective means and 2n times between said first and second reflective surfaces before said beam emerges from said optical scanner apparatus, wherein n is any integer.

4,323,308

COPY MAGNIFICATION MODIFYING APPARATUS

Tadayuki Kitajima, and Yoshikuni Tohyama, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 99,996, Dec. 4, 1979, abandoned. This application Dec. 31, 1980, Ser. No. 221,621
Claims priority, application Japan, Dec. 8, 1978, 53-151768; Dec. 8, 1978, 53-151769
Int. Cl.³ G03B *27/34, 27/40, 27/70*
U.S. Cl. 355—57 16 Claims



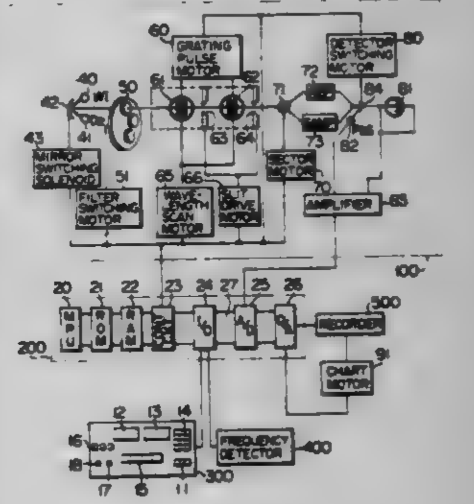
1. A copy magnification modifying apparatus for modifying the copy magnification by displacing an optical member involved in the image formation to and maintaining the same at a position adapted for forming an image of a selected magnification of an original onto a photosensitive member, comprising:
carriage means for supporting said optical member;
a rotary drive source;
an optical member displacing mechanism for transmitting the drive force of said rotary drive source through one-directional rotary clutch means and resilient means to said optical member thereby guiding the same along a determined path;
stopper means to engage with said carriage means thereby stopping said optical member at a position corresponding to the selected magnification; and
control means adapted for continuing the function of said rotary drive source after the stopping of said optical member to cause a deformation in said resilient means thereby pressing said carriage means against said stopper means and generating a resilient force biasing said one-directional rotary clutch means in a direction opposite to the rotating direction thereof, and thereafter terminating the function of said rotary drive source.

4,323,309

SPECTRO-PHOTOMETER WITH ARITHMETIC AND CONTROL UNIT

Nobuo Akitomo, and Shigeo Tohyama, both of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 26, 1980, Ser. No. 124,853
Claims priority, application Japan, Mar. 2, 1979, 54/24956
Int. Cl.³ G01J *3/02, 3/42*
U.S. Cl. 356—319 12 Claims



1. A spectro-photometer having an arithmetic and control unit comprising a spectro-photometer including a calibration mechanism and a wavelength-range changeover mechanism; operation setting means for presetting measuring conditions of said spectro-photometer; storage means for storing therein calibration signals in the order of calibration to be performed by said calibration mechanism, changeover signals in the order of changeover to be performed by said wavelength-range changeover mechanism, and the input information from said operation setting means; an arithmetic unit for generating control signals required to automatically control said calibration mechanism and said wavelength-range changeover mechanism on the basis of said calibration signals, said changeover signals and said input information, all of which are stored in said storage means, and for performing an arithmetic processing an measured values obtained by said spectro-photometer; and a control unit for controlling said calibration mechanism and said wavelength-range changeover mechanism in response to said control signals from said arithmetic unit, further comprising:
first display means for displaying an indication that said

spectro-photometer is subjected to calibration or changeover of the wavelength range, in accordance with a command from said arithmetic unit, when said input information read out of said storage means by said arithmetic unit shows that said spectro-photometer is being automatically subjected to said calibration or said changeover of wavelength range; and

second display means for displaying indications of the states of the steps in said calibration or wavelength-range changeover operations required to be carried out till the termination of operation in said calibration mechanism or said wavelength-range changeover mechanism, in accordance with an output from said arithmetic unit.

4,323,310

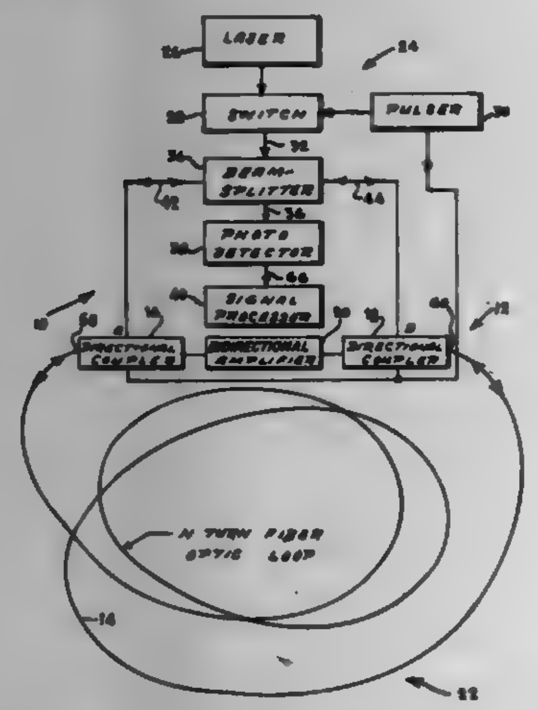
FIBER OPTIC ROTATION SENSING INTERFEROMETER

Herbert J. Shaw, and Marvin Chodorpw, both of Stanford, Calif., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Dec. 5, 1979, Ser. No. 100,320

Int. Cl.³ G01B *9/02*

U.S. Cl. 356—350 **10 Claims**



1. A rotation sensing interferometer comprising means for producing an input pulse of electromagnetic radiation, directing means in optical alignment with said electromagnetic radiation producing means for receiving said input pulse of electromagnetic radiation and dividing said input pulse into a concurrent first and a second pulse of electromagnetic radiation, means optically aligned with said directing means for providing a closed path for said first and second pulse to circulate thereabout, coupling means optically interconnecting said directing means with said path providing means for receiving said first and second pulse electromagnetic radiation and for inputting and directing in opposite directions around said path said first and said second pulse, for non-destructively sampling said first and said second pulse after each pass therethrough and for extracting a first and a second pulse sample from said path once each circulation, said directing means being in optical alignment with said coupling means for receiving said first and said second pulse sample and directing said first and said second pulse sample therefrom as an output, detecting means in optical alignment with said directing means for receiving said output and measuring the instantaneous relative phase shift between said first and said second pulse sample and providing an output in the form of a frame of pulses containing phase information and means for receiving said output from said detecting means and converting said phase information into the angle of said rotation or rate of said rotation of said interferometer.

4,323,311

APPARATUS AND METHOD FOR DETECTING HOLES IN SHEET MATERIAL

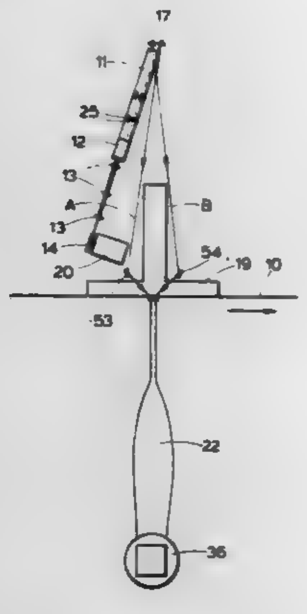
Robert N. West; Patricia A. West, both of Chislehurst; Andrew J. Barker, Orpington, and Rosemary J. Hall, Havant, all of England, assignors to Sira Institute Limited, Chislehurst, England

Filed Apr. 29, 1980, Ser. No. 144,938

Claims priority, application United Kingdom, May 11, 1979, 16525/79

Int. Cl.³ G01N *21/89*

U.S. Cl. 356—431 **31 Claims**



1. Apparatus for detecting holes through opaque or generally opaque sheet material moving in a first direction comprising a radiation source, means for directing a beam of radiation from the source at the sheet material and for scanning the beam thereacross in a direction transverse to said first direction, characterised in that said beam directing means is arranged so that the beam, in use is directed at said sheet material along a path tilted from the perpendicular to the sheet material in an upstream direction with respect to the direction of movement of the sheet material during some scans and in a downstream direction during other scans, means located so as to be on the opposite side of the sheet material to the incident radiation to collect radiation passing through holes in the sheet material, said collection means comprising at least one radiation guide comprising transparent material having a high refractive index relative to its surroundings, a first face of the radiation guide being shaped and positioned to collect the radiation passing through holes in the sheet material, a second face of the radiation guide opposite the first face being shaped to pass the radiation collected by the first face to a radiation detector, and the faces joining the first and second faces being arranged such as to internally reflect radiation from said first face to said second face.

4,323,312

FLUIDIZED BED APPARATUS

Werner Glatt, 7851 Binzen, Krs. Lorrach, and Kurt Bauer, Im Finkeler 4, Freiburg-Tiengen, both of Fed. Rep. of Germany

Continuation-in-part of Ser. No. 936,955, Aug. 25, 1978, abandoned. This application May 30, 1980, Ser. No. 154,682

Claims priority, application Fed. Rep. of Germany, Aug. 26, 1977, 2738485; Feb. 9, 1978, 2805397; Feb. 15, 1980, 3005770

Int. Cl.³ B01F *13/02, 15/02*

U.S. Cl. 366—102 **20 Claims**

1. A fluidized bed apparatus comprising

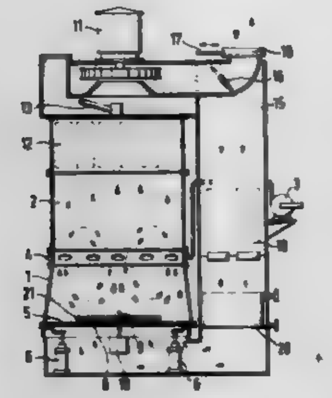
a fluidized bed vessel having walls tapered inwardly as it extends upwardly and having a perforated bottom,

a substantially horizontal rotor disc arranged above said bottom of said vessel,

said rotor disc being of smaller horizontal dimension than the corresponding horizontal dimension of said vessel and forming an annular gap between the circumferential edge of said rotor disc and the upwardly and inwardly tapered wall of said vessel,

means for adjusting the height of said rotor disc connected to said rotor disc and thereby changing the width of said annular gap,

means for rotating said rotor disc about an at least approximately vertical axis connected to said rotor disc,



means for moving a flow of air or other gas into said vessel through said bottom and through said annular gap around the periphery of said rotor disc,

means for releasing material to be treated into the moving gas forming a fluidized bed moved by said rotor disc and the moving gas passing through said annular gap,

whereby the velocity of the flow of gas through said annular gap is adjusted to the varying density, particle size, and surface characteristics of the material to be treated by varying the height of said rotor disc in relation to said walls of said vessel to decrease said gap and increase flow velocity and alternatively to increase said gap and decrease flow velocity.

4,323,313

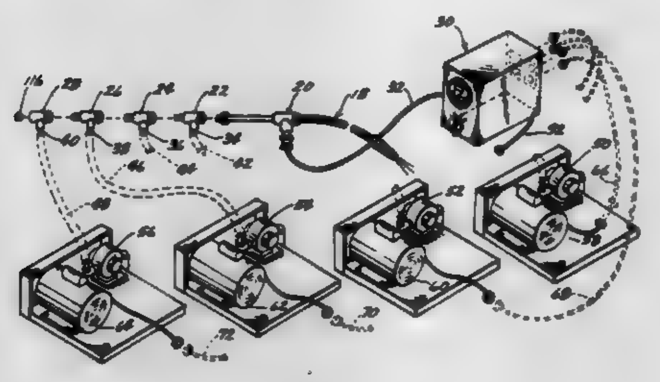
IMPREGNATOR SYSTEM

Robert E. Oberg; Clarence E. Stewart, both of South Sioux City, Nebr., and Thomas C. Geelan, Sioux City, Iowa, assignors to The Broyhill Company, Dakota City, Nebr.

Filed Dec. 5, 1979, Ser. No. 100,632

Int. Cl.³ B01F *15/04;* G05D *11/02*

U.S. Cl. 366—142 **1 Claim**



1. In combination,

a fertilizer blending means including a mixing drum for mixing the dry ingredients of a batch of dry fertilizer,

a plurality of electrically driven pumps having their intakes in communication with respective sources of liquid chemicals,

a discharge line extending from the discharge side of each of said pumps,

a liquid line having a discharge portion in communication with the interior of said mixing container,

said discharge lines being in communication with said liquid line,

a check valve in each of said discharge lines adjacent its connection with said liquid line for preventing flow from said liquid line to the associated pump,

an electronic flow sensor means in said liquid line downstream of the connection between said discharge lines and said liquid line for sensing the rate of flow therethrough,

a control means operatively connected to said flow sensor means and to each of said pumps for selectively activating one of said pumps and for deactivating the said one pump when the preselected volume of liquid has passed through said flow sensor means,

said control means including a selection switch corresponding to the plurality of pumps for selecting the desired pump to be activated; a manually operated dial means for selecting the units of volume of liquid to be pumped by the said pump; a readout means which initially indicates the selected units of volume when said pump is activated; and a countdown means which counts down the units of volume passing through said flow sensor means and sensed thereby; and circuit interruption means for deactivating said pump when the countdown means has caused the readout means to reach zero.

4,323,314

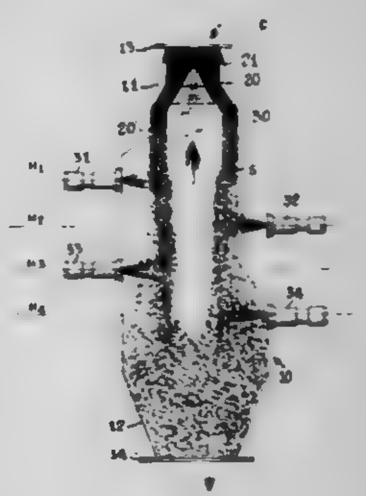
PROCESS AND APPARATUS FOR ADDING LIQUID COMPONENTS TO POURABLE POWDERED OR GRANULAR MATERIALS

Max Kaiser-Wirz, Wintersingerstrasse 23, CH-4465 Magden, Switzerland

Filed Nov. 5, 1979, Ser. No. 91,163

Int. Cl.³ B01F *5/20*

U.S. Cl. 366—167 **2 Claims**



1. A process for continuously adding at least one liquid component to pourable material in a cylindrical vessel having a conical deflector disposed between the pourable material supply and an outlet in the bottom of the vessel, consisting of the steps of;

a. feeding the pourable material into the vessel in such a manner that the material trickles downwardly in the vessel, falling freely in the shape of a hollow cylindrical stream,

b. spraying the interior of the cylindrical stream with a liquid component from at least one nozzle centrally disposed within the deflector,

c. spraying the exterior of the cylindrical stream with a liquid component from at least one nozzle disposed in the wall of the vessel, wherein the only movement which

takes place within the vessel is produced by the pourable material, and said at least one liquid component.

4,323,315

ELECTRONIC TYPEWRITER WITH DISPLAY DEVICE

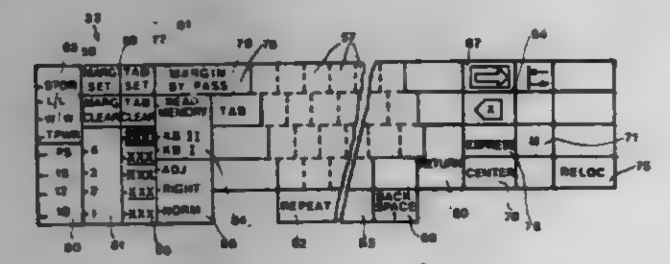
Filippo Demonte, Cavalier Maggiore, and Mario Figini, Bosco Marengo, both of Italy, assignors to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy

Filed Feb. 12, 1980, Ser. No. 120,747

Claims priority, application Italy, Feb. 9, 1979, 67280 A/79

Int. Cl.³ B41J *5/30, 3/46*

U.S. Cl. 400—63 5 Claims



1. An electronic typewriter comprising a keyboard for entering data;
- a printing unit for printing entered data along printing positions of a printing line;
- editing means operable to select an editing state of the typewriter to modify the printing positions of entered data, wherein said editing means include editing selector means and/or editing keys operable according to a selected editing mode, memory means for storing, without printing, said entered data, display means for displaying last entered data, and service keys operable to cause the printing unit to print the data stored in said memory means on modified printed positions of the printing line according to the selected editing mode of said editing selector means and/or editing keys;
- word/word selector means operable to select a word/word state of the typewriter for storing, without printing and without modifying the printing positions, a plurality of entered data defining a word;
- means responsive to the operation of said service keys including a space bar jointly with selected word/word state of the typewriter for causing the print unit to print said plurality of entered data word by word; and
- control means for rendering said word/word selector means ineffective on selection of said word/ word state when said editing selector means and/or editing keys are operated according to a selected editing mode.

3. An electronic typewriter comprising a printing unit for printing entered data,
- presetting means for presetting a mode of a plurality of modes producing an emphasis of the entered data by one of underlining print, heavy print, reverse print of entered data and a combination of said ways of emphasis,
- a display device of the matrix type comprising dots which are made selectively luminous for displaying the entered data and a row of emphasizing dots below the dots of the matrix, and
- emphasizing means which respond to a preset mode to display in an emphasized manner in relation to the other data the entered data which is to be emphasized by selectively making luminous any of said emphasizing dots according to a predetermined code associated with said mode.

4,323,316

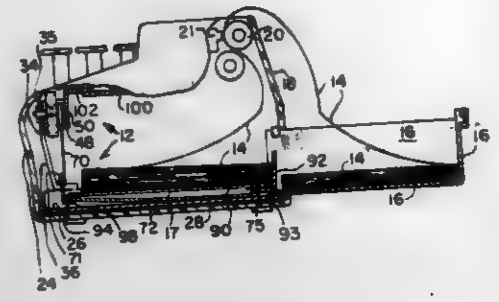
SHORTHAND MACHINE PAPER GAUGE

Paul J. Fowler, Glenview, and Ralph E. Zum Bahlen, Chicago, both of Ill., assignors to Stenograph Corporation, Skokie, Ill.

Filed Feb. 21, 1980, Ser. No. 123,122

Int. Cl.³ B41J *3/26*

U.S. Cl. 400—91 12 Claims



1. A shorthand machine paper gauge for indicating the amount of paper tape remaining in the machine during operation of the shorthand machine, said paper gauge comprising:

(a) scale means adapted to support and weigh a supply of paper tape placed within the shorthand machine, said scale means being mounted for movement related to the weight of the paper within the machine between a first position which will be assumed when no paper tape is within the shorthand machine, a second position which will be assumed when a pre-determined amount of paper tape is within the shorthand machine, and intermediate positions said scale means being resiliently urged toward said first position; and

(b) indicating means operatively connected to said scale means to indicate the position of the scale means and thus the amount of paper within the machine.

4,323,317

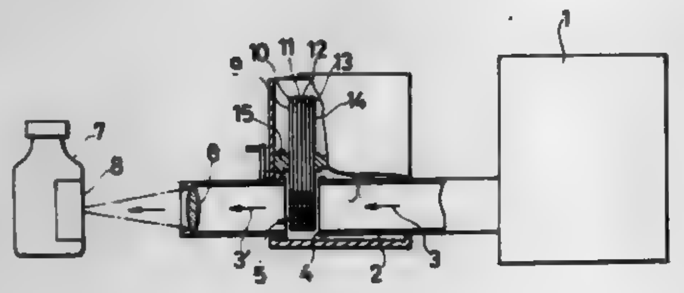
PATTERN CONTROLLING DEVICE FOR LASER MARKER

Yasuyuki Hasegawa, Kanazawa, Japan, assignor to Shibuya Kogyo Company, Ltd., Ishikawa, Japan

Filed May 7, 1980, Ser. No. 147,683

Int. Cl.³ B41J *3/02;* B23K *9/00*

U.S. Cl. 400—118 12 Claims



1. A pattern controlling device for a laser marker in which a laser beam is profiled to a given printing pattern which is marked on the surface of an object; the pattern controlling device comprising a plurality of discs which are rotatably mounted in coaxial relationship and each formed with given patterns which permit the transmission of the laser beam therethrough, each of the rotatable discs being partly disposed in a path of passage of the laser beam so that the patterns on the individual rotatable discs are combined to define the printing pattern, in which the patterns which permit the passage of the laser beam therethrough are formed in patterned discs which are applied to a plurality of circular slots disposed in each

rotatable disc in a concentric circle and centered about the axis of rotation of the rotatable discs and at an equal interval.

4,323,318

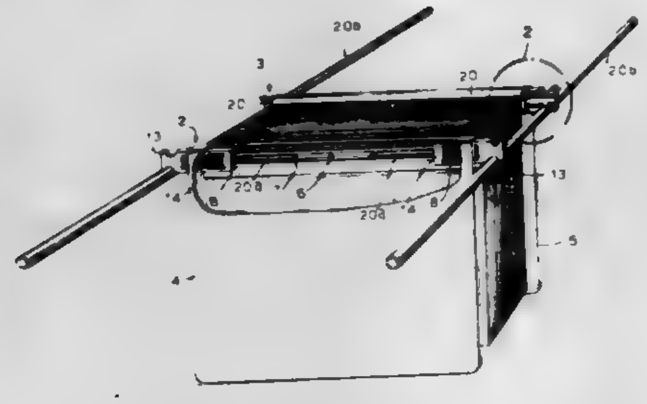
SLIDE COMPRESSION MECHANISM FOR FLEXIBLE POST BINDER

John P. Clark; Jack H. Michaelis, both of Elmhurst, and Frank J. Malcik, Berwyn; all of Ill., assignors to Wilson Jones Company, Chicago, Ill.

Continuation of Ser. No. 551,986, Feb. 21, 1975, abandoned, which is a continuation-in-part of Ser. No. 315,789, Dec. 18, 1972, abandoned. This application Jun. 7, 1977, Ser. No. 804,446

Int. Cl.³ B42F *13/06*

U.S. Cl. 402—17 3 Claims



1. In a flexible post binder for binding a plurality of looseleaf sheets or the like together, said binder comprising at least one elongated channel having two side rails interconnected by a bottom, each channel having at least one pair of post receiving holes therein each adapted to receive a flexible post extending through aligned holes in the looseleaf sheets, the ends of said posts being adapted to be bent-over within the channel to hold the looseleaf sheets in bound condition, a pair of compressor members each slidably mounted for longitudinal movement on the channel into compressive overlying relationship with one of the bent-over post ends to hold said post end in bent-over condition, each of said compressor members including a major body portion having generally parallel upper and lower sides and extending in a plane between said rails and in overlying relationship to said rails, each compressor also having a pair of substantially parallel reinforcing ribs extending from the underside of its major body portion and into said channel, said ribs being spaced apart sufficiently to guidingly receive a flexible post therebetween, the distance between said rails being a plurality of times greater than the transverse dimension of either of said ribs, and motion limiting means for preventing outward movement of each compressor member beyond a predetermined point on the channel, said motion limiting means comprising:

(a) at least one pair of cooperatively engaging longitudinally aligned stops positioned within the channel with one stop of each pair being a portion of said channel projecting into the path of the other stop; and

(b) said other stop of each pair comprising a shoulder on one of said reinforcing ribs, said one rib having two portions along its length, a first portion of said rib from one end thereof to said shoulder being of such shape and dimension to pass by said one stop, a second portion of said rib beginning at said shoulder being of such shape and dimension as to prevent its passage past said one stop, whereby upon outward movement of each compressor member along the channel the two stops of each pair engage each other to prevent further outward movement of the compressor member beyond said predetermined point;

each compressor member also including a hook portion at one end thereof for supporting the binder on spaced-apart bars, and at least a part of at least one of said ribs extending from the underside of said hook portion to reinforce said hook portion.

4,323,319

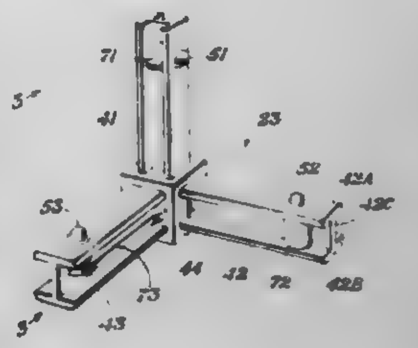
STRUCTURAL CONNECTING MEMBER

Bevoley C. Adams, 2419 J. Weaver St., Fort Worth, Tex. 76117

Continuation of Ser. No. 759,830, Jan. 17, 1977, abandoned. This application Feb. 7, 1978, Ser. No. 875,883

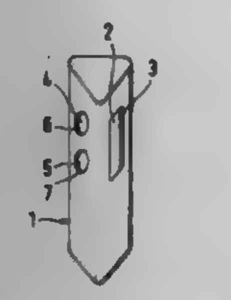
Int. Cl.³ F16B *7/00*

U.S. Cl. 403—171 2 Claims



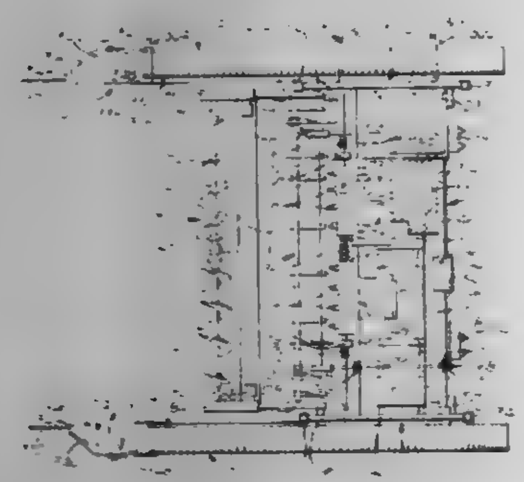
1. A connecting member for connecting a plurality of elongated frame members together to form a desired structure, said elongated frame members having openings formed therethrough and which extend along the length of said frame members, said connecting member comprising:
- a plurality of arms having first ends connected together and second ends extending outward in different directions,
- said arms comprising integral members molded from a plastic material,
- each arm comprising:
  - two spaced apart portions connected together by an intermediate portion,
  - a cylindrical shaped member molded to said intermediate portion, the diameter of said cylindrical shaped member being greater than the thickness of said intermediate portion,
  - an aperture formed into one of said two spaced apart portions and into said cylindrical shaped member,
  - a movable locking member located in said cylindrical shaped member and comprising a generally hemispherical portion adapted to be moved to outward and inward positions,
  - said generally hemispherical portion of said locking member extending through said aperture and beyond said one portion of said two spaced apart portions of said arm when said generally hemispherical portion is moved to said outward position,
  - spring means located in said cylindrical shaped portion and normally urging said generally hemispherical portion of said locking member to said outward position,
- said arms having a size in cross-section corresponding to the cross-sectional size of said openings of said frame members such that said arms may be inserted into said frame members and moved to predetermined securing positions,
- said generally hemispherical portions of said locking members being movable to their inward positions to allow said arms to be inserted into said openings of said frame members and moved to said securing positions,
- said frame members having apertures formed through the structure thereof communicating with said openings such that when said arms are located at said securing positions in said openings, said generally hemispherical portions of said locking members extend into said apertures of said frame members and secure said frame members to said connecting member.

4,323,320
LIGHT-REFLECTING ARRANGEMENT FOR USE IN TRAFFIC CONTROL DEVICES
Wolfgang Liebrich, and Dieter Schneider, both of Buchen, Fed. Rep. of Germany, assignors to Odenwälder Kunststoffwerke GmbH, Buchen, Fed. Rep. of Germany
Filed Jun. 5, 1980, Ser. No. 156,588
Claims priority, application Luxembourg, Jun. 5, 1979, 81365
Int. Cl.³ E01F *9/00*
U.S. Cl. 404—10 **16 Claims**



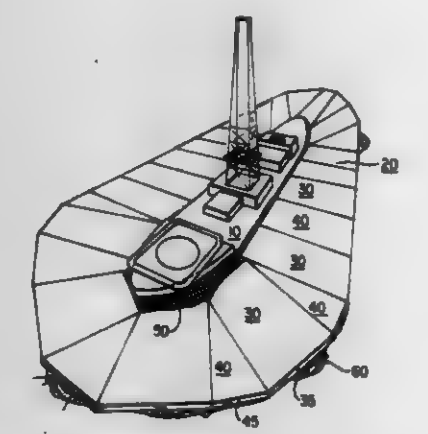
1. A light-reflecting arrangement, particularly for use in traffic control devices such as roadside markers, comprising a support; a stack of light-reflecting plates mounted on said support for successive advancement of the individual light-reflecting plates toward and beyond an operative position in which the respective light-reflecting plate is exposed to act as a reflector; and means for gradually advancing said light-reflecting plates of said stack to replace that light-reflecting plate which may have lost its reflecting capability while dwelling in said operative position by the next-succeeding light-reflecting plate of said stack.

4,323,321
TRACK DRIVEN MACHINES WITH AUXILIARY CABLE-WINCH DRIVE
Charles H. Dale, Rock Island, Ill., assignor to Pav-Saver Mfg. Co., East Moline, Ill.
Filed Apr. 28, 1980, Ser. No. 144,296
Int. Cl.³ E01C *19/12*
U.S. Cl. 404—105 **10 Claims**



1. A paving machine comprising a frame, means on said frame for spreading and working wet concrete into a strip of wet concrete pavement, at least one endless track on each side of said frame for supporting said frame and the machine components mounted thereon, power drive means including a hydraulic motor for driving at least one track on each of said frame to propel said machine forwardly, a pair of cable winches mounted on respective opposite sides of the forward portion of said machine, a hydraulic motor for driving each winch, a first hydraulic line circuit for supplying hydraulic fluid under pressure to one of the track's hydraulic motor and also the one winch's hydraulic motor on the same side of said machine either simultaneously or individually, and a second hydraulic line circuit for supplying hydraulic fluid under pressure to another track's hydraulic motor and also the other winch's hydraulic motor on the opposite side of said machine either simultaneously or individually, whereby, when cables on one or both respective winches are unwound and secured ahead of said machine, the machine may be propelled forwardly by the tracks alone, the track and winch on one side of said machine and the track alone on the opposite side of said machine, the tracks and winches on both sides of said machine, or the track alone or together with the winch on one side of the machine and the winch alone on the opposite side of the machine.

4,323,322
WARM AIR CANOPY SYSTEM FOR PROVIDING ICE-FREE ZONE
J. Cam O'Rourke; G. Roger Pilkington, both of Calgary, and Frank G. Bercha, Cochrane Alta. Tolowo, all of Canada, assignors to Dome Petroleum Limited, Alberta, Canada
Filed Jul. 5, 1979, Ser. No. 54,997
Int. Cl.³ E02B *15/02*
U.S. Cl. 405—217 **8 Claims**



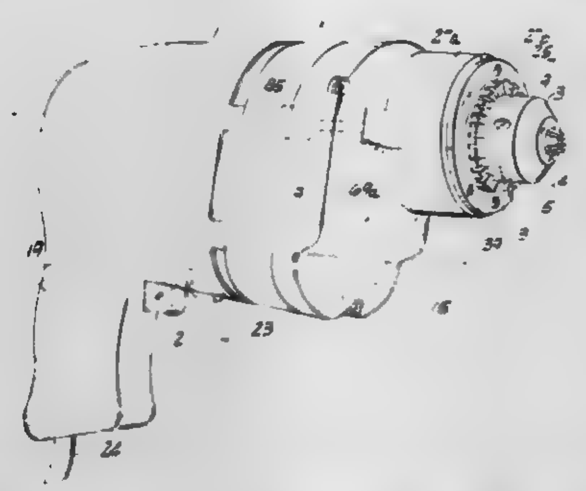
1. A method for providing a substantially ice-free zone to a predetermined distance around a vessel which is floating on a body of water, comprising the steps of:

(a) floating said vessel on a portion of said body of water in which said substantially ice-free zone o;s to be provided;
(b) creating a finite, substantially enclosed annular zone of water around said vessel above the waterline of said vessel to said predetermined distance away from said vessel, said zone of water having a periphery which encroaches said water at said waterline;
(c) continuously circulating warm air derived from a source of heat from said vessel to said substantially enclosed zone, and withdrawing cooler air from said substantially enclosed zone to said source of heat in said vessel; and
(d) establishing an air/water seal at the location where said zone encroaches said water thereby to prevent ice formation within said annular enclosed zone.

4,323,323
TOOL TIP FOR A MACHINE TOOL
Roland J. Lumby, Selly Oak; Bernard North, Stirchley; Alfred J. Taylor, Solihull, and Roland M. Thomas, Hollywood, all of England, assignors to Lucas Industries Limited, Birmingham, England
Continuation of Ser. No. 30,474, Apr. 16, 1979, abandoned, which is a continuation of Ser. No. 885,449, Mar. 10, 1978, abandoned. This application Nov. 5, 1979, Ser. No. 91,506
Claims priority, application United Kingdom, Mar. 17, 1977, 11298/77
Int. Cl.³ B26D *1/00*
U.S. Cl. 407—119 **10 Claims**

1. A cutting tool tip formed at least at a cutting edge of the tip from a ceramic product consisting essentially of at least 75% by volume of a single phase compound having an expanded β-phase silicon nitride lattice and having the general formula $Si_{6-z}Al_zN_{8-z}O_z$, wherein $0<z\leq 5$ and a second phase containing at least one rare earth metal selected from the group consisting of yttrium, lanthanum, cerium, neodymium, praseodymium and scandium, the ceramic product being produced by sintering a starting mixture consisting essentially of silicon nitride, a silicon aluminium oxynitride other than said expanded β-phase silicon nitride, and at least one oxide of a rare earth metal.

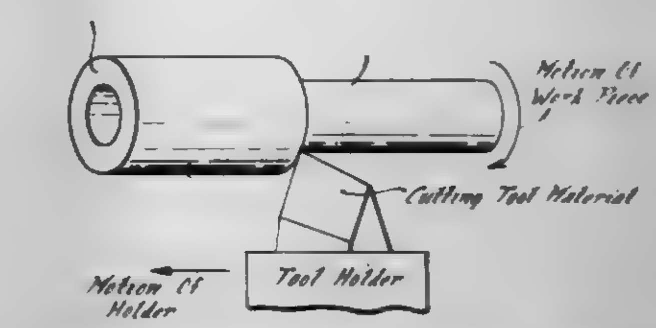
4,323,324
CHUCK BRAKE
Timothy J. Eberhardt, San Francisco, Calif., assignor to Alfred F. Eberhardt and Marvin Coghill, both of Bangkok, Thailand, part interest to each
Filed Apr. 18, 1979, Ser. No. 31,050
Int. Cl.³ B23B *31/06, 31/26*
U.S. Cl. 408—124 **12 Claims**



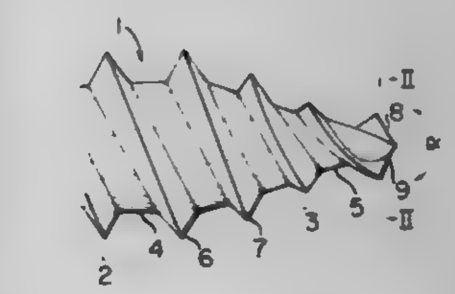
1. Apparatus for use with a drill tool having a chuck including a chucking element and a housing relatively rotatable with respect to said chucking element for selective tightening or loosening of said chucking element about a tool shank, said apparatus comprising brake means adapted to surround and engage at least a portion of a peripheral surface of said chuck housing, means securing said brake means to said drill tool to permit selective movement of said brake means between a first position relative to said chuck housing freely permitting rotation of said chuck housing and a second position relative to said chuck housing providing friction between said brake means and said chuck housing for frictionally impeding rotation of said chuck housing whereby, upon movement of said brake means to said second position, operation of said drill tool provides selective tightening or loosening of said chucking element.

4,323,325
METHOD OF USING $Si_3N_4.Y_2O_3.SiO_2$ CERAMIC SYSTEM FOR MACHINE CAST IRON
Shyam K. Samanta, Ypsilanti; Krishnamoorthy Subramanian, Inkster, and Andre Ezis, Grosse Ile, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.
Continuation-in-part of Ser. No. 105,829, Dec. 20, 1979, Pat. No. 4,227,842, which is a continuation-in-part of Ser. No. 954,796, Oct. 25, 1978, abandoned, which is a division of Ser. No. 911,256, May 31, 1978, abandoned. This application Aug. 29, 1980, Ser. No. 182,342
The portion of the term of this patent subsequent to Oct. 14, 1997, has been disclaimed.
Int. Cl.³ B32C *1/00;* **C04B** *35/58, 35/50*
U.S. Cl. 409—131 **10 Claims**

1. A process for machine cutting of cast iron stock with a shaped ceramic cutting tool, comprising moving said shaped ceramic cutting tool relative to and in engagement with said cast iron stock to remove a cast iron chip, said ceramic cutting tool being the densified and fused product of compacting and heating together about 4 to about 12% by weight Y_2O_3 with a balance (about 96 to about 88% by weight) consisting essentially of Si_3N_4 until said product has a density of at least 3.25 gms./cm^3.



4,323,326
SELF-DRILLING SCREW
Mitsuo Okada, 576-5, Higashiohtake, Isehara-shi, Kanagawa-ken; Eiichi Nagoshi, 990, Muroda, Chigasaki-shi, Kanagawa-ken, and Yoshihisa Matsumoto, 446, Naganuki, Hatano-shi, Kanagawa-ken, all of Japan
Filed Jun. 25, 1979, Ser. No. 52,021
Claims priority, application Japan, Jan. 17, 1979, 54-2914
Int. Cl.³ F16B *25/00*
U.S. Cl. 411—412 **3 Claims**



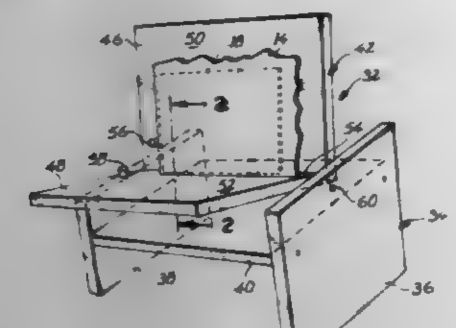
1. A self-drilling screw having a single screw thread or double screw threads and having a circular cross section at their outer perimeter of the same angle and height, wherein at least one cutting edge of a drill shape is formed by form rolling at an end face of a forward end of the screw thread at a tapering forward end portion of the self-drilling screw, said cutting edge having a lead angle distinct from that of other portions of the self-drilling screw, the screw thread being formed at its root with elevated and depressed areas in a zone of said shank extending across the boundary between a parallel portion and a tapering portion in order to reduce the transverse cross sectional area of the root of the screw thread.

4,323,327
TEMPLATE ALIGNMENT DEVICE
Otto G. Slack, P.O. Box 20293, Portland, Oreg. 97220
Filed Apr. 18, 1980, Ser. No. 141,380
Int. Cl.³ B23P *17/00*
U.S. Cl. 414—28 **5 Claims**

1. Apparatus for aligning a pair of substantially planar templates on opposite sides of a substantially planar board, said apparatus comprising

means defining a first surface for receiving such a board, with one side of the board placed against said surface and with one of the templates placed against the other side of the board,
means defining a second surface for receiving the combination of the board and the one template, with the one template placed against the one side of the board, and
means shiftably mounting said first surface-defining means adjacent said second surface-defining means for shifting between a first position, where said first and second sur-

face defining means are disposed to promote lower edge alignment between the board and the one and another



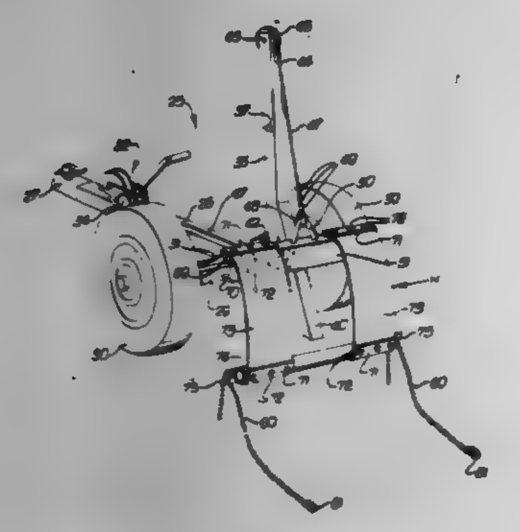
templates, respectively, and a second position enabling flipping of the combination of the one template and the board from said first surface onto said second surface.

4,323,328
VEHICLE HOISTING TOW TRAILER

Michael D. Walsh, III, 5868 Dogwood St., San Bernardino, Calif. 92404

Filed Feb. 13, 1979, Ser. No. 11,871
Int. Cl.³ B60P *3/12*

U.S. Cl. 414—563 4 Claims



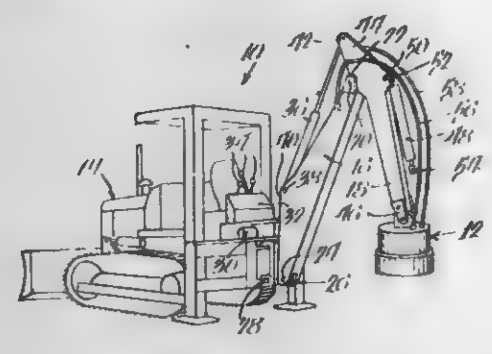
1. In a road vehicle hoisting tow trailer, the combination of:
a central longitudinal axial tow bar having a ball-socket trailer hitch at it's forward end;
twin balloon tired wheel carriage means including a common axle extending equidistantly transversely of and rigidly secured symmetrically to said tow bar at right angles therewith;
a vertical mast rigidly secured to said tow bar near it's rear end;
winch means mounted on said trailer, said winch means including a winch, two co-planar pulleys pivotally mounted in the lengthwise medial axial plane of said tow bar and located at the foot and head of said mast, said winch means also including a cable wound up on and paid out from said winch and being guided by said pulleys to and over said masthead and downwardly therefrom behind said mast;
a transversely symmetrically disposed flexible, rectangular vehicle embracing and hoisting hammock;
means for centrally connecting the rear end of said cable to the front upper end of said hammock;
chain and hook means for temporarily connecting rear lower corners of said hammock to the under structure at one end of a vehicle to be towed;
guide means fixed on and extending forwardly from a middle portion of the front upper end of said hammock and straddling said mast to center the upward movement of said hammock on said mast; and
means for securing said guide means to said mast when said vehicle has been hoisted to the proper level for towing the same, said securing means allowing a substantial degree of rotation of said guide means about said mast to facilitate steering said trailer in towing said vehicle, while retaining a firm tracking grip between the always parallel, widely, co-axially spaced trailer wheels and the ground.

4,323,329
HYDRAULIC-DRIVEN ELECTRO-LIFTING DEVICE

Kenneth J. Chlad, Maple Heights, Ohio, assignor to Magnetics International, Inc., Maple Heights, Ohio

Filed Feb. 21, 1979, Ser. No. 13,056
Int. Cl.³ B66C *1/06*

U.S. Cl. 414—737 9 Claims



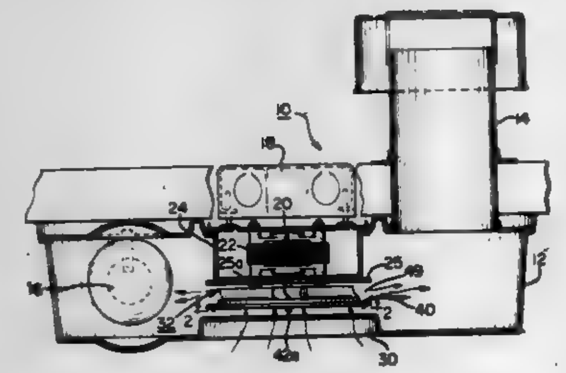
1. A mobile magnetic lifting assembly comprising:
a housing;
an electromagnet retained in said housing and having an exposed magnetic surface for contacting a load to be lifted.
an electric generator disposed within the housing and coupled to provide electrical power to said magnet;
a hydraulic drive motor disposed within said housing and coupled to drive the electric generator;
means coupled through said housing for supplying hydraulic fluid to said hydraulic drive motor; and
suspension means on said housing for enabling removable attachment to a lifting device.

4,323,330
VANELESS DIFFUSER

Richard E. Swin, Sr., Burr Ridge, and Anwar A. Atalla, Willowbrook, both of Ill., assignors to Tec-Air, Inc., Willow Springs, Ill.

Filed Jul. 16, 1979, Ser. No. 57,559
Int. Cl.³ F04D *29/44*

U.S. Cl. 415—207 8 Claims



1. An impeller and vaneless diffuser for a mixed flow fan assembly comprising
support means for supporting a plurality of air flow generating blades outwardly therefrom for rotational movement about an axis,
rotation means coupled to the support means for inducing rotational movement of said plurality of air flow generating blades to draw air therepast in a first direction,

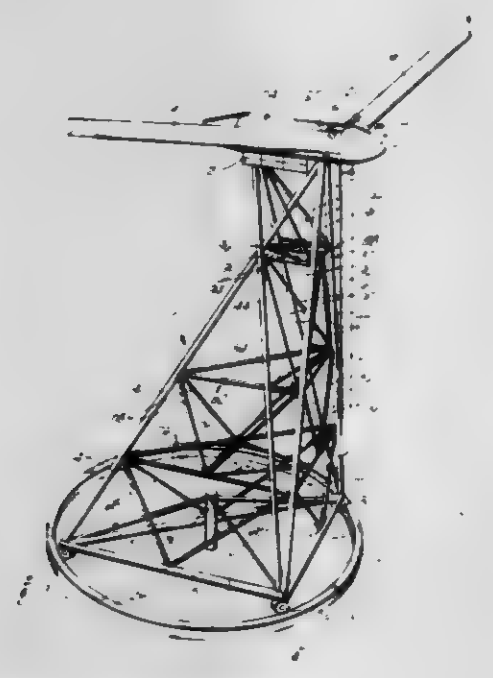
vaneless diffuser means includes a first member operatively coupled to said plurality of air flow generating blades at a free end thereof and extending outwardly therefrom parallel to the axis of rotation of said blades to receive air drawn by said blades, and
said diffuser means further including a second member mounted perpendicular to said first member and extending radially outwardly therefrom to form an outlet to discharge air drawn by said air flow generating blades in a second direction.

4,323,331
WINDMILL TOWER

Charles Schachle, 1032 Grant St., Moses Lake, Wash. 98837; Patrick J. Schachle; Edward C. Schachle, both of 18427 Military Rd. S., Seattle, Wash. 98188, and John R. Schachle, 625 Wellington, #A-12, Walla Walla, Wash. 99362

Filed Apr. 27, 1979, Ser. No. 33,894
Int. Cl.³ F03D *11/04*

U.S. Cl. 416—9 52 Claims



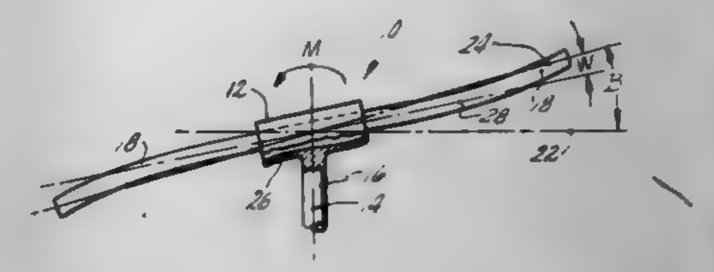
1. A windmill tower comprising:
a tower;
a propeller for rotating in a plane forward of the tower;
the tower having a pair of fixed fore legs spaced apart at their bottoms and converging upwardly toward an apex, and a fixed diagonal bracing strut having a bottom spaced aft of the bottoms of the fore legs, with respect to the plane of the propeller rotation, and extending diagonally upwardly toward said apex, the fore legs and the diagonal bracing strut having top portions in the vicinity of said apex spaced aft of the plane of propeller rotation;
a pair of fixed aft legs having top portions spaced aft of said apex, with respect to the plane of propeller rotation, and extending downwardly adjacent opposite sides of the diagonal bracing strut, each aft leg converging downwardly toward the bottom portion of a corresponding fore leg, the aft legs being braced in a fixed position relative to the fore legs;
load support means secured to the top portions of the fore legs and the diagonal bracing strut and the aft legs for supporting a load from the propeller; and
means rigidly interconnecting the bottoms of the fore legs and the bottom of the diagonal bracing strut at a base of the tower.

4,323,332
HINGELESS HELICOPTER ROTOR WITH ELASTIC GIMBAL HUB

Evan A. Fradenburgh, Fairfield, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Dec. 21, 1979, Ser. No. 106,215
Int. Cl.³ B64C *27/52*

U.S. Cl. 416—134 A 12 Claims



1. A hingeless helicopter rotor adapted to be mounted for rotation from the fuselage about an axis of rotation and having a low equivalent offset comprising:
(A) a hub mounted for rotation about the axis of rotation and having:
(1) a flexible diaphragm forming the hub bottom wall portion and extending when unloaded in a plane substantially perpendicular to the axis of rotation and being of selected flexibility so as to be tiltable with respect thereto due to elastic deformation in response to blade loading imparted thereto so that the flexible diaphragm acts as an elastic gimbal to produce a constant-speed universal joint action thereacross unaffected by hub tilting, and
(B) a hub center body connected to said hub for rotation therewith and including blade root attachment means to accommodate blade pitch change motion and adapted to receive the blade roots so that the blade centrifugal force is imparted to the hub center body therethrough,
(C) at least three blades extending radially from said hub with equal circumferential spacing therebetween and having root sections connected to the center body blade attachment means for centrifugal force support therefrom and pitch change motion with respect thereto and extending radially therefrom to present blade airfoil sections outboard thereof and to produce lead-lag and flapping motion with respect thereto, so that the blades impose cancelling centrifugal loads on the center body, so that said blades, hub and center body coact to center said blades on said hub, and so that the flexing of the hub and flexing of the blades in response to blade loading coact to produce a low equivalent offset rotor, and to establish the tilt of the rotor blade tip path plane relative to the axis to thereby minimize blade flexing and reduce the angle between the rotor constant speed plane and the blade tip path plane to minimize Coriolis effect, and
(D) means to selectively vary the pitch of said blades both collectively and cyclicly.

4,323,333
PISTON METERING PUMP

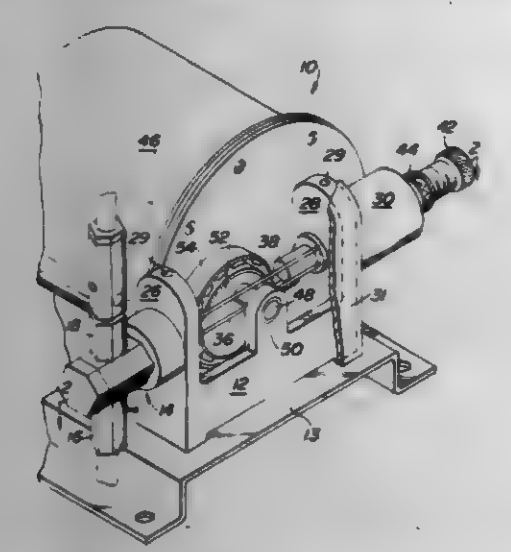
Robert Apter, Wyncote; John Philippi, Horsham; Nicholas Potichko, and Fred. C. Szablewski, both of Lansdale, all of Pa., assignors to R. A. Industries, Lansdale, Pa.

Filed Nov. 23, 1979, Ser. No. 96,951
Int. Cl.³ F04B *21/02*

U.S. Cl. 417—63 6 Claims

1. A pump comprising a housing having an inlet and an outlet, a piston assembly including first and second discrete coaxial portions guided for reciprocation, only one of said portions being a piston arranged in a cylinder having inlet and outlet valves, said piston being adapted to pressurize liquid admitted through the inlet and discharged through the outlet, said portions being interconnected only by a pair of third

portions, said third portions each having one end metallurgically bonded to one end face of said first portion and having its other end metallurgically bonded to one end face of said second portion, said third portions being disposed to one side of the axis of said first and second portions to thereby define a gap between said first and second portions, said second portion including a coaxial stroke member adjustably supported thereby for adjusting the effective length of said gap which



determines the effective length of the piston stroke, a motor having an output shaft, an eccentric driven by said motor shaft, said eccentric being disposed in said gap between said stroke member and said first member for causing reciprocation of said piston, and said third portions being rods spaced apart for a sufficient distance so that an end of the output shaft on said motor extends there between, said shaft end being supported by a bearing on said housing.

4,323,334

TWO STAGE LIQUID RING PUMP

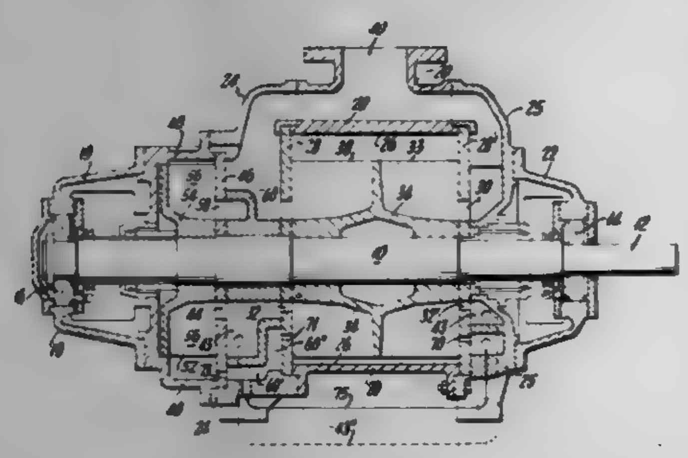
Harold K. Haavik, South Norwalk, Conn., assignor to The Nash Engineering Company, Norwalk, Conn.

PCT No. PCT/US79/00586, § 371 Date Jan. 25, 1980, § 102(e) Date Jan. 25, 1980, PCT Pub. No. WO81/00438, PCT Pub. Date Feb. 19, 1981

PCT Filed Aug. 9, 1979, Ser. No. 121,293

Int. Cl.³ F04C *19/00*

U.S. Cl. 417—68 **9 Claims**



1. In a two-stage liquid ring pump including (1) first and second stages, each stage including (a) a casing, (b) a rotor disposed within the casing, (c) an intake port communicating with an intake stroke area within the casing, and (d) a discharge port communicating with a discharge stroke area within the casing, and (2) interstage conduit means connecting the first stage discharge port to the second stage intake port, the improvement comprising:

a seal liquid unloader orifice in the first stage casing adjacent the first stage discharge stroke area and disposed so that the unloader orifice is normally covered by the ring of seal liquid in the first stage; and

seal liquid conduit means communicating with the unloader orifice outside the first stage casing, the seal liquid conduit means communicating with the second stage discharge port and being maintained at the pressure of the second stage discharge port.

4,323,335

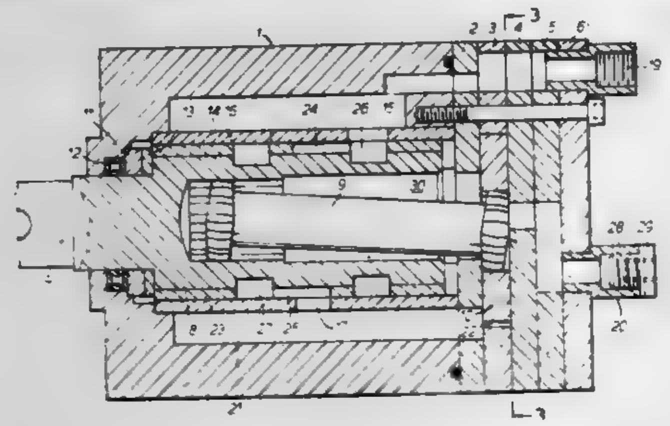
DISTRIBUTOR VALVE FOR HYDRAULIC PLANETARY PISTON MACHINE

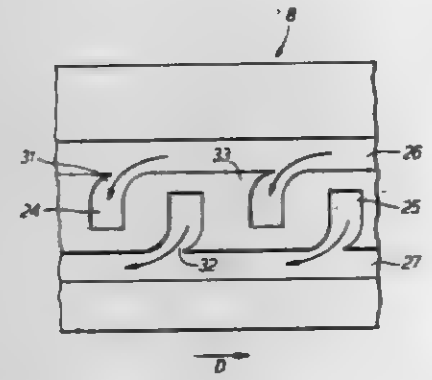
Christian B. Hansen, Nordborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

Filed Feb. 28, 1980, Ser. No. 125,504

Int. Cl.³ F01C *1/10, 21/12;* **F03C** *2/08*

U.S. Cl. 418—61 B **2 Claims**





1. A hydraulic planetary piston machine comprising, a casing, a rotary piston gear in said casing having rotational and orbital movement, a main shaft and a rotary cylindrically surfaced slide valve rotatably mounted in said casing, a cardan shaft having a predetermined direction of rotation connected between said piston gear and said slide valve, said slide valve having two inlet and outlet annular distributor grooves in axially spaced relation, alternately arranged inlet and outlet stub grooves respectively extending axially from and at right angles to said distributor grooves into axially overlapping relation, said inlet stub grooves having curved sections connecting them to said inlet distributor groove, said curved sections being curved towards said predetermined direction of rotation to achieve a scooping effect relative to the ingressing fluid.

4,323,336

INSERTING STICKS INTO CONFECTIONS

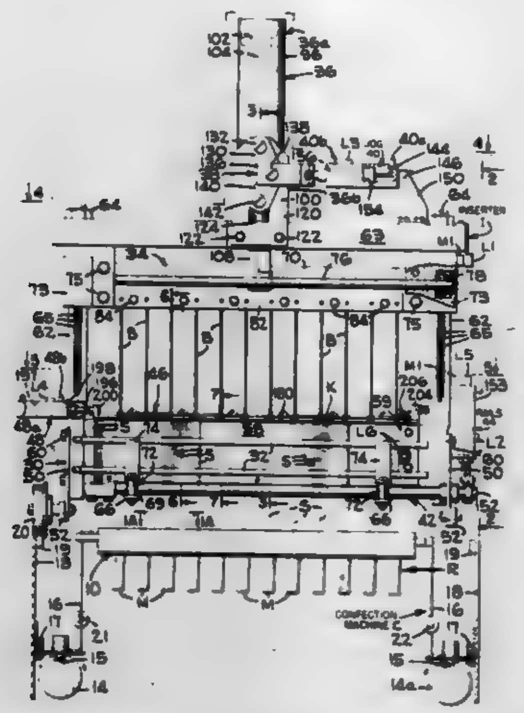
Bruce M. Harper, San Jose; Ronald J. Billett, Sunnyvale; Thomas E. Roberts, Saratoga, and Veikko K. Viitanen, San Jose, all of Calif., assignors to FMC Corporation, Chicago, Ill.

Filed May 5, 1980, Ser. No. 146,935

Int. Cl.³ B29D *3/00;* **B29C** *1/00*

U.S. Cl. 425—126 S **27 Claims**

1. Apparatus for forming frozen molded confections, said apparatus being of the type comprising a plurality of shiftable molds each formed with a row of generally rectangular section mold cavities and a stick inserter for simultaneously inserting flat faced sticks into the confections in the mold cavities, the mold cavities in a row being disposed transversely of the row axis, said stick inserter comprising means for forming a packed column of sticks, said sticks being disposed so that their flat



faces are also transverse to the row axis and the sticks are located in a vertical plane and directly above the mold cavities and means for inserting sticks directly from the column into the mold cavities of a row.

4,323,337

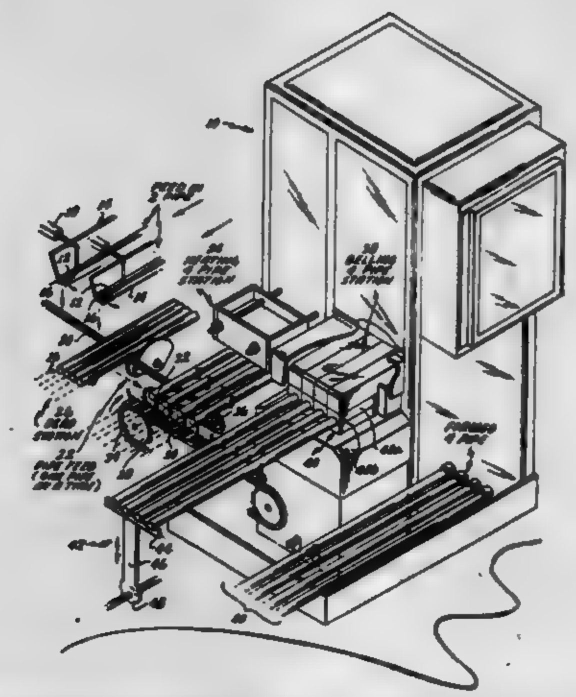
SELECTIVE MULTIPLE PIPE COMPRESSION BELLING MACHINE

Wolfram G. Korff, 12153 Gerald Ave.; Vernon V. Emery, 16852 Knollwood Dr., both of Granada Hills, Calif. 91344, and Joseph K. Bond, 8007 Shadyglade Ave., North Hollywood, Calif. 91605

Division of Ser. No. 808,070, Jun. 20, 1977, abandoned. This application Nov. 3, 1978, Ser. No. 957,351

Int. Cl.³ B29D *23/00*

U.S. Cl. 425—155 **2 Claims**



1. A pipe belling machine capable of a high rate of production and having a dead station at which the pipes to be belled are lying side by side awaiting advancement along a predetermined path in a forward direction perpendicular to their elongated dimension, and in which the incoming pipes are being urged foward at all times along the predetermined path, said pipe belling machine comprising:

an escapement device including a shaft selectively rotatable and located below the predetermined path with its axis of rotation extending substantially in the forward direction, including a first gate affixed to said shaft and lying substantially in a plane perpendicular to the axis of the shaft, and shaped to lie entirely below the path of the first waiting pipe during a portion of each revolution to permit the pipe to advance past it in the forward direction, and shaped to lie at least partially in the path of the remaining waiting pipes during the remainder of each revolution to block further forward motion of the remaining waiting pipes, and further including a second gate affixed to said shaft and lying substantially in a plane perpendicular to its axis and spaced axially along said shaft forward of said first gate a distance approximately equal to the diameter of one of the pipes and shaped to lie at least partially in the path of a pipe advanced from the first gate during the time the first gate lies entirely below the path of the first waiting pipe to block further forward motion of the pipe advanced from the first gate and shaped to lie entirely below the path of the pipe advanced from the first gate during a part of each revolution to permit that pipe to advance forward beyond the second gate, the first gate and the second gate being affixed to the shaft at such relative rotational positions that the first gate lies at least partially in the path of the waiting pipes when the second gate lies entirely below the path of the pipe advanced from the first gate to block unrestricted forward motion of the remaining waiting pipes;

positioning means establishing a sequence of stops which are successively extended into the path taken by the objects released from said escapement device between successive pipes for restraining their forward motion and maintaining their spacing, the sequence of stops having a predetermined spacing in the forward direction and being selectively movable in that direction while extended between successive pipes;

control means for controlling the forward motion of the sequence of stops and for selectively rotating the shaft one full revolution each time said positioning means has advanced by one stop, to selectively discharge a pipe behind a newly-extended stop;

said positioning means and said control means cooperating for selectively placing pipes at a group of predetermined spaced locations along a line of motion, and for maintaining the relative spacing of the pipes as they are transferred as a group from a heating station to a belling station and as they are transferred as a group from the belling station to an output station;

a multiple-pipe heating station for simultaneously heating the ends of a group of pipes; and,

a multiple-pipe belling station for simultaneously belling a group of pipes.

4,323,338

APPARATUS FOR ORIENTATION AND DEPOSITION OF DISCRETE LIGNOCELLULOSIC MATERIALS

Thomas E. Peters, and John M. Bateman, both of Boise, Id., assignors to Morrison-Knudsen Forest Products Company, Inc., Boise, Id.

Division of Ser. No. 106,686, Dec. 26, 1979, Pat. No. 4,287,140. This application Feb. 25, 1981, Ser. No. 237,912

Int. Cl.³ B28B *17/00*

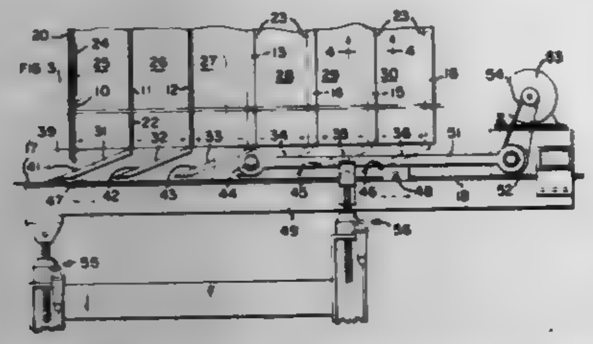
U.S. Cl. 425—174.8 E **18 Claims**

1. Apparatus for the manufacture of mats of aligned lignocellulosic particles employed in the manufacture of comminuted pressed lignocellulosic products having directional qualities, comprising:

an electrically insulative transfer surface for receiving a multitude of discrete lignocellulosic particles thereon to form a mat thereof;

an electrically conductive mat-receiving surface maintained at ground potential positioned adjacent the discharge end of the transfer surface to receive the mat;

means for establishing and maintaining a directional electric



field immediately above the transfer surface to align the particles making up the mat; and

means for transferring the aligned mat from the transfer surface to the mat-receiving surface maintained at ground potential.

4,323,339

DEVICE FOR MANUFACTURING PLASTICS PIPES WITH OBLONG CHANNELS

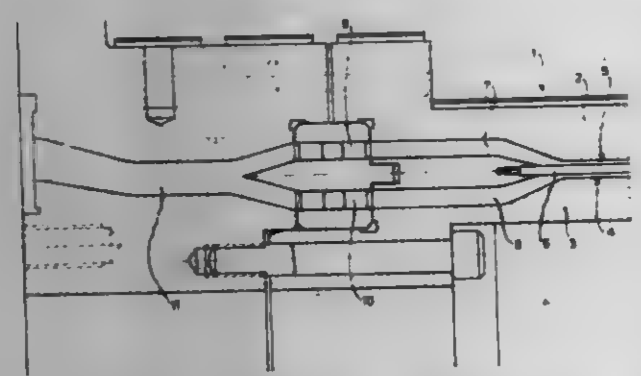
Johan de Kok, Hardenberg, and Jan P. van Dongeren, Bergentheim, both of Netherlands, assignors to Wavin B.V., Zwolle, Netherlands

Division of Ser. No. 648,755, Jan. 13, 1976, abandoned. This application May 7, 1980, Ser. No. 147,391

Claims priority, application Netherlands, Jan. 13, 1975, 7500386

Int. Cl.³ B29D *23/04*

U.S. Cl. 425—199 4 Claims



1. A device for performing the manufacturing of plastic pipes, comprising:

an extruder with an annular mouth piece, being defined by a core and a casing with a plurality of adjacent pins in an annular space, being defined by an outer wall of the core and an inner wall of the casing, said annular space having a cross section which is adapted to a cross section of channels to be formed,

means for regulating the passage of synthetic material being provided between the outer wall of the core and the inner wall of the casing in an area between two of the plurality of adjacent pins,

one row of said plurality of adjacent pins being concentrically situated relative to the core and the casing;

wherein at least one of the inner wall of the casing and the outer wall of the core is provided with corrugated ridges in the area between two adjacent pins; and

whereby the formation of longitudinally extending deformations in the plastic pipes being manufactured is substantially avoided.

4,323,340

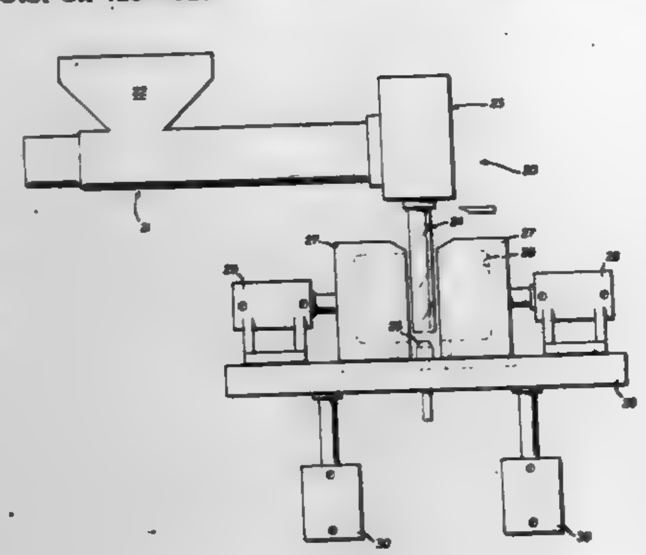
APPARATUS FOR MAKING PLASTIC ARTICLES

Albert R. Uhlig, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Division of Ser. No. 854,555, Nov. 25, 1977, which is a continuation of Ser. No. 670,936, Mar. 26, 1976, abandoned, which is a continuation of Ser. No. 461,361, Apr. 16, 1974, abandoned. This application Jun. 30, 1980, Ser. No. 164,664

Int. Cl.³ B29D *23/04*; B29C *3/00, 17/07*

U.S. Cl. 425—325 1 Claim



1. In an apparatus including a plastic shaping means for making a plastic article by known plastic forming techniques performed exteriorly of an orifice from which the material issues in a formable thermoplastic state, the improvement comprising the combination of means for plasticizing a body of thermoplastic material at a first pressure and a first temperature, means for cooling said body to a second, lower temperature more conducive to orientation, said orifice communicating with said body, power means for progressively advancing at least a portion of said body toward and through said orifice at a second, higher pressure while said portion is at said second temperature, and means for repeatedly and progressively non-linearly shearing said portion during its advance toward said orifice to biaxially orient the same.

4,323,341

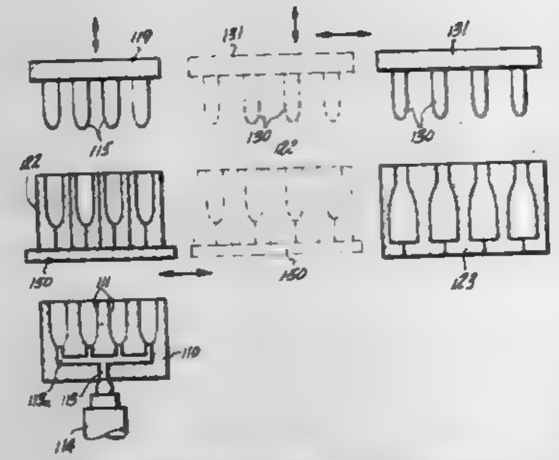
APPARATUS FOR FORMING HOLLOW PLASTIC OBJECTS

Emery I. Valyi, 5200 Sycamore Ave., Riverdale, N.Y. 10471

Continuation-in-part of Ser. No. 5,962, Jan. 24, 1979, Pat. No. 4,234,302, which is a division of Ser. No. 911,359, Jun. 1, 1978, Pat. No. 4,207,134. This application Mar. 11, 1980, Ser. No. 129,389

Int. Cl.³ B29C *17/07*

U.S. Cl. 425—526 8 Claims



1. A blow molding apparatus for forming a plurality of oriented, blown, hollow plastic articles of moldable plastic material which comprises: a plurality of first molds for receiving and tempering a plurality of parisons in spaced relationship to each other to optimize the parison temperature for orientation and blowing; means for changing the center spacing of said first molds from a first to a second center spacing; a plurality of second molds in spaced relationship to said first molds for forming said parisons into oriented, blown, hollow plastic articles, said second molds being in fixed spaced relationship to each other corresponding to said second center spacing; a plurality of first means in fixed spaced relationship to each other corresponding to said first center spacing engageable with said first molds at said first center spacing for placing parisons therein for tempering; means for changing the relative position of said first molds from a position adjacent said first means to a position away from said first means, wherein said means for changing the center spacing is operative to change the center spacing independent of said means for changing the position of said first molds from a position adjacent said first means to a position away from said first means; plaate means which holds said first molds and which is capable of being moved with said first molds from station to station; track means on said plate means and engaged with said first molds which define the limits of the movement which changes the center spacing of said first molds; motive means for moving said first means into and out of engagement with said first molds; a plurality of second means in fixed spaced relationship to each other corresponding to said second center spacing engageable with said first molds at said second center spacing and engageable with said second molds for removing the tempered parisons from the first molds and placing same into said second molds for final processing; motive means for moving said second means into and out of engagement with said first and second molds, respectively; and means associated with said second molds for forming said parisons into oriented, hollow plastic articles.

4,323,342

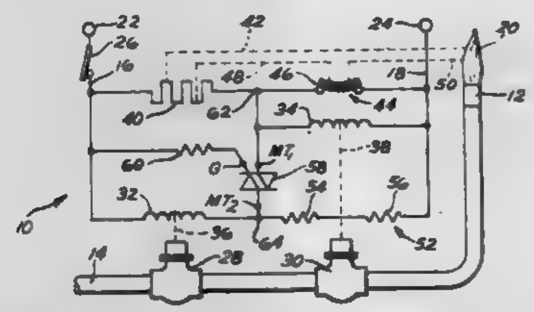
BURNER IGNITION AND CONTROL SYSTEM

Edward G. Sommers, Jr., and James G. O'Connor, both of Louisville, Ky., assignors to General Electric Company, Louisville, Ky.

Filed Jan. 9, 1980, Ser. No. 110,723

Int. Cl.³ F23M *5/00*

U.S. Cl. 431—66 13 Claims



1. An ignition and control system for operating a burner from a fuel supply conduit and a pair of controlled electrical power input conductors, said system comprising:

a pair of electromagnetically operated solenoid valves each having a winding for opening the respective valve when energized, said valves connected in series with the conduit and operable to supply fuel to the burner only when both valves are open;

an electrically operated igniter for igniting fuel issuing from the burner;

a sensing switch having normally closed contacts which open either when said igniter is in an ignition condition or when a flame is present;

said igniter and one of said valve windings being electrically connected in series between the power input conductors, and said sensing switch contacts being connected in shunt across said one of said valve windings, such that, when the power input conductors are energized and said sensing switch contacts are closed, said igniter is energized and said one of said valve windings is not energized, and, when the power input conductors are energized and said sensing switch contacts are open, said igniter is effectively de-energized and said one of said valve windings is energized;

a holding current impedance element electrically connected in series with the other of said valve windings between the power input conductors, said holding current impedance element being selected such that current passed through said impedance element alone is insufficient to operate the other of said valves, but sufficient to maintain the other of said valves in an operated condition once operated;

a controlled switching element having a pair of main switch terminals and a control input terminal, said controlled switching element operable to conduct between said main switch terminals when a signal is applied to said control input terminal with reference to one of said main switch terminals, and operable to cease conducting when the control input signal is not present; and

said controlled switching element being electrically connected so as to conduct and effectively shunt said holding current impedance to cause operation of the other of said valves when the power input conductors are energized and said sensing switch contacts are closed, and to cease conducting when said sensing switch contacts are open.

4,323,343

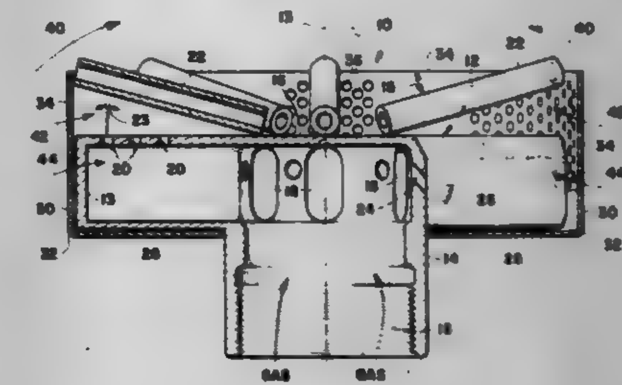
BURNER ASSEMBLY FOR SMOKELESS COMBUSTION OF LOW CALORIFIC VALUE GASES

Robert D. Reed, and Robert E. Schwartz, both of Tulsa, Okla., assignors to John Zink Company, Tulsa, Okla.

Filed Feb. 4, 1980, Ser. No. 118,613

Int. Cl.³ F23D *13/20*

U.S. Cl. 431—202 5 Claims



1. Apparatus for burning low calorific gases in smokeless combustion comprising:

(a) at least one burner head mounted on the top of a vertical pipe, through which said low calorific gases are supplied;

(b) a plurality of hollow arms inserted into the wall of said head arranged in equally-spaced radial array in a common horizontal plane, said arms closed at their outer ends;

(c) a plurality of ports of selected diameter and selected spacing near the outer ends of said arms drilled through the tops of said arms; the direction of the axes of said ports inclined toward the vertical axis of said head, at a selected angle A;

(d) at least one port drilled through the circumferential wall of the central hub of said head in each of the spaces between adjacent radial arms; the angle of said at least one port being at a selected angle B down from the horizontal, from the inside of the hub to the outside;

(e) the pressure of said gas supplied to said head being such that the velocity of the jets of gas flowing from said ports is excessive and up to critical;

(f) an annular circular plate positioned in contact with the

bottom surfaces of said arms closing off the spaces between said arms; and

(g) a thin cylindrical wall surrounding the ends of said arms in contact at its bottom edge with the outer edge of said annular plate, and rising a selected distance above said arms; a plurality of openings in said wall of a selected size in a selected symmetrical pattern over substantially the entire area of said wall.

4,323,344

APPARATUS FOR HEAT TREATING FINE-GRAIN MATERIAL

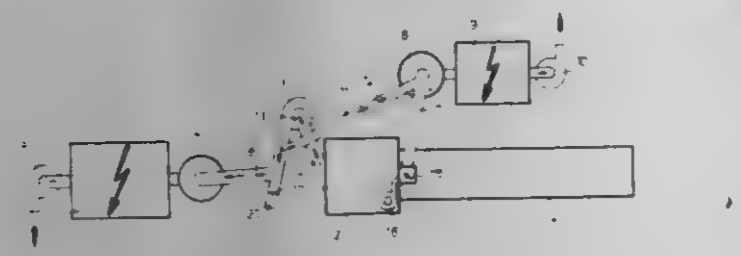
Hans-Dieter Grudno, Beckum, Fed. Rep. of Germany, assignor to Krupp Polysius AG, Fed. Rep. of Germany

Filed Sep. 30, 1980, Ser. No. 192,452

Claims priority, application Fed. Rep. of Germany, Oct. 8, 1979, 2940676

Int. Cl.³ F27B *7/02*

U.S. Cl. 432—106 **6 Claims**



1. In apparatus for heat treating fine-grain material having a rotary kiln, a preheater for such material communicating with said kiln, a kiln waste gas fan for delivering waste gases from said kiln to said preheater, first dedusting means for dedusting kiln waste gases, conduit means establishing communication between said preheater and said first dedusting means, second dedusting means for dedusting kiln waste gases, and a bypass conduit establishing communication between said preheater and said second dedusting means, the improvement comprising a connecting conduit establishing communication between said second dedusting means and said fan at its pressure side, adjustable throttling means in said connecting conduit for enabling and disabling the flow of kiln waste gases therethrough, and adjustable valve means in said bypass conduit for enabling and disabling the flow of kiln waste gases therethrough.

4,323,345

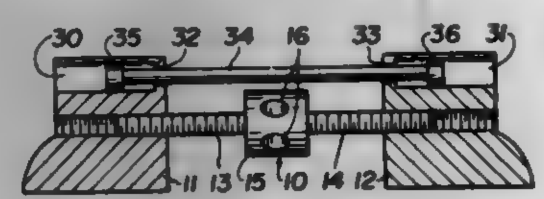
ORTHODONTIC BIASSING DEVICE WITH SCREW DISENGAGEMENT PREVENTING MEANS

Melvin Wallshein, 8645 Bay Pkwy., Brooklyn, N.Y. 11214

Division of Ser. No. 785,587, Apr. 7, 1977, Pat. No. 4,200,979. This application Nov. 19, 1979, Ser. No. 95,378

Int. Cl.³ A61C *3/00*

U.S. Cl. 433—7 **56 Claims**



1. An orthodontic biassing device comprising:

two oppositely disposed body members adapted to engage one or more teeth and to be spaced from each other, each of said body members having a threaded bore directly formed therein, said threaded bores being oppositely threaded;

an elongated threaded member having oppositely threaded end portions which are respectively threadably engaged in the threaded bores of said body members to selectively expand or contract the spacing between said body members;

first abutment means directly formed on at least one of said body members; and

retaining means coupled to and being movable relative to said at least one of said body members for abuttingly engaging with said first abutment means on said at least one of said body members for positively preventing relative movement between said elongated threaded member and said body members when the spacing between said body members is expanded to a predetermined spacing, thereby preventing disengagement of said elongated threaded member from said body members.

4,323,346

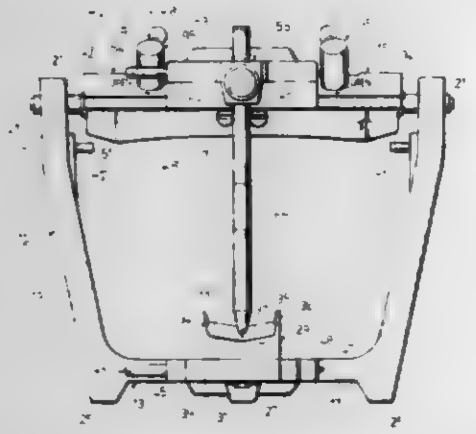
DENTAL ARTICULATOR

Richard A. Beu, Eggertsville, N.Y., assignor to Teledyne Hanau, a division of Teledyne, Inc., Buffalo, N.Y.

Filed Jan. 10, 1980, Ser. No. 111,020

Int. Cl.³ A61C *11/00*

U.S. Cl. 433—58 **6 Claims**



1. In a dental articulator for simulating relative jaw and tooth movements, which includes a pair of simulated condyles on a lower mounting means which simulates a part of a lower jaw, and a simulated maxilla, mountable on the condyles and movable with respect to the condyles to simulate forward and sideward jaw movements, which maxilla, where it is mountable on the condyles, includes medial, superior and posterior joint walls so shaped as to simulate fossae, an improvement which comprises a flat spring in strip form, bent at the ends thereof to form anterior condylar joint walls, which ends yieldably hold the simulated maxilla against the condyles, and in which means are provided, near both spring ends, for selectively moving said spring ends away from the condyles and holding them in such position out of contact with the condyles, and for selectively allowing said spring ends to press against the condyles.

4,323,347

DENTAL TOOL FOR USE WITH DENTAL RETAINING SPLINTS

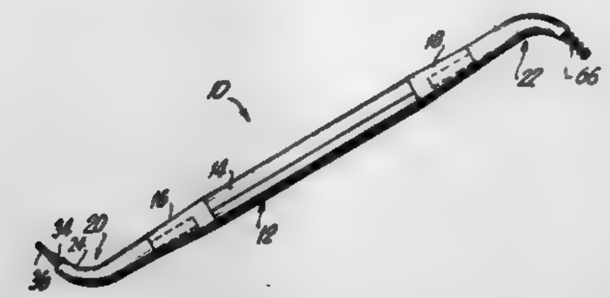
Bernard Weissman, New York, N.Y., assignor to IPCO Corporation, White Plains, N.Y.

Continuation-in-part of Ser. No. 70,247, Aug. 27, 1979, Pat. No. 4,260,383. This application Sep. 17, 1980, Ser. No. 188,026

Int. Cl.³ A61C *3/00*

U.S. Cl. 433—141 **8 Claims**

1. A dental tool comprising an elongated handle with a splint manipulating device at one end thereof, said manipulating device including an extended body portion, an elongated foot portion transversely positioned at a distal end of said body portion for entering into an elongated slot provided in a wall of a dental retaining splint, said foot portion extending perpendicularly outwardly in opposite directions from said body portion so that said foot portion locks against an outer surface of the splint wall, spring means for abutting against an opposite inner surface of the splint wall to retain the splint, said spring means including a compression spring having a first end disposed on said body portion and a second opposing end extending freely towards said foot portion, said second spring end being free and resiliently movable towards and away from said foot portion, said compression spring having a size greater than said



elongated foot, and said body portion including means for retaining said first end of said compression spring on said body portion, whereby with said foot portion locked beneath the elongated slot, the dental splint is sandwiched between said foot portion and second said spring end, the dental splint being held by said foot portion against the resilient action of said compression spring.

4,323,348

DENTAL COMPOSITIONS

Robert Schmitz-Josten, Cologne; Manfred Borgardt, Wuppertal; Hans-Hermann Schulz, Leichlingen, and Michael Walkowiak, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

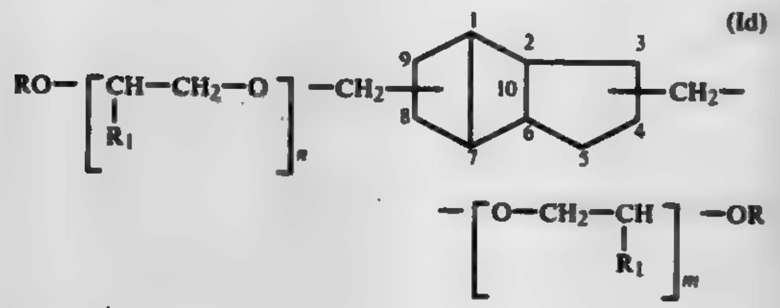
Filed Jul. 31, 1980, Ser. No. 173,945

Claims priority, application Fed. Rep. of Germany, Aug. 7, 1979, 2931926

Int. Cl.³ A61K *6/08*

U.S. Cl. 433—228 **17 Claims**

1. A dental composition comprising a polymerisable (meth-)acrylic acid ester of the formula



(Id)

in which

R represents

$$CH_2{=}CH{-}CO{-} \text{ or } CH_2{=}C(CH_3){-}CO{-},$$

R_1 represents a hydrogen atom or a methyl or ethyl group, and

n+m represents a number from 1 to 10; and one or more inert dentally acceptable carriers.

4,323,349

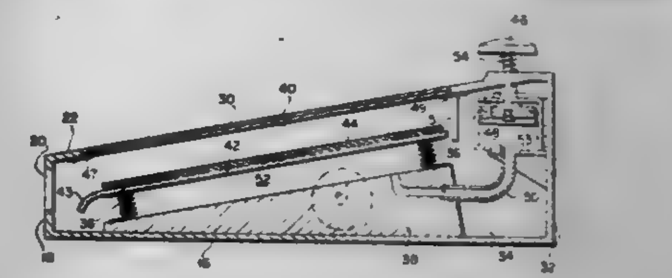
NOVEL TEACHING METHOD AND APPARATUS

Edward Maltzman, 35 Bellingham Rd., Chestnut Hill, Mass. 02167, and Herman E. Erikson, 127 Ridge St., Winchester, Mass. 01890

Continuation-in-part of Ser. No. 658,374, Feb. 17, 1976, abandoned. This application Aug. 18, 1977, Ser. No. 825,661

Int. Cl.³ G09B *17/00*

U.S. Cl. 434—184 **19 Claims**



1. A method for improving motor-perceptual learning of an individual comprising the steps of:

(1) providing lesson material to be reproduced;

(2) rendering said lesson material visible and thereby traceable for an initial predetermined period of time;

(3) commencing said reproduction of said lesson material by tracing a portion thereof;

(4) rendering said lesson material non-visible at the end of said predetermined period of time and before said reproduction can be completed by tracing;

(5) reproducing from memory all or at least a further portion of the remaining subject matter not reproduced by tracing; and

(6) if said reproduction is not completed, repeating said steps 2 to 5 of rendering said lesson material visible, tracing, rendering said lesson material non-visible and reproducing from memory until said lesson material has been reproduced.

4,323,350

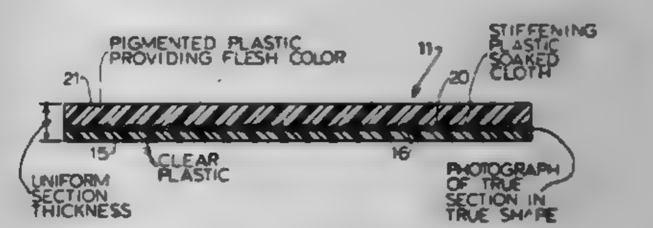
ANATOMICAL MODEL

Robert L. Bowden, Jr., Rte. 2, Box 298, Germantown, N.C. 27019

Filed Sep. 22, 1980, Ser. No. 189,805

Int. Cl.³ G09B *23/30*

U.S. Cl. 434—269 **2 Claims**



1. An anatomical model for simulating a selected uniformly sectioned portion of a deceased body, comprising:

(a) a plurality of sections of uniform thickness adapted to be assembled in serial order to simulate in a corresponding serial order the assembly of sections making up the body portion on which the model is based with each said section comprising a structure made up of:

(i) a first optically clear plastic layer;

(ii) a color photograph covered by and viewable through said layer and comprising a color photograph of the inferior side of a corresponding section of said selected body portion and showing the natural color and shape thereof;

(iii) a stiffening member adhered to the back of said photograph; and

(iv) a second plastic layer adhered to said stiffening member and colored in a flesh tone corresponding to a flesh color

found in said selected body portion and having a thickness selected to provide said uniform section thickness; and

(b) said sections being contoured such that each section and the photograph thereon represents the actual true-to-life appearance in color and the actual contour of a corresponding section in said selected body portion and when assembled in the corresponding serial order is adapted to mate with all other sections to simulate the actual shape of said selected body portion on which said model is based.

4,323,351

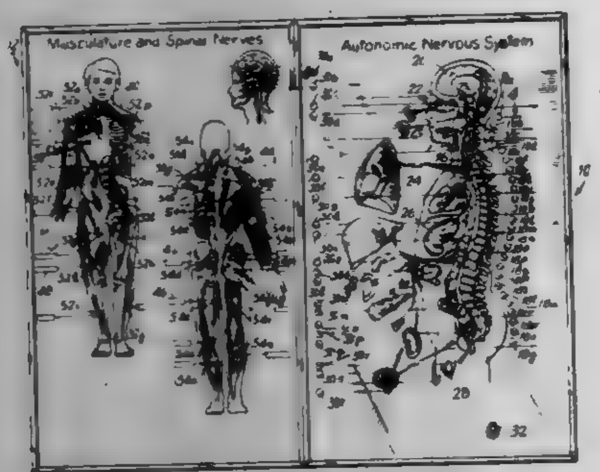
VISUAL DISPLAY APPARATUS FOR THE DISPLAY OF THE AUTONOMIC NERVOUS SYSTEM AND MUSCULATURE AND SPINAL NERVES AND RELATED METHOD

Bruce W. Goldsmith, Kerhonkson, N.Y., assignor to Space Odyssey Ltd., Kerhonkson, N.Y.

Filed Dec. 26, 1979, Ser. No. 106,543

Int. Cl.³ G09B *23/30*

U.S. Cl. 434—274 **15 Claims**



1. Display apparatus comprising display means for displaying a human spine including a plurality of vertebrae and for displaying a plurality of human organs physiologically associated with said vertebrae, illumination means for illuminating said organs, control means positionally corresponding to respective of said vertebrae and adapted for being individually operated to modify the illumination of respective of said organs, said control means including switches respectively positioned adjacent said vertebrae and electric circuitry coupling said switches to said illumination means to modify the illumination of the corresponding organs, supplemental control means coupled to said illumination means for illuminating selective of the said organs independently of the vertebrae, said illumination means including a first plurality of lamps coupled via said electric circuitry to said switches and a second plurality of lamps coupled to said supplemental control means, and supplemental display means for displaying musculature inclusive of a plurality of physiologically related muscles, musculature lamps for illuminating respective of said muscles, said muscles being physiologically related to said organs, musculature switches for selectively operating said musculature lamps, and electric circuit means coupling said musculature switches and musculature lamps to said supplemental control means such that operation of the supplemental control means illuminates said organs and muscles selectively and operation of the musculature switches illuminates said organs and operates said musculature lamps selectively.

4,323,352

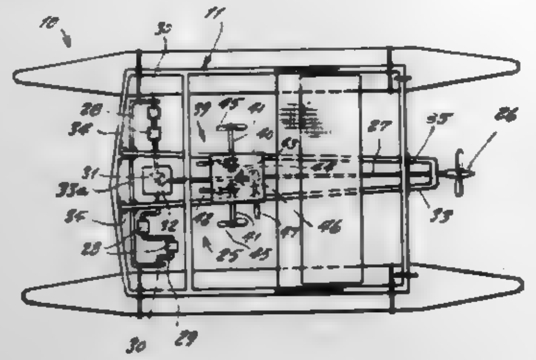
CERF CYCLE

William Warren, c/o George Spector, 3615 Woolworth Bldg., 233 Broadway, and George Spector, 3615 Woolworth Bldg., 233 Broadway, both of New York, N.Y. 10007

Filed Jan. 14, 1980, Ser. No. 111,880

Int. Cl.³ F16H *37/06*

U.S. Cl. 440—27 **2 Claims**



1. A cerf cycle craft for travel upon a water surface, comprising in combination, an angle iron frame mounted upon a pair of spaced apart pontoons, a windshield, a seat and a foot powered drive mechanism mounted on said frame, said mechanism including means for moving said craft in either a directly forward, rearward, either side or in intermediate directions therebetween wherein said mechanism includes a first propeller along a first shaft extending longitudinally of said craft, and a pair of second propellers each of which is on a transverse shaft, and clutch means for selective engagement of said shafts with a crankshaft fitted with foot pedals.

4,323,353

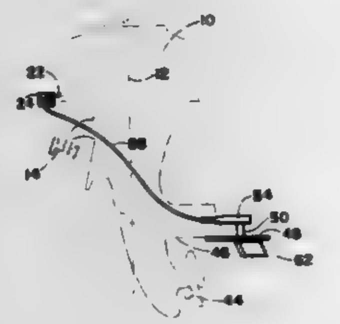
BOAT STEERING APPARATUS

Creal E. Kirkwood, Wagoner, Okla., assignor to Incom International, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 55,615, Jul. 9, 1979, abandoned. This application Jan. 19, 1981, Ser. No. 226,467

Int. Cl.³ B63H *25/42*

U.S. Cl. 440—63 **11 Claims**



8. For use with a boat of the outboard or inboard-outboard type having a reciprocating boat steering means and a propeller assembly which is rotated about a vertical axis to steer the boat, an improved means for reducing the force required to steer the boat comprising:

coupling means connecting the reciprocating boat steering means to the propeller assembly permitting limited movement of the steering means before rotation of the propeller assembly;

a fin supported on the bottom of a vertical shaft, the shaft being rotatably supported to the propeller assembly, whereby the fin is positioned in the propeller slip stream;

a horizontal actuator plate affixed to the shaft upper end;

means to connect said horizontal actuator plate to said coupling means whereby when said boat steering means is displaced, said fin is rotated to apply steering force to the propeller assembly, when a slip stream exists, before the steering means applies force directly to rotate the propeller assembly; and

means controllable remotely from said coupling means for selectably locking the boat steering means to the propeller assembly whereby displacement of the boat steering means directly rotates the propeller assembly.

4,323,354

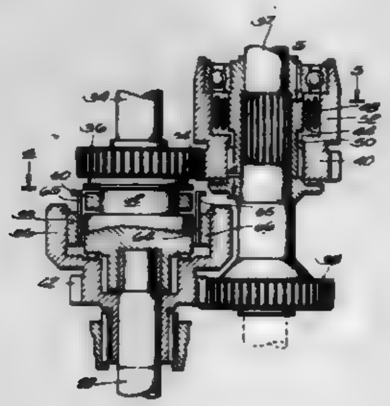
TWO-SPEED AUTOMATIC TRANSMISSION FOR A MARINE PROPULSION DEVICE

Clarence E. Blanchard, Kenosha, Wis., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Feb. 15, 1979, Ser. No. 12,385

Int. Cl.³ B63H *1/14*

U.S. Cl. 440—75 **55 Claims**



1. A marine propulsion device comprising an input shaft drivingly connected to a power source, a lower unit having a rotatably mounted drive shaft extending in coaxial relation to said input shaft, a rotatably mounted propeller shaft carrying a propeller, and means drivingly connecting said drive shaft to said propeller shaft, and a two-speed transmission drivingly connecting said input shaft to said drive shaft, said transmission being shiftable between speed ratios solely in response to variation in the speed of said input shaft and including a first drive means between said input shaft and said drive shaft for selectively drivingly connecting said input shaft and said drive shaft and including a third shaft rotatably mounted in parallel relation to said input shaft and said drive shaft, a first drive gear mounted on said input shaft, a first driven gear mounted on said third shaft and in meshing engagement with said first drive gear, a second drive gear mounted on said third shaft, a second driven gear mounted on said drive shaft and in meshing engagement with said second drive gear, and a one-way overrunning clutch drivingly connecting one of said shafts to a gear mounted on said one shaft when the rotational speed of said input shaft is less than a predetermined value, said first drive means having a first input-output speed ratio with a first value, said first drive means further including means fixedly connecting three of said first drive gear to said input shaft, said third shaft to said first driven gear, said third shaft to said second drive gear, and said second driven gear to said drive shaft, and said one-way overrunning clutch connecting the other of said first drive gear to said input shaft, said first driven gear to said third shaft, said third shaft to said second drive gear, and said second driven gear to said drive shaft, and second drive means for selectively drivingly connecting said input shaft and said drive shaft when the rotational speed of said input shaft is greater than said predetermined value, said second drive means including a selectively actuatable clutch for drivingly connecting said input shaft and said drive shaft and having a second input-output speed ratio with a second value greater than said first value.

4,323,355

SPLASH PLATE FOR MARINE PROPULSION DEVICES

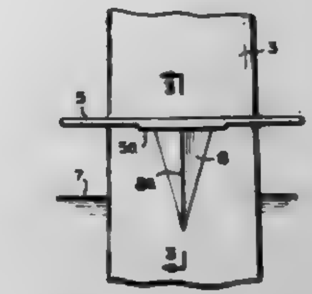
Yasuo Kondo, Shizuoka, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Feb. 21, 1980, Ser. No. 123,281

Claims priority, application Japan, Mar. 6, 1979, 54-25960

Int. Cl.³ B63H *21/26*

U.S. Cl. 440—76 **7 Claims**



1. In combination with a marine propulsion device for mounting to a boat hull rearwardly and outboard thereof, and having a casing intended to be at least partially immersed in water through which water the hull is to be forwardly propelled, a splash plate mounted to said casing and projecting forwardly from said casing at an elevation such that it will be positioned above the water surface during normal cruising, said splash plate having a lower surface to deflect water splashed by the casing, said lower surface being shaped so that a forward portion thereof is lower than a rear portion thereof.

4,323,356

MARINE TRANSMISSION CONTROL WITH VIBRATION ISOLATION SYSTEM

Donald K. Stephenson, Sussex, Wis., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Feb. 23, 1979, Ser. No. 14,696

Int. Cl.³ B63H *21/26*

U.S. Cl. 440—86 **7 Claims**

1. A marine propulsion device comprising a marine propulsion unit including an engine, a rotatably mounted propeller, transmission means operatively connected with said engine and said propeller for operation between a neutral position in which said engine is operatively disconnected from said propeller and a drive position in which said engine powers said propeller, said transmission means including a gearcase housing having confined therein an incompressible lubricating oil, and control means for operating said transmission means between said neutral position and said drive position, said control means including a movable control handle, a shift rod opera-

tively connected between said control handle and said transmission means, having a longitudinal axis, and movable axially along said longitudinal axis in response to operative forces imparted by the movement of said control handle and in response to vibratory forces imparted by operation of said transmission means, and damper means for resisting the transmission of vibratory forces and comprising a cylinder enclosing a portion of said shift rod, a piston attached to said portion of said shift rod and movable within said cylinder in common with the movement of said shift rod axially along said longitudinal axis, and incompressible lubricating oil contained within said cylinder, and conduit means communicating between said gearcase housing and said cylinder for conducting lubricating oil therebetween.

4,323,357

CONNECTING MECHANISM FOR TWO MEMBERS OF A BICYCLE DERAILEUR

Masashi Nagano, Sakai, Japan, assignor to Shimano Industrial Company Limited, Osaka, Japan

Filed Apr. 9, 1980, Ser. No. 138,737

Claims priority, application Japan, Apr. 23, 1979, 54-55107[U]

Int. Cl.³ F16J *15/34;* **F16C** *33/72;* **F16H** *11/00*

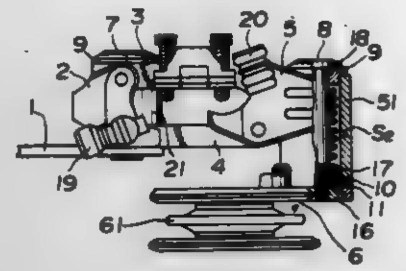
U.S. Cl. 474—82 **11 Claims**

1. A connecting mechanism which rotatably connects a first member and a second member of a bicycle derailleur, said first member including a supporting tubular member having first and second lengthwise end portions, said second member having a headed shaft insertable into said supporting tubular member, said connecting mechanism comprising:

a first bearing interposed between the first end portion of said supporting tubular member and the head of said shaft;

a second bearing interposed between the second end portion of said supporting tubular member and said second member;

each of said first and second bearings comprising a tubular portion inserted between the inner periphery of said supporting tubular member and the outer periphery of said shaft and a flange portion disposed opposite to the end face at each of said end portions of said supporting tubular member, the flange portion of at least one of said first and second bearings having an annular groove opening at one axial side of said flange; and



an annular sealing member loosely fit into said groove, said sealing member comprising elastic material and being elastically deformable within said groove, said sealing member having a height greater than a depth of said groove, and projecting from the opening of said groove, the projecting end face of said sealing member elastically contacting with one of the second member and at the end face of said tubular member opposite to said one axial side of said flange, on which side said groove is opening.

4,323,358

METHOD FOR INHIBITING MINERALIZATION OF NATURAL TISSUE DURING IMPLANTATION

David J. Lentz, Mission Viejo, and Elisabeth M. Pollock, Yorba Linda, both of Calif., assignors to Vascor, Inc., Anaheim, Calif.

Filed Apr. 30, 1981, Ser. No. 259,762

Int. Cl.³ A61F *1/22*

U.S. Cl. 8—94.11 **19 Claims**

1. A method for inhibiting the mineralization of fixed natural tissue after implantation in a living body comprising contacting fixed natural tissue intended for implantation with an aqueous solution of a water soluble salt of a C_{7-18} alkyl sulfate.

4,323,359

MACHINE FOR THE CONTINUOUS WET TREATMENT OF TEXTILE THREAD FORMATIONS, THE PROCESS FOR OPERATING THE MACHINE, AS WELL AS A NON-TOUCHING CATCH-THREAD DEVICE

Werner Keller, Winterthur, Switzerland, assignor to Jaeggli Maschinenfabrik AG, Ruterschen, Switzerland

Filed Mar. 6, 1980, Ser. No. 127,559

Claims priority, application Switzerland, Mar. 23, 1979, 2716/79

Int. Cl.³ D06B *23/04*

U.S. Cl. 8—155 **4 Claims**

1. A process for treating thread formations comprising:

providing a first wetting station for treating a thread formation, said first wetting station having a first reel comprising a central spindle rotatably mounted in a housing along a first axis and a plurality of rollers each rotatably mounted about said central spindle in said housing along axes parallel to said first axis;

providing drive means operatively engaging said first reel, said drive means being operative in a first condition wherein said spindle rotates on said first axis while said rollers orbit about said spindle and a second condition wherein said spindle is stationary and said plurality of rollers rotate on their axes respectively;

mounting thread guide means for axial movement on a second axis parallel to and spaced apart from said first axis for feeding said thread formation over the length of said first reel;

feeding said thread formation to said thread guide means and said first reel when said drive means is operatively engaging said first reel in said first condition for spooling said thread formation on said first reel;

providing a treatment bath in said housing of said first wetting station;

treating the spooled-up thread formation on said first reel in said treatment bath; and

feeding the treated thread formation off of said first reel when said drive means is in said second condition so as to treat said treated thread formation.

4,323,360

DYEING COMPOSITIONS FOR HAIR WHICH CONTAIN 2,4-DIAMINO-BUTOXYBENZENE AND/OR A SALT THEREOF AS THE COUPLING AGENT

Andree Bugaut, Boulogne, and Alex Junino, Aulnay-sous-Bois, both of France, assignors to L'Oreal, Paris, France

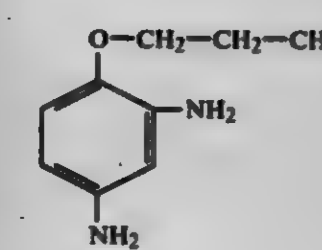
Filed Jun. 16, 1980, Ser. No. 159,920

Claims priority, application France, Jun. 18, 1979, 79 15553

Int. Cl.³ A61K *7/13*

U.S. Cl. 8—407 **35 Claims**

1. A composition suitable for dyeing human hair in the presence of an oxidizing agent selected from the group consisting of hydrogen peroxide, urea peroxide, alkaline persulfate and alkaline perborate, said composition containing at least one oxidation base and a coupling agent having the formula (I):



(I)

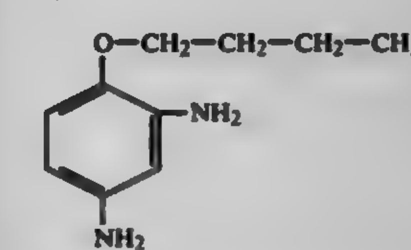
or a salt thereof.

10. A composition according to claim 1, which also contains at least one direct dye

selected from the group consisting of ortho-nitroaniline, 2-amino-3-nitro-isopropylbenzene, 3-nitro-4-amino-phenol, 3-nitro-4-N-β-hydroxyethylamino-phenol, 2-methyl-4-amino-5-nitro-phenol, 2-nitro-4-methyl-6-amino-phenol, 3-nitro-6-N-β-hydroxyethylamino-anisole, 2-amino-3-nitro-phenol, (3-N-methylamino-4-nitro-phenoxy)-ethanol, (2-N-β-hydroxyethylamino-5-nitro-phenoxy)-ethanol, 3-nitro-4-N'-methylamino-N,N-di-β-hydroxyethyl-aniline, 3-nitro-4-N'-β-hydroxyethylamino-N,N-di-β-hydroxyethylaniline and 3-nitro-4-N'-methylamino-N-methyl-N-β-hydroxyethyl-aniline.

17. A composition suitable for dyeing human hair in the presence of at least one oxidizing agent selected from the group consisting of hydrogen peroxide and urea peroxide, comprising an aqueous solution of an effective amount of an oxidation base selected from the group consisting of (a) a paraphenylenediamine, (b) 2,5-diaminopyridine, and (c) a para-aminophenol and 0.005 to 2.5 percent by weight based on the total weight of the composition of, as a coupling agent, 2,4-diamino-butoxybenzene or a salt thereof, said composition having a pH ranging from 8 to 11.5.

35. In a composition for dyeing human hair in the presence of an oxidizing agent wherein said composition contains an oxidation base and a coupling agent, the improvement comprising said coupling agent having the formula

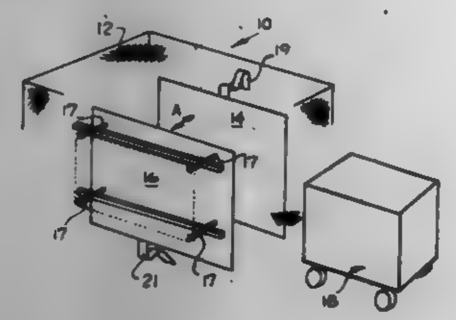


or the hydrochloride, sulfate, citrate or lactate thereof.

4,323,361
DYEING METHOD

John F. Graham, 2 Cherry Grove, Ilkley, West Yorkshire, and Richard R. D. Holt, 14 Endor Grove, Burley-in-Wharfedale, West Yorkshire, both of England

Filed Mar. 12, 1980, Ser. No. 129,681
Claims priority, application United Kingdom, Mar. 21, 1979, 9984/79
Int. Cl.[3] D06P *5/20;* G21K *5/08*
U.S. Cl. 8—444 5 Claims



1. A method of dyeing keratinous fibers which comprises padding the fibers with an aqueous composition containing at least one dyestuff, transferring the padded fibers in a moist state to a thermally insulated batch storage zone in which the fibers are covered with an impermeable layer to prevent loss of moisture, subjecting the thus-stored fibers to radio frequency heating for only a period of time sufficient to raise the temperature of the fibers to between 40° and 80° C. and then discontinuing the heating, and thereafter continuing the batch storage of the moist heated fibers in the thermally insulated zone without further applied heat, to fix the dyestuff in the fibers.

4,323,362
DYED PAPER

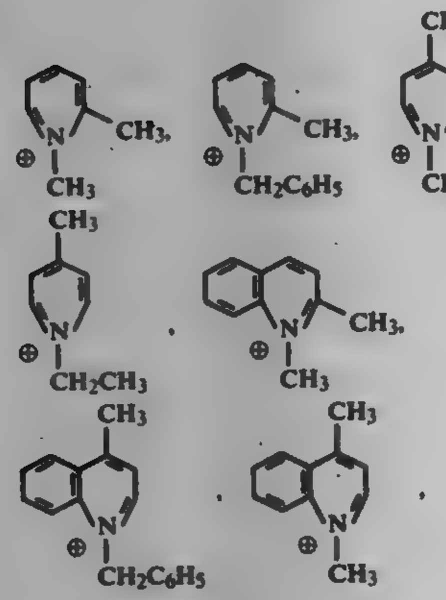
Hans-Juergen Degen, Lorsch, and Klaus Grychtol, Bad Duerkheim, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Division of Ser. No. 109,042, Jan. 2, 1980. This application Jan. 14, 1981, Ser. No. 224,943
Claims priority, application Fed. Rep. of Germany, Jan. 18, 1979, 2901845
Int. Cl.[3] D21H *1/46*
U.S. Cl. 8—506 2 Claims

1. Paper stock dyed with a compound of the formula

$$A^1{=}CH{-}B{-}CH{=}A^2$$

wherein A^1 and A^2 are the same or different radicals derived from quaternized methylene active compounds A^1H_2 and A^2H_2 selected from the group consisting of:



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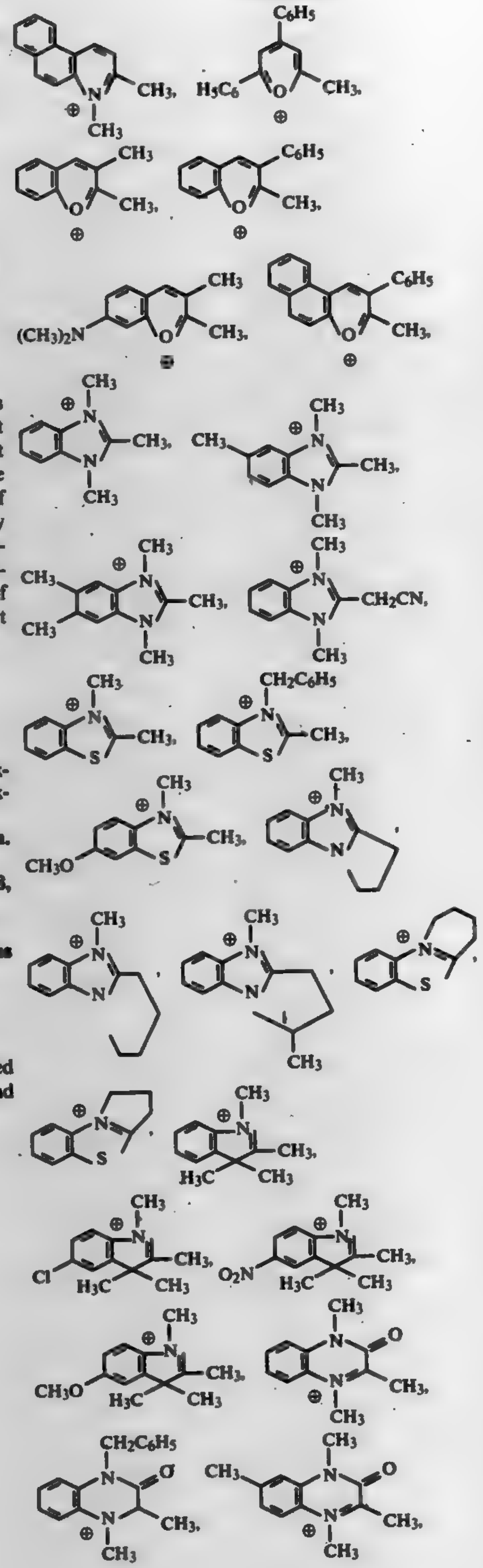

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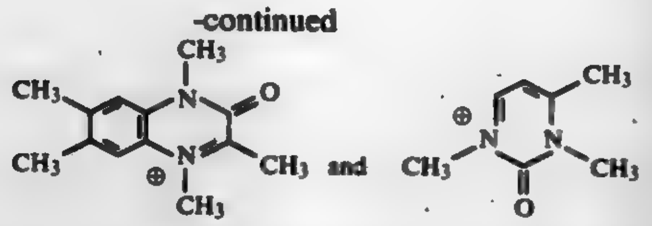
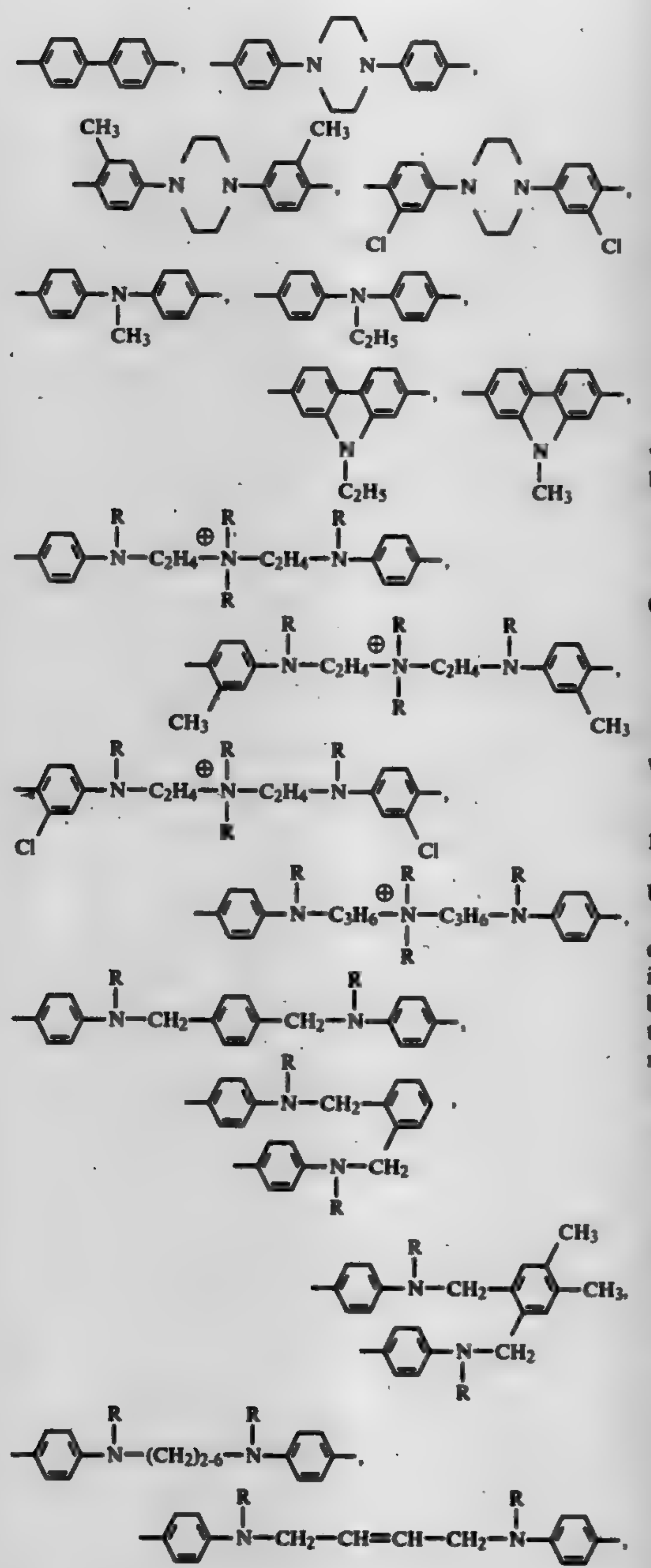


and wherein B is a bridge member selected from the group consisting of



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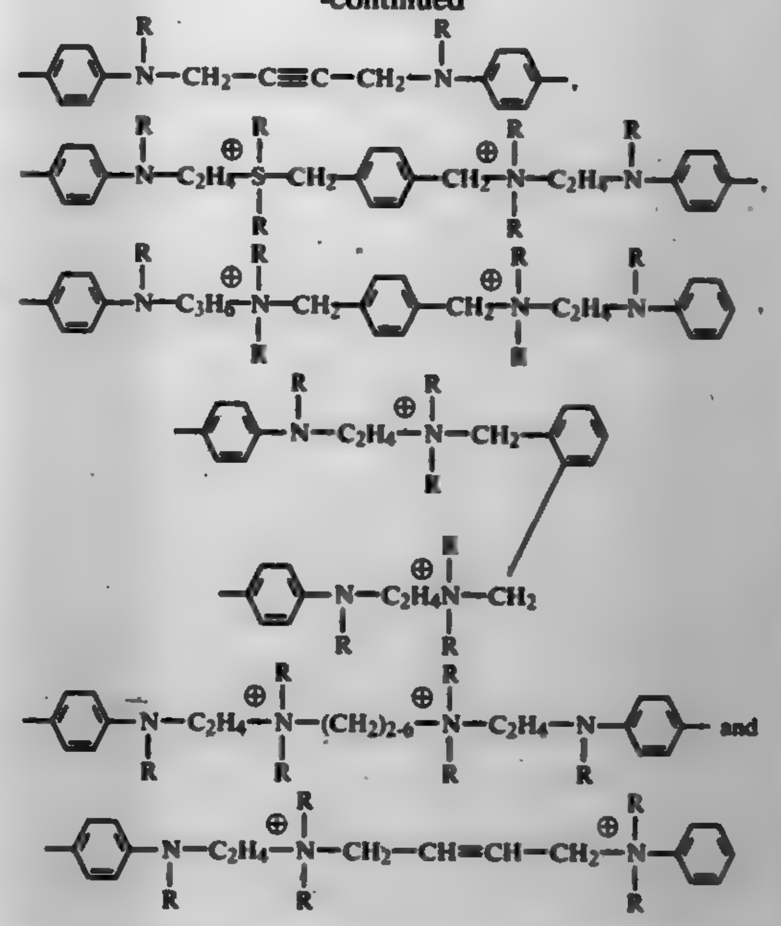


where R is C_1–C_4-alkyl, β-hydroxyethyl, β-cyanoethyl or benzyl.

4,323,363
DYEING OF MIXED FIBERS

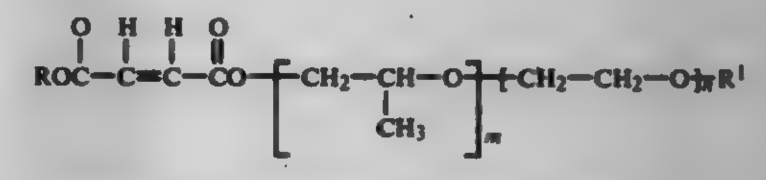
Gert Brachten; Friedrich Engelhardt; Heinz Helling, all of Frankfurt am Main, and Joachim Ribka, Offenbach am Main-Bürgel, all of Fed. Rep. of Germany, assignors to Cassella Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 940,171, Sep. 7, 1978, abandoned, which is a division of Ser. No. 723,985, Sep. 16, 1976, abandoned. This application May 22, 1980, Ser. No. 152,564
Claims priority, application Fed. Rep. of Germany, Sep. 18, 1975, 2541625; Sep. 20, 1975, 2542051
Int. Cl.[3] D06P *5/08, 3/82;* C08F *222/36*
U.S. Cl. 8—532 10 Claims

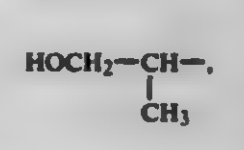
1. In the method of dyeing of polyester fibers with a disperse dye while those fibers are mixed with cellulose fibers, the improvement according to which haze formation is suppressed by applying the disperse dye from a liquor containing in addition to a dispersant about 0.2 to about 5 grams per liter of a normally liquid copolymer of

(a) one mol acrylamide, alpha- or beta-methyl acrylamide, maleamic acid or fumaramic acid, with

(b) from about 0.01 to about 5 mols of



where R is H, NH_4, Na, K, $HOCH_2$—CH_2— or



R^1 is alkyl or alkenyl with up to 20 carbons, alkenyl with from 3 to 20 carbons, phenyl, naphthyl, alkylphenyl

with up to 12 alkyl carbons, alkanoyl or alkenoyl with 4 to 20 carbons;

and

m plus n are whole numbers totalling between 1 and about 30,

and

(c) from zero to ten mols of

$$R^2-\underset{\displaystyle H}{C}=\overset{\displaystyle R^3}{\overset{|}{C}}-R^4$$

where R^2 and R^3 are both H, or one of them is H and the other methyl, or R^3 is H and R^2 is carboxyl or alkoxycarbonyl having up to 10 alkoxy carbons, or R^2 is H and R^3 is $-CH_2COOH$ or alkoxycarbonyl methylene having up to 10 alkoxy carbons, and any of these R^3 alkoxycarbonyls can be substituted by hydroxy, alkoxy with up to 10 carbons, or mono- or di-alkyl amino having up to 4 carbons; and

R^4 is cyano, carboxyl, $-SO_3H$, sulfo-alkylene having up to 6 carbons, alkanoyloxy with up to 6 carbons, alkanoylamino with up to 7 carbons that can form a pyrrolidone, piperidone, caprolactam ring wth the amino, alkoxycarbonyl with up to 10 alkoxy carbons and in which the alkyl of the alkoxy can be further substituted with hydroxy, up to C_4 alkoxy, amino, mono- or di-alkyl amino having up to 4 carbons or

$$-\overset{\displaystyle O}{\overset{\|}{C}}O-\left[CH_2-\underset{\displaystyle CH_3}{\underset{|}{C}H}-O\right]_m\!\!\left(CH_2-CH_2-O\right)_n R^5,$$

R^5 being alkyl with up to 20 carbons, alkenyl with from 3 to 20 carbons, phenyl, naphthyl, alkyl-phenyl with up to 12 alkyl carbons, or alkanoyl or alkenoyl with 4 to 20 carbons and 12 alkyl carbons, or alkanoyl or alkenoyl with 4 to 20 carbons and

m and n are whole numbers totalling between 1 and about 30;

the copolymer being miscible with water in all proportions at about 10° C., and in a 4% by weight solution in water giving a viscosity of between about 500 and about 20,000 centipoise at 25° C.

4,323,364

METHOD OF AND APPARATUS FOR EXAMINING SUBSTANCES AND MIXTURES OF SUBSTANCES

Michael Scherz, Nietzschestr. 4, 6800 Mannheim 1, Fed. Rep. of Germany

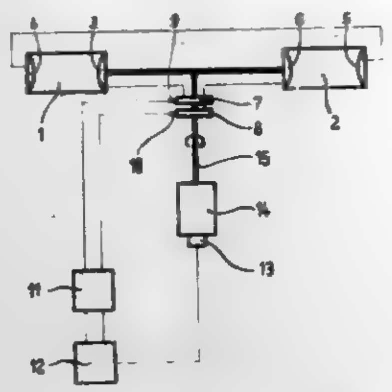
Filed Oct. 15, 1980, Ser. No. 197,325

Claims priority, application Fed. Rep. of Germany, Oct. 31, 1979, 2943942

Int. Cl.³ G01N *27/30, 9/30*

U.S. Cl. 23—230 R **15 Claims**

1. A method of examining substances and mixtures of substances, the method consisting in taking the substance or mixture to be examined in a state in which gravitational orientation of molecules is possible, applying a specific gravitational field to the substance or mixture, and deriving an output signal in accordance with any deflection of the molecular charge orien-



tation resulting from the application of the specific gravitational field.

4,323,365

DEWATERING OF SOLID RESIDUES OF CARBONACEOUS MATERIALS

Alan C. Crosby, Tustin, and David C. Campen, Arcadia, both of Calif., assignors to Occidental Research Corporation, Irvine, Calif.

Continuation of Ser. No. 171,873, Jul. 24, 1980, which is a continuation of Ser. No. 941,772, Sep. 13, 1978, abandoned. This application Jul. 28, 1980, Ser. No. 172,736

Int. Cl.³ C22B *1/14*

U.S. Cl. 23—313 R **34 Claims**

1. A process for producing agglomerated solid carbonaceous material from an aqueous slurry of water and a solid carbonaceous material selected from the group consisting of coal char and coke breeze, comprising:

(a) forming a mixture which comprises
   i. said aqueous slurry of said solid carbonaceous material and said water,
   ii. an acid, thereby forming an aqueous acid with said water of said aqueous slurry, the amount of said acid being between about 1 and about 35% by weight of said aqueous acid,
   iii. a surfactant, and
   iv. a liquid organic material selected from the group consisting of hydrocarbons, chlorinated hydrocarbons, low molecular weight aliphatic alcohols, and mixtures thereof, said liquid organic material being immiscible in said aqueous acid but miscible with said surfactant,

the amounts of said acid, said surfactant and said liquid organic material being sufficient to cause agglomeration of said solid carbonaceous material and to displace a major portion of said water from said solid carbonaceous material;

(b) agglomerating said solid carbonaceous material; and

(c) recovering said agglomerated solid carbonaceous material.

4,323,366

APPARATUS FOR THE GASIFICATION OF COAL

Gernot Staudinger, Graz, Austria, assignor to Voest-Alpine AG, Vienna, Austria

Division of Ser. No. 81,083, Oct. 1, 1979. This application Dec. 30, 1980, Ser. No. 221,407

Claims priority, application Austria, Dec. 29, 1978, 9346/78; Fed. Rep. of Germany, May 23, 1979, 2920922

Int. Cl.³ C10J *3/20*

U.S. Cl. 48—73 **7 Claims**

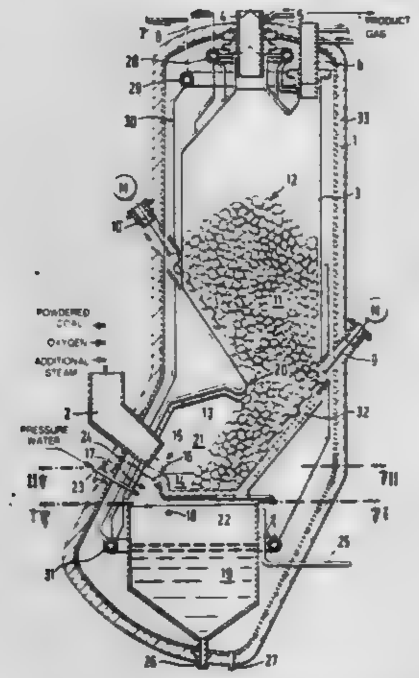
1. An apparatus for the gasification of coal with oxygen or oxygen-containing gas and water vapor, and also if required CO_2, said apparatus comprising:

a pressure container forming a shaft gasifier having an upper coal inlet means for forming a coal bed having a free upper surface and an obliquely extending bottom surface;

said pressure container having therein a chamber having a side portion thereof defined by said bottom free surface of said coal bed;

at least one burner means, extending through said pressure container and into said chamber, for producing at least one primary gas jet and for directing said primary gas jet toward said coal bed in a direction opposite to a direction of flow of an upper free surace of a slag bath, thereby gasifying said coal and generating a product gas and forming liquid slag;

a slag bath tank means for collecting said liquid slag adjacent said bottom free surface of said coal bed, said upper free surface of said slag bath which is collected in said slag



bath tank means partially defining the bottom of said chamber;

a cooling water bath positioned beneath said chamber;

said slag bath tank means having an overflow weir located below said burner means over which said liquid slag flows and falls freely toward said cooling water bath; and

water jet nozzles at a position located below said weir for directing at least one water jet against said liquid slag as it falls freely between said weir and said cooling water bath and for atomizing said liquid slag, thereby cooling said slag and generating steam, at least part of which is supplied as process steam to said coarse coal via a steam outlet means located above said cooling water bath and between said weir and the other side portion of said chamber.

4,323,367

GAS PRODUCTION BY ACCELERATED IN SITU BIOLEACHING OF LANDFILLS

Sambhunath Ghosh, Homewood, Ill., assignor to Institute of Gas Technology, Chicago, Ill.

Filed Jun. 23, 1980, Ser. No. 161,922

Int. Cl.³ C02F *11/04;* **C12P** *5/02*

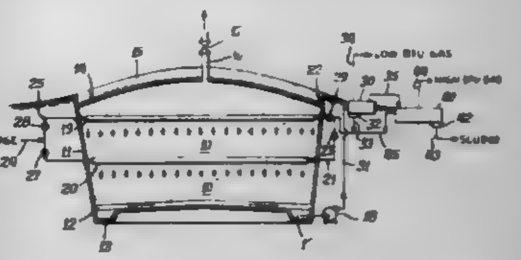
U.S. Cl. 48—197 A **12 Claims**

1. A process for improved gas production by accelerated in situ bioleaching of organic waste landfills comprising:

contacting said organic waste in a substantially sealed landfill in situ with an aqueous activated culture of hydrolytic and liquefying anaerobic microorganisms under growth conditions to produce a bioleachate of hydrolysis and liquefaction products of microbial action of said microorganisms with said organic waste and to produce deactivated hydrolytic and liquefying anaerobic microorganisms;

passing said bioleachate and deactivated microorganisms from said landfill to an acid phase digester operated at mesophilic or thermophilic conditions to regenerate said activated culture of hydrolytic and liquefying anaerobic microorganisms;

passing the supernatant from said acid phase digester to a methane phase digester operated at mesophilic or thermophilic conditions to produce gas rich in methane;



recirculating a mixture of said activated culture of hydrolytic and liquefying anaerobic microorganisms from said acid phase digester and the supernatant from said methane phase digester to contacting organic waste in situ in said substantially sealed landfill; and

withdrawing low Btu gas from said acid phase digester and high Btu gas from said methane phase digester.

4,323,368

GASIFICATION OF COAL

Ogden H. Hammond, Arlington, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation-in-part of Ser. No. 660,637, Feb. 23, 1976, abandoned, which is a continuation of Ser. No. 506,269, Sep. 16, 1974, abandoned. This application Feb. 8, 1977, Ser. No. 766,931

Int. Cl.³ C10J *3/16;* **C01B** *2/00*

U.S. Cl. 48—202 **11 Claims**

1. A process for forming a low molecular weight hydrocarbon-rich gas from solid carbonaceous particles, metallic iron particles, and steam in a manner to minimize agglomeration of said particles, said process being characterized by the steps of:

(1) cofluidizing the carbonaceous particles with at least about 60 percent by weight metallic iron particles in a gas producing zone, the ratio of the diameter of the iron and carbonaceous material particles being fixed in a relationship to their densities to maintain cofluidization of the particle mixture;

(2) contacting the cofluidized metallic iron and carbonaceous particles with steam at a temperature between about 800° and 1125° K. and a pressure between 1 and 100 atmospheres;

(3) recovering a low molecular weight hydrocarbon-rich gas by removing it from said gas producing zone;

(4) transporting a solid stream rich in FeO produced in said producing zone to a reduction zone;

(5) contacting said solid stream with a gas stream containing carbon monoxide and carbon dioxide, said gas stream having a carbon monoxide to carbon dioxide mole ratio selected to favor the production of iron in the reaction:

$$CO + FeO \rightarrow CO_2 + Fe$$

said gas stream being at a temperature between about 900° and 1300° K. and a pressure between about 1 and 45 atmospheres;

(6) forming a carbon monoxide-rich gas stream from effluent from said reduction zone by removing carbon dioxide from said effluent and recycling the stream to the reduction zone; and

(7) recycling the iron particles produced in step (5) to said producing zone.

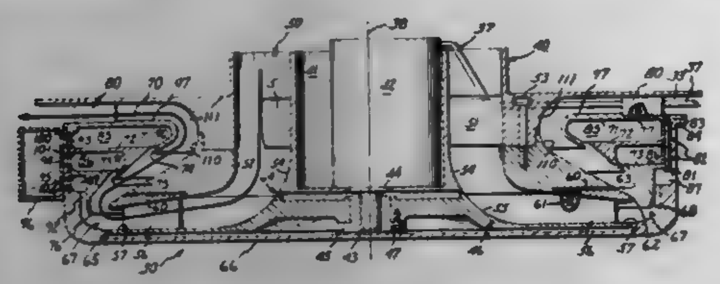
4,323,369
AIR CLEANER AND VENTILATOR

Donald R. Monson, West St. Paul, and Harry R. Camplin, Marine on the St. Croix, both of Minn., assignors to Donaldson Company, Inc., Minneapolis, Minn.

Continuation-in-part of Ser. No. 36,318, May 7, 1979, abandoned. This application Aug. 18, 1980, Ser. No. 178,897

Int. Cl.³ B01D *45/14*

U.S. Cl. 55—1 14 Claims



1. Apparatus for removing entrained particulate matter from a gas, comprising:

a circular housing having an annular inlet and circumferential outlet;

an impeller mounted within said housing for rotation about an axis extending centrally through the inlet;

means for driving said impeller;

a plurality of generally radial first vanes secured at circumferentially spaced intervals about said impeller, said first vanes being oriented toward the rotational direction of said impeller;

a plurality of generally radial second vanes secured at circumferentially spaced intervals to said housing about the outlet, said second vanes being oriented against the rotational direction of said impeller;

skimmer means including a plurality of circumferential lips and associated scavenge chambers secured to said housing for defining with said housing and impeller a generally S-shaped cross sectional flow path between the inlet and outlet whereby the particulate matter is centrifugally scavenged before discharge of the gas through the outlet, the lips of said skimmer means extending progressively radially inward between a region adjacent to said impeller and a region immediately upstream of the outlet; and

means connected to said housing for removing the particulate matter from the scavenge chambers of said skimmer means.

4,323,370
ADSORPTION PROCESS PRODUCING VARYING AMOUNTS OF PRODUCT GAS OF A CONSTANT PURITY

Paul Leitgeb, Munich, Fed. Rep. of Germany, assignor to Linde Aktiengesellschaft, Hollriegelskreuth, Fed. Rep. of Germany

Filed Jun. 6, 1980, Ser. No. 156,946

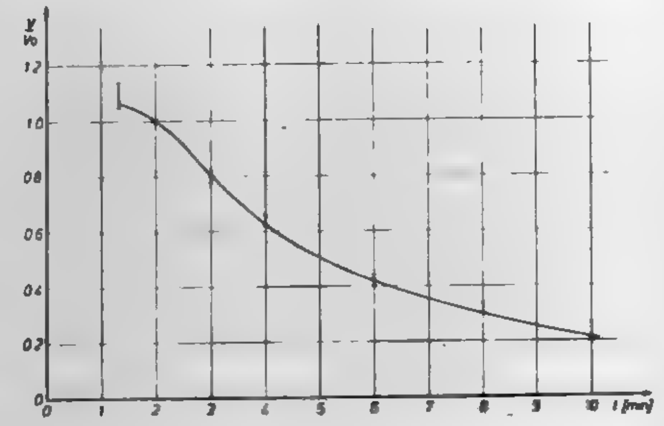
Claims priority, application Fed. Rep. of Germany, Jun. 8, 1979, 2923325

Int. Cl.³ B01D *53/04*

U.S. Cl. 55—18 12 Claims

1. In an adsorption process for the fractionation of a gaseous mixture comprised of at least two gaseous components, by an adsorbent which has different kinetic effect adsorption characteristics for each of said at least two gaseous components, the process comprising an adsorption phase wherein the gaseous mixture is passed through an adsorber packed with the adsorbent wherein at least one component of the gaseous mixture is preferentially adsorbed, thereby simultaneously producing a product gas enriched in the remaining components of the gaseous mixture, withdrawing the product gas from the adsorber and subsequently regenerating the adsorber, the improvement comprising adjusting the length of time of operation of the adsorption phase and the rate of flow of said gaseous mixture through the adsorber in response to a fluctuating demand for the product gas.

10. In an adsorption process for the fractionation of a gaseous mixture comprised of at least two gaseous components, wherein an adsorbent is adapted to adsorb each of said at least two gaseous components at different rates through means of the specific kinetic effect between each one of said at least two gaseous components and the specific adsorbent used, the process including an adsorption phase wherein said gaseous mixture is passed through an adsorber packed with said adsorbent whereby at least one gaseous component of said gaseous mixture is preferentially adsorbed, thereby simultaneously producing a product gas enriched in the remaining components of the gaseous mixture, withdrawing product gas from the adsorber and subsequently regenerating the adsorber, the improvement comprising: adjusting the length of time of operation of the adsorption phase in inverse proportion and the rate of flow of said gaseous mixture through the adsorber in direct proportion to a fluctuating demand for the product gas whereby operation of the adsorption phase for different periods of time with corresponding different gaseous mixture flow rates can be accomplished for meeting a specific product gas demand without shutting down the adsorber.



4,323,371
METHOD AND ARRANGEMENT FOR TREATING GASEOUS COMBUSTION PRODUCTS

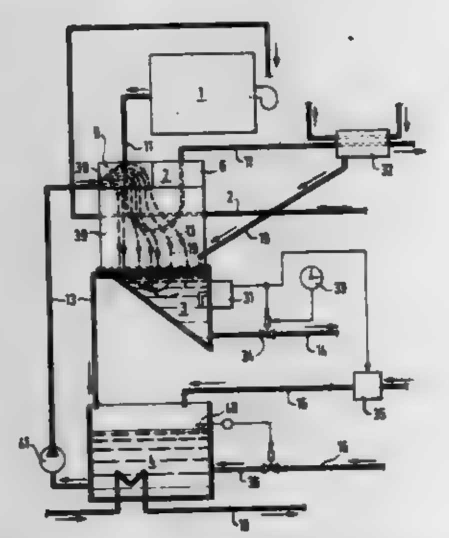
Tapio Ritvanen, Turku, Finland, assignor to Oy Wartsila Ab, Helsinki, Finland

Filed Jun. 10, 1980, Ser. No. 158,300

Claims priority, application Finland, Jun. 15, 1979, 791914

Int. Cl.³ B01D *53/14*

U.S. Cl. 55—19 11 Claims



1. A method for operating a plant for treating and scrubbing gaseous combustion products, in particular combustion products containing sulphur dioxide and smoke gases, in which the combustion products are lead to a scrubber unit where they are brought into contact with scrubbing water containing a base, preferably calcium hydroxide, for neutralization of acids contained in said scrubber unit, whereafter said combustion products are led through a heat exchanger for cooling and recovery of condensation water and the used scrubbing water and said condensation water are collected adjacent to said heat exchanger in a settling tank at the bottom of which solid impurities are caused to settle for removal at suitable intervals, said method including the steps of

measuring the pH value of the mixture in said settling tank for obtaining a measuring value as close as possible to said scrubbing unit,

recycling purified surplus water from said settling tank to said scrubber unit, and

regulating the amount of the base mixed into said scrubbing water so that the pH value of the liquid in said settling tank is kept within the range 7–10, preferably within the range 8–9.

6. An improved apparatus for treating and scrubbing gaseous combustion products from a fuel burning unit, which apparatus comprises a heat exchanger for preheating combustion air, a scrubber unit using scrubbing water and a mixing container for adding a base to said scrubbing water, said scrubber unit being provided with feed nozzles for scrubbing water coming from said mixing container, said nozzles being arranged to bring said scrubbing water into contact with the combustion products in the form of a finely divided mist, the improvement consisting in arranging means for measuring the pH value in a bottom receptacle located below said heat exchanger and arranged to collect said scrubbing water and condensation water separated from said combustion products,

said bottom receptacle being positioned adjacent to said heat exchanger, and

arranging said measuring means as close as possible to said scrubber unit to measure the pH value as close as possible to said scrubber unit for governing the preparation of new scrubbing water in said mixing container to which said used scrubbing water is led from said bottom receptacle.

4,323,372
PROCESS FOR RECOVERING NITROBENZENE, DICHLOROBENZENE AND/OR TRICHLOROBENZENE FROM EXHAUST GASES, IN PARTICULAR SPENT AIR

Rolf Bentz, Basel, and Volker Fattinger, Arlesheim, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Dec. 10, 1980, Ser. No. 214,827

Claims priority, application Switzerland, Dec. 17, 1979, 11160/79

Int. Cl.³ B01D *53/04*

U.S. Cl. 55—59 11 Claims

1. A process for recovering nitrobenzene, dichlorobenzene or trichlorobenzene from exhaust gases or spent air, by adsorption on a solid adsorbent, which process comprises passing the substantially undried exhaust gases or spent air containing these compounds through a layer of silica-containing adsorbents, adsorbing said compounds, and subsequently regenerating the adsorbents by removing the sorbed compounds therefrom.

4,323,373
APPARATUS AND METHOD FOR CLEANING AIR

Frederick F. Fritz, Oxford, Mich., assignor to Oxford Air Systems, Inc., Oxford, Mich.

Filed Mar. 23, 1981, Ser. No. 246,329

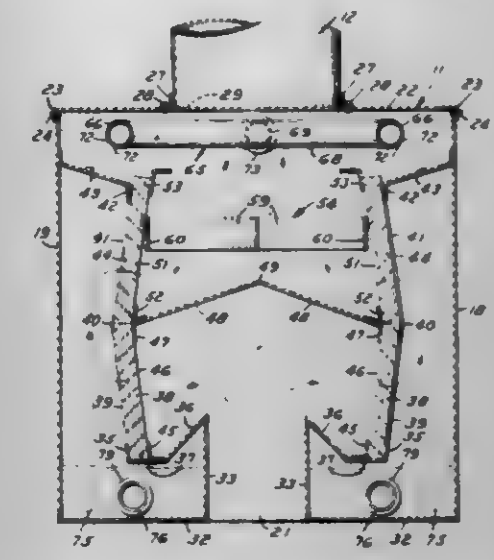
Int. Cl.³ B01D *46/04*

U.S. Cl. 55—96 14 Claims

1. A method of removing smoke, grease, odors and other pollutants from air by passing said air through a filter box comprising the steps of:

(a) passing half of the air through one of a first pair of planar filter members, and passing the other half of the air through the other of said first pair of planar filter members;

(b) and then sequentially passing said first half of the air through a first one of a second pair of planar filter members and said other half of the air through the second one of said second pair of planar filter members; and,



(c) continuously cleaning congealed grease and other pollutants from said planar filter member by passing a scrubbing solution sequentially downward by gravity through said second pair of filter members initially, and then through said first pair of planar filter members, and then passing the scrubbing solution and congealed grease and other pollutants cleaned from said planar filters into a reservoir means.

4,323,374
AIR FILTER ASSEMBLY

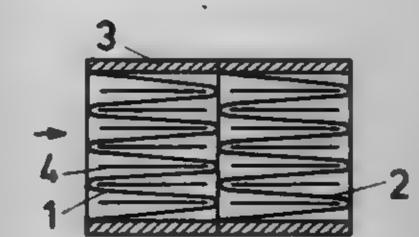
Takehisa Shinagawa, Sakai, and Tsunehiko Inoue, Towdabayashi, both of Japan, assignors to Nitta Belting Co., Ltd., Osaka, Japan

Filed Oct. 19, 1979, Ser. No. 86,449

Claims priority, application Japan, May 4, 1979, 54-54974

Int. Cl.³ B03C *9/02*; B01D *50/00*

U.S. Cl. 55—132 6 Claims



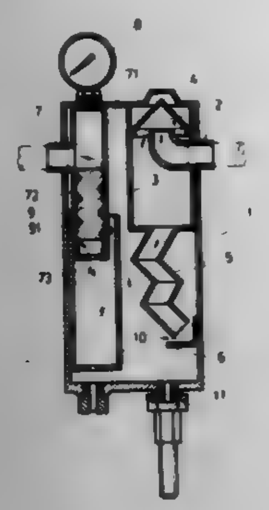
1. An air filter assembly comprising:

a frame for supporting filter sheets, said frame having input and output ends;

a first filter sheet of HEPA material provided in said frame adjacent to said input end of said frame, said first filter sheet of HEPA material being substantially free of an electrical charge; and

a second filter sheet of material provided in said frame, positioned between said first filter sheet and said output end of said frame, said second filter sheet being made from dielectric material, said second filter sheet further having one surface with a positive charge thereon and another surface with a negative charge thereon.

4,323,375
AIR SEPARATOR FOR AIR COMPRESSOR
Ying-Chung Cheng, No. 92, Sec. 2, San Min Rd., Taichung, Taiwan
Filed May 9, 1980, Ser. No. 148,519
Int. Cl.³ B01D *5/00, 45/00, 50/00, 53/30*
U.S. Cl. 55—270 **6 Claims**

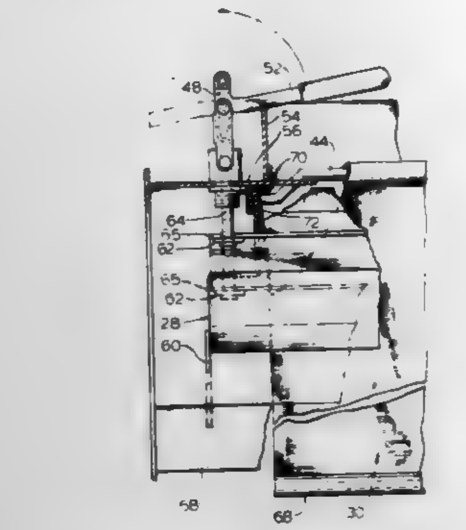


1. A separator for an air compressor to separate aqueous vapor and oil gas from an air stream comprising:
a vertically disposed casing having an air intake pipe for receiving air from a compressor and an outlet for discharging the air stream without the aqueous vapor and oil gas;
a conically converging member mounted adjacent to but spaced from the end of said pipe within said casing;
a vertically disposed cylindrical protective sleeve surrounding said member and mounted within said casing;
said air intake pipe extending through said sleeve for directing air to be separated onto said member so that the impingement of air thereon effects separation;
a zig-zag shaped tube extending from the bottom of said sleeve for conducting air and separated aqueous vapor and oil gas from said sleeve and effecting further separation;
a plate mounted in said casing so that air leaving said zig-zag shaped tube is directed onto said plate to effect further separation, the separated liquid thereafter accumulating in the bottom of said casing;
a transparent pipe connected to the interior of said casing and extending outside thereof for indicating the level of liquid in said casing; and
a round pipe mounted adjacent said outlet and above the bottom of said casing has an open end so as to direct air leaving said zig-zag shaped tube to said outlet.

4,323,376
DUST COLLECTOR WITH QUICK RELEASE FILTER SUPPORT SYSTEM FOR USE IN DUST COLLECTORS
Arthur P. Rosenquest, 2302 N. Pine Ave., Arlington Heights, Ill. 60004
Filed Sep. 2, 1980, Ser. No. 182,945
Int. Cl.³ B01D *46/04*
U.S. Cl. 55—304 **20 Claims**

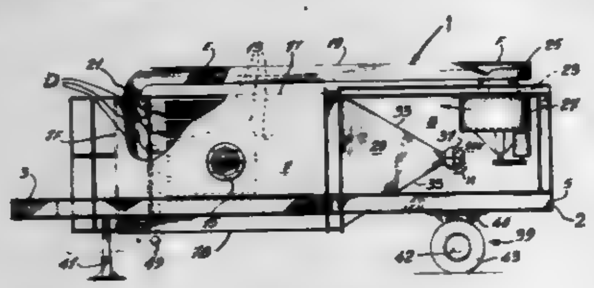
1. A bag filter apparatus which comprises a casing, an open center bulkhead having top and bottom faces and dividing the casing into upper and lower compartments, a bag filter unit having a peripheral frame suspending filter bags, quick release clamping means mounted on said bulkhead having activating means positioned above said top face of said bulkhead and clamping said frame to said bottom face of said bulkhead, a dust collecting hopper communicating with said lower compartment, an exhaust blower communicating with said upper compartment, an air outlet communicating with said upper compartment, an air inlet communicating with said lower compartment, said blower pulling an air stream through the bag filters from said lower to said upper compartments and exhausting filtered air from said upper compartment of said casing through said air outlet to the surrounding atmosphere and a door positioned and arranged on said casing to provide access to said bulkhead for insertion and removal of said bag filter unit.

18. Dust collecting apparatus which comprises a casing, a peripheral bulkhead in said casing, a bag filter tray assembly suspended from said bulkhead dividing the casing into upper and lower compartments, an air inlet communicating with said



lower compartment, an air outlet positioned in said upper compartment, a filter cloth suspended from said tray, clamps having actuating means positioned above said bulkhead so as to releasably secure the tray to the bulkhead in sealed relation therewith whereby the filter tray and cloth separate the casing into said upper and lower compartments and means for exhausting air through the casing to filter solids from the air on the surfaces of the filter cloth and a door positioned and arranged on said casing to provide access to said bulkhead for insertion and removal of said bag filter tray assembly.

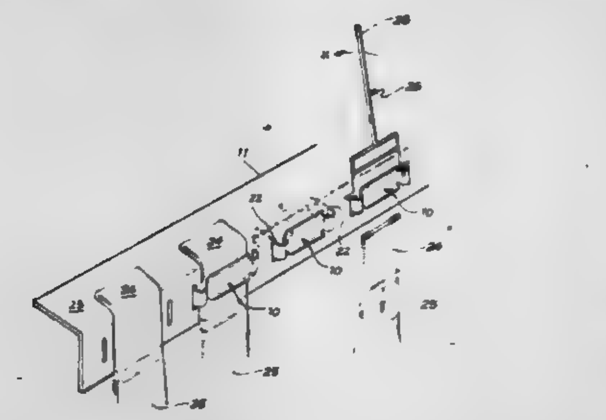
4,323,377
MOBILE DUST COLLECTOR
Marcel Jolin, Dollard des Ormeaux, Canada, assignor to Dustell LTEE, Lachine, Canada
Filed Nov. 3, 1980, Ser. No. 203,706
Int. Cl.³ B02C *23/10;* **B01D** *46/02*
U.S. Cl. 55—341 HM **20 Claims**



1. A mobile dust collector, comprising:
trailer means having;
a housing structure mounted on said trailer means, said housing structure including:
(i) a filter chamber and a fan chamber;
(ii) means communicating outside air with said filter chamber;
(iii) filter means disposed in said filter chamber;
(iv) fan means disposed in said fan chamber; and
(v) means communicating the interior of said filter chamber with said fan means; and
means for swivelling the housing structure from a substantially horizontal position to an upright position, said means comprising:
a first telescoping member connected on one side of said housing structure;

a second telescoping member connected on the other side of said housing structure;
a first vertically extending frame member on one side of said housing structure;
a second vertically extending frame member on the other side of said housing structure;
a first horizontally extending frame member on one side of said trailer means;
a second horizontally extending frame member on the other side of said trailer means;
said housing structure being pivotally connected, at either side thereof, to said vertically extending frame members;
the top of each telescoping member being connected to said housing structure at respective sides thereof; and
the bottom of each telescoping member being connected to a respective one of said horizontally extending frame members; and
wheel means at the back end of said trailer means to rollingly support said trailer means.

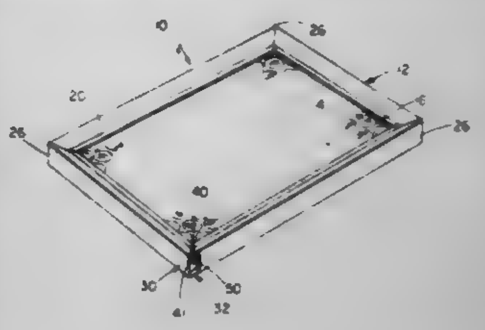
4,323,378
CLAMPING MEANS
Rodney W. Miljoen, Berowra Waters, Australia, assignor to James Howden Australia Pty. Limited, Australia
Filed Aug. 27, 1980, Ser. No. 181,703
Claims priority, application Australia, Aug. 27, 1979, PE0215
Int. Cl.³ B01D *46/02;* **A44B** *21/00*
U.S. Cl. 55—378 **5 Claims**



1. Clamping means for clamping an end of a fabric filter bag to a supporting frame member having apertures, comprising a substantially U-shaped clamping member, the bight portion of which forms a clamping portion adapted to lie on one side of the frame member while the arms of the clamping member project through the apertures in the frame member, and a leaf spring constructed such that it is adapted to engage with the arms of the clamping member and to bear against the other side of the said frame member such that the clamping portion of the clamping member is urged towards the one side of the frame member.

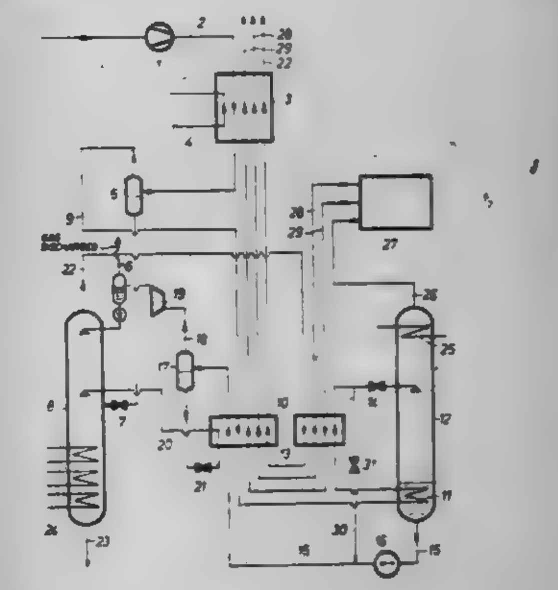
4,323,379
AIR FILTER PANEL
Robert W. Shearin, Henderson, N.C., assignor to Facet Enterprises, Inc., Tulsa, Okla.
Filed Nov. 28, 1980, Ser. No. 211,460
Int. Cl.³ B01D *46/10*
U.S. Cl. 55—511 **10 Claims**

1. In an air filter panel of the type having a fibrous filter batt and a circumferential support frame surrounding the batt, the frame having an axially extending frame element, the frame element being folded transversely to form frame sidewalls, the side of the batt being connected to the sidewalls of the frame, the ends of the folded frame element being fastened together to secure the batt in place within the surrounding sidewalls, the improvement comprising an improved frame end fastening means, said means comprising:
a tab connected at a fixed end thereof to the sidewall of the support frame adjacent one end of the frame element,
said tab having a neck portion at said fixed end and a head portion adjacent a free end thereof,
said head portion being connected along a portion of a following edge thereof to said neck portion, the remaining unconnected portion of the following edge providing a flange portion of said following edge, and
a slot in the sidewall adjacent the end of the frame element opposing said tabbed end,



said slot being at least as wide as the maximum width of said head of said tab to receive said head in a single sliding movement without bending of said head,
said head being fully inserted in said slot, said slot having a free edge facing and parallel to said following edge, thereby producing line contact between said free edge and said following edge opposing withdrawal of said head from said slot.

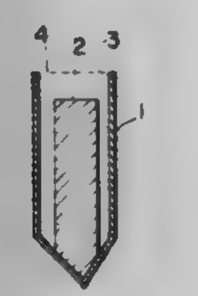
4,323,380
RECTIFICATION OF GASEOUS MIXTURES
Karl-Heinz Müller, Gerstarfed, and Wolfgang Förg, Icking, both of Fed. Rep. of Germany, assignors to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany
Filed Aug. 6, 1980, Ser. No. 175,817
Claims priority, application Fed. Rep. of Germany, Aug. 10, 1979, 2932561
Int. Cl.³ F25J *3/06*
U.S. Cl. 62—28 **9 Claims**



1. In a process for the separation of nitrogen and ethane from a natural gas mixture containing nitrogen and ethane, wherein a fraction containing all the nitrogen, and a fraction containing substantially all the ethane, are separated from the natural gas by rectifying under superatmospheric pressure, the natural gas being fractionated in a first rectifying column into a head product substantially freed of at least the ethane, and containing methane and nitrogen, and into a bottoms product containing methane and substantially all of the ethane from the natural gas, and substantially freed of nitrogen, the improvement comprising the steps of:

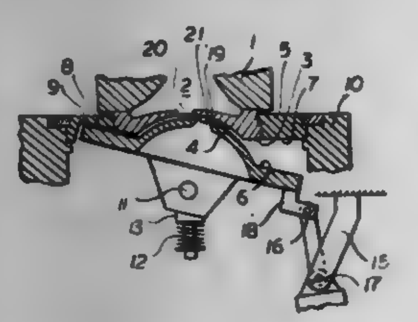
compressing the liquids bottom product of the first rectifying column;
passing the resultant compressed bottoms product through an indirect heat exchange with the natural gas for heating the compressed bottoms product;
expanding the resultant heated compressed bottoms product and passing it into a second rectifying column;
fractionating the expanded bottoms product in said second rectifying column to form a top product containing methane and a sump product containing ethane; and
passing the head product from the first rectifying column to a separation unit for separating nitrogen from methane.

4,323,381
METHOD FOR PRODUCING MOTHER RODS FOR OPTICAL FIBERS
Iwao Matsuyama, Sagamihara; Kenzo Susa, Hinodemachi; Tsuneo Suganuma, Tokorozawa; Shin Satoh, Iruma; Toshio Katsuyama, Kokubunji, and Hidehito Obayashi, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Continuation-in-part of Ser. No. 113,340, Jan. 18, 1980, abandoned. This application Jul. 17, 1980, Ser. No. 169,638
Claims priority, application Japan, Jan. 19, 1979, 54/3957
Int. Cl.³ C03B *5/16*
U.S. Cl. 65—32 **56 Claims**



1. A process for producing a mother rod useful in the production of an optical fiber which consists essentially of:
(i) forming a gel in a predetermined shape in a container means which is similar to the shape of the desired glass block to be produced from a mixed solution comprising a silicon alkoxide having the formula $Si(OR)_4$ wherein R is an alkyl group, water and a polar organic solvent,
(ii) drying the resulting gel to form a dry gel, and
(iii) sintering the dry gel at its collapse temperature but lower than the melting temperature of the dry gel, thereby forming a glass block of the desired shape.

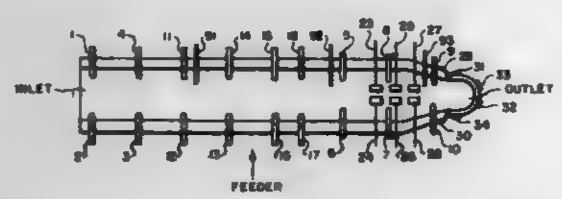
4,323,382
METHOD OF PRESSING GLASS ARTICLES, ESPECIALLY FEET OF GLASSES WITH INTEGRALLY FORMED STEMS
Herman Fuller, Riedlhutte, Austria, assignor to Dorma Glas GmbH & Co. KG, Salzburg, Austria
Filed Mar. 27, 1980, Ser. No. 134,663
Int. Cl.³ C03B *11/08*
U.S. Cl. 65—70 **9 Claims**



1. A method of pressing glass articles from a glass parison to form feet of glasses with integrally formed stems; said method comprising:
pressing substantially all of the glass parison into a mold having the internal contour of the glass article to be formed with a portion of the parison being left behind outside of the mold, the glass article is subsequently separated from the remaining part of the parison; cutting off the still plastified connecting protrusion between the remaining part of the parison and the glass article following the pressing operation; and, removing the protrusion left on the glass article and in the mold bottom by forming the same into the foot.

4. In an apparatus for pressing a foot of a glass with an integral stem from a parison of glass, said method comprising:
a mold having a mold bottom defining and shaping an outer surface of the foot and being provided with an aperture of a predetermined size for pressing the glass into said mold; an outer side of said mold bottom being spherically recessed; a cutting portion with a complementarily spherical surface, said cutting portion having an aperture of similar diameter adapted to be aligned with the aperture of said mold bottom to allow for the passage of the glass therethrough; means for moving said cutting portion to perform an angular movement which permits a point on the circumference to be displaced by a distance exceeding the diameter or width of said aperture of said mold bottom to sever that portion of the glass outside of the mold from a protrusion of glass remaining in the aperture in said mold bottom.

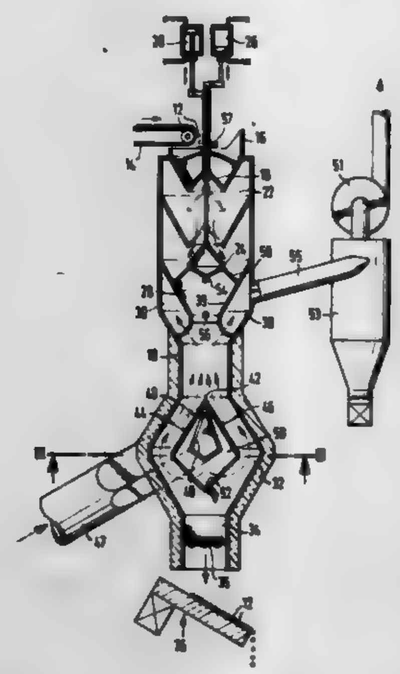
4,323,383
METHOD AND APPARATUS FOR UNIFORMLY HEATING A GLASS STREAM WITHIN THE FEEDER OF A GLASS MELTING FURNACE
George R. Sims, Lohr am Main, Fed. Rep. of Germany, assignor to Nikolaus Sorg GmbH & Co. KG, Postfach, Fed. Rep. of Germany
Filed Sep. 2, 1980, Ser. No. 183,618
Claims priority, application Fed. Rep. of Germany, Sep. 1, 1979, 2935416
Int. Cl.³ C03B *5/027*
U.S. Cl. 65—135 **7 Claims**



1. In a method for uniformly heating a glass stream flowing from the inlet to the outlet of a feeder of a glass melting furnace, wherein power or energy is supplied through electrodes immersed in the glass melt, and wherein the temperature of the glass stream is continuously detected, the improvement comprising the steps of: maintaining the current flowing between cooperating electrodes constant independently of the resistance of the glass melt, by controlling the voltage as long as the temperature of the glass stream does not deviate by a predetermined amount from a set value, regulating the current flow of at least a number of electrodes positioned at the inlet of the feeder to compensate for temperature variations, when the tolerable deviation limit has been exceeded and introducing electric current into the refractory material of the feeder to flow therein at least in front or upstream of the outlet of the feeder and at said outlet.

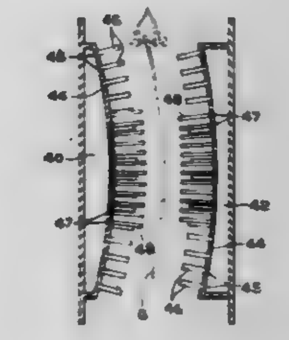
4. In a system for uniformly heating a glass stream flowing from the inlet to the outlet of a feeder of a glass melting furnace of the type wherein energy is supplied through electrodes immersed in the glass melt and means continuously detect the temperature of the glass stream, the improvement comprising: means independent of the glass melt resistance for maintaining a constant current flow between coacting electrodes including means for controlling the voltage when the temperature of the glass stream varies within predetermined limits; and means for adjusting the value of the constant current flow of at least a plurality of electrodes at the inlet of the feeder when the temperature of the glass stream exceeds said limits to compensate for the temperature change; and wherein a plurality of contacts are arranged in pairs at least upstream of the outlet and at said outlet, the contacts being in contact with the refractory material of the feeder and connected to the maintaining means.

4,323,384
PREHEATER FOR COMPACTED VITRIFIABLE MATERIAL
Georges Meunier, Boulogne, France, assignor to Isover Saint-Gobain, Neuilly sur Seine, France
Filed Jul. 25, 1980, Ser. No. 172,232
Claims priority, application France, Jul. 27, 1979, 79 19445
Int. Cl.³ C03B *3/00*
U.S. Cl. 65—335 **10 Claims**



1. A preheater for preheating massed-together, vitrifiable material which may be in the form of balls prior to introduction into a glass-smelting furnace, said preheater comprising a column having a flow path within the region of a heat-insulated wall between an inlet and an outlet, said column arranged substantially in a vertical plane and said material being loaded into said column through the inlet at the top thereby to fall by the force of gravity substantially in counter-flow to the flow of hot gases coming from the furnace circulating upward under action of a fan disposed within the upper region of the column whose low pressure side is in communication with said flow path, characterized in that the flow path of the column substantially constant in cross section includes a central chamber with an enlarged section, a dihedral element having an edge, means for mounting said dihedral element so that said edge is arranged horizontally, in a vertical plane of symmetry of the column and rotated toward the inlet at the top of the column whereby said dihedral element, the wall of the column and a sloping alignment of balls which forms under said dihedral element defines a mixing chamber, said mixing chamber connected with a regenerator for the hot gases from the glass-furnace, and adjustable closing means at said outlet of said column.

4,323,385
NOZZLE ARRANGEMENT FOR GLASS SHEET TEMPERING APPARATUS
Dean W. Gintert, Evansville, Ind., and Raymond A. Wakemanski, Tyrone, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.
Filed Jul. 21, 1980, Ser. No. 170,470
Int. Cl.³ C03B *27/04*
U.S. Cl. 65—351 **7 Claims**



1. An apparatus for tempering a glass sheet by blasting cool tempering medium against opposed major surfaces of a heated glass sheet, comprising:
first means for directing streams of tempering medium;
second means for directing streams of tempering medium;
means for mounting said first and second directing means in facing relationship to direct their respective streams of tempering medium through a common tempering position; and
each of said first and second directing means includes a plurality of discrete spaced orifices each having a cross-sectional area with the cross-sectional area of the innermost orifices facing central portion of the common tempering position having a higher orifice density than the orifice density facing portions outside the central portion of the common tempering position and the cross-sectional area of the innermost orifices being smaller than the cross-sectional area of the outermost orifices with orifices adjacent one another in a direction from the outermost orifice to the innermost orifice being approximately equal in cross-sectional area or having a smaller cross-sectional area to facilitate escape of spent tempering medium from the central portion of the common tempering position.

4,323,386
METHOD OF MANUFACTURING NP- OR NPK-CONTAINING FERTILIZERS FROM MAGNESIUM CONTAINING PHOSPHATE
Trygve Heggebo, Porsgrunn, and Arne Conradsen, Heistad, both of Norway, assignors to Norsk Hydro a.s., Oslo, Norway
Continuation of Ser. No. 50,217, Jun. 20, 1979, abandoned. This application Jan. 23, 1981, Ser. No. 227,973
Int. Cl.³ C05B *7/00*
U.S. Cl. 71—35 **6 Claims**

1. In a method of manufacturing NP- or NPK-containing fertilizer from phosphate ore having a magnesium content of more than 0.3 percent by weight, which comprises subjecting said ore to digestion with nitric acid, removing calcium, as calcium nitrate-tetrahydrate, from the digestion mixture by means of crystallization and filtration until the filtrate resulting from said filtration has a Ca/P-ratio of about 0.35, subjecting said filtrate to neutralization with ammonia, directly subjecting the neutralized filtrate to evaporation, and prilling or granulating the product resulting from said evaporation, the improvement wherein the method is carried out without causing viscosity problems related to the high magnesium content in the ore, by (1) reducing the Ca/P-ratio in said filtrate resulting from said filtration from about 0.35 to 0.01–0.15 by adding sulphuric acid or a sulphate to said filtrate to precipitate calcium in said filtrate, as calcium sulphate, and removing said

calcium sulphate from the resultant mixture, and (2) subjecting said filtrate having a Ca/P-ratio of 0.01–0.15 to said neutralization with ammonia until said filtrate has an N/P_2O_5- ratio of 0.5–2.

4,323,387

N-THIOLCARBONYL DERIVATIVES OF N-PHOSPHONOMETHYLGLYCINONITRILE ESTERS, HERBICIDAL COMPOSITIONS AND USE THEREOF

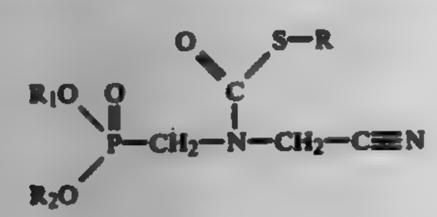
Gerard A. Dutra, Ladue, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Jul. 28, 1980, Ser. No. 172,883

Int. Cl.³ C07C *155/02;* A01N *57/18*

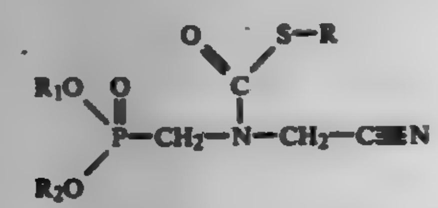
U.S. Cl. 71—87 15 Claims

1. A method of controlling undesired plants which comprises contacting said plants or the plant growth medium with a herbicidal amount of a compound of the formula



wherein R is selected from the group consisting of lower alkyl, lower cycloalkyl, lower alkenyl, phenyl, benzyl and halobenzyl and R_1 and R_2 are independently selected from the group consisting of phenyl and substituted phenyl containing from one to three substituents independently selected from the class consisting of lower alkyl, lower alkoxy and halogen.

6. A compound of the formula



wherein R is selected from the group consisting of lower alkyl, lower cycloalkyl, lower alkenyl, phenyl, benzyl and halobenzyl and R_1 and R_2 are independently selected from the group consisting of phenyl and substituted phenyl containing from one to three substituents independently selected from the class consisting of lower alkyl, lower alkoxy and halogen.

4,323,388

CYANOALKYL-PHENYLUREAS HAVING SELECTIVE HERBICIDAL ACTIVITY

Georg Pissiotas, Lörrach, Fed. Rep. of Germany; Dieter Dürr, Bottmingen; Otto Rohr, Therwil, and Alfons Lukaszczyk, Basel, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Mar. 3, 1981, Ser. No. 240,336

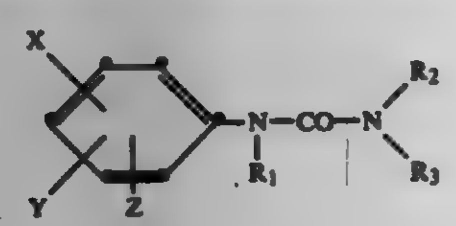
Claims priority, application Switzerland, Mar. 10, 1980, [illegible]

Int. Cl.³ A01N *47/30, 47/38;* C07C *127/19;* C07D *295/16*

U.S. Cl. 71—98 23 Claims

1. A cyanoalkyl-phenylurea of the formula I

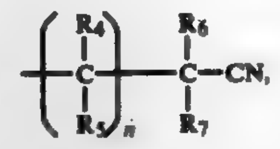
(I)



wherein

X is hydrogen, halogen, trifluoromethyl, methyl or methoxy,

Y is

a cyanoalkyl group 

Z is hydrogen or halogen,

n is the number 0, 1 or 2,

R_1 is hydrogen or C_1–C_6-alkyl,

R_2 is hydrogen, C_1–C_6-alkyl, C_1–C_6-alkoxy, C_2–C_6-alkenyl or C_3–C_6-alkynyl,

R_3 is hydrogen, C_1–C_6-alkyl or C_2–C_6-alkenyl, or

R_2 and R_3 together with the nitrogen atom to which they are bound form a 5–7-membered heterocycle, which can contain as ring member also an oxygen or sulfur atom or an imino group,

R_4, R_5 and R_6 are each hydrogen, C_1–C_6-alkyl and C_1–C_6-haloalkyl,

R_7 is hydrogen, C_1–C_6-alkyl, aralkyl, particularly benzyl, phenyl or C_1–C_6-alkoxy, or

R_6 and R_7 together with the carbon atom carrying them can form a C_3-C_7-cycloalkyl ring.

21. A method for selectively combating weeds in crops of cultivated plants, which method comprises applying thereto or to the locus thereof a herbicidally effective amount of a compound according to claim 1.

4,323,389

HERBICIDAL COMPOUNDS AND COMPOSITIONS

Takeo Yoshimoto, Yokohama; Takayuki Inoue; Hideo Michiyama, both of Omuta; Takeo Harayama, Kamakura; Osamu Morikama; Yoshikata Hojo, both of Chigasaki; Takao Baba, Omuta; Teruhiko Toyama, Fujisawa; Masaaki Ura, Yokohama, and Yoshio Takasawa, Chigasaki, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

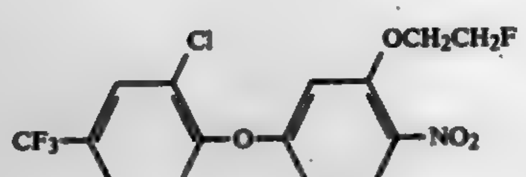
Continuation of Ser. No. 734,198, Oct. 20, 1976, abandoned, which is a division of Ser. No. 638,109, Dec. 5, 1975, Pat. No. 4,264,777. This application Jul. 8, 1980, Ser. No. 167,154

Claims priority, application Japan, Dec. 23, 1974, 49-146789

Int. Cl.³ A01N *31/14*

U.S. Cl. 71—124 8 Claims

1. A herbicidal composition which comprises a herbicidally effective amount of a diphenyl ether compound of the formula:



and an inert carrier or vehicle.

4,323,390

PROCESS FOR CONVERTING BRASS SCRAP TO COPPER POWDER

Paul R. Kruesi, Golden, and Veryl H. Fraham, Jr., Boulder, both of Colo., assignors to Southern Foundry Supply Company, Chattanooga, Tenn.

Filed Dec. 20, 1979, Ser. No. 105,614

Int. Cl.³ B22F *9/00*

U.S. Cl. 75—0.5 A 24 Claims

1. A process for the production of copper powder from brass, wherein the brass does not contain silicon, greater than about 5 percent tin, or greater than about 5 percent nickel, comprising:

(a) reacting the brass with hydrochloric acid in an oxygen-free atmosphere at a temperature of at least 70° C. until the non-copper metals and impurities contained in the brass are dissolved;

(b) oxidizing at least 10 percent by weight of the copper from step (a) to copper oxides;

(c) grinding the copper of step (b) to a powder; and

(d) removing the copper oxides contained in the powder of step (c) to obtain copper powder.

4,323,391

PROCESS FOR RECOVERING ZINC

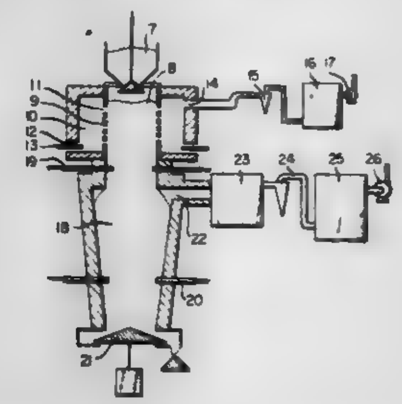
Tsuneo Honda; Haruo Nishina, and Shuichi Uehara, all of Annaka, Japan, assignors to Toho Aen Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 915,672, Jun. 15, 1978, abandoned, and a continuation of Ser. No. 794,366, May 6, 1977, abandoned. This application Jun. 25, 1979, Ser. No. 51,990

Claims priority, application Japan, May 20, 1976, 51-57256

Int. Cl.³ C22B *4/02*

U.S. Cl. 75—14 16 Claims



1. A process for recovering zinc or zinc oxide from zinc containing materials with the use of a shaft type electrothermically distilling furnace, which comprises:

(a) mixing a bituminous material with a zinc-containing material;

(b) forming briquettes from the mixed material;

(c) dry distilling the bituminous material containing briquettes to convert them into coked lumps;

(d) electrothermically distilling the bitumin containing coked lumps to obtain zinc vapor; and

(e) recovering zinc from said vapor.

4,323,392

AGENT FOR DESULFURIZING CRUDE IRON AND STEEL MELTS, AND PROCESS FOR MAKING IT

Albert Braun; Willi Portz, and Georg Strauss, all of Hoechst Aktiengesellschaft, Werk Knapsack, Hürth-Knapsack, Fed. Rep. of Germany

Filed May 9, 1980, Ser. No. 148,565

Claims priority, application Fed. Rep. of Germany, May 14, 1979, 2919324

Int. Cl.³ C21C *7/02*

U.S. Cl. 75—58 6 Claims

1. An agent for desulfurizing crude iron and steel melts, the desulfurizing agent consisting of calcium carbide and calcium oxide and being produced by the steps comprising: preparing a calcium carbide melt containing up to 45 weight % of calcium oxide; introducing into the melt fine particulate calcium oxide in a total amount of more than 48 up to 95 weight % of the final product; allowing the resulting molten mixture to solidify and cool down to a temperature of 350° to 450° C.; precrushing the solidified melt at that temperature to material with a size of less than 150 mm; screening off particles with a size of less than 4 mm; and further crushing and grinding the remaining material, with the exclusion of moisture, to material with a size of less than 10 mm.

4,323,393

HOT DIPPING LEAD BASE COATING MATERIAL

Teiji Nagahôri, No. 15-24 Nakasoki 2-chome, Kawaguchi-shi, Saitama-ken, and Masanori Ohshima, No. 1043 Amanuma-cho 2-chome, Ohmiya-shi, Saitama-ken, both of Japan

Continuation-in-part of Ser. No. 39,579, May 16, 1979, abandoned. This application Aug. 18, 1980, Ser. No. 179,478

Claims priority, application Japan, Jun. 9, 1978, 53-068922

Int. Cl.³ C23B *5/14, 5/38, 5/40*

U.S. Cl. 75—166 C 12 Claims

1. A hot dipping lead base coating material which consists of from 0.3 to 4.9 percent by weight of tin, from 0.001 to 0.3 percent by weight in phosphorus content equivalent of at least one selected from the group consisting of phosphorus, tin phosphide, zinc phosphide, antimony phosphide, bismuth phosphide and lead phosphide, and the balance of lead and inevitable impurities.

4,323,394

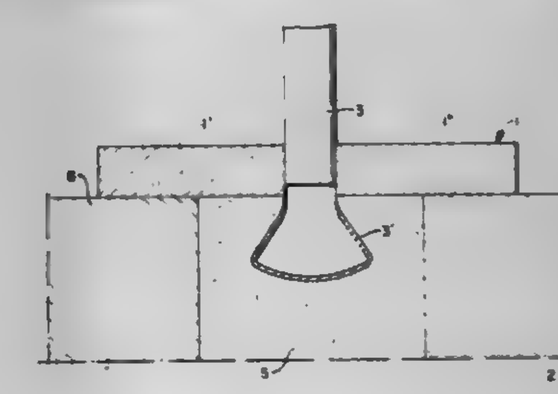
METHOD FOR MANUFACTURING TURBOROTORS SUCH AS GAS TURBINE ROTOR WHEELS, AND WHEEL PRODUCED THEREBY

Wilhelm Hoffmüller, Munich; Axel Rossmann, Karlsfeld, and Franz Schreiber, Meitingen-Herbertshofen, all of Fed. Rep. of Germany, assignors to Motoren-und Turbinen-Union München GmbH, Munich, Fed. Rep. of Germany

Filed Aug. 6, 1979, Ser. No. 63,714

Int. Cl.³ B22F *5/00, 7/00*

U.S. Cl. 75—208 R 19 Claims



1. Method for manufacturing turborotors, such as gas turbine wheels, comprising the steps of (1) inserting a root portion of turbine blades within a cavernous recess area of a premanufactured rotor disk with the root portion spaced from wall portions of said disk defining the recess area; (2) inserting a powdered connection material between said root portion and wall portions; and (3) sintering said connection material for joining said root portion of the blades to the rotor disk.

8. Method for manufacturing turborotors, such as gas turbine wheels, comprising the step of joining a common root portion of a pre-manufactured cast blade ring having a row of blades within a rotor disk by sintering a connection material about the root portion, wherein the blades are ceramic or silicon ceramic blades and comprising the step of coating the blade root portion with a ductile material before they are sintered in place in the rotor disk by said connection material, whereby widely differing thermal expansions between the blade material and said connection material are balanced.

4,323,395

POWDER METALLURGY PROCESS AND PRODUCT

Chou H. Li, 379 Elm Dr., Roslyn, N.Y. 11576

Filed May 8, 1980, Ser. No. 147,711

Int. Cl.³ B22F *1/00, 3/00*

U.S. Cl. 75—212 18 Claims

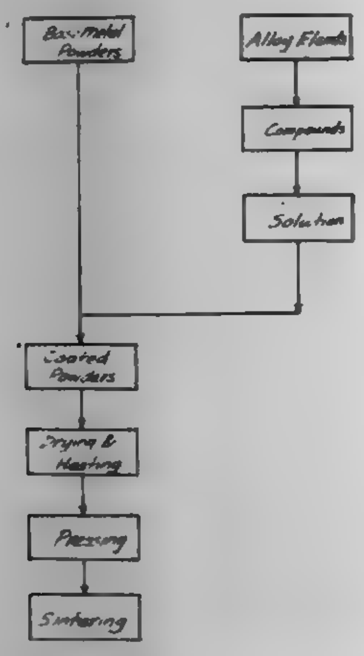
1. A method for making a powder metallurgy product having a multi-component alloy system of a given composition comprising:

collecting powder particles containing a selected component;

forming on the surface of the powder particles a coating containing the other component to a thickness calculated to provide the given composition in the finished product, the specific gravity of the selected component differing from that of the other component by at least a factor of two;

pressing said collected and coated particles to form a powder compact; and sintering the powder compact.

7. A method for making a powder metallurgy product having a multi-component system of a given composition comprising:



collecting powder particles consisting essentially of a selected, yieldable component;

forming on the surface of the particles a coating containing the other component and having a thickness calculated to provide the given composition in the finished product, said coating being fracturable and fragmentable under deformation;

pressing said collected and coated particles, during said pressing step said particles yielding and deforming under the compacting pressure while, simultaneously, said coating fracturing and fragmenting into pieces to fill the nearby voids between said pressed particles thereby enhancing the packing density of the powder compact;

and sintering the pressed powder compact.

4,323,396

PROCESS FOR THE PREPARATION OF PIGMENT FORMULATIONS AND THEIR USE

Klaus Ehl, Frankfurt am Main, and Reinhold Deubel, Bad Soden am Taunus, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Feb. 5, 1981, Ser. No. 231,779

Claims priority, application Fed. Rep. of Germany, Feb. 7, 1980, 3004442

Int. Cl.³ C09D *11/02*

U.S. Cl. 106—23 **12 Claims**

1. A process for the manufacture of pigment preparations which comprises contacting an organic pigment with a polysaccharide having anionic groups and an affinity to said pigment in an aqueous medium, separating mechanically the contacted pigment and drying it.

4,323,397

METHOD AND APPARATUS FOR THE THERMAL TREATMENT OF FINE-GRAINED MATERIAL WITH HOT GASES

Horst Herchenbach, Troisdorf; Hubert Ramesohl, and Kunibert Brachthäuser, both of Bergisch-Gladbach, all of Fed. Rep. of Germany, assignors to Klockner-Humboldt-Deutz AG, Fed. Rep. of Germany

Division of Ser. No. 26,610, Apr. 3, 1979. This application Mar. 10, 1981, Ser. No. 242,396

Claims priority, application Fed. Rep. of Germany, Apr. 10, 1978, 2815461

Int. Cl.³ C04B *7/36*

U.S. Cl. 106—100 **7 Claims**

1. In a method for the thermal treatment of finely divided material for the calcination of cement in a process in which:

said material is preheated in a heat exchanger and later passed to a calcining furnace,

said material is partially deacidified in a pre-calcination zone before entering said calcining furnace, the further calcining and sintering of the material being completed in said calcining furnace,

in which rapidly oxidizing fuel components are burned in said pre-calcination zone in a first stage and more slowly oxidizing fuel components are combined with the partly calcined material from said first stage in a second stage and then sintered, the improvement which comprises:

utilizing as said more slowly oxidizing fuel a mixture of granulated fuel of substantially uniform size and larger particles of briquetted or coarsely broken fuel.

4,323,398

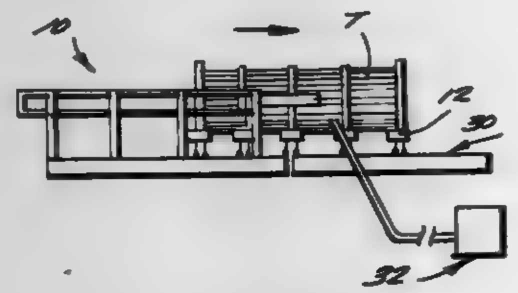
PERFORMING MAINTENANCE OPERATIONS ON HEAT EXCHANGER TUBE BUNDLES

Andrew Simon, Roadmeetings, Carluke, ML84QQ Lanarkshire, Scotland

Filed Apr. 7, 1980, Ser. No. 137,965

Int. Cl.³ B08B *7/04*

U.S. Cl. 134—18 **14 Claims**



1. A method for performing maintenance operations on a heat exchanger tube bundle mounted in a heat exchanger shell utilizing an extracting and inserting apparatus including a frame structure having a plurality of movable trolleys supported for movement therewith and for supporting the tube bundle at spaced points along the length thereof, the trolleys having rollers disposed on opposite sides of the central axis of the tube bundle, the method comprising the steps of

(a) linearly moving the tube bundle to pull it out of the heat exchanger shell onto the frame structure;

(b) providing the trolleys beneath the tube bundle at predetermined spaced points along the length thereof and in engagement therewith to support the weight of the tube bundle;

(c) moving the frame structure with supported tube bundle to a supported position wherein the central axis of the tube bundle is substantially horizontal;

(d) rolling the trolleys, with supported tube bundle, off of the frame structure by moving the tube bundle horizontally with the trolley rollers rolling along a stationary horizontal support;

(e) moving the tube bundle, while still supported by the trolleys, to desired maintenance stations at which maintenance operations are performed on the tube bundle while still supported by the trolleys;

(f) rolling the trolleys supporting the tube bundle back onto the frame structure while the frame structure is in a horizontal position;

(g) moving the frame structure into operative association with the heat exchanger shell; and

(h) linearly moving the tube bundle off of the frame structure into the heat exchanger shell.

4,323,399

PROCESS FOR THE THERMAL TREATMENT OF ALUMINIUM - COPPER - MAGNESIUM - SILICON ALLOYS

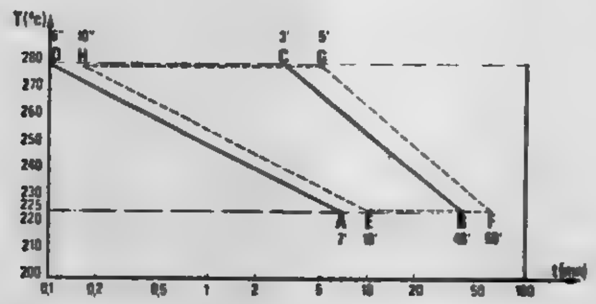
Bruno Dubost, and Jean Bouvaist, both of Grenoble, France, assignors to Cegedur Societe de Transformation de l'Aluminium Pechiney, Paris, France

Filed Aug. 23, 1979, Ser. No. 69,088

Claims priority, application France, Sep. 8, 1978, 78 26371

Int. Cl.³ C22F *1/04*

U.S. Cl. 148—12.7 A **20 Claims**



1. A process for the thermal treatment of wrought products made of aluminum-base high silicon alloy of the 2000 series consisting essentially of by weight, from about 3.5 to 5% of copper, from about 0.2 to 1% magnesium, from about 0.5 to 1.2% silicon, a Si to Mg ratio>1.0 and from about 0 to 1% manganese, from about 0 to 0.5% chromium and from about 0 to 0.3% zirconium, said treatment consisting of the essential sequential steps of solution heat treatment, quenching, ageing at ambient temperature and tempering, wherein said tempering comprises at least two sequential stages:

(a) the first stage being a main tempering treatment at a temperature higher than about 225° C. and lower than about 280° C. for a period of between about 6 seconds and about 60 minutes; and

(b) the second stage being a complementary tempering treatment at a temperature between about 120° C. and about 175° C. for a period of between about 4 and about 192 hours.

3. A process according to claim 1 in which the products are cold worked by plastic deformation of from about 1 to about 5% after the quenching treatment step, wherein the point which is representative of the main tempering treatment step in a temperature/time graph is situated in a quadrangle ABCD, of FIG. 1 having as approximate coordinates:

A = 225° - 7 mn	B = 225° - 40 mn
D = 280° - 6 s	C = 280° - 3 mn

4,323,400

ARTICLES HAVING AN INSULATIVE COATING CONTAINING KAOLIN AND STAPLE FIBERS

William J. Henning, 220 Forest Ave., Cincinnati, Ohio 45215

Division of Ser. No. 35,462, May 3, 1979, Pat. No. 4,240,936. This application Jul. 30, 1980, Ser. No. 173,465

Int. Cl.³ B32B *23/00*; C08L *1/28*

U.S. Cl. 428—36 **10 Claims**

1. An article comprising a substrate coated with an insulative aqueous composition containing film-forming solids consisting essentially of kaolin particles in an amount on the order of about 30% to about 90% by weight, staple fibers and a dispersing agent for said solids in the aqueous composition, said kaolin particles having a diameter of less than about 50 microns.

4,323,401

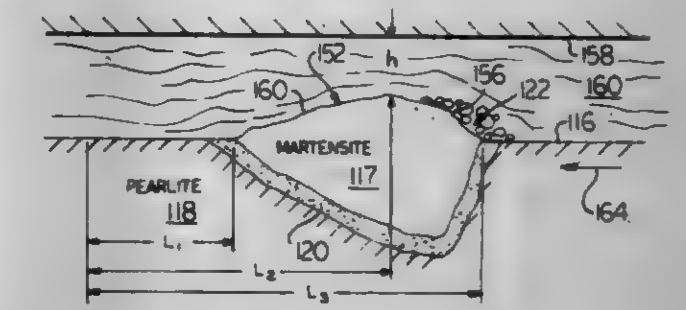
BEARING HAVING AN ARRAY OF MICROASPERITIES

William H. Belke; Joseph C. Hafele; Ernest W. Landen, and Thomas J. Richards, all of Peoria, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Division of Ser. No. 632,602, Nov. 17, 1975, Pat. No. 4,047,984. This application May 13, 1977, Ser. No. 796,586

Int. Cl.³ B32B *15/18*; F16C *33/00*

U.S. Cl. 148—39 **6 Claims**



1. A bearing, comprising:

(a) a generally planar surface; and

(b) an array of microasperities on said planar surface, each of said microasperities having a gently sloping front surface, and a sharply sloping rear surface.

4,323,402

METHOD FOR PRODUCING SUPERCONDUCTING NB₃SN WIRES

Kyoji Tachikawa, and Hisashi Sekine, both of Tokyo, Japan, assignors to National Research Institute for Metals, Tokyo, Japan

Continuation-in-part of Ser. No. 118,994, Feb. 6, 1980, abandoned. This application Mar. 31, 1981, Ser. No. 249,473

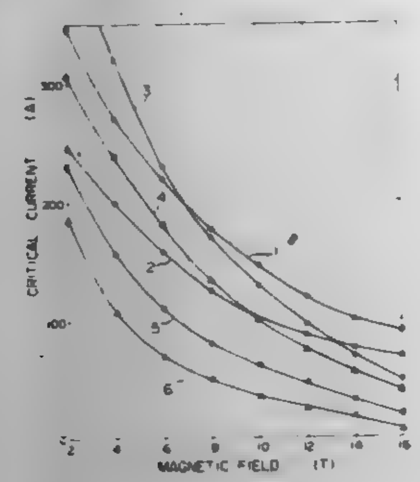
Claims priority, application Japan, Feb. 9, 1979, 54-13407

Int. Cl.³ H01L *39/00*; C23C *1/04*

U.S. Cl. 148—133 **3 Claims**

1. In a method of producing a superconducting Nb_3Sn wire which comprises passing a wire or tape of a niobium-base alloy through a molten metal bath containing tin and then heat-treating it to form a Nb_3Sn compound layer on the surface of said wire or tape, the improvement wherein said niobium-base alloy is an alloy comprising niobium and 0.1 to 30 atomic percent of hafnium, and said molten metal bath is a molten bath of a tin-base alloy consisting of tin, from 0.1 to 70 atomic percent of one element of Group IIIb of the periodic table selected from the group consisting of gallium, indium and aluminum, and

from 0.1 to 70 atomic percent of one element of Group Ib of the periodic table selected from the group consisting of copper



and silver, the total amount of the element of Group IIIb and the element of Group Ib not exceeding 70 atomic percent.

4,323,403

CONTINUOUS ANNEALING METHOD FOR COLD REDUCED STEEL STRIP

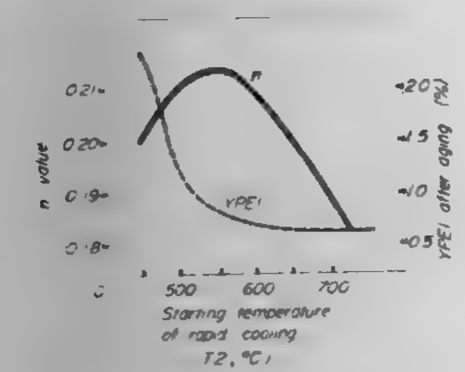
Kazuhide Nakaoka; Kenzi Araki, both of Yokohama; Kozi Iwase, Machida; Haruo Kubotera; Takao Kurihara, both of Yokohama, and Nobuo Tanaka, Fukuyama, all of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 926,192, Jul. 19, 1978, abandoned, which is a continuation of Ser. No. 715,863, Aug. 19, 1976, abandoned, which is a continuation-in-part of Ser. No. 558,840, Mar. 17, 1975, abandoned, which is a continuation of Ser. No. 373,744, Jun. 22, 1973, abandoned. This application Jul. 23, 1979, Ser. No. 60,028

Claims priority, application Japan, Jun. 22, 1972, 47/61813

Int. Cl.[3] C21D *6/00, 9/52*

U.S. Cl. 148—134 2 Claims



1. In a continuous annealing process for cold reduced steel strip, of which kind of steel are low carbon rimmed, low carbon Al-killed, low carbon Si-killed steel and of which coiling temperature at hot rolling stage are above 680° C. and of which the continuous annealing process is composed of heating the strip to a temperature of more than recrystallization temperature, rapidly cooling said strip, reheating said strip to a temperature within the range of 300° C. to 500° C. for more than 10 seconds and cooling said strip to room temperature, the improvement of imparting to said steel strip immediately after the completion of said annealing process of an n-value of more than 0.21, and a yield point elongation of zero percent wherein said steel strip is slowly cooled in said heating step for a period of time of about 100 seconds to a temperature in the range of between 500° C. and lower than 600° C. and subsequently rapidly cooling from said temperature range at a rate of over 200° C./sec to below 4,000° C./sec to said room temperature, and wherein upon subjecting said steel strip to equivalent natural aging for 2 months at room temperature, said n-value decreases about 10%, and the yield point elongation is held to an increase of no more than 1.2%.

4,323,404

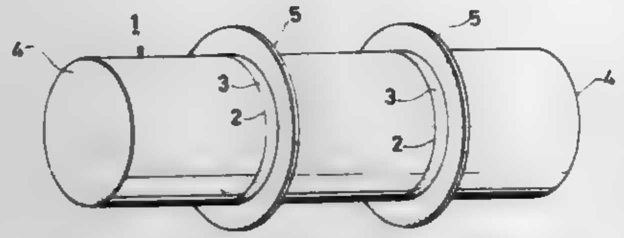
METHOD FOR PROVIDING SINGLE PIECE WITH PLURAL DIFFERENT MECHANICAL CHARACTERISTICS

Susumu Sawada, Muroran; Takashi Fukuda, Noboribetsu; Katsuhiro Tsuchiya, Muroran, and Kazuo Ito, Noboribetsu, all of Japan, assignors to The Japan Steel Works Ltd., Tokyo, Japan

Filed May 7, 1980, Ser. No. 147,453

Int. Cl.[3] C21D *1/78*

U.S. Cl. 148—148 4 Claims



1. A method for producing a metal piece having plural sections of different mechanical characteristics comprising the steps of: dividing a piece to be treated into plural sections by at least one groove, filling said groove with heat insulating material, forming a partitioning wall along each said groove, heating each section to a different temperature, and cooling each of said sections to thereby impart different mechanical or metallurgical characteristics to each of said sections.

4,323,405

CASING HAVING A LAYER FOR PROTECTING A SEMICONDUCTOR MEMORY TO BE SEALED THEREIN AGAINST ALPHA PARTICLES AND A METHOD OF MANUFACTURING SAME

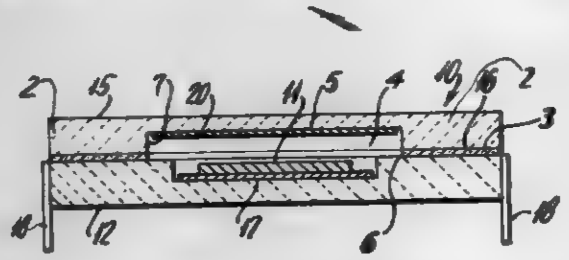
Koichi Uno, and Shinichi Murakami, both of Nagoya, Japan, assignors to Narumi China Corporation, Nagoya, Japan

Filed Dec. 19, 1979, Ser. No. 105,196

Claims priority, application Japan, Dec. 28, 1978, 53/161168

Int. Cl.[3] H01L *23/06*

U.S. Cl. 156—64 2 Claims



1. A method of manufacturing a casing for a semiconductor memory element, said element having a semiconductor substrate and a plurality of memory circuits, said substrate having a first surface and a second surface opposite to said first surface, said memory circuits being formed adjacent to said first surface, said casing comprising:

a base member and a cap member, said cap member having a peripheral region having a peripheral surface to be hermetically sealed on said base member, a center region surrounded by said peripheral region and having a center surface offset relative to said peripheral surface to form a hollow space in said casing when said base and said cap members are sealed together, and a wall surface between said center and said peripheral surface, said substrate being held on said base member with said first surface directed to said hollow space, and with said second surface brought into contact with said base member, said cap member irregularly emitting alpha particles that adversely affect operation of said semiconductor memory element,

said method comprising the step of:

preparing at least one protected material against said alpha particles;

determining a thickness of a protection layer formed by said protective material, said thickness being not less than the range in said protective material of said alpha particles emitted by said cap member; and

attaching said protection layer to said center surface to prevent said alpha particles from being emitted from said cap member into said hollow space and onto said first surface.

4,323,406

MANUFACTURING PROCESS FOR COVERING PANELS, AND PANELS OBTAINED WITH THIS PROCESS

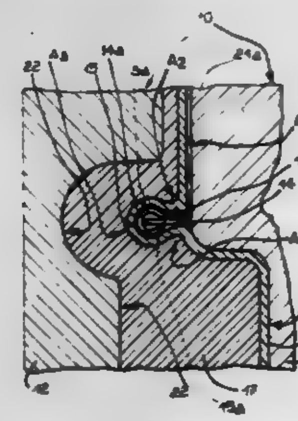
Sergio Morello, Via Passione, 9, Milan, Italy

Filed Apr. 14, 1980, Ser. No. 140,088

Claims priority, application Italy, Apr. 27, 1979, 3388 A/79

Int. Cl.[3] B29D *3/00, 9/00*

U.S. Cl. 156—91 4 Claims



1. A process for covering a panel, including use of a die-counterdie unit (10) in which a surface (21) of a die (11), defining the outside surface of the corresponding panel (1), has at least one plate protrusion (14) separating the die (21) into at least two prefixed portions, comprising:

(a) adhering a first sheet (3) to one of the portions (21*a*) of the die surface (21), such that the edge (3*a*) of said first sheet folds over and envelops the end (14*a*) of said protrusion (14);

(b) securing by elastic means, the folded edge (3*a*) of said first sheet at the end (14*a*) of said protrusion (14);

(c) adhering a second sheet (2) to said first sheet (3) and the remaining portion (21*b*) of said die surface (21);

(d) closing the die-counterdie unit (10), and injecting synthetic resin into a hollow space (17) between the said second sheet (2) and the surface (22) of the counterdie (12);

(e) opening, after a prefixed time, said unit; and

(f) detaching the panel from the die with simultaneous removal of said protrusion from the folded edge of said first sheet, leaving said elastic means within said panel.

4,323,407

ENDLESS PRESSURE BELTS FOR USE IN CONTINUOUS PRESSING AND DECATIZING DEVICES

Dieter Riedel, Porta Westfalica, Fed. Rep. of Germany, assignor to Drabert Sohne Minden (Ger. Body Corp.), Minden, Fed. Rep. of Germany

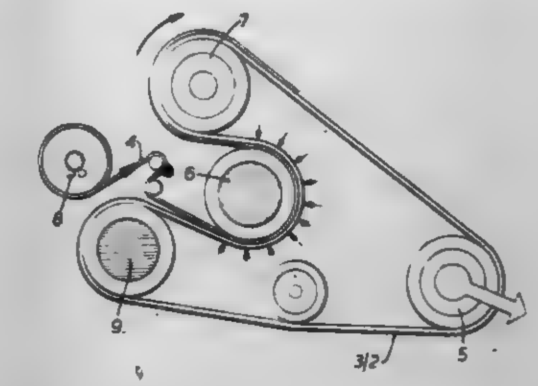
Filed Sep. 29, 1980, Ser. No. 192,327

Claims priority, application Fed. Rep. of Germany, Sep. 29, 1979, 2939637

Int. Cl.[3] B32B *31/20, 31/12*

U.S. Cl. 156—91 3 Claims

1. A method of manufacturing an endless pressure belt for use on a device for the continuous pressing and decatizing of woven and knitted fabrics and the like, said method comprising: providing an endless fabric made of aromatic polyamide fibres, stitching a synthetic fibre skin to at least one side of said



fabric, pressing at least one layer of rubber at room temperature onto the skin, and vulcanising the structure while longitudinal tension is being applied.

4,323,408

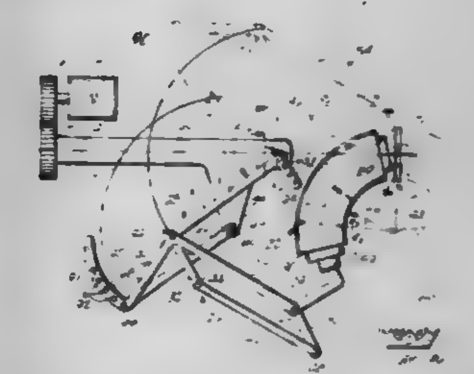
FILAMENT WINDING OF PLASTIC ARTICLES

William R. Dana, Corona del Mar; Ralph S. Friedrich, Hermosa Beach, and John D. McKenney, South Laguna, all of Calif., assignors to Ameron, Inc., Monterey Park, Calif.

Filed Sep. 25, 1979, Ser. No. 78,887

Int. Cl.[3] B65H *81/00*

U.S. Cl. 156—175 24 Claims



1. A method for making a pipe fitting having a nonlinear centerline lying in a substantially flat plane by wrapping filaments around a mandrel in the shape of the fitting, the method comprising the steps of:

disposing the mandrel adjacent a winding station;

rotating the mandrel about an axis which is fixed in space and which lies in the plane of the nonlinear centerline;

passing the rotating mandrel through the winding station while maintaining the nonlinear centerline substantially tangent to the axis of rotation at the winding station;

wrapping filaments around the mandrel in a curved path as it moves past the winding station; and

applying a curable resin to the filaments.

7. Apparatus for making a nonlinear pipe fitting by winding filaments in continuous curved paths around a mandrel in the shape of the fitting, the mandrel having a longitudinally extending nonlinear centerline, the apparatus comprising:

a spindle having a longitudinal axis;

an outwardly extending bracket secured to the spindle;

means for securing the mandrel to the bracket;

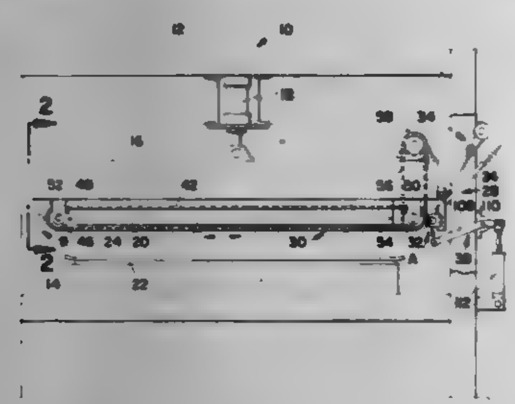
dispensing means for supplying filaments to the mandrel;

means for rotating the spindle about its longitudinal axis, the axis of spindle rotation having a fixed orientation relative to the dispensing means;

means for simultaneously moving the bracket and mandrel laterally and longitudinally relative to the spindle about an axis spaced from and transverse to the spindle axis as the spindle rotates to cause the centerline of the mandrel to

move through a point substantially on the longitudinal axis of the spindle and at a substantially fixed distance from the last point of contact between the filaments and the delivery means so the filaments wind around the mandrel in a continuous curved path; and
means for applying a curable resin to the filaments.

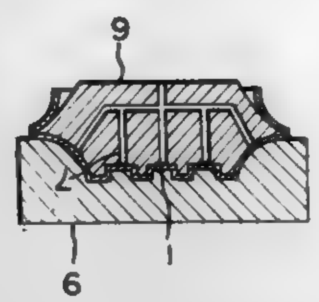
4,323,409
APPARATUS AND METHOD FOR FORMING DIELECTRICALLY SEALED LAMINAR SHEET MATERIALS
Rudolph Alt, Methuen, Mass., assignor to The General Tire & Rubber Company, Akron, Ohio
Filed Feb. 28, 1980, Ser. No. 125,499
Int. Cl.³ B31F *1/00*
U.S. Cl. 156—219 **33 Claims**



1. In an apparatus for dielectrically sealing a strap of relatively flexible material to a base sheeting material of predetermined width and arbitrary length comprising a press including a first platen having an electrode bar mounted thereto and a second platen, said platens being operable between an opened position for material feed and a closed position for dielectric sealing, dielectric sealing means connected between said electrode bar and second platen, means for advancing said base material lengthwise in predetermined increments between said platens and transversely of said electrode bar, the improvement comprising a strap feeder assembly for feeding said strap material between said electrode bar and base material in correlation with the operation of said platens, said strap feeder assembly including a grab bar arranged to reciprocate back and forth across the width of said base material, strap threader means arranged to feed a free end of said strap material extending from a tensioned supply thereof to said grap bar, said grab bar having relatively movable first and second members arranged to grasp said free end of said strap material and to pull a predetermined length of said strap material from said supply thereof across the width of said base material to position and hold said strap material in a tensioned condition adjacent said electrode bar for dielectric sealing to said base material.

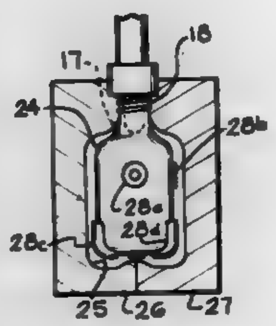
4,323,410
METHOD OF MANUFACTURING SEAT CUSHIONS
Muneharu Urai, Tokyo, Japan, assignor to Tachikawa Spring Co., Ltd., Tokyo, Japan
Filed Oct. 22, 1980, Ser. No. 199,436
Claims priority, application Japan, Oct. 31, 1979, 54/139835
Int. Cl.³ B32B *31/04, 31/12, 31/20*
U.S. Cl. 156—228 **7 Claims**

1. A method of manufacturing a permeable seat cushion comprising the steps of preparing a seat surface covering of fabric material including side portions integrally joined to the peripheral edges of a seating portion of the seat cushion, placing said seat surface covering in a turned-over relation on a lower die of shape complementary to that of the seat surface covering, heating said seating portion while fixing said seating portion at the joint between it and the side portions, urging an upper die of the same shape as that of said seating portion toward and onto said lower die supporting said seat surface covering thereon thereby shaping said seat surface covering into a desired configuration, urging said upper die away from said lower die while said seat surface covering is maintained in position on said lower die, applying a bonding agent to at least one of the back surface of said seating portion and the front surface of a skinless molded block or profile-cut slab of cushion



providing material of the same shape as that of the front surface of said seat cushion, bonding said molded block or profile-cut slab of cushion providing material to said seating portion of said seat surface covering, removing the assembly from said lower die, and turning over said side portions of said seat surface covering to provide said seat cushion.

4,323,411
METHOD FOR APPLYING PREFABRICATED PARTS TO BLOW MOLDED ARTICLES
Albert R. Uhlig, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Continuation of Ser. No. 726,967, Sep. 27, 1976, abandoned. This application Jul. 10, 1978, Ser. No. 922,913
Int. Cl.³ B32B *1/10;* **B29C** *17/07, 17/08;* **B29D** *3/00*
U.S. Cl. 156—245 **2 Claims**

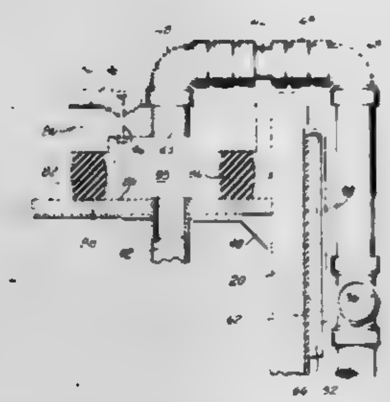


1. A method for forming a hollow article from a thermoplastic material comprising the steps of: forming a parison from a heated mass of said material; blowing the parison in a cavity in a first mold defining a shape smaller than the article to form a preform; removing the preform from the first mold cavity; attaching at least one prefabricated part to an external surface area on the preform; positioning the preform and the attached part in a cavity in a second mold defining the external shape of the article; blowing the preform into contact with the second mold whereby the preform is shaped into the article with the part at least partially embedded in the article; removing the article from the second mold cavity; positioning a die against the article adjacent the prefabricated part; and drawing the prefabricated part from the article and into the die to cut an opening in the shape of the part into the article.

4,323,412
PROCESS OF IMPREGNATING PAPER LAMINATE PLIES WITH OIL MODIFIED PHENOLIC RESOLE VARNISH
LeRoy A. Claybaker, Coshocton, Ohio, assignor to General Electric Company, Coshocton, Ohio
Division of Ser. No. 745,733, Nov. 29, 1976, Pat. No. 4,254,187, which is a division of Ser. No. 562,526, Mar. 27, 1975, Pat. No. 4,043,954. This application Aug. 4, 1980, Ser. No. 174,938
Int. Cl.³ C09J *3/14*
U.S. Cl. 156—335 **5 Claims**

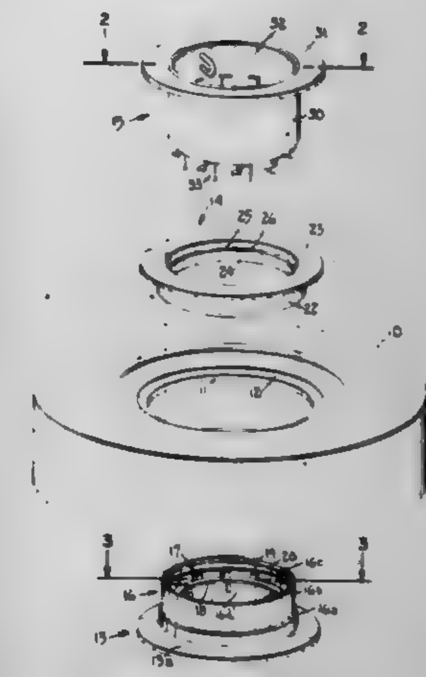
1. The process of preparing a laminate which comprises impregnating paper laminate plies with an impregnating varnish made by (a) reacting a phenol moiety with tung oil in the presence of strong acid and (b) reacting the product of (a) in an alcohol solvent with an aldehyde moiety in the presence of an amine catalyst using as the alcohol solvent a mixture consisting of, by weight, from 15 to 50 percent methyl alcohol and 85 to 50 percent isopropyl alcohol, the reaction product of (b) being dissolved in a solvent, laying up the plies and consolidating under heat and pressure.

4,323,413
APPARATUS FOR MAKING TRUCK BODIES, UNITIZED SHELLS AND PANELS
Michel Trempe, 157 Principale St., St. Alexis de Montcalm, Canada (J0K 1T0)
Filed Jul. 22, 1980, Ser. No. 171,140
Int. Cl.³ B32B *31/00*
U.S. Cl. 156—382 **4 Claims**



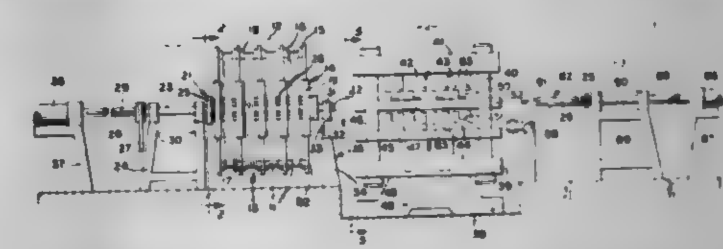
1. A vacuum bag apparatus for making an integral truck body out of panels covered with an outside layer of fiber-reinforced plastic material bonded thereto, comprising:
(a) a mold having a bottom wall, an end wall and two side walls joined together and having internal dimensions corresponding to the size of the truck body, each wall being adapted to be lined with panels, which are covered on at least one surface with a layer of fiber-reinforced plastic material adapted to be bonded thereto;
(b) a grid of inter-connected perforated air conduits adapted to be positioned in the mold adjacent the walls thereof;
(c) a vacuum bag membrane engaging the outside surface of the grid of perforated air conduits and defining a sealed chamber with the bottom wall, end wall and side walls, of the mold; and
(d) means for evacuating said conduits to form a vacuum within said sealed chamber, so as to compress and bond the layer of fiber-reinforced plastic material to said panels.

4,323,414
SELF-SEALING CURING RIM FOR TUBELESS EARTHMOVER TIRE
Larry A. Severson, West Fargo, N. Dak., assignor to Branick Mfg., Inc., Fargo, N. Dak.
Filed Aug. 21, 1980, Ser. No. 180,152
Int. Cl.³ B29H *17/00*
U.S. Cl. 156—414 **14 Claims**



1. A rim for supporting a vehicle tire during a curing operation, comprising:
(a) a first sleeve, having a flanged first end and a second end, adapted to seal the bead of a tire;
(b) a flanged sealing sleeve adpated to seal the bead of the tire opposite from the first sleeve, said sealing sleeve having a cylindrical inner surface with an annular groove formed therein;
(c) a locking sleeve having first and second ends, comprising a cylindrical outer wall portion and an annular stop flange at said first end, telescoped within said sealing sleeve to permit relative axial movement therebetween;
(d) means including sealing means for securing together said first and locking sleeves at their second ends for support between them of a vehicle tire during a curing operation;
(e) a gasket member in said groove to engage said cylindrical outer wall portion; and
(f) an air inlet in said rim, said sealing sleeve being constructed and arranged to maintain an air-tight seal with the bead of the tire as the tire is inflated and to move therewith along said outer wall portion of said locking sleeve until blocked by said stop flange of said locking sleeve.

4,323,415
METHOD AND APPARATUS FOR SIMULTANEOUSLY MOLDING A PLURALITY OF PARTS
Leonard S. Meyer, Columbia, S.C., assignor to Victor United, Inc., Chicago, Ill.
Filed May 27, 1980, Ser. No. 153,217
Int. Cl.³ B29D *3/02, 9/00*
U.S. Cl. 156—433 **24 Claims**



1. An apparatus for molding parts from bundles of rein-

forced resins including, a loading station having a shiftable carrier, a winding frame assembly removably mountable upon said carrier and having a frame section adapted to support a wound bundle comprising resin impregnated strands, a molding station adjacent said loading station and provided with opposed mold sections displaceable between an open spaced-apart position and a closed mating position, opposed guide means in said molding station disposed in a plane intermediate said mold sections when in said open position to receive said frame assembly when said carrier is shifted to an extended position between said spaced-apart mold sections, movable means associated with said guide means operable to retain said frame assembly in said molding station as said carrier is retracted to said loading station, actuating means in said molding station operable to displace said opposed mold sections from an open to a closed position with said bundle sandwiched between said mold sections, a removal station adjacent said molding station, and a shiftable carrier on said removal station extendible to engage said frame assembly within said molding station to retract said frame assembly from said molding station following molding of said bundle and opening of said mold sections.

4,323,416

LABELLING EQUIPMENT

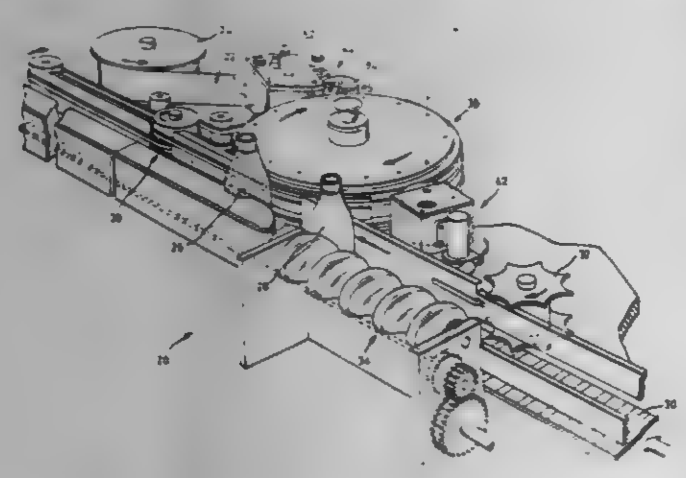
Martin D. Malthouse, 204 Glen Rd., Toronto, Ontario, Canada (M4W 2X1), and Heinz K. Groeger, #63, 85 Henderson Dr., Thornhill, Ontario, Canada (L3T 2L2)

Filed Nov. 28, 1979, Ser. No. 98,085

Claims priority, application Canada, Dec. 5, 1978, 317428

Int. Cl.³ B65C *9/04, 9/26*

U.S. Cl. 156—521 **4 Claims**



1. Labelling equipment for applying wrap-around labels to cylindrical containers, the equipment comprising:

a label carrier having a wheel rotatable about its axis;

a vacuum system coupled to the wheel to retain labels on the wheel;

a feeder for directing containers individually to the wheel adjacent the periphery of the wheel to receive a label;

a drive system for receiving containers from the feeder and for rolling the containers upon receiving the label from the label carrier, the drive system including at least one belt engaged about the wheel in slipping relationship therewith to permit the belt to move faster than the periphery of the wheel and including a portion for moving in contact with the container immediately after the container leaves the feeder to both carry the label off the wheel and to engage it on the container;

drive means coupled to the label carrier, the feeder and the drive system to cause the containers and labels to move together immediately after the containers leave the feeder, to then apply the labels to the containers and to cause the belt to move slightly faster than the peripheral speed of the wheel so that the labels are in tension as they move individually from the wheel to containers, and

a label feeder assembly coupled to the drive means and positioned to supply labels to the label carrier, the label feeder assembly being mounted about a second axis parallel to said wheel axis whereby this assembly can be moved about this second axis to facilitate service and maintenance, said label feeder assembly including a cutter head driven to sever labels from a strip of labels and having a stationary blade inclined with respect to said second axis and a driven blade coupled to the drive means for rotation to combine with the stationary blade once in every revolution to sever the labels from the strip, the driven blade being parallel to said second axis so that the blades combine to cut the strip from one edge to the other progressively.

4,323,417

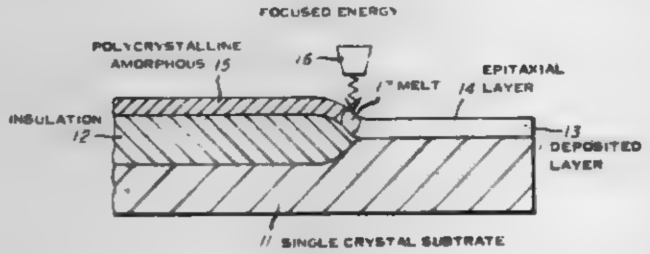
METHOD OF PRODUCING MONOCRYSTAL ON INSULATOR

Hon W. Lam, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed May 6, 1980, Ser. No. 147,408

Int. Cl.³ C30B *19/00*

U.S. Cl. 156—613 **9 Claims**



1. A method for producing monocrystal on insulator comprising the steps of:

(a) depositing a layer of material on a surface of a single crystal substrate having an insulator region formed therein;

(b) transforming, via epitaxial growth induced above the single crystal substrate, said layer of material into an epitaxial layer overlying the single crystal substrate and a polycrystal or amorphous layer overlying said insulator region; and,

(c) scanning a focused energy source, from a starting zone within said epitaxial layer to a stopping zone lying inside the polycrystalline or amorphous layer such that the region of polycrystalline or amorphous layer so scanned is melted, whereby on resolidifying, said scan area will resolidify as monocrystal.

4,323,418

METHOD FOR GROWING A PIPE-SHAPED SINGLE CRYSTAL

Toshio Kobayashi, Hinodemachi, and Tetsu Oi, Tokyo, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

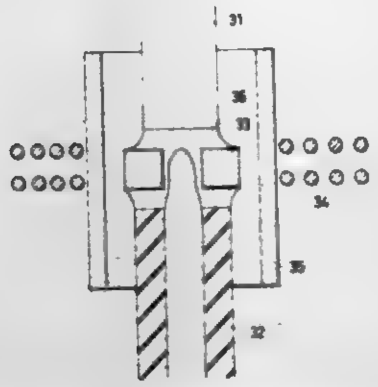
Filed Nov. 9, 1979, Ser. No. 92,671

Claims priority, application Japan, Nov. 10, 1978, 53/137875

Int. Cl.³ C30B *15/24*

U.S. Cl. 156—617 SP **16 Claims**

1. A method for growing a pipe-shaped single crystal which comprises providing a starting material at one side of a susceptor and locating a seed crystal on the other side thereof, said susceptor being provided with a hole in its central portion so as to grow said pipe-shaped crystal, maintaining the susceptor at a temperature not lower than the melting point of said starting material by radio frequency induction heating, and causing a melt produced by the melting of said starting material to flow from said one side of said susceptor via said susceptor to said other side thereof, whereby said melt is made to contact said seed crystal, and moving said seed crystal at a predetermined rate in a direction away from said susceptor and



simultaneously feeding said starting material to said one side of said susceptor at a predetermined rate.

4,323,419

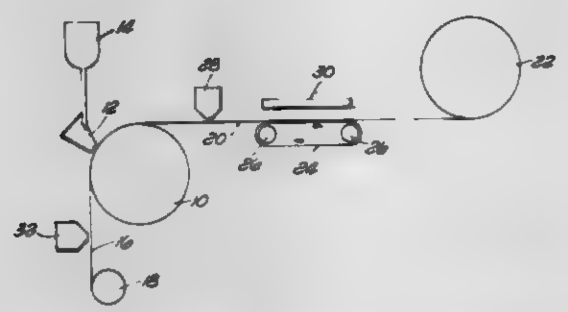
METHOD FOR RIBBON SOLAR CELL FABRICATION

G. Felix Wakefield, Woodland Hills, Calif., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed May 8, 1980, Ser. No. 147,765

Int. Cl.³ B22D *11/06;* **H01L** *31/18*

U.S. Cl. 156—622 **13 Claims**



1. A method of casting a ribbon of crystallized material on a metal backing or a backing having a metal layer and a layer of cast material-metal alloy, comprising:

extruding, at a region of extrusion, a ribbon of the material to be cast in a molten form onto an elongated strip of metal foil, drawn past the region of extrusion on a cooled surface moving past the region of extrusion, the ribbon of molten material having a form, and the metal of the foil having a melting point or forming with the molten material to be cast an alloy having a melting point, sufficiently below that of the molten material to be cast, so that at least a sufficient portion of the metal of the foil contacted by the molten material to be cast will melt, or form a melted alloy with the molten material to be cast, to provide a liquid layer upon which crystallization of the molten material to be cast occurs in conjunction with solidification of the material of the liquid layer.

4,323,420

PROCESS FOR MANUFACTURE OF INERTIAL CONFINEMENT FUSION TARGETS AND RESULTING PRODUCT

Nino A. Masnari; Walter B. Rensel; Merrill G. Robinson; David E. Solomon; Kensall D. Wise, all of Ann Arbor, and Gilbert H. Wuttke, Ypsilanti Township, Washtenaw County, all of Mich., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jul. 17, 1978, Ser. No. 925,437

Int. Cl.³ G21B *1/00*

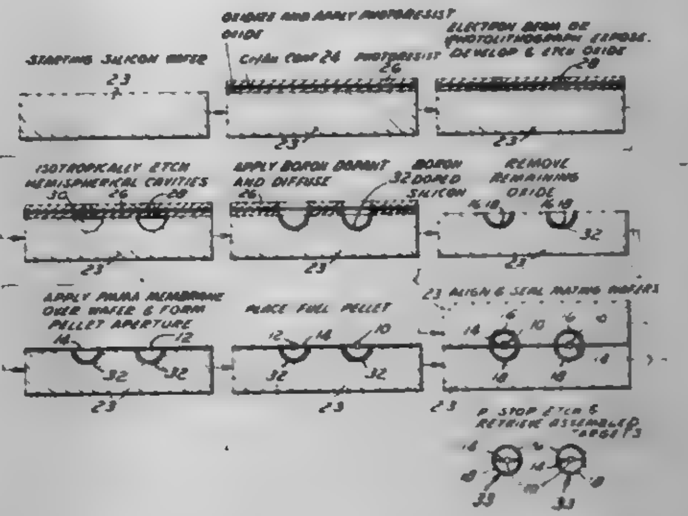
U.S. Cl. 156—628 **8 Claims**

1. In a process for manufacture of fusion fuel targets comprising the steps of: (a) forming a pair of hemispheric shell segments, (b) suspending a spherical pellet of fusion fuel within one of said shell segments, and (c) joining the shell segments to each other with said pellet being contained concentrically therewithin, the improvement for production of said targets in quantity wherein said step (a) comprises the steps of:

(d) forming a plurality of hemispheric mold cavities in a substrate material by

(d1) depositing a metal film on a working surface of said substrate material,

(d2) photolithographically or electron-beam lithographically forming in said metal film a mask for the underlying substrate material,



(d3) etching said underlying substrate material through said mask to form a plurality of hemispheric mold cavities in said substrate material, and then

(d4) removing said mask to expose said working surface including said hemispheric mold cavities,

(e) forming in each of said mold cavities a thin film of desired shell material, and

(f) removing said films from said mold cavities to form said plurality of hemispheric shell segments.

4,323,421

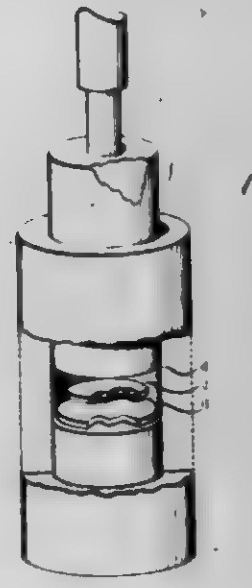
FABRICATION OF CONDUCTOR-CLAD COMPOSITES USING MOLDING COMPOUNDS AND TECHNIQUES

Theodore H. Klein, Livingston, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Continuation of Ser. No. 900,937, Apr. 28, 1978, abandoned. This application Feb. 15, 1980, Ser. No. 121,821

Int. Cl.³ B32B *31/06, 31/24;* **H05K** *3/06*

U.S. Cl. 156—630 **17 Claims**



1. A process for producing conductor-clad printed wiring board composites comprising,

placing a quantity of substantially uncured polymeric mold-

ing compound in a heated compression molding apparatus;
compression molding and curing the compound; the invention characterized in that
(a) the linear dimensions of the molding compound charge placed within the molding apparatus are less than the interior linear dimensions of the mold face upon which it is placed,
(b) a conductive foil of thickness less than 7 mils is placed upon, and supported by, the molding charge, prior to molding,
(c) the linear dimensions of the conductive foil are less than the interior linear dimensions of the mold face, but greater than the linear extent of the molding compound charge,
(d) the compound is caused to flow during the molding process,
(e) the molding compound is constrained by the mold walls when the mold is closed, and
(f) the foil is smooth to within 20 microinches rms subsequent to molding,
whereby a conductor-clad composite is formed.

2. The process of claim 1 wherein the conductive foil is a copper foil.

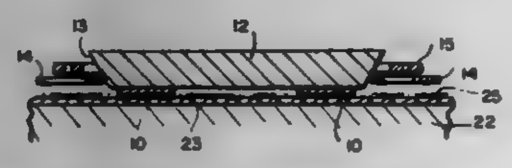
17. The process of claims 2 and 16 wherein a circuit pattern is defined on the conductive foil subsequent to the molding.

4,323,422

METHOD FOR PREPARING OPTICALLY FLAT DAMAGE-FREE SURFACES

Arthur R. Calawa, 6 Abbott La., Chelmsford, Mass. 01824; Joseph V. Gormley, 14 Gail Rd., Merrimack, N.H. 03054, and Michael J. Manfra, 240 N. Billerica Rd., Tewksbury, Mass. 01876

Filed Apr. 24, 1980, Ser. No. 143,380
Int. Cl.³ H01L *21/306*
U.S. Cl. 156—636 2 Claims



1. A method for preparing optically flat surfaces of a semiconductor material comprising the steps of
placing a first surface to be prepared adjacent, but not in contact with, a second surface, said first and second surfaces being movable relative to each other, said first surface being freely positioned relative to said second surface so that the distance therebetween can be freely varied;
applying a fluid selected from a mixture of methanol, ethylene glycol and bromine to said second surface to form a fluid layer between said first and second surfaces, the viscosity of said fluid and the speed of the relative movement of said surfaces being selected to be sufficiently high to cause said first surface to hydroplane on said fluid and said viscosity being sufficiently low that the surface tension of said fluid does not prevent the hydroplaning action, the hydroplaning action thereby removing portions of said first surface in a manner so as to cause said first surface to become optically flat.

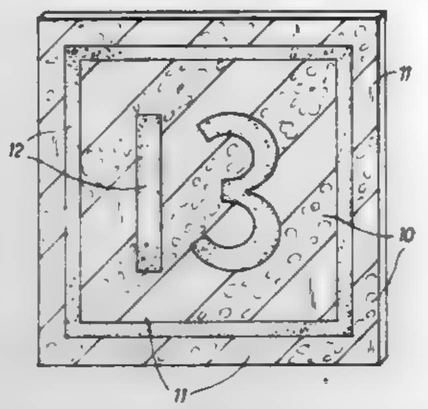
4,323,423

DECORATIVE GLASS CHIPPING METHOD

Thomas R. Schrunk, 2306 NE. Garfield St., Minneapolis, Minn. 55418

Continuation of Ser. No. 48,891, Jun. 18, 1979, abandoned. This application Sep. 11, 1980, Ser. No. 186,318
Int. Cl.³ B44C *1/22;* C03C *15/00, 25/06*
U.S. Cl. 156—645 1 Claim

1. A method for making a decorative pane of glass having a total area consisting of desired clear, etched and chipped areas with clearly delineated boundaries therebetween, comprising the steps of providing a pane of glass, etching predetermined areas of said glass which include only said desired etched and chipped areas to provide predetermined etched areas and said desired clear areas, applying a layer of glue having shrinkage characteristics to said glass to at least cover said desired chipped areas, forming scribed lines in said layer of glue during a time interval after said layer has begun to harden but prior to any appreciable adhesion of said layer to said glass, said scribed



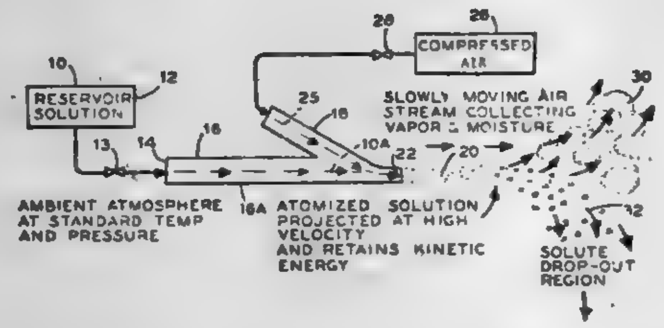
lines including a first set of lines which trace the boundaries of said desired chipped areas relative to the boundaries of said desired clear areas within the periphery of said pane of glass, said scribed lines including a second set of lines laterally within the boundaries of said predetermined etched areas which constitute the only means employed to form boundaries between said desired chipped areas and said desired etched areas, and removing the portion of said layer of glue covering said desired etched and clear areas during said time interval.

4,323,424

LIQUID-SOLIDS SEPARATION PROCESS

David J. Secunda, 3500 E. Lincoln Dr., Phoenix, Ariz. 85018, and Lloyd Motz, 815 W. 181st St., New York, N.Y. 10027

Filed Aug. 25, 1980, Ser. No. 181,313
Int. Cl.³ B01D *1/16*
U.S. Cl. 159—48 R 12 Claims



1. Method for the rapid separation of a liquid composition which contains solid dissolved or suspended therein which comprises:
(a) atomizing said composition to droplets substantially in the range of 0.5 to 6.0 microns in diameter;
(b) projecting the atomized droplets in the form of a spray at a velocity of 600 feet per second to sonic velocities directly into a mass of relatively dry, ambient, unheated air maintained at substantially standard temperature in an entrainment zone;
(c) separating dry solid particles from liquid evaporated from the droplets within a short distance of the point of projection into the entrainment zone; and
(d) recovering separated solid particles from the entrainment zone.

4,323,425

PAPER SIZING

Edwin Dowthwaite, Frampton, and Ian R. Hiskens, Oldfield Park, both of England, assignors to Tenneco Chemicals, Inc., Piscataway, N.J.

Continuation of Ser. No. 730,908, Oct. 8, 1976, abandoned, which is a continuation of Ser. No. 577,485, May 14, 1975, abandoned, which is a division of Ser. No. 435,561, Jan. 22, 1974, Pat. No. 3,906,142. This application Mar. 21, 1980, Ser. No. 132,505
Claims priority, application United Kingdom, Jan. 22, 1973, 3145/73
Int. Cl.³ D21H *3/34, 3/36*
U.S. Cl. 162—168 N 7 Claims

1. A method for the preparation of sized cellulosic paper in the absence of aluminum sulfate which comprises adding a polyamine retention aid and a stable aqueous dispersion of fortified rosin to a cellulosic paper pulp slurry, forming a sheet from the pulp slurry, and drying the resultant sheet; said aqueous dispersion comprising water, a protective colloid, a volatile base and fortified rosin, at least 90% of said fortified rosin being unsaponified.

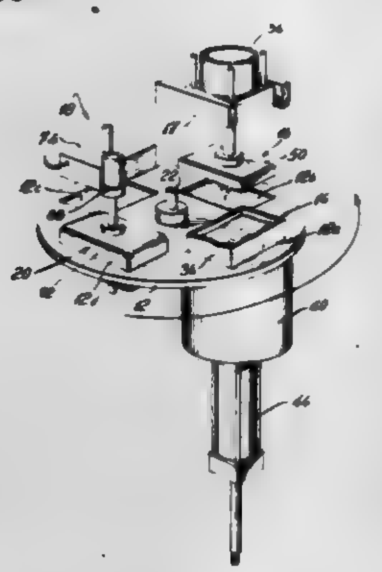
5. Sized cellulosic paper prepared by the method of claim 1.

4,323,426

CRAFTED PAPER MAKING MACHINE

Wavell F. Cowan, Montpelier; Marshall S. Green, Waterbury Center, both of Vt., and Stanley E. McGurk, Westmount, Canada, assignors to Inotech Process Ltd., Quebec, Canada

Filed Nov. 13, 1979, Ser. No. 93,743
Int. Cl.³ D21J *3/12*
U.S. Cl. 162—398 13 Claims



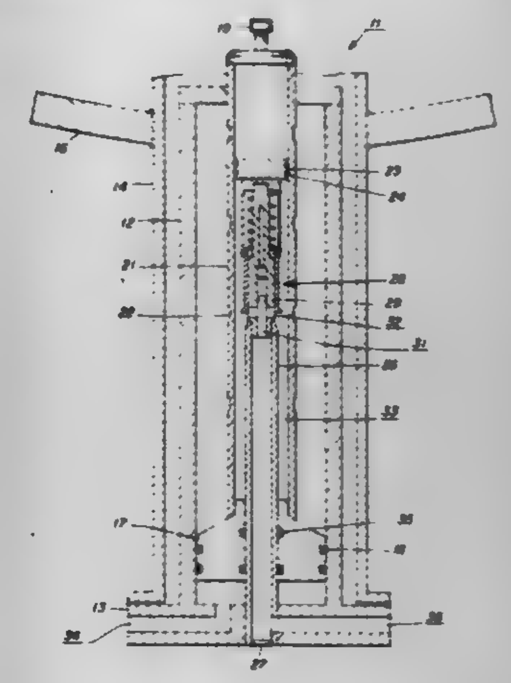
1. An apparatus for forming paper comprising:
at least one carrier provided with a filter medium defining a mold suitable for forming a sheet of paper;
means for conveying said carrier sequentially to first, second, third, and fourth treatment stations, said means comprising a turntable mounted for rotation about a vertical axis, whereby said carrier is rotated into each of said stations;
said first station including means for supplying a fiber suspension liquid to said filter medium and means for drawing said liquid through said filter medium whereby the fibers are left on said mold forming a sheet;
said second station comprising means for applying a pressure against said formed sheet whereby excess liquid is forced from said sheet through said filter medium;
said third station comprising heating means for drying the sheet whereby a removable sheet of paper is obtained from said mold; and
said fourth station comprising a sheet pickup means adjacent the turntable and adapted to pickup and remove the sheet from the mold.

4,323,427

DECELERATION BUFFER FOR HYDRAULIC LINEAR MOTION DRIVE

Kenneth J. Jamrus, San Jose, Calif., assignor to General Electric Company, San Jose, Calif.

Filed Sep. 10, 1979, Ser. No. 73,720
Int. Cl.³ G21C *7/08*
U.S. Cl. 376—230 4 Claims



1. In a vertically oriented linear motion-producing device for a nuclear reactor including a stationary elongated main cylinder, a stationary elongated tubular element coaxially disposed in said main cylinder to provide an annular drive fluid space between said tubular element and said main cylinder, a double-acting driving piston reciprocably disposed in said annular drive fluid space, a connecting tube secured to said driving piston and extending from said annular drive fluid space for connection to a load, and means for introducing and removing drive fluid to and from said annular drive fluid space to move said driving piston and said connecting tube in either direction, the improvement comprising buffer apparatus for braking said driving piston near the end of its upward stroke including: a buffer cylinder positioned within said connecting tube and open at its lower end; a buffer shaft connected at its lower end to said tubular element, extending coaxially through said buffer cylinder and secured at its upper end thereto, said buffer shaft being formed with a longitudinal bore closed at its upper end and open to said tubular element at its lower end and with a small diameter portion within said buffer cylinder, a diameter transition forming a shoulder near the open end of said buffer cylinder and a large diameter portion between the open end of said buffer cylinder and the upper end of said tubular element; an annular buffer piston disposed coaxially on said buffer shaft and providing an annular buffer fluid flow space therebetween, said buffer piston having an outside diameter sized for sliding fit in said buffer cylinder, said buffer piston being formed with an upper flange with an inside diameter sized for sliding fit on said small diameter portion of said buffer shaft and being formed with a lower flange with an inside diameter sized for sliding fit on said large diameter portion of said buffer shaft; spring means in said buffer cylinder urging said buffer piston out of said buffer cylinder whereby said upper flange of said buffer piston normally engages said shoulder of said buffer shaft; a fluid-tight plug in said bore of said buffer shaft positioned below said shoulder of said buffer shaft and dividing said bore into a lower bore portion and an upper bore portion, said plug and the engagement of said upper flange of said buffer piston against said shoulder of said buffer shaft normally sealing said cylinder against escape of buffer fluid therefrom; a radial hole in said large diameter portion of said buffer shaft providing a fluid passage between said annular buffer fluid flow space and said lower bore portion of said

buffer shaft; a plurality of relatively small radical braking holes providing fluid passages between the interior of said buffer cylinder and said upper bore portion of said buffer shaft; fluid passage means in said buffer shaft near said buffer shaft shoulder providing fluid passage from said upper bore portion of said buffer shaft to said annular buffer fluid flow space when said upper flange of said buffer piston is unseated from said shoulder of said buffer shaft by engagement of said driving piston with said lower flange of said buffer piston, said driving piston moving said buffer piston into said buffer cylinder whereby said buffer piston seals off said braking holes in succession to thereby increase resistance to buffer fluid flow from said buffer cylinder and to thus dissipate the kinetic energy of the driving piston and connected moving elements to reduce their velocity near the end of the driving piston to stroke.

4,323,428

RECONSTITUTABLE FUEL ASSEMBLY FOR A NUCLEAR REACTOR

John M. Schallenberger, O'Hara Township, Allegheny County; Stanley Kmonk, Plum Borough, and Stephen J. Ferlan, Wilkins Township, Allegheny County, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 7, 1979, Ser. No. 92,237

Int. Cl.³ G21C *3/30*

U.S. Cl. 376—353 **6 Claims**

1. A reconstitutable fuel assembly comprising:

an array of parallel fuel rods held in spaced relationship with each other by grids spaced along the fuel rod length;

a multiplicity of control rod guide thimbles interspersed among said rods, said thimbles being immovably attached to said grids;

a top nozzle and bottom nozzle located at opposite ends of said fuel rods and guide thimbles;

separate upper and lower control rod guide thimble sleeves enclosing the ends of said control rod guide thimbles and being arranged to respectively interconnect said top and bottom nozzles with said grids;

each of said upper sleeves connecting said top nozzle with a grid including a section extending through the top nozzle and having an inner diameter just sufficient to accept a control adapted to reciprocate therein;

separate removable mechanical fasteners on the upper surface of said top nozzle, each of said fasteners having a configuration which permits locking engagement between a sleeve and said top nozzle, and stop members on the opposite side of said top nozzle, each of said stop members being positioned to coact with said nozzle and a sleeve having a fastener on the other side of the nozzle, to help removably lock the nozzle on said sleeves; and

means connecting the lower control rod guide thimble sleeves to said bottom nozzle.

4,323,429

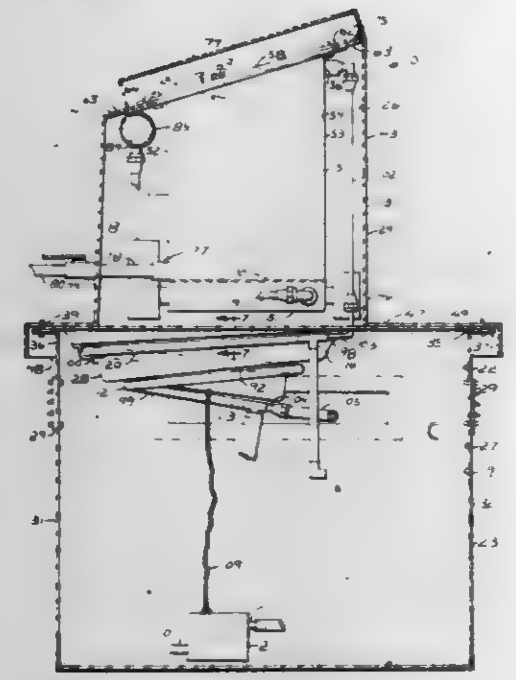
SPENT SOLVENT PURIFICATION APPARATUS

Jack W. Hoover, 575 Valbon St., Orange Park, Fla. 32073

Filed Jun. 9, 1980, Ser. No. 157,443

Int. Cl.³ B01D *3/00;* B08B *7/04*

U.S. Cl. 202—83 **7 Claims**



4. A portable outdoor distillation apparatus for use in recovering the acetone component of a batch of spent acetone solvent that includes said acetone component, said apparatus comprising a unit for treating said batch at substantially atmospheric pressure conditions to vaporize and separate the acetone component as acetone vapors from the residual material remaining from the vaporization treatment, a unit for condensing said acetone vapors at substantially atmospheric pressure conditions to thereby recover said acetone component as fresh solvent, and a ground supported housing for the units having a bottom section with a reservoir for containing a supply of cooling water, and a panel section which is secured to the bottom section and overlies the reservoir, said vaporizing unit comprising a fabricated aluminum container having a first chamber for receiving said batch and containing said residual material during the vaporization of said acetone component therein, a second chamber for receiving and containing a liquid heat exchange medium, and a horizontal interior wall that separates and serves to transmit heat between said liquid heat exchange medium and the batch of spent acetone solvent contained in the respective chambers, said ground supported housing having an upper section which is secured to the bottom and panel sections of the housing and forms a compartment over the panel section in which said vaporizing unit is located, said vaporizing unit comprising an electrical heating element which is located in said second chamber and energizable to heat the liquid heat exchange medium contained therein during the vaporization of said solvent component, said first chamber having a vapor zone for receiving the acetone vapors during the vaporization of said acetone component therein, said container having inlet forming means communicating with the vapor zone of the first chamber for admitting said spent acetone solvent to said first chamber, removable closure means closing the inlet of said inlet forming means, and outlet forming means communicating with said first chamber adjacent to said interior wall for draining said residual material remaining from the vaporization treatment of said batch therein, said upper section having a top wall and said container being secured to and suspended from said top wall, said condensing unit comprising a heat exchanger which is suspended from said panel section and has an elongated tubular means with opposite ends and a water jacket surrounding said tubular means between said opposite ends, said apparatus comprising conduit means communicating with said vapor zone and arranged to deliver the acetone vapors received therein to one of the opposite ends of said tubular means, said condensing unit further comprising pumping means connected to the heat exchanger and located in said reservoir for pumping cooling water from the supply contained in said reservoir through said water jacket and in indirect countercurrent heat exchange with the passage of condensed acetone vapors through the tubular means, and said heat exchanger being arranged to provide a gravity flow of the condensed acetone vapors from said one to the other of said opposite ends of said tubular means and said water jacket having a water inlet that is connected to receive the cooling water pumped by a pumping means and a water outlet that is arranged to pass the cooling water received in the water jacket back into said reservoir.

4,323,430

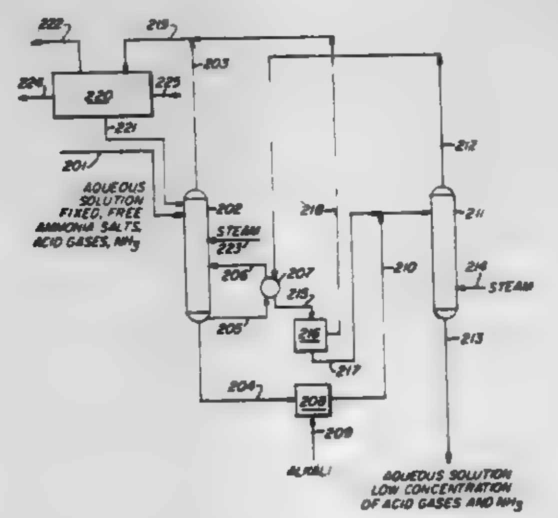
PROCESS FOR SEPARATING AMMONIA AND ACID GASES FROM STREAMS CONTAINING FIXED AMMONIA SALTS

Donald Glassman, Mt. Lebanon Township, Allegheny County, and Edward E. Maier, Murrysville, both of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Filed Mar. 16, 1981, Ser. No. 244,489

Int. Cl.³ B01D *3/38;* C02F *1/04*

U.S. Cl. 203—7 **34 Claims**



1. In a process for achieving substantially complete removal of acid gases and ammonia from a dilute aqueous solution thereof, said solution also containing free and fixed ammonia salts, said process comprising:

(a) subjecting said solution to a first countercurrent multi-stage continuous distillation, said distillation being conducted by heating said solution, at least in part by means of a stripping vapor, and by having a gradient of ammonia concentration decreasing towards the region of bottom liquid withdrawal which results in said bottom liquid having a pH of less than about 8.0,

(i) withdrawing from this first distillation an overhead vapor stream containing a major proportion of stripping vapor, substantially all of said acid gases in said solution, and substantially all of the ammonia from said free ammonia salts,

(ii) withdrawing from this distillation an aqueous bottom stream which contains substantially all of said fixed ammonia salts;

(b) adding alkali to said withdrawn bottom stream, said alkali being added in an amount sufficient to evolve ammonia contained in said fixed ammonia salts during subsequent distillation of said mixture;

(c) subjecting said withdrawn bottom stream to a second counter-current multi-stage continuous distillation,

(i) withdrawing from this second distillation an overhead vapor stream said vapor stream containing a portion of the ammonia from said fixed ammonia salts,

(ii) withdrawing from this second distillation an aqueous bottom stream;

(d) vaporizing the aqueous bottom stream of step (a), at least in part (1) by heating said bottom stream by means of indirect heat exchange with at least a portion of the overhead vapor stream being withdrawn in step (c) and (2) by conducting said first distillation at a pressure substantially less than the pressure of the second distillation;

(e) passing said vapor stream from said first distillation through a condenser to concentrate the ammonia in the vapor stream leaving the condenser, the improvement comprising adding ammonia to said vapor stream from said first distillation to reduce corrosion of said condenser.

4,323,431

PURIFICATION OF COMPOUNDS HAVING HIGH MELTING POINT

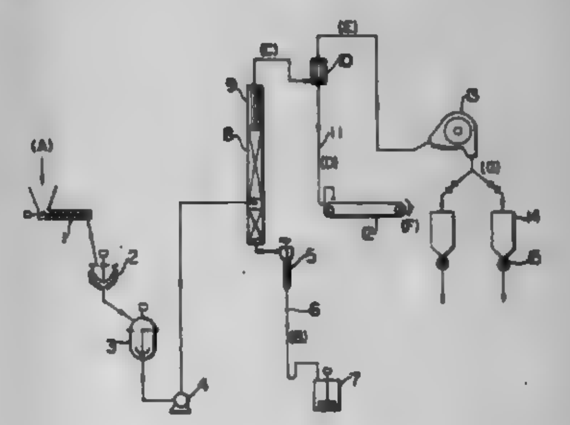
Masatoshi Takahashi, Nishinomiya; Norio Kotera, Amagasaki; Masatoshi Uegaki, Nara; Takashi Miyaoka, Minoo, and Yuzo Maegawa, Oita, all of Japan, assignors to Sumitomo Chemical Company Limited, Osaka, Japan

Filed Aug. 4, 1980, Ser. No. 175,082

Claims priority, application Japan, Aug. 6, 1979, 54-100546

Int. Cl.³ B01D *1/22, 3/10;* C07C *97/24*

U.S. Cl. 203—72 **8 Claims**



1. A process for continuously purifying a crude, high melting, high boiling organic compound, which comprises:

(a) melting the crude organic compound;

(b) supplying the melt to a rectification zone kept under a subatmospheric pressure;

(c) partially condensing vapors distilled off from the top of the rectification zone by leading the vapors to a first partial condensation zone provided at the top of said rectification zone, the partial condensate being fed into the rectification zone as a reflux;

(d) further partially condensing the remaining vapors after said partial condensation in step (c) by leading said remaining vapors to a second partial condensation zone connected to said first partial condensation zone, thereby obtaining a second partial condensate which is a purified organic product;

(e) withdrawing said purified product to the outside of said rectification zone through a conduit establishing a first barometric leg;

(f) finally cooling the remaining uncondensed vapor in a vacuum rotary cooling zone or a total condensing zone; and

(g) withdrawing a liquid bottoms product containing at least one of higher boiling impurities and involatile impurities from a thin film evaporator with stirring blades provided at the bottom of the rectification zone through a conduit establishing a second barometric leg.

4,323,432

PROCESS FOR ISOLATING AND RECOVERING META- AND PARA-CRESOLS FROM CRUDE CRESOL-CONTAINING COMPOSITIONS COMPOSED OF CRESOL COMPONENTS, UNREACTED CYMENE COMPONENTS AND HIGH-BOILING BY-PRODUCTS

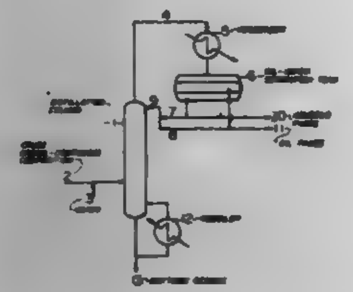
Yoshitaka Ohtani, Ohtake, and Junichi Nakagawa, Iwakuni, both of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Filed Jul. 7, 1980, Ser. No. 165,981

Claims priority, application Japan, Jul. 6, 1979, 54-85015

Int. Cl.³ B01D *3/36*

U.S. Cl. 203—85 6 Claims



1. A process for isolating and recovering meta- and para-cresols comprising distilling a crude meta-, para- and ortho-cresols-containing composition obtained by acid cleaving an oxidation product containing cymene hydroperoxide formed by the oxidation of a cymene isomeric mixture with a molecular oxygen-containing gas and distilling acetone off from the acid cleavage product, said composition comprising cresol components, unreacted cymene components and high boiling by-products having boiling points higher than that of para-cresol, in the presence of water added to the distillation zone to distill off the unreacted cymene components as an azeotropic mixture with water, and isolating and recovering the cresol component, the distillation being conducted so that

(i) the amount of unreacted cymene components in the crude cresol-containing composition is adjusted to 5–25% by weight of the composition after adjustment by distilling off a part of the unreacted cymenes and the water content of said cresol-containing composition is adjusted to 0.17–1.5 times by weight of the total cresol components in the composition by adding water thereto before the composition is supplied to the distillation zone; and

(ii) in said distillation zone, the cresol component containing ortho-cresol at a higher concentration than that in the supplied crude cresol-containing composition is distilled off as an overhead product of the distillation zone in the form of an azeotropic mixture with the unreacted cymene components and water, whereby the cresol component composed of more concentrated meta- and para-cresols with a conspicuously reduced ortho-cresol content is isolated and recovered.

4,323,433

ANODIZING PROCESS EMPLOYING ADJUSTABLE SHIELD FOR SUSPENDED CATHODE

David M. Loch, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Sep. 22, 1980, Ser. No. 189,089

Int. Cl.³ C25D *11/02, 17/00*

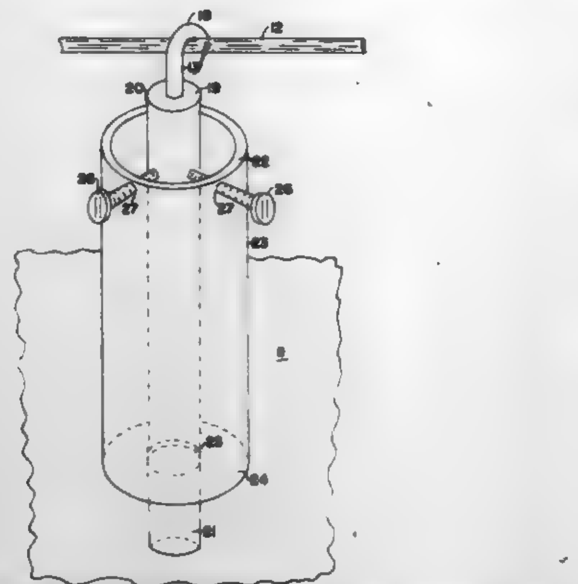
U.S. Cl. 204—56 R 5 Claims

1. In an anodizing process utilizing an anodizing bath, an anode and a suspended cathode, the improvement comprising positioning for said suspended cathode an electrically nonconductive casing having an upper end, a lower end, side walls and a bottom opening;

said side walls being annularly spaced from said suspended cathode;

said casing having a bottom wall having a perimeter connected to said side walls and having a central opening which constitutes the said bottom opening of the casing;

said bottom opening receiving the bottom end of a suspended cathode, the inner surface of said side walls being annularly spaced from the said suspended cathode; and securing means for supporting the said casing relative to the



said suspended cathode whereby only that portion of the suspended cathode which extends through the said bottom opening is in effective electrolytic communication with the said anodizing bath.

4,323,434

PROCESS FOR ELECTROLYSIS OF ALKALI CHLORIDE

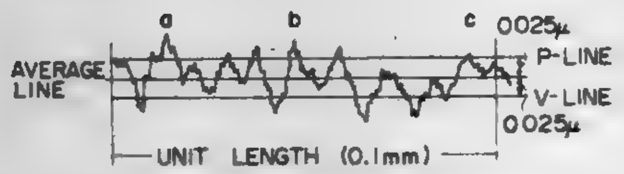
Mitsuo Yoshida; Yoshinori Masuda, and Akio Kashiwada, all of Nobeoka, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Feb. 15, 1980, Ser. No. 121,911

Claims priority, application Japan, Feb. 16, 1979, 54-16070

Int. Cl.³ C25B *1/34, 13/08*

U.S. Cl. 204—98 6 Claims



1. In a process for electrolysis of an alkali chloride which comprises carrying out electrolysis of an alkali chloride in an electrolytic cell divded by a cation exchange membrane into an anode compartment and a cathode compartment to produce an alkali hydroxide, the improvement which comprises using as said cation exchange membrane a homogeneous cation exchange membrane having at least one roughened surface, said roughened surface having a concavo-convex structure such that there are at least 20 concavo-convex portions with a roughness of 0.05 micron or more per unit length of 1 mm, said roughness being measured by a stylus method using a pick-up having a shape of 13 μm R at the tip of the stylus and a measuring force of 0.07 g and a wavelength cut-off value of 0.032 mm [the maximum height thereof is at least 0.05 micron], said membrane being assembled in the electrolytic cell with at least one roughened surface facing toward the cathode side of the cell.

4,323,435

METHOD OF OPERATING A SOLID POLYMER ELECTROLYTE CHLOR-ALKALI CELL

William W. Carlin, Portland, Tex., assignor to PPG Industries, Inc., Pittsburgh, Pa.

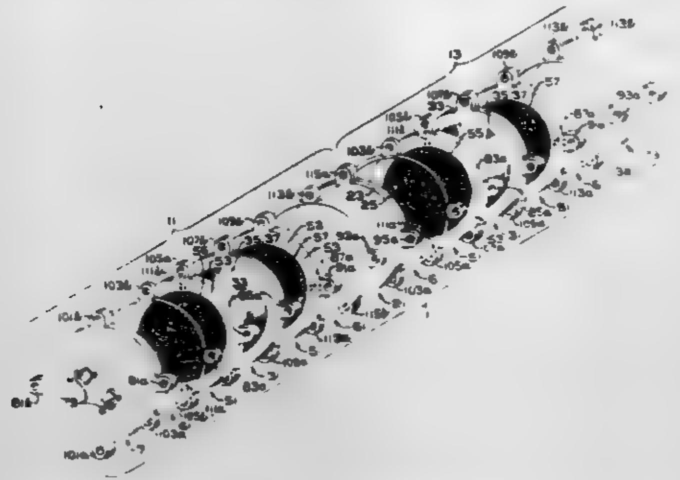
Division of Ser. No. 15,529, Feb. 27, 1979, Pat. No. 4,250,013. This application Sep. 10, 1980, Ser. No. 185,657

Int. Cl.³ C25B *1/34, 9/00, 13/08*

U.S. Cl. 204—98 4 Claims

1. In a method of electrolysis comprising feeding aqueous alkali metal chloride brine to an electrolytic cell having an

anolyte compartment separated from a catholyte compartment by a solid polymer electrolyte, said solid polymer electrolyte comprising a fluorinated permionic membrane having carboxylic acid groups as the ion exchange groups, an anodic electrocatalyst on the anodic surface thereof and a cathodic electrocatalyst on the cathodic surface thereof; imposing an electrical potential across the solid polymer electrolyte; and withdraw-



ing chlorine from the anolyte compartment and alkali metal hydroxide from the catholyte compartment; the improvement comprising applying a rectified half wave alternating electrical current of 100 to about 400 cycles per second, through said solid polymer electrolyte.

4,323,436

PURIFICATION OF AQUEOUS SOLUTION OF POTASSIUM CHLORIDE

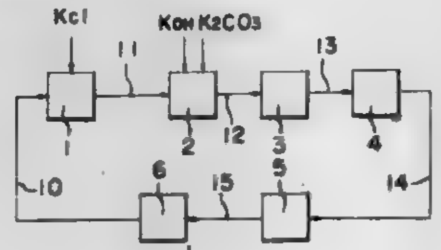
Eiji Itoi, Shikawatashi;* Takashi Nakayama, Nishinomiya; Makoto Nakao, Yokohama, and Yukio Matsumura, Takatsuki, all of Japan, assignors to Asahi Glass Company, Ltd., Tokyo, Japan

Filed Dec. 18, 1980, Ser. No. 217,745

Claims priority, application Japan, Jan. 10, 1980, 55-866

Int. Cl.³ C25B *1/46*

U.S. Cl. 204—98 5 Claims



1. In a purification of an aqueous solution of potassium chloride which is used for producing potassium hydroxide by an electrolysis in an electrolytic cell using a cation exchange membrane, an improvement characterized by incorporating an oxidizing reagent to remove additives as an anticaking reagent.

4,323,437

TREATMENT OF BRINE

Paul R. Mucenieks, Lawrenceville, N.J., assignor to FMC Corporation, Philadelphia, Pa.

Filed Feb. 9, 1981, Ser. No. 232,602

Int. Cl.³ C25B *1/34*

U.S. Cl. 204—98 12 Claims

1. The process of electrolyzing sodium chloride brine to produce chlorine and caustic soda using a brine which contains oxidizable material susceptible to oxidation during said electrolysis, said oxidizable material comprising hydrogen sulfide and ammonia, wherein the improvement comprises oxidizing said oxidizable material in the brine by means of hypochlorite ions prior to electrolysis of the brine.

4,323,438

ANODE FOR ALKALI METAL CHLORIDE ELECTROLYSIS

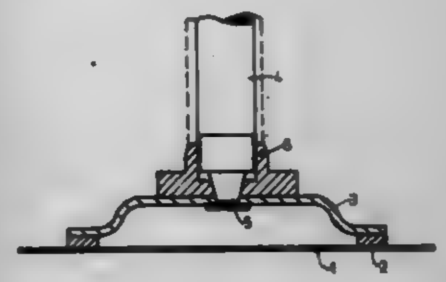
Lothar Sesterhenn, Dormagen, and Milorad Tomic, Cologne, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Mar. 21, 1980, Ser. No. 132,564

Claims priority, application Fed. Rep. of Germany, Apr. 10, 1979, 2914414

Int. Cl.³ C25B *1/26, 1/42, 11/03, 11/10*

U.S. Cl. 204—128 4 Claims



1. In an anode of a cell for alkali metal chloride electrolysis by the amalgam method and comprising a grid-like or net-like level titanium anode surface, optionally current distributing rails, a bridge acting as a primary conducting rail and at least one copper bolt as a current supply means, the improvement wherein the copper bolt has a screw thread in its lower region and below the screw thread is conical with a taper of from about 1:5 to 1:15, the bridge having a threaded passage for receiving the conical portion of the copper bolt, the copper bolt and bridge being screwed together in a force- and form-locking manner.

4,323,439

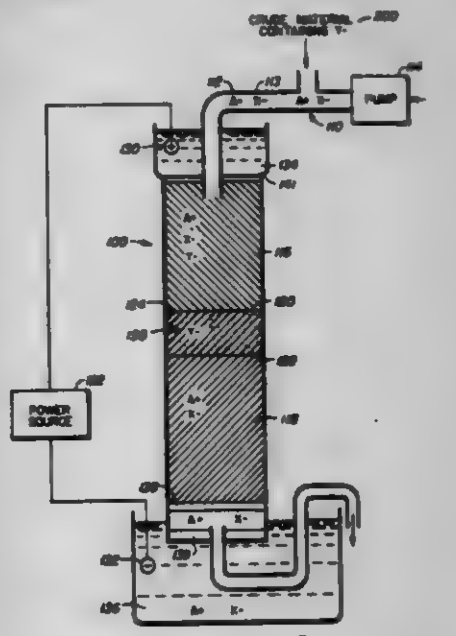
METHOD AND APPARATUS FOR DYNAMIC EQUILIBRIUM ELECTROPHORESIS

Patrick H. O'Farrell, San Francisco, Calif., assignor to The Regents of the University of California, Berkeley, Calif.

Filed Dec. 31, 1979, Ser. No. 109,003

Int. Cl.³ B01D *57/02*

U.S. Cl. 204—180 G 26 Claims



1. A method of segregating at least one species of desired ions in a separation chamber having longitudinally varying separation characteristics comprising the steps of:

introducing said ions into said chamber;

imparting said ions with a movement in a first direction by flowing a carrier fluid through said chamber; and

applying an electric field across said chanber to simulta-

neously electrophorese said ions in a second direction counter to said first direction to segregate each of said species in an equilibrium zone within the chamber.

4,323,440

OXYGEN SENSOR WITH PROTECTIVE SHIELD AND POROUS AIR FILTER

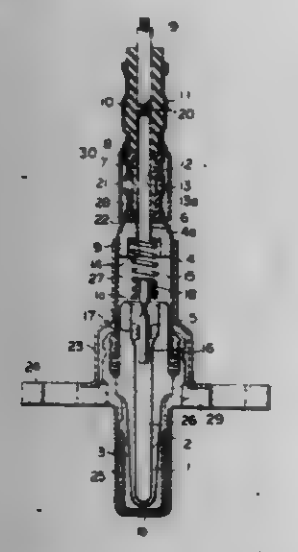
Takao Akatsuka, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Oct. 27, 1980, Ser. No. 201,237

Claims priority, application Japan, Mar. 25, 1980, 55-38428

Int. Cl.³ G01N *27/58*

U.S. Cl. 204—195 S 6 Claims



1. An oxygen sensor, comprising:
(a) an electrolytic body, made of a solid electrolyte material, and formed as a tube with an open end and a closed end;
an internal electrode located on the interior surface of the tubular electrolytic body;
(c) an external electrode located on the exterior surface of the tubular electrolytic body;
(d) a tubular housing airtightly connected around the outer circumference of the open end of the tubular electrolytic body, and defining within it an internal space to which the internal electrode is exposed, and formed with a side hole;
(e) an electrically conducting tube member, located within the tubular housing and substantially coaxial therewith, and formed with a side hole opposing the side hole in the tubular housing;
(f) a blocking member, comprising (fa) a tube formed of water repellent porous material and (fb) a tube made of an elastomeric rubber-like material and formed with a side hole, one of these tubes being within the other, said blocking member being fitted tightly over the electrically conducting tube member and fitting tightly inside the tubular housing and interrupting communication of said internal space within the tubular housing, via the space between the tubular housing and the electrically conducting tube member, to the outside, with said side hole in the tube which is made of an elastomeric rubber-like material corresponding to the side holes in the tubular housing and in the electrically conducting tube member;
(g) a means for electrically connecting the internal electrode with the end of the electrically conducting tube member closest thereto;
(h) a lead wire connected to the other end of the electrically conducting tube member and leading to the outside of the sensor, communication between said internal space within the tubular housing via the part of the inside of the electrically conducting tube member closer to said other end thereof than said blocking member to the outside being interrupted; and
(i) a protective shield located over the outside of the said hole in the housing, which does not interrupt communication between said side hole and the atmosphere, but which shields said side hole from direct exposure to the exterior.

4,323,441

APPARATUS FOR ELECTROPLATING STRIP MATERIAL WITHOUT CURRENT LEAKAGE

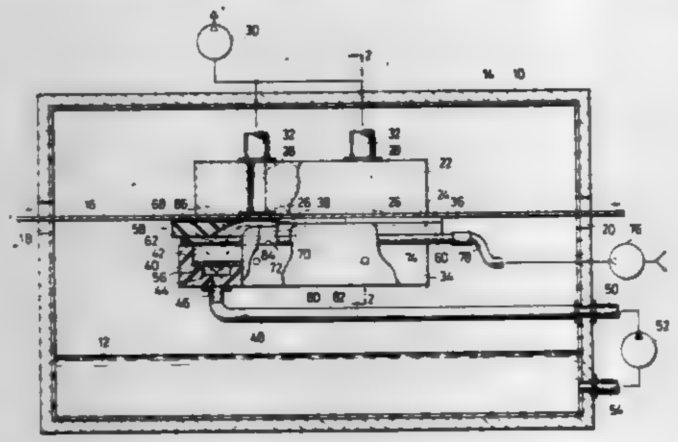
Glenn R. Schaer, Columbus, Ohio; Tasuku Touyama; Teruaki Yamamoto, both of Shizuoka, Japan; Keisuke Honda, and Tatsuo Wada, both of Shimizu, Japan, assignors to Koito Seisakusho Co. Ltd., Tokyo, Japan

Filed Jan. 7, 1981, Ser. No. 223,208

Claims priority, application Japan, Jan. 12, 1980, 55-2242

Int. Cl.³ C25D *5/02, 5/08, 7/06*

U.S. Cl. 204—224 R 5 Claims



1. An apparatus for electroplating a strip of electrically conductive material being fed through the apparatus in a predetermined direction, comprising:
(a) a hollow vessel for receiving an electroplating solution containing a metal to be electrodeposited;
(b) a cathode mounted in the vessel and having a bottom surface disposed horizontally, the conductive strip being fed in sliding contact with the bottom surface of the cathode and being thereby made cathodic;
(c) an insoluble anode mounted under the cathode, there being an interelectrode gap between the insoluble anode and the conductive strip traveling under the cathode;
(d) inlet means in said vessel defining a solution inlet from which the electroplating solution is fed into the interelectrode gap so as to flow turbulently therethrough in the predetermined traveling direction of the conductive strip;
(e) turbulence creating means for making constant in the transverse direction of the conductive strip the degree of turbulence of the electroplating solution flowing through the interelectrode gap;
(f) a pair of sealing bars of electrically insulating material for sealing the opposite sides of the interelectrode gap against the outflow of the electroplating solution; and,
(g) a shield block bridging the pair of sealing bars and molded integral therewith, the shield block being disposed over the inlet means so as to shield the conductive strip traveling over the shield block from premature deposition of the metal due to current leakage.

4,323,442

ELECTROLYSIS INSTALLATION FOR THE PRODUCTION OF GAS

Patrice Lantin, Givry, and Gerard Pere, Le Breuil, both of France, assignors to Creusot-Loire, Paris, France

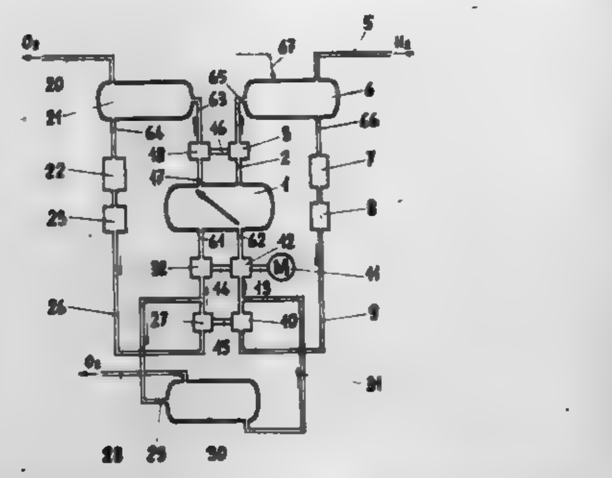
Filed Jul. 2, 1980, Ser. No. 165,368

Claims priority, application France, Jul. 5, 1979, 79 17929

Int. Cl.³ C25B *15/08, 9/00*

U.S. Cl. 204—237 8 Claims

1. An electrolysis installation having separate anolyte and catholyte flow circuits and gas outlets, and whereby degassed electrolyte is recycled by means of pumps to an electrolyzer and comprising an electrolyzer equipped at least partially with diaphragms separating the anolyte and catholyte into separate compartments and which are permeable to liquids and impermeable to gases; and means based on the creation of differences in flow enabling a partial transfer of electrolyte to be effected in the electrolyzer, through said diaphragms, from each catholyte compartment to the corresponding anolyte compartment, in such a manner as to preserve similar electrolyte densities for



each of the anolyte and catholyte flow circuits; said means comprising, downstream of the electrolyzer, an anolyte flow control device coupled to a catholyte flow control device, said devices being dimensioned to impose an anolyte-catholyte flow ratio greater than that existing at the inlets of the recycled electrolyte to the electrolyzer, of the amount necessary to effect, by suction, said transfer through said diaphragms.

4,323,443

ELECTROLYZER HAVING A HORIZONTAL TUBULAR ENCLOSURE

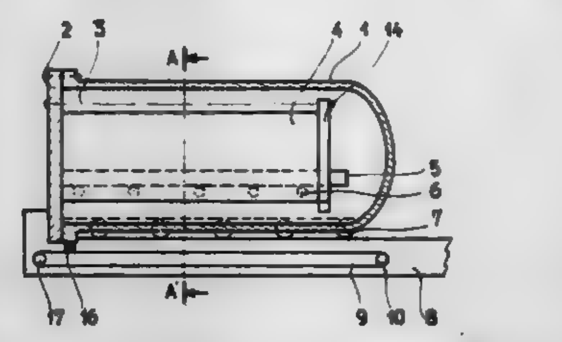
Gerard Pere, Le Breuil, France, assignor to Creusot-Loire, Paris, France

Filed Feb. 1, 1980, Ser. No. 117,653

Claims priority, application France, Jul. 2, 1979, 79 03797

Int. Cl.³ C25B *9/00*

U.S. Cl. 204—253 2 Claims



1. An electrolyzer comprising a stack of elemental electrolytic cells, an enclosure surrounding said stack and consisting of a vertical base attached to said stack and a movable horizontal tubular body, a horizontal base supporting said tubular body and attached to said vertical base, and a device mounted on the exterior of said tubular body so as to provide longitudinal rolling movement of said tubular body on said horizontal base.

4,323,444

FILTER PRESS-TYPE ELECTROLYTIC CELL

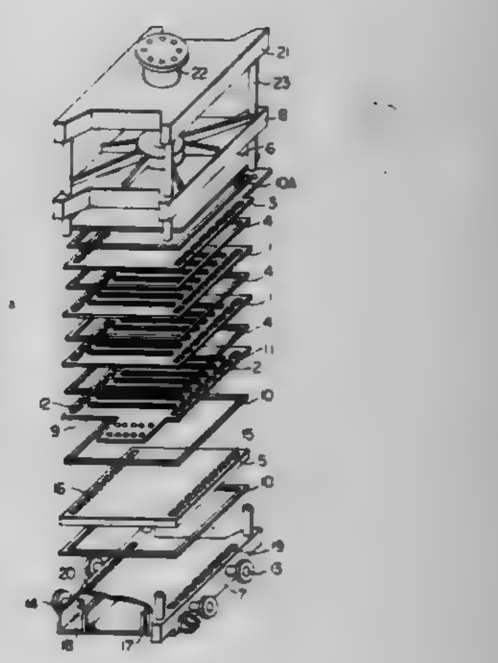
Chikayuki Kawamura; Toshiro Isoya, and Kazumori Yamataka, all of Nobeoka, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Jul. 28, 1980, Ser. No. 173,139

Claims priority, application Japan, Jul. 31, 1979, 54/97817

Int. Cl.³ C25B *9/00, 11/10, 15/08*

U.S. Cl. 204—269 11 Claims



1. A filter press-type electrolytic cell comprising parallel electrode plates with inflow holes and outflow holes for allowing an electrolytic solution to be passed, gaskets being placed between the electrode plates to seal their peripheral edges, spacers being put on one side of the electrode plates to keep a given distance therebetween, and a pair of metallic press heads being provided at the both ends of the group of the electrode plates to tighten them, wherein supply and discharge of the electrolytic solution to and from spaces between the electrode plates is conducted through inflow holes and outflow holes of the individual electrode plates, wherein an improvement comprises one or more inlets and one or more outlets for the electrolytic solution being provided on only one of the press heads and communicated with the inflow holes and the outflow holes of the individual electrode plates, respectively, and an insulating plate of non-electroconductive material having a thickness of 4–60 mm being placed between the press head with the inlet and the outlet and the nearest electrode plate thereto, the insulating plate having inflow holes and outflow holes which communicate with the inflow holes and the outflow holes of the individual electrode plates, respectively, and the edge parts of the holes of adjacent electrode plate and the adjacent press head are prevented from inwardly protruding from the edge of holes of the insulating plate in a state of stacking the insulating plate and the adjacent electrode plate and the adjacent press head one upon another in positions at normal operation.

4,323,445

APPARATUS FOR ELECTROKINETICALLY SEPARATING DRILLING MUD

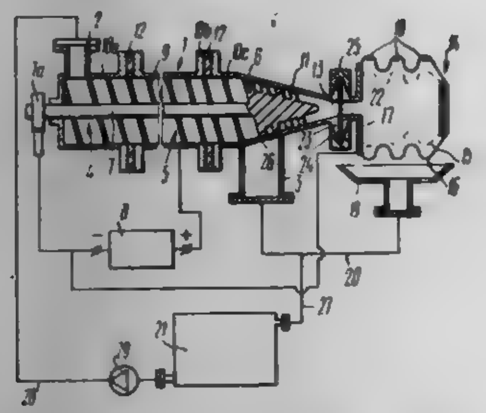
Stanislav A. Alekhin, Chilanzar, kvartal 24, dom 53, kv. 89; Eduard B. Kuznetsov, Chilanzar, Sektor E, dom 5, kv. 33; Vitold M. Bakhir, proezo Gaidara, 7, kv. 17; Vladimir I. Klimenko, Chilanzar, kvartal 23, dom 3, kv. 37, and Jury G. Zadorozhny, Chilanzar, kvartal 2, dom 59, kv. 12, all of Tashkent, U.S.S.R.

PCT No. PCT/SU80/00031, § 371 Date Nov. 26, 1980, § 102(e) Date Nov. 25, 1980, PCT Pub. No. WO80/02045, PCT Pub. Date Oct. 2, 1980

PCT Filed Feb. 27, 1980, Ser. No. 224,547

Int. Cl.³ B01D *13/02;* E21B *21/06;* B01D *43/00;* B03C *5/00*

U.S. Cl. 204—300 R 6 Claims



1. An apparatus for electrokinetically separating drilling mud into liquid and solid phases, comprising a casing having an inlet for drilling mud and outlets for separated phases thereof and accommodating electrodes connected to the negative terminal and to the positive terminal respectively, of a d-c source, characterized in that the electrode connected to the negative terminal of the d-c source (8) comprises a conveyor screw (4) having a cylindrical portion (5) and an adjacent conical portion (6), the screw being installed in the casing (1) which forms the electrode connected to the positive terminal of the d-c source (8) and has respective cylindrical (10a, 10b, 10c) and conical (11) portions, the outlet (13) for solid phase of drilling mud being provided at the end of the conical portion (11) of the casing (1), and in that there is provided a receptacle (14) for collecting solid phase of drilling mud communicating with the outlet (13) for solid phase of drilling mud provided in the casing (1).

4,323,446

MULTI-ZONE COAL CONVERSION PROCESS USING PARTICULATE CARRIER MATERIAL

Michael C. Chervenak, Pennington; Edwin S. Johanson, Princeton, and Marvin S. Rakow, East Brunswick, all of N.J., assignors to Hydrocarbon Research, Inc., Lawrenceville, N.J.

Filed Aug. 30, 1979, Ser. No. 71,215

Int. Cl.³ C10G *1/00;* C10J *3/00*

U.S. Cl. 208—8 R 14 Claims

1. A multi-zone coal gasification process for producing fuel gas and distillable liquid products, comprising the steps:

(a) injecting particulate coal into a pressurized upper fluidized bed devolatilization zone maintained at 900° to 1500° F. temperature range and containing an adsorptive particulate carrier material suitable for deposition of coal tars and coke thereon and on which coke deposits while reacting with an upflowing reducing gas;

(b) passing the carrier material coated with coke plus unconverted coal solids (char) downward through an intermediate stripping zone into a lower fluidized bed gasification zone;

(c) injecting steam and oxygen-containing gas into the lower gasification zone to maintain it at 700°–2000° F. temperature range for combustion of the unconverted coal solids and coke deposited on the carrier material and to produce said reducing gas and ash;

(d) passing said reducing gas upwardly successively through said stripping zone and through said upper bed to fluidize same;

(e) transferring the clean hot particulate carrier solids from the lower gasification zone upward through a riser conduit into the upper devolatilization zone using a transport gas;

(f) passing effluent gas from the upper devolatilization zone through a primary separation step for removal of solids, which are returned to the lower fluidized bed;

(g) withdrawing effluent gas and distillable liquid products from the upper zone; and

(h) further separating principally ash and unconverted coal solids from the effluent gas and withdrawing them from the process.

4,323,447

COAL LIQUEFACTION PROCESS EMPLOYING OCTAHYDROPHENANTHRENE-ENRICHED SOLVENT

Shirley C. Tsai, and Howard G. McIlvried, III, both of Pittsburgh, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Feb. 5, 1980, Ser. No. 118,859

Int. Cl.³ C10G *1/00, 1/06*

U.S. Cl. 208—8 LE 19 Claims

1. A process for the conversion of coal to a liquid fuel product, which comprises contacting said coal with hydrogen and a coal-derived recycle solvent in a coal liquefaction zone, said recycle solvent containing OHP, THP and P, said OHP and THP being present in a ratio of OHP/THP greater than 0.4 and less than 15, said OHP being present in an amount of at least 5 weight percent based on the total weight of said recycle solvent, withdrawing reactor effluent comprising liquid from said coal liquefaction zone, passing a portion of the liquid produced in said coal liquefaction zone having a boiling range between about 200° and about 500° C. and containing OHP and THP in a ratio of OHP/THP below 0.4 with hydrogen to a hydrogenation zone, and hydrogenating said liquid in the presence of a supported catalyst consisting essentially of Group VIB and Group VIII metals under hydrogenation conditions including a temperature between about 260° and about 427° C. to provide an OHP-enriched solvent containing OHP and THP in a ratio of OHP/THP greater than 0.4 and below 15, and at least 1 weight percent THP, and recycling the OHP-enriched solvent for contact with said feed coal, and recovering a portion of the liquid produced in said coal liquefaction zone as liquid fuel product.

4,323,448

PROCESS FOR ACTIVATING TREATMENT OF CRUDE OIL

Karl Entzmann, St. Kathrein am Hauenstein, Austria, assignor to Simmering-Graz-Pauker Aktiengesellschaft fur Maschinen-, Kessel-und Waggonbau, Vienna, Austria

Filed Mar. 18, 1980, Ser. No. 131,426

Claims priority, application Austria, Mar. 19, 1979, 2039/79

Int. Cl.³ C10G *7/00, 71/00*

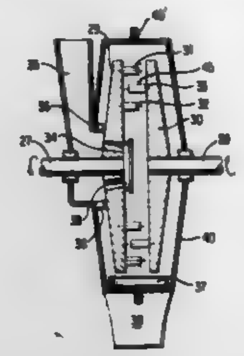
U.S. Cl. 208—85 12 Claims

1. A process for mechanochemically activating a liquid hydrocarbon comprising the steps of:

passing said hydrocarbon to a disintegrator comprising a pair of counter-rotable disks having alternate concentric rows of beating pins;

subjecting said hydrocarbon to intense mechanical beating

by contacting said hydrocarbon with said beating pins, whereby said hydrocarbon is subjected to a statistical



average of between about 3 to 12 beats during a period between about 0.001 to 0.01 seconds; and

recovering a mechanochemically activated hydrocarbon.

4,323,449

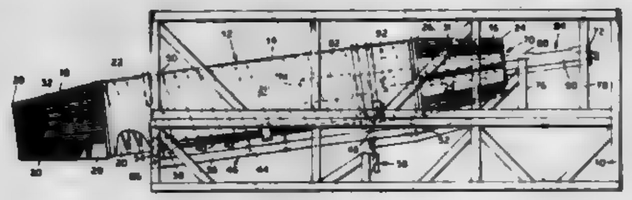
METHOD AND APPARATUS FOR BENEFICIATING COAL

Robert A. Pelletier, Rte. 15, Moreland Dr., Kingsport, Tenn. 37660

Filed Nov. 14, 1980, Ser. No. 206,961

Int. Cl.³ B03B *5/02, 5/30*

U.S. Cl. 209—17 11 Claims



1. An apparatus for the beneficiation of a mixture including coal and a second material having a greater density than coal comprising:

a frame,

an elongated, hollow, generally cylindrical barrel member,

said barrel member including:

an imperforate central section,

a foraminous inwardly directed, frustoconical end section connected to each end of said central section,

a spiral flight attached to the interior surface of the central section of said barrel and at least one of said frustoconical sections,

means for mounting said barrel for rotation on said frame with its longitudinal axis disposed at an acute angle to the horizontal with a frustoconical section having a spiral flight being elevated relative to the other frustoconical section,

means for varying the angle of said barrel,

means for rotating said barrel about its longitudinal axis, a source of liquid medium of predetermined density,

a source of said mixture, means for depositing said liquid medium from said medium source at a location within said central section,

means for continuously supplying said mixture to a location within said central section,

whereby coal concentrate passes out the lower end of said barrel and the second material passes out the upper end of said barrel.

4,323,450

APPARATUS FOR SEPARATING A SOLID OR VISCOUS LIQUID COMPONENT FROM A MIXTURE

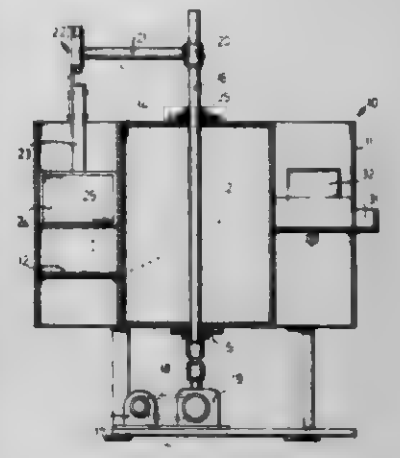
Geoffrey C. Arthur, Coventry, England, assignor to Abrasive Developments Limited, Henley in Arden, England

Filed Feb. 4, 1980, Ser. No. 118,188

Claims priority, application United Kingdom, Feb. 17, 1979, 5658/79

Int. Cl.³ B01D *21/24*

U.S. Cl. 210—11 S 7 Claims



1. Apparatus for separating the components of a mixture, the mixture comprising a solid or viscous liquid component and a readily flowable liquid component, the flowable liquid component having a specific gravity which is only slightly greater than that of the solid or viscous liquid component, the apparatus comprising:

a tank having a closed bottom and a top;

inlet means for supplying the mixture to the tank;

a separation ramp located within the tank and being inclined upwardly between the bottom and the top of the tank and above the level of the mixture to be received in the tank;

a first aperture means in communication with the ramp for egress of the readily flowable liquid from the tank, closure means for the first aperture means, biasing means for biasing the closure means open, the biasing means including means for imparting a force to the closure means to maintain the first aperture means open to receive the flowable liquid component and to enable the first aperture means to close by flow of the solid or viscous liquid component past the closure means as the mixture flows upwardly on the ramp along a mixture flow path;

second aperture means in communication with the ramp and positioned downstream from the first aperture means along the mixture flow path;

skimmer means for skimming through the mixture at least adjacent the ramp and for skimming over the ramp and thereby skimming the mixture towards the first and second aperture means;

means for rotating the skimmer means through the mixture at a speed such that the skimmer means drives the mixture with the readily flowable liquid component preceding the solid or liquid viscous component up the ramp and through the first aperture means and with the solid or viscous liquid component following behind and closing the first aperture means, and with the solid or viscous liquid component directed past the closure means towards the second aperture means.

4,323,451

ARRAY OF FILTER ELEMENTS

Tadashi Hagihara, 4-1, 5-chome, Minami Nagasaki, Toshima-ku, Toyko, Japan

Filed May 30, 1978, Ser. No. 910,361

Int. Cl.³ B01D *33/32*

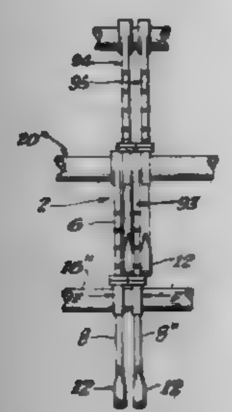
U.S. Cl. 210—160 11 Claims

10. In an array of staggeringly interconnected thin filter elements in a plurality of rows held together by a transverse

clamping force on a plurality of parallel spaced apart support shafts, the first row of filter elements that are supported on a first forward shaft and a second rearward shaft with an adjacent forward row and rearward row of like filter elements also supported by two adjacent shafts, the rearward shaft of the adjacent forward row is the same shaft as said first forward shaft, the forward shaft of the adjacent rearward row is the same shaft as said second rearward shaft, filter elements comprising:

filter elements,

each of said filter elements including an arm with two hubs located in said arm, each hub includes a bore for connecting each of said filter elements to support shafts,



separator means for separating adjacent filter elements that are similarly held on the same two shafts, said separator means positioned adjacent and about at least a portion of one of said hubs, said separator means including projecting means for projecting outward from at least one side of each of said filter elements for distal contact with at least one of the adjacent filter elements that are similarly held on the same two shafts,

said separator means having at least one surface area balancing means for balancing the transverse clamping force holding a plurality of filter elements in each row that are similarly held on the same two shafts.

4,323,452

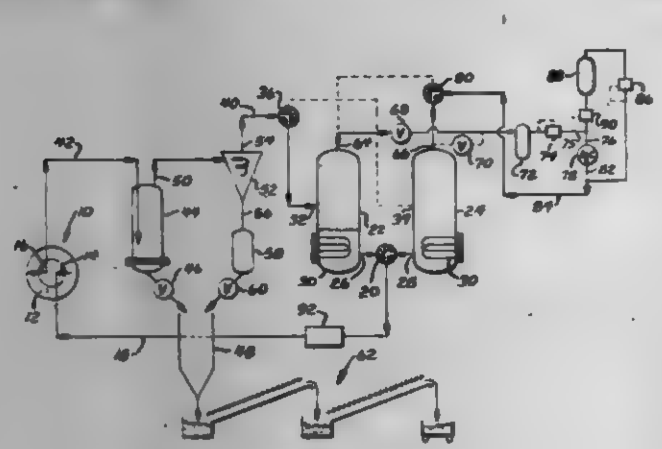
PUMPLESS FLOW SYSTEM FOR A CORROSIVE LIQUID

Marion J. Witzenburg, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Continuation-in-part of Ser. No. 108,910, Nov. 1, 1979, abandoned. This application Nov. 3, 1980, Ser. No. 219,310

Int. Cl.[3] B01D *21/26, 53/14*

U.S. Cl. 210—188 **9 Claims**



1. A closed loop high pressure fluid flow system for transporting a mixture of a highly corrosive liquid and a particulate material and separating the latter from the former while recovering the corrosive liquid and not requiring mechanical pumps comprising:

a source (78,82) of high pressure gas under pressure;

first and second corrosive liquid reservoirs (22,24) connected in parallel (64,66,80,84) to said source, said source comprising a compressor (78) having an outlet (82) connectable to one or the other, but not both concurrently, of said reservoirs and an inlet (76) connectable to one or the other, but not both concurrently, of said reservoirs, and specifically the reservoir not then connected to said outlet, and gas supply regulating means comprising a gas storage tank, a low pressure regulator connecting the gas storage tank to said compressor inlet, and a high pressure regulator connecting the gas storage tank to said compressor outlet;

means (20) for connecting one or the other, but not both concurrently, of said reservoirs to a point of use (10) of the corrosive liquid and specifically, for connecting the reservoir receiving pressurized gas to said point of use;

means (44,52) for receiving a mixture of the corrosive liquid, after use, and particulate material and for separating the mixture into its components of particulate material and corrosive liquid; and

means (36) for conveying the separated corrosive liquid to one or the other, but not both concurrently, of the reservoirs, and specifically the reservoir not then receiving pressurized gas from the source.

4,323,453

TUBE SHEETS FOR PERMEATORS

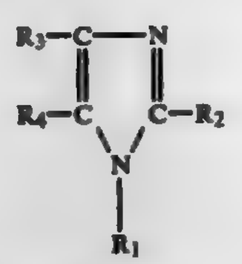
Anthony Zampini, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 109,428, Jan. 3, 1980, abandoned. This application Nov. 25, 1980, Ser. No. 209,806

Int. Cl.[3] B01D *31/00, 13/00;* **B29C** *6/04;* **B29F** *1/10*

U.S. Cl. 210—321.1 **32 Claims**

1. A tube sheet having a plurality of hollow fiber membranes suitable for fluid separations embedded therein, said tube sheet being adapted to be positioned in a fluid tight relationship within a permeator and said tube sheet comprising a cured epoxy resin of a liquid resin comprising polyglycidyl resin and imidazole curing agent having the structure



wherein R_1 is hydrogen, alkyl of 1 to about 12 carbon atoms, lower acyl or mono or bicyclic aryl or aralkyl of 6 to about 15 carbon atoms and R_2, R_3 and R_4 are hydrogen, halogen, hydroxy, nitro, alkoxy of 1 to about 6 carbon atoms, alkyl of 1 to about 12 carbon atoms, lower acyl, or mono or bicyclic aryl or aralkyl of 6 to about 15 carbon atoms, said imidazole curing agent being provided in an amount between about 2 to 40 percent of the amount required for complete reaction through one ring nitrogen with the epoxy moieties of the liquid resin on a stoichiometric basis.

4,323,454

TUBE SHEETS FOR PERMEATORS

Alfred K. Fritzsche, Cary; Harry P. Holladay, and Maurice L. Woodcock, both of Raleigh, all of N.C., assignors to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 109,425, Jan. 3, 1980, abandoned. This application Nov. 25, 1980, Ser. No. 209,807

Int. Cl.[3] B01D *31/00, 13/00;* **B29C** *6/04;* **B29F** *1/10*

U.S. Cl. 210—321.1 **71 Claims**

1. A tube sheet having a plurality of hollow fiber membranes suitable for fluid separations embedded therein, said tube sheet being adapted to be positioned in a fluid tight relationship within a permeator and said tube sheet comprising a cured, solidified resinous composition of a liquid resinous composition, said liquid reinous composition comprising

a. resin containing a major amount by weight of polyglycidyl resin having a viscosity of about 1000 to 30,000 centipoises at 25° C., said resin having a viscosity of about 500 to 12,000 centipoises at 25° C.;

b. curing agent composition in an amount sufficient to consume at least about 90 percent of the glycidyl groups in the liquid resinous composition; and

c. particulate filler having a density of about 1 to 10 grams per cubic centimeter at 25° C., an average maximum particle size of about 1.5 to 150 microns, and a surface area of less than about 5 square meters per gram of filler, said filler comprising about 5 to less than about 35 percent by volume of the liquid resinous composition

wherein the liquid resinous composition has a viscosity of about 1000 to 10,000 centipoises at 25° C.

4,323,455

COMPACT TYPE FLUID TREATMENT APPARATUS

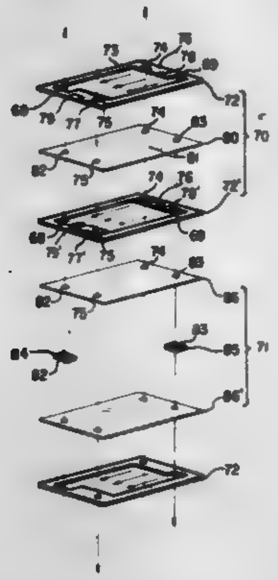
Yoshinobu Tanaka; Koichi Ogawa, and Minoru Hioka, all of Kurashiki, Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

Continuation of Ser. No. 21,765, Mar. 19, 1979, abandoned. This application Aug. 19, 1980, Ser. No. 179,486

Claims priority, application Japan, Mar. 28, 1978, 53-36285; Nov. 15, 1978, 53-141407

Int. Cl.[3] B01D *13/00;* **C02F** *1/44*

U.S. Cl. 210—321.2 **18 Claims**



1. A fluid treatment apparatus comprising: a stack assembly composed of two kinds of cells disposed in such order of arrangement that the adjacent cells are different in kind from each other; a first cell positioned in a cell plane and including a first fluid distribution means having inlet and outlet ports for a first fluid and the membranes lying on either side of said means; a second cell positioned in said cell plane and including a second fluid distribution member having inlet and outlet ports for a second fluid and comprising paired members having a plurality of grooves on one surface thereof that form independent tunnel-like fluid paths between the membrane support sheet and a respective one of the paired members, said membrane support sheet being 5–500μ thick and provided with a large number of projections on either side of the central portion thereof, said projections being 50–500μ thick, and said pair of grooved members being arranged so that the grooved surfaces are face-to-face with each other, interposing said membrane support sheet therebetween; and, so that each of said distribution members may introduce a respective fluid separately through said stack assembly and so that said first fluid may be distributed between a pair of membranes composing the first cell as well as the second fluid between the second cell and an adjacent membrane, the fluid manifolds of all of said cells are adapted to communicate with said inlet and outlet ports for said first and second fluids and are arranged so as to perform substantially uniform diffusion exchange of substances between said first and second fluids; wherein said first and second fluid distribution members do not overlap one another in said cell plane.

4,323,456

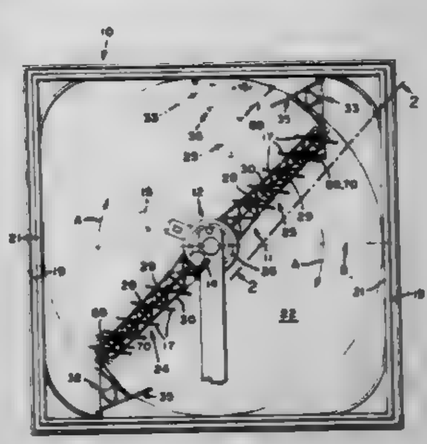
CORNER SWEEP MECHANISM FOR SQUARE SETTLING TANK

John Olear, Cheshire, Conn., assignor to Dorr-Oliver Incorporated, Stamford, Conn.

Filed Sep. 2, 1980, Ser. No. 183,106

Int. Cl.[3] B01D *21/18*

U.S. Cl. 210—529 **6 Claims**



1. In a square-shaped settling tank for separating solids from a solids-liquid suspension, a feed supply inlet, a first outlet means at the top of the tank for discharging supernatant liquids separated from solids settled on the tank bottom, a second outlet means at the bottom of the tank for discharging said sludge, a rotary rake structure having rake arms effective to move solids over said tank bottom to said second outlet means and a supplemental corner sweep mechanism secured to said rotary rake structure for sweeping the corner areas of said tank bottom, said supplemental corner sweep rake mechanism comprising:

a. a frame of triangular configuration suspended from and pivotally mounted to the outer end of said rotary rake structure with a corner sweep arm forming the base of said triangular frame and a pivot arm and a support arm for said pivot arm completing the sides of said triangular frame,

b. said pivot arm and said support arm comprised of elongated watertight hollow members to provide buoyancy to said frame during movement thereof through a solids-liquid suspension over said tank bottom,

c. guide means provided at one end of said pivot arm,

d. a control arm connected to said pivot arm for controlling movement of said pivot arm, and

e. a tension spring means interconnected at one end to said control arm and at the opposite end to said rotary rake structure to urge said guide means into constant contact with the inner wall surface of said tank and operable to move said pivot arm and said corner sweep arm into the corner areas of said tank bottom during rotation of said rotary rake structure.

4,323,457

ARTIFICIAL ENDOCRINE PANCREAS

Anthony M. Sun, and Wolf J. Parisius, both of Willowdale, Canada, assignors to Connaught Laboratories Limited, Willowdale, Canada

Filed Mar. 24, 1977, Ser. No. 781,001

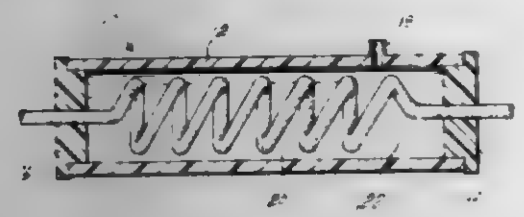
Claims priority, application Canada, Mar. 21, 1977, 274354

Int. Cl.[3] B01D *31/00, 13/00*

U.S. Cl. 210—645 **12 Claims**

9. A process for treating a body fluid comprising: placing in a container defining an enclosed chamber pancreatic islet cells;

and passing body fluid through one or more hollow fibres extending in said chamber, each said fibre having a porosity



allowing substances of molecular weight less than 100,000 Daltons to diffuse and to thereby treat said body fluid.

4,323,458
PROCESS FOR REMOVING HEAVY-METAL IONS FROM AQUEOUS SOLUTION

Hiroyuki Uejima, Nara; Masahide Hirai, Kyoto, and Tsutomu Sakaida, Uji, all of Japan, assignors to Unitika Ltd., Hyogo, Japan

Division of Ser. No. 941,355, Sep. 11, 1978, Pat. No. 4,266,045. This application Aug. 20, 1980, Ser. No. 180,056
Claims priority, application Japan, Sep. 12, 1977, 52/110099
Int. Cl.³ C02F *1/28*

U.S. Cl. 210—688 16 Claims

1. A method for adsorptive treatment, which comprises contacting an aqueous solution containing a heavy metal ion and having a pH of about 7 to 13 with an etherified phenolic chelate resin comprising the product obtained on etherification of some or all of the phenolic hydroxyl groups of a phenolic chelate resin with an etherification agent, wherein the heavy metal is adsorbed by said phenolic chelate resin and removed from said aqueous solution.

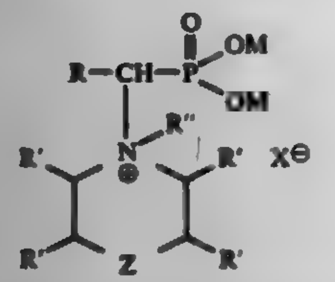
4,323,459
PROCESS OF INHIBITING SCALE FORMATION IN AQUEOUS SYSTEMS USING QUATERNARY AMMONIUM SALTS OF α-1,4-THIAZINE ALKANEPHOSPHONIC ACIDS

Patrick M. Quinlan, Webster Groves, Mo., assignor to Petrolite Corporation, St. Louis, Mo.

Division of Ser. No. 932,258, Aug. 9, 1978, Pat. No. 4,259,483. This application Sep. 15, 1980, Ser. No. 187,399
Int. Cl.³ C02F *5/12, 5/14*

U.S. Cl. 210—700 10 Claims

1. A process of inhibiting scale formation in an aqueous solution which comprises treating said aqueous solution with an effective amount of a compound of the formula



where R and R'' are members selected from the group consisting of alkyl, alkenyl, cycloalkyl, aryl, alkaryl, aralkyl, and hydroxyphenyl and from the group consisting of alkyl, aralkyl, cycloalkyl, alkenyl, and alkynyl, respectively, R' is hydrogen or alkyl, Z is S, SO or SO_2, M is hydrogen or a salt moiety and X is a halide, acetate, sulfonate or arylsulfonate.

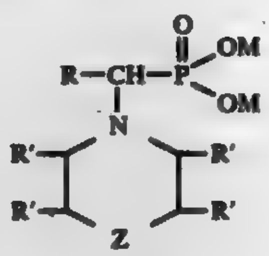
4,323,460
PROCESS OF INHIBITING SCALE FORMATION IN AQUEOUS SYSTEMS USING α-1,4-THIAZINE ALKANEPHOSPHONIC ACIDS

Patrick M. Quinlan, Webster Groves, Mo., assignor to Petrolite Corporation, St. Louis, Mo.

Division of Ser. No. 932,257, Aug. 9, 1978, Pat. No. 4,264,767. This application Oct. 2, 1980, Ser. No. 193,222
Int. Cl.³ C02F *5/12, 5/14*

U.S. Cl. 210—700 8 Claims

1. A process of inhibiting scale formation in an aqueous solution which comprises treating said aqueous solution with an effective amount of a compound of the formula



where R is a member selected from the group consisting of alkyl, alkenyl, cycloalkyl, aryl, alkaryl, aralkyl and hydroxyphenyl, and R' is hydrogen or alkyl, Z is S, SO or SO_2, and M is a hydrogen or a salt moiety.

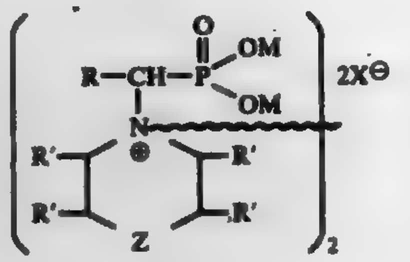
4,323,461
PROCESS OF INHIBITING SCALE FORMATION IN AQUEOUS SYSTEMS USING DI-QUATERNARY AMMONIUM SALTS OF α-1,4-THIAZINE ALKANEPHOSPHONIC ACIDS

Patrick M. Quinlan, Webster Groves, Mo., assignor to Petrolite Corporation, St. Louis, Mo.

Division of Ser. No. 932,259, Aug. 9, 1978, Pat. No. 4,264,768. This application Oct. 14, 1980, Ser. No. 197,055
Int. Cl.³ C02F *5/12, 5/14*

U.S. Cl. 210—700 5 Claims

1. A process of inhibiting scale formation in an aqueous solution which comprises treating said aqueous solution with an effective amount of a compound having the formula



where R is alkyl, alkenyl, cycloalkyl, aryl, alkaryl, aralkyl or hydroxyphenyl, R' is hydrogen or alkyl, Z is S, SO or SO_2, M is hydrogen or a salt moiety, is a bridging group selected from alkylene, aralkylene, alkaralkylene, alkylene- or polyalkylene-ether, alkenylene or alkynylene and X is a halide.

4,323,462
PROCESS FOR PURIFYING WATER CONTAINING FLUORIDE ION

Stanley Bruckenstein, Williamsville, N.Y., assignor to Andco Industries, Inc., Buffalo, N.Y.

Division of Ser. No. 11,512, Feb. 12, 1979, Pat. No. 4,226,710, which is a continuation-in-part of Ser. No. 761,685, Jan. 24, 1977, Pat. No. 4,145,282. This application Jul. 24, 1980, Ser. No. 173,334
The portion of the term of this patent subsequent to Mar. 20, 1996, has been disclaimed.
Int. Cl.³ C02F *1/52*

U.S. Cl. 210—714 2 Claims

1. A continuous process for purifying water containing fluoride which comprises:

(a) continuously adding sufficient calcium composition to a stream of water to provide at least five moles of available calcium in said water for each mole of fluoride in said water;

(b) continuously adding sufficient phosphate composition to said stream, said phosphate composition being selected to provide a pH in the water of below about 11.5 after its addition;

(c) subsequent to adding said phosphate, upwardly adjusting and maintaining the pH of the water to above 6.0 and below 11.5 with a base;

(d) slurrying a seeding composition selected from the group consisting of fluorapatite, calcium fluoride and mixtures thereof into said stream; and

(e) permitting a precipitate to form which contains essentially all fluoride which was present in the water.

4,323,463
SECONDARY RECOVERY PROCESS

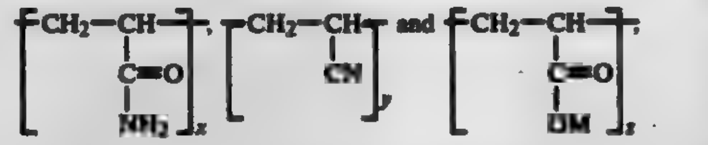
Abraham Morduchowitz, Monsey, N.Y., assignor to Texaco Inc., White Plains, N.Y.

Filed Jun. 11, 1980, Ser. No. 158,657
Int. Cl.³ E21B *43/22*

U.S. Cl. 252—8.55 D 11 Claims

1. A process for recovering hydrocarbons from a subterranean, hydrocarbon-bearing formation penetrated by an injection well and a production well which comprises:

(a) injecting into the formation via an injection well a drive fluid comprising brine having dissolved therein about 0.01 to about 5.0 weight percent of a terpolymer water insoluble, brine soluble, having a number average molecular weight from about 10,000 to about 2,000,000 and comprising recurring units of:



wherein x, y and z represent the weight percent of the respective units in the said terpolymer and x ranges from about 50 to about 60 weight percent, y ranges from about 20 to about 30 weight percent and z ranges from about 10 to about 20 weight percent and wherein M is the radical

$—(CH_2CH_2O)_nH$

wherein n is an integer of from 1 to 3 inclusive

(b) forcing the said fluid through the formation and

(c) recovering hydrocarbons through the production well.

4,323,464
PROCESS FOR PRODUCING HYDRATED IRON OXIDE HAVING SILICON AND PHOSPHORUS COMPONENT

Shinji Umeki, Tokyo, Japan, assignor to TDK Electronics Co., Ltd., Tokyo, Japan

Filed Apr. 24, 1980, Ser. No. 143,512
Claims priority, application Japan, May 11, 1979, 54-57021
Int. Cl.³ C01G *49/06*

U.S. Cl. 252—62.59 6 Claims

4. A process for producing a hydrated iron oxide powder consisting essentially of

goethite;

a silicon component in an amount of 0.05 to 10 weight %, as Si based on the iron oxide; and

a phosphorus component in an amount of 0.05 to 5 weight %, as P based on the iron oxide;

wherein silicon and phosphorus are incorporated in the crystal structure of the iron oxide;

the process comprising:

adding a base to an aqueous solution of ferrous ion;

and oxidizing the so-formed admixture, while maintaining the pH of the admixture in the range of 5.5 to 7.5;

wherein a silicate and a phosphate are present in said admixture during oxidation.

4,323,465
STABILIZED SODIUM SULFATE-HYDROGEN PEROXIDE-SODIUM CHLORIDE ADDUCT AND ALKALINE BLEACH COMPOSITION CONTAINING SAME

Gale D. Downey, Pennington, and Charles W. Lutz, Princeton, both of N.J., assignors to FMC Corporation, Philadelphia, Pa.

Filed Apr. 23, 1981, Ser. No. 256,621
Int. Cl.³ C11D *7/36*

U.S. Cl. 252—102 19 Claims

1. A $4Na_2SO_4.2H_2O_2.NaCl$ composition, having improved storage stability in alkaline formulations, comprising $4Na_2SO_4.2H_2O_2.NaCl$ having incorporated in its crystalline structure a stabilizing amount of an organic polyphosphonate compound wherein the polyphosphonate compound contains 2 or more $—PO_3$— — functions connected through their phosphorous atoms by way of an alkylene chain optionally interrupted by a nitrogen atom or containing a hydroxy substituent.

4,323,466
GERMICIDE

Janet C. Curry, Palisade, and Barbara H. Bory, Fairview, both of N.J., assignors to Lever Brothers Company, New York, N.Y.

Continuation of Ser. No. 926,777, Jul. 21, 1978, abandoned, which is a division of Ser. No. 308,064, Nov. 20, 1972, abandoned, which is a continuation-in-part of Ser. No. 72,527, Sep. 15, 1970, abandoned. This application Aug. 11, 1980, Ser. No. 177,302
The portion of the term of this patent subsequent to Jul. 6, 1996, has been disclaimed.
Int. Cl.³ A61L *13/00;* C11D *1/66, 3/075, 3/48*

U.S. Cl. 252—106 13 Claims

1. An antibacterial detergent composition having bactericidal properties and being effective to destroy at least 99.9% of *S. aureus* cells during a contact time of about 10–15 minutes at washing concentrations at a temperature of about 25° C. to about 40° C., comprising

(a) a 2-alkyl-2-imidazoline having an alkyl group of 9–17 carbon atoms,

(b) a bacteriostatic halogenated compound selected from the group consisting of 4',5-dibromosalicylanilide, 3,4',5-tribromosalicylanilide, and 2,4,4'-trichloro-2'-hydroxydiphenyl ether, and mixtures thereof, in a compatible detergent base, the weight ratio of (b) to (a) being from about 0.01:1 to about 2:1 by weight.

4,323,467

CONTACT LENS CLEANING, STORING AND WETTING SOLUTIONS

Cherng-Chyi Fu, Sunnyvale, Calif., assignor to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Nov. 24, 1980, Ser. No. 209,795

Int. Cl.³ C11D *1/44, 1/66, 1/722, 3/48*

U.S. Cl. 252—106 9 Claims

1. A contact lens cleaning, storing or wetting solution which comprises:
(a) a poly(oxyethylene)-poly(oxypropylene) substituted ethylene diamine nonionic surfactant which is present in an amount of 0.01% to 40% by weight/volume (w/v);
(b) at least one germicide which is present in an amount of 0.0005% to 0.05% (w/v);
(c) a water soluble, cellulose-derived viscosity builder which is present in an amount of 0.01% to 5.0% (w/v);
(d) at least one tonicity agent which is present in an amount of 0.4% to 1.7% (w/v);
(e) a sequestering agent which is present in an amount of 0.01% to 1.0% (w/v); and
(f) water.

4,323,468

MAKE-UP REMOVER COMPOSITION FOR THE FACE AND EYES

Jean-Francois Grollier, Paris, and Josiane Allec, Pierrefitte, both of France, assignors to L'Oreal, Paris, France

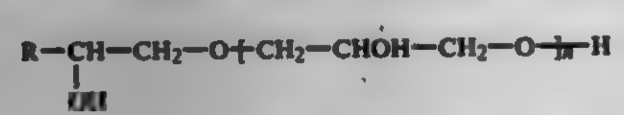
Filed May 12, 1980, Ser. No. 149,115

Claims priority, application Luxembourg, May 15, 1979, [illegible]

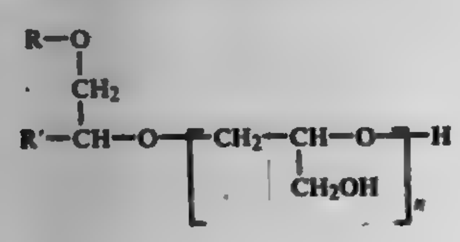
Int. Cl.³ C11D *1/72*

U.S. Cl. 252—174.17 5 Claims

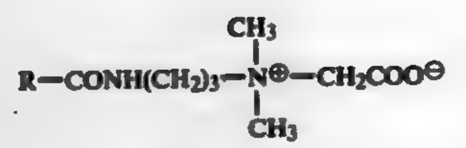
1. A makeup removal composition comprising in an aqueous carrier a cleansing amount of a surface active agent selected from the group consisting of
(1) alkyl or hydroxyalkyl polyglucoside wherein the alkyl moiety has 11–18 carbon atoms and which has 5–25 glucoside units,
(2) sorbitan monolaurate polyoxyethylenated with 20 moles of ethylene oxide,
(3) sorbitan monooleate polyoxyethylenated with 20 moles of ethylene oxide,
(4) polyoxyethylenated alkyl or alkenyl carboxylate of α-methyl glucoside wherein the alkyl or alkenyl moiety has 12–22 carbon atoms,
(5) polyoxyethylenated ester of a fatty acid and glycerol wherein the fatty acid contains 12–18 carbon atoms,
(6) the disodium salt of lauroyl-cycloimidinium1-ethoxyethanoic-1-ethanoic acid,
(7) a mixture of fatty alcohol sulfates,
(8) polyglycerolated ether of an α-diol having the formula



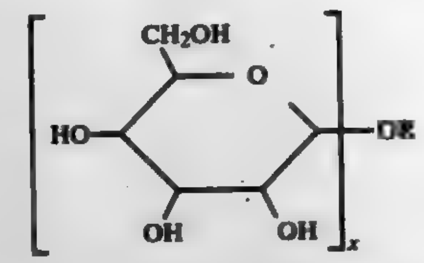
wherein R represents a mixture of C_{10} and C_{12}, and n is 3 or 4,
(9) polyglycerolated ether having the formula



wherein R is linear saturated C_8, R′ is linear saturated C_{16} and n is 10 or 12,
(10) amino-alkyl-betain of fatty acids having the formula



wherein R is $C_{11-17}H_{23-25}$,
(11) the imidazolinic derivative of copra condensed with sodium lauryl ether sulfate, and
(12) a glucoside ether having the formula



wherein x is 1–5 and R is 50/50 mixture of C_8 and C_{10}, and an effective amount of an extract of sarsaparilla (Smilax Species).

4,323,469

PROCESS FOR O-ACYLATING PHENOL DERIVATIVES AND ACYLATING COMPOSITIONS FOR THIS PURPOSE

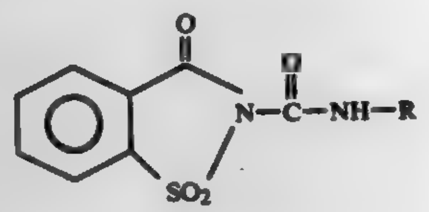
György Lugosi, Felsögöd; Antal S. May, Budapest; Janos Bodnar, Budapest; Istvan Turcsan, Budapest; Istvan Jelinek, Budapest; Eva Somfai, Budapest, and Laszlo Simandi, Budapest, all of Hungary, assignors to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara R.T., Budapest, Hungary

Filed Oct. 28, 1980, Ser. No. 201,508

Int. Cl.³ C09K *3/00*

U.S. Cl. 252—182 3 Claims

1. An acylating composition for the acylation of phenolic hydroxyl groups, which comprises 5 to 50% by weight of a saccharin derivative of the formula (IV)



(IV)

wherein
R is alkyl having 1 to 8 carbon atoms, aryl, cycloalkyl having 5 or 6 carbon atoms, aralkyl having 7 to 16 carbon atoms, which can be substituted by one or more alkyl groups having 1 to 4 carbon atoms,
in admixture with 0.2 to 3% by weight but at least an equivalent amount of a base and 10 to 80% by weight of a solvent.

2. A composition as claimed in claim 1, which comprises as the saccharin derivative N-phenylcarbamoyl-benzoic acid sulfinide, N-methylcarbamoyl-benzoic acid sulfinide, N-butylcarbamoyl-benzoic acid sulfinide or N-(methylphenyl)-carbamoyl-benzoic acid sulfinide.

3. A composition as claimed in claim 1, which comprises triethyl amine as a base, and acetone as a solvent.

4,323,470

BATTERY PASTE FOR LEAD-ACID STORAGE BATTERIES

Basanta K. Mahato, Brown Deer, and Edwin C. Laird, Sussex, both of Wis., assignors to Globe-Union Inc., Milwaukee, Wis.

Filed Aug. 25, 1980, Ser. No. 180,883

Int. Cl.³ H01M *4/62, 4/56*

U.S. Cl. 252—182.1 6 Claims

4. A composition of materials adapted to be mixed with water and sulfuric acid to form an active material paste for the negative electrodes of a lead-acid cell comprising:
(a) 65 to 75 weight % lead oxide (PbO);
(b) 25 to 35 weight % free lead;
(c) 1 to 2 weight %, based on the total weight of (a) and (b), of one or more of the materials selected from the group comprising cellulose fiber, barium sulfate, lignosulfonate and channel black; and,
(d) 1.5 to 6.5 weight %, based on the total weight of (a) and (b), of milled glass fibers.

4,323,471

LIQUID CRYSTAL COMPOSITION

Nicholas L. Sethofer, San Jose, Calif., assignor to Timex Corporation, Waterbury, Conn.

Filed Dec. 11, 1980, Ser. No. 215,592

Int. Cl.³ G02F *1/13;* C09K *3/34*

U.S. Cl. 252—299.61 4 Claims

1. A nematic liquid crystal composition comprising:

4-heptylphenyl-4′-butylcyclohexane carboxylate	25–40 weight %
4-cyanophenyl-4′-propyl-cyclohexane carboxylate	10–20 weight %
4-cyanophenyl-4′-butylcyclohexane carboxylate	10–20 weight %
4-cyanophenyl-4′-pentylcyclohexane carboxylate	10–20 weight %
5-pentyl-2-cyanophenyl-1,3-dioxane	10–40 weight %
4-cyanophenyl-4″-propyl-4′-cyclohexyl-cyclohexanecarboxylate	3–15 weight %

4,323,472

LIQUID CRYSTAL ADMIXTURE

Nicholas L. Sethofer, San Jose, Calif., assignor to Timex Corporation, Waterbury, Conn.

Filed Dec. 11, 1980, Ser. No. 215,593

Int. Cl.³ G02F *1/13;* C09K *3/34*

U.S. Cl. 252—299.61 5 Claims

1. A nematic liquid crystal composition comprising:

4-heptylphenyl-4′-butylcyclohexane carboxylate	20–40 weight %
4-cyanophenyl-4′-propylcyclohexane carboxylate	8–20 weight %
4-cyanophenyl-4′-butylcyclohexane carboxylate	8–20 weight %
4-cyanophenyl-4′-pentylcyclohexane carboxylate	8–20 weight %
5-butyl-2-cyanophenyl-1,3-dioxane	10–40 weight %
4-cyanophenyl-4″-pentyl-4′-cyclohexyl benzoate	2–10 weight %
4-cyanophenyl-4″-heptyl-′-cyclohexyl benzoate	2–10 weight %

4,323,473

CYCLOHEXYL CYCLOHEXYL DIOXANE LIQUID CRYSTALLINE COMPOUNDS AND ADMIXTURE CONTAINING SAME

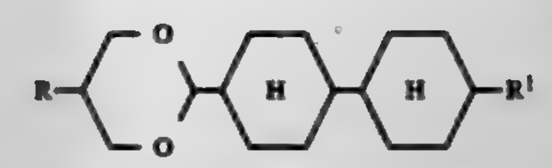
Nicholas L. Sethofer, San Jose, Calif., assignor to Timex Corporation, Waterbury, Conn.

Continuation-in-part of Ser. No. 219,672, Dec. 24, 1980, which is a continuation-in-part of Ser. No. 135,381, Mar. 28, 1980, Pat. No. 4,298,528. This application Jan. 19, 1981, Ser. No. 226,298

Int. Cl.³ G02F *1/13;* C09K *3/34;* C07D *319/04*

U.S. Cl. 252—299.61 5 Claims

1. A nematic liquid crystalline admixture including as an effective ingredient to broaden the nematic temperature range a compound of the formula:



where R and R¹ independently can be the same or different straight chain alkyl or alkoxy group.

4,323,474

METHOD OF PRODUCING FOAM MATERIAL AND APPARATUS THEREFOR

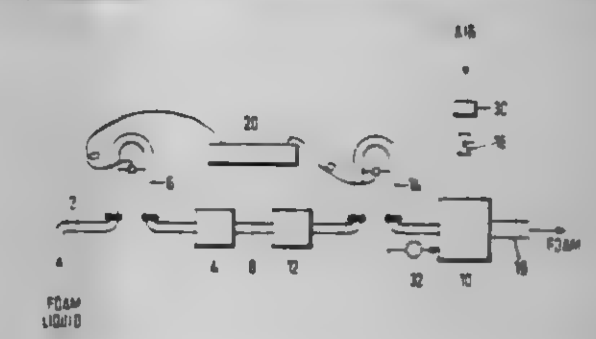
Niels H. V. Hansen, Emmasvej; Erling H. Mikkelsen, Stokbrovej, and Soren Vissing, Blaboervej, all of Denmark, assignors to P. Campen Maskinfabrik A/S, Aarhus V., Denmark

Filed Oct. 17, 1979, Ser. No. 85,654

Claims priority, application United Kingdom, Oct. 16, 1975, 40663/78

Int. Cl.³ B01J *13/00;* B01F *3/04*

U.S. Cl. 252—307 11 Claims



1. A method of producing a foam material by continually supplying through a supply pump a pressurized flow of a material to be foamed into a mixer unit,
supplying an adjustable gas flow to said mixer unit,
causing the material to be foamed by the gas and
exhausting the foam from the mixer in a continuous flow,
measuring the flow rate of the material to be foamed,
measuring the specific weight of the supply material flow at the input and output of said supply pump and
controlling one of the gas flow and the material supply flow in response to said measurements for maintaining the density of the produced foam material as constant as possible.

8. Apparatus for producing a foam material comprising
means for mixing a gas with a material to be foamed received from two respective inputs to produce a foamed material,
means for pumping said material to be foamed into said mixer,
means for sensing the specific weight of material at the input and output of said means for pumping to provide respective control inputs, and
means to control at least one of said inputs to said means for mixing in response to said control inputs.

4,323,475

PROCESS FOR THE PRODUCTION OF AMORPHOUS ALUMINOSILICATES AND THEIR USE AS CATALYSTS

William J. Ball, Capel; Keith W. Palmer, Weybridge, and David G. Stewart, Epsom, all of England, assignors to The British Petroleum Company Limited, London, England

Division of Ser. No. 80,477, Oct. 1, 1979, Pat. No. 4,299,732. This application Jun. 13, 1980, Ser. No. 159,183

Claims priority, application United Kingdom, Oct. 6, 1978, 39565/78

Int. Cl.³ C01B *3/22, 3/32*

U.S. Cl. 252—373 10 Claims

1. A process for the production of synthesis gas which comprises contacting methanol in the vapor phase at a temperature in the range of from 200° to 600° C. and a pressure up to 100

atmospheres with a catalyst consisting essentially of an amorphous alumino-silicate prepared by mixing under reaction conditions which effect formation of said alumino-silicate, a source of silica, a source of alumina, a source of alkali metal, water, and one or more polyamines other than a diamine.

4,323,476

ANTICORROSIVE AGENT FOR ALUMINIUM AND ALUMINIUM ALLOYS

Rainer Helwerth, Eschborn, and Horst Lorke, Liederbach, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 16, 1980, Ser. No. 169,362

Claims priority, application Fed. Rep. of Germany, Jul. 20, 1979, 2929413

Int. Cl.³ C23F *11/16, 11/14, 11/12*

U.S. Cl. 252—389 R 2 Claims

1. Anticorrosive agent for aluminium and the alloys thereof consisting of

(A) 15 to 50% by weight of a product obtained by reaction of sulfochlorination products of aliphatic, alkylaromatic, or cycloaliphatic hydrocarbons having from 12 to 24 carbon atoms with ammonia or a C_1–C_3 alkyl or hydroxyalkyl amine with subsequent reaction with a C_2–C_{11}-halocarboxylic acid and conversion into an alkaline earth metal or the zinc salt,

(B) 40 to 90% by weight of a paraffinic hydrocarbon containing from 50 to 60% of C_{13}–C_{16} praffins, 50 to 40% of naphthenes and 0 to 1$ of aromatics and having a viscosity of from 3° to 5° E/20° C.,

(C) 1 to 4% by weight of the salt of a C_8–C_{19} alkyl amine and a C_8–C_{10} carboxylic acid,

(D) 1–4% by weight of an oxethylate of 1 mol of a C_8–C_{12} alkylphenol and 2 to 10 mols of ethylene oxide and

(E) 1 to 2% by weight of a C_4–C_8 aliphatic alcohol.

4,323,477

ACID COPPER CHROMATE CONCENTRATES

Robert E. Hill, Webster Groves, Mo., assignor to Koppers Company, Inc., Pittsburgh, Pa.

Filed Oct. 3, 1979, Ser. No. 81,396

Int. Cl.³ C09K *15/00*

U.S. Cl. 252—397 13 Claims

1. An aqueous copper chromate concentrate substantially free of sulfate anions formed of a hexavalent chromium compound selected from sodium dichromate, potassium dichromate, chromium trioxide and mixtures, a bivalent copper compound selected from basic cupric carbonate basic cupric hydroxide, cupric nitrate, cupric oxide and mixtures, and an acid selected from nitric, sulfamic, fluosilicic, fluoboric and mixtures wherein the total oxide content of CuO and CrO_3 is from 25 to 60% and the CuO to CrO_3 ratio is from 1 to 2.145 to 1 to 2.161.

4,323,478

NOVEL PARTICULATE COMPOSITIONS

Thomas H. Adams, Mission Viejo; James P. Beck, Garden Grove, and Robert C. Menson, Newport Beach, all of Calif., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

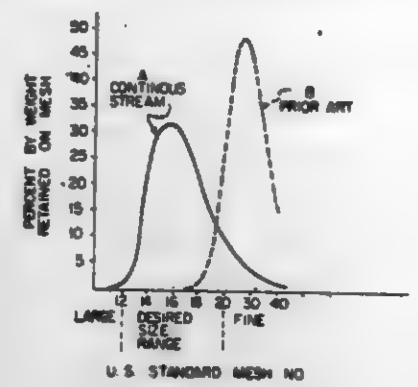
Division of Ser. No. 870,537, Jan. 18, 1977, Pat. No. 4,211,015. This application Dec. 19, 1979, Ser. No. 105,330

Int. Cl.³ G01N *33/16;* F26B *5/06*

U.S. Cl. 252—408 10 Claims

2. A composition comprising particles consisting essentially of a lyophilized solution of a blood plasma protein said particles having about 75 to 100% by weight in the U.S. Standard 12–20 mesh size range and about 0 to 25% by weight in a size range other than U.S. Standard 12–20 mesh.

6. A composition comprising particles of a lyophilized solution of clinically significant blood plasma constituents including a blood plasma protein, a first portion of said particles having a first homogeneous concentration of said constituents



and a second portion of said particles having a different homogeneous concentration of at least one of said constituents.

4,323,479

CATALYST FOR DECOMPOSITION OF 1,3-DIOXANES

Oleg E. Batalin, ulitsa Ordzhonikidze, 45, kv. 85; Arkady S. Dykman, ulitsa Leni Golikova, 37, korpus 4, kv. 15; Alexandr I. Osadchenko, ulitsa Sofiiskaya, 23, korpus 2, kv. 174; Galina F. Balkhanova, ulitsa Telmana, 48, korpus 3, kv. 60, all of Leningrad; Izrail M. Belgorodsky, Molodezhny bulvar, 50, kv. 25, Tolyatti; Vladimir I. Nevstruev, ulitsa Karla Marxa, 52, kv. 31, Tolyatti; Valery A. Radionov, ulitsa Matrosova, 30, kv. 180, Tolyatti; Eduard A. Tulchinsky, ulitsa Ushakova, 46, kv. 12, Tolyatti; Valentin M. Belyaev, prospekt Lenina, 32, kv. 20, Volzhsky; Jury I. Smolin, prospekt Lenina, 97, kv. 494, Volzhsky; Mark I. Breiman, ulitsa Chaikovskogo, 17, kv. 12, Volzhsky; Vitaly V. Orlyansky, ulitsa Pionerskaya, 8"a", kv. 4, Volzhsky; Nikolai Y. Zhirnov, ulitsa Sovetskaya, 59, kv. 35, Volzhsky; Nikolai V. Galibin, ulitsa Pushkina, 122, kv. 49, Volzhsky; Andrian P. Troitsky, ulitsa Miklukho-Maklaya, 65, korpus 2, kv. 46, Moscow, and Vladimir V. Kovalenko, ulitsa Tsiolkovskogo, 7/2, kv. 38, Voronezh, all of U.S.S.R.

Filed Jul. 25, 1980, Ser. No. 172,635

Int. Cl.³ B01J *21/02*

U.S. Cl. 252—432 7 Claims

1. A catalyst for the decomposition of 1,3-dioxanes, consisting essentially of calcium oxide, phosphorus pentoxide, chlorine, water and boron oxide, in the following ratio expressed in mass percent:

calcium oxide: 48.5 to 53.5
phosphorus pentoxide: 42.5 to 46.5
chlorine: 0.05 to 1.0
boron oxide: 0.005 to 3.0
the balance being water.

4,323,480

METHOD OF PREPARING DI AND POLY CHALCOGENIDES OF GROUP IVB, VB, MOLYBDENUM AND TUNGSTEN TRANSITION METALS BY LOW TEMPERATURE PRECIPITATION FROM NON-AQUEOUS SOLUTION AND THE PRODUCT OBTAINED BY SAID METHOD

Martin B. Dines, Westfield, N.J., and Russell R. Chianelli, Brooklyn, N.Y., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation of Ser. No. 59,548, Jul. 23, 1979, abandoned, which is a continuation of Ser. No. 641,424, Dec. 17, 1975, abandoned. This application May 19, 1980, Ser. No. 151,450

Int. Cl.³ B01J *27/02;* H01B *1/06;* C01B *17/00, 19/00*

U.S. Cl. 252—439 24 Claims

1. A method for the preparation of chalcogenides of the formula MX_y wherein M is a metal selected from the group consisting of IVb, Vb, molybdenum and tungsten transition metals of the Periodic Table of the Elements, X is selected from the group consisting of sulfur, selenium and tellurium, and y is a number ranging from about 2 to about 4, which comprises reacting in the absence of aqueous protic solution a solution of a transition metal salt, the transition metal being selected from the group consisting of Group IVb, Vb, molybdenum, and tungsten with a source of sulfide, selenide or telluride ions which source is selected from the group consisting of Li_2X, Na_2X, K_2X, LiHX, NaHX, KHX, $(NH_4)_2X$, $(NH_4)HX$, $(RNH_3)_2X$, $(RR'NH_2)_2X$, $(RR'R''NH)_2X$, wherein R, R' and R'' are the same or different and are selected from the group consisting of C_1 to C_{20} alkyl and C_6 to C_{20} aryl groups and X is the chalcogen selected from the group consisting of sulfur selenium and tellurium at a temperature of from −78° C. to 400° C. for a time sufficient for reaction to occur.

4,323,481

SYNTHESIS OF MOLECULAR SIEVES USING BETA-DIKETONES AS ORGANIC TEMPLATES

James A. Kaduk, Naperville, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Filed Feb. 26, 1981, Ser. No. 238,592

Int. Cl.³ C01B *33/28;* B01J *29/06*

U.S. Cl. 252—455 Z 21 Claims

1. A method to prepare a crystalline aluminosilicate comprising (1) forming an aqueous mixture of an oxide of aluminum, an oxide of silicon, a metal cation and a beta-diketone, (2) maintaining the pH of such mixture between about 9 and about 14 and (3) crystallizing such mixture.

4,323,482

CATALYST AND METHOD OF PREPARATION

Alvin B. Stiles, Wilmington, Del., and Glenn L. Schrader, Jr., Ames, Iowa, assignors to University of Delaware, Newark, Del.

Continuation-in-part of Ser. No. 66,433, Aug. 14, 1979, abandoned. This application Jan. 26, 1981, Ser. No. 228,591

Int. Cl.³ B01J *21/04, 23/10, 23/78, 23/86*

U.S. Cl. 252—462 8 Claims

1. A catalyst composition comprising an intimate mixture of at least two metal oxides one of which is reducible to either a sub-oxide or substantially to the elemental metal state whereas the other is a refractory oxide which is substantially non-reducible, which mixture has been exposed to a reducing gas in sufficient quantity and at a temperature in the range of 550° C. to 1000° C. to cause a substantial inhibition or disruption of crystallite growth as evidenced by x-ray diffraction pattern analysis, concomitantly enhancing catalytic activity.

4,323,483

MIXED OXIDE BONDED COPPER CONDUCTOR COMPOSITIONS

Joseph R. Rellick, Newark, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 8, 1979, Ser. No. 92,711

Int. Cl.³ H01B *1/02*

U.S. Cl. 252—512 6 Claims

1. A thick film conductor composition for application to a dielectric ceramic substrate consisting essentially of a mixture of 65 to 90 percent by weight copper, copper oxide, and one or more of lead oxide and bismuth oxide powders and 10 to 35 percent by weight of a vehicle and solvent mixture.

4,323,484

GLAZE RESISTOR COMPOSITION

Masumi Hattori; Toru Ishida, both of Hirakata, and Shinichi Tanaka, Kyoto, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Nov. 23, 1979, Ser. No. 97,044

Claims priority, application Japan, Nov. 25, 1978, 53-145482

Int. Cl.³ H01B *1/06*

U.S. Cl. 252—521 6 Claims

1. A glaze resistor composition which consists essentially of 95 to 50% by weight of a glass frit and 5 to 50% by weight of a mixture of silicides comprising molybdenum disilicide, tantalum disilicide, magnesium silicide and aluminium, the molar ratio of molybdenum disilicide plus tantalum disilicide plus magnesium silicide to aluminium being from 90:10 to 60:40.

4,323,485

RUBBER COMPOSITIONS FOR TIRE TREADS HAVING LOW ROLLING RESISTANCE

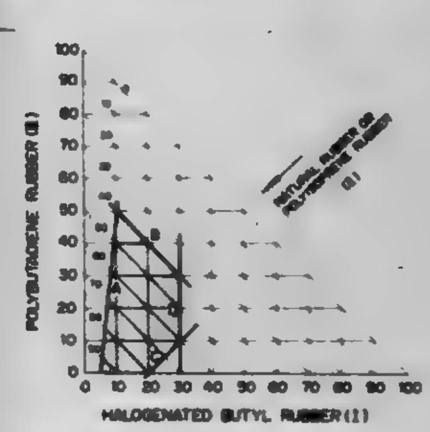
Asahiro Ahagon; Makoto Misawa; Kazuo Miyasaka, all of Hiratsuka, and Hiroshi Hirakawa, Isehara, all of Japan, assignors to The Yokohama Rubber Co., Ltd., Tokyo, Japan

Filed Mar. 26, 1980, Ser. No. 134,238

Claims priority, application Japan, Apr. 9, 1979, 54-42011

Int. Cl.³ C08L *7/00, 9/00, 15/02, 47/00*

U.S. Cl. 525—237 3 Claims



1. A rubber composition for tire treads having improved rolling resistance and wet road braking performance, consisting essentially of, by weight, (I) 7–30 parts of at least one member selected from the group consisting of a chlorinated butyl rubber having a 1.0–2.0 wt. % chlorine content and a brominated butyl rubber having a 1.0–2.0 wt. % bromine content, (II) 40–73 parts of at least one member selected from the group consisting of natural rubber and a polyisoprene rubber containing at least 90% of cis-1,4-bonding units and (III) at least 20 but not more than 50 parts of a polybutadiene rubber with the proviso that the total amount of the rubbers (I), (II) and (III) is 100 parts.

4,323,486

ALBUMIN-FIXED RESIN, PRODUCTION THEREOF, AND THERAPEUTICAL USE THEREOF

Hideaki Suzuki, and Gentaro Yamashita, both of Koganei, Japan, assignors to Teijin Limited, Osaka, Japan

Filed Nov. 12, 1980, Ser. No. 205,997

Claims priority, application Japan, Nov. 12, 1979, 54-145503

Int. Cl.³ C07G *7/00;* C08H *1/00;* C08L *89/00;* C09J *3/24*

U.S. Cl. 525—54.1 17 Claims

1. An albumin-fixed resin comprising a crosslinked water-insoluble resin and albumin chemically bound thereto, said water-insoluble resin being a crosslinked epoxy resin containing about 1 to about 30 milliequivalents of at least one of primary, secondary, and tertiary amino groups and about 1 to about 50 milliequivalents of hydroxyl groups per gram thereof, said albumin being ionically bound to the amino groups of the epoxy resin and to the hydroxyl groups by hydrogen bonding, and the amount of said albumin fixed being at least about 25% by weight based on the epoxy resin.

7. A process for producing the albumin-fixed resin of claim 1, which comprises

(1) (a) subjecting a polyepoxy compound containing at least two epoxy groups in the molecule and a polyamine compound containing at least two primary and/or secondary amino groups in the molecule to addition reaction in an inert medium to produce a fully crosslinked resin, or (b) subjecting said compounds to addition reaction to produce an insufficiently crosslinked pre-polymer, and then reacting the

pre-polymer with at least one compound selected from the group consisting of organic polyisocyanates, organic polyisothiocyanates and organic polycarboxylic acid halides to crosslink it fully, and

(2) contacting the resulting crosslinked epoxy resin containing about 1 to about 30 milliequivalents of amino groups and about 1 to about 50 milliequivalents of hydroxyl groups per gram thereof intimately with an aqueous solution containing albumin optionally after partially neutralizing the amino groups of the epoxy resin.

4,323,487

ABSORBENT STARCH GRAFT POLYMER AND METHOD OF ITS PREPARATION

Duane A. Jones, Minneapolis, and Lyle F. Elmquist, St. Paul, both of Minn., assignors to Henkel Corporation, Minneapolis, Minn.

Filed Oct. 22, 1979, Ser. No. 87,682

Int. Cl.³ C08L *3/04*

U.S. Cl. 525—54.32 **15 Claims**

1. Hydrolyzed starch polyacrylonitrile graft copolymer which has been crosslinked with a quantity of formaldehyde comprising about 0.1% to 6.0% by weight of the hydrolyzed starch polyacrylonitrile graft copolymer.

4,323,488

METHOD FOR THE PREPARATION OF SILICONE-MODIFIED POLYOXYALKYLENE POLYETHERS AND ROOM TEMPERATURE-CURABLE COMPOSITIONS THEREWITH

Toshio Takago; Masatoshi Arai, and Koji Futatsumori, all of Annaka, Japan, assignors to Shin-Etsu Chemical Company Limited, Tokyo, Japan

Filed Mar. 14, 1980, Ser. No. 130,565

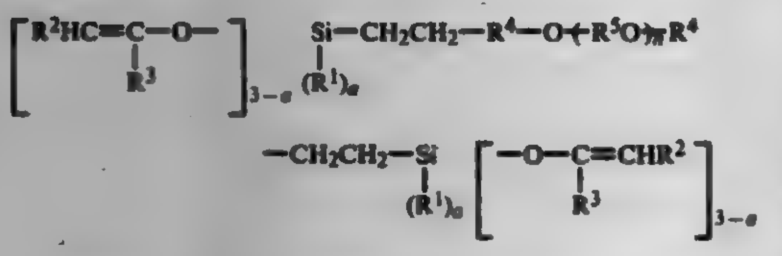
Claims priority, application Japan, Mar. 26, 1979, 54-35254; Mar. 30, 1979, 54-38014

Int. Cl.³ C08L *91/00*

U.S. Cl. 528—32 **7 Claims**

1. A room temperature-curable composition which comprises

(a) 100 parts by weight of a polyoxyalkylene polyether modified with alkenyloxy-containing organosilicon groups at the chain terminals represented by the general formula



where R^1 is a substituted or unsubstituted monovalent hydrocarbon group or a triorganosiloxy group, R^2 is a hydrogen atom or a substituted or unsubstituted monovalent hydrocarbon group, R^3 is a substituted or unsubstituted monovalent hydrocarbon group, R^4 is a divalent hydrocarbon group, R^5 is a divalent hydrocarbon group having from 1 to 4 carbon atoms, a is a number of zero, 1 or 2 and n is a positive integer, and having an average molecular weight in the range from 400 to 15,000, and

(b) from 0.01 to 10 parts by weight of a curing agent.

5. The composition of claim 1 wherein the curing agent is a curing accelerator, curing catalyst, or crosslinking agent.

6. The composition of claim 5 wherein the curing accelerator is a metal salt of a carboxylic acid, organic ester of titanic acid, aminoalkyl substituted alkoxysilane, amine, amine salt, quaternary ammonium salt, guanidine compounds, guanidyl-containing organosilane or guanidyl-containing organopolysiloxane.

4,323,489

EXTREME LOW MODULUS RTV COMPOSITIONS

Melvin D. Beers, Schenectady, N.Y., assignor to General Electric Company, Waterford, N.Y.

Filed Mar. 31, 1980, Ser. No. 135,959

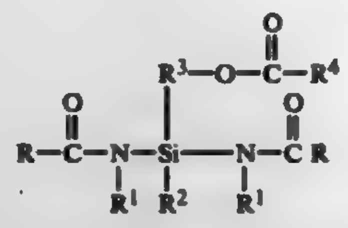
Int. Cl.³ C08L *91/00*

U.S. Cl. 524—788 **43 Claims**

1. A room temperature vulcanizable silicone rubber composition with very low modulus comprising

(A) 100 parts by weight of silanol endstopped diorganopolysiloxane having a viscosity varying from 100 to 100,000 centipoise at 25° C. when the organo is a monovalent hydrocarbon radical;

(B) from 1 to 5 parts by weight of a coupler having the formula



where R, R^1, R^2, R^4 are monovalent hydrocarbon radicals of 1 to 8 carbon atoms, R^3 is a divalent hydrocarbon radical of 2 to 8 carbon atoms; and

(C) from 0.01 to 5.0 parts by weight of cross-linking agent selected from the class consisting of ketoxime functional silanes and aminoxy functional silane compounds and mixtures thereof.

5. The composition of claim 1 wherein there is further present from 0.001 to 2 parts by weight of a tin salt of a carboxylic acid.

4,323,490

MIXTURES OF COMPONENTS, COMPRISING EPOXIDE/POLYALKYLENE-POLYAMINOAMIDE REACTION PRODUCTS AND ACRYLIC-BASED AND/OR STYRENE-BASED POLYMERS, THEIR PREPARATION AND THEIR USE AS PAPER SIZES AND TEXTILE TREATMENT AGENTS

Rosemarie Töpfl, Dornach, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Mar. 23, 1981, Ser. No. 246,338

Claims priority, application Switzerland, Mar. 28, 1980, 2490/80

Int. Cl.³ C08L *63/10*

U.S. Cl. 523—409 **42 Claims**

1. A mixture of components which contains, as component (A), at least one water-dispersible or water-soluble salt of a reaction product, this salt being prepared by reacting (a) 1.0 epoxy group equivalent of a diglycidyl ether of 2,2-bis-(4'-hydroxyphenyl)-propane, (b) 0.2 to 5.0 amino group equivalents of a polyalkylenepolyaminoamide of (b') a polymerised, unsaturated fatty acid which is derived from fatty acids having 12 to 24 carbon atoms and (b'') an aliphatic polyalkylenepolyamine having 4 to 12 carbon atoms, (c) 0 to 0.6 amino group equivalent of at least one primary fatty amine having 12 to 24 carbon atoms, 1.0 to 5.0 amino group equivalents of component (b) being employed if component (c) is absent, and 0.5 to 2.0 amino group equivalents of component (b) being employed if component (c) is used, and (d) 0 to 0.1 mol of an epihalogenohydrin, in the presence of an inert, organic solvent at temperatures up to 110° C., it being ensured, by adding an acid, at the latest when the reactions have ended, that a sample of the reaction mixture diluted with water to 10 to 40 percent by weight has a pH value of 2 to 8, a salt being formed, and, as component (B), a homopolymer of styrene or a copolymer of styrene or acrylonitrile and an alkyl acrylate or methacrylate having 4 to 12 carbon atoms in the alkyl radical.

4,323,491

POLYURETHANE ADHESIVE COMPOSITION

Roman A. Veselovsky, Kharkovskoe shosse, 21/3, kv. 179; Anatoly N. Kuxin, ulitsa Geroev Oborony, 9/10, kv. 27, both of Kiev; Oleg A. Mudrov, ulitsa Dvinskaya, 15, kv. 164, Leningrad, and Yakov I. Roitenberg, ulitsa Gagarina, 2/35, kv. 30, Kiev, all of U.S.S.R.

Filed Apr. 24, 1980, Ser. No. 143,464

Int. Cl.³ C08L *75/06*

U.S. Cl. 524—144 **7 Claims**

1. In an adhesive composition comprising a prepolymer of polydiethylene glycol adipate and tolylene diisocyanate, polyisocyanate and trichlorethylphosphate, the improvement which comprises the inclusion of an additive mixture comprising: water; urea and sodium sulphoricinate.

4,323,492

PLASTICIZER CONTAINING POLYVINYL ALCOHOL GRANULES

Wolfgang Zimmermann, and Albrecht Harreus, both of Kelkheim, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 22,869, Mar. 21, 1979, abandoned. This application Dec. 1, 1980, Ser. No. 211,627

Claims priority, application Fed. Rep. of Germany, Mar. 23, 1978, 2812684; Sep. 22, 1978, 2841238

Int. Cl.³ C08K *3/18, 5/05;* **C08L** *29/04*

U.S. Cl. 524—388 **20 Claims**

1. A process for the manufacture of plasticizer-containing, pourable, tack-free granular polyvinyl alcohol capable of thermoplastic processing comprising the steps of

intensely and homogeneously mixing 100 parts by weight of dry polyvinyl alcohol granules, at least 70% of which consist of particles having a diameter of from 0.4 to 4 mm, and 5 to 50 parts by weight of a plasticizer, in the presence of an amount of water insufficient to dissolve the polyvinyl alcohol granules, and

during the mixing step, raising and then lowering the temperature of the mixture for a period of time and in such a manner that the polyvinyl alcohol granules swell and temporarily agglomerate and then are broken up to form plasticizer-containing polyvinyl alcohol particles of which at least 70% by weight are from 0.8 to 4 mm in diameter.

4,323,493

INJECTION MOLDABLE AMIDE-IMIDE POLYMERS CONTANING DIVALENT ALIPHATIC RADICALS DERIVED FROM ALIPHATIC DIAMINES

Robert G. Keske, and James R. Stephens, Naperville, both of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

PCT No. PCT/US81/00074, § 371 Date Jan. 7, 1981, § 102(e) Date Jan. 7, 1981

Continuation-in-part of Ser. No. 112,650, Jan. 16, 1980, abandoned. This PCT application Jan. 7, 1981, Ser. No. 245,641

Int. Cl.³ C08G *69/26*

U.S. Cl. 524—451 **12 Claims**

1. A process for the preparation of ordered linear injection moldable polyamide-imide polymers which process comprises reacting fully acylated aliphatic, cycloaliphatic or araliphatic diamines with tricarboxylic acid anhydrides compounds and aliphatic, cycloaliphatic or araliphatic diamines in a molar ratio of about 1.1:2:0.9 to 0.9:2:1.1 at a temperature of about 100 to 700 Fahrenheit.

4,323,494

PROCESS FOR THE PRODUCTION OF CELLULOSE-SILICATE PRODUCTS

David H. Blount, 5450 Lea St., San Diego, Calif. 92105

Division of Ser. No. 221,432, Dec. 30, 1980, which is a continuation-in-part of Ser. No. 169,973, Jul. 18, 1980, which is a continuation-in-part of Ser. No. 884,135, Mar. 7, 1978, which is a continuation-in-part of Ser. No. 663,924, Mar. 4, 1976, Pat. No. 4,097,424, which is a continuation-in-part of Ser. No. 599,000, Jul. 7, 1975, Pat. No. 4,072,637, which is a continuation-in-part of Ser. No. 262,485, Jun. 14, 1972, abandoned, which is a continuation-in-part of Ser. No. 71,628, Sep. 11, 1970, abandoned. This application Jun. 29, 1981, Ser. No. 278,069

Int. Cl.³ C08L *83/02*

U.S. Cl. 524—858 **20 Claims**

1. The process for the production of polyurethane lignin-cellulose silicate prepolymer by the following steps:

(a) mixing and reacting 1 to 100 parts by weight of an oxidized silicate compound, selected from the group consisting of oxidized alkali metal silicate, oxidized alkaline earth metal silicate, oxidized mono alkali metal silicic acid, oxidized silicic acid and mixtures thereof, 50 parts by weight of plant cellulose particles, selected from the group consisting of cotton, wood cellulose, regenerated cellulose, sulfate cellulose produced by the Kraft process, sulfite cellulose, mechanical pulp cellulose, vegetable cellulose, cellulose esters and semichemical cellulose, a salt-forming compound selected from the group consisting of hydrochloric and sulfuric acid and in an amount wherein the mixture of the components has a pH of 1.5 to 5 after the reaction is complete, thereby producing lignin-cellulose silicate product containing impregnated hydrated silica;

(b) mixing 50 parts by weight of an organic polyisocyanate or polyisothiocyanate with 1 to 100 parts by weight of the dried lignin-cellulose silicate product containing impregnated hydrated silica and allowing to react,

(c) thereby producing a polyurethane lignin-cellulose silicate prepolymer.

4,323,495

NOVEL BRANCHED-CHAIN MONOALCOHOLS AND DERIVATIVES THEREOF, LUBRICANT COMPOSITIONS FOR POLYMERS AND WAX COMPOSITIONS IN WHICH THESE NOVEL PRODUCTS ARE INCORPORATED

Jacobus J. Zeilstra, Wijnbergen; Willem J. de Klein, Dieren, and Joannes D. Bik, Eerbeek, all of Netherlands, assignors to Akzona Incorporated, Asheville, N.C.

Filed Oct. 26, 1979, Ser. No. 88,614

Claims priority, application Netherlands, Oct. 26, 1978, 7810669

Int. Cl.³ C08L *91/00*

U.S. Cl. 524—156 **15 Claims**

1. Novel branched-chain monoalcohols having at least 20 carbon atoms and the derivatives thereof selected from the group consisting of

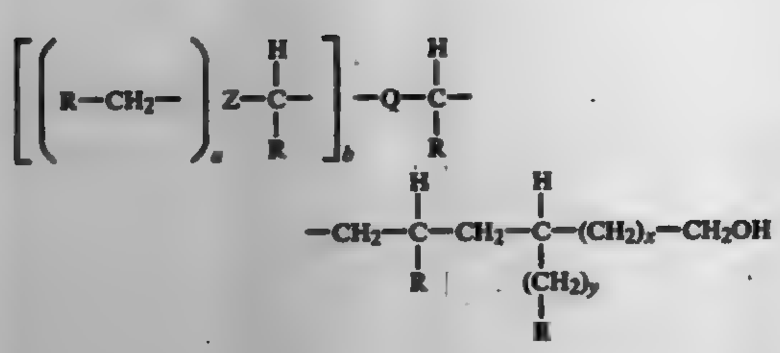
(a) esters of aromatic, aliphatic or cycloaliphatic acids having at least 2 carbon atoms and 1,2 or 3 carboxyl groups;

(b) urethanes of aromatic, aliphatic or cycloaliphatic isocyanates;

(c) monoethers of polyalkylene oxide glycols having 2 to 50 alkylene oxide units each containing 2 or 3 carbon atoms and the alkylpolyoxyalkylene sulfates derived therefrom;

(d) sulfates,

characterized in that the structure of said branch-chain monoalcohol conforms to the formula:



where
x is 0 or 2
and y is 0 or 2,
where
when $y=2$, $x=0$ and when $y=0$, $x=2$,
$R=CH_3(CH_2)_n$, where n represents an integer from 3 to 42;
b is 0 or 1, where
when b=0, Q represents a hydrogen atom, and when b=1, Q represents a CH_2-group, and
a=0 or 1, where
when a=0, z represents a hydrogen atom, and
when a=1, z represents a CH_2-group.

10. A resin composition having improved internal and external lubricant properties, comprising a polymer or copolymer of vinyl chloride and 0.1 to 5% by weight, calculated on the polymer, of said branched-chain monoalcohol and/or said derivative thereof according to the preamble of claim 1, characterized in that at least 40 percent by weight of said branched-chain monoalcohol present as such, or at least 40 percent of said derivatives thereof have a branched-chain structure, and that at least 10 percent by weight thereof correspond to the formula given in claim 1.

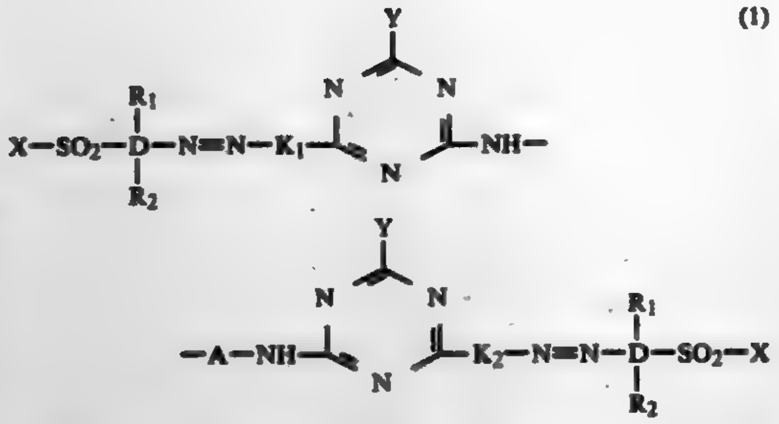
4,323,496
INNOXIOUS INTERFERON-INDUCING SUBSTANCE, INDUCING AGENT AND PROCESS FOR PRODUCING SAME
Ikusaburo Mitsui, 46-19, Narashinodai 5-chome, Funabashi-shi, Chiba-ken, Japan
Filed Mar. 26, 1980, Ser. No. 134,060
Claims priority, application Japan, Jul. 14, 1979, 54/89463
Int. Cl.[3] C07G *7/00*
U.S. Cl. 260—112 R 7 Claims

1. Method of producing an interferon-inducing substance, which comprises comminuting a protein source containing essential amino acids and also containing proteins of hetero-arrangement and being selected from the group consisting of glycoproteins, nucleoproteins, chromoproteins and phosphoroproteins, distributing the thus obtained particulate protein source in oil, uniformly heating the oil mixture at a temperature of 203°–298° C. to denature the protein source into material including the essential amino acids and material including the proteins of hetero-arrangement, and separating said material including the essential amino acids, said material constituting an interferon-inducing substance.

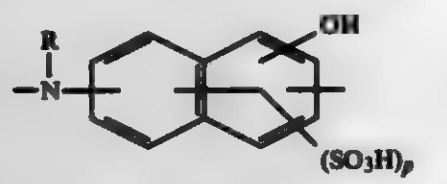
4,323,497
WATER-SOLUBLE DISAZO DYESTUFFS
Ernst Hoyer; Fritz Meininger, both of Frankfurt am Main, and Rudolf Fass, Kelkheim, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany
Filed Oct. 31, 1978, Ser. No. 956,322
Claims priority, application Fed. Rep. of Germany, Nov. 2, 1977, 2748975
Int. Cl.[3] C09B *45/00, 29/22*
U.S. Cl. 260—146 T 16 Claims

1. A water soluble dyestuff which in the form of the free acid has the formula (1)

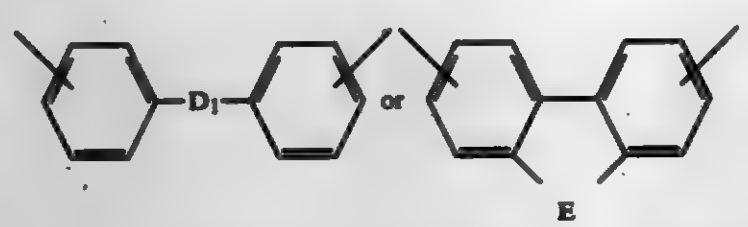
(1)



in which K_1 and K_2 are identical or different to each other and have in the form of the free acid, the formula



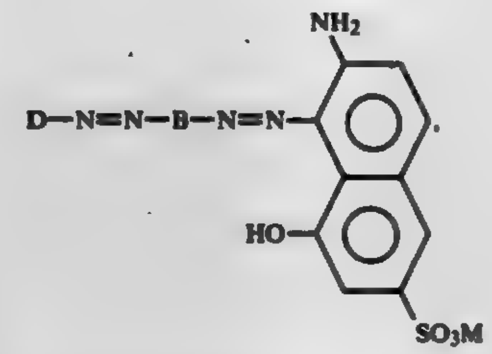
in which R is hydrogen or alkyl and p is 1 or 2, K_1 and K_2 being bonded via the amino groups to the s-triazine radicals and bonded by the azo groups in ortho-position to their hydroxy groups, D is a benzene nucleus or naphthalene nucleus, R_1 is in ortho-position to the azo group and is hydrogen, halogen, lower alkyl, lower alkoxy, hydroxy, carboxy or sulfo and R_2 is hydrogen, halogen, lower alkyl, lower alkoxy, nitro or sulfo, R_1 and R_2 being identical or different from one another; X is β-thiosulfatoethyl, β-chloroethyl, β-sulfatoethyl or vinyl, A is an aliphatic radical of 2–10 C atoms or an aliphatic radical of, in total, 2–6 C atoms, which may be interrupted by a hetero-atom and/or a cycloaliphatic radical, or is a cycloaliphatic radical or is a benzene nucleus or a naphthalene nucleus, these nuclei being unsubstituted or substituted by substituents selected from the group consisting of lower alkyl, lower alkoxy, chlorine, sulfo, carboxy and lower alkanoylamino, or is



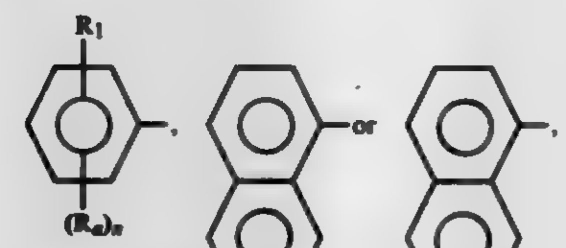
in each of which the benzene nuclei may be substituted by substituents selected from the group consisting of lower alkyl, lower alkoxy, sulfo, carboxy and chlorine, and D_1 is a direct covalent bond or a bridge member and E is —O—, —S—, —NH— or —SO_2—, Y is chlorine, fluorine, bromine, sulfo or a group of the formula —S—R'— or —O—R'', in which R' is a substituent selected from the group consisting of lower alkyl, substituted lower alkyl, phenyl, naphthyl, substituted phenyl, substituted naphthyl or 2-benzthiazolyl and R'' is hydrogen or has the meaning of R' with the exception of 2-benzthiazolyl, or Y is an amino group of the formula —NR_3R_4, in which R_3 is hydrogen, an optionally substituted lower aliphatic radical, an optionally substituted araliphatic radical or a cycloaliphatic radical and R_4 is hydrogen, an optionally substituted lower aliphatic radical or an optionally substituted aromatic radical or an optionally substituted araliphatic radical or is hydroxy or lower alkoxy or an optionally substituted amino group, or R_3 and R_4 together with the nitrogen atom form a ring containing lower alkylene and optionally a hetero-atom, and a copper, chromium or cobalt complex dyestuff of the compounds of formula (1) wherein one or both of the R_1s are hydroxy.

4,323,498
CARBOCYCLIC DISAZO COMPOUNDS CONTAINING A 2-AMINO-8-HYDROXY-5- OR 6-SULFO-NAPHTHALENE-2 COUPLING COMPONENT RADICAL
Francois Benguerel, Oberwil, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland
Continuation-in-part of Ser. No. 818,008, Jul. 22, 1977, abandoned. This application Jan. 9, 1979, Ser. No. 2,226
Claims priority, application Switzerland, Jul. 28, 1976, 9638/76; Dec. 15, 1978, 12787/78
Int. Cl.[3] C09B *31/04, 29/04*
U.S. Cl. 260—187 41 Claims

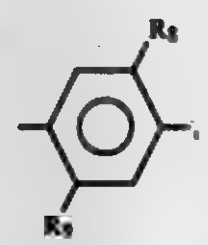
1. A compound of the formula



or a mixture of such compounds,
wherein D is



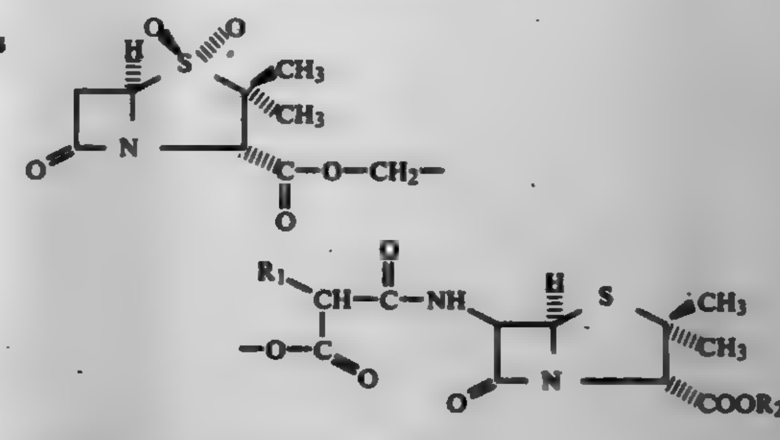
wherein R_1 is —$COOR_2$ or m— or p—NR_5COR_6,
wherein
R_2 is C_{1-12}alkyl,
R_5 is hydrogen or C_{1-4}alkyl, and
R_6 is C_{1-6}alkyl, C_{1-6}alkoxy or C_{1-6}alkyl monosubstituted by chloro or methoxy,
each
R_a is halo, C_{1-4}alkyl or C_{1-4}alkoxy and
n is 0, 1 or 2,
B is 1,4-naphthylene, 5,8-(1,2,3,4-tetrahydronaphthylene) or



wherein
each of R_8 and R_9 is independently hydrogen, C_{1-4}alkyl or C_{1-4}alkoxy, and
M is hydrogen or a non-chromophoric cation.

4,323,499
6-(2-ARYL-2-(1,1-DIOXOPENICILLANOYLOXY-METHOXYCARBONYL)ACETAMIDO PENICILLANIC ACIDS
Robert F. Myers, East Lyme, Conn., assignor to Pfizer Inc., New York, N.Y.
Filed Jan. 5, 1981, Ser. No. 222,239
Int. Cl.[3] C07D *499/32, 499/58*
U.S. Cl. 260—239.1 12 Claims

1. A compound of the formula



wherein R_1 is phenyl or 3-thienyl;
and R_2 is hydrogen or benzyl;
and, when R_2 is hydrogen, a salt thereof with a pharmaceutically acceptable base.

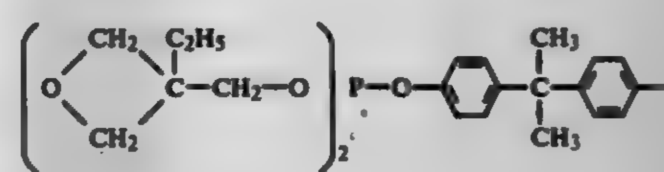
4,323,500
METHOD FOR PREPARING 7α-ACYLTHIO-4-EN-3-OXOSTEROIDS
Hiromi Okushima, Kawasaki; Shinichiro Fujimori, Yokohama; Rikizo Furuya, Yokohama, and Shuzo Hayakawa, Yokohama, all of Japan, assignors to Mitsubishi Chemical Industries, Limited, Tokyo, Japan
Filed Mar. 5, 1981, Ser. No. 240,949
Claims priority, application Japan, Mar. 13, 1980, 55-31789
Int. Cl.[3] C07J *17/00*
U.S. Cl. 260—239.57 12 Claims

1. A method for preparing 7α-acylthio-4-en-3-oxosteroids, comprising, contacting a steroidal material which contains a 7β-acylthio-4-en-3-oxosteroid with a thiocarboxylic acid.

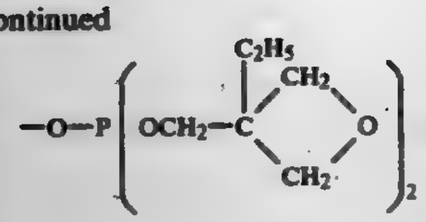
2. The method according to claim 1 wherein the 7β-acylthio-4-en-3-oxosteroid is 7β-acetylthio-17-hydroxy-3-oxo-17α-pregn-4-ene-21-carboxylic acid γ-lactone.

4,323,501
ESTERS OF PHOSPHOROUS ACID
Erich Eimers, Krefeld; Dieter Margotte, Krefeld-Bockum; Helmut Schmid, Krefeld, and Rolf Dhein, Krefeld-Bockum, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany
Division of Ser. No. 635,010, Nov. 25, 1975, Pat. No. 4,073,769, which is a continuation of Ser. No. 409,503, Oct. 25, 1973, abandoned, which is a continuation-in-part of Ser. No. 278,909, Aug. 9, 1972, Pat. No. 3,794,629. This application Oct. 18, 1977, Ser. No. 843,186
Claims priority, application Fed. Rep. of Germany, Aug. 11, 1971, 2140207; Nov. 14, 1972, 2255639
Int. Cl.[3] C07F *9/145*
U.S. Cl. 260—333 14 Claims

1. The phosphite:



-continued



4,323,502

PROCESS FOR THE SIMULTANEOUS PREPARATION OF TRIOXAN AND CYCLIC FORMALS

Karl-Friedrich Mück; Günter Sextro, and Karlheinz Burg, all of Wiesbaden, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Oct. 4, 1979, Ser. No. 81,933

Claims priority, application Fed. Rep. of Germany, Oct. 5, 1978, 2843468

Int. Cl.^{3} C07D *323/06, 317/10*

U.S. Cl. 260—340 4 Claims

1. A process for the simultaneous synthesis of trioxan and dioxolan, which comprises reacting a mixture consisting of 50% to 70% concentrated aqueous formaldehyde and of from 1 to 25 weight percent, referred to formaldehyde, of ethylene glycol or ethylene oxide with an acid catalyst, at a temperature of from 30° to 150° C.

4,323,503

SUBSTITUTED 2,3-ALKYLENE DI (OXY) BENZAMIDES AND DERIVATIVES

Michel Thominet; Gerard Bulteau, both of Paris; Jacques Acher, Itteville, and Claude Collignon, Saint Remy les Chevreuse, all of France, assignors to Societe d'Etudes Scientifiques et Industrielles de L'ile-de-France, Paris, France

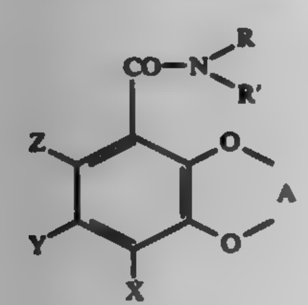
Division of Ser. No. 821,123, Aug. 2, 1977, Pat. No. 4,186,135. This application Jun. 12, 1979, Ser. No. 47,968

Claims priority, application France, Aug. 4, 1976, 76 23835

Int. Cl.^{3} C07D *319/18;* A61K *31/335*

U.S. Cl. 260—340.3 5 Claims

1. Substituted 2,3-alkylene bis(oxy) benzamides, their pharmaceutically acceptable acid addition salts, their quaternary ammonium salts, their oxides, and their dextrorotatory and levorotatory isomers, having the formula:



wherein:

A is a C_{2-3} alkylene group;

X is selected from the group consisting of hydrogen, halogen, C_{1-4} alkoxy, nitro, amino, and acetamino;

Y is selected from the group consisting of hydrogen, halogen, nitro, amino, acetamino, C_{1-4} alkylsulfonyl, sulfamoyl, C_{1-4} alkylsulfamoyl, C_{1-4} dialkylsulfamoyl, cycloalkylsulfamoyl, and adamantylsulfamoyl;

Z is selected from the group consisting of hydrogen, halogen, nitro, amino, and acetamino;

R' is a hydrogen atom or a C_{1-4} alkyl, adamantyl or benzyl group;

R is a hydrogen atom or a C_{1-4} alkyl group.

4,323,504

CYCLOHEXYL CYCLOHEXYL DIOXANE LIQUID CRYSTALLINE COMPOUNDS AND ADMIXTURE CONTAINING SAME

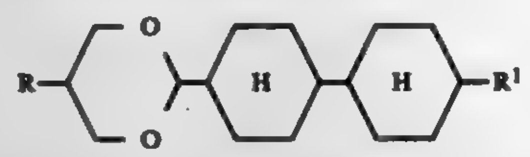
Nicholas L. Sethofer, San Jose, Calif., assignor to Timex Corporation, Waterbury, Conn.

Continuation-in-part of Ser. No. 135,381, Mar. 28, 1980, Pat. No. 4,298,528. This application Dec. 24, 1980, Ser. No. 219,672

Int. Cl.^{3} G02F *1/13;* C09K *3/34;* C07D *319/04*

U.S. Cl. 260—340.7 5 Claims

1. A liquid crystalline compound of the formula:



where R and R^1 independently can be the same or different alkyl or alkoxy group.

4,323,505

POLYALKYLHYDROXYCHROMENE AND PROCESS FOR PREPARING THE SAME

Isao Hashimoto, and Hirohiko Nambu, both of Iwakuni, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Filed Jun. 27, 1980, Ser. No. 163,660

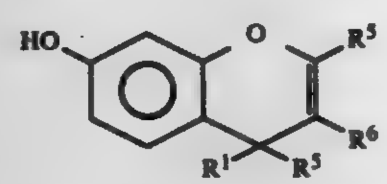
Claims priority, application Japan, Jun. 27, 1979, 54-80133

Int. Cl.^{3} C07D *311/70, 311/04*

U.S. Cl. 260—345.2 4 Claims

1. A compound represented by the formula (III)

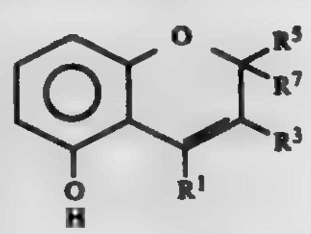
(III)



wherein R^1 and R^5 each represents an alkyl group having 1 to 3 carbon atoms, and R^6 represents a hydrogen atom or an alkyl group having a carbon atom number smaller than that of R^1 by one.

2. A compound represented by the formula (VI)

(VI)



wherein R^1 and R^5 and R^7 each represents an alkyl group having 1 to 3 carbon atoms, and R^3 represents a hydrogen atom or an alkyl group having 1 to 3 carbon atoms.

4,323,506

PREPARATION OF GAMMA-PYRONES

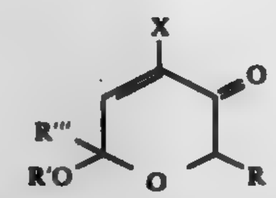
Thomas M. Brennan, Old Lyme; Daniel P. Brannegan, Pawcatuck; Paul D. Weeks, Gales Ferry, and Donald E. Kuhla, Gales Ferry, all of Conn., assignors to Pfizer Inc., New York, N.Y.

Division of Ser. No. 971,897, Dec. 21, 1978, abandoned, which is a division of Ser. No. 869,493, Jan. 16, 1978, Pat. No. 4,147,705, which is a division of Ser. No. 721,885, Sep. 9, 1976, Pat. No. 4,082,717, which is a continuation-in-part of Ser. No. 710,901, Aug. 2, 1976, abandoned. This application Sep. 4, 1979, Ser. No. 72,057

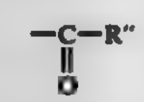
Int. Cl.^{3} C07D *309/22*

U.S. Cl. 260—345.8 R 3 Claims

1. A compound of the formula



wherein R is alkyl of 2 to 4 carbon atoms, phenyl or benzyl; R$_1'$ is alkyl of 1 to 4 carbon atoms or



wherein R'' is methyl, ethyl or phenyl; R''' is hydrogen or alkyl of 1 to 4 carbon atoms; and X is chlorine or bromine.

4,323,507

VALPROATE CONJUGATION USING DICARBONYLS

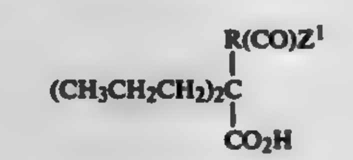
Danton K. Leung, San Jose, and Prithipal Singh, Santa Clara, both of Calif., assignors to Syva Company, Palo Alto, Calif.

Division of Ser. No. 11,254, Feb. 12, 1979, Pat. No. 4,238,389. This application Jul. 14, 1980, Ser. No. 168,867

Int. Cl.^{3} C07D *309/10;* C07C *59/74, 55/02*

U.S. Cl. 260—345.9 R 9 Claims

1. Compound of the formula:

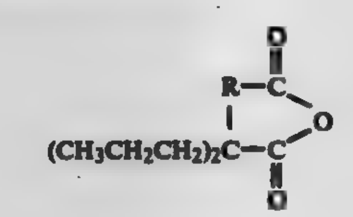


wherein:

R is an alkylene group of from 2 to 4 carbon atoms; and

Z^1 is -hydroxy, alkoxy of from 1 to 6 carbon atoms, or an oxy group forming an activated ester which readily reacts with the amine groups of poly(amino acids) under mild conditions in an aqueous medium.

6. Compound of the formula:



wherein: R is an alkylene group of from 2 to 4 carbon atoms.

4,323,508

PROCESS FOR THE MANUFACTURE OF FURAN COMPOUNDS

Daniel R. Herrington, Chesterland, and Albert P. Schwerko, Solon, both of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Continuation of Ser. No. 866,313, Jan. 3, 1978, abandoned. This application Feb. 2, 1979, Ser. No. 8,716

Int. Cl.^{3} C07D *307/36*

U.S. Cl. 260—346.11 31 Claims

1. A process for converting acyclic conjugated diolefinic hydrocarbons containing from 4 to 10 carbon atoms to furan and alkyl-substituted furans comprising reacting said conjugated diolefins with molecular oxygen in the liquid phase in an inert organic solvent in the presence of a catalyst having the composition:

$$[R_xM\,(L)_y]_z$$

wherein

R is an organic ligand selected from the group consisting of alkyl, aryl, alkene, diene, triene, or alkyne radicals containing from 1 to 8 carbon atoms;

L is a ligand selected from the group consisting of carbon monoxide and a halogen;

M is a transition metal or mixtures thereof, selected from Groups IVB, VB, VIB, VIIB and VIII of the Periodic classification of elements;

and wherein

x is 0 to 2,

y is 0 to 6, and

x+y is 1 to 6,

and wherein z is 1 to 6.

4,323,509

PROCESS FOR THE PREPARATION OF ALKYL FURANS

David J. Milner, Manchester, England, assignor to Imperial Chemical Industries Limited, London, England

Filed May 11, 1981, Ser. No. 262,775

Claims priority, application United Kingdom, Jun. 11, 1980, 19152/80

Int. Cl.^{3} C07D *307/28*

U.S. Cl. 260—346.11 7 Claims

1. A process for the preparation of alkylfurans which comprises reacting furan with an alkyl halide in the presence of iron (III) oxide and an iron (II) halide or iron (III) halide as catalyst.

4,323,510

BROWN VAT DYE AND ITS PREPARATION

Helmut Hoch, and Heinrich Hiller, both of Wachenheim, Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Jun. 2, 1980, Ser. No. 155,189

Claims priority, application Fed. Rep. of Germany, Jun. 28, 1979, 2926025

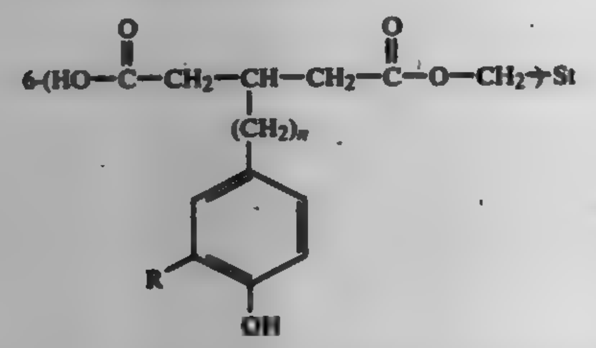
Int. Cl.^{3} C07C *50/18;* C09B *1/00*

U.S. Cl. 260—367 10 Claims

1. A vat dye obtained by heating a condensation product itself obtained by heating 3,9-di-(1-anthraquinonylamino)-benz[d,e]anthrone in a melt of aluminum chloride and picoline or quinoline or a mixture of these in the presence of sulfuryl chloride or thionyl chloride at from 110° to 140° C. - at from 100° to 180° C. in a melt of an alkali metal hydroxide in an alcohol or a glycol or an aqueous glycol.

4,323,511
STEROID DERIVATIVES AND THEIR USE IN RADIOIMMUNOASSAYS
Ravi K. Varma, Belle Mead, and Sam T. Chao, East Windsor, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.
Filed May 22, 1978, Ser. No. 908,294
Int. Cl.[3] C07J *7/00*
U.S. Cl. 260—397.45 12 Claims

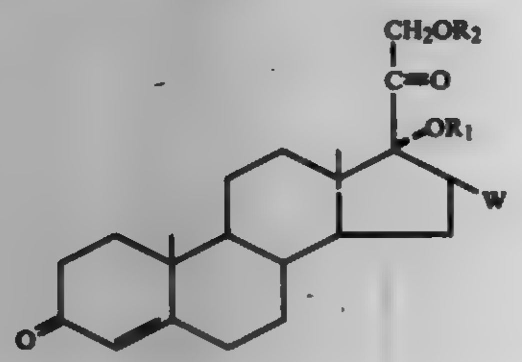
1. A steroid having the formula



wherein St is a 6-dehydro derivative of a 3-oxo-4,5-dehydro steroid intended for radioimmunoassay, said steriod being saturated in the 1,2-position; R is hydrogen or alkyl of 1 to 3 carbon atoms; and n is 0, 1, 2, 3 or 4.

4,323,512
PROCESS FOR THE PREPARATION OF STEROIDAL 17α-ARYLCARBOXYLATES
Ronald C. D. Breslow, Englewood, N.J., and Craig S. Wilcox, New York, N.Y., assignors to Schering Corporation, Kenilworth, N.J.
Filed May 13, 1981, Ser. No. 263,323
Int. Cl.[3] C07J *1/00*
U.S. Cl. 260—397.47 5 Claims

1. A process for preparing a steroid ester selected from the group consisting of 4-pregnenes of formula I


I

wherein

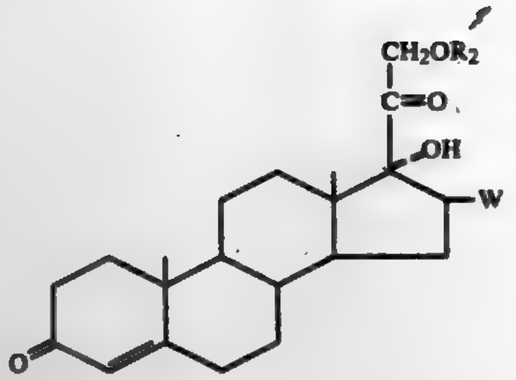
R_1 is an acyl radical of a hydrocarboncarboxylic acid containing an aryl group having up to 12 aromatic carbon atoms and which may be substituted by halogeno, methyl, or methoxy;

R_2 is an acyl radical of a lower alkanoic acid or benzoic acid and methyl-substituted derivatives thereof;

W is hydrogen or β-methyl; and

the 1-dehydro, 6-dehydro and 1,6-bis-dehydro analogs thereof;

which comprises the reaction of a 17α-hydroxy steroid selected from the group consisting of a 4-pregnene of formula II


II

wherein

W and R_2 are as defined hereinabove;

and the 1-dehydro, 6-dehydro, and 1,6-bis-dehydro analogs thereof;

with lower alkyl lithium, a reagent selected from the group consisting of $(R_1)_2O$, and R_1X, wherein R_1 is as hereinabove defined and X is chlorine, bromine or iodine, and a 4-(di-lower alkyl)aminopyridine in a non-reactive solvent at temperatures in the range of from about −40° C. to about −80° C.

4,323,513
PRODUCTION OF METHYL ESTERS AND ETHYLENE GLYCOL ESTERS FROM REACTION OF CARBON MONOXIDE AND HYDROGEN IN PRESENCE OF RUTHENIUM CATALYST
Bernard D. Dombek, Charleston, W. Va., assignor to Union Carbide Corporation, New York, N.Y.
Continuation of Ser. No. 971,750, Dec. 21, 1978, abandoned. This application Nov. 4, 1980, Ser. No. 204,025
Int. Cl.[3] C07C *67/36, 69/003*
U.S. Cl. 260—410.6 1 Claim

1. The process for producing methyl and ethylene glycol esters which comprises reacting carbon monoxide and hydrogen in a homogeneous liquid phase mixture comprising a ruthenium carbonyl complex and an acyl compound selected from the group consisting of a carboxylic acid, a carboxylic acid anhydride and mixtures thereof, at a temperature of between about 50° C. and about 400° C. and a pressure of between about 500 psia. and about 12,500 psia. wherein the combined concentration of methyl ester, ethylene glycol ester and water in the reaction medium is maintained at less than about 30 volume percent.

4,323,514
COFFEE OIL
Albrecht Dieffenbacher, Saint-Legier, Switzerland, assignor to Societe d'Assistance Technique pour Produits Nestle S.A., Lausanne, Switzerland
Filed Jul. 7, 1980, Ser. No. 166,146
Int. Cl.[3] C09F *5/02*
U.S. Cl. 260—412.3 7 Claims

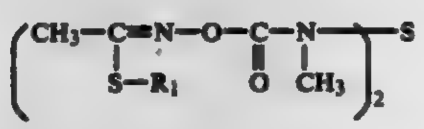
1. A process for improving coffee oil consisting essentially of contacting coffee oil, under conditions of agitation, with a solution of a strong mineral acid in a monohydric aliphatic alcohol containing from 1 to 3 carbon atoms and then separating the oil layer from the alcohol layer.

4,323,515
PROCESS FOR THE PREPARATION OF ORGANIC ISOCYANATES FROM NITRO DERIVATIVES
Jean-Marie Cognion, Saint Genis Laval, and Jacques Kervennal, Lyons, both of France, assignors to P C U K Produits Chimiques Ugine Kuhlmann, Courbevoie, France
Filed Sep. 20, 1979, Ser. No. 77,521
Claims priority, application France, May 15, 1979, 79 12272
Int. Cl.[3] C07C *119/048*
U.S. Cl. 260—453 P 39 Claims

1. A process for the synthesis of aromatic isocyanates which comprises reacting an aromatic mononitro derivative with carbon monoxide in the presence of a catalyst consisting of a metal complex of a porphyrin.

4,323,516
METHOD FOR MAKING THIOBISCARBAMATES
Robert W. Ashworth, Hackettstown, N.J., and Wallace Y. Fu, South Charleston, W. Va., assignors to Union Carbide Corporation, Danbury, Conn.
Continuation-in-part of Ser. No. 70,535, Sep. 5, 1979, Pat. No. 4,256,655. This application Oct. 21, 1980, Ser. No. 199,382
Int. Cl.[3] C07C *119/18*
U.S. Cl. 260—453.3 2 Claims

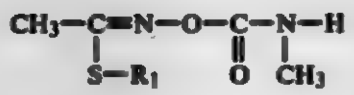
1. A method for making a compound of the formula



wherein R_1 is methyl, ethyl, n-propyl, isopropyl, n-butyl or isobutyl comprising the steps of:

(a) Reacting pyridine with a sulfur chloride selected from the groups of SCL_2, S_2Cl_2, and mixtures thereof to form pyridine-sulfur chloride adduct, in the presence of excess pyridine, and

(b) reacting said adduct with carbamate of the formula



wherein R is as previously defined, in the presence of pyridine.

4,323,517
METHOXY AND METHYLSULFINYLTHIOLESTERS
Wolfgang Opitz; Eugen Etscherberg, both of Cologne; Hans-Dieter Dell, Berg. Gladbach, and Haireddin Jacobi, Leichlingen, all of Fed. Rep. of Germany, assignors to Troponwerke GmbH & Co. KG, Cologne, Fed. Rep. of Germany
Division of Ser. No. 963,651, Nov. 24, 1978, Pat. No. 4,246,278. This application Aug. 29, 1980, Ser. No. 182,353
Claims priority, application Fed. Rep. of Germany, Dec. 2, 1977, 2753786; Jun. 3, 1978, 2824386
Int. Cl.[3] C07C *153/017*
U.S. Cl. 260—455 R 3 Claims

1. A compound selected from the group consisting of S-methyl 3-methylsulphinylpropionothioate and S-methyl 3-methoxypropionothioate.

4,323,518
POLYNITROETHYLTHIONOCARBONATES AND METHOD OF PREPARATION
William H. Gilligan, Fort Washington, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Feb. 17, 1981, Ser. No. 235,305
Int. Cl.[3] C07C *154/00*
U.S. Cl. 260—455 B 5 Claims

1. Bis(2,2-dinitropropyl)thionocarbonate.

4,323,519
METHOD OF WASHING ORGANIC SOLVENT SOLUTION OF POLYCARBONATE
Hazime Mori; Katsuhisa Kohyama; Katsuhiko Nakamura, and Shinichi Takamatsu, all of Kita-Kyushu, Japan, assignors to Mitsubishi Chemical Industries, Ltd., Tokyo, Japan
Filed Apr. 11, 1979, Ser. No. 29,044
Claims priority, application Japan, Apr. 19, 1978, 53/46093
Int. Cl.[3] C07C *68/02*
U.S. Cl. 528—499 7 Claims

1. In a method for washing a methylene chloride solution of a polycarbonate obtained by the phosgene method, containing impurities arising from said phosgene method which are soluble in an aqueous washing liquid, the improvement comprising (1) mixing said methylene chloride solution of said polycarbonate from said phosgene method in concentration of 8 to 20 wt.% with a sufficient amount of said aqueous washing liquid to form a water in oil dispersed phase, (2) adding to said mixture from Step (1) a sufficient amount of said aqueous washing liquid to produce a phase inversion from said water in oil dispersed phase into an oil in water dispersed phase, and (3) carrying out a phase separation whereby said methylene chloride solution of the purified polycarbonate is separated from said aqueous washing liquid containing said impurities.

4,323,520
PREPARATION OF METHACRYLIC DERIVATIVES FROM TERTIARY-BUTYL-CONTAINING COMPOUNDS
Harley F. Hardman, Lyndhurst; James L. Callahan, Wooster, and Robert K. Grasselli, Chagrin Falls, all of Ohio, assignors to The Standard Oil Co., Cleveland, Ohio
Division of Ser. No. 711,014, Aug. 2, 1976, Pat. No. 4,065,507. This application May 9, 1977, Ser. No. 794,875
Int. Cl.[3] C07C *120/00, 120/14*
U.S. Cl. 260—465.9 1 Claim

1. A process for producing methacrylonitrile by the ammoxidation of an alkyl-tertiary butyl ether wherein the alkyl group contains from 1 to 4 carbon atoms, in the presence of steam, at an elevated temperature, and in the presence of a catalyst having the formula:

$$A_a\,C_c\,Fe_e\,Bi_f\,D_d\,Mo_g\,O_x$$

wherein

A is an alkali metal, barium, strontium, thallium, indium, silver, copper or mixtures thereof;

C is nickel, cobalt, magnesium, zinc, manganese, cadmium, calcium or mixtures thereof;

D is phosphorus, antimony, germanium, chromium, thorium, tin, niobium, praseodymium, tungsten, boron, zirconium, cerium, arsenic, or mixtures thereof; and

wherein

a is a number from 0 to 3;

c is a number from 0.001 to 12;

d is a number from 0 to 3;

e and f are each a number from 0.01 to 12;

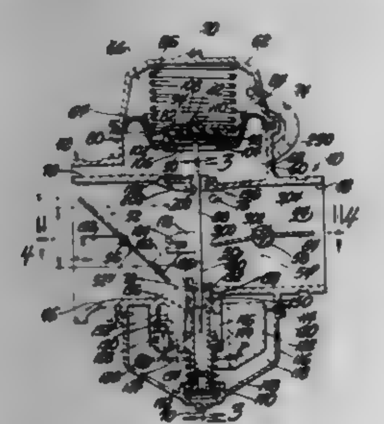
g is 12; and

x is the number of oxygens required to satisfy the valence requirements of the other elements present.

4,323,521
CONSTANT DEPRESSION CARBURETOR
Henri Morgenroth, 3090 Hidden Valley La., Santa Barbara, Calif. 93108
Filed Dec. 18, 1980, Ser. No. 217,666
Int. Cl.[3] F02M *7/22*
U.S. Cl. 261—50 A 56 Claims

1. A constant depression carburetor for a combustion engine, comprising carburetor body means, induction passage means formed by said body means, said induction passage means comprising an upstream air inlet end and a downstream fuel-air mixture outlet end, a fuel-air mixing region in said induction

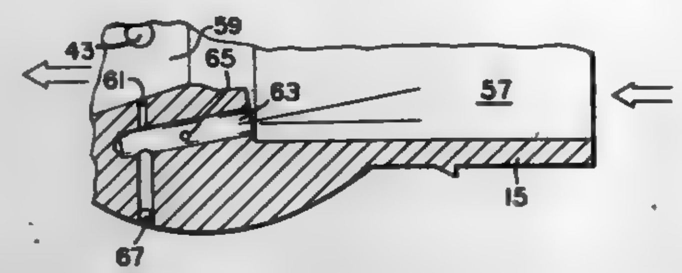
passage means generally between said inlet end and said outlet end, first and second rotatable throttle means in said induction passage means, said first throttle means being situated generally upstream of said fuel-air mixing region, said second throttle means being situated generally downstream of said mixing region, said second throttle means being effective for controlling the rate of discharge of said fuel-air mixture through said outlet end, fuel metering orifice means effective for discharging fuel into said fuel-air mixing region, metering rod means, said metering rod means comprising an axially extending contoured fuel metering portion, said metering rod means being situated generally transversely of said induction passage means as to pass generally through said mixing region and as to have said contoured fuel metering portion received by said fuel metering orifice means, pressure responsive motor means, said pressure responsive motor means comprising pressure responsive wall means, vacuum passage means, said vacuum passage means being effective for communicating the fuel-metering vacuum generated in said mixing region to one side of said pressure responsive wall means, said axially extending fuel



metering portion being effective to cooperate with said fuel metering orifice means to thereby define varying effective metering orifice areas, and coupling means for operatively interconnecting said first throttle means, said pressure responsive movable wall means and said axially extending fuel metering portion, said coupling means comprising first connecting means operatively interconnecting said movable wall means and said axially extending fuel metering portion, said first connecting means permitting angular movement of said axially extending metering portion relative to said movable wall means, said coupling means further comprising second connecting means operatively interconnecting said first throttle means to said axially extending fuel metering portion, said second connecting means being effective to cause angular rotation of said first throttle means whenever said axially extending fuel metering portion moves axially while simultaneously permitting said axially extending fuel metering portion to have freedom of movement in directions generally transverse to the axial movement of said axially extending fuel metering portion.

4,323,512
INTERNALLY VENTED FLOAT BOWL PRIMER ARRANGEMENT
Jerome L. Rasmussen, Timberline, Conn., assignor to Tecumseh Products Company, Tecumseh, Mich.
Filed Sep. 24, 1980, Ser. No. 190,332
Int. Cl.³ F02M *1/16*
U.S. Cl. 261—72 R **3 Claims**

1. A single control fixed fuel metering carburetor for providing a combustible fuel-air mixture to a conventionally aspirated internal combustion engine comprising:
a carburetor bore forming part of the engine air intake path and having a restricted Venturi region therein;
a float regulated fuel supply chamber;
a fuel well gravity fed from the float regulated chamber;
conduit means for conveying fuel from the fuel well to air passing through the carburetor bore in the region of the Venturi; and
a bifurcated fuel supply chamber air vent conduit having one branch communicating with the bore in the region of the Venturi and another branch communicating with the bore outside the region of the Venturi formed in a body portion of the carburetor as three generally cylindrical holes, the

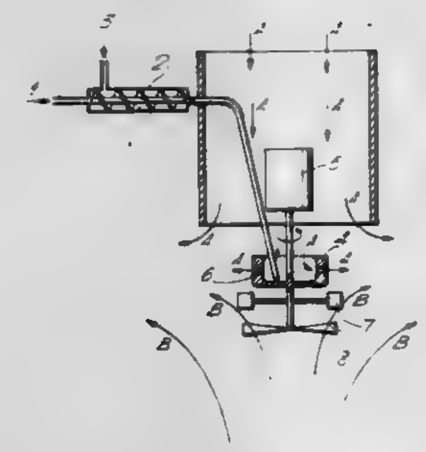


first and largest of which is a blind hole opening into the bore outside the Venturi region, the second and next largest of which is also a blind hole transverse to and intersecting the first hole and opening into the Venturi region of the bore, and the third and smallest of which extends from an upper surface of the fuel supply chamber to intersect the first hole.

4,323,523
PROCESS AND APPARATUS FOR PRODUCING SPHERICAL PARTICLES AND FIBERS WITH A SPECIALLY FIXED SIZE FROM MELTS
Setsuo Ueda, Chigasaki; Takashi Yasuda, Aichi; Tokuyoshi Yamada, Nagoya, and Shigeki Kobayashi, Tokai, all of Japan, assignors to Sato Technical Research Laboratory Ltd., Kanagawa and Itoh Metal Abrasive Co., Ltd., Aichi, both of, Japan
Filed Aug. 27, 1979, Ser. No. 69,851
Claims priority, application Japan, Aug. 29, 1978, 53-104430
Int. Cl.³ B01J *2/02*
U.S. Cl. 264—8 **6 Claims**

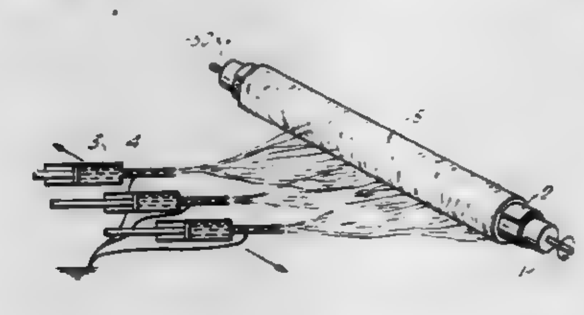
1. A process for producing spherical particles with an analytically predetermined diameter from a melt comprising:
establishing a kinematic viscosity of the melt in a range of 0.001 to 10 cm^2/sec.; wherein said melt consists essentially of at least one material selected from the group consisting of metal, slag, flux and a mixture thereof;
introducing the melt through a conduit at a predetermined outflow velocity in a range of 5 to 500 cm/sec onto a rotating disk having a flat refractory surface with a diameter between 50 and 200 mm and a rotational speed in the range of 3,000 to 30,000 rpm;
said conduit having an outlet with a radius r_o of 3 to 30 mm so that the distance h_o between said conduit outlet and said disk surface is maintained within a range of $(r_o/2)$ to $(r_o/2+2$ mm);
said melt forming a thin film stream having a predetermined thickness, at least, in the proximity of the periphery of said disk surface by centrifugal force, said thin film stream having a tangential velocity component as well as a radial velocity component throughout the entire thickness thereof, said thickness being established by said diameter of said disk, said rpm of said disk, and said kinematic viscosity of the melt;
projecting said thin film stream into a free space of air atmosphere from the periphery of said disk by said centrifugal force resulting from the rotation of said disk;
wherein said thin film stream is split into free linear streams with a predetermined radius by a termination of said tangential velocity component and the additional action of surface tension;
splitting said free linear streams further into spherical droplets having a predetermined diameter by decelerating the velocity of said streams to a fixed value through air resistance and surface tension acting on the streams; and
solidifying said droplets whereby spherical particles with an analytically predetermined diameter are produced.

4,323,524
PRODUCTION OF FIBRES
Paul Snowden, Redcar, England, assignor to Imperial Chemical Industries Limited, London, England
Continuation-in-part of Ser. No. 92,857, Nov. 9, 1979, abandoned, which is a continuation of Ser. No. 885,344, Mar. 10, 1978, Pat. No. 4,178,336. This application May 9, 1980, Ser. No. 148,521
Claims priority, application United Kingdom, Mar. 11, 1977, 10405/77; May 15, 1979, 16863/79; Feb. 21, 1980, 05838/80
Int. Cl.³ B22D *23/08*
U.S. Cl. 264—8 **10 Claims**



1. A process for the manufacture of fibres from a thermosetting formaldehyde resin comprising feeding the resin together with a resin-curing catalyst, which at temperatures above 100° C. will cure and chemically stabilise the resin and render it insoluble in cold water, in liquid form into a spinning cup rotating about a substantially vertical axis, feeding cold, humid, air into the cup, the temperature and humidity of the air being such that it inhibits drying and reaction of the resin/-catalyst mixture whilst the cup, the rotation of the cup causing the resin/catalyst mixture to flow as an even film over the inner surface of the cup and to be spun centrifugally from the outer wall of the cup in the form of individual separate fibres entrained in an outwardly directed stream of said cold, humid, air within which said fibres attenuate until they have achieved the desired diameter, contacting the fibres with a stream of hot, dry, air at a temperature such as to dry the attenuated fibres and to transport them to a collecting zone, and collecting the dry fibres from the collecting zone.

4,323,525
ELECTROSTATIC SPINNING OF TUBULAR PRODUCTS
Alan Bornat, Liverpool, England, assignor to Imperial Chemical Industries Limited, London and University of Liverpool, Liverpool, both of, England
Filed Apr. 19, 1979, Ser. No. 31,606
Claims priority, application United Kingdom, Apr. 19, 1978, 15419/78
Int. Cl.³ B29D *23/00;* **A61F** *1/00;* **A61B** *17/00;* **B29C** *13/00*
U.S. Cl. 264—24 **13 Claims**



1. A method of preparing a tubular product by electrostatically spinning a fibre-forming material and collecting the resulting spun fibres upon a former, the former comprising a core and a removable sheath thereon.

4,323,526
METHOD FOR SEALING PIPE JOINTS
Edward O. Hilbush, III, West Chester, Pa., assignor to Rubco Products, Inc., West Chester, Pa.
Filed Jun. 2, 1980, Ser. No. 155,494
Int. Cl.³ B29H *5/06*
U.S. Cl. 264—36 **5 Claims**

1. A method for sealing a pipe joint comprising:
installing an electrical resistance heating element around the pipe the joint, said heating element being detachably connected to a source of electricity;
installing and securing a flexible mold around the pipe joint to enclose the heating element within the mold cavity;
heating the pipe joint and the interior of the mold cavity to a predetermined temperature range by causing a current to flow through said heating element;
injecting a chemically settable, flexible sealing material into the mold cavity, said sealing material having an accelerated curing rate within said predetermined temperature range;
curing the sealing material by maintaining the temperature of the interior of the mold cavity within the predetermined temperature range at least until the sealing material has initially cured; and
detaching said element from said source.

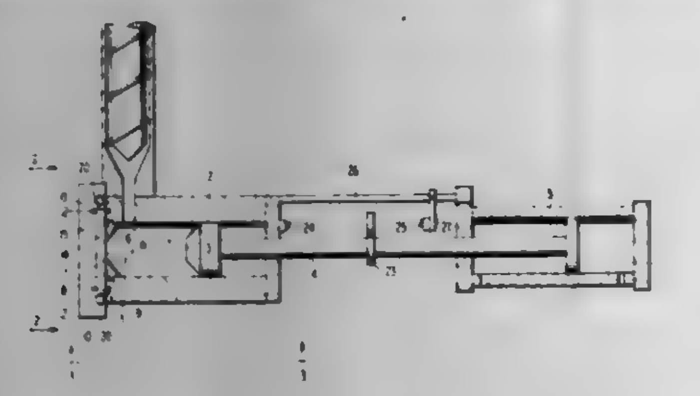
4,323,527
METHOD FOR MAKING LIGHT WEIGHT CONCRETE BUILDING ELEMENTS
Helmut Katzenberger, Archenweg 52, A-6020 Innsbruck, Austria
Continuation-in-part of Ser. No. 989, Jan. 4, 1979, abandoned. This application Oct. 10, 1980, Ser. No. 196,094
Claims priority, application Austria, Aug. 1, 1978, 5567/78
Int. Cl.³ B29D *27/00*
U.S. Cl. 264—45.1 **4 Claims**

1. A method of making light weight concrete building elements comprising the steps of:
foaming expandable polymer beads using saturated steam for a period of about 2 minutes to 10 minutes, preferably 1.5 minutes to 2.5 minutes, exposing the foamed beads to air under atmospheric conditions for a period between 0.5 minutes and 15 minutes, preferably between 2 and 8 minutes,
then mixing the beads with a cementitious mixture including a binding agent, inorganic aggregates and water for a period of 0.5 minutes to 10 minutes, preferably 1.5 minutes to 2.5 minutes, and
placing the mixture thus formed within 45 minutes, preferably within 15 minutes, into a mold and applying pressure thereto momentarily; and then releasing the mixture from the mold to form a light weight concrete building element whereby the foamed beads are irreversibly compressed in the mold so as to not expand once the pressure applied to the mold is released to destroy the light weight concrete building element before the binding agent has set.

4,323,528
METHOD AND APPARATUS FOR MAKING LARGE SIZE, LOW DENSITY, ELONGATED THERMOPLASTIC CELLULAR BODIES
Frederick H. Collins, Glens Falls, N.Y., assignor to Valcour Imprinted Papers, Inc., Glens Falls, N.Y.
Filed Aug. 7, 1980, Ser. No. 176,041
Int. Cl.³ B29D *27/00;* **B29F** *3/014*
U.S. Cl. 264—53 **18 Claims**

1. In a method for the production of an elongated, thermo-

plastic cellular body from a foamable mobile gel, that improvement providing low density, elongated cellular bodies of large lateral cross-sectional area comprising: forming a mixture of a thermoplastic polymer and, dissolved therein under pressure, a blowing agent, said mixture having a temperature at which the viscosity of said mixture is sufficient to retain said blowing agent when said mixture is allowed to expand; extruding said mixture into a holding zone maintained at a temperature and pressure which does not allow the resulting mixture to foam, said holding zone having an outlet die defining an orifice open-



ing into a zone of lower pressure at which said mixture foams, and an openable gate closing said die orifice; periodically opening said gate and substantially concurrently applying mechanical pressure by a movable ram on said mixture to eject said mixture from said holding zone through said die orifice into said zone of lower pressure, at a rate greater than that at which substantial foaming in said die orifice occurs and less than that at which substantial irregularities in cross-sectional area or shape occurs; and permitting said ejected mixture to expand unrestrained in at least one dimension to produce an elongated thermoplastic cellular body.

4,323,529

METHOD FOR MAKING A REFRACTORY ARTICLE

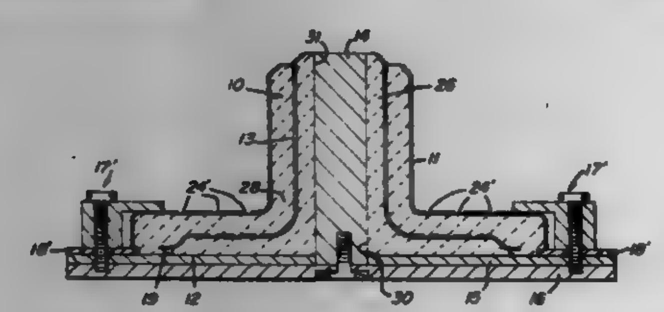
Michael A. Roberts, and Martin Copperthwaite, both of Sheffield, England, assignors to USS Engineers and Consultants, Inc., Pittsburgh, Pa.

Filed Nov. 13, 1980, Ser. No. 206,582

Claims priority, application United Kingdom, Dec. 14, 1979, 43234/79

Int. Cl.³ B29D *3/00*; B28B *1/08*

U.S. Cl. 264—69 **9 Claims**



1. A method of making a refractory article having a surface portion which, in service, is contacted by a molten metal stream, including the steps of (i) forming a first mould space from a trough or cup shaped metal foil and a companion, permanent mould member the shape of which is a negative of said surface portion, (ii) filling said first mould space with a mouldable refractory concrete and at least partially curing the concrete; (iii) assembling the foil and moulding therein in a second mould space formed from companion mould members; (iv) filling the second mould space with a second refractory concrete, which is of lower duty than the first concrete; and (v) curing the second concrete and, to the extent that it may not already be completely cured, the first concrete also.

4,323,530

METHOD OF LUBRICATING COMPRESSION TOOLS OF MOLDING MACHINES

Günther Voss, Briethrunn, and Peter Gruber, Biberach an der Riss, both of Fed. Rep. of Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Fed. Rep. of Germany

Continuation of Ser. No. 897,571, Apr. 19, 1978, abandoned. This application Feb. 7, 1980, Ser. No. 119,479

Claims priority, application Fed. Rep. of Germany, Apr. 20, 1977, 2717438; Mar. 23, 1978, 2812677

Int. Cl.³ B29D *7/02*

U.S. Cl. 264—109 **14 Claims**

1. A method for the compression molding of tablets, pill cores, cores for hard gelatin capsules, and the like, which comprises:

before each molding operation spraying unto each molding surface of compression molding tools for molding tablets, pill cores, cores for hard gelatin capsules, or the like a measured amount of lubricant selected from the group consisting of suspensions, solutions, and melts of lubricating agents selected from the group consisting of fatty acids and their salts, metal soaps, fatty acid esters, higher aliphatic alcohols, polyethylene glycols, paraffin, and silicon oil by means of intermittently and briefly spraying nozzle system, the amount of lubricant deposited comprising from about 0.5 to 5% of the material to be compression molded;

introducing into the compression molding tools lubricant-free material to be compression molded; and

compression molding the lubricant-free material.

4,323,531

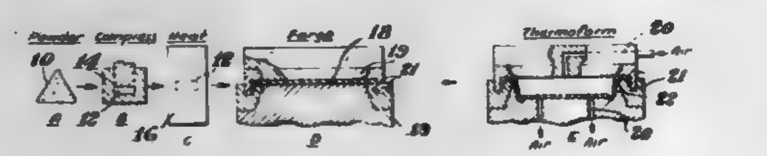
PROCESS FOR FORMING A PLASTIC ARTICLE

Norbert L. Bradley; Kenneth J. Cleereman, and Ritchie A. Wessling, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 484,498, Jul. 1, 1974, abandoned, which is a division of Ser. No. 215,632, Jan. 5, 1972, abandoned, which is a continuation-in-part of Ser. No. 119,669, Mar. 1, 1971, abandoned. This application Oct. 28, 1976, Ser. No. 736,628

Int. Cl.³ D04H *1/16*

U.S. Cl. 264—113 **14 Claims**



1. A process for forming a plastic article from thermoplastic polymeric resinous powder wherein a sufficient quantity of said powder for making said article is compressed into a briquette having green strength, the improvement comprising the steps of:

(a) heating said briquette to a temperature in the range from about the alpha transition temperature to less than the melt temperature thereof;

(b) maintaining said temperature for a period sufficient to soften said briquette and sinter the same short of substantial fusion thereof; and

(c) forging the briquette into said article while the briquette is at a temperature within said temperature range to effect substantial plug flow deformation of the briquette and obtain substantial fusion of the powder forming said briquette.

4,323,532

METHOD FOR COMPRESSING AND AGGLOMERATING COAL DUST

Hugo Bleckmann, Bonn, and Kellerwessel, Aachen, both of Fed. Rep. of Germany, assignors to Klöckner-Humboldt-Deutz AG, Fed. Rep. of Germany

Filed Nov. 17, 1980, Ser. No. 207,698

Claims priority, application Fed. Rep. of Germany, Nov. 24, 1979, 2947386

Int. Cl.³ B01J *2/22*

U.S. Cl. 264—118 **4 Claims**

1. A method for forming granulates from finely divided coal particles which comprises:

feeding said particles at a temperature below the coal softening point into a roll press operating at a compressive force of at least 20 kN per cm of roll width and a circumferential velocity of up to 1.0 m/sec to form a solid sheet without the addition of extraneous binders, and

grinding the resulting sheet into granulates.

4,323,533

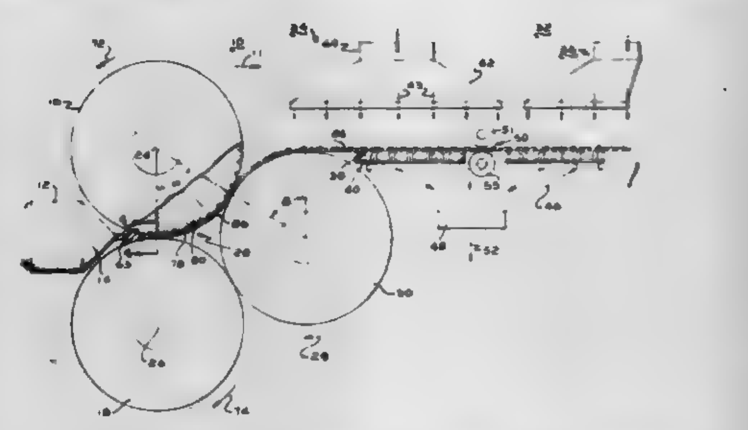
ROTARY FORMING OF ARTICLES

George H. Bramhall, Boulder, Colo., assignor to Monsanto Company, St. Louis, Mo.

Continuation of Ser. No. 67,463, Aug. 17, 1979, abandoned. This application Dec. 22, 1980, Ser. No. 219,141

Int. Cl.³ B28B *11/16*

U.S. Cl. 264—145 **21 Claims**



1. In the method of continuously forming substantially flat articles having varying cross sectional profiles by steps which include:

(a) continuously introducing molten thermoplastic material from a die opening into a nip formed by opposing rotating rolls, at least one roll having a cooled arcuate mold cavity in its surface contoured to substantially correspond to the profile of the articles thereby providing varying clearances in the nip;

(b) progressively successively arcuately forcing the cooled cavity into shaping engagement with the molten thermoplastic material to mold the articles therefrom;

(c) maintaining the thermoplastic material containing the articles in contact with one of the rolls after exiting the nip thereby forming a first, curved intermediate shape with portions having said varying cross sectional profiles therein, the temperature within the thickness of said portions being greater than that of said portions adjacent to the cooled cavity surface;

(d) extracting said portions from the curved molds by sliding said portions along the mold walls while flexing the cooled outer surfaces inwardly as a result of the increased temperature within the thickness, as said at least one roll continues to rotate;

(e) passing such shape over a cooled cylindrical surface to further yet not completely set the thermoplastic material while transposing said first shape into a second intermediate shape reversely configured from the first shape;

(f) discharging the second, incompletely-set shape in a substantially planar direction to straighten the second shape and transpose the articles into a substantially flat condition; and thereafter

(g) separating the articles from the remainder of the thermoplastic material;

the improvements minimizing stress levels in the articles which comprise:

conductively increasing the temperature of the outer surfaces of said varying cross sectional portions during steps (d), (e) and (f) as a result of the greater temperature within the thickness to anneal the outer surfaces of said varying cross sectional portions thereby substantially relieving stresses developed in the outer surface during mold removal; and then

gradually uniformly further cooling the intermediate shape to fully set the thermoplastic material without generating substantial additional stresses therein.

4,323,534

EXTRUSION PROCESS FOR THERMOPLASTIC RESIN COMPOSITION FOR FABRIC FIBERS WITH EXCEPTIONAL STRENGTH AND GOOD ELASTICITY

Thomas A. DesMarais, Norwood, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Dec. 17, 1979, Ser. No. 104,260

Int. Cl.³ B28B *3/20*

U.S. Cl. 264—176 R **10 Claims**

1. A process for making fibers comprising the steps of:

(a) mixing a composition comprising:

(i) from about 20% to about 50% by weight of a fatty chemical selected from the group consisting of fatty acids containing from about 12 to about 24 carbon atoms and fatty alcohols containing from about 12 to about 24 carbon atoms; and

(ii) from about 80% to about 50% by weight of an A-B-A block copolymer wherein A is selected from the group consisting of polystyrene and poly(alpha-methylstyrene) and B is poly(ethylene-butylene);

(b) heating said composition to a temperature of from about 195° C. to about 240° C.; and

(c) extruding said composition into fibers.

4,323,535

MANUFACTURE OF THERMOPLASTICS PIPE

William C. Aston, Halesowen, and Derek Walker, East Ardsley, both of England, assignors to Imi Yorkshire Imperial Plastics Limited, Leeds, England

Filed Sep. 10, 1980, Ser. No. 185,924

Claims priority, application United Kingdom, Sep. 15, 1979, 32062/79

Int. Cl.³ B29C *17/07*

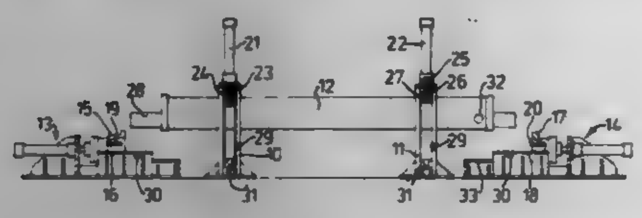
U.S. Cl. 264—528 **10 Claims**

1. A method of manufacturing a length of thermoplastics pipe of circular cross-section by the radial expansion of a thermoplastics tubular pipe blank within a circular cross-section mould, said blank having an external diameter which is less than the interior diameter of the mould, said method including the steps of;

(a) inserting the blank into a substantially horizontally-extending cylindrical central mould portion, said central mould portion being in a raised position relative to a

mould end portion, such that the blank after insertion rests on the lowermost internal surface of the central mould portion and extends outwardly of the end of the central mould portion adjacent the mould end portion,

(b) lowering the central mould portion containing the blank to a first predetermined position adjacent to but not registering with the mould end portion, said mould end portion having a mandrel which in said first predetermined position is capable of entering an end of the blank, and advancing the mould end portion towards the central mould portion, the extent of said advance being predetermined



such that the mandrel enters an open end of the blank, but the mould end portion is not closed to the central mould portion,

(c) lowering the central mould portion containing the blank to a second predetermined position co-axial with the mould end portion, and

(d) advancing the mould end portion towards the central mould portion to close the mould in preparation for the heating and expansion of the pipe blank, and radially expanding the blank into contact with the internal surface of the mould.

4,323,536

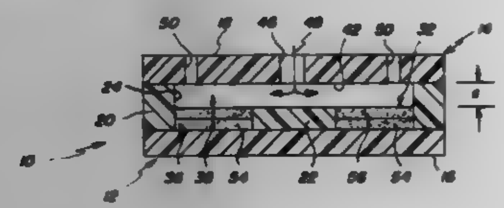
MULTI-ANALYTE TEST DEVICE

Richard L. Columbus, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 6, 1980, Ser. No. 118,840

Int. Cl.^{3} G01N *21/78, 33/68, 33/62*

U.S. Cl. 422—56 6 Claims



1. A multi-analyte test device for the analysis of a plurality of analytes in a liquid, the device comprising,

a first member,

a second covering member, said members having opposing surfaces,

means for spacing said members apart a distance effective to induce capillary flow of liquid introduced between said surfaces and to create a liquid transport zone,

at a first location, access means permitting introduction of a quantity of liquid into said zone, said access means being in either said first or second members or said spacing means, said first or second member opposite to said access means being configured to create a temporary energy barrier to liquid flow beyond the vicinity of said access means,

a plurality of individual test elements disposed on one of said members at locations other than said first location and spaced away from the other of said members, said other member in the areas directly opposite to said test elements being recessed, at least two of said elements each respectively comprising a test composition for the generation of a detectable response indicative of a different one of the analytes, and

control means for confining liquid flow from said access means to a plurality of predetermined flow paths each of which extends to only one of said test elements,

whereby all of said analytes from a single quantity of the liquid are each detectable by the respective test element for that analyte without contamination from others of said test elements.

4,323,537

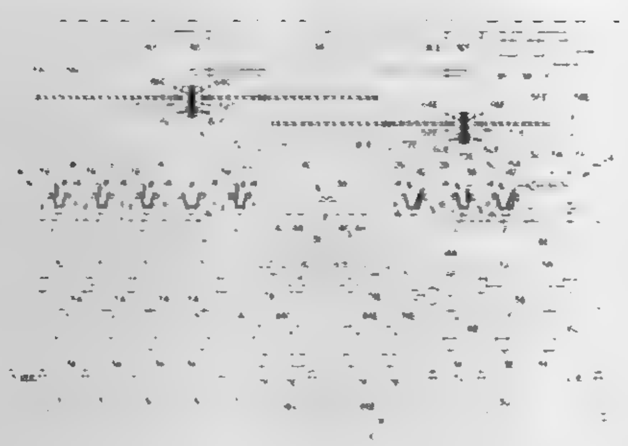
ANALYSIS SYSTEM

Dinesh I. Mody, Bedford, Mass., assignor to Instrumentation Laboratory Inc., Lexington, Mass.

Filed Oct. 20, 1980, Ser. No. 198,632

Int. Cl.^{3} G01N *1/14, 35/00*

U.S. Cl. 422—63 21 Claims



1. Analysis apparatus comprising first and second storage chambers, each said storage chamber having a port through which liquid may be flowed into and from said storage chamber, said storage chambers and their ports being arranged to permit concurrent flowing of liquids from both said storage chambers into a processing chamber,

first and second liquid metering means, a diluent reservoir, and a valve arrangement for connecting one of said metering means to said diluent reservoir and to either of said storage chambers, each said metering means, when connected to a storage chamber, controlling flow of liquid into and out of said storage chamber through its port.

4,323,538

HYDROGENATION APPARATUS

Jerry E. Sinor, Longmont, Colo., assignor to Rockwell International Corporation, El Segundo, Calif.

Division of Ser. No. 871,163, Jan. 20, 1978, Pat. No. 4,243,509, which is a continuation of Ser. No. 689,002, May 24, 1976, abandoned. This application Jul. 28, 1980, Ser. No. 172,744

The portion of the term of this patent subsequent to Jan. 6, 1998, has been disclaimed.

Int. Cl.^{3} B01J *8/08;* **C10G** *1/06;* **F27B** *15/08;* **H05B** *3/40*

U.S. Cl. 422—207 5 Claims

1. A hydrogenation apparatus having a single reaction chamber for reacting hydrogen and a pulverized carbonaceous material at a desired hydrogenation reaction temperature to form desired gaseous and liquid hydrocarbon reaction products, said apparatus comprising:

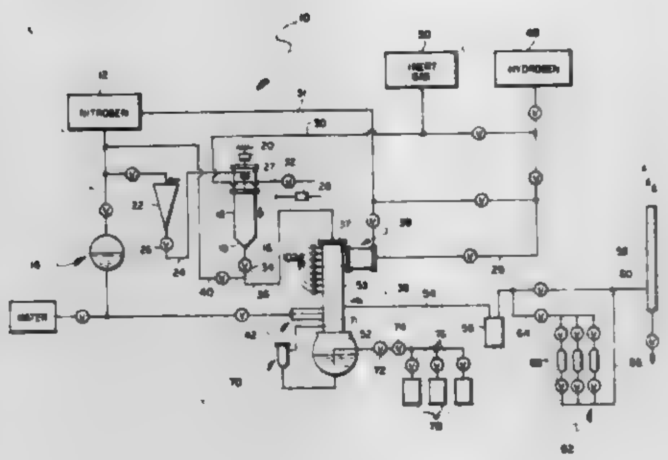
a source of hydrogen;

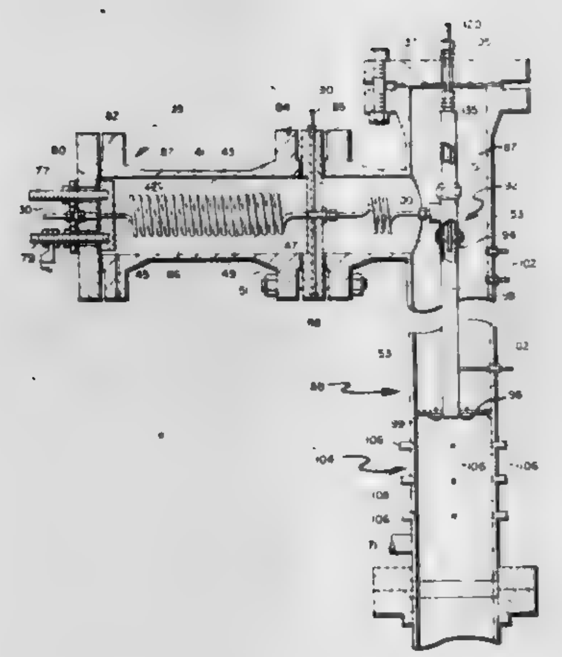
heating means for heating said hydrogen to a temperature several hundred degrees Fahrenheit above that of the carbonaceous material and that of the desired hydrogenation reaction temperature;

an unimpeded flow-through single reaction chamber defining a single reaction zone, said reaction zone providing for the unimpeded high-velocity entrained flow therethrough of said hot hydrogen and carbonaceous material and reaction products formed therefrom, said chamber having opposite ends and having a length sufficient to provide for a residence time of said hot hydrogen and pulverized carbonaceous material in said reaction zone substantially equal to a reaction time of up to about 500 milliseconds and having a cross-sectional area sufficient to provide a high entrained flow cross-sectional throughput through said reaction zone of pulverized carbonaceous material in said hot hydrogen;

injector means adjacent one end of said reaction chamber, said injector means including (a) means for introducing said pulverized carbonaceous material into said reaction zone, (b) means for introducing said heated hydrogen into said reaction zone in an amount sufficient to rapidly heat said carbonaceous material to the desired hydrogenation reaction temperature in said reaction zone and at a high velocity of at least several hundred feet per second in excess of that of said carbonaceous material and to ensure rapid and uniform mixing with said carbonaceous material and to provide said high entrained flow cross-sectional throughput through said reaction zone, and (c) insulating means for maintaining said heated hydrogen thermally separated from said carbonaceous material prior to said mixing to prevent agglomeration of said carbonaceous material; and

quenching means located adjacent the other end of said reaction chamber for rapidly quenching the reaction products exiting said reaction chamber to arrest said hydrogenation reaction.





4,323,539

APPARATUS FOR CONTINUOUSLY LEACHING ORE

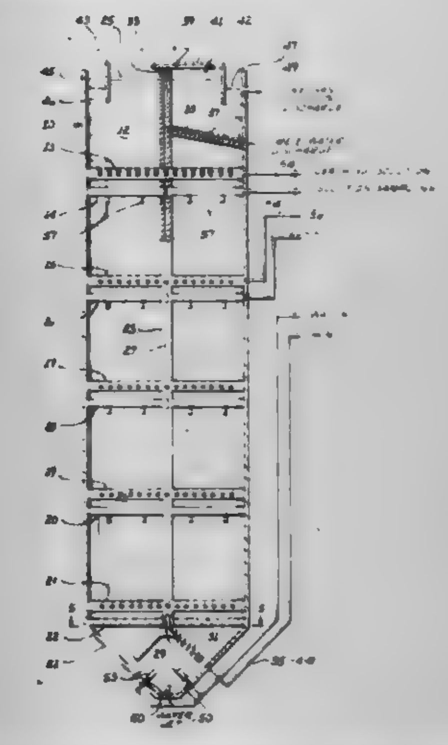
Richard E. Chilson, 8350 Tanque Verde Rd., Tucson, Ariz. 85715

Filed Sep. 12, 1975, Ser. No. 612,941

The portion of the term of this patent subsequent to Mar. 6, 1997, has been disclaimed.

Int. Cl.^{3} B01D *11/02*

U.S. Cl. 422—278 6 Claims



1. Apparatus for continuously leaching crushed ore comprising:

(a) a vertical columnar container for receiving crushed ore;

(b) means for continuously feeding said crushed ore to the top of said container;

(c) a plurality of stationary grid structures positioned at predetermined locations along said container, each grid structure extending across said container to contact the crushed ore and turbulate said crushed ore as it passes downwardly through the grid structure;

(d) a plurality of means positioned along said container at predetermined spaced intervals for introducing leaching reagents into said crushed ore as it passes downwardly through said grid structure;

(e) means positioned near the bottom of said container for continuously introducing rinsing liquid into said crushed ore, said rinsing liquid mixing with said reagents to form leaching solutions;

(f) means comprising a tubular passageway extending through the crushed ore from near the bottom of said container to the top of said container for continuously removing crushed ore from the bottom of said container; and

(g) means for continuously withdrawing said leaching solutions from the top of said container.

4,323,540

REDUCTION OF IRON PRECIPITATION IN URANIUM EXTRACTION PROCESS

Parameshwaran S. Sundar, Pittsburgh, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

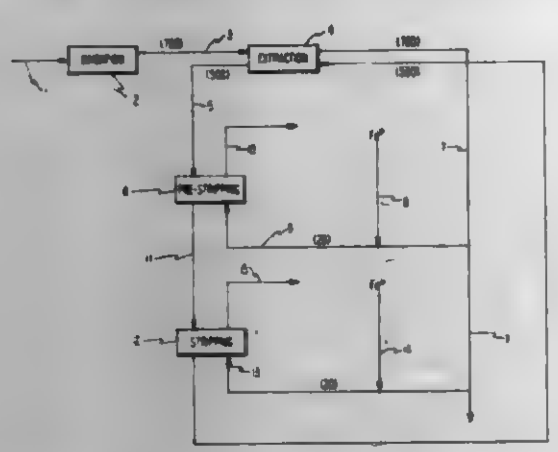
Filed Jan. 23, 1980, Ser. No. 114,467

Int. Cl.^{3} C01G *43/00*

U.S. Cl. 423—10 10 Claims

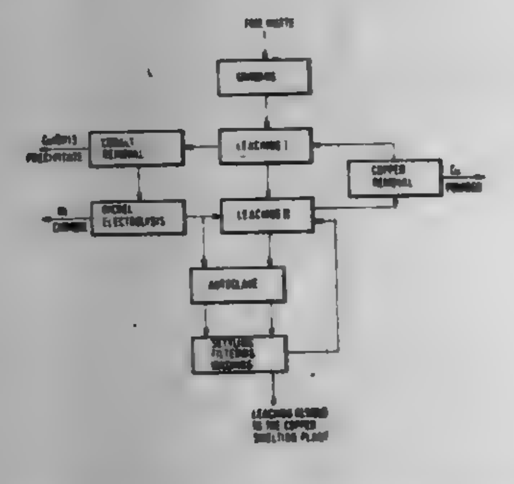
1. In a process for recovering uranium from a phosphoric acid liquor wherein uranium is oxidized from the +4 oxidation state to the +6 oxidation state with nitrate or nitrite ions and the +6 oxidation state uranium is extracted into an organic solvent and is then stripped from the organic solvent with an aqueous phosphoric acid solution containing Fe^{+2} ions, the improvement which comprises reducing or eliminating the

precipitation of iron when said uranium is stripped by pre-stripping with an aqueous phosphoric acid solution containing



sufficient Fe^{+2} ions to reduce nitrite and nitrate ions to nitrogen oxide gases but insufficient Fe^{+2} ions to precipitate uranium.

4,323,541
SELECTIVE TWO STAGE LEACHING OF NICKEL FROM NICKEL-COPPER MATTE
Heimo U. A. Saarinen, and Matti Seilo, both of Harjavalta, Finland, assignors to Outokumpu Oy, Helsinki, Finland
Filed Jun. 18, 1980, Ser. No. 160,503
Claims priority, application Finland, Jun. 29, 1979, 792057
Int. Cl.³ C25C *1/06;* **C22B** *15/14*
U.S. Cl. 423—37 **9 Claims**



1. A process for selective leaching of nickel-copper matte comprising:
(a) first leaching a finely-ground nickel-copper matte using an acid at a minimum temperature of approximately 80° C. and under oxidizing conditions in order to produce a nickel sulfate solution and a nickel-copper sulfide residue, which is separated from the solution and
(b) thereafter leaching the nickel-copper sulfide residue using acid in an autoclave at a minimum temperature of 110° C. and under oxidizing conditions in order to produce an additional quantity of nickel sulfate solution and a copper sulfide precipitate
(c) directing the nickel sulfate solution obtained from the autoclave solution of stage (b) to the leaching of stage (a) [redacted]
(d) directing leach residue from stage (b) containing primarily said copper sulfide precipitate to a copper smelting plant.

4,323,542
CATALYTIC CONVERSION OF CARBON MONOXIDE, HYDROCARBONS AND OXIDES OF NITROGEN
George C. Joy, III, Alrington Heights, Ill., assignor to UOP Inc., Des Plaines, Ill.
Continuation-in-part of Ser. No. 52,647, Jun. 27, 1979, abandoned. This application Aug. 8, 1980, Ser. No. 176,831
Int. Cl.³ B01D *53/36*
U.S. Cl. 423—213.5 **8 Claims**

1. A process for the oxidation of carbon monoxide, the oxidation of hydrocarbons, and the reduction of oxides of nitrogen contained in a sulfur-dioxide containing gas from an internal combustion engine which comprises contacting said gas at a temperature above 200° C. with a catalytic composite comprising rhodium, uranium, and one or more metals selected from the group consisting of platinum and palladium, dispersed on a high surface area refractory inorganic oxide.

4,323,543
SORPTION OF GASES
Charles A. McAuliffe, Altrincham; William Levason, Southampton, and Francis P. McCullough, Cheedleholm, all of England, assignors to National Research Development Corporation, London, England
Division of Ser. No. 16,081, Feb. 28, 1979, Pat. No. 4,251,452. This application May 16, 1980, Ser. No. 150,586
Claims priority, application United Kingdom, Mar. 3, 1978, 08547/78; Sep. 25, 1978, 37949/78
Int. Cl.³ B01D *53/34*
U.S. Cl. 423—219 **16 Claims**

1. A method for the separation of a gas from a fluid containing said gas, comprising the step of treating said fluid with a compound of formula I whereby said gas is absorbed by said compound, wherein said gas is oxygen, hydrogen, carbon monoxide, sulfur dioxide, or an alkene, and wherein said formula I is

$$Mn^{II}LX_2 \qquad \text{I}$$

wherein L represents a ligand of the formula IA,

$$PR^1R^2R^3 \qquad \text{IA}$$

wherein R^1, R^2, and R^3 independently represent alkyl, cycloalkyl, or aryl groups or hydrogen, with the proviso that no more than two of the groups R^1, R^2, and R^3 are aryl groups and that at least one of the groups R^1, R^2, and R^3 is an alkyl, cycloalkyl, or aryl group, and wherein X, which is a species capable of existing as an anion, represents —Cl, —Br, —I, —CN, $—NO_2$, $—NO_3$, —OH, —NCS, or —NCO.

4,323,544
PROCESS AND SORBENT SYSTEM FOR REMOVING NITROGEN AND OTHER OXIDES FROM GAS STREAMS
Jules Magder, Princeton, N.J., assignor to Noxso Corporation, Reston, Va.
Continuation of Ser. No. 54,337, Jul. 2, 1979, abandoned, which is a continuation of Ser. No. 945,769, Sep. 25, 1978, abandoned, and a continuation of Ser. No. 871,920, Jan. 23, 1978, abandoned, which is a continuation of Ser. No. 745,944, Nov. 29, 1976, abandoned, which is a continuation of Ser. No. 625,275, Oct. 23, 1975, abandoned, which is a continuation of Ser. No. 444,191, Feb. 15, 1974, abandoned, which is a division of Ser. No. 236,483, Jun. 16, 1972, abandoned. This application Apr. 28, 1980, Ser. No. 144,078
Int. Cl.³ C01B *53/34*
U.S. Cl. 423—239 **62 Claims**

1. A method for removing sulfur oxides and nitrogen oxides from a sorbent comprising alumina having a surface area of at least 20 square meters per gram and an alkaline component comprising an oxide, hydroxide or salt of a Group IA or IIA metal of atomic number not exceeding 56 which sorbent contains both sulfur oxides and nitrogen oxides which comprises:

(a) contacting said sulfur oxide and nitrogen oxide-containing sorbent in a regeneration zone with a regenerant gas stream containing at least 0.01 atmosphere partial pressure of hydrogen sulfide at a temperature of about 350° to about 750° C. for a period of time sufficient to recover a substantial portion of the sorbent's capacity for nitrogen oxide and sulfur oxide sorption;
(b) withdrawing nitrogen oxide formerly contained on said sorbent in the form of elemental nitrogen, or a non-polluting nitrogen compound; and
(c) withdrawing sulfur oxides formerly contained on said sorbent in the form of elemental sulfur.

4,323,545
DENSE ALUMINA WITH A PRIMARY RECRYSTALLIZED POLYCRYSTALLINE STRUCTURE AND CRYSTAL ORIENTATION
David J. Sellers, Pepperell; William H. Rhodes, Lexington, and Thomas Vasilos, Winthrop, all of Mass., assignors to Avco Corporation, Wilmington, Mass.
Continuation of Ser. No. 700,297, Jun. 28, 1976, abandoned. This application Feb. 14, 1977, Ser. No. 768,062
Int. Cl.³ C01F *7/02*
U.S. Cl. 423—625 **3 Claims**

1. An article of manufacture, a high density polycrystalline alumina body consisting essentially in excess of 99.90 percent pure alumina having a primary recrystallized grain structure with the "c" axis of the grains being aligned parallel to one another and said alignment being caused by plastic deformation of the alumina grains.

4,323,546
METHOD AND COMPOSITION FOR CANCER DETECTION IN HUMANS
David R. Crockford, Haverhill, Mass., and Buck A. Rhodes, Albuquerque, N. Mex., assignors to Nuc Med Inc., Albuquerque, N. Mex. and University Patents Inc, Norwalk, Conn.
Continuation-in-part of Ser. No. 908,568, May 22, 1978, abandoned. This application May 14, 1979, Ser. No. 37,992
Int. Cl.³ A61K *49/00, 43/00;* **G01T** *1/00;* **B65D** *71/00*
U.S. Cl. 424—1 **12 Claims**

1. A composition of matter selected from the group consisting of Technetium-99m labeled anti-human chorionic gonadotropin, Technetium-99m labeled anti-human chorionic gonadotropin-beta and/or mixtures thereof.

10. The method of detecting cancer cells and/or a malignant tumor in a human which comprises injecting the composition of claim 1 into the human and scanning the human by scintigraphy, a means for detecting gamma radiation from said composition within the body of said human.

4,323,547
LABELED FATTY ACIDS AND METHOD OF MAKING AND USING SAME
Ernst J. Knust, Jülich; Christiane Kupfernagel, Aachen, and Gerhard Stöcklin, Jülich, all of Fed. Rep. of Germany, assignors to Kernforschungsanlage Jülich GmbH, Jülich, Fed. Rep. of Germany
Filed Jun. 28, 1979, Ser. No. 52,965
Claims priority, application Fed. Rep. of Germany, Jun. 29, 1978, 2828623
Int. Cl.³ A61K *43/00, 49/00;* **G01T** *1/00*
U.S. Cl. 424—1 **15 Claims**

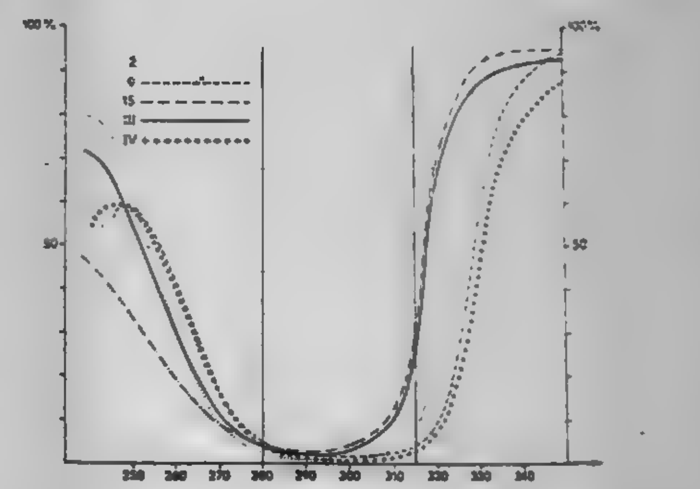
1. An ^{18}F labeled fatty acid, particularly for investigation into the kinetics of heart muscle metabolism containing at least one positron-emitting ^{18}F atom at the ω terminal or at least at one position along the chain substantially central of the α and ω terminals.

5. In a method of investigating heart muscle metabolism by a noninvasive process, the improvement which comprises administering to the subject an ^{18}F labeled fatty acid as defined in claim 1.

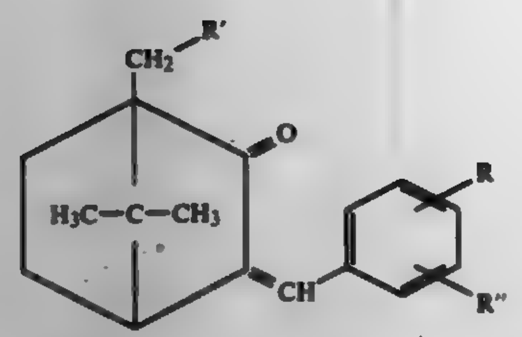
4,323,548
VAGINAL SUPPOSITORY FOR CONTRACEPTION, HAVING A PREDETERMINED LACTALBUMIN CONTENT
Arthur Scherm, Bad Homburg, Fed. Rep. of Germany, assignor to Merz & Co., Frankfurt, Fed. Rep. of Germany
Continuation of Ser. No. 893,187, Apr. 3, 1978, abandoned, which is a continuation of Ser. No. 692,859, Jun. 4, 1976, abandoned. This application Dec. 22, 1978, Ser. No. 972,228
Claims priority, application Fed. Rep. of Germany, Jan. 22, 1976, 2602297
Int. Cl.³ A61K *9/00, 31/09*
U.S. Cl. 424—44 **7 Claims**

1. A foam-producing vaginal suppository consisting essentially of about 65 to about 85 percent by weight of a solid water-soluble polyethylene glycol material which melts at body temperature, having dispersed therein minor amounts of a spermicide, about 10 to about 20 percent by weight of a foaming agent comprising a mixture of a water-soluble bicarbonate and a solid weak acid, operative when the suppository is dissolved in aqueous medium to generate a foam-forming gas, and a foam-stabilizing agent, characterized in that the foam-stabilizing agent comprises about 2 to about 4 percent by weight of a surfactant, which is effective to reduce the surface tension of water to less than 45 dynes per centimeter, and lactalbumin in an amount ranging from that amount which is effective to impart increased stability to the foam produced up to and not more than about 10 percent by weight.

4,323,549
ANTI-SOLAR COSMETIC COMPOSITION
Claude Bouillon, Eaubonne; Charles Vayssie, Aulnay-sous-Bois, and Francoise Richard, Montreuil-sous-Bois, all of France, assignors to L'Oreal, Paris, France
Division of Ser. No. 497,469, Aug. 14, 1974, Pat. No. 4,165,336, and a continuation-in-part of Ser. No. 440,570, Feb. 7, 1974, abandoned. This application Jan. 30, 1976, Ser. No. 653,957
Claims priority, application Luxembourg, Feb. 19, 1973, 67061
Int. Cl.³ A61L *9/04;* **A61K** *7/42*
U.S. Cl. 424—45 **31 Claims**



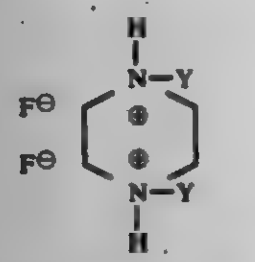
1. A cosmetic composition which absorbs ultraviolet rays in the zone ranging from 280 to 315 millimicrons and which transmits ultraviolet rays from 315 millimicrons to 400 millimicrons comprising a solution or suspension of a U. V. absorbing effective amount of an anti-solar agent of the formula



wherein R represents a member selected from the group consisting of hydrogen, halogen selected from the group consisting of chlorine and fluorine and alkyl containing 1 to 4 carbon atoms; R' and R'' each independently represent a member selected from the group consisting of hydrogen and SO_3M wherein M represents a member selected from the group consisting of hydrogen, organic ammonium group and a metal, wherein at least one of R' and R'' is other than hydrogen and R'' is a substituent at the para or meta position relative to the bornylidene ring.

4,323,550
HALOGENOHYDRATES OF N,N-DISUBSTITUTED DERIVATIVES OF PIPERAZINE HAVING ANTICARIOGENIC PROPERTIES
Jean-Jacques Goupil, 30 Ave du President Wilson, Cachan, France (94230)
Filed Feb. 17, 1977, Ser. No. 769,588
Claims priority, application France, Feb. 19, 1976, 76 04546
Int. Cl.³ A61K *7/18;* **C07D** *295/08*
U.S. Cl. 424—52 **11 Claims**

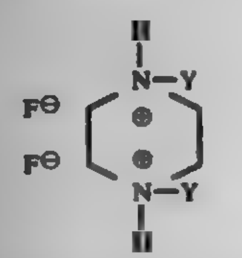
1. An orally administrable pharmaceutical dosage form comprising from about 0.66 to 13% by weight of a compound of the formula



wherein Y is a member selected from the group consisting of hydroxyalkyl, dihydroxyalkyl and epoxyalkyl wherein alkyl is C_2–C_4 and from about 87 to about 99.66% by weight of a carrier material.

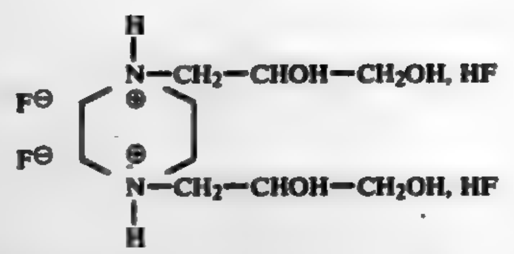
2. A method for preventing dental caries in a human which comprises orally administering to said human the pharmaceutical dosage form of claim 1.

6. A compound of the formula

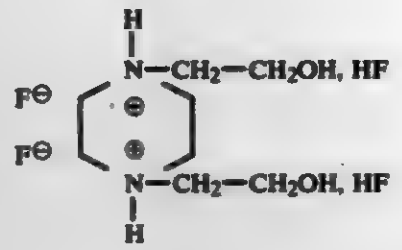


where Y is a member selected from the group consisting of hydroxyalkyl, dihydroxyalkyl and epoxyalkyl wherein alkyl is C_2–C_4.

10. N,N'-di(hydroxy-propyl) piperazine tetrafluorohydrate of the formula



11. N,N'-di(hydroxy-ethyl) piperazine tetrafluorohydrate of the formula



4,323,551
MOUTHWASH COMPOSITIONS
John J. Parran, Jr., Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio
Filed Feb. 19, 1981, Ser. No. 235,873
Int. Cl.³ A61K *7/16, 7/22*
U.S. Cl. 424—54 **10 Claims**

1. A mouthwash composition comprising:
(A) from about 0.02% to 0.20% of a quaternary ammonium compound;
(B) an amount of a tetra-alkali metal pyrophosphate salt sufficient to provide from about 0.5% to 5% of the $P_2O_7^{-4}$ species; and
(C) a carrier liquid
wherein the pH of said composition is adjusted to the range of from about 7.0 to 9.5 with a mineral or organic acid.

4,323,552
HIGH FOAMING DENTIFRICE COMPOSITIONS
Irving R. Schmolka, Grosse Ile, Mich., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.
Filed May 11, 1981, Ser. No. 262,315
Int. Cl.³ A61K *7/16, 7/22*
U.S. Cl. 424—54 **9 Claims**

1. A dentifrice comprising a nonionic surfactant and an effective amount of a cationic anti-decay agent, said nonionic surfactant being a cogeneric mixture of conjugated polyoxybutylene-polyoxyethylene compounds containing in their structure oxybutylene groups, oxyethylene groups and an organic radical derived from a water-soluble organic compound containing a plurality of reactive hydrogen atoms and 2 to 12 carbon atoms; the compounds being characterized in that all of the oxybutylene groups are present in polyoxybutylene chains that are attached to the organic radical at the site of a reactive hydrogen atom thereby constituting a polyoxybutylene polymer; the oxyethylene groups being attached to the polyoxybutylene polymer in polyoxyethylene chains; the average molecular weight of the polyoxybutylene polymers in the mixture being at least 500, as determined by hydroxyl number, and the oxyethylene groups present constituting 60 to 85 percent, by weight, of the mixture.

4,323,553
COMPOSITION FOR STRENGTHENING AND REVITALIZING BRITTLE OR DAMAGED NAILS CONTAINING A SALT OF 2-BENZYLTHIO ETHYLAMINE
Claude Bouillon, Eaubonne, and Patrick Darmenton, Villejuif, both of France, assignors to L'Oreal, Paris, France
Filed Apr. 29, 1980, Ser. No. 144,872
Claims priority, application France, May 3, 1979, 79 11115
Int. Cl.³ A61K *7/04*
U.S. Cl. 424—61 **8 Claims**

1. A process for strengthening and revitalizing brittle or damaged nails comprising applying to the surface of the nails an effective amount of a composition comprising in a cosmetic vehicle from 0.05 to 5 weight percent of a mineral or organic acid salt of 2-benzylthio ethylamine having the formula

$$C_6H_5—CH_2—S—CH_2—CH_2NH_2.$$

4,323,554
PREPARATION AND USE OF IMPROVED PEARLESCENT PIGMENTS OF HIGH LIGHT FASTNESS
Horst Bernhard, Reinheim, Fed. Rep. of Germany, assignor to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Fed. Rep. of Germany
Filed Jul. 11, 1980, Ser. No. 167,598
Claims priority, application Fed. Rep. of Germany, Jul. 13, 1979, 2928287
Int. Cl.³ A61K *7/021;* **C09C** *1/00, 3/08, 3/10*
U.S. Cl. 424—63 **9 Claims**

1. A colored material-containing pearlescent pigment comprising mica flakes coated with a metal oxide, the colored material being a colored aluminum lake which is fixed as a water-insoluble compound on the surface of the pigment particles, the lake being formed by a precipitated aluminum hydroxide layer, wherein the aluminum hydroxide layer forming the colored lake contains an amount in the range of 1 to 50% by weight, sufficient to increase the light fastness of said pigment, of a compound of the formula

$$\begin{array}{c} Y—CH—Z \\ | \\ X \end{array}$$

wherein X is hydroxy or carboxy; Y is hyrdrogen, or alkyl or alkenyl of 10 to 20 carbon atoms; and Z is hydrogen, alkyl or alkenyl of 10 to 20 carbon atoms, or the grouping

$$\begin{array}{c} —CH—Z \\ | \\ X \end{array} \text{ or } \begin{array}{c} —CH_2—CH—Z, \\ \quad\;\; | \\ \quad\;\; X \end{array}$$

the compound having a molecular weight of at least 150 and a solubility in water at a pH of 5–9 of at least 0.05 g/l, and the compound being precipitated onto the metal oxide coated mica flakes together with the aluminum hydroxide layer.

9. A cosmetic composition containing an amount of the pigment of claim 1 sufficient to alter the appearance of the composition and a cosmetically acceptable carrier.

4,323,555
METHOD OF PROTECTING CATTLE AND SHEEP AGAINST BOVINE LEUKEMIA VIRUS AND VACCINES FOR USE THEREIN
Gordon H. Theilen, Davis, Calif., assignor to The Regents of the University of California, Berkeley, Calif.
Filed Nov. 3, 1980, Ser. No. 203,062
Int. Cl.³ A61K *39/00;* **C12N** *5/02*
U.S. Cl. 424—88 **10 Claims**

1. The method of protecting cattle or sheep against bovine leukemia virus (BLV), comprising culturing lymphoid cells in vitro obtained from bovine or ovine lymphosarcoma tissue, continuing said culturing until a cell line is established capable of successive in vitro propagation, which cell line is characterized by being a non-producer of BLV, propagating said cells in vitro, harvesting the propagated cells, and preparing a parenteral vaccine therefrom for administration to cattle or sheep.

4,323,556
SOLID FORMULATIONS CONTAINING PHEROMONES AND METHOD OF USING SAME
Anacleto Dal Moro; Franco Pinamonti, and Amedeo Capizzi, all of Milan, Italy, assignors to Montedison S.p.A., Milan, Italy
Continuation-in-part of Ser. No. 210,727, Nov. 26, 1980, abandoned. This application May 26, 1981, Ser. No. 267,059
Claims priority, application Italy, Jan. 23, 1980, 19390 A/80
Int. Cl.³ A01N *17/14*
U.S. Cl. 424—84 **16 Claims**

1. A solid formulation consisting of: a sex insect pheromone as an active substance, supported on an inert material coated with a film-forming resin, a wetting agent, a dispersant and a sticker, an ultraviolet stabilizer, and an antioxidant, and having the following composition, the quantities being in percent by weight:

A	Active substance - sex pheromone	0.5–10
B	Film-forming resin selected amongst terpene polymers, chlorinated natural rubber or carboxylated polyvinylalcohol	5–30
C	Mixture of a polyoxyethylated alkyl phenol (1–10% b.w.), sodium polymethacrylate (50–94% b.w.) and sodium lignosulphonate (5–40% b.w.), the total being 100%	5–15
D	U.V. Stabilizer consisting of derivatives of benzophenone having stabilizing properties	0.5–10
E	Antioxidant selected amongst the esters of 3-(3,5-di-tert.butyl-4-hydroxy-phenyl)-propionic acid with stearic alcohol or with pentaerithritol (tetrakis ester)	0.5–10
F	Inert carrier consisting essentially of a material selected amongst fossil meal, kaolin, attapulgite and talc	to 100%.

4,323,557
PRESSURE-SENSITIVE ADHESIVE CONTAINING IODINE
Paul D. Rosso, St. Joseph Township, St. Croix County, Wis., and Michael Y. Moss, St. Paul, Minn., assignors to Minnesota Mining & Manufacturing Company, St. Paul, Minn.
Filed Jul. 31, 1979, Ser. No. 62,362
Int. Cl.³ A61K *9/70;* **A61F** *13/00;* **A61L** *15/03;* **A61K** *31/79*
U.S. Cl. 424—28 **8 Claims**

1. In a process for making a composition which exhibits antiseptic broad-spectrum antimicrobial activity when placed in contact with the skin, the improvement comprising forming a solution of an iodide, a solvent and iodine, and reacting said solution with a dermatologically acceptable pressure-sensitive adhesive.

4,323,558
TOPICAL TRIEN CONTAINING PHARMACEUTICAL COMPOSITIONS AND METHODS OF USE
Eric L. Nelson, Santa Ana, Calif., assignor to Nelson Research & Development Co., Irvine, Calif.
Continuation-in-part of Ser. No. 73,932, Sep. 10, 1979, abandoned. This application Aug. 7, 1980, Ser. No. 176,076
Int. Cl.³ A61K *33/04, 31/13*
U.S. Cl. 424—164 **16 Claims**

1. A therapeutic composition limited to topical Application to the body comprising an effective anti-inflammatory amount of trien and a pharmaceutically acceptable topical carrier

selected from the group consisting of gels, ointments and lotions.

4,323,559

COMPOUNDS DERIVED FROM N-ACETYL-NOR-MURAMYL-L-ALANYL-D-ISO-GLUTAMIC ACID AND OTHER COMPOUNDS AND BIOLOGICALLY ACTIVE COMPOSITIONS CONTAINING SUCH COMPOUNDS

Francoise Audibert, Neuilly-Sur-Seine, and Pierre Lefrancier, Bures-Sur-Yvette, both of France, assignors to Agencie Nationale de Valorisation de la Recherche (ANVAR), Neuilly sur Seine, France

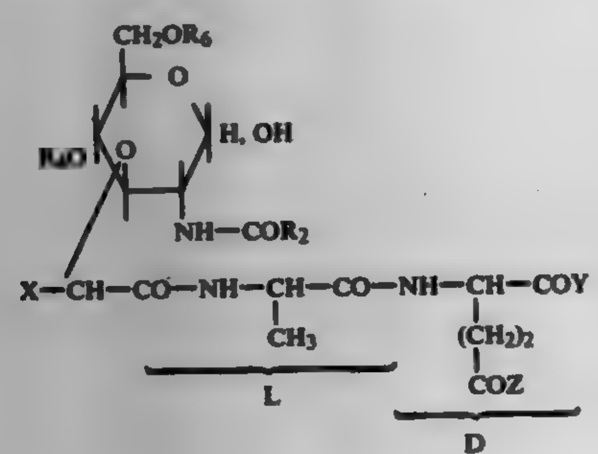
Continuation of Ser. No. 914,073, Jun. 9, 1978, abandoned, which is a continuation-in-part of Ser. No. 516,991, Oct. 22, 1974, Pat. No. 4,186,194. This application Mar. 31, 1980, Ser. No. 135,928

Claims priority, application France, Oct. 23, 1973, 73 37806; Jul. 1, 1974, 74 22909

Int. Cl.³ A61K *37/00;* C07C *103/52*

U.S. Cl. 424—177 7 Claims

1. A biological composition which comprises a biologically acceptable carrier and, in a biologically effective amount, a water-soluble, biologically active compound which is an adjuvant and anti-bacterial in vivo of the formula:



wherein X is hydrogen,

R_2 is methyl, R_4 is hydrogen R_6 is hydrogen and Y is amino when Z is hydroxyl, or Y is methoxy when Z is methoxy.

4,323,560

NOVEL PHOSPHORYLMURAMYL PEPTIDES AND PROCESSES FOR THE MANUFACTURE THEREOF

Gerhard Baschang, Bettingen, Switzerland; Lajos Tarcsay, Grenzach-Wyhlen; Albert Hartmann, Grenzach, both of Fed. Rep. of Germany, and Jaroslav Stanek, Birsfelden, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

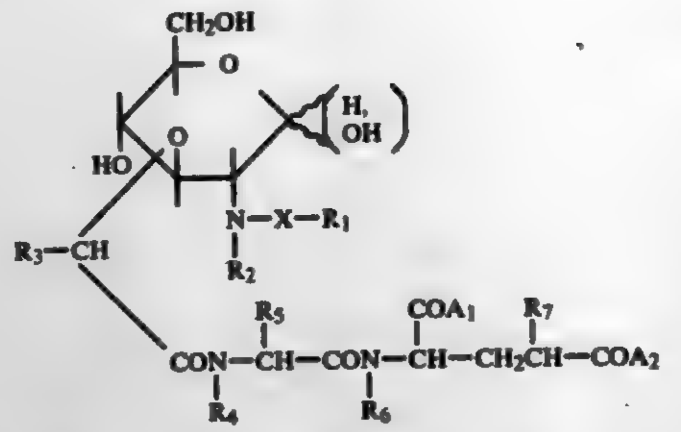
Filed Oct. 6, 1980, Ser. No. 194,104

Claims priority, application Switzerland, Oct. 12, 1979, 9219/79

Int. Cl.³ A61K *37/00, 37/02;* C07C *103/52*

U.S. Cl. 424—177 18 Claims

1. Phosphorylmuramyl peptides of the formula



(I)

in which X represents carbonyl, R_1 represents lower alkyl unsubstituted or substituted by hydroxy, lower alkoxy or halogen, or represents phenyl unsubstituted or substituted by hydroxy, lower alkoxy, lower alkyl or halogen, R_2, R_4 and R_6 independently of one another represent hydrogen or lower alkyl, R_3 represents hydrogen or lower alkyl, R_5 represents hydrogen, lower alkyl having from 1 to 3 carbon atoms unsubstituted or substituted by hydroxy, lower alkoxy, mercapto, lower alkylthio, amino or halogen, or represents cycloalkyl or cycloalkyl-lower alkyl in which the lower alkyl radical contains from 1 to 3 carbon atoms, and in each of which the cycloalkyl radical contains from 4 to 6 carbon atoms, phenyl or phenyl-lower alkyl having from 1 to 3 carbon atoms in the lower alkyl radical and each unsubstituted or substituted by hydroxy, lower alkoxy or halogen, or heterocyclyl or heterocyclyl-lower alkyl having from 1 to 3 carbon atoms in the lower alkyl radical, and each containing one or two nitrogen atoms and having 5 or 6 ring members, or R_4 and R_5 together alternatively represent alkylene having 3 to 4 carbon atoms, R_7 represents hydrogen, and one of the radicals A_1 and A_2 represents a radical of the formula

$$—T—Y—O—\overset{\overset{\displaystyle O}{\|}}{\underset{\underset{\displaystyle OH}{|}}{P}}—O—W \qquad \text{(II)}$$

in which T represents HN or O, Y represents lower alkylene which is unsubstituted or substituted by hydroxy, lower alkoxy, lower alkanoyloxy, halogen, mercapto, lower alkylthio, lower alkanoylthio, amino-lower alkyl, mono- or di-lower alkylamino-lower alkyl, lower alkanoylamino-lower alkyl, aminocarbonyl, lower alkyl, cycloalkyl having 5 or 6 carbon atoms, a phenyl or a phenyl lower alkyl radical, or by heterocyclyl or heterocyclyl-lower alkyl having from 1 to 3 carbon atoms in the lower alkyl radical and each containing one or two nitrogen atoms and having 5 or 6 ring members or a radical of one of the formulae

$$Y_1—COO—Y_2 \qquad \text{(IIIa)}$$

$$Y_1—OOC—Y_2 \qquad \text{(IIIb)}$$

$$Y_1—CO—\underset{\underset{\displaystyle R_8}{|}}{N}—Y_2 \text{ or} \qquad \text{(IIIc)}$$

$$Y_1—\underset{\underset{\displaystyle R_8}{|}}{N}CO—Y_2, \qquad \text{(IIId)}$$

in which Y_1 and Y_2 each represents lower alkylene which is unsubstituted or substituted by hydroxy, lower alkoxy, lower alkanoyloxy, halogen, mercapto, lower alkylthio, lower alkanoylthio, amino-lower alkyl, mono- or di-lower alkylamino-lower alkyl, lower alkanoylamino-lower alkyl, aminocarbonyl, lower alkyl, cycloalkyl having 5 or 6 carbon atoms, a phenyl or a phenyl lower alkyl radical, or by heterocyclyl or heterocyclyl-lower alkyl having from 1 to 3 carbon atoms in the lower alkyl radical and each containing one or two nitrogen atoms and having 5 or 6 ring members and R_8 represents hydrogen, W represents an alkyl or alkenyl group having from 7 to 30 carbon atoms which is unsubstituted or substituted by hydroxy, lower alkoxy, lower alkanoyloxy, halogen, amino, lower alkylamino, lower alkanoylamino or oxo or represents a cycloalkyl or cycloalkenyl radical having from 10 to 30 carbon atoms which is unsubstituted or substituted by one or more alkyl radicals having from 1 to 8 carbon atoms, and the other of the radicals A_1 and A_2 represents hydroxy, lower alkoxy, amino or lower alkylamino, or represents aminocarbonyl-lower alkylamino unsubstituted or substituted in the lower alkyl radical by hydroxy, carboxy or amino groups, and salts thereof.

18. A method for modulating the immune response of a warm-blooded animal including man, which comprises administering to said animal an effective amount of a compound of claim 1.

4,323,561

PROCESS OF ENHANCING IMMMUNOGENIC RESPONSE IN MAMMALS BY THE ADMINISTRATION OF SYNTHETIC GLYCOLIPID ADJUVANTS

Alois H. Nowotny, Abington, Pa., assignor to Temple University of the Commonwealth System of Higher Education, Philadelphia, Pa.

Filed Sep. 6, 1977, Ser. No. 830,681

Int. Cl.³ A61K *31/70;* C07H *5/06*

U.S. Cl. 424—180 4 Claims

1. The method of enhancing the immunogenic response of a mammal which comprises administering to a mammal parenterally before or at the time of administration of an immunogen a mixture of the immunogen and an effective amount of an N-acylated-D-glucosamine selected from the group consisting of N-lauroyl-D-glucosamine, N-myristoyl-D-glucosamine, N-stearoyl-D-glucosamine, N-palmitoyl-D-glucosamine, N-caprylyl-D-glucosamine and N-capryl-D-glucosamine.

4,323,562

ADJUVANT FOR STIMULATING PRODUCTION OF LYMPHOCYTES

Dae-Eun Kim, 545-90, 6-dong, Anyang City, Kyonggi-do, Rep. of Korea

Filed Jul. 16, 1980, Ser. No. 169,324

Claims priority, application Rep. of Korea, Jul. 27, 1979, 2546

Int. Cl.³ A61K *35/78*

U.S. Cl. 424—195 1 Claim

1. A method for stimulating the production of lymphocytes in the circulating blood of a mammal, which comprises:

administering to the mammal an adjuvant in an amount effective to stimulate the lymphatic system to elevate the number of lymphocytes in the blood, said adjuvant being a water-soluble, diethyl ether-soluble, unsaponified, fraction of Atractylis lyrata s. et z.

4,323,563

FAT EMULSION FOR INTRAVENOUS INJECTION

Toru Takami, Yokosuka; Misako Takezawa, Yokohama; Hiroyuki Ohashi, and Shigeru Takeda, both of Kawasaki, all of Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed Oct. 30, 1979, Ser. No. 89,498

Claims priority, application Japan, Oct. 31, 1978, 53-134279

Int. Cl.³ A61K *31/685;* C07F *9/02, 9/10;* C11C *3/00*

U.S. Cl. 424—199 20 Claims

1. An emulsifier comprising purified phospholipid of soybean origin, containing less than 5% of glycolipid by weight, and having a degree of hydrogenation of 30–50 as defined by the iodine number.

7. A fat emulsion for intravenous injection comprising a fatty oil, water and the emulsifier of claim 1.

20. A process for preparing a purified emulsifier of soybean origin comprising:

(1) isolating a phosphatidylcholine fraction from a phospholipid of soybean origin;

(2) partially hydrogenating said isolated phosphatidylcholine fraction; and

(3) removing glycolipid from said hydrogenated phosphatidylcholine fraction.

4,323,564

ESTERS OF 6-CHLORO-11β, 17α,21-TRIHYDROXYPREGNA-1,4,6-TRIENE-3,20-DIONE

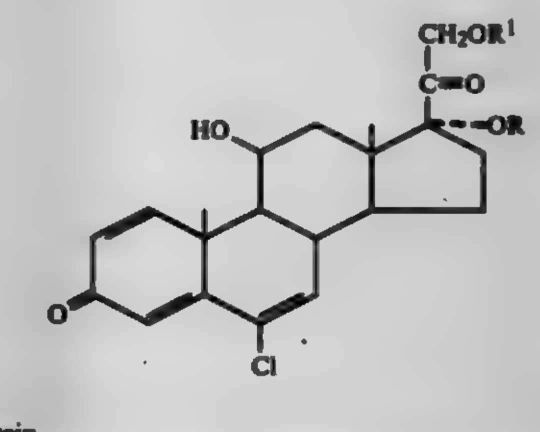
John H. Fried, Palo Alto; Denis J. Kertesz, Mountain View, and Michael Marx, Sunnyvale, all of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Continuation-in-part of Ser. No. 791,911, Apr. 24, 1977, abandoned. This application Mar. 9, 1978, Ser. No. 884,933

Int. Cl.³ A61K *31/58;* C07J *5/00*

U.S. Cl. 424—241 8 Claims

1. A compound chosen from those represented by the formula

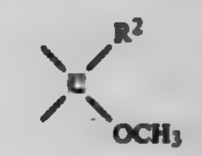


(I)

wherein

R is butyryl or benzoyl when R^1 is hydrogen, or R is butyryl when R^1 is butyryl, or

R and R^1 taken together are represented by



(II)

wherein

R^2 is propyl or phenyl.

8. A method of relieving a topical inflammatory condition in mammals which comprises contacting the afflicted area with an effective amount of a compound of claim 1.

4,323,565

ANTIBACTEDIAL AND ANTIFUNGAL COMPOSITION

Masayasu Hasegawa, Kyoto; Hideo Nishikawa, Ibaraki, and Kayoko Yoshida, Takatsuki, all of Japan, assignors to Nippon Gohsei Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 58,446, Jul. 18, 1979, Pat. No. 4,242,336. This application May 20, 1980, Ser. No. 151,651

Claims priority, application Japan, Jul. 31, 1978, 53-93870; Aug. 2, 1978, 53-94785

The portion of the term of this patent subsequent to Dec. 30, 1997, has been disclaimed.

Int. Cl.³ A01N *43/02, 43/40, 43/88, 55/02*

U.S. Cl. 424—246 1 Claim

1. An antibacterial and antifungal composition comprising a mixture of:

(A) at least one member selected from the group consisting of dehydroacetic acid, and its alkali metal salts; and

(B) tetrahydro-3,5-dimethyl-2H-1,3,5-thiadiazine-2-thione, wherein the weight ratio of component (A) to component (B) is in the range of 95/5 to 60/40.

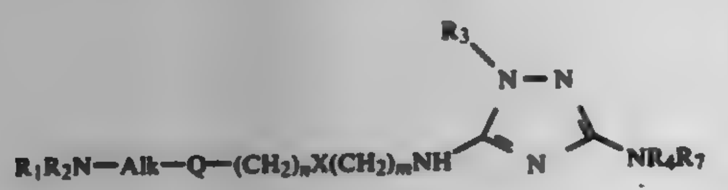
4,323,566

TRIAZOLE ACYLAMINES, PHARMACEUTICAL COMPOSITIONS THEREOF AND METHOD OF USE THEREOF

John W. Clitherow, Sawbridgeworth; Barry J. Price, Hertford; John Bradshaw; Michael Martin-Smith, both of Ware; John W. M. MacKinnon, Royston; Duncan B. Judd, Ware, and Linda Carey, Royston, all of England, assignors to Glaxo Group Limited, London, England

Filed Feb. 29, 1980, Ser. No. 125,847
Claims priority, application United Kingdom, Mar. 2, 1979, 07421/79
Int. Cl.[3] C07D *403/12;* A61K *31/41;* C07D *403/14*
U.S. Cl. 424—248.51 18 Claims

1. A compound of the formula (I)



(I)

and physiologically acceptable acid addition salts and hydrates thereof, in which

R_1 and R_2 which may be the same or different, each represent hydrogen, C_{1-10} alkyl, C_{3-18} cycloalkyl, C_{3-6} alkenyl, C_{3-6} alkynyl, phenyl C_{1-6} alkyl, substituted phenyl C_{1-6} alkyl wherein said substituent is at least one C_{1-3} alkyl or C_{1-6} alkoxy groups or halogen atoms; trifluoro C_{1-6} alkyl, or C_{1-6} alkyl substituted by hydroxy, C_{1-6} alkoxy, amino, C_{1-6} alkylamino, di-C_{1-6} alkylamino or C_{3-8} cycloalkyl or R_1 and R_2 may together with the nitrogen atom to which they are attached form a heterocyclic ring which is pyrrolidine, piperidine optionally substituted in the 4-position by methyl or hydroxy, tetrahydropyridine, morpholine, 2,6-dimethylmorpholine, hexamethyleneimine or heptamethyleneimine;

Alk represents a straight or branched alkylene chain of 1 to 6 carbon atoms;

Q represents a furan or thiophene ring in which incorporation into the rest of the molecule is through bonds at the 2- and 5-positions, the furan ring optionally bearing a further substituent R_6 adjacent to the group R_1R_2N-Alk-, or Q represents a benzene ring in which incorporation into the rest of the molecule is through bonds at the 1- and 3- or 1- and 4-positions;

R_6 represents halogen or C_{1-4} alkyl which may be substituted by hydroxy or C_{1-4} alkoxy;

X represents —CH_2—, —O—, —S— or

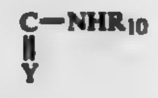
where R_5 represents hydrogen or methyl;

n represents zero, 1 or 2;

m represents 2, 3 or 4;

R_3 represents hydrogen, C_{1-6} alkyl, C_{3-6} alkenyl, phenyl C_{1-6} alkyl, substituted phenyl C_{1-6} alkyl wherein said substituent is at least one C_{1-3} alkyl or C_{1-6} alkoxy groups or halogen atoms; hydroxy C_{2-6} alkyl; C_{1-6} alkoxy C_{1-6} alkyl, or phenyl, substituted phenyl wherein said substituent is at least one C_{1-3} alkyl or C_{1-6}-alkoxy groups or halogen atoms; and

R_4 represents hydrogen, C_{1-6} alkyl, C_{3-6} alkenyl or phenyl C_{1-6} alkyl, substituted phenyl C_{1-6} alkyl wherein said substituent is at least one C_{1-3} alkyl or C_{1-6} alkoxy groups or halogen atoms, and R_7 represents the group COR_8 where R_8 represents hydrogen, C_{1-6} alkyl, phenyl, substituted phenyl wherein said substituent is at least one C_{1-3} alkyl or C_{1-6} alkoxy groups or halogen atoms; phenyl C_{1-6} alkyl, substituted phenyl C_{1-6} alkyl wherein said substituent is at least one C_{1-3} alkyl or C_{1-6} alkoxy groups or halogen atoms; C_{1-6} alkoxy, heteroaryl, wherein said heteroaryl is furyl, pyridyl, thiazolyl, quinolinyl, indolyl or thienyl; or monocyclic heteroaryl C_{1-6} alkyl wherein said monocyclic heteroaryl portion is furyl, pyridyl, thiazolyl, or thienyl, or R_7 represents the group SO_2R_9 where R_9 represents C_{1-6} alkyl or phenyl, substituted phenyl wherein said substituent is at least one C_{1-3} alkyl or C_{1-6} alkoxy groups or halogen atoms, or R_7 represents the group



where Y is oxygen or sulphur and R_{10} represents hydrogen,. C_{1-6} alkyl, C_{3-8} cycloalkyl, phenyl, substituted phenyl wherein said substituent is at least one C_{1-3} alkyl or C_{1-6} alkoxy groups or halogen atoms, or phenyl C_{1-6} alkyl, substituted phenyl C_{1-6} alkyl wherein said substituent is at least one C_{1-3} alkyl or C_{1-6} alkoxy groups or halogen atoms.

18. A method of treating a condition mediated through histamine H_2-receptors which comprises administering to a patient an effective amount of a compound as defined in claim 1 to relieve said condition.

4,323,567

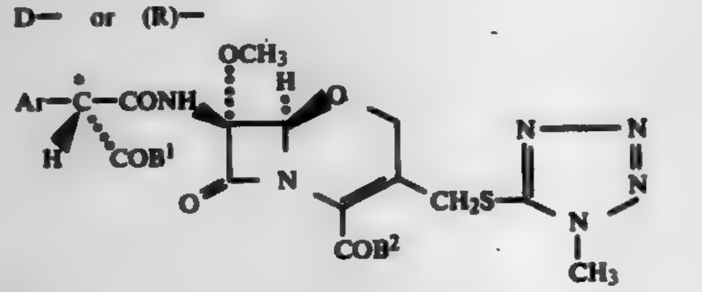
ARYLMALONAMIDO-1-OXADETHIACEPHALOSPORINS

Masayuki Narisada, Ibaraki, and Wataru Nagata, Nishinomiya, both of Japan

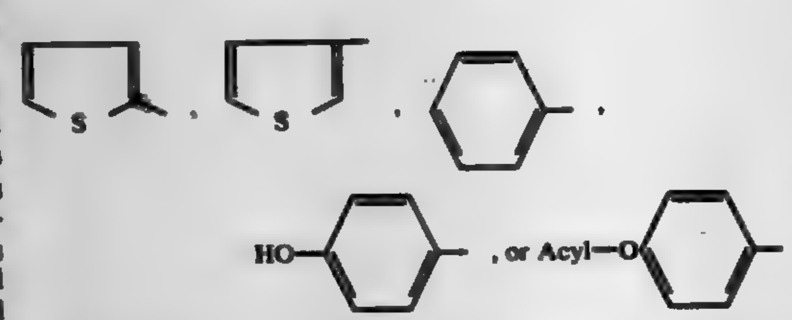
Continuation of Ser. No. 41,630, May 23, 1979, abandoned, which is a continuation-in-part of Ser. No. 959,784, Nov. 13, 1978, Pat. No. 4,180,571, which is a division of Ser. No. 780,183, Mar. 22, 1977, Pat. No. 4,138,486. This application Jun. 5, 1980, Ser. No. 156,872
Claims priority, application Japan, Mar. 25, 1976, 51-33401; Apr. 30, 1976, 51-50295
The portion of the term of this patent subsequent to Feb. 6, 1996, has been disclaimed.
Int. Cl.[3] C07D *413/14;* A61K *31/41;* C07D *413/12;* A61K *31/535*
U.S. Cl. 424—248.51 59 Claims

1. A substantially pure compound of the following formula:

D— or (R)—



wherein
Ar is



in which Acyl is alkanoyl containing 1 to 5 carbon atoms, carbamoyl, N-alkylcarbamoyl containing 2 to 6 carbon atoms, or ureidocarbonyl, and

COB^1 and COB^2 each independently represent carboxy, methoxycarbonyl, ethoxycarbonyl, isopropoxycarbonyl, n-butoxycarbony, t-butoxycarbonyl, pentyloxycarbonyl, cyclopropylmethoxycarbonyl, monohydroxy-t-butoxycarbonyl, 2,2,2-trichloroethoxycarbonyl, chloromethoxycarbonyl, cyanomethoxycarbonyl, methanesulfonylethoxycarbonyl, acetylmethoxycarbonyl, acetoxymethoxycarbonyl, acetoxyethoxycarbonyl, propionyloxymethoxycarbonyl, propionyloxyethoxycarbonyl, pivaloyloxymethoxycarbonyl, benzoyloxymethoxycarbonyl, methoxymethoxycarbonyl, phenoxymethoxycarbonyl, methylthiomethoxycarbonyl, phenylthiomethoxycarbonyl, tetrahydropyranyloxy carbonyl, phthaliminomethoxycarbonyl, α,α-dimethylpropargyloxycarbonyl, methoxycarbonyloxyethoxycarbonyl, ethoxycarbonylethoxycarbonyl, methoxycarbonyloxypropoxycarbonyl, allyloxycarbonyl, benzyloxycarbonyl, phenethyloxycarbonyl, tolylmethoxycarbonyl, dimethylbenzyloxycarbonyl, nitrobenzyloxycarbonyl, halobenzyloxycarbonyl, methoxybenzyloxycarbonyl, phthalidyloxycarbonyl, p-hydroxy-di-t-butylbenzyloxycarbonyl, diphenylmethoxycarbonyl, trityloxycarbonyl, phenacyloxycarbonyl, chlorophenacyloxycarbonyl, bromophenacyloxycarbonyl, nitrophenacyloxycarbonyl, methylphenacyloxycarbonyl, trimethylsilyloxycarbonyl, dimethylmethoxysilyloxycarbonyl, trimethylstannyloxycarbonyl, phenoxycarbonyl, naphthyloxycarbonyl, tolyloxycarbonyl, dimethylphenoxycarbonyl, nitrophenoxycarbonyl, methoxyphenoxycarbonyl, methanesulfonylphenoxycarbonyl, chlorophenoxycarbonyl, pentachlorophenoxycarbonyl, indanyloxycarbonyl, pyridyloxycarbonyl, sodiooxycarbonyl, potassiooxycarbonyl, magnesiooxycarbonyl, calciooxycarbonyl, or a salt of carboxy group with procain, xylocain, triethylamine, or dicyclohexylamine.

46. A method for treating human or veterinary bacterial infection which comprises administering to a human or veterinary subject suffering from such infection an antibacterially effective amount of a compound according to claim 1.

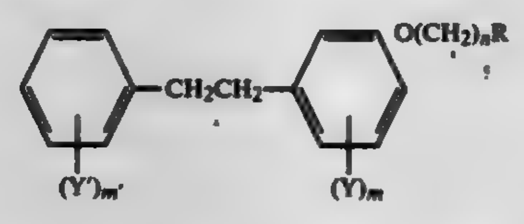
4,323,568

PHARMACEUTICALLY ACTIVE (OMEGA-AMINOALKOXY)BIBENZYLS

Kyoji Kikumoto, Machida; Kunihiro Ninomiya; Harukazu Fukami, both of Yokohama, and Hiroto Hara, Machida, all of Japan, assignors to Mitsubishi Chemical Industries Limited, Tokyo, Japan

Division of Ser. No. 943,621, Sep. 19, 1978, Pat. No. 4,220,603. This application Dec. 6, 1979, Ser. No. 100,741
Claims priority, application Japan, Oct. 7, 1977, 52-120710; Jul. 14, 1978, 53-85833; Aug. 1, 1978, 53-94044
The portion of the term of this patent subsequent to Sep. 2, 1997, has been disclaimed.
Int. Cl.[3] A61K *31/135, 31/495;* C07D *295/08*
U.S. Cl. 424—250 14 Claims

1. A compound having blood platelet aggregation inhibitory effects of formula (I):



wherein R is (1) —N—R_1R_2, R_1 and R_2 which are alike or different are selected from the group consisting of hydrogen, C_1–C_8 alkyl and C_1–C_8 hydroxyalkyl or (2) a heterocyclic group selected from the group consisting of 1-pyrrolidinyl, piperidino, morpholino, C_6–C_8 4-alkyl-1-piperazinyl and C_6–C_8 4-ω-hydroxyalkyl-1-piperazinyl or said heterocyclic group substituted by one or two substituents selected from the group consisting of carboxyl, C_2–C_4 alkoxycarbonyl, carbamoyl, C_3–C_6 N,N-dialkylcarbamoyl, C_2–C_4 N-alkylcarbamoyl, C_1–C_3 alkyl and hydroxyl; each of the Y radicals and Y' radicals being hydrogen, halogen, C_1–C_5 alkyl, hydroxyl, C_1–C_5 alkoxy, carboxyl, C_2–C_6 alkoxycarbonyl or —NR_9R_{10}, wherein R_9 and R_{10} are hydrogen or C_1–C_5 alkyl; n is an integer of 2 to 8; m is an integer of 1 to 4; and m' is an integer of 1 to 5, or the acid addition salts thereof, with the proviso that when Y and Y' are hydrogen and n is 2, R cannot be dimethylamino; when Y and Y' are hydrogen and n is 4, R cannot be dimethylamino or diethylamino and when Y' is hydrogen, Y is clorine and n is 3, R cannot be dimethylamino.

2. A method of inhibiting platelet aggregation in blood of warm blooded animals, which comprises: administering to said animal an effective amount of a compound of claim 1.

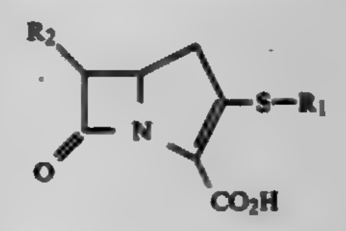
4,323,569

β-LACTAM ANTI-BACTERIAL, COMPOSITIONS CONTAINING THEM AND A PROCESS FOR THEIR PREPARATION

Andrew J. G. Baxter, Hull, England, assignor to Beecham Group Limited, England

Filed Aug. 23, 1979, Ser. No. 68,893
Claims priority, application United Kingdom, Aug. 25, 1978, 34643/78
Int. Cl.[3] C07D *487/04;* A61K *31/505*
U.S. Cl. 424—251 86 Claims

1. A compound of the formula (II):



(II)

a salt thereof or an ester thereof which is convertible to a corresponding salt by chemical or biological means wherein R_1 is pyrimidyl unsubstituted or substituted by one or two lower alkyl groups, or by one lower alkoxy or lower alkanoyloxy group; and R_2 is hydrogen or a group $CR_3R_4R_5$ wherein R_3 is hydrogen or hydroxy; R_4 is hydrogen or lower alkyl, and R_5 is hydrogen, lower alkyl, benzyl or phenyl or is joined to R_4 to form part of a carbocyclic ring of 5 to 7 carbon atoms.

24. A compound according to claim 1 in the form of a sodium salt.

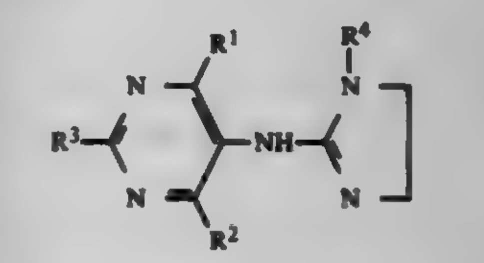
4,323,570

SUBSTITUTED AMINOPYRIMIDINES

Wolfgang Stenzel; Wolfgang Fleck; Erich Cohnen, and Ben Armah, all of Hamburg, Fed. Rep. of Germany, assignors to Beiersdorf Aktiengesellschaft, Fed. Rep. of Germany

Filed Nov. 7, 1979, Ser. No. 92,134
Claims priority, application Fed. Rep. of Germany, Nov. 15, 1978, 2849537; Sep. 13, 1979, 2937023
Int. Cl.[3] C07D *239/20*
U.S. Cl. 424—251 9 Claims

1. Substituted 5-(2-imidazolin-2-yl)-amino-pyrimidines of the general formula (I)

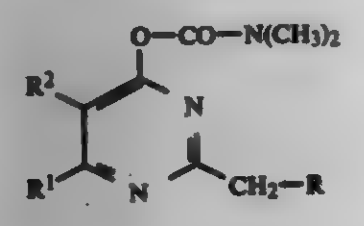


(I)

wherein R^1, R^2, and R^3 individually denote hydrogen or halogen, or alkoxy-, alkylthio- or alkyl group, each having 1 to 4

carbon atoms, or a cycloalkyl group with 3 to 5 carbon atoms, and R^4 represents hydrogen, formyl, acetyl, proprionyl, or butyryl,
provided that R^1, R^2, R^3, and R^4 are not all hydrogen at the same time, and their physiologically compatible acid addition salts.

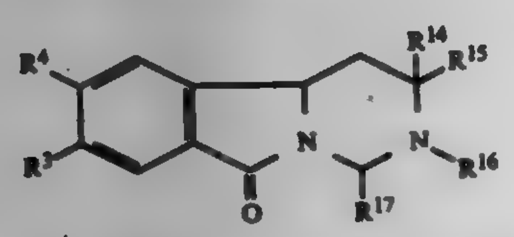
4,323,571
COMBATING PESTS WITH 2-SUBSTITUTED-ALKYL-5-SUBSTITUTED-N,N-DIMETHYLCARBAMIC ACID O-PYRIMIDIN-6-YL ESTERS
Fritz Maurer, Wuppertal; Ingeborg Hammann, Cologne, and Bernhard Homeyer, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany
Filed Jun. 20, 1980, Ser. No. 161,540
Claims priority, application Fed. Rep. of Germany, Jul. 12, 1979, 2928155
Int. Cl.³ C07D *239/24*
U.S. Cl. 424—251 10 Claims
1. A 2-substituted-alkyl-5-substituted-N,N-dimethyl-carbamic acid O-pyrimidin-6-yl ester of the formula



in which
R and R^2 each independently is alkoxy, alkylthio, alkylsulphinyl or alkylsulphonyl and
R^1 is hydrogen or alkyl.

4,323,572
ANTIHYPERTENSIVE TRICYCLIC ISOINDOLE DERIVATIVES
Christopher A. Demerson, Montreal; Leslie G. Humber, Dollard des Ormeaux, and Jean-Marie Ferland, St. Laurent, all of Canada, assignors to American Home Products Corporation, New York, N.Y.
Division of Ser. No. 78,547, Sep. 24, 1979, Pat. No. 4,273,773. This application Feb. 6, 1981, Ser. No. 232,267
Int. Cl.³ A61K *31/505;* C07D *487/04*
U.S. Cl. 424—251 12 Claims
1. A compound of formula Ib

(Ib)



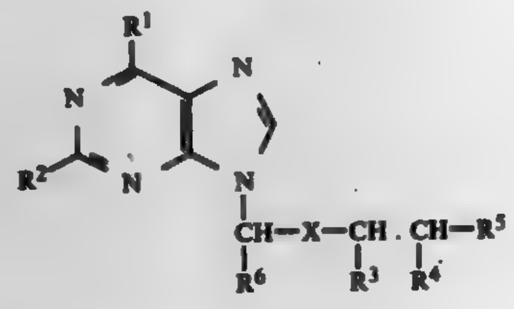
in which R^3 and R^4 each is hydrogen, lower alkoxy, lower alkyl, trifluoromethyl, halo, or hydroxy; or R^3 and R^4 together form a OCH_2O chain; R^{14} and R^{15} each is hydrogen or lower alkyl; R^{16} is hydrogen, a radical of formula $(CH_2)_nNR^{12}R^{13}$ wherein n is an integer from two to six, and R^{12} and R^{13} each is hydrogen or lower alkyl, or a radical of formula $CO(CH_2)_{n-1}NR^{12}R^{13}$ wherein n, R^{12} and R^{13} are as described herein, and R^{17} is hydrogen, or R^{16} and R^{17} together form an imine; or a thereapeutically acceptable acid addition salt thereof.

8. A method of treating hypertension in a mammal, which comprises administering to said mammal an effective antihypertensive amount of a compound of formula Ib or a therapeutically acceptable acid addition salt thereof, as claimed in claim 1.

9. An antihypertensive pharmaceutical composition, which comprises an effective amount of a compound of formula Ib or a therapeutically acceptable acid addition salt thereof, as claimed in claim 1, and a pharmaceutically acceptable carrier therefor.

4,323,573
ADENINE DERIVATIVES
Howard J. Schaeffer, Raleigh, N.C., assignor to Burroughs Wellcome Co., Research Triangle Park, N.C.
Division of Ser. No. 718,105, Aug. 27, 1976, abandoned, which is a continuation-in-part of Ser. No. 662,900, Mar. 1, 1976, Pat. No. 4,199,574, and Ser. No. 608,263, Aug. 27, 1975, abandoned. This application Feb. 1, 1978, Ser. No. 874,130
Claims priority, application United Kingdom, Sep. 2, 1974, 38278/74
Int. Cl.³ A61K *31/52*
U.S. Cl. 424—253 25 Claims
1. A compound of the formula (I)

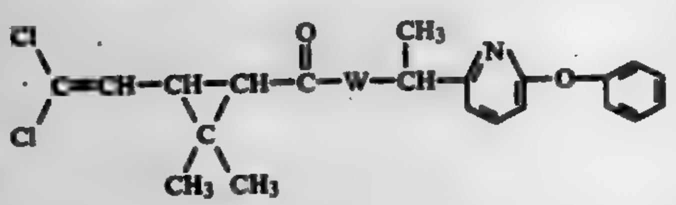
(I)



wherein
R^1 is amino, R^2 is amino
X is oxygen or sulphur
R^3 is hydrogen, straight or branched chain or cyclic alkyl, hydroxyalkyl, benzyloxyalkyl or phenyl;
R^4 is hydrogen, hydroxy or alkyl;
R^5 is hydroxy, amino, alkyl, hydroxyalkyl, benzyloxy, benzoyloxymethyl, sulphamoyloxy, phosphate, or acyloxy having 1 to 8 carbon atoms, R^6 is hydrogen or alkyl; or a pharmaceutically acceptable salt thereof.

2. A pharmaceutical composition for use as an antiviral which comprises an effective antiviral amount of the compound or salt of claim 1.

4,323,574
CIS AND TRANS ISOMERS OF α-METHYL(6-PHENOXY-2-PYRIDYL)METHYL-3-(2,2-DICHLOROETHENYL)-2,2-DIMETHYLCYCLOPROPANECARBOXYLATES AND DERIVATIVES THEREOF
Clive A. Henrick, Palo Alto, Calif., assignor to Zoecon Corporation, Palo Alto, Calif.
Filed Nov. 24, 1980, Ser. No. 209,912
Int. Cl.³ A01N *43/40;* C07D *213/64*
U.S. Cl. 424—263 4 Claims
1. A compound of the following formula (A):



(A)

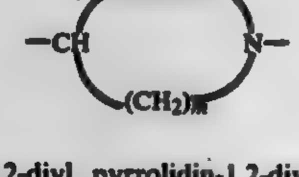
wherein, W is oxygen or sulfur.

4. A method for controlling insect or acarid pests which comprises applying to the pest or its habitat a pesticidally effective amount of a compound of claim 1.

4,323,575
1-PHENYL-2-AMINOETHANOL DERIVATIVES
Geraint Jones, Macclesfield, England, assignor to Imperial Chemical Industries Limited, London, England
Filed May 6, 1980, Ser. No. 147,074
Claims priority, application United Kingdom, May 21, 1979, 17645/79
Int. Cl.³ C07D *205/04, 207/16, 211/60, 211/62;* A61K *31/395, 31/40, 31/445*
U.S. Cl. 424—267 9 Claims
1. A 1-phenyl-2-aminoethanol derivative of the formula:

I

wherein R^1 is selected from the group consisting of 3,4-bis[-(3–8C)alkanoyloxy]phenyl, 3,5-bis[(3–8C)alkanoyloxy]phenyl, 3-[(3–8C)alkanoyloxy]methyl-4-[(3–8C)alkanoyloxy]phenyl, 4-[(3–8C)alkanoyloxy]phenyl, 2-chlorophenyl and 3,5-dichloro-4-aminophenyl radicals; R^2 and R^3 are independently hydrogen or (1–4C)alkyl radicals; A^1 is a (1–4C)alkylene diradical; and Q is selected from the group consisting of (3–12C)alkanoyl, [(3–6C)alkoxy]carbonyl, phenylacetyl, phenoxyacetyl, benzoyl and benzyloxycarbonyl radicals, the phenyl rings of which may optionally bear a substituent selected from the group consisting of halogeno, (1–4C)alkyl, (1–4C)alkoxy and trifluoromethyl radicals [n is zero, 1 or 2; and m is 2,3,4 or 5,] and wherein the diradical of the formula:

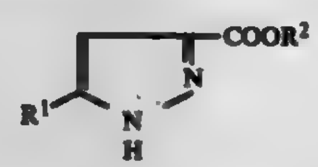


III

is an azetidin-1,2-diyl, pyrrolidin-1,2-diyl, pyrrolidin-1,3-diyl, piperidin-1,2-diyl, piperidin-1,3-diyl or piperidin-1,4-diyl radical; or a pharmaceutically acceptable acid-addition salt thereof.

7. A method for treating an area of inflammation affecting the skin of a warm-blooded animal which comprises topically administering to said area an effective anti-inflammatory amount of a compound of formula I, or a pharmaceutically acceptable acid-additon salt thereof, as claimed in claim 1.

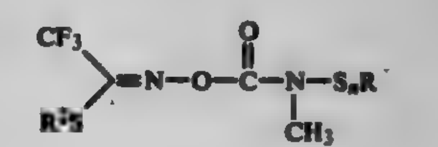
4,323,576
DERIVATIVES OF PYRAZOLE FOR USE IN THERAPY
Kunio Seki, and Masahiko Ohki, both of Shiga, Japan, assignors to Morishita Pharmaceutical Co., Ltd., Osaka, Japan
Filed Nov. 12, 1980, Ser. No. 205,936
Claims priority, application Japan, Nov. 16, 1979, 54-149103
Int. Cl.³ A61K *31/415*
U.S. Cl. 424—273 P 8 Claims
1. An antihyperlipemic composition in dosage form, which comprises an antihyperlipemically effective amount of a compound of the formula:



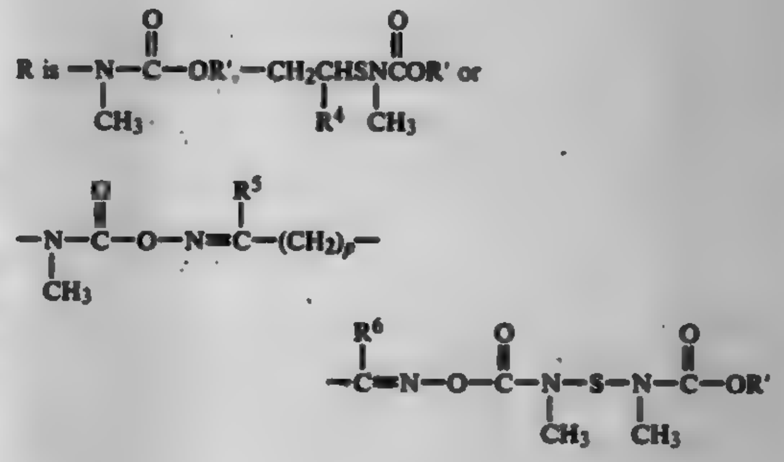
wherein R^1 represents an alkyl group of 7–11 carbon atoms and R^2 represents H or a lower alkyl group of up to two carbon atoms, and a pharmaceutically acceptable carrier.

4,323,577
AQUEOUS SOLUTION OF NITROGLYCERIN
Takaaki Ohkuma, Tokyo; Hiroshi Ninomiya, Sayama; Masaaki Nakamura, Ageo, and Genichi Idzu, Yono, all of Japan, assignors to Nippon Kayaku Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 3, 1980, Ser. No. 203,142
Claims priority, application Japan, Nov. 13, 1979, 54-146011
Int. Cl.³ A61K *31/21*
U.S. Cl. 424—298 4 Claims
1. An aqueous solution of nitroglycerin comprising: an amount of nitroglycerin in the range 0.1 to 1.0 mg of nitroglycerin per milliliter of said solution; and an amount of a component consisting of at least one substance selected from the group consisting of sorbitol, mannitol and xylitol in the range 25 to 150 mg of said component per milliliter of said solution, said solution having a pH value of 3 to 8.

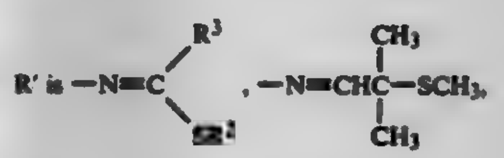
4,323,578
FLUORINATED CARBAMATE INSECTICIDES
William J. Middleton, Chadds Ford, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Continuation-in-part of Ser. No. 65,485, Sep. 10, 1979, abandoned. This application Apr. 14, 1980, Ser. No. 139,797
Int. Cl.³ A01N *37/52;* C07C *119/18*
U.S. Cl. 424—298 63 Claims
1. A compound of the formula:



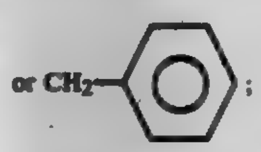
wherein



where

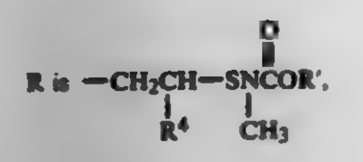


R^2 is C_1–C_6 alkyl; C_3–C_6 alkenyl,

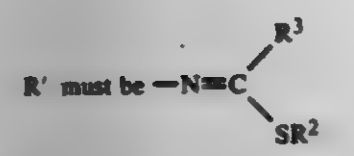


R^3 is CFXY, $CON(CH_3)_2$, CH_2OCH_3, or C_1–C_3 alkyl wherein X and Y are independently H or F;
R^4 is H or CH_3;
n is 1 or 2;
p is 0, 1 or 2;
R^5 or R^6 are independently H, C_1–C_4 alkyl, phenyl or phenyl substituted with one atom of F, Cl, Br or CH_3;
provided that when:

(1)



n must be 1;
(2) R^4 is CH_3,



and R^3 must be CFXY.

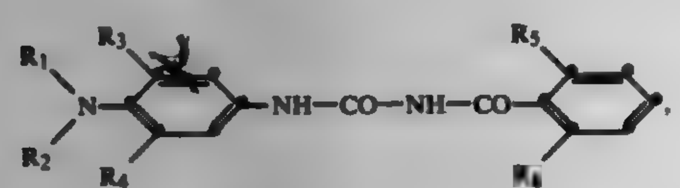
22. An agricultural composition for insecticidal use consisting essentially of a surfactant, diluent or combination thereof and an insecticidally effective amount of a compound of claim 1.

4,323,579
INSECTICIDAL N-(P-AMINOPHENYL)-N'-BENZOYLUREAS

Josef Ehrenfreund, Allschwil, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 128,610, Mar. 10, 1980, abandoned. This application Jan. 14, 1981, Ser. No. 224,983
Claims priority, application Switzerland, Mar. 13, 1979, 2379/79; Feb. 12, 1980, 1134/80
Int. Cl.³ A01N *47/34*; C07C *127/22*
U.S. Cl. 424—322 11 Claims

1. A compound of the formula


(I)

wherein each of R_1 and R_2 independently is C_1–C_4 alkyl or C_3–C_5 alkenyl, each of R_3 and R_4 independently is chlorine or bromine, and each of R_5 and R_6 independently is hydrogen, fluorine or chlorine, with the proviso that R_5 and R_6 are not both simultaneously hydrogen.

9. A pesticidal composition for controlling insects and acarids which contains, as active component a pesticidally effective amount of a compound according to claim 1, together with carriers and/or other adjuvants.

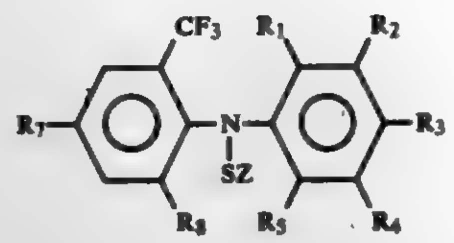
10. A method for controlling insects and acarids which comprises applying thereto an insecticidally or carricidally effective amount of a compound according to claim 1.

4,323,580
MITICIDAL, FUNGICIDAL AND OVICIDAL DIPHENYLSULFENAMIDES

Gary D. Grantham, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 24, 1980, Ser. No. 115,105
The portion of the term of this patent subsequent to Jul. 29, 1997, has been disclaimed.
Int. Cl.³ A01N *33/02, 37/18*; C07C *145/02*
U.S. Cl. 424—324 12 Claims

1. A compound of the formula


I

wherein
R_1, R_3 and R_4 independently are H, F, Cl, Br, NO_2, CF_3, OCF_3, OCF_2CF_2H or $S(O)_kR_6$;
R_2 is H, F, Cl, Br, NO_2 or CF_3;
R_5 is H or F;
k is 0, 1, or 2;
R_6 is C_1–C_2 alkyl or C_1–C_2 alkyl substituted with 2 to 4 atoms of Cl, F or combinations thereof;
R_7 is NO_2 or CF_3;
R_8 is NO_2 or CF_3;
Z is CCl_3, CCl_2F, CCl_2CCl_2H or CCl_2CFCL_2;
provided that when R_1 is NO_2 or CF_3, then R_3 must be H or F;
provided that at least two of the substituents R_1, R_2, R_3, and R_4 are H, F or combinations thereof;
provided that when two of the substituents R_1, R_2, R_3 and R_4 are NO_2, $S(O)_kR_6$ or combinations thereof, they are not ortho to each other;
provided that R_7 and R_8 cannot both be NO_2 unless one of R_1, R_3, or R_4 is $S(O)_kR_6$; and
provided that R_7 and R_8 cannot both be CF_3.

9. A method for control of mites, fungus disease of a plant or insect eggs which comprises applying to a locus to be protected a miticidally, fungicidally or ovicidally effective amount of a compound of claim 1.

4,323,581
METHOD OF TREATING CARCINOGENESIS

Robert J. Gander, Whitehouse, N.J., assignor to Johnson & Johnson, New Brunswick, N.J.

Filed Jul. 31, 1978, Ser. No. 929,094
Int. Cl.³ A61K *31/165*
U.S. Cl. 424—324 10 Claims

1. A method of treating carcinogenesis in epithelial tissue in a mammal in need of said treatment, which comprises periodically administering to the subject mammal an effective amount for treating carcinogenesis of N-(4-hydroxyphenyl)-all-trans-retinamide.

4,323,582
METHOD OF TREATING ANIMALS AND HUMANS FOR INTERNAL AND EXTERNAL PARASITES

Norman H. Siegel, 3956 Farragut St., Hollywood, Fla. 33021, and Dan C. Roehm, 808 NE. 20th Ave., Fort Lauderdale, Fla. 33304

Filed Jul. 21, 1980, Ser. No. 170,621
Int. Cl.³ A01N *33/02*
U.S. Cl. 424—325 11 Claims

1. A method of treating animals suffering from bloodsucking parasitic infestation comprising:
administering orally or by injection to said animals a non-toxic parasitic repugnant effective amount of a lower alkanolamine selected from the group consisting of monoethanolamine, diethanolamine triethanolamine and an at least partially neutralized form thereof having a pH of between 4 and 8.

4,323,583
COLORANTS FOR LIPID-BASED EDIBLE COMPOSITIONS AND LIPID-BASED COMPOSITIONS MADE THEREFROM

Kenneth B. Bass, Evanston, and Robert G. Agusto, Chicago, both of Ill., assignors to National Can Corporation, Chicago, Ill.

Division of Ser. No. 967,972, Dec. 11, 1978. This application Nov. 20, 1980, Ser. No. 208,552
Int. Cl.³ A23L *1/275*
U.S. Cl. 426—250 7 Claims

1. A dry, edible, non-toxic food color blend pigment composition for imparting a brown coloration to lipid-based food products which comprises a pulverulent admixture of a water soluble, lipid insoluble caramel powder and, as a color enhancer, a pulverulent FD&C Yellow No. 6 lake.

4,323,584
METHOD OF PREPARING ANIMAL FEEDS

Karel F. Saldien, Fort Wayne, Ind., assignor to Central Soya Company, Inc., Fort Wayne, Ind.

Continuation-in-part of Ser. No. 90,285, Nov. 1, 1979, abandoned. This application May 21, 1980, Ser. No. 152,040
Claims priority, application Netherlands, Mar. 26, 1980, 8001790
Int. Cl.³ A23K *1/18*
U.S. Cl. 426—285 2 Claims

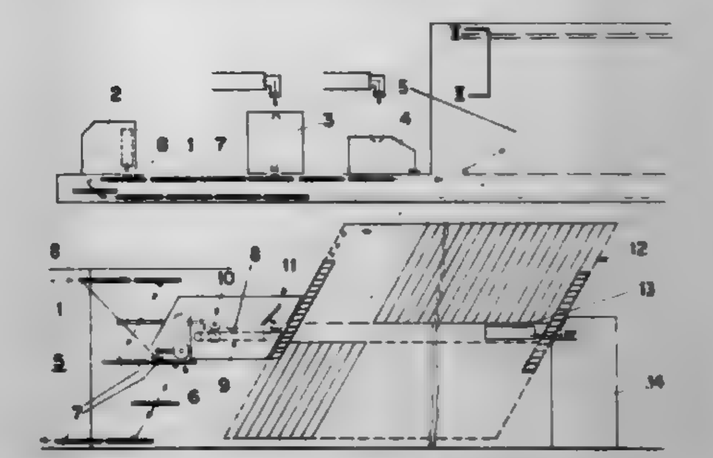
1. A method of preparing animal feeds consisting essentially of providing a multiple ingredient mixture having a particle size less than about 0.80 mm. and continuously introducing a dry stream of said mixture having a predetermined moisture content into a disk pelletizer inclined at an angle from about 40° to about 60° relative to the horizontal and rotating said pelletizer at a speed effective to produce agglomerated balls while simultaneously introducing separately a stream of water into said disk pelletizer with both streams being at room temperature and atmospheric pressure, and continuously removing balls and drying said balls to provide a product having a bulk density ratio of ball to said ingredient mixture of from about 0.60 to about 0.95 on the same moisture content basis, said mixture including milk particles present at least in an amount of about 30% of said mixture and having a particle size less than about 0.2 mm., and the ball diameter being about 3 mm. whereby a milk replacer is achieved which is reconstitutable with water to milk consistency in about one minute without substantial agitation.

4,323,585
PROCESS FOR THE PRODUCTION OF PASTA PRODUCTS PACKED READY FOR SALE IN SERVING PORTIONS IN PACKAGES

Josef Manser, Uzwil, Switzerland, assignor to Gebrueder Buehler A.G., Uzwil, Switzerland

Filed Feb. 14, 1980, Ser. No. 121,520
Claims priority, application Switzerland, Feb. 15, 1979, 1499/79
Int. Cl.³ A23L *1/16*; F26B *3/04, 11/18*; B65B *23/00*
U.S. Cl. 426—394 8 Claims

1. A process for automatically producing pasta products packaged for sale in individual serving portions, comprising the steps of:
positioning groups of interconnected first package portions for movement along a feed path, each first package portion being of porous material to allow circulating air to flow therethrough;
depositing individual servings of predetermined pasta products directly onto the groups of first package portions, each first package portion including predetermined recesses thereon for receiving individual servings of the pasta products;
advancing the groups of first package portions and servings of pasta products thereon into a dryer;
circulating dry air through and around the first package portions substantially to dry the servings of pasta products thereon while in the dryer;
removing the first package portions and dried servings of pasta products thereon from the dryer;

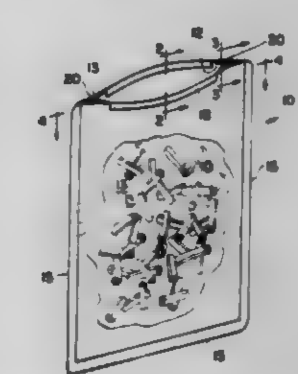


separating the groups of first package portions into individual first package portions each having a plurality of individual servings of dried pasta products thereon; and
combining the separated first package portions with second package portions to complete packaging of the individual servings of pasta products.

4,323,586
THERMALLY-PROCESSABLE FLEXIBLE PACKAGE AND PROCESS FOR USING SAME

Florren E. Long, Mount Vernon, Ohio, assignor to Ludlow Corporation, Needham Heights, Mass.

Filed Oct. 20, 1980, Ser. No. 198,369
Int. Cl.³ B65B *31/02, 55/06*; B65D *33/02*
U.S. Cl. 426—412 4 Claims



1. In a pouch for use in the packaging and subsequent secure transporting of food, the improvement wherein said pouch is formed of two flexible sealable wall panels, said panels each being formed of an inner sheet and an adjacent outer sheet and said panels and the sheets from which they are formed being sealed together about the lateral and bottom edges of said panels and said panels being unsealed to each other across their upper edges to form an open topped pouch; said inner sheet and adjacent outer sheet of each panel being unsealed to each other between the lateral and bottom edges to define an unsealed space; the upper edge of each said wall panel comprising a major central portion therealong, which comprises a sealed edge shield, formed of the upper edge of said inner sheet and said outer sheet of each said panel being sealed together, said shield forming means to prevent contamination of said space between said inner sheets and said adjacent outer sheets during pouch-filling; and unsealed conduit means to vent said space between each of said inner sheets and each adjacent outer sheet, said conduit means being formed at the sides of each panel and between the ends of each said shield means and a sealed lateral edge adjacent to said shield means.

4. In a process for packaging food in a flexible sealable

pouch and including the step of thermally-treating such food, the improvement wherein

(1) said food is placed into the open-topped pouch of claim 1,
(2) filling said pouch while shielding said unsealed space between said sheets from contamination with food by said sealed edge shield, then
(3) subjecting said pouch to a sub-atmospheric pressure, removing any excessive insulating gas from between said sheets through said unsealed conduit means,
(4) and then sealing the upper edges of said pouch leaving said inner sheet and adjacent outer sheet of each panel in non-laminated relationship and thermally processing the sealed pouch.

4,323,587

COLORANTS FOR LIPID-BASED EDIBLE COMPOSITIONS AND LIPID-BASED COMPOSITIONS MADE THEREFROM

Kenneth B. Bass, Evanston, and Robert G. Agusto, Chicago, both of Ill., assignors to National Can Corporation, Chicago, Ill.

Division of Ser. No. 967,972, Dec. 11, 1978. This application Nov. 20, 1980, Ser. No. 208,553
Int. Cl.³ A23L *1/275*
U.S. Cl. 426—540 5 Claims

1. A brown-hued cocoa replacer composition comprising a dry, pulverulent, brown-hued color blend composition containing from about 50 to 99.4% by weight spray dried powdered caramel; 0.5 to 40% by weight of FD&C Yellow No. 6 lake; 0.1 to 10% by weight of FD&C Blue No. 2 lake; a flavorant; and a diluent.

4,323,588

AERATED CONFECTIONS

Walter Vink, Purdys Station; Leonard Spooner, Port Chester, and Donald A. M. Mackay, Pleasantville, all of N.Y., assignors to Life Savers, Inc., New York, N.Y.

Filed Aug. 7, 1980, Ser. No. 175,985
Int. Cl.³ A23G *3/00*
U.S. Cl. 426—564 17 Claims

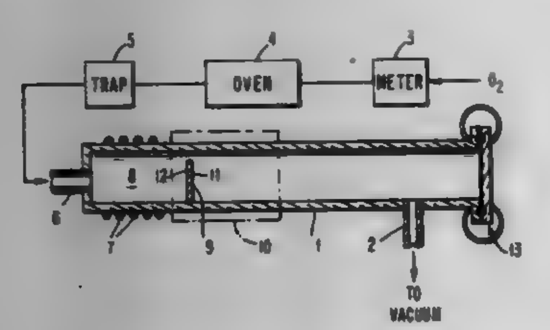
1. An aerated confection having good stability consisting essentially of from about 20 to about 90% by weight of a hydrogenated sugar which is isomaltitol or a mixture of isomaltitol and α-D-glucopyranosyl-1,6-mannitol, from about 5 to about 60% by weight of a hydrogenated starch hydrolysate and from about 0.5 to about 5% by weight of a whipping agent.

4,323,589

PLASMA OXIDATION

Asit K. Ray, Mt. Kisco, and Arnold Reisman, Yorktown Heights, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 7, 1980, Ser. No. 147,684
Int. Cl.³ B05D *3/06*
U.S. Cl. 427—38 14 Claims



1. A process for oxidizing by plasma one surface of a metallic-type electrically conductive substrate or semiconductive substrate which comprises placing the surface to be oxidized perpendicular to the flow of plasma gas and in a region having a pressure of about 10 mtorr to about 100 mtorr where the surface of the substrate which is not to be oxidized faces the plasma, and thereby oxidizing the surface of the substrate not facing the plasma.

4,323,590

METHOD FOR IMPROVING SWITCH CONTACTS, IN PARTICULAR FOR VACUUM SWITCHES

Joseph H. Lipperts, Hengelo, Netherlands, assignor to Hazemeijer B. V., Hengelo, Netherlands

Filed Jul. 21, 1980, Ser. No. 170,925
Claims priority, application Netherlands, Jul. 24, 1979, 7905720
Int. Cl.³ B05D *3/06*
U.S. Cl. 427—38 5 Claims

1. A method for forming vacuum switch contacts, comprising:
implanting ions of a material, or a combination of materials, taken from the group consisting of Cr, Ti, Be, Si, Ni, or Ta, into the discharge area of switch contacts to a depth of 0.1 to 1.0 microns; and
continuing said ion implantation until the concentration of said ion material amounts to at least 10% by weight of the switch contact.

4,323,591

IRRADIATION OF POLYACRYLATE FILMS IN AIR

Larry A. Wendling, and John B. Covington, both of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 51,888, Jun. 25, 1979, Pat. No. 4,306,954. This application Jan. 29, 1981, Ser. No. 229,328
Int. Cl.³ B05D *3/06*
U.S. Cl. 427—53.1 7 Claims

1. The process of curing a composition to a non-tacky state said composition comprising at least 15% by weight of radiation polymerizable components having the formula

$$A^1—Z—A^2 \tag{1}$$

wherein A^1 and A^2 independently are ethylenically unsaturated terminal groups having terminal ethylenic unsaturation and having the formula

$$R—O—CH_2—\overset{\displaystyle OR^2}{\underset{\displaystyle R^1}{C}}—R^3$$

wherein R—O— is a monovalent residue of an aliphatic terminally unsaturated primary alcohol, ROH, formed by the removal of the active hydrogen from the primary —OH group, R having the formula:

$$[E—CH_2)_b]_mR^5—CH_2)_c$$

wherein
E is

$$CH_2{=}\underset{\displaystyle R^4}{C}—\overset{\displaystyle O}{\overset{\|}{C}}—O—$$

c is an integer of from 1 to 6,
b is zero or an integer of from 1 to 6,
R^1 and R^4 independently represent hydrogen or methyl,
R^5 is an aliphatic group having from 1 to 15 carbon atoms, and no more than two catenary oxygen or carboxy groups, a valence of m+1,

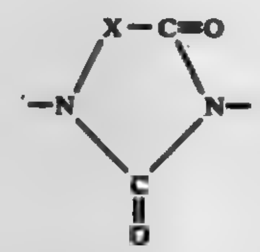
m is an integer of from 1 to 5,
R^2 represents hydrogen or groups of the formula or

$$—\overset{\displaystyle O}{\overset{\|}{C}}—R^6$$

or

$$—\overset{\displaystyle O}{\overset{\|}{C}}—NHR^7$$

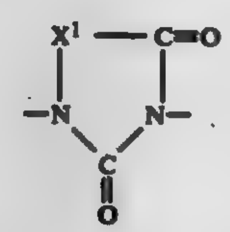
wherein
R^6 represents alkyl or alkenyl groups,
R^7 is an aliphatic or aromatic group of up to eight carbon atoms,
R^3 is an alkylene group of from 1 to 6 carbon atoms with up to one catenary oxygen atom, and
Z is a heterocyclic group of the formula



wherein
X is a divalent group which is required to complete a 5- or 6-membered heterocyclic ring, or

$$\left[CH_2{=}\underset{\displaystyle R^{12}}{C}—\overset{\displaystyle O}{\overset{\|}{C}}\left(O—\underset{\displaystyle R^{13}}{CH}—\underset{\displaystyle R^{14}}{CH}\right)_m\right]_n—A \tag{2}$$

wherein
R^{12} and R^{13} independently represent hydrogen or methyl,
R^{14} represents hydrogen, an alkyl group, or a phenyl group,
R^{13} and R^{14} together may represent a trimethylene or tetramethylene group,
m represents a number of from 1 to 30,
n is 2 or 3, and
a represents a group of the formula



wherein
X^1 represents the divalent radical necessary to complete a 5- or 6-membered heterocyclic ring group, said process comprising exposing said composition to radiation within the ultraviolet and visible spectral region while the composition is in the presence of an atmosphere of at least 2% by volume of oxygen to polymerize said components having formula (1) or (2) wherein said composition is in the form of a film on a substrate.

4,323,592

PROCESS FOR PRODUCING A SHAPED ARTICLE HAVING A MAT SURFACE

Isao Sasaki, 2-6-206, Kurokawa 3-chome, and Kenji Kushi, 2-6-101, Kurokawa 3-chome, both of Ohtake-shi, Hiroshima-ken, Japan

Filed May 15, 1980, Ser. No. 150,141
Claims priority, application Japan, Jun. 21, 1979, 54-78378
Int. Cl.³ B05D *3/06*
U.S. Cl. 427—54.1 2 Claims

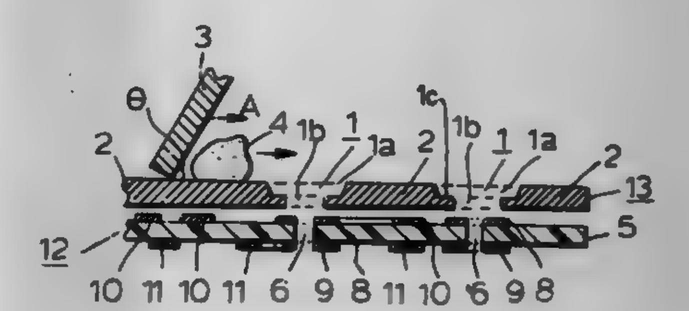
1. A process for producing a shaped article having a uniform mat surface which comprises: coating a surface of a shaped resin article with an acrylic coating composition comprising an acrylic or methacrylic ester polymer, and a polyfunctional monomer containing at least two acryloyloxy or methacryloyloxy groups per molecule; irradiating the coated surface with ultraviolet rays, and, further, coating the irradiated surface with a hardening liquid comprising mainly a polyfunctional monomer containing at least three acryloyloxy or methacryloyloxy groups per molecule, and; irradiating the further coated surface with ultraviolet rays.

4,323,593

METHOD OF PRINTING A SPOT PATTERN IN A PRINTED CIRCUIT BOARD

Eiichi Tsunashima, Hirakata, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Apr. 11, 1980, Ser. No. 139,213
Claims priority, application Japan, Apr. 11, 1979, 54-44710
Int. Cl.³ H05K *3/40*
U.S. Cl. 427—97 7 Claims



1. A method of applying a paste through a through-hole in a printed circuit board, comprising:
forming a mask having a hole therethrough having (a) an upper larger cross-section hole portion having a bottom portion and (b) a lower smaller cross-section hole portion extending downwards from said bottom portion of said upper hole portion and said bottom portion of said upper hole portion forming an inhole ring-shaped land, the lower hole portion having a cross-section larger than the cross-section of said through hole in the printed circuit board;
placing the printed circuit board close to and facing said lower hole portion of said mask with said through hole positioned substantially coaxially with said hole in said mask and with the portion of the surface of said printed circuit board which is away from said mask uncovered;
applying a paste to said hole in said mask from said upper hole portion;
pressing said paste applied to said upper hole portion through said lower hole portion of said mask and through said through-hole in said printed circuit board for filling said through-hole with said paste and coating the surface of the printed circuit board which is toward said mask and/or the surface of said printed circuit board which is away from said mask in the area around and close to said through-hole with said paste; and hardening said paste.

4,323,594

COLLOIDAL DISPERSIONS FOR ACTIVATING NON-CONDUCTORS PRIOR TO ELECTROLESS PLATING

Nathan Feldstein, 63 Hemlock Cir., Princeton, NJ 08540

Continuation-in-part of Ser. No. 672,044, Mar. 30, 1970, which is a division of Ser. No. 607,506, Aug. 26, 1975, Pat. No. 3,993,799, which is a continuation-in-part of Ser. No. 512,224, Oct. 4, 1974, abandoned. This application May 27, 1980, Ser. No. 153,272

Int. Cl.³ C23C *3/02*

U.S. Cl. 427—98 **5 Claims**

1. A process for the electroless plating of a non-conductor substrate comprising

contacting said substrate prior to plating with a colloidal composition comprising a copper colloid admixed with cuprous compound and wherein the admixing takes place subsequent to the production of the copper colloid.

4,323,595

NICKEL-MOLYBDENUM CATHODE

Cletus N. Welch, Clinton, and John O. Snodgrass, Akron, both of Ohio, assignors to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 6,068, Jan. 24, 1979, Pat. No. 4,248,679. This application Jan. 31, 1980, Ser. No. 117,414

The portion of the term of this patent subsequent to Feb. 17, 1998, has been disclaimed.

Int. Cl.³ B05D *1/08, 5/12*

U.S. Cl. 427—123 **5 Claims**

1. A method of preparing an electrode having a porous surface on a metal substrate comprising:

(a) depositing an aqueous alkali metal hydroxide impermeable nickel film on the substrate;

(b) flame spraying particles comprising an alloy of nickel and aluminum and separate particles comprising molybdenum onto the nickel film; and

(c) leaching out said aluminum whereby to form a porous surface consisting essentially of nickel and molybdenum atop the porous film.

4,323,596

COATING IRON OXIDE PARTICLES FOR MAGNETIC RECORDING

Gunter Buxbaum, Krefeld; Ingo Pflugmacher, Meerbusch; Franz Hund, Krefeld; Volker Hahnkamm, Krefeld, and Peter Woditsch, Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Mar. 19, 1979, Ser. No. 21,870

Claims priority, application Fed. Rep. of Germany, Apr. 12, 1978, 2815712

Int. Cl.³ B22F *1/02;* **G11B** *5/62;* **C01G** *49/02*

U.S. Cl. 427—127 **5 Claims**

1. In the preparation of highly orientatable needle-shaped ferrimagnetic iron oxide particles by the reduction and reoxidation of needle-shaped particles of hydrated oxide of iron which have been surface treated before reduction against sintering the improvement which comprises effecting the surface treatment by applying to the particles of hydrated oxide of iron one layer of oxygen-containing anions selected from the group consisting of silicate, phosphate, borate, vanadate, molybdate and tungstate and a further layer of polyvalent cations selected from the group consisting of aluminum, chromium, manganese, iron and gallium, each layer weighing about 0.02 to 2% by weight of the particle.

4,323,597

PROCESS FOR PRODUCING AN ULTRAVIOLET RADIATION STABILIZED POLYMERIC ARTICLE

Daniel R. Olson, Schenectady, N.Y., assignor to General Electric Company, Pittsfield, Mass.

Filed Sep. 15, 1980, Ser. No. 187,508

Int. Cl.³ B05D *7/02, 3/02, 7/24*

U.S. Cl. 427—160 **8 Claims**

1. A process for producing a polycarbonate resin article having an improved resistance to degradation by ultraviolet radiation comprising impregnating the surface layers of said article with at least one ultraviolet radiation absorber by contacting the surface of said article with an ultraviolet radiation stabilizing composition consisting essentially of (i) at least one ultraviolet radiation absorbing compound, and (ii) at least one liquid carrier which is nonaggressive towards and wets polycarbonate selected from the class consisting of alcohols, hydroxy ethers, alcohol-water mixtures, liquid aliphatic hydrocarbons, liquid cycloaliphatic hydrocarbons, and chlorofluorocarbons, and thereafter heating said article containing said stabilizing composition on its surface for a period of time at a temperature sufficient for said ultraviolet radiation absorbing compound to effectively impregnate the surface layers of said article but insufficient to deleteriously affect the physical properties of said polycarbonate.

4,323,598

METHOD OF COATING GLASS SURFACE WITH HEAT-REFLECTING METAL OXIDE FILM

Seiki Okino; Toshiharu Yanai, and Katsuto Tanaka, all of Matsusaka, Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Dec. 15, 1980, Ser. No. 216,752

Claims priority, application Japan, Dec. 28, 1979, 54-170462

Int. Cl.³ C03C *17/25;* **G02B** *1/10*

U.S. Cl. 427—160 **6 Claims**

1. In a method of coating a glass plate surface with a heat-reflecting metal oxide film, which comprises titanium oxide as a principal component thereof, through the step of spraying a solution containing a thermally decomposable organic titanium compound dissolved in an organic solvent onto a surface of a glass plate which has been heated such that said surface is maintained at a temperature sufficient to cause thermal decomposition of said organic titanium compound to titanium oxide,

the improvement comprising the spraying step being performed by maintaining the absolute humidity of the spraying atmosphere, in which said glass plate is disposed, below about 0.008 kg H_2O/kg dry gas.

4,323,599

METHOD FOR ACHIEVING PARTICLE-TO-PARTICLE CONTACT IN AN ANTIFOULING COATING

David W. Marshall, North Reading, Mass., assignor to Kennecott Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 46,904, Jun. 8, 1979, abandoned, which is a division of Ser. No. 886,951, Mar. 15, 1978, Pat. No. 4,197,233. This application Nov. 28, 1979, Ser. No. 98,312

Int. Cl.³ B05D *7/22*

U.S. Cl. 427—181 **9 Claims**

1. A method for controlling fouling of the surface of a water pipe interior or a submergible or submerged marine structure by applying a copper-containing polymeric coating, said method comprising:

(a) providing the copper in flake form;

(b) cleaning the copper flake to remove substantially all contaminating surface deposits;

(c) mixing the cleaned copper flake with an uncured water-insoluble polymer;

(d) applying the mixture as a coating onto the surface of the water pipe interior or submergible or submerged marine structure; and

(e) curing the coating.

4,323,600

PROCESS FOR METALLIC COAT FINISHING

Kenji Sakata, Kamakura; Toshiaki Yamada, Yokohama; Kenji Uchiyama, Odawara, and Yugo Hasegawa, Yokohama, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Filed Aug. 7, 1980, Ser. No. 176,155

Claims priority, application Japan, Aug. 7, 1979, 54-99907

Int. Cl.³ B05D *1/36*

U.S. Cl. 427—202 **9 Claims**

1. A process for metallic coat finishing which comprises

(1) undercoating a substrate with a liquid coating (A) comprising a thermosetting vinyl copolymer (a) of 5,000–30,000 in number average molecular weight and a pigment (b) imparting a metallic appearance to the coating to form a first coated film,

(2) without baking the first coated film obtained as in step (1), overcoating said coated film obtained as in step (1) with a clear thermosetting powder paint (B) to form a second coated film and thereafter,

(3) baking the two coated films together, said thermosetting vinyl copolymer (a) being obtained by copolymerizing 3–25% by weight of N-alkoxymethyl(metha)acrylic amide, 3–20% by weight of a hydroxyl group containing vinyl monomer, 0.5–5% by weight of a carboxyl group containing vinyl monomer and 50–93.5% by weight of copolymerizable other vinyl monomers.

4,323,601

METHOD FOR PRINTING CANS FROM HEAT TRANSFER PAPER

Danny L. McMillin, Golden, and James S. Stirbis, Littleton, both of Colo., assignors to Coors Container Company, Golden, Colo.

Continuation of Ser. No. 943,372, Sep. 18, 1978, Pat. No. 4,250,831. This application Jun. 16, 1980, Ser. No. 159,876

Int. Cl.³ B05D *5/00*

U.S. Cl. 427—287 **12 Claims**

1. A method of continuous transfer of images onto outer surfaces of generally cylindrical members by use of a sheet material having a series of spaced heat transferable ink images thereon comprising the steps of:

continuously unwinding a roll of sheet material and rewinding sheet material at a distance from said unwinding to provide a moving unwound intermediate length of material;

feeding in spaced sequence the generally cylindrical members into association with said unwound intermediate length of material;

transporting said generally cylindrical members in a predetermined position relative to said spaced ink images on the moving intermediate length of material;

wrapping the unwound intermediate length of material about the outer surfaces of the generally cylindrical members associated therewith to form wrapped cylindrical members;

heating said wrapped cylindrical members to cause the transfer of said images to the outer surfaces of the generally cylindrical members;

unwrapping the unwound intermediate length of material from said wrapped cylindrical members after said heating; and

removing cylindrical members from said intermediate length of material.

4,323,602

WATER REPELLENT AND PRESERVATIVE FOR WOOD PRODUCTS

Thomas G. Parker, Three Rivers, Mich., assignor to Roberts Consolidated Industries, Inc., City of Industries, Calif.

Filed May 14, 1980, Ser. No. 149,155

Int. Cl.³ B05D *1/18, 1/28, 3/00*

U.S. Cl. 427—298 **7 Claims**

2. The method of protecting wood and wood based products by impregnating with an aqueous solution containing 3-iodo-2-propynyl butyl carbamate and paraffin wax emulsion.

4,323,603

FLUOROELASTOMER FILM COMPOSITIONS CONTAINING SILANE COMPOUNDS AND METHOD FOR THE PREPARATION THEREOF

Donald Close, Stow, Ohio, assignor to David Hudson, Inc., Stow, Ohio

Filed Aug. 18, 1980, Ser. No. 178,788

Int. Cl.³ B05D *3/02*

U.S. Cl. 524—545 **15 Claims**

2. A method for adhering fluoroelastomer film compositions, devoid of metallic oxides, to substrates comprising the steps of:

dissolving a fluoroelastomer gum selected from the group consisting of copolymers of vinylidene fluoride and hexafluoropropylene, and terpolymers of vinylidene fluoride, hexafluoropropylene and tetrafluoroethylene in a solvent; and

adding a silane compound to said gum solution said silane compound having the formula $RCH_2CH_2CH_2SiR'_{3-n}(OR'')_n$, where R is an organofunctional group selected from the group consisting of amine and epoxy molecules; R' is a simple alkyl group having about one to five carbon atoms; OR" is a hydrolyzable alkoxy group, R" being an alkyl group having about one to four carbon atoms and n is 1, 2 or 3;

coating said substrate with said fluoroelastomer gum-silane solution; and

evaporating said solvent and leaving a film firmly adhered to said substrate.

4,323,604
CONTINUOUS DIP-PLATING PROCESS ON ONE-SIDE OF STEEL STRIP

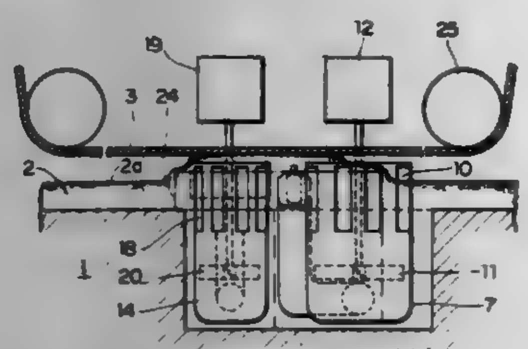
Shuzo Fukuda, and Yutaka Ohkubo, both of Yokohama, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 11, 1980, Ser. No. 158,630

Claims priority, application Japan, Jun. 1, 1979, 54-67445; Dec. 6, 1979, 54-158635

Int. Cl.³ C23C *1/02, 7/00*

U.S. Cl. 427—433 3 Claims



1. A continuous dip-plating process for plating one side of a steel strip, wherein said strip travels substantially horizontally over a still surface of a plating bath, while said plating bath is spouted onto said one side of said strip, and wherein a plating flow is provided along the edges of said strip in a widthwise direction outwardly from said edges, and a plating flow is provided along the central part of said strip in a lengthwise direction.

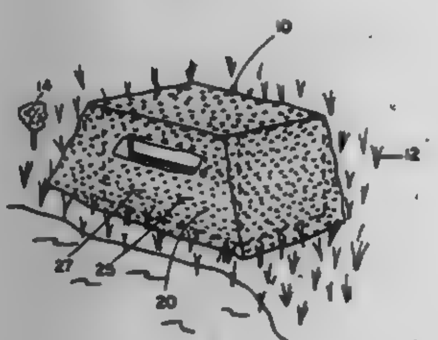
4,323,605
CAMOUFLAGE INCISING GEOMETRY

Charles R. Rush, DeLand, Fla., assignor to Brunswick Corporation, Skokie, Ill.

Continuation of Ser. No. 928,880, Jul. 28, 1978, abandoned, which is a continuation of Ser. No. 723,331, Sep. 14, 1976, abandoned. This application Jan. 21, 1980, Ser. No. 113,468

Int. Cl.³ F41H *3/02*

U.S. Cl. 428—17 6 Claims



1. A camouflage material for covering and stretching over a structure to prevent visual and radar detection thereof, said camouflage material being formed of a planar sheet of material having top and bottom surfaces, a vertical dimension and a horizontal dimension substantially perpendicular to said vertical dimension, and a plurality of spaced apart horizontally aligned rows and vertically aligned columns of V-shaped cuts therethrough, each V-shaped cut comprising two straight unequal in length cuts defining a triangular member hinged about a base angularly disposed with respect to the horizontal dimension of the sheet and having a central axis bisecting the angle formed between the legs which axis is substantially aligned in the vertical dimension of said sheet, alternate rows of V-shaped cuts being inverted with respect to intermediate rows of V-shaped cuts with the inverted V-shaped cuts being further aligned in alternate vertical columns intermediate vertical columns containing the upright V-shaped cuts, the longer length cut of each triangular member having an end adjacent to the end of the shorter length of cut of the adjacent triangular member, the vertical component of the longer length of cut being from 12% to 25% greater than the vertical component of the shorter length of cut of each V-shaped cut whereby stretching said material in a direction transverse to the rows of V-shaped cuts extends the apexes of the triangular members in one row upward out of the plane of the sheet away from said top surface with the next adjacent row of cuts extending the apexes of the triangular members downward out of said plane away from said bottom surface, said V-shaped cuts projecting from said surfaces substantially straight relative to the plane of said sheet to prevent viewing of both of said surfaces simultaneously from one side of said sheet.

4,323,606
CONJUGATED DIENE/MONOVINYL AROMATIC COPOLYMER-BASED HEAT CONTRACTIBLE FILM COATINGS ON GLASS BOTTLE

Ollie G. Buck, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 917,440, Jun. 20, 1978, abandoned. This application Dec. 27, 1979, Ser. No. 107,793

Int. Cl.³ B05D *3/06*

U.S. Cl. 428—35 4 Claims

1. A coated object said object having been coated by a coating contracting operation in which a coating applied comprises essentially a blend of a conjugated diene/monovinyl aromatic copolymer having the ratio of conjugated diene to vinyl aromatic of from about 20/80 to about 50/50 Copolymer I and a conjugated diene/monovinyl aromatic copolymer having a conjugated diene/monovinyl aromatic ratio ranging from about 50/50 to about 90/10 Copolymer II each said copolymer having at least about 5 wt. % olefinic unsaturation said Copolymer I being represented by the formula $(AB)_nZ$ or AB and said Copolymer II being represented by formula AB wherein A is a polyvinyl aromatic segment, B is a polyconjugated diene, Z is a polyfunctional coupling residue or polyfunctional initiator residue and n is an integer in the range 2 to 4, wherein Copolyer I is present in the approximate range of 90–50 and Copolymer II is present in the approximate range of 10–50, by weights percent.

4,323,607
HEAT SHRINKABLE COVERS

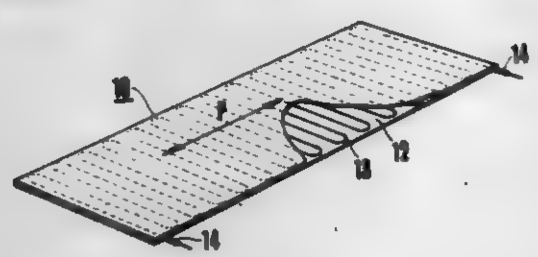
Hiroshi Nishimura; Tetsuo Monma; Minoru Yoshida, all of Yokohama; Kazunari Kirimoto, Chiba; Yoshio Hayamizu, Goi, and Toshio Nagasawa, Kyoto, all of Japan, assignors to UBE Industries, Ltd. and The Furukawa Electric Co., Ltd., both of Tokyo, Japan

Filed Aug. 23, 1979, Ser. No. 68,761

Claims priority, application Japan, Sep. 1, 1978, 53-106199; Sep. 1, 1978, 53-106200

Int. Cl.³ H05B *3/10*

U.S. Cl. 219—213 14 Claims



1. A heat shrinkable synthetic resin cover comprising a heat shrinkable synthetic resin member having a heat shrinkability in substantially one direction, and a flexible electric heating member made of a metallic elongated resistive conductor coated with a cross-linked polymer having a gel fraction of from 20 to 60% and embedded in said heat shrinkable synthetic resin member having a heat shrinkability in substantially one direction, said heating member being arranged with said metallic elongated conductor in a zig-zag form transverse to said direction of heat shrink of said heat shrinkable synthetic resin member and operable to contract upon heat shrinkage of said synthetic resin member in said direction induced by heat produced by electric current flowing through said metallic elongated resistive conductor.

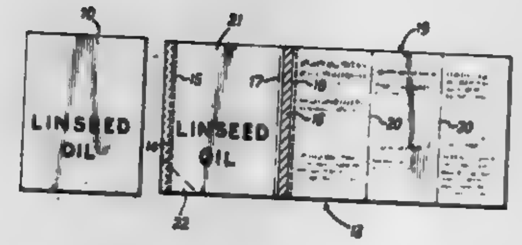
4,323,608
LABEL

Russell W. Denny, 35 Horringer Rd., and Barry D. Denny, 11 Gage Close, both of Bury St. Edmunds, Suffolk, England

Filed Jun. 30, 1980, Ser. No. 164,019

Int. Cl.³ A44C *3/00;* G09F *3/00;* B65D *65/28*

U.S. Cl. 428—43 9 Claims



1. A label comprising a first portion in the form of a sheet having a forward non-adhesive face and a rear face which has an adhesive applied thereto, and a second portion formed separately from said first portion and secured thereto by two spaced bands of adhesive, said second portion comprising a strip having one end edge portion secured to said forward face of said first portion by one of said bands of adhesive, a front part extending across said forward face of said first portion from said one band of adhesive, a transverse tear line adjacent and parallel to said one band of adhesive whereby said front part can be detached from said one end edge portion, a fold line at the edge of said front part remote from said tear line, a back part joined to said front part along said fold line and constituting a substantial proportion of the length of said second portion, which back part is disposed between said front part and said first portion, the second of said bands of adhesive securing said back part to said first portion adjacent said fold line and extending parallel to said fold line, a second transverse tear line formed in said back part adjacent and parallel to said second band of adhesive at the side of said second band of adhesive remote from said fold line, whereby tearing of said second portion along the first said transverse tear line enables said back part to be torn along said second tear line.

4,323,609
ROTATABLE WHEEL ASSEMBLY

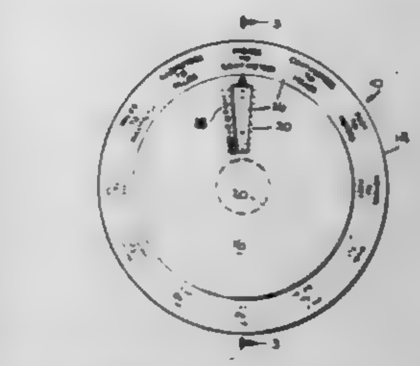
Howard M. Bromberg, Bronx, N.Y., assignor to The Flexi-Group Inc., New York, N.Y.

Filed Sep. 21, 1978, Ser. No. 944,272

Int. Cl.³ G09F *11/04*

U.S. Cl. 428—65 25 Claims

1. A rotatable wheel assembly comprising a pair of generally flat oppositely disposed parallel cover members, a generally flat wheel member sandwiched between said oppositely disposed cover members, said wheel member having an axis of rotation substantially perpendicular to the oppositely disposed cover members and including an axial opening encompassing said axis of rotation, the axial opening of said wheel member not encompassing any pivot disc that is contiguous with said wheel member, and grommetless securing means on at least one of said cover members for securing said one cover member to said other cover member through said axial opening in said wheel member such that the securance of said cover members



through said axial opening forms a pivot for rotation of said wheel member substantially about said axis with respect to said cover members.

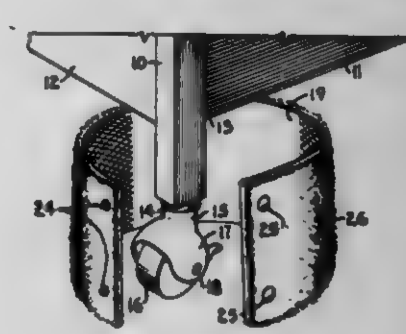
4,323,610
FOOT PROTECTOR FOR FURNITURE

George C. Leverich, 4905 N. Topping, Kansas City, Mo. 64119

Filed Apr. 14, 1980, Ser. No. 140,149

Int. Cl.³ B32B *1/08, 3/02*

U.S. Cl. 428—68 14 Claims



1. A protective sleeve for enclosing the foot of a normally vertical material object support leg, as well as a portion of the leg above said foot, comprising:

an elongate, substantially rectangular strip of material having relatively longer, substantially parallel and normally substantially horizontal upper and lower edges and relatively shorter, substantially parallel and normally substantially vertical end edges and inner and outer faces,

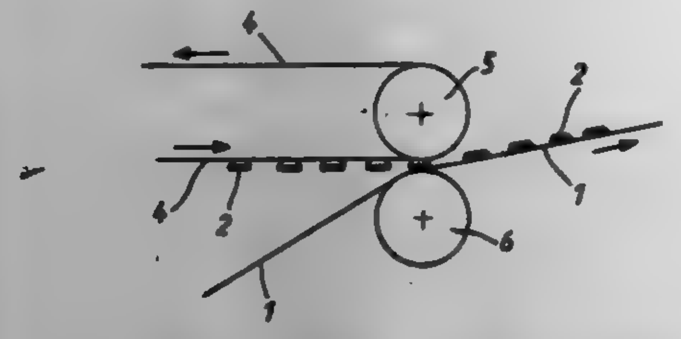
means on said strip adjacent the end edges thereof for releasably engaging the said end edges together to form a continuous, cylindrical sleeve, with the strip outer face on the outside thereof,

said strip of sufficient strength, dimensional stability and height to stand on one lower edge thereof on a normally horizontal supporting surface, when the end edges thereof are engaged together, said strip encircling and enclosing the said support leg foot and a portion of said leg thereabove,

said strip additionally sufficiently resilient in the body thereof to form a cushion to shock on impact of a contacting object (such as a person's bare foot) striking the enclosed support leg and foot through the strip,

said strip further additionally of greater interior dimension then said support leg and any enclosed parts thereof, including its foot, whereby, when the strip is applied around (encircling and partially enclosing) the support leg foot and some of said leg and the end edges thereof engaged together, it normally stands substantially free of said foot and leg, supporting itself and giving an initial foot warning contact to an unexpecting contacting object, independent of the structure of the support leg foot and support leg thereof, before there is any contact by said object with the surrounded leg or foot.

4,323,611
DECORATIVE MATERIAL AND A PROCESS FOR PRODUCING THE SAME
Martin Pöll, Fritzens, Austria, assignor to D. Swarovski & Co., Osterreich, Austria
Filed Jan. 9, 1980, Ser. No. 110,613
Claims priority, application Fed. Rep. of Germany, Jan. 17, 1979, 2901728
Int. Cl.[3] B44C *1/26, 1/28, 3/12*
U.S. Cl. 428—67 4 Claims

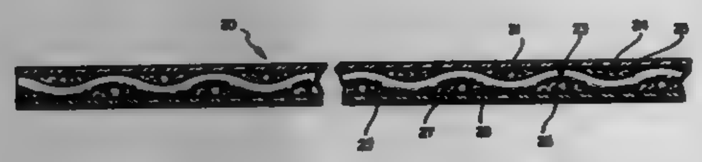


1. A decorative composite material for application to a substrate such as textile, comprising:
a thin, open mesh, net-like backing layer, for example tulle;
decorative elements larger than the mesh size of the backing layer each secured to said backing layer by a respective individual heat activatable adhesive layer, said adhesive layer penetrating at least partially through said backing layer;
said backing layer being thermally stable at the activating temperature of said adhesive;
whereby said composite material can be applied to a desired substrate by reactivating each thermally heat activatable adhesive layer to cause the adhesive to completely penetrate the mesh-like backing layer and to contact an underlying substrate.

4,323,612
CARPETS HAVING PILE OF CRIMPED AND NON-CRIMPED NYLON FILAMENTS
Ernst J. van Issum, Echternach, Luxembourg, assignor to Monsanto Company, St. Louis, Mo.
Continuation of Ser. No. 37,605, May 10, 1979, abandoned. This application Apr. 21, 1980, Ser. No. 142,208
Int. Cl.[3] D03D *27/00*
U.S. Cl. 428—89 5 Claims

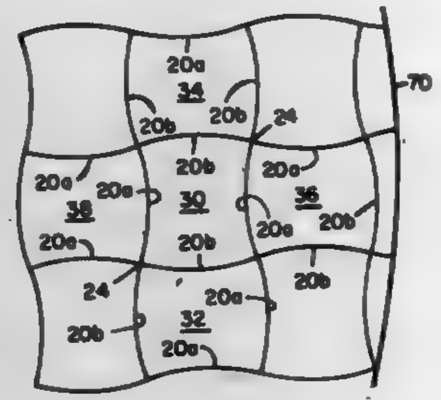
1. A cut pile tufted carpet wherein each tuft consists of two continuous filament nylon yarns plied together, in which one of the yarns is composed of crimped filaments and the other yarn is composed of non-crimped filaments wherein all of the filaments are of substantially the same dTex and the ratio of crimped filaments to non-crimped filaments is 3:1 to 1:3.

4,323,613
LAMINATE MATERIAL
Dennis Snyder, Rt. 1, Atwood Elena, Mineral City, Ohio 44656
Filed Jan. 14, 1980, Ser. No. 112,089
Int. Cl.[3] B32B *27/12, 27/20*
U.S. Cl. 428—111 13 Claims



1. A substantially light-impervious laminate material comprising the combination of a first light-reflective polyvinyl chloride sheet, an open scrim sheet, a second light-reflective polyvinyl chloride sheet, and a light-absorptive pigmentary bonding agent permeating the scrim sheet and binding together the first sheet, the second sheet and the scrim sheet.

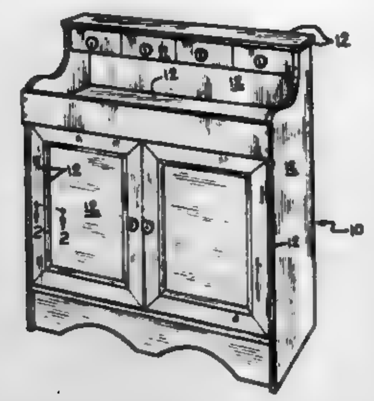
4,323,614
CERAMIC HONEYCOMB STRUCTURE
Suresh T. Gulati, Elmira, N.Y., assignor to Corning Glass Works, Corning, N.Y.
Filed Mar. 31, 1976, Ser. No. 672,155
Int. Cl.[3] B32B *3/12*
U.S. Cl. 428—116 3 Claims



1. In a ceramic honeycomb structure including a plurality of interrelated cells of identical shapes formed by interconnected partitions extending through the structure parallel to a honeycomb axis to form in cross-sectional planes normal to the honeycomb axis a reoccurring pattern of cells, a cell construction which is relatively uniform in structural elasticity in said cross-sectional planes and which deforms in a preinduced manner under stresses exerted in the cross-sectional planes, said cell construction comprising: a plurality of curved partitions having a sinusoidal shape along their extent, said curved partitions being interconnected at junctures to form a plurality of adjacent cells; each said cell having a longitudinal axis extending through the center thereof; said partitions being alternately convexly and concavely curved about the longitudinal axis of the cell; each of said convex and concave partitions having the shape of a half sine wave; each said half sine wave having amplitude means for minimizing the structural elastic modulus anisotropy in directions lying in said cross-sectional planes and for minimizing the bending stresses at end portions of said interconnected partitions adjacent said junctures; said curved partitions having a selected thickness; and said amplitude means including an amplitude of said half sine wave which is less than said selected thickness.

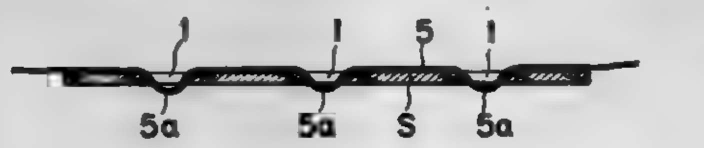
4,323,615
LAMINATED ARTICLE
Myrl D. Sauder, Archbold, Ohio, assignor to Sauder Woodworking Company, Archbold, Ohio
Division of Ser. No. 780,765, Mar. 24, 1977, Pat. No. 4,089,721. This application Mar. 17, 1978, Ser. No. 887,497
Int. Cl.[3] B32B *3/04;* B29C *17/04*
U.S. Cl. 428—121 7 Claims

1. A laminated product comprising a substrate having sharp corners or bends of contour, comprising:
contiguous sheet laminate bonded on said substrate surfaces shaped around said sharp corners or bends of contour, said laminate including inner lamina overlying said substrate surfaces of a thermo-forming organic plastic material and



an outer surface lamina intimately bonded to said inner lamina of a thermo-setting organic plastic material.

4,323,616
REINFORCED VENEER SHEET AND THE METHOD OF MANUFACTURING THE REINFORCED VENEER SHEET
Yasuhiro Ibuki, Obbu, Japan, assignor to Meinan Machinery Works, Inc., Aichi, Japan
Filed Feb. 6, 1980, Ser. No. 118,905
Int. Cl.[3] B32B *3/10;* B27C *1/00, 9/00*
U.S. Cl. 428—134 5 Claims



1. A reinforced veneer sheet having at least one row of closed cuts, said closed cuts in each row having spaces therebetween, said closed cuts extending completely through said veneer sheet and across its grain; and a length of cord extending on one side of said veneer sheet and having intermediate portions forced through said spacially arranged closed cuts to protrude in part from the other side of said veneer sheet, said intermediate portions being clasped only by said spacially arranged closed cuts extending across said grain.

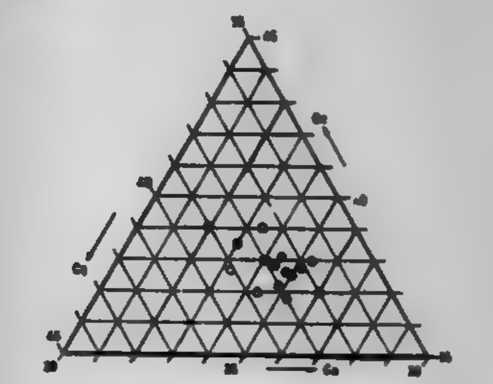
4,323,617
SEMICONDUCTOR CERAMIC COMPOSITION FOR BOUNDARY LAYER CAPACITORS
Harufumi Mandai, and Kunitaro Nishimura, both of Nagaokakyo, Japan, assignors to Murata Manufacturing Co., Ltd., Kyoto, Japan
Continuation of Ser. No. 942,690, Sep. 15, 1978, abandoned. This application Jul. 3, 1980, Ser. No. 165,666
Claims priority, application Japan, Sep. 16, 1977, 52/111807; Sep. 16, 1977, 52/111808
Int. Cl.[3] B32B *5/04, 15/16;* C04B *35/46*
U.S. Cl. 428—148 4 Claims

1. A semiconductor ceramic boundary layer capacitor comprising a shaped ceramic semiconductor having insulating grain boundary layers on crystal grains of said shaped semiconductor formed by firing a shaped semiconductor ceramic composition in a neutral or reducing atmosphere and then heat treating said shaped semiconductor ceramic composition in an oxidizing atmosphere to form said insulating grain boundary layers wherein said semiconductor ceramic composition consists essentially of 99.90 to 99.995 weight % of a semiconductor ceramic component and 0.005 to 0.1 weight % of phosphorus, said semiconductor ceramic component consisting essentially of a solid solution of strontium titanate or modified strontium titanate having a composition expressed by the general formula:

$$(Sr_{1-x}A_x)(Ti_{1-y}Zr_y)O_3$$

wherein A is Ba or Ca, and x and y are mole fractions of the respective components and take respective values in the following ranges, $0 \leq x \leq 0.20$, $0 \leq y \leq 0.20$, and at least one semiconductorizing agent selected from the group consisting of Sb, Ta, Nb, W, Y, La and rare earth elements, said semiconductorizing agent being present in an amount sufficient to semiconductorize the solid solution but not more than 5 weight %, and wherein said insulating grain boundary layers formed as a result of the heat treating of said shaped semiconductor ceramic composition are formed from at least one member selected from the group consisting of V, Cr, Mn, Fe, Co, Ni, As, Sb, Tl, Bi and their oxides, said boundary layer capacitor having a permittivity of from 32,000 to 63,000 and a dielectric loss of from 0.36 to 0.70%.

4,323,618
SINGLE CRYSTAL OF CALCIUM-GALLIUM GERMANIUM GARNET AND SUBSTRATE MANUFACTURED FROM SUCH A SINGLE CRYSTAL AND HAVING AN EPITAXIALLY GROWN BUBBLE DOMAIN FILM
Johannes P. M. Damen, and Johannes A. Pistorius, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Continuation of Ser. No. 740,245, Nov. 8, 1976, abandoned. This application Feb. 13, 1978, Ser. No. 877,168
Claims priority, application Netherlands, Jun. 16, 1976, 7606482
Int. Cl.[3] B32B *7/02*
U.S. Cl. 428—212 7 Claims



1. A single crystal of a non-magnetic synthetic garnet material, characterized in that the garnet material is calcium-gallium-germanium garnet.

2. A bubble domain device comprising a bubble domain film grown epitaxially on a crystallographic face of a monocrystalline garnet substrate, the substrate material consisting of calcium-gallium-germanium garnet having a melting point of about 1380° C.

4,323,619
COVERING ELEMENT SCREENING OFF THE SOLAR RADIATION FOR THE APPLICATIONS IN THE REFRIGERATION BY RADIATION
Vittorio Silvestrini, Naples; Mario Peraldo, Milan, and Enrico Monza, Nerviano (Milan), all of Italy, assignors to Montedison S.p.A., Milan, Italy
Continuation of Ser. No. 869,279, Jan. 13, 1978, abandoned. This application Jul. 23, 1979, Ser. No. 59,598
Claims priority, application Italy, Jan. 17, 1977, 19361 A/77
Int. Cl.[3] B32B *7/00, 5/16, 27/08;* F25B *27/00*
U.S. Cl. 428—212 7 Claims

7. A flexible covering element having selective optical properties, being useful as a protective screen for refrigerating devices which provide refrigeration by selective irradiation, said covering element consisting of a film which is transparent to infrared radiations in a range of light wavelengths com-

prised between 8 and 13 μm, consisting of two films coupled to each other and each formed of a polymer selected from the group consisting of polyethylene and ethylene copolymers, one of said films being white and containing at least one white pigment of granule size lower than 8 μm and selected from the group consisting of TiO_2, CaO, ZnS and MgO in a weight ratio comprised between 2% and 20% for films having a thickness of about 25 to 100 μm, and the other of said films being black and containing at least one coloring adjuvant which is a dye or

pigment of granule size lower than 3 μm and selected from the group consisting of cobalt oxide and carbon black, the cobalt oxide, if present, being present in a weight ratio of between 1% and 5% for films having a thickness of about 25 to 100 μm, and the carbon black, if present, being in a weight proportion of between 0.1% and 0.5% for films having a thickness of about 25–100 μm, the concentration of total additives in the films depending on the thickness of the film and the granule size of the pigments and dyes used, and selected to result in the desired optical properties.

4,323,620

MULTILAYER HEAT INSULATOR

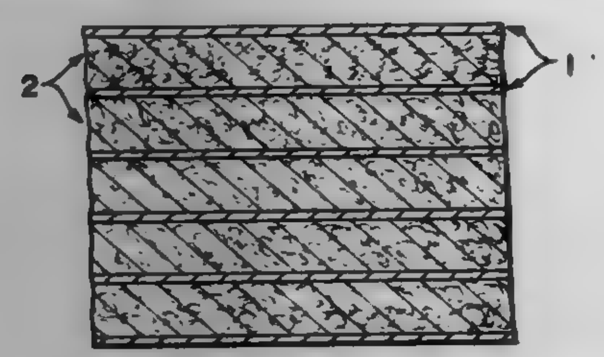
Suminobu Iwabuchi, and Kazumasa Matsui, both of Takatsuki, Japan, assignors to Yuasa Battery Company Limited, Osaka, Japan

Continuation-in-part of Ser. No. 51,455, Jun. 22, 1979, abandoned. This application Feb. 15, 1980, Ser. No. 121,908

Claims priority, application Japan, Jun. 30, 1978, 53/80812

Int. Cl.³ B32B *7/02, 15/14*

U.S. Cl. 428—215 4 Claims



1. A multilayer heat insulator, comprising: gas-impermeable layers each made of a metal foil of one member selected from the group consisting of aluminum, nickel and stainless steel; gas-containing layers each made of at least one member selected from the group consisting of glass fiber, ceramic fiber, carbon fiber, silica powder, alumina powder and zirconia powder in the form of wool, paper or mat; said gas-impermeable and gas-containing layers being laminated alternately so that the same layers are in non-contacting relationship with each other; the thickness of each gas-impermeable layer is 10 to 20 μm; the thickness of each gas-containing layer is 0.3 to 1.8 mm and has a porosity of 0.98 to 0.95 and a bulk density of 0.04 to 0.1 gm/cm^3 and weight per unit area of 0.02 to 0.05 g/cm^2 to make the thermal conductivity of this laminated multilayer heat insulator about 0.02 kcal/mh° C. (200° C.).

4,323,621

MAGNETIC RECORDING MEDIUM

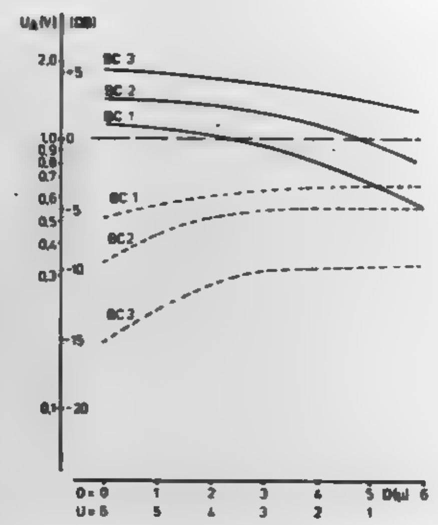
Heinrich Kober, Hohenschaeftlarn; Burkhard Nippe, Munich, and Bernhard Seidel, Pullach all of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jan. 12, 1979, Ser. No. 2,955

Claims priority, application Fed. Rep. of Germany, Jan. 13, 1978, 2801452

Int. Cl.³ G11B *5/70*

U.S. Cl. 428—216 5 Claims



1. In a magnetic tape recording material for tape recorders operable with the iron oxide bias and a playback equalization of 120 μs having improved stability, a support and, arranged one above the other thereon, at least two layers containing magnetic pigments and synthetic resin binders and differing in coercivity and layer thickness, characterised in that the uppermost layer contains as acicular, magnetic pigment magnetite thermally stabilized with one or more elements comprised of an effective amount of P (expressed as P_2O_5) or B (expressed as B_2O_3) together with a metal selected from the group consisting of Cd, Pb, Ca, Mg, Zn, Al, Cr, W, said stabilizing element or elements being present in an amount of from 0.1 to 5% by weight based on Fe_3O_4, and having an average crystallite size, as determined by X-ray photography, of from 30 to 35 nm and a coercivity of from 28 to 36 KA/m, said magnetite having a bias noise level, based on the reference level, which is lower by about 3 dB in relation to the standardized low-noise standard.

4,323,622

HIGH-ELASTICITY PRESS FELT

Arne I. L. Gladh, Skoghall, and Eric W. Gröndahl, Halmstad, both of Sweden, assignors to Albany International Corp., Albany, N.Y.

PCT No. PCT/SE78/00080, § 371 Date Jul. 21, 1979, § 102(e) Date Jul. 17, 1979, PCT Pub. No. WO79/00312, PCT Pub. Date Jun. 14, 1979

PCT Filed Nov. 21, 1978, Ser. No. 61,293

Claims priority, application Sweden, Nov. 21, 1977, 7713097

Int. Cl.³ B32B *5/06*

U.S. Cl. 428—230 11 Claims

1. A dewatering felt of needled textile fibre material for use in the press section of paper-making machines, cellulose machines and similar machines, characterised in that said material comprises high-molecular thermoplastic elastomer fibres which may be stretched to at least twice their original length and thereafter, after relief of the load thereon, rapidly return to essentially their original length.

4,323,623

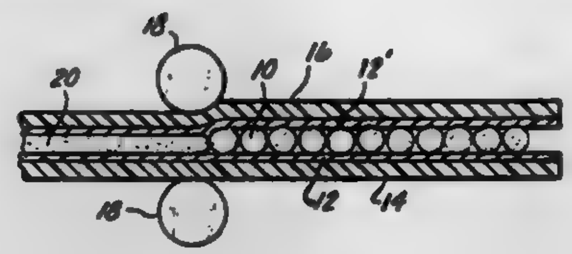
COMPOSITE PLASTIC STRUCTURE AND METHOD FOR PRODUCING SAME

Robert O. Ahrens, and Jerry L. Merkel, both of Florissant, Mo., assignors to McDonnell Douglas Corporation, Long Beach, Calif.

Continuation-in-part of Ser. No. 833,029, Sep. 14, 1977, abandoned. This application Oct. 27, 1978, Ser. No. 955,472

Int. Cl.³ B32B *5/16, 27/04, 27/12, 27/20*

U.S. Cl. 428—246 19 Claims



1. A composite plastic structure consisting of a core material of a thermosetting resin containing a major volume of glass microballoons, and adjacent outer layers of a fibrous material impregnated with a thermosetting resin, wherein said resin of said core material and of said outer layers is a thermosetting resin selected from the group consisting of epoxy, polyimide, polyester, polyurethane and phenolic resins, said fibrous material being selected from the group consisting of graphite, glass, boron, polyamide, polyimide and poly (paraphenyl terephthalamide) fibers and woven fibers.

4,323,624

METHOD OF PREPARING WRINKLE-RESISTANT FABRIC

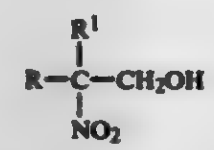
Jerry H. Hunsucker, and Milton E. Woods, both of Terre Haute, Ind., assignors to International Minerals & Chemical Corp., Terre Haute, Ind.

Division of Ser. No. 170,437, Jul. 21, 1980, which is a continuation-in-part of Ser. No. 63,221, Aug. 3, 1979, abandoned. This application Nov. 28, 1980, Ser. No. 210,988

Int. Cl.³ B06D *13/34;* B05D *3/02;* B32B *7/00, 27/42*

U.S. Cl. 428—270 32 Claims

1. A method of preparing a wrinkle-resistant fabric by the steps of (a) impregnating the fabric with a curable urea-formaldehyde resin and a catalyst therefor and from 0.25 to 3.0 moles of a nitroalkanol per mole of urea, said nitroalkanol being represented by the formula



where R and R^1 are hydrogen, methyl, ethyl or hydroxymethyl and can be the same or different and (b) heating to 225° F. to 350° F. to effect a cure of the resin.

4. A wrinkle-resistant fabric obtained by the method of claim 1.

5. A woven fabric of claim 4 made of wool or cotton.

4,323,625

COMPOSITES OF GRAFTED OLEFIN POLYMERS AND CELLULOSE FIBERS

Aubert Y. Coran, and Raman Patel, both of Akron, Ohio, assignors to Monsanto Company, St. Louis, Mo.

Filed Jun. 13, 1980, Ser. No. 159,078

Int. Cl.³ B32B *23/00;* C08L *61/10*

U.S. Cl. 428—361 26 Claims

1. A composite consisting essentially of from 2 to 55 weight percent of discontinuous cellulose fibers, the remaining from 98 to 45 weight percent being a matrix comprising from 2 to 99.9 parts by weight of a crystalline polymer from alpha olefin monomer having 2 to 4 carbon atoms, said polymer having methylol phenolic groups grafted thereto, and at least 0.1 part by weight of a bonding agent per 100 parts of matrix by weight.

19. Treated fibers comprising discontinuous cellulose fibers of aspect ratio greater than five and crystalline polymer from alpha olefin monomer having 2 to 4 carbon atoms, said polymer having methylol phenolic groups grafted thereto, and said polymer being present in an amount sufficient to reduce fiber-to-fiber affinity up to about 85 parts by weight per 100 parts of fibers by weight.

4,323,626

HEAT-ADHESIVE COMPOSITE FIBERS

Kohichi Kunimune, Moriyamachi; Teruaki Hane, Shigaken; Seigo Inadomi, Moriyamachi, and Yasuhiko Furukawa, Kusatsushi, all of Japan, assignors to Chisso Corporation, Osaka, Japan

Continuation-in-part of Ser. No. 62,814, Aug. 1, 1979, Pat. No. 4,234,655, which is a continuation-in-part of Ser. No. 31,989, Apr. 20, 1979, abandoned, which is a continuation of Ser. No. 842,660, Oct. 11, 1977, abandoned. This application Sep. 18, 1980, Ser. No. 188,302

Claims priority, application Japan, Oct. 20, 1976, 51/125723; Dec. 13, 1976, 51/149597; Apr. 12, 1977, 52/41685

The portion of the term of this patent subsequent to Nov. 18, 1997, has been disclaimed.

Int. Cl.³ D02G *3/00*

U.S. Cl. 428—374 7 Claims

1. Heat-adhesive composite fibers having a denier within the range of 1–20, and comprising

(a) a first component of crystalline polypropylene, and P1

(b) a second component consisting of a polymer mixture composed of (1) a saponification product of an ethylene-vinyl acetate copolymer and (2) polyethylene,

said saponification product of an ethylene-vinyl acetate copolymer containing 0.5–18 mol % of vinyl monomer units consisting of vinyl alcohol units and vinyl acetate units based upon the total of vinyl alcohol units, vinyl acetate units and ethylene units, and having a saponification degree of 30% or more,

said polymer mixture consisting of more than 70% by weight of said saponification product of an ethylene-vinyl acetate copolymer and less than 30% by weight of said polyethylene,

said polymer mixture containing 0.5–18 mol % of vinyl monomer units consisting of vinyl alcohol units and/or vinyl acetate units based upon the total of vinyl acetate units, vinyl alcohol units and the total of ethylene units in said saponification product and those in said polyethylene, in the said polymer mixture,

the composite ratio of said first component to said second component being in the range of 40:60 to 70:30,

said first and second components being joined together along an axially extending interface, and

said second component forming at least 50% of the exterior surface of the composite fibers continuously in the longitudinal direction of the fibers so as to give the composite fibers heat-adhesive properties.

4,323,627
HOLLOW FIBER AND METHOD OF MANUFACTURING THE SAME

Yasushi Joh, Yokohama, Japan, assignor to Nippon Zeon Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 916,950, Jun. 19, 1978, abandoned, which is a continuation-in-part of Ser. No. 754,973, Dec. 28, 1976, abandoned. This application Dec. 8, 1980, Ser. No. 213,877

Claims priority, application Japan, Dec. 29, 1975, 50-156316; Jul. 8, 1976, 51-81570

Int. Cl.³ D02G *3/00*

U.S. Cl. 428—398 12 Claims

1. A method of manufacturing a hollow fiber which comprises:

providing a spinning solution of a water miscible organic solvent having a dipole moment less than 3.6×10^{-18} esu and a high molecular weight compound selected from the group consisting of polyacrylonitrile, a copolymer of acrylonitrile, a cellulose ester, polymethylmethacrylate, and poly-γ-benzyl glutamate, extruding said spinning solution through an annular slit,

simultaneously extruding an alkaline or acid aqueous salt solution from an orifice encircled by said annular slit, said aqueous salt solution having a a salt content of 15 to 50% by weight, being a non-coagulant for said spinning solution, being immiscible with said spinning solution and being capable of developing a phase separation with said solvent by a salting out effect, there being sufficient alkali or acid present in said aqueous salt solution to effect hydrolysis of said high molecular weight compound, and

introducing the extruded spinning solution with said aqueous salt solution contained therein into a coagulating bath to initiate coagulation.

4,323,628
MAGNETIC RECORDING MEDIUM

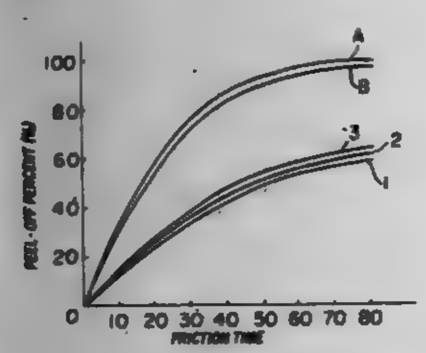
Kiyotaka Okuyama, and Akihiko Hosaka, both of Tokyo, Japan, assignors to TDK Electronics Co., Ltd., Tokyo, Japan

Filed Aug. 5, 1980, Ser. No. 175,533

Claims priority, application Japan, Aug. 17, 1979, 54/104606

Int. Cl.³ B32B 27/30

U.S. Cl. 428—425.9 3 Claims



1. A magnetic recording medium which comprises a substrate coated with a magnetic composition comprising a magnetic powder in a binder comprising a vinyl chloride-vinyl acetate vinyl alcohol copolymer having more than 10 wt. % of vinyl alcohol component and polyvinyl chloride impregnated nitrocellulose which is crosslinked with a polyisocyanate.

4,323,629
METALLIC THIN FILM MAGNETIC RECORDING MEDIUM

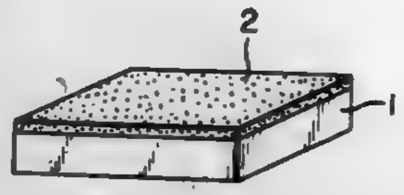
Toshiaki Kunieda, Minoo; Masaru Odagiri; Takashi Fujita, both of Kawanishi, and Koichi Shinohara, Kobe, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 11, 1980, Ser. No. 167,418

Claims priority, application Japan, Jul. 17, 1979, 54-91318

Int. Cl.³ G11B *5/62*

U.S. Cl. 428—457 3 Claims



1. A metallic thin film recording medium comprising a magnetic thin film deposited from the vapor phase in an oxygen atmosphere on a non-magnetic substrate, said thin film consisting essentially of nickel, cobalt and oxygen;

the content of nickel being between 10 and 55 percent by weight based on the weight of nickel and cobalt; and

the ratio of the oxygen atoms to the sum of the nickel and cobalt atoms in atomic percent being between 3 and 45 percent.

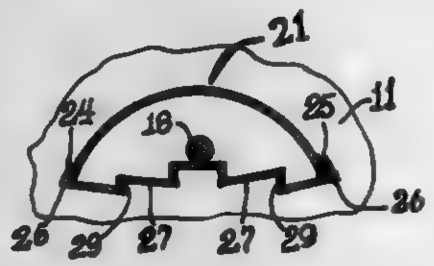
4,323,630
TROPHY SUPPORT COLUMN

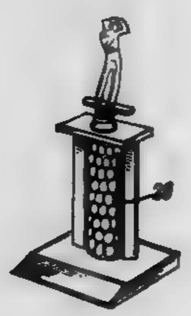
William H. Mackey, 1825 S. Busse Rd., Mount Prospect, Ill. 60058, and Lee R. Smith, 200 Mingo Trail, Longwood, Fla. 32750

Filed Sep. 2, 1980, Ser. No. 183,190

Int. Cl.³ B32B *9/04*

U.S. Cl. 428—542 1 Claim





1. A trophy structure having a base and a support plate with a figure mounted thereon comprising:

(a) a hollow weight supporting column extending in a vertical relation between the base and the figure supporting plate,

(b) said column having a rectangularly shaped metallic front plate adapted to be of a length to extend between the base and the supporting plate,

(c) a non-metallic back panel having a width greater than that of said front plate and of a length to extend between the base and the supporting plate,

(d) flanges extending rearwardly and in converging direction from the opposite side longitudinal edges of said front plate, providing spaced apart retaining members for mounting therebetween said back panel in a rearwardly tensioned bowed condition onto the back of said front panel,

(e) said front plate providing in its face a series of spaced apart recessed shoulders for receiving and retaining a decorative front insert panel in a forwardly tensioned bowed condition with respect to the face of said front plate, and

(f) a removable decorative front insert panel having a width less than that of said front plate yet greater than the width between said spaced apart shoulders so as to be mounted thereon between longitudinal edges of said front plate.

4,323,631
SOLDER REMOVING DEVICE

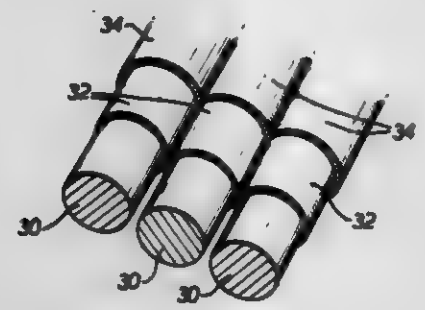
Ernst Spirig, CH-8640 Rapperswil, Switzerland

Filed Oct. 27, 1980, Ser. No. 201,228

Claims priority, application United Kingdom, Sep. 5, 1980, 28819/80

Int. Cl.³ B23P *17/06*

U.S. Cl. 428—605 12 Claims



1. A solder removing device, comprising

(a) a group of fibers (30) formed from a temperature-resistant non-metallic material;

(b) at least one layer of metal (32) metallizing said fibers; and

(c) a layer of solder flux (34) coating the metallized fibers, thereby to render the fibers more capable of wetting with molten solder, whereby the interstices between the fibers serve to absorb molten solder by capillary attraction.

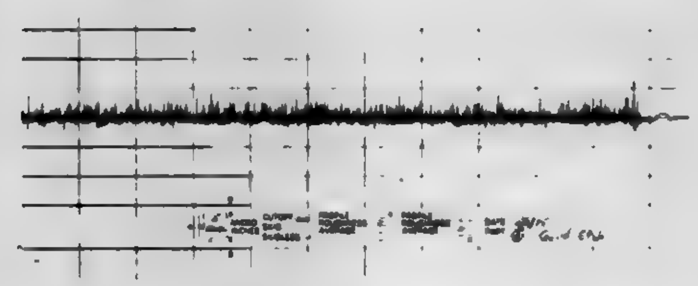
4,323,632
METAL COMPOSITES AND LAMINATES FORMED THEREFROM

Betty L. Berdan, Willowick, and William M. King, Mentor, both of Ohio, assignors to Gould Inc., Rolling Meadows, Ill.

Division of Ser. No. 952,512, Oct. 17, 1978, Pat. No. 4,234,395, which is a continuation of Ser. No. 652,139, Jan. 26, 1976, abandoned, which is a continuation-in-part of Ser. No. 431,060, Jan. 7, 1974, abandoned. This application Aug. 15, 1980, Ser. No. 178,481

Int. Cl.³ B32B *15/08, 15/20*

U.S. Cl. 428—626 6 Claims



1. A metal composite comprising:

(a) a substrate having a mildly, uniformly etched aluminum alloy surface, said alloy consisting of at least about 99 wt.% aluminum, up to about 1.00 wt.% silicon plus iron, from about 0.05 to about 0.20 wt.% copper, up to about 0.05 wt.% manganese and up to about 0.10 wt.% zinc,

(b) an electrocathodically deposited foil of copper having a thickness within the range of about 0.1 to about 0.4 mils uniformly adhering directly to said surface, and

(c) a coating on said copper foil of a material selected from the group consisting of zinc and indium, said coating having a thickness within the range of about 10 to about 25 microinches such that when the coated face of said copper foil is bonded by heat and pressure to a resinous substrate the peel strength between said copper foil and said aluminum alloy surface is a value within the range of from about 0.3 to about 2 lbs./in.

4,323,633
UV-ABSORBING COMPOUNDS AND PHOTOGRAPHIC ELEMENTS CONTAINING THEM

Paolo Beretta, Ferrania, Italy, assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Nov. 13, 1980, Ser. No. 206,377

Claims priority, application Italy, Nov. 9, 1979, 65207 A/79

Int. Cl.³ G03C *1/84*

U.S. Cl. 430—17 14 Claims

1. A photographic element comprising a support, at least one silver halide photographic emulsion layer and at least one auxiliary layer, said photographic element being characterized by having in at least one of said silver halide emulsion layer and said auxiliary layer an ultraviolet radiation absorbing 2-(2'-hydroxyphenyl)-benzotriazole compound having two butyl groups attached to the 2'-hydroxyphenyl nucleus and a third butyl group attached to the benzotriazole nucleus.

4,323,634
ELECTROGRAPHIC TONER AND DEVELOPER COMPOSITION CONTAINING QUATERNARY AMMONIUM SALT CHARGE CONTROL AGENT

Thomas A. Jadwin, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 690,331, May 26, 1976, abandoned, and a continuation-in-part of Ser. No. 594,395, Jul. 9, 1975, abandoned. This application Nov. 10, 1977, Ser. No. 850,164

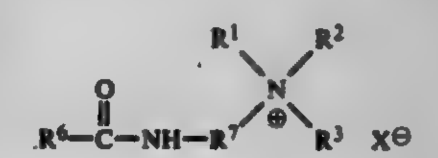
Int. Cl.³ G03G *9/08*

U.S. Cl. 430—110 10 Claims

1. A dry, particulate, electrostatic toner composition having a particle size from about 0.1 to about 100 microns and comprising

(a) a polymeric binder having a softening temperature from about 40° C. to about 200° C. and

(b) from about 0.01 to about 2 percent by weight of a quaternary ammonium salt surfactant of the formula:



wherein:

R^1, R^2, and R^3 are the same or different lower alkyl groups;

R^6 is an alkyl group having 7 or more carbon atoms;

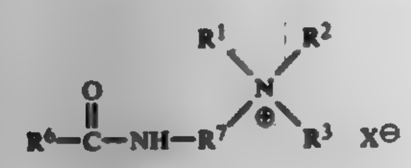
R^7 is a straight chain alkylene group having from 1 to about 8 carbon atoms; and

$X^\ominus$ is a halide ion or an organosulfur-containing anion of the formula R^5SO_n wherein R^5 is an aliphatic or aromatic group having up to about 10 carbon atoms and n is 3 or 4,

the amount of said quaternary ammonium salt being effective to provide an electrostatic toner that is capable of maintaining a relatively high, stable net toner charge level under widely varying relative humidity conditions.

6. A dry, particulate electrostatic toner composition having a particle size from about 0.1 to about 30 microns and comprising

(a) a polymeric binder,
(b) a pigment or dyestuff in an amount sufficient to color the particles, and
(c) from about 0.01 to about 2 percent by weight of said composition of a quaternary ammonium salt of the formula:



wherein:
R^1, R^2 and R^3 are the same or different alkyl groups, each having from 1 to about 4 carbon atoms;
R^6 is an alkyl group having from about 7 to about 11 carbon atoms;
R^7 is a straight-chain alkylene group having from 1 to about 8 carbon atoms; and
$X^{\ominus}$ is a halide ion or an organosulfur-containing anion of the formula R^5SO_n wherein R^5 is an alkyl or aryl group having up to about 10 carbon atoms and n is 3 or 4.

4,323,635
DIRECT REVERSAL PHOTOGRAPHIC COLOR MATERIAL
Yasushi Oishi, Minami-ashigara, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Nov. 6, 1980, Ser. No. 204,667
Claims priority, application Japan, Nov. 6, 1979, 54-144155
Int. Cl.³ G03C *5/54*
U.S. Cl. 430—217 **28 Claims**

1. A color photographic material suitable for processing with an alkaline solution in the presence of a developing agent comprising a support and, in sequence, the following five layers:
(1) a first emulsion layer containing an internal latent image forming direct reversal silver halide emulsion that is selectively sensitive to light in a first spectral region;
(2) a first color material layer containing a ballasted dye releasing redox compound that provides a dye image that selectively absorbs light in the first spectral region;
(3) an intermediate layer containing a ballasted reducing agent capable of capturing an oxidized developing agent or electron transfer agent;
(4) a second emulsion layer containing an internal latent image forming direct reversal silver halide emulsion that is selectively sensitive to light in a second spectral region; and
(5) a second color material layer containing a ballasted dye releasing redox compound that provides a dye image that selectively absorbs light in the second spectral region;
wherein the improvement comprises uniformly incorporating a surface latent image forming negative silver halide emulsion that is sensitive to light in the second spectral region in the intermediate layer (3) so as to obtain uniform oxidation of reducing agent that is formed in the intermediate layer (3) as a result of development of the second emulsion layer.

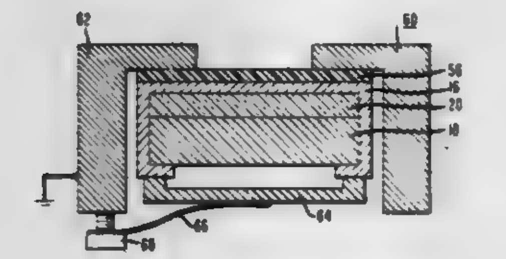
4,323,636
PHOTOSENSITIVE BLOCK COPOLYMER COMPOSITION AND ELEMENTS
Gwendyline Y. Y. T. Chen, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Continuation-in-part of Ser. No. 926,578, Jul. 20, 1978, abandoned, which is a continuation-in-part of Ser. No. 130,470, Apr. 1, 1971, abandoned. This application Mar. 2, 1981, Ser. No. 239,415
Int. Cl.³ G03C *1/68*
U.S. Cl. 430—271 **10 Claims**

1. A compatible photosensitive, elastomeric composition comprising:
(1) at least 30% by weight of at least one solvent-soluble, thermoplastic, elastomeric block copolymer containing at least two thermoplastic, nonelastomeric polymer blocks having a glass transition temperature above 25° C. and an average molecular weight of 2000–100,000, and between said thermoplastic, nonelastomeric polymer blocks an elastomeric polymer block having a glass transition temperature below 10° C. and an average molecular weight of about 25,000 to 1,000,000, the thermoplastic, nonelastomeric polymer blocks being the terminal blocks of said copolymer and being connected by said elastomeric polymer block,
(2) at least 1% by weight of at least one addition-polymerizable, ethylenically unsaturated compound having a boiling point at normal pressure over 100° C. taken from the group consisting of t-butyl acrylate, N,N-diethylaminoethyl acrylate, 1,4-butanediol diacrylate, hexamethylene glycol diacrylate, decamethylene glycol diacrylate, 2,2-dimethylolpropane diacrylate, tripropylene glycol diacrylate, 2,2-di(p-hydroxyphenyl)-propane diacrylate, 2,2-di(p-hydroxyphenyl)-propane dimethacrylate, polyoxyethyl-2,2-di(p-hydroxyphenyl)-propane dimethacrylate, butylene glycol dimethacrylate, hexamethylene glycol dimethacrylate, 2,2,4-trimethyl-1,3-pentanediol dimethacrylate, 1-phenylethylene-1,2-dimethacrylate, and triethyleneglycol diacrylate said addition-polymerizable, ethylenically unsaturated compound being compatible with the thermoplastic-elastomeric block copolymer component which is soluble in or which forms a solution with the ethylenically unsaturated compound; and
(3) a polymerization-effective amount of polymerization initiator activatable by actinic radiation.

4,323,637
USE OF COVER SHEET AND INTERPOSED FLEXIBLE FILM WITH BLOCK COPOLYMER COMPOSITION
Gwendyline Y. Y. T. Chen, Wilmington, and James F. Brennan, Newark, both of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Continuation-in-part of Ser. No. 926,579, Jul. 20, 1978, abandoned, which is a continuation-in-part of Ser. No. 374,567, Jun. 28, 1973, abandoned, which is a continuation-in-part of Ser. No. 130,470, Apr. 1, 1971, abandoned. This application Jan. 5, 1981, Ser. No. 222,713
Int. Cl.³ G03C *1/68, 5/30, 1/76, 1/78*
U.S. Cl. 430—271 **8 Claims**

1. A photosensitive element which comprises a sheet support; a layer of a photosensitive, elastomeric composition coated on said support having a thickness of from about 0.0005 to about 0.250 inch, said composition comprising
(1) at least 30% by weight of at least one solvent-soluble, thermoplastic, elastomeric block copolymer containing at least two thermoplastic, nonelastomeric polymer blocks having a glass transition temperature above 25° C. and an average molecular weight of 2000–100,000, and between said thermoplastic, nonelastomeric polymer blocks an elastomeric polymer block having a glass transition temperature below 10° C. and an average molecular weight of about 25,000 to 1,000,000.
(2) at least 1% by weight of an addition-polymerizable ethylenically unsaturated compound containing at least one terminal ethylenical group, and
(3) a polymerization-effective amount of polymerization initiator activatable by actinic radiation;
a flexible cover sheet; and a flexible, polymeric film interposed between said cover sheet and the surface of said layer.

4,323,638
REDUCING CHARGING EFFECTS IN CHARGED-PARTICLE-BEAM LITHOGRAPHY
Arthur C. Adams, Berkeley Heights; Frank B. Alexander, Jr., Totowa; Hyman J. Levinstein, Berkeley Heights, and Louis R. Thibault, Piscataway, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Aug. 18, 1980, Ser. No. 178,968
Int. Cl.³ B05D *3/06*
U.S. Cl. 430—275 **15 Claims**



1. A method of fabricating integrated circuits by patterning a resist layer by means of a charged-particle beam in a high-resolution lithographic system, said method comprising the steps of
forming on one main surface of a wafer a layer to be patterned,
depositing a continuous charge-conducting film on top of said layer to be patterned, on the sides of said wafer and on at least a peripheral portion of the other main surface of said wafer,
depositing a resist layer on top of the portion of said charge-conducting film that overlies the main surface of said wafer,
mounting said wafer in a cassette holder to establish an electrical connection between the peripheral portion of said charge-conducting film and a part of said holder that is connected to a point of reference potential,
and, while said wafer is so mounted in said cassette holder, delineating a pattern in said resist layer by directing a charged-particle beam at said resist layer.

4,323,639
PHOTOSENSITIVE POLYAMIDE RESIN COMPOSITION
Kazumasa Chiba, Nagoya; Keiichi Egawa, Otsu, and Toshio Muraki, Nagoya, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan
PCT No. PCT/JP79/00307, § 371 Date Jul. 24, 1980, § 102(e) Date Jul. 24, 1980, PCT Pub. No. WO80/01212, PCT Pub. Date Jun. 12, 1980
PCT Filed Nov. 30, 1979, Ser. No. 202,381
Claims priority, application Japan, Dec. 1, 1978, 53/147833; Dec. 13, 1978, 53/153139
Int. Cl.³ G03C *1/68*
U.S. Cl. 430—281 **5 Claims**

1. A photosensitive polyamide resin composition comprising a polyamide containing 10 to 70% by weight of a polyoxyethylene segment or poly(oxyethylene/oxypropylene) copolymer segment having a number average molecular weight of from 150 to 1,500 in its molecular chain and from 5 to 200% by weight based on the weight of the polyamide of a photopolymerizable unsaturated compound.

4,323,640
POSITIVE IMAGING METHOD USING DOPED SILVER HALIDE MEDIUM
Nicholas F. Borrelli, Elmira, N.Y., and Peter L. Young, North Wales, Pa., assignors to Corning Glass Works, Corning, N.Y.
Filed Nov. 5, 1980, Ser. No. 204,165
Int. Cl.³ G03C *5/24, 1/76*
U.S. Cl. 430—353 **4 Claims**

1. A method for forming a positive image in a photosensitive medium which comprises the steps of:
(a) providing a multilayer photosensitive medium comprising alternating layers of doped silver halide and tin oxide on a substrate, the doped silver halide layers consisting essentially, in weight percent, of at least about 50% AgCl, 15–25% CuCl, 5–15% $CuCl_2$ and 10–20% AgI by weight;
(b) selectively exposing the medium to ultraviolet light for a time sufficient to achieve darkening of the exposed portions; and
(c) heating the medium at a temperature and for a time sufficient to bleach the darkened exposed portions and to darken the unexposed portions thereof.

3. A photosensitive medium for forming a positive image of a subject which comprises alternating layers of doped silver halide and tin oxide on a substrate, the doped silver halide layers consisting essentially, in weight percent, of at least about 50% AgCl, 15–25% CuCl, 5–15% $CuCl_2$ and 10–20% AgI.

4,323,641
PHOTOGRAPHIC IMAGE ENHANCEMENT BY A GOLD-TONING NEUTRON-ACTIVATION PROCESS
Clarence D. Bond, Alexandria, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Aug. 15, 1980, Ser. No. 178,330
Int. Cl.³ G03C *7/00*
U.S. Cl. 430—370 **3 Claims**

1. A method of photographic image enhancement on a film for subsequent transfer of the images to another film comprising the steps of:
immersing a developed photographic film containing silver grains dispersed in an emulsion including gelatin molecules in a toning solution of gold chloride and ammonium thiocyanate whereby gold simultaneously plates the silver grains and attaches to the gelatin molecules;
washing the film in a complexing solution of ammonium thiocyanate for substantially removing the gold from the gelatin molecules; and
exposing the film to neutron radiation for rendering the gold plating radioactive.

4,323,642
STABLE PHOTOGRAPHIC DEVELOPERS CONTAINING AN INDAZOLE ANTIFOGGANT AND A LIGNOSULFONATE
Steven R. Levinson, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Mar. 9, 1981, Ser. No. 241,778
Int. Cl.³ G03C *5/30*
U.S. Cl. 430—438 **16 Claims**

1. A photographic developing composition comprising at least one developing agent, an indazole antifoggant, and a lignosulfonate in an amount sufficient to suppress precipitation of said indazole antifoggant.

4,323,643

SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIALS

Hiroyuki Mifune; Shigeo Hirano, and Yoshitaka Akimura, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

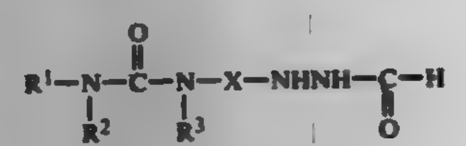
Filed Nov. 6, 1980, Ser. No. 204,666

Claims priority, application Japan, Nov. 6, 1979, 54/144158

Int. Cl.[3] G03C *5/24, 1/02*

U.S. Cl. 430—441 19 Claims

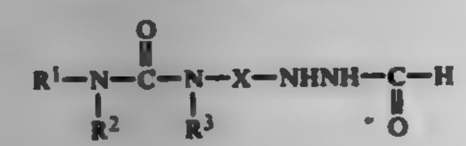
1. A silver halide photographic light-sensitive material comprising at least one silver halide photographic emulsion layer consisting essentially of surface latent image-type silver halide grains, wherein at least one layer contains a compound represented by formula (I) in an amount sufficient to improve dot quality and contrast,



(I)

wherein R^1 and R^2 each represents hydrogen, an aliphatic hydrocarbon group, an aryl group, or a heterocyclic group; R^3 represents hydrogen or an aliphatic hydrocarbon group; and X represents a divalent aryl group.

15. A process for forming a photographic image which comprises developing the silver halide photographic light-sensitive material comprising at least one silver halide photographic emulsion layer consisting essentially of surface latent image-type silver halide grains, wherein at least one layer contains a compound represented by formula (I) in an amount sufficient to improve dot quality and contrast,



(I)

wherein

R^1 and R^2 each represents hydrogen, an aliphatic hydrocarbon group, an aryl group, or a heterocyclic group;

R^3 represents hydrogen or an aliphatic hydrocarbon group; and

X represents a divalent aryl group;

by a developer containing a dihydroxybenzene.

4,323,644

PHOTOGRAPHIC MATERIAL CONTAINING POLYMERS WITH ACTIVE ESTER GROUPS

Taku Nakamura; Masasi Ogawa, and Kunio Ishigaki, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 5, 1980, Ser. No. 204,669

Claims priority, application Japan, Nov. 5, 1979, 54/143036

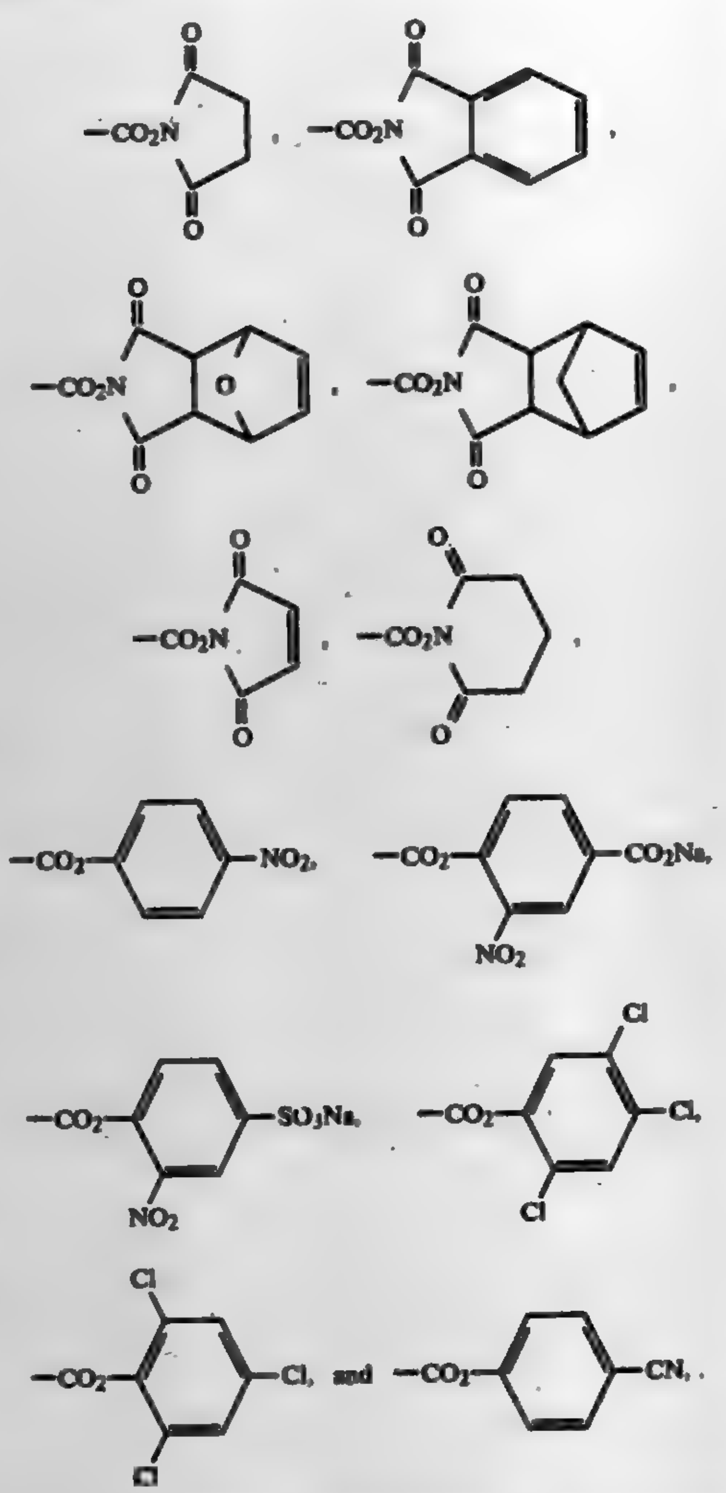
Int. Cl.[3] G03C *1/78*

U.S. Cl. 430—518 16 Claims

1. A silver halide photographic material having at least one layer containing a polymer having a repeating unit of formula (I):

(I)

wherein A is a monomer unit copolymerized with a copolymerizable ethylenically unsaturated monomer; R is a hydrogen atom or a lower alkyl group having 1 to about 6 carbon atoms; L is a bivalent linking group having 1 to about 20 carbon atoms; X is an active ester group selected from the group consisting of



j and k each represents molar percent, and j being between 0 and 95 and k being between 5 and 100; m is 0 or 1.

4,323,645

ORGANIC HALOGEN COMPOUNDS FOR NEGATIVE-WORKING SILVER HALIDE EMULSIONS

Laurence W. Hall, Asheville, N.C., and Joseph D. Overman, Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 1, 1980, Ser. No. 174,551

Int. Cl.[3] G03C *1/02*

U.S. Cl. 430—564 6 Claims

1. A negative-working silver halide emulsion having low fog and improved aging stability, characterized in that the preparation of said emulsion includes an after-digestion of, or in-line injection of, an organic halogen compound selected from the group consisting of 2,2,2-trichloroethanol, m-nitrobenzyl chloride, 3-chloroaniline, 2-chloro-4-nitrobenzyl chloride, o-chloranil, p-nitrobenzyl chloride, 4-chloro-2-nitrobenzyl chloride, 4-chloro-3-nitrobenzyl chloride, o-nitrobenzyl chloride, α,α,α,-trichlorotoluene, 4,6-dichloro-5-nitropyrimidine, 5-chloro-2(trichloromethyl)benzimidazole, 2-chloro-3-nitropyridine and 2-amino-3,5-dichloropyridine.

4,323,646

PROCESS FOR HARDENING A PHOTOGRAPHIC MATERIAL

Peter Bergthaller, Cologne; Wolfgang Himmelmann, and Johannes Sobel, both of Leverkusen, all of Fed. Rep. of Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Oct. 27, 1980, Ser. No. 201,242

Claims priority, application Fed. Rep. of Germany, Oct. 30, 1979, 2943807

Int. Cl.[3] G03C *1/30*

U.S. Cl. 430—622 14 Claims

1. A process for hardening a photographic silver halide material comprising of a support layer and, applied thereto, at least one gelatin-containing layer, said process comprising hardening said at least one gelatin-containing layer with a compound containing vinyl sulfonyl groups wherein the hardener is a compound containing at least two free sulfonyl groups in a molecule of a compound containing up to six vinyl sulfonyl corresponding to the following general formula

$$(CH_2{=}CH{-}SO_2)_a{-}Z{-}(SO_2{-}CH_2{-}CH_2{-}SO_3.Me)_b$$

in which

Z is an x-functional aliphatic hydrocarbon radical which may be substituted, an x-functional cycloalkane radical which may be substituted or an x-functional aromatic radical which may be substituted,

x is an integer of from 3 to 6,

$a = x - b$

$b = 1$ or 2 and

Me is an alkali metal or ammonium ion.

4,323,647

STERIC HINDRANCE ENZYME IMMUNOASSAY

Nobuo Monji, Miami Springs, and Albert Castro, Miami, both of Fla., assignors to University of Miami, Coral Gables, Fla.

Filed Oct. 15, 1980, Ser. No. 197,063

Int. Cl.[3] G01W *33/54*; C12W *9/96*

U.S. Cl. 435—7 52 Claims

1. A process for separating a dissolved unbound ligand-enzyme conjugate from the same conjugate bound to a receptor for the ligand moiety and dissolved in the same solution, comprising:

contacting (i) an aqueous solution containing both an unbound ligand-enzyme conjugate and the same conjugate bound through its ligand moiety to a receptor that binds specifically to the ligand, with (ii) an insoluble immobilized pseudo-substrate for the enzyme moiety of said conjugate, said receptor and said pseudo-substrate being so selected that

(a) the enzyme moiety of the ligand-enzyme conjugate binds to the immobilized pseudo-substrate, and

(b) the receptor, when bound to the ligand moiety of the ligand-enzyme conjugate, inhibits the binding of the enzyme moiety of the bound conjugate to the immobilized pseudo-substrate,

whereby the unbound ligand-enzyme conjugate is immobilized to the insoluble immobilized pseudo-substrate and removed from the solution while the receptor-bound conjugate remains in solution.

18. An assay procedure for detecting or determining a dissolved ligand in a medium suspected of containing it, comprising:

combining in an aqueous liquid vehicle, to form a mixture:

(1) said medium,

(2) a given amount of a soluble conjugate of an enzyme with the same ligand or its immunochemical equivalent as the ligand to be detected, and

(3) a given amount of a receptor capable of specifically binding to both the ligand to be detected and the ligand moiety of the conjugate, the relative amounts of conjugate and of receptor being such that there is an excess of the conjugate present over that necessary to bind with the receptor,

contacting said mixture with an insoluble immobilized pseudo-substrate for the enzyme moiety of said conjugate whereby said receptor bound to the ligand moiety of said conjugate inhibits said conjugate from binding to said immobilized pseudo-substrate;

separating said insoluble immobilized pseudo-substrate having bound thereto, through the enzyme moiety of the conjugate, unbound conjugate from the liquid, and

detecting the enzyme activity of either said liquid or said separated pseudo-substrate as an indicator of the presence or quantity of the ligand in said original medium.

4,323,648

PREPARATION OF MONACOLIN K

Kazuhiko Tanzawa; Seigo Iwado; Yoshio Tsujita; Masao Kuroda, and Kouhei Furuya, all of Hiromachi, Japan, assignors to Sankyo Company Limited, Tokyo, Japan

Filed Apr. 4, 1980, Ser. No. 137,821

Claims priority, application Japan, May 11, 1979, 54-57927

Int. Cl.[3] C12P *17/06*

U.S. Cl. 435—125 12 Claims

1. A process for preparing Monacolin K comprising cultivating at least one strain of the genus Monascus, selected from the group consisting of *Monascus anka* SANK 10171 (IFO 6540), *Monascus purpureus* SANK 10271 (IFO 4513), *Monascus ruber* SANK 10671 (FERM 4958), *Monascus vitreus* SANK 10960 (FERM 4960), *Monascus paxii* SANK 11172 (IFO 8201), *Monascus ruber* SANK 13778 (FERM 4959), *Monascus ruber* SANK 15177 (FERM 4956) and *Monascus ruber* SANK 18174 (FERM 4957), in a culture medium containing an assimilable carbon source and an assimilable nitrogen source to produce Monacolin K and isolating Monacolin K from the culture medium.

4,323,649

BIOTRANSFORMATIONS USING METHANE-UTILIZING BACTERIA

Irving J. Higgins, Wingham, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Feb. 28, 1980, Ser. No. 125,660

Claims priority, application United Kingdom, Mar. 9, 1979, 08357/79

Int. Cl.[3] C12P *7/40*

U.S. Cl. 435—136 4 Claims

1. A process for the partial degradation of a complex organic compound

selected from the group consisting of mono-alkyl benzenes having from 5 to 12 carbon atoms in the alkyl group and di-substituted lower alkyl benzenes having at least one halogen substituent,

into at least one other oxidized and/or dehalogenated organic compound, said process comprising the step of contacting the complex organic compound with a methane-utilizing bacterium of a genus selected from the group consisting of Methylosinus, Methylocystis, Methylomonas, Methylococcus and Methylobacterium or with an extract thereof containing a methane mono-oxygenase and/or a de-halogenase enzyme under conditions suitable for enzymatically partially degrading the complex organic compound.

4,323,650

IMMOBILIZATION OF BIOLOGICALLY ACTIVE SUBSTANCES IN A POROUS SUPPORT

Alan Rosevear, Faringdon, England, assignor to United Kingdom Atomic Energy Authority, London, England

Continuation of Ser. No. 773,157, May 1, 1977, abandoned, which is a continuation of Ser. No. 587,201, Jun. 16, 1975, abandoned. This application Feb. 26, 1979, Ser. No. 15,405

Claims priority, application United Kingdom, Jun. 25, 1974, 28212/74

Int. Cl.³ C12N *11/00, 11/04, 11/14*

U.S. Cl. 435—174 **2 Claims**

1. A method for the preparation of a porous support material having a biologically active substance immobilised in the pores thereof comprising selecting a porous support material having a pore size and pore structure that permits entry of a solution containing biologically active substance, introducing said solution into the pores of said porous support material so as to substantially fill the pore volume of said support material, freeze-drying the volume of said solution introduced into the pores so as to retain said biologically active substance in the pores of the porous support material and hold the biologically active substance available for cross-linking, cross-linking the biologically active substance in the pores of the porous support material, said introduction of solution of containing biologically active substance and said freeze-drying being conducted so as to provide a major proportion of the immobilised biologically active substance in the pores of, rather than on the external surface of, the porous material.

4,323,651

THERMOSTABLE LACTASE DERIVED FROM BACILLUS

Margaret E. Long, and Chin K. Lee, both of Winston-Salem, N.C., assignors to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Continuation of Ser. No. 63,668, Aug. 6, 1979, abandoned, which is a division of Ser. No. 660,094, Feb. 23, 1976, Pat. No. 4,197,335, which is a continuation-in-part of Ser. No. 529,329, Dec. 4, 1974, abandoned. This application Oct. 2, 1980, Ser. No. 193,149

The portion of the term of this patent subsequent to Dec. 18, 1996, has been disclaimed.

Int. Cl.³ C12N *9/38, 1/20*

U.S. Cl. 435—207 **4 Claims**

1. A lactase having improved thermal stability and exhibiting at about pH 6.0 optimum activity for catalyzing the hydrolysis of lactose to glucose and galactose, said lactase being further characterized as being derived from an organism belonging to the species *Bacillus coagulans* and having sufficient thermal stability so that at least 50 percent of its activity is retained after heating for one hour at 60° C. as determined by assaying lactase activity associated with washed cells of said organism suspended in a 0.05 M phosphate buffer at pH 7.0 in the presence of σ-nitrophenyl-β-galactoside.

3. A biologically pure culture of a strain of the microorganism *Bacillus coagulans* which when cultivated in a suitable nutrient medium is capable of producing lactase having sufficient thermal stability so that at least 50 percent of its activity is retained after heating for one hour at 60° C. as determined by assaying lactase activity associated with washed cells of said microorganism suspended in a 0.05 M phosphate buffer at pH 7.0 in the presence of σ-nitrophenyl-β-galactoside.

4,323,652

STARTING MIXTURE FOR A DIELECTRIC COMPOSITION, SCREEN PRINTING PASTE HAVING SUCH A STARTING MIXTURE, AND PRODUCT OBTAINED

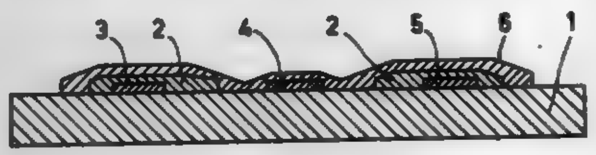
Hugues Baudry, Villecresnes; Claude Morhaim, Paris, and Dominique Bricout, Evreux, all of France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 14, 1980, Ser. No. 130,282

Claims priority, application France, Mar. 23, 1979, 7907355

Int. Cl.³ H01B *3/02;* **C03C** *3/04, 3/22;* **C04B** *35/00*

U.S. Cl. 501—17 **6 Claims**



1. A composition suitable for forming a dielectric composition consisting essentially of 85 to 60% by volume of a vitreous phase and 15 to 40% by volume of a ceramic phase, said ceramic phase consisting essentially of zinc oxide or of a mixture of zinc oxide and cobalt oxide and said vitreous phase having the following composition by mol percent: 30–50% SiO_2, 20–40% ZnO, 0–20% B_2O_3, 0–10% Al_2O_3, 5–40% CaO+SrO+BaO and, as a coloring oxide, 0–10% of CoO.

4,323,653

INHIBITING CRYSTALLIZATION OF OPAL GLASS COMPOSITIONS

Hans J. Holland, Painted Post, and John E. Megles, Jr., Corning, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Apr. 16, 1981, Ser. No. 254,901

Int. Cl.³ C03C *3/08*

U.S. Cl. 501—32 **2 Claims**

1. A spontaneous opal glass composition which limits the development of CaF_2 crystals and crystals of xonotlite structure therein, when the glass is heated at temperatures in excess of the annealing point but less than the softening point thereof, consisting essentially, as analyzed in weight percent on the oxide basis, of about:

SiO_2	64.5 ± 2.0
Al_2O_3	6.25 ± 0.5
Na_2O	3.0 ± 0.5
K_2O	3.0 ± 0.5
MgO	1.25 ± 0.3
B_2O_3	4.5 ± 0.7
F	3.25 ± 0.5
CaO	14.5 ± 1.0

4,323,654

MOLDABLE GLASS COMPOSITIONS

Paul A. Tick, Corning, and Leon M. Sanford, deceased, late of Campbell, N.Y. (by Michele R. Sanford, administratrix), assignors to Corning Glass Works, Corning, N.Y.

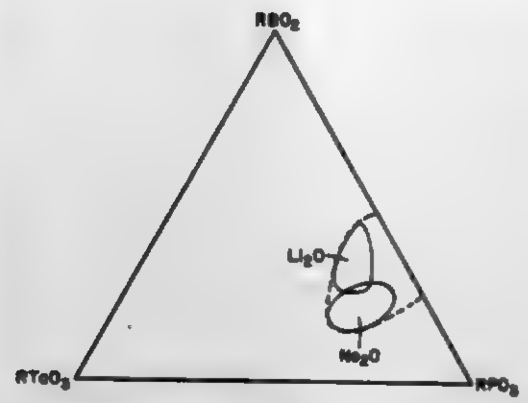
Filed Mar. 26, 1981, Ser. No. 248,001

Int. Cl.³ C03C *3/14, 3/16*

U.S. Cl. 501—47 **3 Claims**

1. A glass article having a composition consisting essentially, in mole percent, of about 18–35% P_2O_5, 7–25% B_2O_3, 3–14% Ta_2O_5, and 33–67% R_2O, wherein R_2O consists of one or more

alkalli metal oxides selected from the group consisting of Li_2O, Na_2O and K_2O, the glass forming the article exhibiting a glass



transition temperature below 500° C. and a refractive index value (n_d) exceeding about 1.523.

4,323,655

RUBBER-MODIFIED FIRE-RETARDANT ANHYDRIDE COPOLYMERS

Adolph V. DiGiulio, and Jack N. Bauer, both of Pittsburgh, Pa., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Division of Ser. No. 147,666, May 7, 1980, Pat. No. 4,278,768. This application Feb. 17, 1981, Ser. No. 235,355

Int. Cl.³ C08V *9/06, 9/12*

U.S. Cl. 521—88 **5 Claims**

1. A fire-retardant foam composition having a density of between 1 and 10 pounds per cubic foot and consisting of a rubber-modified copolymer, from 10 to 20 parts per hundred parts of copolymer of an at least tribrominated diphenylether, and 4 to 8 parts per hundred parts of copolymer of a metal oxide synergist for the ether; said rubber-modified copolymer consisting of (a) 5 to 40 weight percent of a rubber, selected from the group consisting of homopolymers of butadiene, isoprene, chloroprene and piperylene; copolymers of said conjugated diene with up to 50 weight percent of one or more monoolefinically unsaturated monomers selected from the group consisting of styrene, substituted styrenes, acrylonitrile, methacrylonitrile and isobutylene; ethylenepropylene-diene terpolymer rubbers; acrylate-diene copolymer rubbers; and mixtures thereof and (b) 60 to 95 weight percent of a copolymer of 50 to 95 mole percent of a monovinyl aromatic monomer and 5 to 50 mole percent of the anhydride of an ethylenically unsaturated dicarboxylic acid monomer.

4,323,656

POLYURETHANE SPONGES MANUFACTURED WITH ADDITIVE DISPERSED THEREIN

Robert L. Strickman, 729 Handwerg Dr., River Vale, N.J. 07675, and Melvyn B. Strickman, Academy St., Shiloh, N.J. 08353

Continuation of Ser. No. 305,870, Nov. 13, 1972, abandoned. This application Oct. 30, 1978, Ser. No. 955,881

Int. Cl.³ A47L *13/17;* **C08G** *18/16;* **C08J** *5/14;* **C11D** *17/04*

U.S. Cl. 521—109 **1 Claim**

1. A method for manufacturing a resilient scouring product characterized by the feature that a hot mass of abrasive particles is thoroughly mixed with a mixture of an aryl diisocyanate and a polyether, including as a catalyst an alkali metal or ammonium salt of alginic acid, and the mass is allowed freely to expand and cure thereby to form a synthetic sponge structure.

4,323,657

DISPERSIONS OF HIGH MELTING POLYESTERS IN POLYHYDROXYL COMPOUNDS, A PROCESS FOR THEIR PREPARATION AND THEIR USE IN THE PRODUCTION OF POLYURETHANES

Jan Mazanek; Roland Gipp, both of Cologne; Robert Zöllner, Leverkusen; Peter Seifert, Bergisch Gladbach; Künno Wagner, Leverkusen, and Johannes Blahak, Munich, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Mar. 27, 1980, Ser. No. 134,367

Claims priority, application Fed. Rep. of Germany, Apr. 4, 1979, 2913458

Int. Cl.³ C08G *18/14*

U.S. Cl. 521—116 **13 Claims**

1. A dispersion comprising

(a) 1 to 40% by weight based on the whole dispersion of a polyester, polyester amide or segmented copolyether ester having a melting point above 100° C., as the disperse phase; in

(b) 99 to 60% by weight based on the whole dispersion of a polyhydroxyl compound having a melting point below 50° C. and a molecular weight of from 62 to 12,000 and in which said disperse phase is substantially insoluble, as the continuous phase;

said disperse phase further characterized as containing more than 50% by weight of dispersed particles in a size range of from 0.05 to 10μ.

4,323,658

POLYISOCYANURATES FROM DIOLS MODIFIED WITH EPOXY RESINS

George P. Speranza, and Robert L. Zimmerman, both of Austin, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Sep. 2, 1980, Ser. No. 183,610

Int. Cl.³ C08G *18/14, 18/48, 18/32*

U.S. Cl. 521—174 **22 Claims**

1. A modified polyether polyol being produced by a method comprising the following steps

(a) mixing a low molecular weight polyol initiator having a hydroxyl functionality of less than three with an epoxy resin,

(b) heating the mixture in (a) to a temperature between about 70° C. to 115° C. for a period of time and

(c) adding to the heated mixture one or more alkylene oxides.

15. An improved rigid polyisocyanurate foam produced by the reaction of a modified polyol, an organic polyisocyanate and a foam catalyst wherein the improvement comprises making the modified polyol by a method comprising the following steps

(a) mixing a low molecular weight polyol initiator having a hydroxyl functionality of less than three with an epoxy resin,

(b) heating the mixture in (a) to a temperature between about 70° C. to 115° C. for a period of time and

(c) adding to the heated mixture one or more alkylene oxides.

4,323,659

NON-FLAMMABLE ADHESIVE COMPOSITIONS

Masanao Watanabe; Keiichi Naito; Tooru Odajima, and Yoshio Fujiwara, all of Kanuma, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Dec. 4, 1980, Ser. No. 212,801

Int. Cl.³ C08L *63/00*

U.S. Cl. 525—108 **11 Claims**

1. A non-flamable adhesive composition comprising 100 parts by weight of a brominated epoxy resin, 40–80 parts by weight of an acrylic copolymer and 5–20 parts by weight of a brominated polyvinylphenol, said acrylic copolymer being prepared by copolymerizing (a) 5–35% by weight of acryloni-

trile, (b) 0.5–10% by weight of an ethylenically unsaturated compound having at least one functional group selected from carboxyl group, hydroxyl group and epoxy group, and (c) substantially the balance of an ester obtainable from an alcohol having from 1 to 6 carbon atoms and acrylic acid and/or methacrylic acid.

4,323,660

COMPOSITION WITH LATENT REACTIVE CATALYST - #5

Mohinder S. Chattha, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Jan. 4, 1980, Ser. No. 109,437

Int. Cl.³ C08L *37/00, 61/28*

U.S. Cl. 525—161 10 Claims

1. A composition of which, exclusive of pigments, solvents and other nonreactive components, consists essentially of:

(A) a sulfonic acid ester comprising the reaction product of

(i) a bifunctional copolymer bearing pendent epoxy functionality and at least 2 hydroxyl groups per molecule, and having a number average molecular weight (M_n) of between about 1,500 and about 10,000 and a glass transition temperature (T_g) of between about −25° C. and about 70° C., said copolymer being prepared from (a) between about 0.5 and about 5 weight percent of monoethylenically unsaturated monomers bearing glycidyl functionality, (b) between about 10 and about 30 weight percent of monoethylenically unsaturated monomers bearing hydroxyl functionality, and (c) between about 65 and about 89.5 weight percent of other monoethylenically unsaturated monomers, and

(ii) a sulfonic acid having the formula

$$R-\overset{\overset{\displaystyle O}{\|}}{\underset{\underset{\displaystyle O}{\|}}{S}}-OH$$

wherein R is selected from linear or branched alkyl groups and aryl groups, said epoxy functional polymer and said sulfonic acid being reacted in such amounts that there are between about 0.3 and about 1 acid groups per epoxy in the reaction mixture; and

(B) an amine-aldehyde crosslinking agent in an amount ranging from about 15 to about 45 weight percent based on the total weight of (A) and (B).

4,323,661

SINTERABLE, FINELY DIVIDED VINYL CHLORIDE MOLDING COMPOSITION AND A PROCESS FOR ITS MANUFACTURE AND USE

Helmut Kraus, Töging; Jürgen Weinlich, Eppstein, and Otto Plewan, Neuötting, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed May 14, 1981, Ser. No. 263,581

Claims priority, application Fed. Rep. of Germany, May 17, 1980, 3018922

Int. Cl.³ C08F *265/04*

U.S. Cl. 525—259 10 Claims

1. Sinterable, finely divided molding composition, based on polyvinyl chloride having a K-value of 55 to 75, a bulk density of 450 to 700 g/l, a plasticizer absorption of 5 to 20% by weight, a content of metal cations of less than 0.01% by weight, relative to the molding composition, an average particle size of 10 to 50 μm and a particle size distribution of 99 to 30% by weight <33 μm, 1 to 60% by weight from 33 to 63 μm, 0 to 9% by weight from 63 to 125 μm and 0 to 1% by weight >125 μm, which consisting essentially of:

99.8 to 97% by weight, relative to the molding composition, of a graft copolymer which has been prepared by suspension polymerization of vinyl chloride in the presence of an ethylene/vinyl acetate copolymer in an aqueous phase and which is in turn composed of 99.7 to 85% by weight, relative to the graft copolymer, of polymerized units of vinyl chloride, 0.09 to 10.5% by weight, relative to the graft copolymer, of polymerized units of ethylene and 0.09 to 10.5% by weight, relative to the graft copolymer, of polymerized units of vinyl acetate, with the proviso that the total of the polymerized units of ethylene and vinyl acetate is 0.3 to 15% by weight;

0.01 to 0.5% by weight, relative to the molding composition, of at least one of the following free sulfonic acids: alkylsulfonic acids having 8 to 16 C atoms and alkylarylsulfonic acids having 3 to 16 C atoms in the alkyl chain; and

0.005 to 0.5% by weight, relative to the molding composition, of at least one water-soluble wetting agent which is free from metal ions and contains 12 to about 80 C atoms and a quaternary N atom which forms a salt with a carboxylic or sulfuric acid group;

the remainder being: suspending agents, residues of activators and other polymerization auxiliaries and also, in some cases, small quantities of further additives.

4,323,662

THERMOSETTING RESIN COMPOSITIONS COMPRISING BISMALEIMIDES AND ALKENYLANILINE DERIVATIVES

Masayuki Obe; Motoo Kawamata; Hikotada Tsuboi, and Nobuhito Koga, all of Yokohama, Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Filed Jul. 8, 1980, Ser. No. 167,145

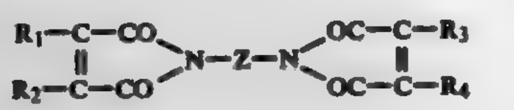
Claims priority, application Japan, Jul. 10, 1979, 54/86429

Int. Cl.³ C08F *220/52, 222/40, 122/40, 271/02*

U.S. Cl. 525—281 11 Claims

1. A thermosetting resin composition comprising:

(a) at least one maleimide selected from the group consisting of bismaleimides having the formula

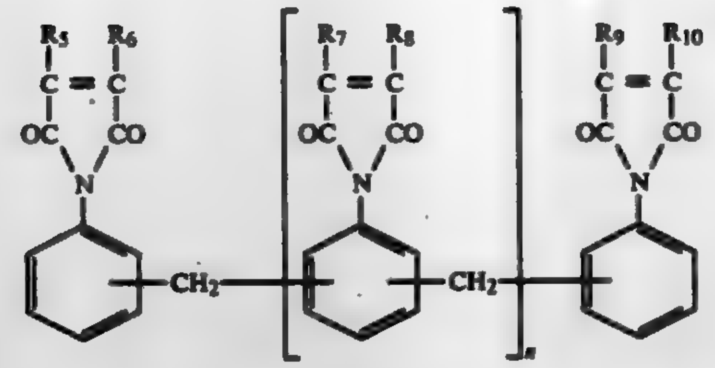


(I)

where R_1, R_2, R_3, and R_4 are hydrogen atoms, halogen atoms, straight-chain or branched alkyl radicals of from 1 to 10 carbon atoms, phenyl radicals, or substituted phenyl radicals having one or more substituents selected from straight-chain or branched alkyl radicals of from 1 to 10 carbon atoms, halogen atoms, $R_{13}O$— groups in which R_{13} is an aliphatic radical of from 1 to 5 carbon atoms and, if there are two or more radicals represented by R_{13}, they may be identical to or different from each other,

$$R_{13}\overset{\overset{\displaystyle O}{\|}}{C}-$$

groups in which R_{13} is as previously defined, hydroxyl groups, and cyano groups, and the radicals represented by R_1, R_2, R_3, and R_4 may be identical to or different from each other, and Z is a divalent organic radical of at least 2 carbon atoms and polymaleimides having the formula



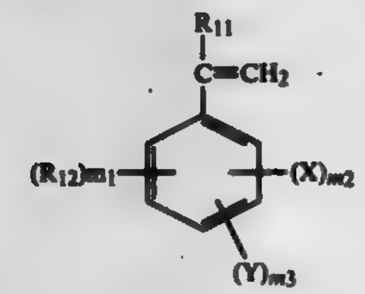
(II)

where R_5, R_6, R_7, R_8, R_9, and R_{10} are hydrogen atoms, halogen atoms, straight-chain or branched alkyl radicals of from 1 to 10 carbon atoms, phenyl radicals, or substituted phenyl radicals having one or more substituents selected from halogen atoms, straight-chain or branched alkyl radicals of from 1 to 10 carbon atoms, $R_{13}O$— groups in which R_{13} is as previously defined,

$$R_{13}\overset{\overset{\displaystyle O}{\|}}{C}-$$

groups in which R_{13} is as previously defined, hydroxyl groups, and cyano groups, and the radicals represented by R_5, R_6, R_7, R_8, R_9, and R_{10} may be identical to or different from each other, and n is zero or a positive number; and

(b) at least one member selected from the group consisting of alkenylaniline derivatives having the formula



(III)

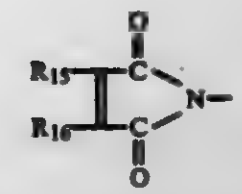
where R_{11} and R_{12} are hydrogen atoms, halogen atoms, straight-chain or branched alkyl radicals of from 1 to 10 carbon atoms, phenyl radicals, or substituted phenyl radicals having one or more substituents selected from halogen atoms, straight-chain or branched alkyl radicals of from 1 to 10 carbon atoms, $R_{13}O$— groups in which R_{13} is as previously defined, and cyano groups, and the radicals represented by R_{11} and R_{12} may be identical to or different from each other, X is a hydrogen atom, halogen atom, carboxyl group,

$$R_{13}\overset{\overset{\displaystyle O}{\|}}{C}-$$

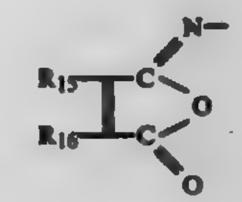
group in which R_{13} is as previously defined, $R_{13}O$— group in which R_{13} is as previously defined, or cyano group, Y is an amino group, maleimido glycidylamino group, diglycidylamino group,

$$\begin{matrix} R_{15}C-CONH- \\ \| \\ R_{16}C-COOH \end{matrix}$$

group in which R_{15} and R_{16} are hydrogen atoms, halogen atoms, or straight-chain or branched alkyl radicals of from 1 to 10 carbon atoms and the radicals represented by R_{15} and R_{16} may be identical to or different from each other,



group in which R_{15} and R_{16} are as previously defined,



group in which R_{15} and R_{16} are as previously defined,

$$R_{14}\overset{\overset{\displaystyle O}{\|}}{C}-NH-$$

group in which R_{14} is an aliphatic radical of from 1 to 20 carbon atoms, an alkylamino group of from 1 to 5 carbon atoms, or a dialkylamino group in which each alkyl radical has from 1 to 5 carbon atoms, and m_1, m_2, and m_3 are positive integers and the sum of $m_1+m_2+m_3$ has a value of 5, linear dimers thereof, and polymers thereof.

4,323,663

PROCESS FOR PRODUCING A HALOGEN-CONTAINING POLYCARBONATE RESIN

Hazime Mori; Katsuhisa Kohyama, and Katsuhiko Nakamura, all of Kitakyushu, Japan, assignors to Mitsubishi Chemical Industries, Ltd., Tokyo, Japan

Filed Nov. 3, 1980, Ser. No. 203,649

Claims priority, application Japan, Nov. 20, 1979, 54-150254

Int. Cl.³ C08L *69/00;* C08G *63/62*

U.S. Cl. 525—470 9 Claims

1. A process for producing a halogen-containing polycarbonate resin characterized by washing, with an aqueous washing liquid, an organic solvent solution of a mixture of a first halogen-containing polycarbonate resin prepared by a process using phosgene as a reactant, said first polycarbonate resin having a halogen content of not less than 4 wt% and a second polycarbonate resin having a halogen content of not larger than 4 wt% and present in said mixture in an amount 0.05–4 times the weight of said first polycarbonate resin, and collecting a mixed polycarbonate resin having a halogen content of not less than 4 wt% from said solution.

4,323,664

PROCESS FOR PRODUCING GRANULAR POLYMER HAVING UNIFORM FINE PARTICLE SIZE

Yoshiyuki Makoyama, and Nobutoshi Chikazumi, both of Hitachi, Japan, assignors to Hitachi Chemical Company, Ltd., Tokyo, Japan

Filed Dec. 28, 1979, Ser. No. 107,762

Claims priority, application Japan, Jan. 11, 1979, 54-2422

Int. Cl.³ C08F *2/20*

U.S. Cl. 526—88 9 Claims

1. A process for producing a granular polymer having a fine particle size by aqueous suspension polymerization which comprises conducting aqueous suspension polymerization of one or more crosslinkable polymerizable monomers, non-crosslinkable polymerizable monomers or a mixture thereof in the presence of a suspension agent under stirring accompanying high speed shearing at a rate of shear in the range of 10^5 to

5×10^6 min^{-1} until the percentage conversion becomes 1 to 50% and continuing the polymerization under stirring without the accompanying high speed shearing and without mechanical cutting; said non-crosslinkable polymerizable monomer being a styrene series monomer or an acrylic series monomer.

4,323,665
HIGH EFFICIENCY CATALYST FOR POLYMERIZING OLEFINS

Kirby Lowery, Jr., Lake Jackson; Donald F. Birkelbach, Angleton, and Randall S. Shipley, Alvin, all of Tex., assignors to The Dow Chemical Co., Midland, Mich.

Division of Ser. No. 27,974, Apr. 9, 1979, Pat. No. 4,224,186, which is a continuation-in-part of Ser. No. 939,632, Sep. 5, 1978, abandoned. This application Apr. 14, 1980, Ser. No. 140,408

Int. Cl.³ C08F *4/02, 10/00*

U.S. Cl. 526—122 24 Claims

1. In a process for the polymerization of an α-olefin under the conditions characteristic of Ziegler polymerization wherein the polymerization is conducted in the presence of, as a catalyst for said polymerization, a catalytic reaction product of (A) a tetravalent titanium compound, (B) an organoaluminum compound, (C) an organomagnesium component and (D) a halide source; said catalytic reaction product having atomic ratios of

Mg:Ti is from about 1:1 to about 2000:1,

Al:Ti is from about 0.1:1 to about 2000:1;

excess X:Al is from about 0.0005:1 to about 10:1;

the improvement which comprises employing as the halide source in said catalyst, a tetravalent tin halide represented by the formula SnX_aR_{4-a}, wherein X is a halogen, R is a hydrocarbyl or hydrocarbyloxy group and a has a value of 1 to 4 and the atomic ratio of Sn:Mg is from about 0.1:1 to about 2:1.

4,323,666
COPOLYMERS OF VINYL ACETATE, ETHYLENE AND PEROXY ALKYL ACRYLATE

Vram T. Shirinian, ulitsa Proletarskaya, 58, kv. 21; Suren S. Mnatsakanov, prospekt Metallistov, 50, kv. 165; Valery N. Pavljuchenko, prospekt Energetikov, 34, kv. 53; Mark E. Rosenberg, Kondratievsky prospekt, 79, kv. 159; Valery V. Gromov, ulitsa Vernosti, 38, korpus 3, kv. 80, and Sergei S. Ivanchev, ulitsa Nalichnaya, 36/3, kv. 97, all of Leningrad, U.S.S.R.

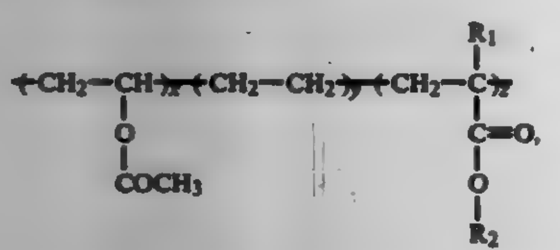
PCT No. PCT/SU79/00024, § 371 Date Dec. 12, 1980, § 102(e) Date Dec. 12, 1980, PCT Pub. No. WO80/02289, PCT Pub. Date Oct. 30, 1980

PCT Filed Apr. 24, 1979, Ser. No. 227,062

Int. Cl.³ C08F *210/02, 220/28*

U.S. Cl. 526—329 1 Claim

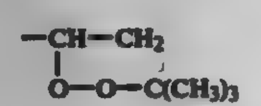
1. Copolymers of vinyl acetate, ethylene and peroxy alkyl acrylate of the general formula:



wherein

R_1 represents a normal alkyl $—CH_3$, $—C_2H_5$, $—C_3H_7$, $—C_4H_9$, or $—C_5H_{11}$;

R_2 represents



or $—O—C(CH_3)_3$;

x = 24.0 to 89.9 mole %; y = 10.0 to 75.0 mole %; z = 0.1 to 1.0 mole %.

4,323,667
BORIC ANHYDRIDE SOLUTIONS AND THEIR USE AS HARDENERS OF RESOLS

Nicolas Meyer, Bully les Mines, and Raymond Foulon, Bruay en Artois, both of France, assignors to Societe Chimique des Charbonnages SA, Paris, France

Division of Ser. No. 49,009, Jun. 15, 1979, Pat. No. 4,272,403. This application Jan. 22, 1981, Ser. No. 227,308

Claims priority, application France, Jun. 19, 1978, 78 18279

Int. Cl.³ C08G *8/32, 8/36*

U.S. Cl. 528—138 11 Claims

1. In a process for hardening formo-phenolic resols, wherein a mixture comprising a formo-phenolic resin and a hardening agent is hardened;

the improvement wherein said hardening agent is a concentrated boric anhydride solution which comprises (1) at least 5 percent by weight of boric anhydride; (2) at least one solvent selected from the group consisting of mono alcohols, poly alcohols, trialkylborates and dialkyl acetals of formol; and (3) from 5 to 70 percent by weight, based on the weight of solution, of at least one acid selected from the group consisting of sulfuric acid and sulfonic acids.

4,323,668
(ORTHO-ALKOXYCARBONYARYL)-CARBONATE TRANSESTERIFICATION

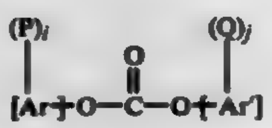
Daniel J. Brunelle, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 3, 1980, Ser. No. 212,386

Int. Cl.³ C08G *63/62*

U.S. Cl. 528—173 9 Claims

1. A process for effecting a polycarbonate transesterification which comprises reacting a bis (ortho-alkoxycarbonylaryl) carbonate of the formula



and a dihydric phenol under transesterification reaction conditions where at least a P or Q substituent is an ortho-positioned —COOR group, R being a C_{1-4} alkyl directly bonded to a ring carbon atom located adjacent to an oxo group of the carbonate, i and j represent whole numbers of at least 1 up to a maximum equivalent to the number of replaceable hydrogen atoms or C_{1-4} alkyl groups substituted for on the aromatic rings comprising Ar and Ar′.

4,323,669
PROCESS FOR PURIFICATION OF NITROCELLULOSE

William T. Bolleter, Blacksburg, and Carl D. Chandler, Jr., Dublin, both of Va., assignors to Hercules Incorporated, Wilmington, Del.

Filed Jul. 23, 1980, Ser. No. 171,623

Int. Cl.³ C08B *5/04, 5/10*

U.S. Cl. 536—38 4 Claims

1. A process is provided for purification and viscosity reduction of unpurified nitrocellulose containing residual acid from the nitration step in the preparation of the nitrocellulose, said process comprising:

(a) cutting the unpurified nitrocellulose fibers in water forming an aqueous slurry of nitrocellulose fibers comprising a dispersed nitrocellulose fiber phase and a continuous liquid phase,

(b) adjusting the pH of such slurry to at least about 8 with the basic solution,

(c) heating the resulting slurry to an elevated temperature of at least 100° C. to about 150° C. and at a pressure of from about atmospheric pressure to about 60 psi (gauge), and maintaining the pH of the slurry at at least about 8 by the addition of basic solution during the heating of the slurry under pressure and continuing said heating for a time sufficient for the residual acid in said nitrocellulose fibers to be substantially completely neutralized,

(d) separating the neutralized fibers from the continuous liquid phase of the slurry, and

(e) washing the separated nitrocellulose fibers with water to effect removal of the basic solution and recovering stable nitrocellulose fibers therefrom.

4,323,670
ANTHRAQUINONE-AZOMETHINE COMPOUNDS, PROCESSES FOR THEIR PREPARATION AND PROCESSES FOR PIGMENTING ORGANIC MACROMOLECULAR SUBSTANCES

Rütger Neeff; Meinhard Rolf, and Walter Müller, all of Leverkusen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

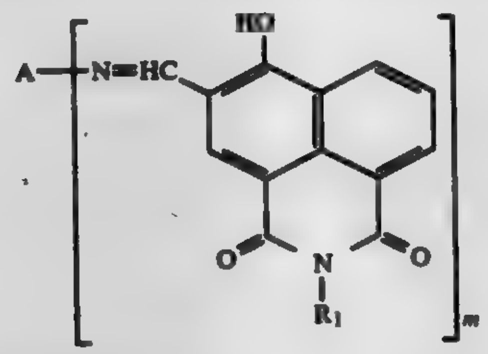
Filed Jul. 21, 1980, Ser. No. 170,444

Claims priority, application Fed. Rep. of Germany, Aug. 4, 1979, 2931711

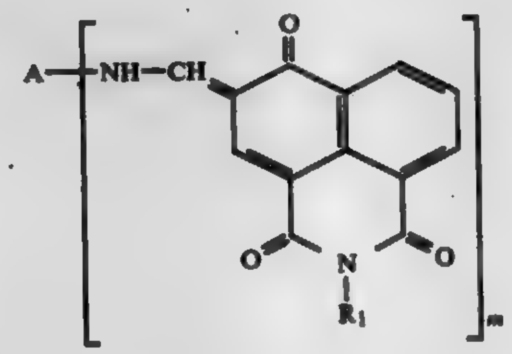
Int. Cl.³ C07D *221/06*

U.S. Cl. 542—415 3 Claims

1. An anthraquinone-azomethine compound of the formula



or of the tautomeric formula



in which

A denotes an anthraquinone radical which is free from sulphonic acid groups and is optionally further substituted by halogen, C_1–C_4 alkyl, C_1–C_4 alkoxy, C_1–C_4 alkylamino, benzylamino, cyclohexylamino, C_1–C_4 alkylmercapto, phenylmercapto which is optionally substituted by C_1–C_4 alkyl, C_1–C_4 alkoxy, fluorine, chlorine, bromine or nitro, C_1–C_4 alkylcarbonyl, C_1–C_4 alkoxycarbonyl, phenylamino which is optionally substituted by C_1–C_4 alkyl, C_1–C_4 alkoxy, bromine, chlorine or nitro, carbamoyl which is optionally monsubstituted or disubstituted by C_1–C_4 alkyl, benzyl or phenyl, it being possible for phenyl to be substituted by C_1–C_4 alkyl, C_1–C_4 alkoxy, fluorine, chlorine, bromine or nitro, carboxyl, hydroxyl, C_1–C_4 alkylcarbonylamino, benzoylamino which is optionally substitued by C_1–C_4 alkyl, C_1–C_4 alkoxy, chlorine, bromine or nitro, C_1–C_4 alkyl sulphonylamino or benzenesulphonylamino which is optionally substituted by C_1–C_4 alkyl, C_1–C_4 alkoxy, fluorine, chlorine, bromine or nitro;

R_1 denotes hydrogen, an optionally substituted aryl group of the formula

wherein the aryl group can be substituted by halogen, C_1–C_4 alkyl, C_1–C_4 alkoxy, nitro, trifluoromethyl or cyano, hetero-aryl, cycloalkyl or C_1–C_{12} alkyl, it being possible for the alkyl chain to be interrupted by oxygen or sulphur and/or to be substituted by hydroxyl groups of $N(R_3)_2$ groups, $—N(R_3)_3$ or

R_2 denotes halogen, C_1–C_4 alkyl, C_1–C_4alkoxy, nitro, trifluoromethyl, cyano, optionally substituted carbamoyl optionally substituted sulphamoyl, acylamino or optionally substituted arylamino, the substituents on the optionally substituted carbamoyl or sulphamoyl being C_1–C_4 alkyl, phenyl which in turn is optionally substituted by C_1–C_4 alkyl, C_1–C_4 alkoxy, chlorine, bromine or nitro and benzyl, the substituents on the aryl amino being C_1–C_4 alkyl, C_1–C_4 alkoxy, fluorine, chlorine, bromine or nitro;

R_3 denotes hydrogen, C_1–C_4 alkyl, cycloalkyl or optionally substituted aryl where the substituents are halogen, C_1–C_4 alkyl, C_1–C_4 alkoxy, nitro, trifluoromethyl or cyano;

m denotes 1, 2, 3 or 4 and

n denotes 1, 1, 2, 3, 4 or 5.

4,323,671
ANTHRAQUINONE DERIVATIVES, PROCESSES FOR THEIR PREPARATION, PROCESSES FOR PIGMENTING ORGANIC MACROMOLECULAR SUBSTANCES, AND PIGMENTED ORGANIC MACROMOLECULAR MATERIAL

Rütger Neeff; Meinhard Rolf, and Walter Müller, all of Leverkusen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Apr. 14, 1980, Ser. No. 140,348

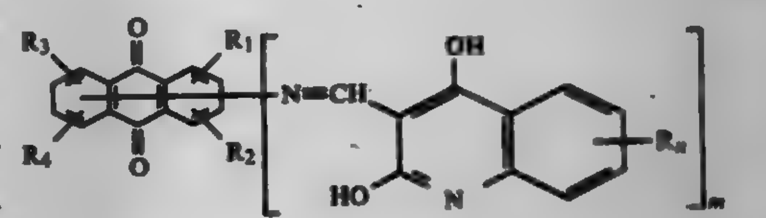
Claims priority, application Fed. Rep. of Germany, Apr. 28, 1979, 2917312

Int. Cl.³ C07D *215/22*

U.S. Cl. 542—415 2 Claims

1. Anthraquinone derivatives of the formula

(III)



or of the corresponding tautomeric formula, wherein

m denotes a number from 1 to 4,

R denotes a substituent and

n denotes 0, 1, 2, 3 or 4,

R_1 denotes hydrogen, halogen, such as fluorine, chlorine and bromine, nitro, C_1–C_4-alkyl, C_1–C_4-alkoxy, C_1–C_4-alkylamino, benzylamino, cyclohexylamino, C_1–C_4-alkylmercapto, phenylmercapto which is optionally substituted

by C_1–C_4-alkyl, C_1–C_4-alkoxy, fluorine, chlorine, bromine or nitro, C_1–C_4-alkylcarbonyl, C_1–C_4-alkoxycarbonyl, phenylamino which is optionally substituted by C_1–C_4-alkyl, C_1–C_4-alkoxy, chlorine or nitro, carbamoyl which is optionally monosubstituted or disubstituted by C_1–C_4-alkyl, benzyl or phenyl, it being possible for phenyl to be substituted by C_1–C_4-alkyl, C_1–C_4-alkoxy, fluorine, chlorine, bromine or nitro, carboxyl, hydroxyl, C_1–C_4-alkylcarbonylamino, benzoylamino which is optionally substituted by C_1–C_4-alkyl, C_1–C_4-alkoxy, chlorine, bromine or nitro, or phenylsulphonylamino which is optionally substituted by C_1–C_4-alkyl, C_1–C_4-alkoxy, fluorine, chlorine, bromine or nitro,

R_2 denotes hydrogen, chlorine or hydroxyl,

R_3 denotes hydrogen, halogen, such as fluorine, chlorine or bromine, nitro, C_1–C_4-alkyl, C_1–C_4-alkoxy, C_1–C_4-alkylamino, C_1–C_4-alkylmercapto, phenylmercapto which is optionally substituted by C_1–C_4-alkyl, C_1–C_4-alkoxy, fluroine, chlorine, bromine or nitro, C_1–C_4-alkoxycarbonyl, C_1–C_4-alkylcarbonyl, benzylamino, cyclohexylamino, phenylamino which is optionally substituted by C_1–C_4-alkyl, C_1–C_4-alkoxy, chlorine, bromine or nitro, carboxyl, hydroxyl, carbamoyl which is optionally monosubstituted or disubstituted by C_1–C_4-alkyl, benzyl or phenyl, it being possible for phenyl to be substituted by C_1–C_4-alkyl, C_1–C_4-alkoxy, fluorine, chlorine, bromine or nitro, C_1–C_4-alkylcarbonylamino, benzoylamino which is optionally substituted by C_1–C_4-alkyl, C_1–C_4-alkoxy, chlorine, bromine or nitro, C_1–C_4-alkylsulphonylamino, or phenylsulphonylamino which is optionally substituted by C_1–C_4-alkyl, C_1–C_4-alkoxy, fluorine, chlorine, bromine or nitro and

R_4 denotes hydrogen, halogen, such as fluorine, chlorine and bromine, or hydroxyl.

4,323,672

PGI$_2$ AMIDES

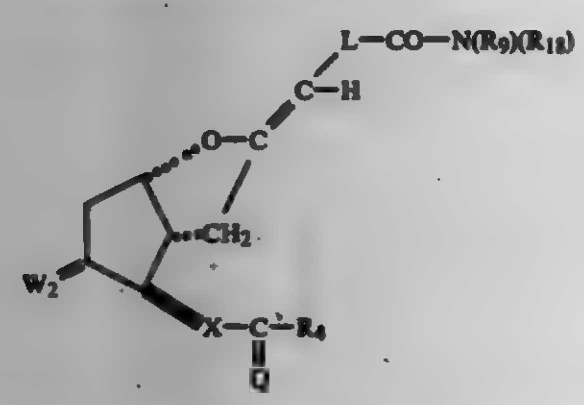
Roy A. Johnson, Kalamazoo; Frank H. Lincoln, Portage, and John E. Pike, Kalamazoo, all of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Continuation of Ser. No. 819,940, Jul. 28, 1977, which is a continuation-in-part of Ser. No. 725,550, Sep. 22, 1976, abandoned, which is a continuation-in-part of Ser. No. 716,770, Aug. 23, 1976, abandoned. This application Mar. 27, 1981, Ser. No. 248,635

Int. Cl.³ C07D *307/935*

U.S. Cl. 542—421 15 Claims

1. A compound of the formula



or a mixture comprising that compound and the enantiomer thereof, wherein W_2 is α—OH:β—H, α—H:β—OH, oxo, methylene, α—H:β—H, or α—CH_2OH:β—H; wherein L is

(1) —$(CH_2)_d$—$C(R_2)_2$—,

(2) —CH_2—O—CH_2—Y—, or

(3) —CH_2CH=CH—,

wherein d is zero to 5, R_2 is hydrogen, methyl, or fluoro, being the same or different with the proviso that one R_2 is not methyl when the other is fluoro, and Y is a valence bond, —CH_2— or —$(CH_2)_2$—, wherein Q is oxo, α—H:β—H, α—R_8:β—OH, or α—OH:β—R_8, wherein R_8 is hydrogen or alkyl of one to 4 carbon atoms, inclusive, wherein R_9 is hydrogen, methyl, or ethyl, and wherein R_{18} is hydrogen, alkyl of one to 4 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, or phenyl substituted with alkyl of one to 4 carbon atoms, inclusive, wherein R_4 is

—$C(R_5)(R_6)C_gH_{2g}$—CH_3,

—$C(R_5)(R_6)$—Z—(Ph I), or

—CH_2—CH=CH—CH_2CH_3,

wherein C_gH_{2g} is alkylene of one to 9 carbon atoms, inclusive, with one to 5 carbon atoms, inclusive, in the chain between —CR_5R_6 and terminal methyl, wherein R_5 and R_6 are hydrogen, alkyl of one to 4 carbon atoms, inclusive, or fluoro, being the same or different, with the proviso that one of R_5 and R_6 is fluoro only when the other is hydrogen of fluoro and the further proviso that neither R_5 nor R_6 is fluoro when Z is oxa (—O—); wherein Z represents an oxa atom (—O—) or C_jH_{2j} wherein C_jH_{2j} is a valence bond or alkylene of one to 9 carbon atoms, inclusive, with one to 6 carbon atoms, inclusive between CR_5R_6- and (Ph I); wherein (Ph I) is phenyl optionally substituted by one, 2, or 3 alkyl of one to 4 carbon atoms, inclusive, fluoro, chloro, trifluoromethyl, or —OR_7— wherein R_7 is alkyl of one to 4 carbon atoms, inclusive, with the proviso that not more than two such substituents are other than alkyl and such substituents being either the same or different; and wherein X is

(1) trans—CH=CH—,

(2) cis—CH=CH—,

(3) —C≡C—, or

(4) —CH_2CH_2—;

including the lower alkanoates thereof.

4,323,673

2-DECARBOXY-2-AMINOMETHYL-PGI$_2$ COMPOUNDS

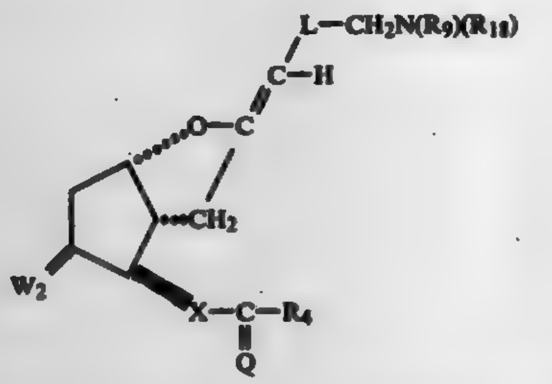
Roy A. Johnson, Kalamazoo; Frank H. Lincoln, Portage, and John E. Pike, Kalamazoo, all of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Continuation of Ser. No. 819,940, Jul. 28, 1977, which is a continuation-in-part of Ser. No. 725,550, Sep. 22, 1976, abandoned, which is a continuation-in-part of Ser. No. 716,770, Aug. 28, 1976, abandoned. This application Mar. 27, 1981, Ser. No. 248,627

Int. Cl.³ C07D *307/935*

U.S. Cl. 542—426 10 Claims

1. A compound of the formula



or a mixture comprising that compound and the enantiomer thereof,

wherein W_2 is α—OH:β—H, α—H:β—OH, oxo, methylene, α—H:β—H, or α—CH_2OH:β—H;

wherein L is

(1) —$(CH_2)_d$—$C(R_2)_2$—,

(2) —CH_2—O—CH_2—Y—, or

(3) —CH_2CH=CH—,

wherein d is zero to 5, R_2 is hydrogen, methyl, or fluoro, being the same or different with the proviso that one R_2 is not methyl when the other is fluoro, and Y is a valence bond, —CH_2— or —$(CH_2)_2$—,

wherein Q is oxo, α—H:β—H, α—R_8:β—OH, or α—OH:βR_8, wherein R_8 is hydrogen or alkyl of one to 4 carbon atoms, inclusive,

wherein R_9 is hydrogen, methyl, or ethyl, and wherein R_{18} is hydrogen, alkyl of one to 4 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, or phenyl substituted with alkyl of one to 4 carbon atoms, inclusive,

wherein R_4 is

—$C(R_5)(R_6)C_gH_{2g}$—CH_3,

—$C(R_5)(R_6)$—Z—(Ph I), or

—CH_2—CH=CH—CH_2CH_3,

wherein C_gH_{2g} is alkylene of one to 9 carbon atoms, inclusive, with one to 5 carbon atoms, inclusive, in the chain between —CR_5R_6 and terminal methyl, wherein R_5 and R_6 are hydrogen, alkyl of one to 4 carbon atoms, inclusive, or fluoro, being the same or different, with the proviso that one of R_5 and R_6 is fluoro only when the other is hydrogen or fluoro and the further proviso that neither R_5 nor R_6 is fluoro when Z is oxa (—O—); wherein Z represents an oxa atom (—O—) or C_jH_{2j} wherein C_jH_{2j} is a valence bond or alkylene of one to 9 carbon atoms, inclusive, with one tö 6 carbon atoms, inclusive, between CR_5R_6— and (Ph I); wherein (Ph I) is phenyl optionally substituted by one, 2, or 3 alkyl of one to 4 carbon atoms, inclusive, fluoro, chloro, trifluoromethyl, or —OR_7— wherein R_7 is alkyl of one to 4 carbon atoms, inclusive, with the proviso that not more than two such substituents are other than alkyl and such substituents being either the same or different; and wherein X is

(1) trans—CH=CH—,

(2) cis—CH=CH—, (3) —C≡C—, or

(4) —CH_2CH_2—;

including the lower alkanoates thereof.

4,323,674

PGI$_2$ ANALOGS

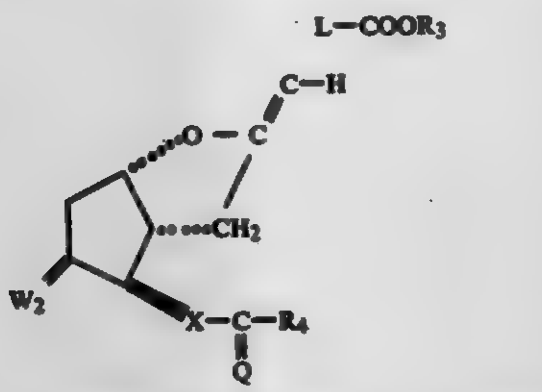
Roy A. Johnson, Kalamazoo; Frank H. Lincoln, Portage, and John E. Pike, Kalamazoo, all of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Continuation of Ser. No. 819,940, Jul. 28, 1977, which is a continuation-in-part of Ser. No. 725,550, Sep. 22, 1976, abandoned, which is a continuation-in-part of Ser. No. 716,770, Aug. 23, 1976, abandoned. This application Mar. 27, 1981, Ser. No. 248,641

Int. Cl.³ C07D *307/935*

U.S. Cl. 542—426 29 Claims

1. A compound of the formula



or a mixture comprising that compound and the enantiomer thereof, wherein W_2 is α—OH:β—H, α—H:β—OH, oxo, methylene, α—H:β—H, or α—CH_2OH:β—H; wherein L is

(1) —$(CH_2)_d$—$C(R_2)_2$—,

(2) —CH_2—O—CH_2—Y—, or

(3) —CH_2CH=CH—,

wherein d is zero to 5, R_2 is hydrogen, methyl, or fluoro, being the same or different with the proviso that one R_2 is not methyl when the other is fluoro, and Y is a valence bond, —CH_2— or —$(CH_2)_2$—, wherein Q is oxo, α—H:β—H, α—R_8:β—OH, or α—OH:β—R_8, wherein R_8 is hydrogen or alkyl of one to 4 carbon atoms, inclusive, wherein R_3 is

(a) hydrogen,

(b) alkyl of one to 12 carbon atoms, inclusive,

(c) cycloalkyl of 3 to 10 carbon atoms, inclusive,

(d) aralkyl of 7 to 12 carbon atoms, inclusive,

(e) phenyl,

(f) phenyl substituted with one, 2, or 3 chloro or alkyl of one to 4 carbon atoms, inclusive,

(g) —(p—Ph)—NH—CO—(p—Ph)—NH—CO—CH_3,

(h) —(p—Ph)—NH—CO—(Ph),

(i) —(p—Ph)—NH—CO—CH_3,

(j) —(p—Ph)—NH—CO—NH_2,

(k) —(p—Ph)—CH=N—NH—CO—NH_2,

(l) 2-naphthyl,

(m) $CH(R_{11})$—CO—R_{10}, wherein R_{10} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, wherein R_{11} is hydrogen or benzoyl, (Ph) is phenyl and (p-Ph) is 1,4-phenylene or

(n) a pharmacologically acceptable cation, with the proviso that R_3 is not hydrogen, a pharmacologically acceptable cation, or alkyl of one to 4 carbon atoms, inclusive, when Q and W_2 are both α—OH:β—H, L is —$(CH_2)_3$, X is trans—CH=CH—, and R_4 is —$(CH_2)_4$—CH_3;

wherein R_4 is

—$C(R_5)(R_6)C_gH_{2g}$—CH_3,

—$C(R_5)(R_6)$—Z—(Ph I), or

—CH_2—CH=CH—CH_2CH_3,

wherein C_gH_{2g} is alkylene of one to 9 carbon atoms, inclusive, with one to 5 carbon atoms, inclusive, in the chain between —CR_5R_6 and terminal methyl, wherein R_5 and R_6 are hydrogen, alkyl of one to 4 carbon atoms, inclusive, or fluoro, being the same or different, with the proviso that one of R_5 and R_6 is fluoro only when the other is hydrogen or fluoro and the further proviso that neither R_5 nor R_6 is fluoro when Z is oxa (—O—); wherein Z represents an oxa atom (—O—) or C_jH_{2j} wherein C_jH_{2j} is a valence bond or alkylene of one to 9 carbon atoms, inclusive, with one to 6 carbon atoms, inclusive between CR_5R_6— and (Ph I); wherein (Ph I) is phenyl optionally substituted by one, 2, or 3 alkyl of one to 4 carbon atoms, inclusive, fluoro, chloro, trifluoromethyl, or —OR_7— wherein R_7 is alkyl of one to 4 carbon atoms, inclusive, with the proviso that not more than two such substituents are other than alkyl and such substituents being either the same or different; and wherein X is

(1) trans—CH=CH—,

(2) cis—CH=CH—,

(3) —C≡C—, or

(4) —CH_2CH_2—;

including the lower alkanoates thereof.

4,323,675

NOVEL STILBENE COMPOUNDS: PROCESS FOR THEIR MANUFACTURE AND THEIR USE AS OPTICAL BRIGHTENERS

Helmut Eckes; Rüdiger Erckel, both of Eppstein; Thomas Martini, and Günter Rösch, both of Bad Soden am Taunus, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

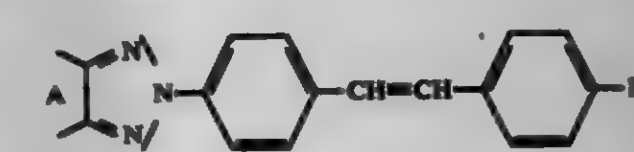
Filed Jan. 25, 1980, Ser. No. 162,930

Claims priority, application Fed. Rep. of Germany, Jan. 29, 1979, 2925234

Int. Cl.³ C07D *401/14, 413/10, 413/14*

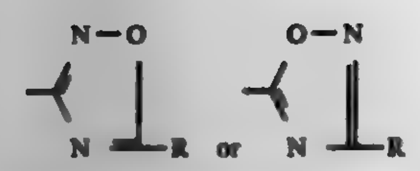
U.S. Cl. 542—463 5 Claims

1. A compound of the formula



(1)

wherein A is a benzene or naphthalene ring which is unsubstituted or substituted by non-chromophoric substituents, B is a group of the formulae



and R is a straight-chain or branched alkyl group with 1-18 C-atoms, preferably 1-6 C-atoms, which is unsubstituted or substituted by hydroxyl groups, halogen atoms, lower alkoxy, dialkylamino, lower alkylmercapto, chloroaryloxy, aryloxy, arylmercapto, aryl, morpholine, piperidine or piperazine groups, or R is a group of the formula—$(CH_2CH_2O)_n$—R^1 with n being 1, 2 or 3 and R^1 being H, lower alkyl or R is dialkylaminoalkoxyalkyl, alkylthioalkoxyalkyl, piperidine-alkoxyalkyl, hexamethylenimine-alkoxyalkyl, morpholine-alkoxyalkyl or piperazine-alkoxyalkyl or R is a group of the formula

wherein R_2 and R_3 are identical or different and are selected from the group consisting of hydrogen, fluorine, chlorine, phenyl, lower alkyl, lower alkoxy, lower acylamino, or two adjacent radicals R_4 and R_5 form together a lower alkylene group, a fused benzene ring or a 1,3-dioxapropylene group.

4,323,676

PROCESS FOR PREPARING CEPHALOSPORINS

Susumu Tsushima, Suita; Michiyuki Sendai, Osaka, and Mitsuru Shiraishi, Suita, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

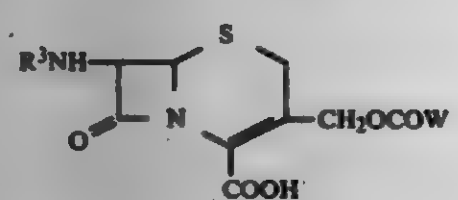
Division of Ser. No. 46,708, Jun. 8, 1979, Pat. No. 4,245,088, which is a continuation of Ser. No. 882,914, Mar. 2, 1978, abandoned, which is a continuation of Ser. No. 660,408, Feb. 23, 1976, abandoned. This application Aug. 29, 1980, Ser. No. 182,616

Claims priority, application Japan, Feb. 24, 1975, 50-23158; Mar. 21, 1975, 50-34714; Mar. 20, 1975, 50-33759; Jan. 1, 1976, 51-1274

Int. Cl.³ C07D *501/20*

U.S. Cl. 544—22 29 Claims

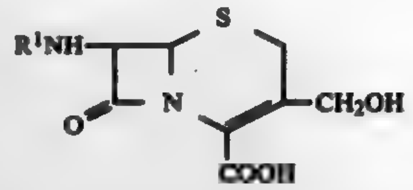
1. A process for producing a compound of the formula:



wherein W represents —X—COOH, in which X is a carbon chain which is capable of forming a five- or six-membered ring with

$$-\overset{\overset{\displaystyle O}{\|}}{C}-O-\overset{\overset{\displaystyle O}{\|}}{C}-,$$

which carbon chain may include a double bond or at least one atom selected from the group consisting of oxygen, nitrogen and sulfur, and on which carbon chain one or more substituents may be attached, the substituent being selected from the group consisting of carboxyl, halogen, nitro, alkyl having up to 3 carbon atoms, aralkyl, aryl, hydroxy substituted by one of said groups and mercapto substituted by one of said groups, and, when two or more of the substituents are present the substituents may form a ring with the carbon chain, and R^3 represents an acyl group, or a salt of said compound, which comprises the step of reacting a compound of the formula:



wherein R^1 represents hydrogen or an acyl group, or a salt of said compound, with a compound of the formula:

wherein X has the same meaning as defined hereinbefore.

4,323,677

N-AMIDES OF 2-BENZOTHIAZOLINONE

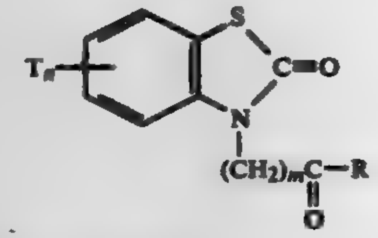
John J. D'Amico, Olivette, Mo., assignor to Monsanto Company, St. Louis, Mo.

Continuation of Ser. No. 861,476, Dec. 16, 1977, abandoned. This application Jun. 25, 1979, Ser. No. 51,483

Int. Cl.³ C07D *277/62, 265/28*

U.S. Cl. 544—135 4 Claims

1. An N-amide of 2-benzothiazolinone characterized by the formula



wherein T is trifluoromethyl and halo, n is 0 or 1; m is an integer from one to four; and R is selected from the group consisting of heterocyclics selected from the group consisting of cis- and trans-2,6-dimethylmorpholino, cis- and trans-2,5-dimethylpyrrolidino, 3-azabicyclo (3.2.2) nonyl, and ethyl N-piperazinocarboxylate.

4,323,678

PROCESS FOR THE MANUFACTURE OF DIAZINON

Bernd Schilling, Munich, Fed. Rep. of Germany, assignor to Consortium fur elektrochemische Ind. GmbH, Munich, Fed. Rep. of Germany

Filed Feb. 11, 1980, Ser. No. 120,411

Claims priority, application Fed. Rep. of Germany, Feb. 28, 1979, 2907773

Int. Cl.³ C07F *9/65*

U.S. Cl. 544—243 4 Claims

1. In a process for the manufacture of diazinon, the improvement comprising the steps of:

cyclizing β-isobutyrylaminocrotonic acid amide with 1 to 1.2 times the molar amount of a substance of the general formula NaOR, in which R represents hydrogen or an alkyl group having 1 to 8 carbon atoms, in a mixture of 0 to 100% by weight of water and an alcohol having 1 to 8 carbon atoms, above 90° C. but below the boiling point of the alcohol/water mixture used;

precipitating the resulting sodium pyrimidinolate by a non-polar solvent which is inert toward the alcoholate and which has a boiling point above that of the alcohol used; and

after removing the alcohol/water mixture by fractionation, reacting the precipitated sodium pyrimidinolate directly with diethylthiophosphoryl chloride at a temperature of 100° to 130° C. to form diazinon.

4,323,679

PYRIMIDO(4,5-c)PYRIDAZINES

Robert W. Morrison, Jr.; William R. Mallory, and Virgil L. Styles, all of Raleigh, N.C., assignors to Burroughs Wellcome Co., Research Triangle Park, N.C.

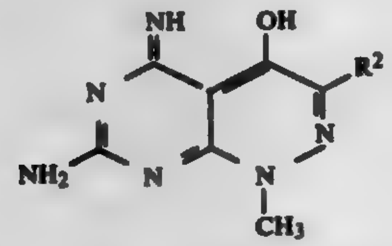
Division of Ser. No. 922,545, Jul. 7, 1978, Pat. No. 4,225,710. This application May 27, 1980, Ser. No. 153,059

Claims priority, application United Kingdom, Jul. 8, 1977, 28765/77

Int. Cl.³ C07D *487/04;* A61K *31/505*

U.S. Cl. 544—256 1 Claim

1. A compound of the formula (VI)



(VI)

wherein R^2 is, lower alkanoic acid acyloxymethyl, phenyl, indolyl, indolylmethyl, CH(CN) $CH_2C_6H_5$, $CH(CN)CH_2C_6H_5$ substituted in the phenyl ring with lower alkoxy, $CH_2CH_2CO_2Z$ where Z is hydrogen or C_{1-4} alkyl.

4,323,680

4-AMINOQUINAZOLINE COMPOUNDS USEFUL AS AGRICULTURAL FUNGICIDES

Kazuto Nakagami; Shinji Yokoi, both of Yasumachi; Kenji Nishimura, Ube; Shigeki Nagai, Ube; Takeo Honda, Ube; Kiroku Oda, Ube; Katsutoshi Fujii, Ube; Ryuji Kobayashi, Ube, and Mikio Kojima, Ube, all of Japan, assignors to Sankyo Company Limited, Tokyo and Ube Industries, Ltd., Ube, both of, Japan

Division of Ser. No. 910,117, May 30, 1978, Pat. No. 4,213,987. This application Mar. 28, 1980, Ser. No. 134,794

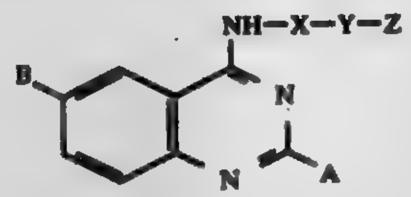
Claims priority, application Japan, Jun. 7, 1977, 52-67034

The portion of the term of this patent subsequent to Jul. 22, 1997, has been disclaimed.

Int. Cl.³ C07D *239/94*

U.S. Cl. 544—293 15 Claims

1. A compound having the formula



wherein:

A and B each represents a hydrogen atom;

X represents an alkylene group;

Y represents an oxygen atom or a sulfur atom; and

Z represents an unsubstituted phenyl group or a phenyl group substituted with 1 to 3 substituents which are the same or different and selected from the group consisting of a lower alkyl group, a lower alkoxy group, a lower alkylthio group, a phenyl group, a trifluoromethyl group and a halogen atom; or a salt thereof.

4,323,681

4-AMINO-2-SUBSTITUTED-5-PYRIMIDINECARBOXAMIDOXIMES AND CARBOTHIOAMIDES

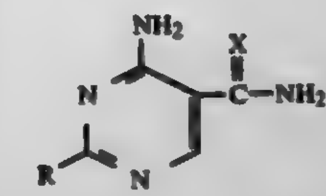
Milton Wolf, West Chester, and Richard L. Fenichel, Wyncote, both of Pa., assignors to American Home Products Corporation, New York, N.Y.

Filed Sep. 29, 1980, Ser. No. 192,120

Int. Cl.³ C07D *239/46, 239/38;* A61K *31/505*

U.S. Cl. 544—323 3 Claims

1. A compound of the formula:



wherein X is NOH, and R is hydrogen, alkyl of 1-4 carbon atoms, alkylthio of 1-4 carbon atoms, amino, phenyl or phenyl substituted with fluoro, chloro, bromo, monoalkyl of 1-4 carbon atoms, dialkyl of 1-4 carbon atoms in each alkyl group, alkoxy of 1-4 carbon atoms, trifluoromethyl, carbamoyl or dialkylcarbamoyl of 1-4 carbon atoms in each alkyl moiety and the pharmaceutically acceptable salts thereof.

4,323,682

QUINOXALINES AND THEIR USE IN PHOTOGRAPHIC PROCESSES

Gerald Jan; Remon Hagen, and John Lenoir, all of Marly, Switzerland, assignors to Ciba Geigy AG, Basel, Switzerland

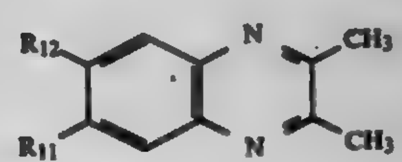
Division of Ser. No. 15,384, Feb. 26, 1979, Pat. No. 4,202,698, which is a continuation-in-part of Ser. No. 799,020, May 20, 1977, abandoned. This application Oct. 26, 1979, Ser. No. 88,727

Claims priority, application Switzerland, May 24, 1976, 6521/76

Int. Cl.³ C07D *241/42*

U.S. Cl. 544—353 3 Claims

1. A quinoxaline, which corresponds to the formula



in which R_{11} is methyl or ethyl and R_{12} is —OH, —OCH_3, —$NHCOCH_3$ or —$NHSO_2CH_3$.

4,323,683

PROCESS FOR MAKING PYRIDINETHIONE SALTS

Raymond E. Bolich, Jr., Maineville; Steven A. Shaya, Cincinnati, and Christian Steuri, Fairfield, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Feb. 7, 1980, Ser. No. 119,346

Int. Cl.³ C07D *213/89*

U.S. Cl. 546—6 11 Claims

1. A process for making heavy metal, magnesium or aluminum N-hydroxy pyridinethione salts comprising reacting 1-hydroxy-2-pyridinethione or a water soluble salt thereof with a water soluble heavy metal, magnesium or aluminum salt in an aqueous surfactant medium, wherein the reaction temperature is at least about 20° C.

4,323,684

PROCESS FOR PREPARING A 2,2,6,6-TETRAALKYL-4-PIPERIDYL SPIRO ALIPHATIC ETHER

Naohiro Kubota, 404-1 Ageomura, Ageo, and Toshihiro Shibata, 136-49-3-104 Nara-cho, Omiya, both of Japan

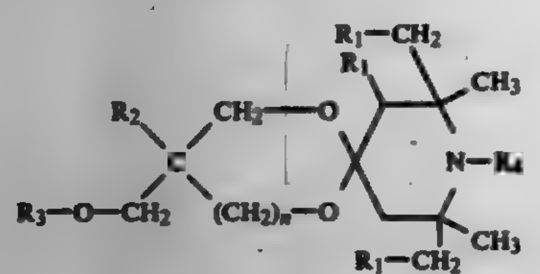
Filed Aug. 5, 1980, Ser. No. 175,487

Claims priority, application Japan, Aug. 8, 1979, 54-100916

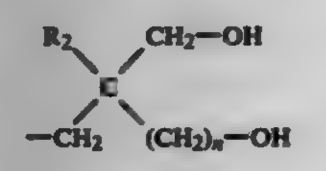
Int. Cl.³ C07D *491/13*

U.S. Cl. 546—19 10 Claims

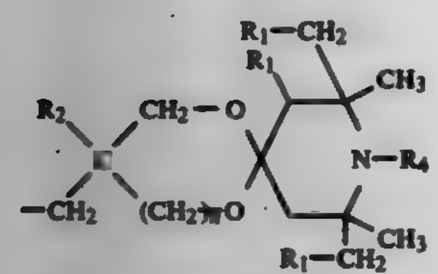
1. In a process for preparing a 2,2,6,6-tetraalkyl-4-piperidyl spiro aliphatic ether compound represented by the formula



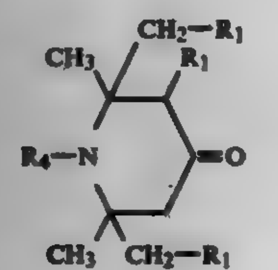
or an acid addition salt thereof, in which R_1 is a hydrogen atom or an alkyl group having 1 to 4 carbon atoms, R_2 is a hydrogen atom, or a methyl, ethyl, or hydroxymethyl group, n is zero or one, R_3 is a group represented by a formula



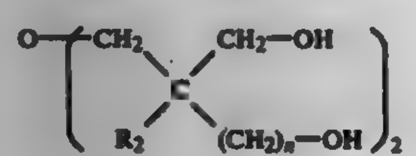
or



and R_4 is a hydrogen atom or an alkyl group, comprising the reaction of a 2,2,6,6-tetraalkyl-4-piperidone compound represented by the formula



or an acid addition salt thereof with an oxybis (alkanediol) compound represented by the formula



in which reaction water is formed, the improvement comprising carrying out the reaction of the 2,2,6,6-tetraalkyl-4-piperidone compound and the oxybis (alkanediol) compound in the presene of a polar solvent selected from the group consisting of alcohols having 1 to 13 carbon atoms and 1 alcoholic hydroxyl group, and amides of carboxylic acids having 1 to 4 carbon atoms.

4,323,685

PREPARATION OF ESTERS

Jonathan S. Baum, 148 S. Main St., Pennington, N.J. 08534, assignor to FMC Corporation, Philadelphia, Pa.

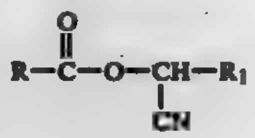
Continuation-in-part of Ser. No. 159,338, Jun. 13, 1980, Pat. No. 4,254,052, which is a continuation-in-part of Ser. No. 79,610, Sep. 27, 1979, abandoned. This application Feb. 12, 1981, Ser. No. 233,795

The portion of the term of this patent subsequent to Mar. 3, 1998, has been disclaimed.

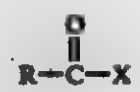
Int. Cl.³ C07C *121/75;* C07D *213/64*

U.S. Cl. 546—300 9 Claims

1. A process for preparing an insecticidal α-cyano-3-phenoxybenzyl ester of the formula



wherein R is selected from 3-(2,2-dichloroethenyl)-2,2-dimethylcyclopropyl, 3-(2,2-dibromoethenyl)-2,2-dimethylcyclopropyl, 3-(2-chloro-3,3,3-trifluoropropenyl)-2,2-dimethylcyclopropyl, 2,2,3,3-tetramethylcyclopropyl, 1-(4-chlorophenyl)-2-methylpropyl, 1-(4-difluoromethoxyphenyl)-2-methylpropyl, and 1-[(2-chloro-4-trifluoromethyl)amino]-2-methylpropyl and R_1 is selected from 3-phenoxyphenyl, 4-fluoro-(3-phenoxy)phenyl, 3-(4-halophenoxy)phenyl, and 6-phenoxy-2-pyridyl which comprises reacting an acyl halide of the formula



wherein X is chlorine or bromine and R is as defined above with 3-phenoxybenzaldehyde, 4-fluoro-3-phenoxybenzaldehyde, a 3-(4-halophenoxy)benzaldehyde, or 6-phenoxy-2-pyridylcarboxaldehyde in a mixture of substantially water-immiscible aprotic solvent and an aqueous solution of water-soluble cyanide salt in the presence of a catalytic amount of rate-promoting agent selected from acid salts of tertiary amines.

4,323,686

BENZOTHIAZOLEETHANIMIDAMIDES

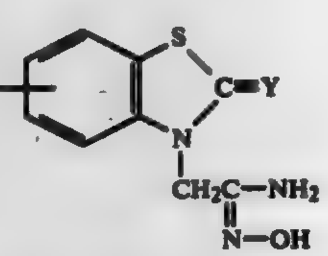
John J. D'Amico, Olivette, and John T. Marvel, St. Louis, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 68,993, Aug. 23, 1979, Pat. No. 4,283,220. This application Dec. 10, 1980, Ser. No. 214,910

Int. Cl.³ C07D *277/68, 277/70*

U.S. Cl. 548—165 7 Claims

1. A compound having the formula



wherein T is halogen or trifluoromethyl, n is 0 or 1 and Y is oxygen or sulfur.

4,323,687

PROCESS FOR THE PREPARATION OF 1,2,4-TRIAZOLIDINE-3,5-DIONE

Rudolf Merten, Leverkusen, and Ludwig Rottmaier, Odenthal, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 21, 1980, Ser. No. 208,870

Claims priority, application Fed. Rep. of Germany, Nov. 26, 1979, 2947619

Int. Cl.³ C07D *249/12*

U.S. Cl. 548—264 7 Claims

1. A process for the preparation of 1,2,4-triazolidine-3,5-dione, which comprises suspending hydrazodicarbonamide in at least one organic, water-miscible or water-immiscible solvent and cyclising it at a temperature in the range of from 150° to 280° C. and at a pressure of from 50 mbar to 5 bar with removal of the ammonia split off from the reaction mixture, and isolating the resulting 1,2,4-triazolidine-3,5-dione after crystallization.

4,323,688

BENZIMIDAZOLE-2-CARBOXYLIC ACID AND DERIVATIVES THEREOF

Ernst Habicht, Oberwil; Pier G. Ferrini, and Alfred Sallmann, both of Binningen, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jul. 27, 1978, Ser. No. 928,632

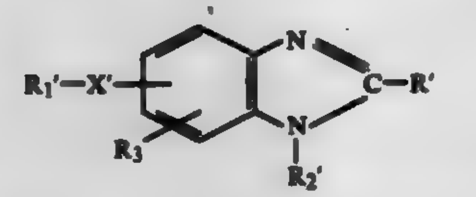
Claims priority, application Hungary, Aug. 1, 1977, CI 1761; Switzerland, Feb. 27, 1978, 2094/78

Int. Cl.³ C07D *235/04*

U.S. Cl. 548—330 5 Claims

1. A benzimidazole-2-derivative of the formula

(Ia)



Ia, in which R' is carboxyl, hydroxymethyl or lower alkoxycarbonyl having a total of not more than 5 carbon atoms, R_1'-X' is lower alkyl of 4 carbon atoms and R_2' is lower alkyl having not more than 4 carbon atoms and R_3 is hydrogen or lower alkyl having not more than 4 carbon atoms, or a pharmaceutically usable salt of said compound with salt-forming properties.

3. The compound 5-butyl-2-ethoxymethyl-1,6-dimethyl-benzimidazole or a pharmaceutically acceptable salt thereof.

4,323,689

2-HYDROXYPROPYLIMIDAZOLES, THEIR PREPARATION, AND THEIR USE AS OIL-SOLUBLE CORROSION INHIBITORS

Hans-Henning Vogel, Frankenthal; Rainer Strickler, Heidelberg; Knut Oppenlaender, Ludwigshafen, and Richard Baur, Dannstadt-Schauernheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Nov. 24, 1980, Ser. No. 209,959

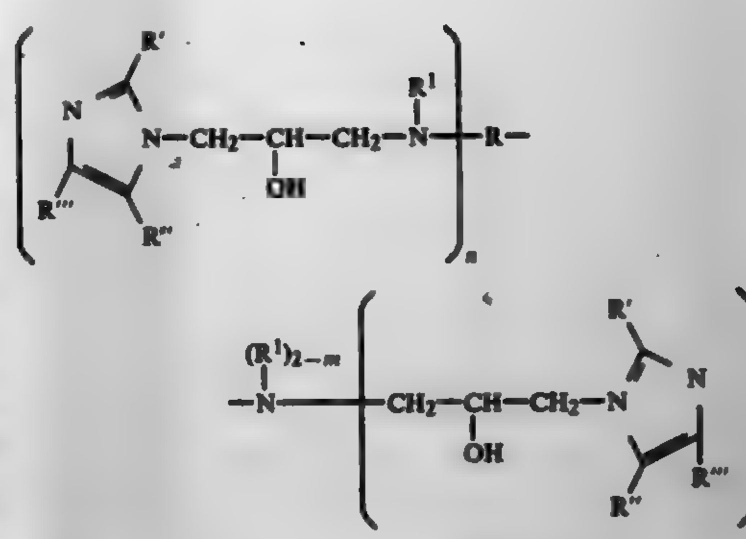
Claims priority, application Fed. Rep. of Germany, Dec. 5, 1979, 2948884

Int. Cl.³ C07D *403/00*

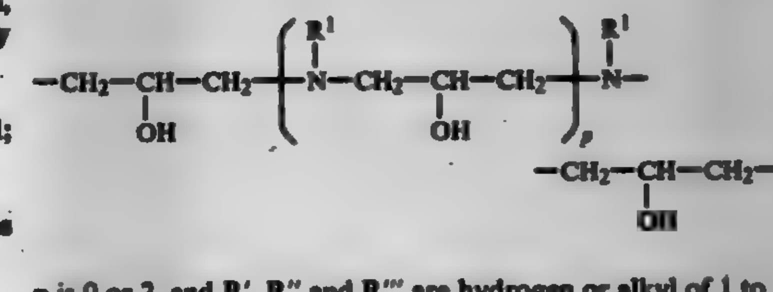
U.S. Cl. 548—336 2 Claims

1. A 2-hydroxypropylimidazole derivative of the formula I

I



where m is 1 or 2 and n is 0 or 1, with the proviso that m+n is 2, R^1 is an aliphatic or where m is 1 or 2 and n is 0 or 1, R^1 is an aliphatic or cycloaliphatic radical of 6 to 21 carbon atoms, R, if n is 0, is an aliphatic, cycloaliphatic, aromatic or araliphatic radical of 6 to 21 carbon atoms and is preferably identical with R^1, or R, if n is 1, is a divalent aliphatic or aromatic radical of 2 to 15 carbon atoms or is



p is 0 or 2, and R', R'' and R''' are hydrogen or alkyl of 1 to 4 carbon atoms, and R'' or R''' may also be nitro.

4,323,690

METHOD OF MAKING SILICATE ESTERS

John F. Montle, St. Louis; Henry J. Markowski, Manchester; Paul D. Lodewyck, St. Louis, and Daniel F. Schneider, III, House Springs, all of Mo., assignors to Carboline Company, St. Louis, Mo.

Filed Apr. 20, 1981, Ser. No. 255,479

Int. Cl.³ C07F *7/04, 7/18*

U.S. Cl. 556—470 11 Claims

1. A process for making tetraalkyl or tetraalkoxyalkyl silicates comprising heating an alkanol or an alkoxyalkanol having from 1 to 6 carbon atoms with finely divided silicon and with an alkali metal carboxylic acid salt, and separating the hydrogen by-product from the reaction mixture.

4,323,691

HYDROXYAMINOMETHYL DERIVATIVES OF BENZOYL DI-SUBSTITUTED α-PHENOXYALKANOYL ESTERS

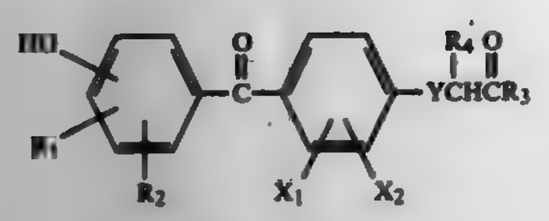
Carroll W. Ours, Zion, and Cheuk M. Lee, Libertyville, both of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Continuation-in-part of Ser. No. 83,008, Oct. 9, 1979, abandoned. This application Dec. 1, 1980, Ser. No. 212,007

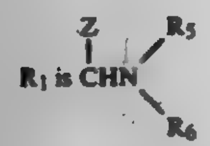
Int. Cl.³ C07C *101/34;* A61K *31/24*

U.S. Cl. 560—36 28 Claims

1. A compound of the formula

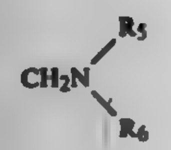


wherein



wherein Z is hydrogen or loweralkyl and R_5 and R_6 may be the same or different and are hydrogen, loweralkyl or together are alkylene of 4 or 5 carbon atoms,

R_2 is hydrogen, halo, haloloweralkyl, loweralkyl, loweralkoxy, loweralkylthio or



wherein R_5 and R_6 are as previously defined,

R_3 is hydroxy, alkoxy, branched alkoxy, adamantyloxy, morpholino, amino or amino substituted by loweralkyl or together are alkylene of 4 or 5 carbon atoms,

R_4 is hydrogen or loweralkyl, and

X_1 and X_2 are hydrogen, loweralkyl, halo or when substituted on adjacent carbon atoms of the benzene ring form a 1,3-butadienylene linkage, Y is oxygen or sulfur, and pharmaceutically acceptable salts thereof.

4,323,692

PROCESS FOR PREPARING PHENOXYBENZOIC ACIDS

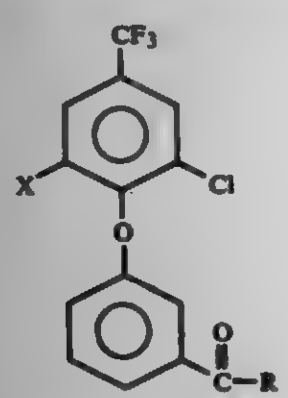
Charles M. Tauger, Levittown, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Filed Aug. 4, 1978, Ser. No. 931,054

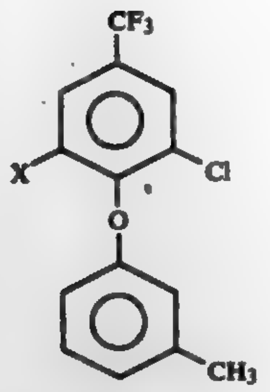
Int. Cl.[3] C07C *69/76, 51/265, 153/11, 103/76*

U.S. Cl. 560—65 7 Claims

1. A process for the preparation of compounds of the formula



wherein R is ONa, OK, OR^1, SR^1, NR^1R^1 wherein R^1 is hydrogen, alkyl, substituted alkyl or alkenyl, and X is hydrogen or halogen which comprises oxidizing a phenoxytoluene of the formula



wherein X is hydrogen or halogen, in an appropriate protic solvent selected from the group consisting of acetic acid, propionic acid and butyric acid, in the presence of from about 0.001 to about 0.5 moles of a cobalt (II) salt per mole of phenoxytoluene, from about 1 to about 3 equivalents of bromide ion per mole of cobalt (II) salt, from about ½ to about 1 mole of hydrogen peroxide per mole of cobalt (II) salt and a feed rate of from about 0.001 to about 1.0 moles of oxygen per minute, per mole of phenoxytoluene at temperatures from about 70° C. to about 115° C. at about atmospheric pressure optionally followed by esterification, amidation or salt formation.

4,323,693

BENZOIC ACID ESTER

Thomas L. Scala, Jr., West Milford, N.J., assignor to Finetex, Inc., Elmwood Park, N.J.

Continuation-in-part of Ser. No. 252,794, Apr. 13, 1981, which is a continuation-in-part of Ser. No. 74,071, Sep. 14, 1979, Pat. No. 4,275,222, which is a continuation-in-part of Ser. No. 949,630, Oct. 10, 1978, abandoned. This application Apr. 27, 1981, Ser. No. 257,977

Int. Cl.[3] C07C *69/76*

U.S. Cl. 560—103 1 Claim

1. A benzoic acid ester of isostearyl alcohol.

4,323,694

BENZOIC ACID ESTERS

Thomas L. Scala, Jr., West Milford, N.J., assignor to Finetex, Inc., Elmwood Park, N.J.

Continuation-in-part of Ser. No. 252,794, Apr. 13, 1981, which is a continuation-in-part of Ser. No. 74,071, Sep. 14, 1979, Pat. No. 4,275,222, which is a continuation-in-part of Ser. No. 20,850, Mar. 15, 1979, which is a continuation-in-part of Ser. No. 949,630, Oct. 10, 1978, abandoned. This application Apr. 29, 1981, Ser. No. 258,801

Int. Cl.[3] C07C *69/76*

U.S. Cl. 560—103 4 Claims

1. A benzoic acid ester of an alcohol, wherein said alcohol is selected from the group consisting of:

(A) at least one C_{2n} branched primary alcohol, wherein n is 5 through 9;

(B) at least one C_{2m+1} branched or linear primary alcohol, wherein m is 4 through 9; and

(C) mixtures comprising at least 40% by weight of the members of (A) and/or (B), with one or more linear primary alcohols of even carbon number chain length.

4,323,695

PROCESS FOR MAKING AN ACRYLIC MONOMER

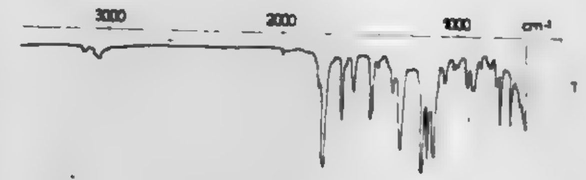
Bertrand Bloch, Paris; Chantal C. Meyer, Voisins le Bretonneux, and Denis Charrier, Antony, all of France, assignors to Office National d'Etudes et de Recherches, Chatillon Sous Bagneux, France

Filed Dec. 11, 1979, Ser. No. 102,389

Claims priority, application France, Dec. 15, 1978, 78 35458

Int. Cl.[3] C07C *67/14*

U.S. Cl. 560—145 9 Claims



1. A process for producing phenyl fluoroacrylate by reacting a fluoroacryloyl halide with phenol to produce phenyl fluoroacrylate comprising the steps of:

saponifying the reaction product of formaldehyde and an enolate of an oxalofluoroacetic acid ester having the formula:

$$R—O—CO—C(OM_1)=C(F)CO—O—R$$

in which R is an alkyl radical and M_1 is a metal cation, by using a substantially stoichiometric amount of a strong base in aqueous solution, and recovering the salt of fluoroacrylic acid thus obtained;

reacting substantially stoichiometric amounts of said salt with a halogenating agent in the presence of inert solvent with respect to the halogenating agent, and

reacting the fluoroacryloyl halide with phenol.

4,323,696

(METH)ACRYLIC ACID ESTERS OF TRICYCLIC DECANEDIOLS CONTAINING ETHER GROUPS

Robert Schmitz-Josten, Cologne, Fed. Rep. of Germany; Manfred Dietrich, New Martinsville, W. Va., and Bruno Bömer, Leverkusen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 1, 1980, Ser. No. 174,332

Claims priority, application Fed. Rep. of Germany, Aug. 7, 1979, 2931925

Int. Cl.[3] C07C *69/54*

U.S. Cl. 560—220 8 Claims

1. Compounds which are acrylic or methacrylic esters of tricyclic decanediols, containing ether groups, of the formula

(I)

in which

R_1 represents a hydrogen atom, a methyl group or an ethyl group and

n+m represents an integer from 1 to 10.

4,323,697

PROCESS FOR PREPARING ETHYLIDENE DIACETATE

Nabil Rizkalla, River Vale, N.J., assignor to The Halcon SD Group, Inc., New York, N.Y.

Filed Dec. 24, 1980, Ser. No. 219,787

Int. Cl.[3] C07C *67/36, 67/37, 69/16*

U.S. Cl. 560—232 4 Claims

1. A process for the preparation of ethylidene diacetate which comprises reacting methyl acetate and/or dimethyl ether under anhydrous conditions with hydrogen and carbon monoxide in the presence of a molybdenum-nickel co-catalyst or a tungsten-nickel co-catalyst, in the presence of an iodide and in the presence as a promoter of an organo-phosphorus compound or an organo-nitrogen compound wherein the phosphorus and nitrogen are trivalent.

4,323,698

RESIN-METAL COMPOUND COMPLEX FOR CATALYZING CHEMICAL REACTIONS

Werner O. Haag, Lawrenceville, and Darrell D. Whitehurst, Titusville, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 965,829, Dec. 4, 1978, Pat. No. 4,211,880, which is a division of Ser. No. 858,228, Dec. 7, 1977, Pat. No. 4,145,486, which is a continuation of Ser. No. 501,429, Aug. 29, 1974, Pat. No. 4,111,856, which is a continuation of Ser. No. 306,782, Nov. 15, 1972, which is a continuation-in-part of Ser. No. 860,807, Sep. 24, 1978, abandoned, which is a continuation-in-part of Ser. No. 672,010, Oct. 2, 1967, abandoned. This application Jan. 21, 1980, Ser. No. 113,897

Int. Cl.[3] C07C *67/36, 51/12, 5/03, 45/49*

U.S. Cl. 560—233 10 Claims

1. In a method of carrying out a metal-compound catalyzed reaction, the improvement comprising employing as a catalyst an insoluble resin-metal coordinative complex compound comprising an insoluble weak base anion exchange resin having amine, phosphine, arsine, stibine, thiol or sulfide Lewis base substituents, said resin being coordinatively, nonionically bonded through said substituent to a metal atom selected from the group consisting of platinum, palladium, rhodium, ruthenium, osmium, iridium, gold, cadmium, titanium, zirconium, hafnium, vanadium, chromium, molybdenum, tungsten, manganese, rhenium, iron, cobalt, nickel, copper, zinc, silver, and mercury.

10. The method of claim 1 wherein said metal-compound catalyzed reaction is a carbon monoxide insertion reaction.

4,323,699

OXIDATION OF SUBSTITUTED AROMATIC COMPOUNDS TO AROMATIC CARBOXYLIC ACIDS

Stephen V. Norval, Guisborough, England, assignor to Imperial Chemical Industries Limited, London, England

Filed May 26, 1981, Ser. No. 267,421

Claims priority, application United Kingdom, Jun. 10, 1980, 10919/80

Int. Cl.[3] C07C *51/16*

U.S. Cl. 562—416 10 Claims

1. In a process for the production of an aromatic carboxylic acid which comprises oxidising by means of molecular oxygen a substituted aromatic compound in the presence of a catalyst comprising a heavy metal compound and/or bromine or a bromine-containing compound, the improvement whereby the reaction is carried out in an essentially aqueous reaction medium and in the presence of iodine or an iodine-containing compound.

4,323,700

PROCESS FOR PREPARING BENZOPHENONE DERIVATIVES

Mitsuru Kondo; Hiroshi Iwasaki, both of Kawanishi; Kiyoshi Yasui, Mukomotomachi, and Makoto Miyake, Nishinomiya, all of Japan, assignors to Kanzaki Paper Manufacturing Co., Ltd., Hyogo, Japan

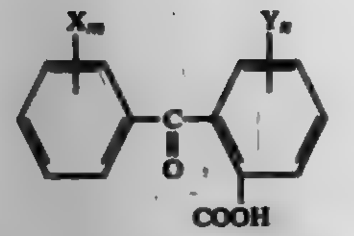
Continuation of Ser. No. 772,124, Feb. 25, 1977, abandoned. This application Sep. 6, 1979, Ser. No. 73,108

Claims priority, application Japan, Mar. 4, 1976, 51-23912

Int. Cl.[3] C07C *59/76*

U.S. Cl. 562—460 17 Claims

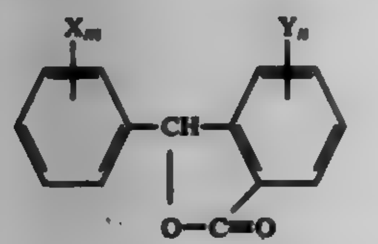
1. A process for preparing benzophenone derivatives having the general formula



(I)

wherein each of X and Y is a substituent selected from the group consisting of a halogen; a nitro group; an alkyl group; an amino group substituted with two substituents selected from the group consisting of a saturated C_{1-4} alkyl group, an allyl group, a propargyl group, a phenyl group, a tolyl group and a benzyl group; a morpholino group; a pyrimidino group; a pyrrolidino group; and a C_{1-2} alkoxy group, each of m and n is 0 or an integer from 1 to 2, or XM

is a moiety selected from the group consisting of a juloidine moiety or a 1-butyl, 1,2,3,4-tetrahydroquinoline moiety which comprises dissolving a 3-phenylphthalide derivative having the general formula



(II)

wherein X, Y, m and n are the same as described hereinbefore, into an aqueous solution of alkali salt and oxidizing said dispersed 3-phenylphthalide derivative with at least one oxidizing agent, said alkali salt being in at least an equimolar amount with respect to said 3-phenylphthalide derivative.

4,323,701
PROCESS FOR THE PREPARATION OF INDENONECARBOXYLIC ACIDS

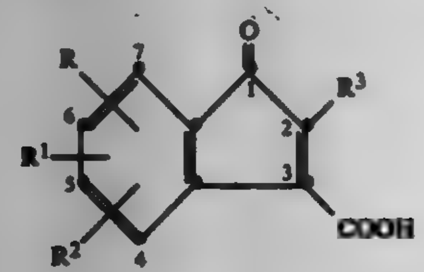
Hans Bosshard, Basel; Hermann Rempfler, Ettingen, and Hans Zweifel, Basel, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 114,488, Jan. 23, 1980, abandoned. This application Feb. 9, 1981, Ser. No. 232,763

Int. Cl.³ C07C *59/81, 62/38, 51/08, 69/757*

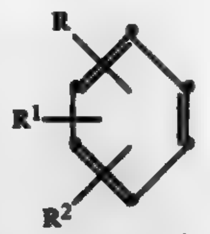
U.S. Cl. 562—462 11 Claims

1. A process for the preparation of an indenonecarboxylic acid of the formula I



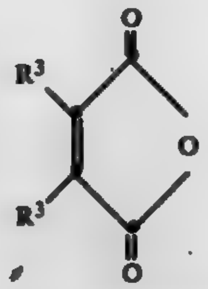
(I)

in which R^3 is Cl or Br, and R, R^1 and R^2 are identical or different and R is a n-alkyl radical having 1 to 4 C atoms, or is H, Cl, Br or F, R^1 is a n-alkyl radical having 1 to 4 C atoms, or is H, and R^2 is H or CH_3, or R^1 and R^2 together are the group $—CH_2CH_2CH_2—$, in which latter case the bond to the six-membered ring is via the C atoms in the 5-position and 6-position of the nucleus, which comprises subjecting an aromatic compound of the formula II



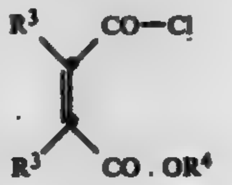
(II)

in which the H atoms on at least 2 adjacent C atoms of the nucleus have not been replaced by substituents and in which R, R^1 and R^2 are as defined for formula I, either together with a diahalogenomaleic anhydride of the formula III



(III)

or together with an ester of the formula IV



(IV)

in which formulae R^3 is as defined for formula I and R^4 is in each case a low-molecular aliphatic radical, a cycloaliphatic radical, an aliphatic-aromatic radical or an aromatic radical, in each case in an approximately stoichiometric ratio, to a condensation reaction in the presence of $AlCl_3$ and if desired in the presence of inert fluxes and/or solvents, at temperatures between 40° and 150° C., and hydrolysing the reaction product thus obtained.

4,323,702
PROCESS FOR RECOVERING A CARBOXYLIC ACID

Nariyoshi Kawabata, Osaka; Shinichi Yasuda, Otsu, and Takeshi Yamazaki, Sakai, all of Japan, assignors to Koei Chemical Co., Ltd., Osaka, Japan

Filed Nov. 17, 1980, Ser. No. 207,796

Claims priority, application Japan, Nov. 21, 1979, 54-151416

Int. Cl.³ C07C *51/42, 59/48, 65/10, 53/00*

U.S. Cl. 562—485 11 Claims

1. A process for recovering a carboxylic acid, from an aqueous solution thereof which comprises capturing a carboxylic acid by use of a capturing material of which the main component is a polymeric compound having a pyridine skeletal structure and a crosslinked structure, followed by desorbing the captured carboxylic acid by use of a desorbing agent selected from the group consisting of an aliphatic alcohol, an aliphatic ketone and a carboxylic ester.

4,323,703
PROCESS FOR THE OXIDATION OF OLEFINS TO ALDEHYDES AND ACIDS

Robert K. Grasselli, Garfield Heights; Arthur F. Miller, Cleveland, and Harley F. Hardman, Lyndhurst, all of Ohio, assignors to Standard Oil Company, Cleveland, Ohio

Continuation of Ser. No. 676,039, Apr. 12, 1976, abandoned, which is a continuation of Ser. No. 112,782, Feb. 4, 1971, abandoned. This application May 26, 1977, Ser. No. 800,981

Int. Cl.³ C07C *51/25, 45/35*

U.S. Cl. 562—546 13 Claims

1. The process for the conversion of an olefin selected from the group consisting of propylene, isobutylene and mixtures thereof, to the corresponding unsaturated aldehydes and unsaturated carboxylic acids, comprising reacting in the vapor phase at a temperature of from about 500° to 900° F. and at a pressure of from about 0.5 to 5 atmospheres said olefin with a molecular oxygen-containing gas in the presence of a catalyst of the empirical formula:

$$A_aB_bC_cFe_dBi_eMo_fO_x$$

wherein A is an alkali metal, B is phosphorus or arsenic or both, and C is at least one element selected from Group II A of the Periodic Classification of elements, and wherein (a) is a number greater than 0 to less than 0.1, (b) is a number from 0 to 3, (c) is a number from 0.1 to 10, (d) and (e) are each a number from 0.1 to 6, (f) is a number from 8 to 16, and (x) is a number determined by the valence requirements of the other elements present.

4,323,704
αACETYLENE AND α-VINYL DERIVATIVES OF AMINO ACIDS

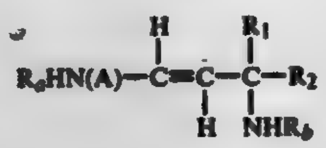
Brian W. Metcalf, Strasbourg; Michel Jung, Illkirch, and Charles Danzin, Strasbourg, all of France, assignors to Merrell Toraude et Compagnie, Strasbourg, France

Division of Ser. No. 52,035, Jun. 25, 1979, Pat. No. 4,267,374, which is a continuation of Ser. No. 812,115, Jul. 1, 1977, abandoned. This application Jan. 16, 1981, Ser. No. 225,503

Int. Cl.³ C07C *103/52, 101/28, 103/68, 125/065, 125/073, 129/12*

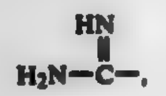
U.S. Cl. 562—561 9 Claims

1. A compound of the Formula

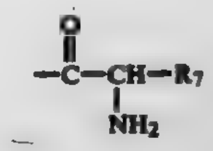


wherein A is methylene, ethylene or ethylidene; R_1 is $—CH{=}CH_2$ or $—C{\equiv}CH$; R_2 is COR wherein R is hydroxy, a straight or branched alkoxy group of from 1 to 8 carbon atoms, $—NR_4R_5$ wherein each of R_4 and R_5 is hydrogen or a straight or branched lower alkyl group of from 1 to 4 carbon atoms, or

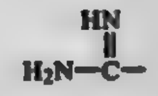
wherein R_6 is hydrogen, a straight or branched lower alkyl group of from 1 to 4 carbon atoms, benzyl or p-hydroxybenzyl; Ra is hydrogen,



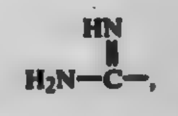
alkylcarbonyl wherein the alkyl moiety has from 1 to 4 carbon atoms and is straight or branched, alkoxycarbonyl wherein the alkoxy moiety has from 1 to 4 carbon atoms, and is straight or branched or



wherein R_7 is hydrogen, a straight or branched lower alkyl group of from 1 to 4 carbon atoms, benzyl or p-hydroxybenzyl; and R_b has the same meaning as defined for R_a except R_b is not



and R_a and R_b can be the same or different; with the proviso that when R_a is



A is methylene; and pharmaceutically acceptable salts and individual optical isomers thereof.

4,323,705
PROCESS FOR THE PREPARATION OF N,N'-DIFORMYLHYDRAZINE

Harald Knorr, Gersthofen, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

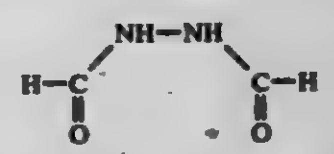
Filed Oct. 22, 1980, Ser. No. 199,456

Claims priority, application Fed. Rep. of Germany, Oct. 26, 1979, 2943264

Int. Cl.³ C07C *97/16*

U.S. Cl. 564—151 2 Claims

1. In a process for the preparation of N,N'-diformylhydrazine of the formula



by reaction of formamide and hydrazine hydrate with splitting off of ammonia, the improvement which comprises mixing first formamide and hydrazine hydrate in a molar ratio of from 2:1 to 2:0.6 at a temperature of from 5° to 25° C., and maintaining this mixture at the same temperature under reduced pressure until splitting-off of ammonia is completed, then raising the temperature to 80°-120° C. and allowing the reaction to continue for 1 to 3 hours also under reduced pressure, and finally distilling off water and unreacted starting material under a pressure reduced still further.

4,323,706
PRODUCTION OF ACETALDEHYDE OXIME

John H. Bonfield, Basking Ridge; Stephen E. Belsky, Parsippany, and Donald Pickens, Mendham, all of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Continuation of Ser. No. 880,672, Feb. 23, 1978, abandoned. This application Dec. 18, 1980, Ser. No. 217,938

Int. Cl.³ C07C *131/00*

U.S. Cl. 564—253 11 Claims

1. A method for preparing acetaldehyde oxime by oximating acetaldehyde with an aqueous oximation reaction mixture which includes a salt and recovering acetaldehyde oxime from the aqueous oximation reaction mixture, characterized in that the acetaldehyde oxime is recovered by:

first distilling a mixture of acetaldehyde oxime, water and lights including acetaldehyde and ammonia directly from the aqueous oximation reaction mixture under conditions of temperature and pressure at which acetaldehyde oxime, water and lights are volatile, and then distilling lights from said mixture of acetaldehyde oxime, water and lights under conditions of temperature and pressure at which lights are volatile and acetaldehyde oxime is non-volatile to remove the lights and produce a product mixture of acetaldehyde oxime and water relatively free of lights.

4,323,707

ANTIFERTILITY COMPOUNDS

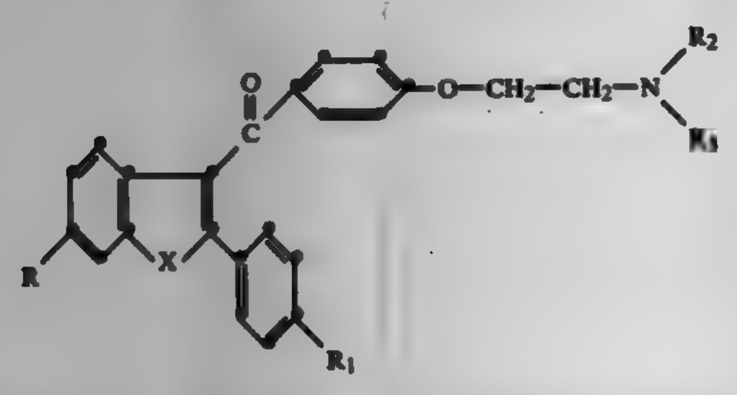
Tulio Suarez, and C. David Jones, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 930,639, Aug. 3, 1978, Pat. No. 4,230,862, which is a continuation of Ser. No. 761,930, Jan. 24, 1977, abandoned, which is a continuation-in-part of Ser. No. 724,202, Sep. 17, 1976, abandoned, which is a continuation-in-part of Ser. No. 625,991, Oct. 28, 1975, abandoned. This application May 12, 1980, Ser. No. 148,640

Int. Cl.³ C07C *93/06*

U.S. Cl. 564—324 **15 Claims**

1. A compound of the formula



in which X is —CH_2—CH_2— or —CH═CH—; R is hydrogen, hydroxyl, or C_1–C_5 alkoxy; R_1 is hydrogen, hydroxyl, or C_1–C_5 alkoxy; and R_2 and R_3 independently are C_1–C_4 alkyl; and pharmaceutically acceptable non-toxic acid addition salts thereof.

4,323,708

METHOD FOR PREPARING 2,4-DIAMINOLPHENOL OR 2,4-DIAMONOPHENOL DIHYDROCHLORIDE

Alexandr P. Mischenko, Teply Stan, 2 mikroraion, korpus 27, kv. 426; Vladimir M. Gryaznov, Lomonosovsky prospekt, 14, kv. 504, both of Moscow; Igor G. Gakh, ulitsa Shevchenko, 21, kv. 58, Shostka; Iraida L. Parbuzina, Metrostroevskaya ulitsa, 3/14, kv. 44, Moscow; Evgeny M. Savitsky, ulitsa Ulyanova, DNR-3, kv. 13, Moscow; Viktoria P. Polyakova, ulitsa Trofimova, 15, kv. 211, Moscow, and Natalia R. Roshan, Yaroslavskoe shosse, 57, kv. 36, Moscow, all of U.S.S.R.

Filed Apr. 14, 1980, Ser. No. 140,311

Int. Cl.³ C07C *89/00, 85/11*

U.S. Cl. 564—418 **1 Claim**

1. A method for preparing phenol diamino derivatives selected from the group consisting of 2,4-diaminophenol and 2,4-diaminophenol dihydrochloride comprising hydrogenation of 2,4-dinitrophenol on a membrane catalyst made of an alloy consisting of 90 to 98% by mass of palladium and 2 to 10% by mass of a metal selected from the group consisting of rhodium and ruthenium; said hydrogenation of 2,4-dinitrophenol is effected by hydrogen diffusing through said membrane catalyst; the starting 2,4-dinitrophenol is used in a medium of a polar solvent selected from the group consisting of water and a 4-37% aqueous solution of hydrochloric acid at a concentration of 2,4-dinitrophenol in said medium ranging from 2 to 50% by mass; said hydrogenation being conducted at a temperature within the range of from 50° to 150° C. under a pressure of from 1 to 60 atm.

4,323,709

PREPARATION OF POLYMERIC REACTION PRODUCTS OF POLY(ALKOXYALKYLENE)AMINES AND EPIHALOHYDRINS

Gary W. Y. Kwong, Racine, Wis., assignor to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 92,386, Nov. 8, 1979, Pat. No. 4,252,746. This application Oct. 15, 1980, Ser. No. 197,306

Int. Cl.³ C07C *85/04, 89/02*

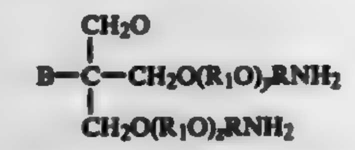
U.S. Cl. 564—476 **6 Claims**

1. The process of making a polymeric reaction product which comprises reacting one molar proportion of a poly(oxyalkylene)amine of the structure A-$(R_1O)_n$-RNH_2, wherein

(a) R and each R_1 are independently selected from the group consisting of alkylene moieties containing from 2 to about 10 carbon atoms;

(b) n is an integer from 2 to about 50;

(c) A is selected from the group consiting of H_2N, alkoxy, where the carbonaceous portion contains from 1 to about 40 carbon atoms, and



wherein B is selected from the group consisting of hydrogen and alkyl containing from 1 to about 10 carbon atoms, and y, z are integers from 1 to about 10;

with about 0.5 to about 2.0 molar proportions of an epihalohydrin selected from the group consisting of epihalohydrin, 1-halo-3,4-epoxybutane, 1-halo-2,3-epoxybutane, 1-halo-4,5-epoxypentane, and 1-halo-3,4-epoxypentane, at a temperature from about 40° C. to about 150° C., thereafter reacting the resultant adduct with an inorganic base at said temperature, and recovering the polymeric reaction product.

4,323,710

PARTIAL ALKYLATION OF POLYHYDROXYBENZOPHENONES

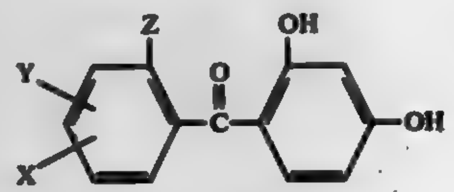
Allan Wexler, Haledon; Paritosh M. Chakrabarti, Cedar Grove, and Michael J. Brown, Randolph, all of N.J., assignors to GAF Corporation, New York, N.Y.

Filed Nov. 3, 1980, Ser. No. 203,026

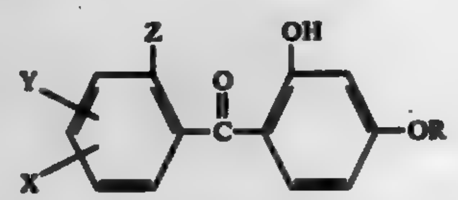
Int. Cl.³ C07C *45/61*

U.S. Cl. 568—315 **7 Claims**

1. The process for alkylating a polyhydroxybenzophenone of the formula:



where Z is hydrogen, alkyl, alkoxy, halogen or hydroxy and where X and Y individually are hydrogen, alkyl, alkoxy or halogen to produce an ortho hydroxy, para alkoxybenzophenone of the formula:



where R is alkyl and Z and X and Y are as defined above; which comprises the steps of:

(a) forming a reaction mixture consisting of said polyhydroxybenzophenone, an alkyl chloride, a metal brpmide or iodide catalyst, a solid acid acceptor, and a non-aqueous solvent consisting of a polyethylene glycol or its mono- or dialkylated derivatives,

(b) heating the reaction mixture to a reaction temperature of about 155° C. and refluxing the mixture whereupon the reaction is effected from two phases only, namely, a solid and liquid solvent phase in which the solvent also functions as a solid-liquid phase transfer catalyst to improve the yield of product and shorten the reaction time,

(c) removing any water of reaction at said reaction temperature,

(d) continuing to reflux for a time sufficient to effect alkylation, and,

(e) recovering the alkylated product.

4,323,711

PROCESS FOR PRODUCING CYCLOHEXENES

Teodor Lukàc, Aesch; Erich Widmer, Münchenstein, and Reinhard Zell, Rodersdorf, all of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

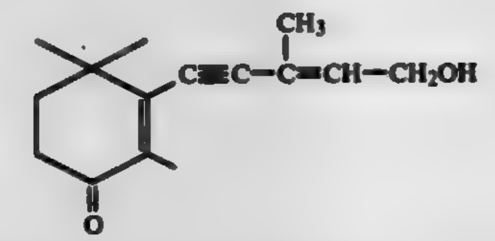
Filed Nov. 10, 1980, Ser. No. 205,410

Claims priority, application Switzerland, Nov. 28, 1979, 10581/79

Int. Cl.³ C07C *45/62, 45/00*

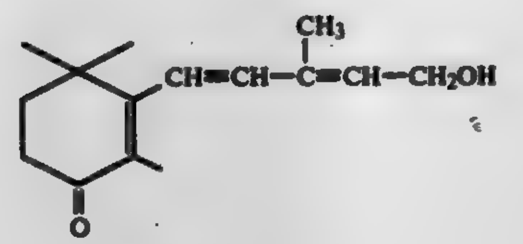
U.S. Cl. 568—347 **5 Claims**

1. A process comprising hydrogenating a compound of the formula:



I

by treating said compound with zinc and a carboxylic acid having from 1 to 3 carbon atoms to produce a compound of the formula



II

4,323,712

ETHERIFICATION OF OLEFINIC HYDROCARBONS

Tamotsu Imai, Mt. Prospect, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Sep. 22, 1980, Ser. No. 189,449

Int. Cl.³ C07C *41/05*

U.S. Cl. 568—697 **13 Claims**

1. A process for the etherification of an olefinic hydrocarbon containing from 2 up to about 10 carbon atoms which comprises reacting said olefinic hydrocarbon with an aliphatic alcohol containing from 1 to about 10 carbon atoms in the presence of a catalyst consisting essentially of a metal phthalocyanine sulfonic acid, wherein said metal is selected from the group consisting essentially of cobalt, vanadium, magnesium, titanium, hafnium, tantalum, molybdenum, manganese, iron, nickel, platinum, palladium, copper, silver, zinc and tin at etherification conditions, and recovering the resultant ether.

4,323,713

PREPARATION OF MONO-TERTIARY BUTYLHYDROQUINONE

Dusan J. Engel, Des Plaines, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Nov. 20, 1980, Ser. No. 208,952

Int. Cl.³ C07C *37/11, 39/08*

U.S. Cl. 568—766 **11 Claims**

1. A process for the preparation of mono-tertiary butylhydroquinone which comprises reacting hydroquinone with an alkylating agent comprising isobutylene or t-butyl alcohol at reaction conditions in the presence of an acidic alkylation catalyst selected from the group consisting essentially of phosphoric acid and fluorosulfonic acid in a reaction medium comprising a mixture of a nonpolar hydrocarbon and an aliphatic ketone selected from the group consisting of acetone, methyl ethyl ketone, 2-pentanone, 3-pentanone, 2-hexanone, 3-hexanone, 2-heptanone, 3-heptanone, 4-heptanone, 2-octanone, 3-octanone, and 4-octanone and recovering the resultant mono-tertiary butylhydroquinone.

4,323,714

ALKYLATION OF HYDROXY-SUBSTITUTED AROMATIC COMPOUNDS

Thomas P. Malloy, Lake Zurich, and Dusan J. Engel, Des Plaines, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed Nov. 20, 1980, Ser. No. 208,953

Int. Cl.³ C07C *37/11, 39/08*

U.S. Cl. 568—766 **8 Claims**

1. A process for the alkylation of a mono- or di-hydroxy-substituted aromatic compound selected from the group consisting of phenol, 1-hydroxynaphthalene, 2-hydroxynaphthalene, anthracene, 2-hydroxyanthracene, 1-hydroxyphenanthrene, 2-hydroxyphenanthrene, 3-hydroxyphenanthrene, 1,2-dihydroxybenzene (catechol), 1,4-dihydroxybenzene (hydroquinone), 1,2-dihydroxynaphthalene, 1,4-dihydroxynaphthalene, 1,5-dihydroxynaphthalene, 1,2-dihydroxyanthracene, and 1,4-dihydroxyanthracene, which comprises treating said mono- or di-hydroxy-substituted aromatic compound with an alkylation agent selected from the group consisting essentially of aliphatic olefins containing from 2 carbon atoms to about 10 carbon atoms in length and alcohols containing from 1 to about 10 carbon atoms in length at a temperature of from about 50° to about 200° C. and a pressure in the range of from about atmospheric pressure to about 100 atmosphere in the presence of a catalyst consisting essentially of a solid perfluorosulfonic acid resin, and recovering the resultant alkylated hydroxy-substituted aromatic compounds.

4,323,715

PREPARATION OF MONO-TERTIARY BUTYLHYDROQUINONE

Dusan J. Engel, Des Plaines, and Thomas P. Malloy, Lake Zurich, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed Nov. 20, 1980, Ser. No. 208,954

Int. Cl.³ C07C *37/11, 39/08*

U.S. Cl. 568—766 **9 Claims**

1. A process for the preparation of tertiary butylhydroquinone which comprises alkylating hydroquinone with isobutylene or t-butyl alcohol in the presence of an alkylation catalyst comprising an acidic alumina at alkylation conditions in a reaction medium comprising an ether selected from the group consisting of tetrahydrofuran, dioxane, dimethyl ether of diethylene glycol, dimethyl ether of triethylene glycol, diethyl ether of diethylene glycol and diethyl ether of triethylene glycol, and recovering the tertiary butylhydroquinone.

4,323,716
PROCESS AND CATALYST FOR THE PRODUCTION OF DICHLOROETHANE

Roberto Canavesi, Bollate; Ferdinando Ligorati, Usmate, and Giancarlo Aglietti, Milan, all of Italy, assignors to Societa' Italiana Resine S.I.R. S.p.A., Milan, Italy

Continuation of Ser. No. 617,951, Sep. 29, 1975, abandoned. This application Jan. 21, 1980, Ser. No. 113,553

Claims priority, application Italy, Oct. 4, 1974, 28051 A/74

Int. Cl.³ C07C *17/02*

U.S. Cl. 570—243 9 Claims

1. An oxychlorination catalyst, active in the production of dichloroethane, from ethylene, hydrogen chloride and oxygen, consisting of supported copper chloride obtained by contacting a granular support with cupric chloride dissolved in a solvent and evaporating said solvent, the said support consisting of alumina in the crystallographic form eta, having a total volume of pores of from 0.3 to 0.5 ml/g and a surface area of from 250 to 400 m^2/g with a least 90% of said volume attributable to pores with a radius of less than 40 A and with at least 90% of said surface area attributable to pores with a radius of less than 30 A.

4,323,717
FURNACE ELECTRODE CLAMPS

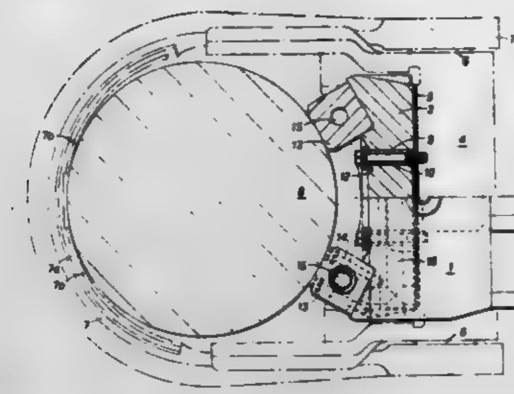
Henry C. Garner, Mexborough, and Lawrence McGee, Sheffield, both of England, assignors to British Steel Corporation, London, England

Filed Jun. 25, 1980, Ser. No. 162,913

Claims priority, application United Kingdom, Feb. 7, 1979, 2281/79

Int. Cl.³ H05B *7/101*

U.S. Cl. 373—101 9 Claims



1. A furnace electrode clamp comprising: (a) a metallic body portion; (b) U-shaped band mounted for movement about the body and electrically insulated therefrom and adapted to embrace the electrode; and, (c) an electrode contact piece mounted on the body and against which one side of the electrode is clamped by said band whereby electrical contact is made at that one side only, the contact piece being made from highly conductive material and defining a bore therethrough constituting a water coolant channel.

4,323,718
ARC FURNACE ROOF

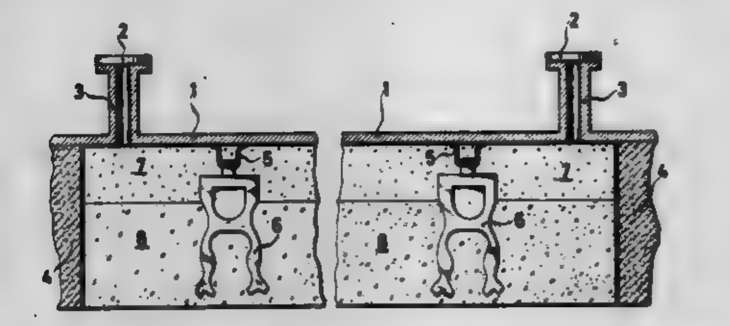
Otto Bühring, Hürth, Fed. Rep. of Germany; Gerardus J. W. Dreessen, Vlissingen; Jacob W. H. Groeneveld, Middelburg, both of Netherlands; Robert Queck, Hürth; Heinrich Thome, Kerpen-Türnich, both of Fed. Rep. of Germany, and Gerrit J. Willemsen, Middelburg, Netherlands, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jun. 17, 1980, Ser. No. 160,167

Claims priority, application Fed. Rep. of Germany, Jun. 23, 1979, 2925395

Int. Cl.³ F27D *1/02, 1/10*

U.S. Cl. 373—73 10 Claims



1. A roof for an electrical reduction furnace comprising a metal cover connectible by bolting to a furnace shell, a first layer of insulating concrete on the inward surface of the metal cover and a second layer applied in effective contact with the inward surface of the first layer, shackle hooks attached to the cover inward surfaces and having anchor bolts hooked thereon, said hooks and bolts being embedded within said first and second layers,

characterized by a temperature gradient being producible in the roof positioned on the furnace during furnace operation, and in the absence of a coolant within the cover, of not more than 100° C. at the shell from a temperature of at least 600° C. in the furnace,

said layers having been prepared by flowing onto the inward cover surface a hydraulically setting composition of 6 to 10 weight % Al_2O_3, 32 to 38 weight % SiO_2, 15 to 20 weight % MgO, 30 to 35 weight % CaO, and 40 to 200 weight % mixing water and applying the composition to the hooks, and setting the hydraulic setting composition to form said first layer in the cover and around the hooks in said first layer,

and applying by flowing onto said first layer and said hooks a second layer of a hydraulically setting composition of 50 to 85 weight % Al_2O_3, 5 to 8 weight % SiO_2, and 10 to 12 weight % mixing water and heating the second composition to set said composition to form said second layer and embed said hooks within said second layer.

4,323,719
INTEGRATED SOLAR CELLS AND SHUNTING DIODES

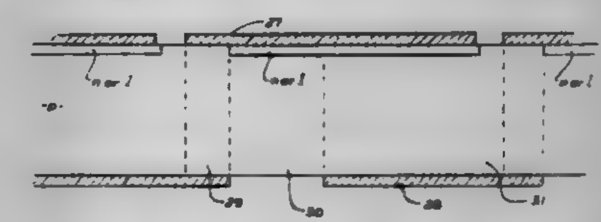
Martin A. Green, Bondi, Australia, assignor to Unisearch Limited, Kensington, Australia

Filed Aug. 22, 1980, Ser. No. 181,374

Claims priority, application Australia, Aug. 23, 1979, PE0167

Int. Cl.³ H01L *31/06, 31/18*

U.S. Cl. 136—249 6 Claims



1. A solar cell with integral shunting diode, comprising a wafer of semiconductor substrate material having top and bottom metal contact layers having at least some contact with said substrate either directly or indirectly through an intermediate layer of different dopant type or an insulating layer, wherein said layer is nominally divided into three contiguous regions including a shunting or bypass diode region and a main cell region separated by an intermediate isolation region, wherein

said main cell region comprises a portion of the substrate having top and bottom metal contacts, one of which is either directly or indirectly in contact with said substrate and the other of which is separated from said substrate by means of an intermediate layer of different dopant type or an insulating layer,

said isolation region comprises a portion of the substrate which is separated from each of said top and bottom metal contacts by an intermediate layer of diffent dopant type or an insulating layer, and

said bypass diode region comprises a portion of the substrate having top and bottom metal contacts, one of which is either directly or indirecty in contact with said substrate and the other of which is separated from said substrate by means of an intermediate layer of different dopant type or an insulating layer, and wherein said bypass diode is in electrical communication with said main cell by means of a narrow conductive path joining said bypass diode with said main cell.

3. An integrated array of a plurality of solar cells on a single sheet of semiconductor substrate material, comprising a continuous sheet of said substrate having top and bottom metal contact layers having contact with said substrate at spaced intervals, either directly or indirectly through an intermediate layer of different dopant type or an insulating layer, wherein each said cell is nominally divided into three contiguous regions including a main cell region and a shorting or series interconnection region separated by an intermediate isolation region, wherein

said main cell region comprises a portion of the substrate having top and bottom metal contacts with the intermediate

layer of different dopant type or insulating layer separating one of said metal contacts from said substrate, and said main cell region is contiguous with the shorting region of the next adjacent cell,

said isolation region, adjacent said main cell region, comprises a portion of the substrate having only one metal contact and an underlying layer of different dopant type or an insulating layer, both of which are contiguous with the corresponding metal contact and intermediate layer of different dopant type or insulating layer in said main cell region, and

said shorting or series interconnection region comprises a portion of the substrate in contact with both top and bottom metal contacts, one of which metal contacts is also in contact with the main cell region of the next adjacent cell.

4,323,720

SET OF BARS FOR A HIGH-TENSION UNIT

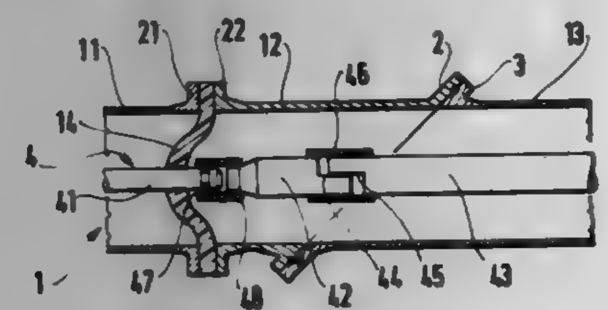
Lucien Orgeret, Lyons, France, assignor to Societe Anonyme dite: Delle-Alsthom, Villeurbanne, France

Filed Apr. 16, 1980, Ser. No. 140,922

Claims priority, application France, Apr. 23, 1979, 79 10223

Int. Cl.³ H02G *5/06, 15/24*

U.S. Cl. 174—21 JS 6 Claims



1. A metal-clad high-tension unit containing an insulating gas, cladding formed by a casing of cylindrical casing lengths disposed in longitudinal alignment, bars within said casing lengths, a dismantleable intermediate connection casing length interposed between said lengths of casing and having on at least one of its ends a connection flange disposed in a plane which is inclined with respect to the longitudinal axis of the casing and which is aligned with a connection flange of the adjacent length, an intermediate length of bar being disposed inside said connection casing length, the ends of said intermediate length of bar including joining components which are detachably connected to the ends of the bars of the adjacent lengths of casing and said joining components being joined at the plane of contact between the flanges of the casing lengths; whereby, said intermediate connection casing length may be laterally removed without dismantling of the cylindrical casing length or the bars within said casing length.

4,323,721

ELECTRIC CABLES WITH IMPROVED SHIELDING MEMBER

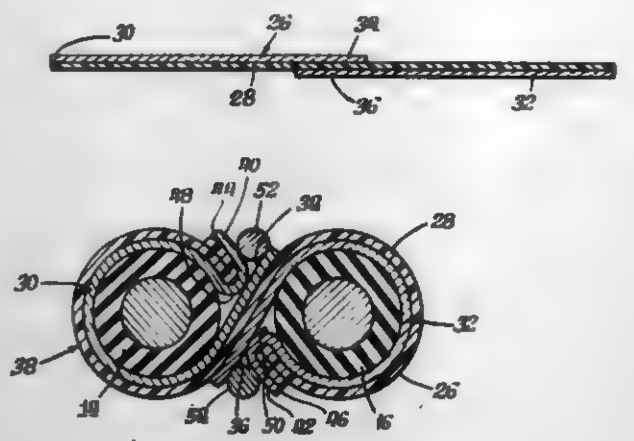
John W. Kincaid, Batavia, and Robert E. Ward, Aurora, both of Ill., assignors to Belden Corporation, Geneva, Ill.

Filed Feb. 8, 1980, Ser. No. 119,866

Int. Cl.³ H01B *11/06, 9/02*

U.S. Cl. 174—36 13 Claims

1. A shielding member helically wound about and shielding at least two insulated electrical conductors, said helically wound shielding member comprising: an elongated ribbon of insulating material having two opposite sides and two parallel edges; and a pair of elongated metallic foil strips arranged in a parallel relationship with the ribbon, each strip having two opposite sides and two parallel edges, with a respective side of each strip bonded to a respective one of the opposite sides of the ribbon, one of the edges of one of the foil strips being substantially coterminus with one edge of the elongated ribbon, and one of the edges of the other of the foil strips being substantially coterminus with the other edge of the elongated ribbon, the width of each of the foil strips being approximately one half the width of the ribbon, and each of the other edges of



the foil strips slightly overlapping one another, said ribbon being helically wound about said insulated electrical conductors with each of said foil strips surrounding and forming a shielding envelope about said insulated electrical conductors.

4,323,722

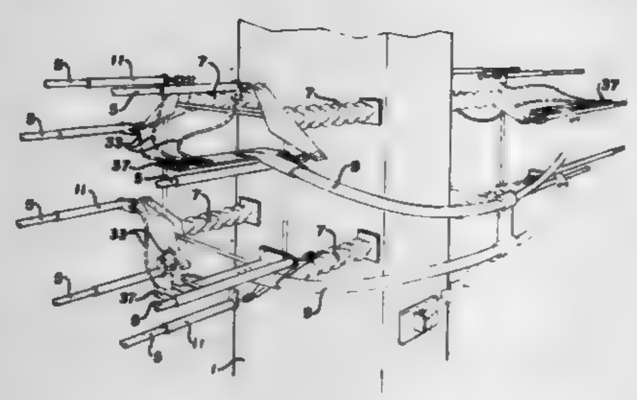
OVERHEAD ELECTRIC POWER TRANSMISSION LINE JUMPERING SYSTEM FOR BUNDLES OF FIVE OR MORE SUBCONDUCTORS

Paul F. Winkelman, Beaverton, Oreg., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Sep. 24, 1980, Ser. No. 190,307

Int. Cl.³ H02G *7/00*

U.S. Cl. 174—43 12 Claims



1. An overhead electric power transmission line jumpering system for interconnecting two transmission line conductor bundles which terminate at and are insulatively attached to a common supporting structure, each of said transmission line conductor bundles being generally a cylindrical array of at least five parallel spaced apart elongated electrical transmission line subconductors operable at the same voltage level at any instant of time with terminal ends generally disposed in a common circular plane adjacent to said supporting structure, said system comprising:

a. at least one jumper bus located within each of said bundles and attached to one of said transmission line subconductors adjacent its terminal end;

b. internal jumper conductors located within each of said bundles, one of which is connected from each of said remaining transmission line subconductors adjacent its terminal end directly to one of said jumper buses; and

c. at least one external jumper conductor connected from said jumper bus in one of said bundles and extending outside of said bundle to said jumper bus of said other bundle to provide current flow between the said two transmission line conductor bundles.

4,323,723

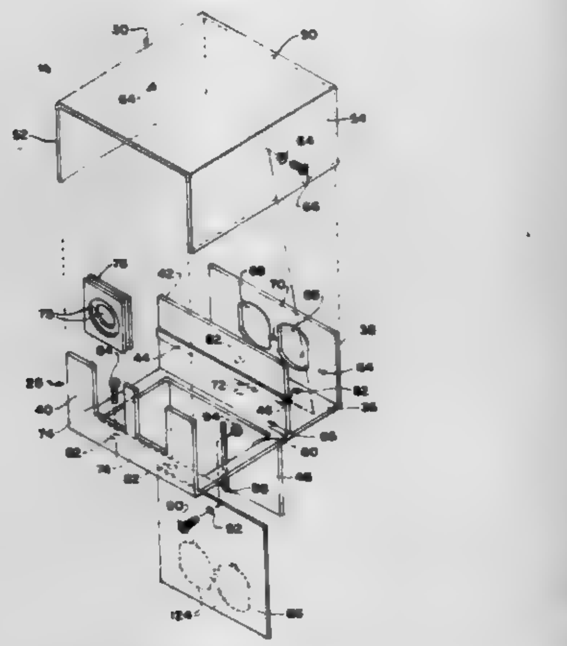
SURFACE MOUNTED OUTLET UNIT

Frank W. Fork, Allison Park, and Charles J. Kelly, Pittsburgh, both of Pa., assignors to H. H. Robertson Company, Pittsburgh, Pa.

Filed Apr. 4, 1980, Ser. No. 137,545

Int. Cl.³ H02G *3/10*

U.S. Cl. 174—48 11 Claims



1. A dual service outlet unit comprising;

a base member comprising a segment of a first metal extrusion having a generally U-shaped profile, said base member including a bottom wall, and formed integrally therewith upstanding opposite end walls and an upstanding partition intermediate of said end walls;

a cover member comprising a segment of a second metal extrusion having an inverted generally U-shaped profile, said cover member including a top wall and depending opposite sidewalls;

said cover member straddling said base member with said opposite sidewalls thereof confronting opposite end edges of said end walls and said bottom wall, and said partition extending from said bottom wall to said top wall thereby to define segregated compartments; and

securing means securing said cover member to said base member.

4,323,724

UNITARY INSERTABLE SELF-ANCHORING POKE-THRU WIRING DEVICE

William P. Shine, 3909 Park Ave., Fairfield, Conn. 06430

Filed May 1, 1980, Ser. No. 145,715

Int. Cl.³ H02G *3/22*

U.S. Cl. 174—48 6 Claims

1. A unitary insertable self-anchoring poke-thru wiring device for self-captivating anchored insertion in a standard concrete slab floor aperture, providing electrical communication wiring connections or plug-in receptacle power outlets in occupied spaces above the slab floor within a building comprising

a tombstone outlet box whose minimum lateral dimension exceeds the maximum lateral dimension of the standard aperture, whereby a bottom face of the outlet box is dimensioned to overlie and conceal the standard aperture opening into an overlying occupied space, and the outlet box having electrical conductors extending downward therefrom,

hollow elongated conduit means enclosing the extending electrical conductors, and having a first end joined to the bottom face of the outlet box and extending therefrom to a second end, the conduit means having a maximum lateral dimension substantially less than the minimum lateral dimension of the standard floor slab aperture, thus adapting the conduit means for insertion downward through the aperture,

a narrow elongated junction box anchored to the second end of the conduit means, enclosing and presenting the electrical conductors for subsequent connections thereto, and having its maximum lateral dimension substantially less than the minimum lateral dimension of the standard floor slab aperture, whereby the junction box is dimensioned to pass lengthwise through the aperture,

fire-retardant means centrally anchored to the hollow conduit means for positioning inside the aperture,

a conically-dished resilient spring washer encircling the hollow conduit means adjacent to the fire retardant means and having its conical surface concavely diverging toward the outlet box face, with its periphery notched and dimensioned for wedging engagement in the standard aperture,

and means anchoring the spring washer to prevent its displacement relative to the hollow conduit,

whereby the poke-thru wiring device is adapted for unitary insertion from the occupied space into the standard aperture, wherein the resilient spring washer wedgingly engages the internal wall of the standard aperture retaining the wiring device captively installed therein, with the fire-retardant means spanning the standard aperture near its lower end, while the narrow elongated junction box depends therebeneath.

4,323,725

STRAIN RELIEF DEVICE FOR AN ELECTRICAL SUPPLY LINE

Thomas Müller, Stuttgart, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 19, 1980, Ser. No. 151,103

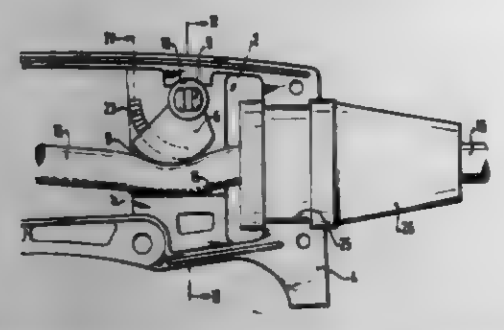
Claims priority, application Fed. Rep. of Germany, Jul. 18, 1979, 2928931

Int. Cl.³ H01R *13/585;* H02G *3/18*

U.S. Cl. 174—65 R 13 Claims

1. A strain relief device for an electrical supply line in an electrical instrument, particularly a power tool, which has a housing and an opening in the housing to admit the supply line, comprising a clamping member mounted for pivoting about a pivot axis relative to said housing and having a first clamping surface and a pivoting eye; a second clamping surface on said housing, wherein the supply line is adapted to be located between said first and second clamping surfaces, said clamping member being operative to apply a clamping force to said supply line when a strain force is applied to said supply line in the direction outwardly of the housing; and a locking mechanism operative to prevent motion of said supply line in response to a pushing force applied thereto in the direction

inwardly of said housing, said locking mechanism comprising first teeth arranged on said housing so as to form a part of the



same and located concentrically relative to said pivot axis of said clamping member, and at least one second teeth attached to said clamping member and engageable with said first teeth.

4,323,726

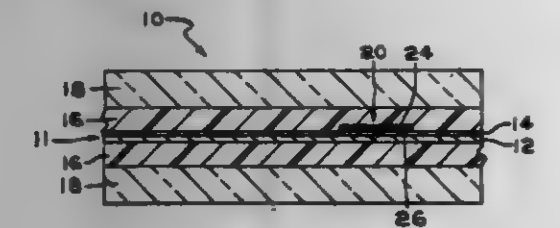
ELECTRICAL BUS BAR ASSEMBLY

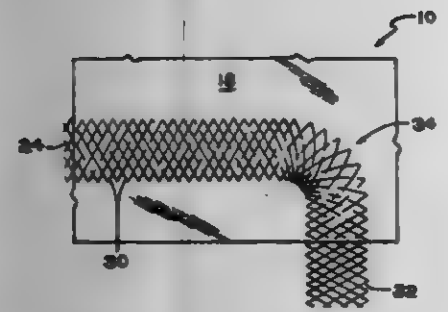
Russell C. Criss, Pittsburgh, and Edward J. Stofka, Sarver, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jul. 24, 1980, Ser. No. 171,780

Int. Cl.³ H05K *1/00*; H05B *3/06*

U.S. Cl. 174—68.5 11 Claims





1. A bus bar assembly for electrically connecting a source of electrical potential to an electroconductive pattern on a nonelectroconductive substrate at a plurality of points, comprising:

at least one elongated metallic current carrying member positioned adjacent said pattern at said plurality of points; and

an electroconductive layer between and in contact with adjacent surfaces of said current carrying member and said electroconductive pattern to maintain same in spaced relation, said layer conforming to the surface configurations of both the contacted adjacent surfaces of said member and said pattern to minimize localized high current densities therebetween and having a volume resistivity less than about 10^{-2} ohm-cm., wherein said layer comprises a mixture of finely divided metallic electroconductive particles bound together by fused metal alloy particles substantially free of non-metallic components.

4,323,727

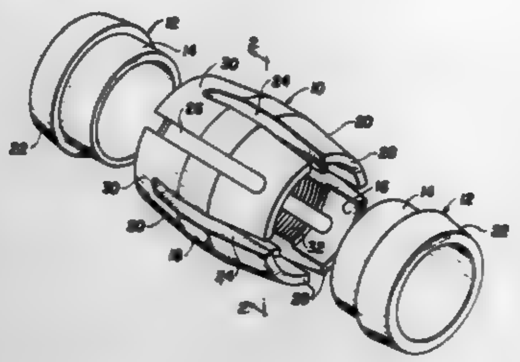
CABLE STRAIN RELIEF AND SEALING APPARATUS

Arthur H. Berg, Fabius, N.Y., assignor to Crouse-Hinds Company, Syracuse, N.Y.

Filed Oct. 21, 1980, Ser. No. 199,342

Int. Cl.³ H02G *3/22*; F16J *15/10*; H01R *13/58*

U.S. Cl. 174—135 11 Claims



1. Cable strain relief and sealing apparatus, comprising:

a sleeve formed of flexible and resilient material, said sleeve having an outer surface tapered inwardly toward one end thereof,

said sleeve comprising a plurality of substantially axial slots alternately extending from opposite ends thereof to define a plurality of cantilevered sections alternately extending from opposite ends thereof,

whereby an inward force on said tapered outer surface causes said cantilevered sections to flex inwardly so that the inner surface of said sleeve constricts to grip a cable when passing therethrough, and

a sealing bushing of flexible and resilient material mating with one end of said sleeve,

said one end of said sleeve having an annular recessed portion, and said bushing having an annular flange portion that is slidably received within said recessed portion.

4,323,728

CONVERSION CIRCUIT ARRANGEMENT AND METHOD FOR SWITCHING DIGITAL ENCODED SIGNALS

Ola Bergman, Munich; Rolf Hagen, Unterhaching; Juergen Harenberg, Munich, and Herbert Steiner, Gelting, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Mar. 10, 1980, Ser. No. 129,397

Claims priority, application Fed. Rep. of Germany, Mar. 30, 1979, 2912649

Int. Cl.³ H04N *1/32*; G06F *3/14*; H04Q *3/54*

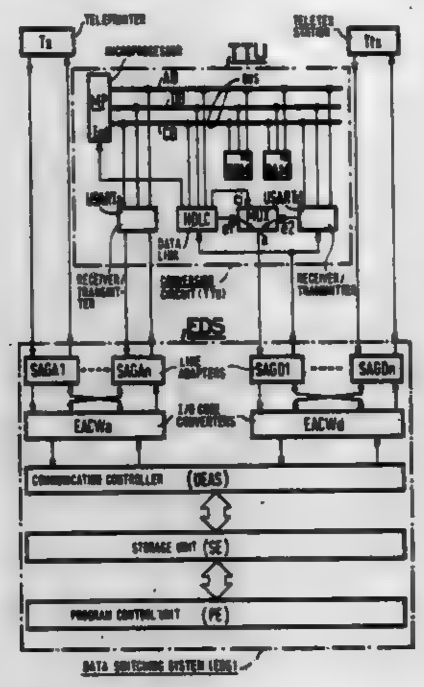
U.S. Cl. 178—3 10 Claims

1. A conversion circuit arrangement for establishing bidirectional communication links between different types of data terminals operating with distinctive interfaces with respect to data transmission procedures including signalling, data format and data rate, said circuit arrangement adapted for use with an electronic data switching system capable of controlling data exchange only between data terminals of the same type and including a plurality of sets of line adapters, each set forming connection units associated with just one type of data terminal, said conversion circuit arrangement comprising:

(a) at least two interface circuits each having an external input and output, a first internal input and output and a first control terminal, each including input/output converting networks connected to said internal and external inputs and outputs, and each adapted to be connected to a respective line adapter of a different set of line adapters;

(b) a storage unit adapted for intermediately storing complete messages of transmitting data terminals and having a second internal input and output and a second control terminal, said first and second internal inputs and outputs being connected in parallel to said second internal output and input, respectively; and

(c) a control means for controlling the buffering of messages in said storage unit such that a message received by one interface circuit in accordance with the data transmission procedure associated with the transmitting data terminal is intermediately buffered and is read out across the other



interface circuit using the different data transmission procedure of the receiving data terminal, said control means having a third control terminal being connected to said first and second control terminals, wherein said conversion circuit arrangement simulates, with respect to said electronic data switching system, a different type of data terminal by means of each interface circuit and allows of inter-connecting different sets of line adapters.

4,323,729

CIRCUIT ARRANGEMENT FOR THE CONTROL OF A CRYPTO OPERATION IN THE CASE OF PROCEDURE-CONTROLLED SEMI-DUPLEX DATA TRANSMISSION SYSTEMS

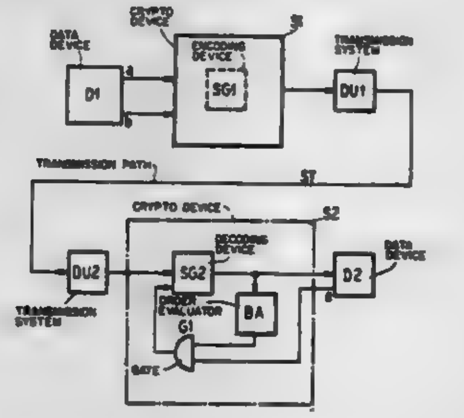
Joerg Westermayer, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Feb. 19, 1976, Ser. No. 659,968

Claims priority, application Fed. Rep. of Germany, Feb. 24, 1975, 2507803

Int. Cl.³ H04L *9/00*

U.S. Cl. 178—22.01 1 Claim



1. In a procedure-controlled semi-duplex data transmission system for crypto operation in which data are transmitted from a first station with a first data device and a first crypto device via a transmission path to a second station having a second crypto device, which includes a decoding device, and a second data device, in which a change of transmission direction is signaled with an order word from the first crypto device to the second crypto device and is evaluated by an order evaluator, whereby the second data device emits a control signal to prepare the second crypto device for transmission when an end signal is received from the first data device, and in which data words inadvertently simulate change of direction order words, the improvement comprising:

gating means having an input connected to the output of the order evaluator and an input connected to the output of the second data device and an output connected to the decoder to stop operation of the decoder in response to an order word in conjunction with an end signal.

4,323,730

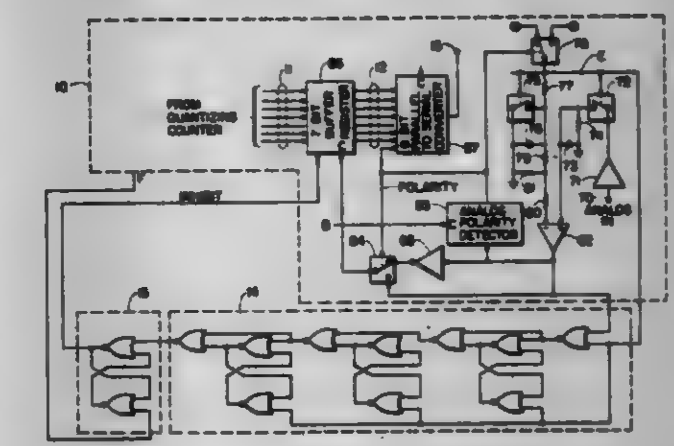
IDLE CHANNEL NOISE SUPPRESSOR FOR SPEECH ENCODERS

Anthony K. D. Brown, Kanata, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Jun. 13, 1979, Ser. No. 48,144

Int. Cl.³ H03K *13/01, 13/20*

U.S. Cl. 179—1 P 4 Claims



1. In a circuit for encoding analog signals into pulse code modulation samples, the encoding circuit comprising an analog comparator circuit responsive to an analog signal and to a reference signal to provide a first signal, a method for recognizing an idle channel during a sampling period, comprising the steps of: counting at least two, and not more than thirty two, zero-level traversals by the signal at the output of the analog comparator circuit during a single sampling period, and storing in a register means a signal indicating the presence of said traversals whereby the encoding circuit is caused to output a pulse code modulation word corresponding to a zero amplitude analog signal.

4,323,731

VARIABLE-ANGLE, MULTIPLE CHANNEL AMPLITUDE MODULATION SYSTEM

David L. Hershberger, Quincy, Ill., assignor to Harris Corporation, Melbourne, Fla.

Continuation-in-part of Ser. No. 970,652, Dec. 18, 1978, Pat. No. 4,225,751. This application Dec. 11, 1979, Ser. No. 102,633

Int. Cl.³ H04H *5/00*

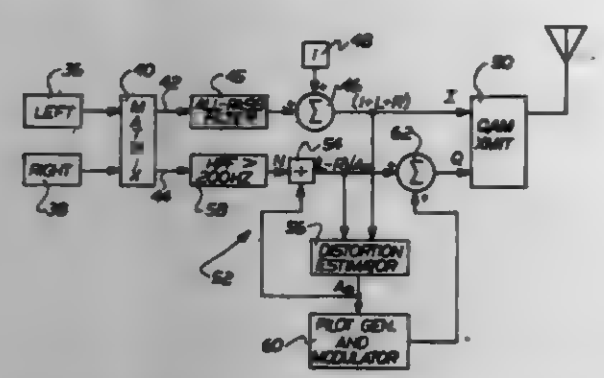
U.S. Cl. 179—1 GS 35 Claims

1. A modulator comprising:

modulator means for providing a composite modulated signal having a subsonically varying quiescent carrier component, and

adaptor means for separating said composite modulated signal into AF and RF components for application to AF and RF inputs of an AM transmitter, said adapter means including means responsive to said composite modulated signal to provide an envelope signal which varies as the envelope of said composite modulated signal, and means for subsonically

adjusting the gain of said envelope signal so that its DC component remains substantially fixed, thereby reducing



harmonic distortion resulting from AC coupling of said envelope signal into said AF input of said AM transmitter.

4,323,732

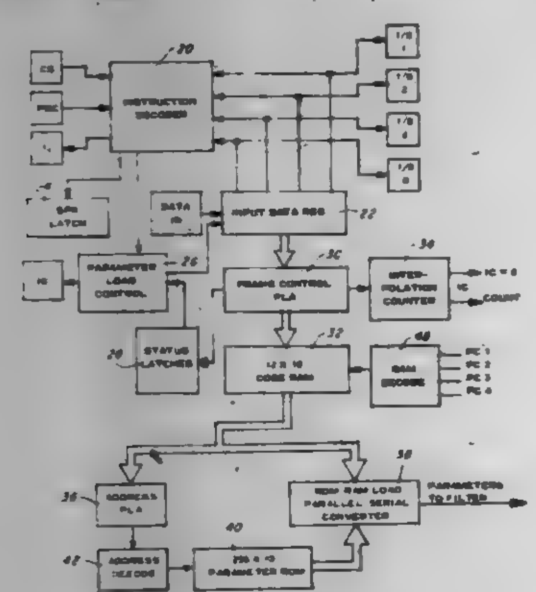
SPEECH SYNTHESIS SYSTEM WITH ALTERNATIVE CODED OR UNCODED PARAMETER FORMATS

Richard H. Wiggins, Dallas, and Alva E. Henderson, Lubbock, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Feb. 4, 1980, Ser. No. 118,367

Int. Cl.³ G10L *1/00*

U.S. Cl. 179—1 SM 6 Claims



1. A speech synthesis system comprising:
memory means for storing digital speech data as a plurality of digital speech values including digital speech values representative of digital filter coefficients for defining speech parameters in a coded or uncoded format;
digital filter speech synthesizer means operatively associated with said memory means for converting uncoded speech data corresponding to digital speech values representative of digital filter coefficients from said memory means into digital speech signals representative of human speech;
memory load input means having an output coupled to said digital filter speech synthesizer means and having first and second inputs operatively associated with said memory means for alternatively receiving coded or uncoded speech parameters, the first input of said memory load input means being effective to receive uncoded speech parameters from said memory means for input to said digital filter speech synthesizer means;
decoding means operatively interposed between said memory means and the second input of said memory load input means and effective to receive coded speech parameters when enabled for decoding said coded speech parameters, the output of said decoding means being connected to the second input of said memory load input means for providing decoded speech parameters to said memory load input means for input to said digital filter speech synthesizer means;
said decoding means being responsive to a control signal indicative of coded speech parameters being provided from said memory means for receiving said coded speech parameters for decoding prior to reception by said memory load input means, and said memory load input means being effective in the absence of said control signal for directing uncoded speech parameters provided from said memory means via the first input thereof to said digital filter speech synthesizer means;
digital-to-analog converter means coupled to said digital filter speech synthesizer means for converting said digital speech signals representative of human speech into analog signals; and
audio means coupled to said digital-to-analog converter means for converting said analog signals into audible sounds.

4,323,733

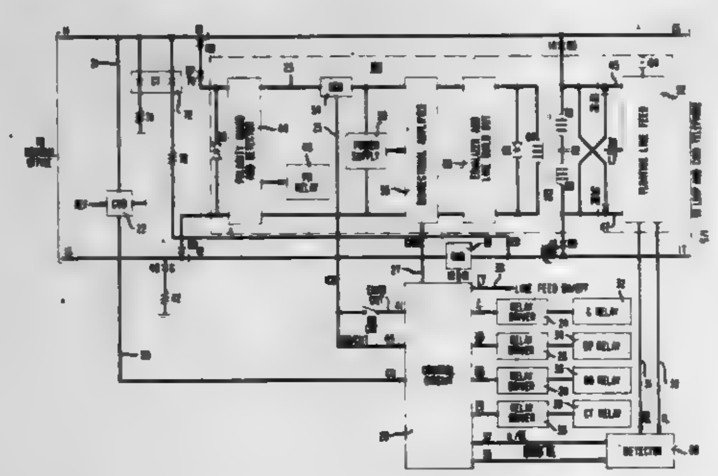
RANGE EXTENDER WITH VARIABLE GAIN FOR COIN TELEPHONE LOOPS

Henry W. Ott, Livingston, and Bernard A. Tilson, Parsippany, both of N.J., assignors to Bell Telephone Laboratories, Inc., Murray Hill, N.J.

Filed Nov. 28, 1980, Ser. No. 211,425

Int. Cl.³ H04M *17/02*

U.S. Cl. 179—6.3 R 11 Claims



1. A method of controlling a coin telephone from a central office over a coin subscriber loop
characterized by the steps of
detecting the flow of current through a single conductor in said coin subscriber loop,
detecting the absence of coin control signal voltages, and
in response to said current and voltage detection, inserting an amplifier circuit (100) and a line feed circuit (52) into said coin subscriber loop.

4,323,734

INTERFACE CIRCUIT FOR TELEPHONE LINE TO EQUIPMENT SIGNAL COUPLING

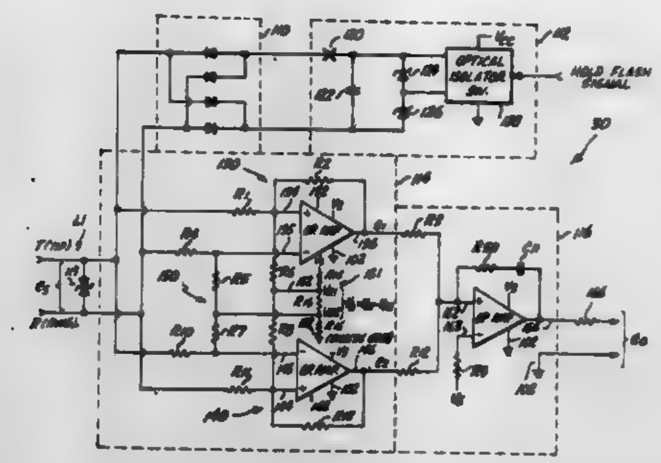
Gene A. Kimsey, Graham, Wash., assignor to Crest Industries, Inc., Puyallup, Wash.

Filed May 15, 1980, Ser. No. 150,199

Int. Cl.³ H04Q *5/20*

U.S. Cl. 179—18 FA 17 Claims

1. An interface circuit for coupling the tip and ring conductors of a telephone line to a signal utilizing means that is responsive to line voltage supervisory and information signals, including line voltage polarity reversals, comprising:
first and second terminals, said first terminal adapted to be connected to the tip conductor and said second terminal adapted to be connected to the ring conductor such that the line voltage across the tip and ring conductors will be applied to said first and second terminals;
first and second voltage comparator circuit means each being formed by an operational amplifier having an inverting input and a noninverting input and an output, said inputs of said first and second comparator circuit means connected to said first and second terminals in parallel and in an opposite phase relationship such that said first comparator circuit means is effective to respond to changes in the magnitude of the line voltage when it has a relative



reversed polarity, and said second comparator circuit means is effective to respond to changes in the magnitude of the line voltage when it has a normal non-reversed polarity; and
signal combining circuit means connected to said outputs of said first and second comparator circuit means for producing a combined output signal for receipt by the signal utilizing means.

4,323,735

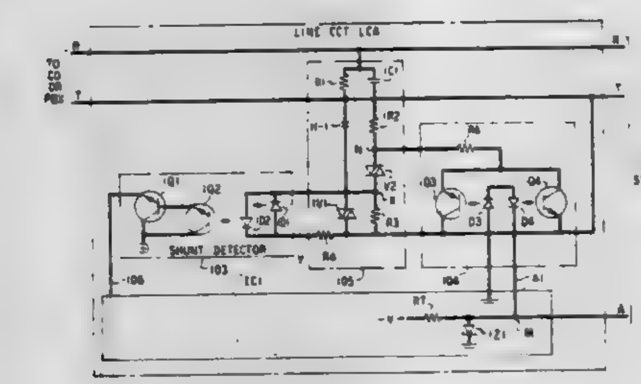
KEY TELEPHONE LINE SHUNT DETECTOR CIRCUIT

Gerry C. Balzer, Freehold, and Alan M. Gordon, Matawan, both of N.J., assignors to Bell Telephone Laboratories, Inc., Murray Hill, N.J.

Filed Sep. 26, 1980, Ser. No. 191,143

Int. Cl.³ H04M *1/00*

U.S. Cl. 179—99 LC 13 Claims



1. A line circuit for use in a key system for detecting and controlling the operational states of a communication pair extending between a switching machine and at least one telephone station, said line circuit comprising
a shunt detector means (103, 105) for detecting voltage changes indicative of the operational state of said communication pair
characterized in that
said shunt detector means further includes
a switchable current shunt (104) for changing the sensitivity of said shunt detector means in response to a change in an operational mode of said telephone station.

4,323,736

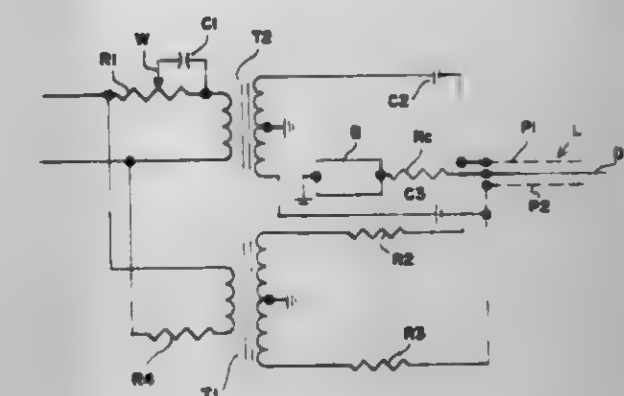
STEP-UP CIRCUIT FOR DRIVING FULL-RANGE-ELEMENT ELECTROSTATIC LOUDSPEAKERS

James C. Strickland, 3101 SW. First Ter., Fort Lauderdale, Fla. 33315

Filed Aug. 11, 1980, Ser. No. 176,668

Int. Cl.³ H04R *3/06*

U.S. Cl. 179—111 R 9 Claims



1. An audio step-up circuit for driving full-range-element electrostatic loudspeakers of the type having a flat conductive diaphragm suspended in spaced, parallel relation between a pair of opposed, acoustically transparent stator plates comprising, in combination, a first audio signal voltage step-up transformer for signal voltage step-up at lower audio frequencies of the 30 Hz to 20 kHz audio frequency band, a second audio signal voltage step-up transformer of substantially lesser turns ratio as compared with said first transformer for signal voltage step-up at higher audio frequencies of said 30 Hz to 20 kHz audio frequency band, means for connecting the primary winding of said second transformer to a low voltage, low impedance audio signal source, said connecting means including an adjustable series-parallel RC network in series with said primary winding of said second audio transformer, the secondary windings of said transformers each being center-tapped with the center-taps returned electrically to a common low potential "ground" return for push-pull output operation, a capacitor connected in series with each of the secondary winding terminal leads of said second transformer for capacitive coupling to the stator plates of an electrostatic loudspeaker and a resistive element connected in series with each of the secondary winding terminal leads of said first transformer for resistance coupling to the stator plates of the electrostatic loudspeaker, whereby the output circuits of said first and second transformers will be in parallel-bilateral interconnection for cooperatively feeding the stator plates of the electrostatic loudspeaker, and means for supplying a substantially constant high voltage electrostatic charge to the conductive diaphragm of the electrostatic loudspeaker.

4,323,737

DRIVER UNIT FOR PLANAR DIAPHRAGM TYPE LOUDSPEAKER

Kunihiko Shimada, and Yukio Tsuchiya, both of Tokorozawa, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Jun. 30, 1980, Ser. No. 164,398

Claims priority, application Japan, Jun. 30, 1979, 54-90266; Jun. 30, 1979, 54-90272

Int. Cl.³ H04R *9/02, 9/04, 9/06*

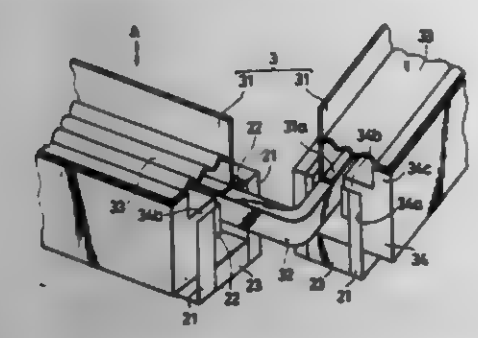
U.S. Cl. 179—115.5 R 4 Claims

1. A driver unit for a square planar diaphragm type loudspeaker system comprising:
square magnetic circuit means comprising a plurality of straight magnetic circuit sections positioned along corresponding sides of side square planar diaphragm, each of said straight magnetic circuit sections including a pair of parallel plate members, at least one magnet disposed on

one end of an inner wall of each said plate member, said magnets facing one another to form an air gap, and a yoke member joining the other ends of said plate members;

a voice coil bobbin attached along one edge thereof to said square planar diaphragm;

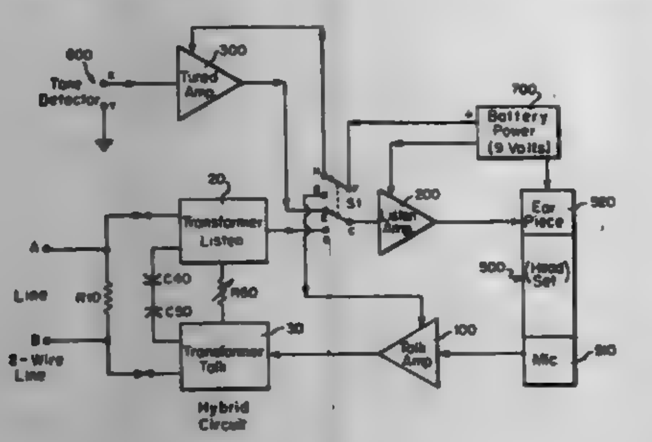
a voice coil attached to the other edge of said voice coil bobbin and disposed in said air gap;



damper supporting means mounted on outer plate members of said straight magnetic circuit sections, said damper supporting means being made of a material having high heat-conductivity to transmit heat generated by said voice coil; and

damper means having one edge coupled to said voice coil bobbin for suspending said voice coil bobbin and the other edge thereof supported by said damper supporting means.

4,323,738
PORTABLE TELEPHONE LINE TEST SET
Llewellyn S. Merrick, Wilbraham, Mass., assignor to Oros Corporation, Nutley, N.J.
Filed Apr. 10, 1980, Ser. No. 138,825
Int. Cl.[3] H04M 3/00; H04B 3/46
U.S. Cl. 179—175.1 R 2 Claims



1. A portable two wire line test set comprising:

(a) power supply means for providing electrical energy;

(b) hybrid circuit means for connecting to a telephone line;

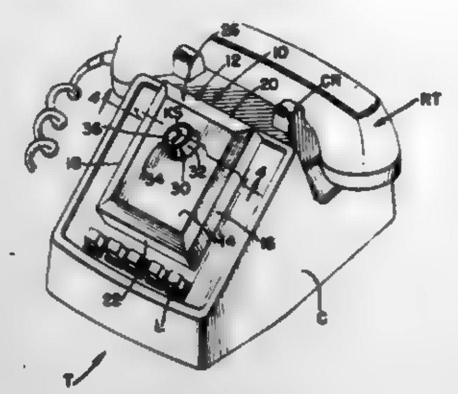
(c) first amplifier means connected to said power supply means and to said hybrid circuit means for receiving and amplifying voice signals;

(d) second amplifier means connectable to said power supply means and to said hybrid circuit means for amplifying and transmitting voice signals;

(e) transducer means connected to said first amplifier means for converting said voice signals into audible sounds; and

(f) transducer means connected to said second amplifier means for converting audible sound into voice signals.

4,323,739
TELEPHONE LOCKING DEVICE
Louis Flax, Moonachie, and Vincent Brzezinski, Wyckoff, both of N.J., assignors to Televault, Inc., New York, N.Y.
Filed Jan. 14, 1979, Ser. No. 47,307
Int. Cl.[3] H04M *1/66*
U.S. Cl. 179—189 D 17 Claims

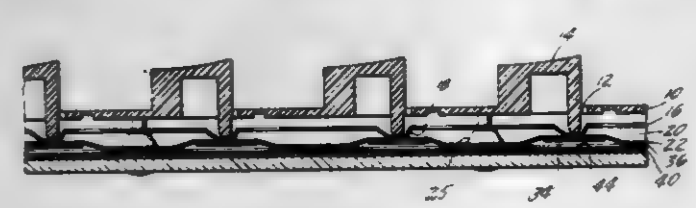


1. A locking device for preventing unauthorized use of a push-button telephone, comprising:

a protective shield for preventing access to at least one of the dial push-buttons on a dial push-button telephone, said shield including a front surface, a rear surface, sides and ends and having a dial push-button receiving chamber defined in said rear surface for accommodating therein the at least one dial push-button, said chamber being located in said shield rear surface so that access to the interior of said chamber is only possible from said shield rear surface so that said shield prevents access to the at least one dial push-button when said shield is in position on a telephone; and

shield mounting means for detachably mounting said shield on a telephone, said mounting means including locking means for locking said shield on the telephone, said shield mounting means including a dial push-button grasping means attached to said locking means and grasping the at least one dial push-button to hold said shield in a dial push-button covering position on the telephone, said locking means including grasping means operating means mounted on said locking means for moving said grasping means into a dial push-button grasping position to mount said shield on a telephone with the at least one dial push-button accommodated in said dial push-button receiving chamber to control access to the at least one dial push-button.

4,323,740
KEYBOARD ACTUATOR DEVICE AND KEYBOARD INCORPORATING THE DEVICE
Frederick A. Balash, Mesa, Ariz., assignor to Rogers Corporation, Rogers, Conn.
Filed Feb. 4, 1980, Ser. No. 118,513
Int. Cl.[3] H01H *13/70*
U.S. Cl. 200—5 A 10 Claims



1. A switch assembly including:

a first circuit layer having a first electrical circuit element on at least one surface thereof, said first circuit layer defining a first plane;

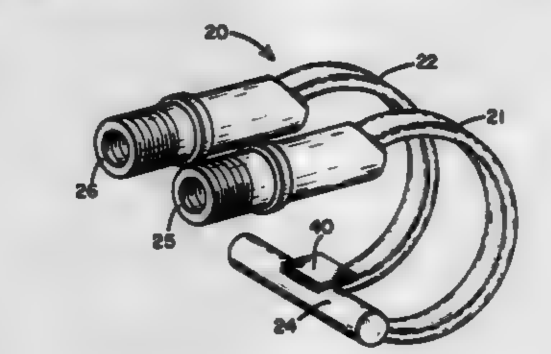
a second circuit layer having a second electrical circuit element on at least one surface thereof, said second circuit layer defining a second plane, said second circuit layer being positioned relative to said first circuit layer so that said second element is facing but normally out of contact with said first circuit element and said first and second planes are substantially parallel to one another;

a tactile protrusion formed in said second circuit layer, said tactile protrusion projecting out of said first plane and away from said first circuit layer, said tactile protrusion supporting at least a portion of said second electrical circuit element for selective contact with said first electrical circuit element;

a key spaced from said second circuit layer on the side thereof removed from said first circuit layer, said key including a movable actuator bar positioned to cause actuation of said tactile protrusion, said actuator bar being in registration with at least a part of said protrusion; and

a striker element positioned between said key and said tactile protrusion to effect electrical contact between said first and second circuit elements with tactile feedback, said striker element being generally planar and parallel to said first and second circuit layers, said striker element being provided with a recess which extends away from said key, said recess receiving said key actuator bar and having a geometrical configuration which will transmit an actuating force from said key to the protrusion.

4,323,741
MECHANICAL DEFLECTION APPARATUS FOR SENSING FLUID PRESSURE
Duane D. Krohn, Westminster, Colo., assignor to Graco, Inc., Minneapolis, Minn.
Filed May 27, 1980, Ser. No. 153,443
Int. Cl.[3] H01H *35/40*
U.S. Cl. 200—81.9 R 9 Claims



1. A fluid pressure sensing and switching apparatus for insertion in series fluid flow relationship in a pressurized fluid flow line, comprising

(a) a housing having an inlet and outlet for respective connection in series fluid flow relation to said fluid flow line;

(b) a pair of curved tubes in generally parallel alignment, one end of one of said tubes coupled to said housing inlet and one end of the other of said tubes coupled to said housing outlet, the respective other ends of each of said tubes being freely suspended;

(c) a flow through manifold coupled between the respective other ends of said tubes;

(d) a bracket attached to said housing, said bracket having an L-shaped member with a free end proximate said manifold; and

(e) a switch mounted on said bracket, said switch having an actuator in close proximity to said manifold.

4,323,742
HIGH PRESSURE DIFFERENTIAL SWITCH DEVICE
Wayne A. Priest, Kansas City, Kans., assignor to SOR, Inc., Olathe, Kans.
Filed Jan. 4, 1980, Ser. No. 109,451
Int. Cl.[3] H01H *35/38*
U.S. Cl. 200—82 C 12 Claims

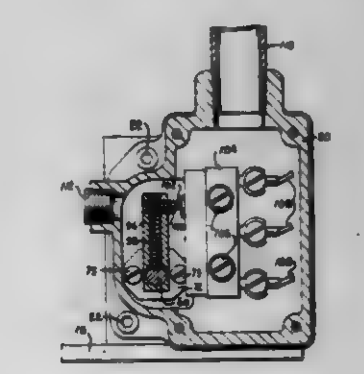
1. A switch device for detecting when the pressure differential between high and low pressures exceeds a preselected level, said switch device comprising:

a housing having high and low pressure ports adapted to receive the respective high and low pressures, said housing presenting a piston chamber therein between said ports;

a piston in said piston chamber having opposed faces exposed to the respective high and low pressure ports to urge the piston toward the low pressure port under the influence of the pressure differential between the high and low pressures;

a shaft supported for rotation in said housing, said shaft having a lever arm and a switch arm extending outwardly from the shaft at spaced apart locations;

means coupling said piston with said lever arm in a manner to move an outer portion of the lever arm in a direction to



turn said shaft in a first rotative direction upon movement of said piston toward the low pressure port;

resilient means exerting a biasing force on said shaft urging said shaft in a second rotative direction opposite said first direction, said resilient means resisting movement of said piston toward the low pressure port when said pressure differential is below said preselected level but yielding to permit rotation of the shaft in said first direction when said pressure differential exceeds said preselected level;

a pair of seal elements sealing said shaft to said housing at locations on opposite sides of said lever arm to isolate said switch arm and resilient means from the fluid in said ports; and

switch means actuated by said switch arm upon movement of said shaft in said first rotative direction, said switch means thereby being actuated when the pressure differential exceeds said preselected level.

4,323,743
MEANS FOR OPERATING BLAST VALVE IN TWO-PRESSURE CIRCUIT BREAKER
Henry L. Peek, Naples, Fla., assignor to Siemens-Allis, Inc., Atlanta, Ga.
Filed Dec. 19, 1979, Ser. No. 105,003
Int. Cl.[3] H01H *33/86*
U.S. Cl. 200—148 F 6 Claims

1. In a power circuit breaker of two-pressure type including circuit interrupter means, a tank enclosing said means and confining therein a gas at a first, lower pressure, a reservoir confining the gas at a second, higher pressure, and a gas passage extending from said reservoir to the interruptor means, the improvement comprising:

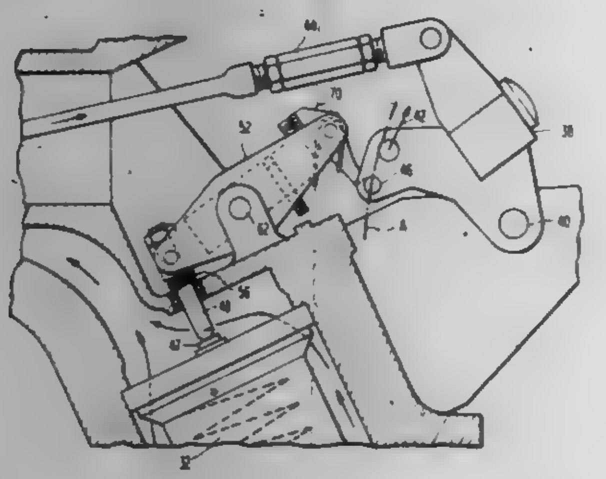
valves means disposed in the gas conduit;

linkage means coupled to the interrupter means and operable to open and close the interrupter means;

a lever coupled to said linkage means and mounted for rotating in an arc in a first direction in response to movement of said linkage to open the interrupter and rotating in said arc in a second direction in response to movement of said linkage to close said interrupter, said lever having a projection thereon;

a crank having a first and a second end and being pivotally

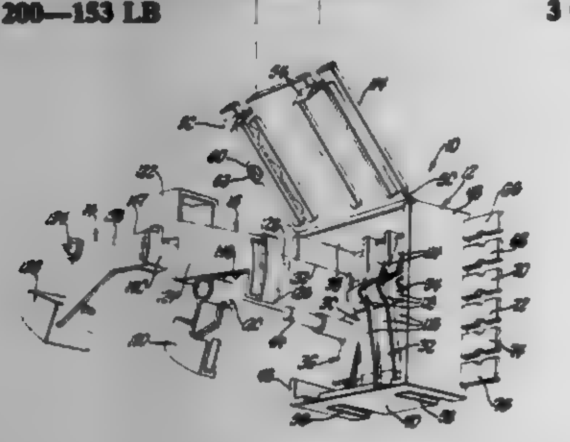
mounted intermediate said ends at a point between said valve means and said arc;
a pushrod pivotally attached to the first end of said crank;
guide means for confining said pushrod to a path whereby the pushrod will intercept said valve means as said crank pivots about its pivotal mounting;
a latch pivotally mounted upon the second end of said crank, said latch having an end extending into a portion of the arc traversed by said projection of said lever;
spring means carried by said crank biasing said latch for rotation in a first direction toward said lever;
second spring means biasing said crank to rotate in a direction to cause said latch to approach said arc; and



a stop mounted on said crank and confronting said latch for limiting rotation of said latch caused by said spring means;
whereby rotation of said lever in said arc in a first direction urges said projection against said latch, said latch moving free of said arc after said crank has rotated by a predetermined amount, and after encountering said valve means; said projection interfering with said latch when said lever rotates in said second direction to cause said latch to be deflected against the pressure of said spring means, said projection and said lever being thereby allowed to return to their quiescent state.

4,323,744
SWITCH FOR CONTROLLING A PLURALITY OF LIGHTING CIRCUITS

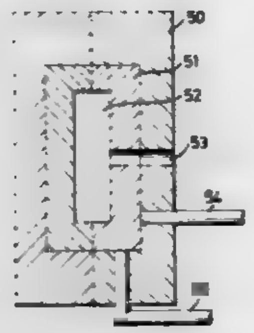
John J. Sheridan, Middletown; Allen K. Schwartz, Alexandria, and Willis H. Anderson, Anderson, all of Ind., assignors to General Motors Corporation, Detroit, Mich.
Filed Oct. 8, 1980, Ser. No. 195,185
Int. Cl.³ H01H *21/80*
U.S. Cl. 200—153 LB 3 Claims



1. A switch for controlling a plurality of lighting circuits on a motor vehicle, comprising a housing; a first operating lever and a second operating lever supported in side-by-side relationship by said housing for pivotal movement about a common transverse axis; a first cam formed on said first operating lever; a first pair of contacts carried by said housing for controlling a first lighting circuit; a second cam formed on said second operating lever; a second pair of contacts carried by said housing for controlling a second lighting circuit, said first operating lever having a first position wherein said first cam closes said first pair of contacts to complete said first lighting circuit, and a second position wherein said first pair of contacts remain open, said second operating lever having a first position wherein said second cam closes said second pair of contacts to complete said second lighting circuit and a second position wherein said second pair of contacts remain open; and cooperating means formed on said first operating lever and said second operating lever permitting said first operating lever to independently close said first pair of contacts when moved from said second position to said first position and allowing said second operating lever to close said second pair of contacts and simultaneously shift said first operating lever to said first position to close said first pair of contacts when said first operating lever and said second operating lever are in said second position and said second operating lever is moved from said second position to said first position.

4,323,745
METHOD AND APPARATUS FOR EFFECTING BY MICROWAVES A SUBSTANTIALLY UNIFORM HEATING OF A MATERIAL IN A CAVITY

Benny Berggren, Vällingby, Sweden, assignor to Stiftelsen Institutet for Mikrovagsteknik vid Tekniska Hogskolan i Stockholm, Stockholm, Sweden
Continuation of Ser. No. 892,014, Mar. 31, 1978, abandoned.
This application Dec. 26, 1979, Ser. No. 107,258
Claims priority, application Sweden, Apr. 7, 1977, 7704137
Int. Cl.³ H05B *6/74*
U.S. Cl. 219—10.55 A 4 Claims

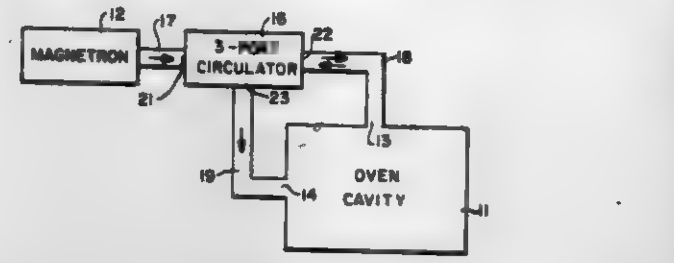


1. A microwave apparatus for substantially uniformly heating a dielectric material wherein microwave energy is supplied into a cavity in a manner causing at least two resonant modes to arise in the cavity, comprising: a metal enclosure, an insert made from a material, such as a ceramic material, with a low loss factor, said insert is contiguously enclosed by said metal enclosure, wherein the contacting surfaces of said insert conforms the shape of the inside surfaces of said enclosure, said insert further defines a cavity therein, a dielectric material to be heated which has a relatively high loss factor than said ceramic material, is attached to the surfaces within and substantially completely fills said cavity, means connecting at least two microwave energy sources to said cavity including means to effect simultaneous exciting of said cavity in at least two resonant modes, having different frequencies, which frequencies differ only slightly so that said at least two resonant modes arise and none of the zero points of the distribution of the electric energy density of said resonant modes coincides with any other zero points within said cavity.

4,323,746
MICROWAVE HEATING METHOD AND APPARATUS

John E. Gerling, Cupertino, Calif., assignor to Jova Enterprises, Inc., Modesto, Calif.
Filed Jan. 28, 1980, Ser. No. 116,001
Int. Cl.³ H05B *6/70*
U.S. Cl. 219—10.55 F 5 Claims

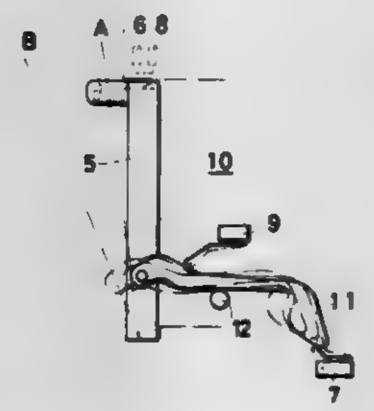
1. In a method for heating material in a microwave oven, the steps of: placing the material in the cavity of the oven, supplying microwave energy to the oven cavity through a first feed port, a portion of said energy being reflected back into the port



from the oven cavity, intercepting the reflected energy which enters the first feed port, and feeding the reflected energy back into the oven cavity through a second feed port.

4,323,747
SAFETY APPARATUS FOR MICROWAVE COOKING DEVICES

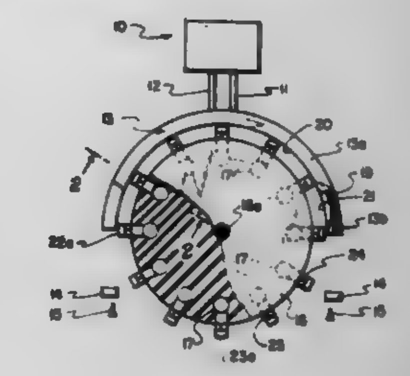
Tadayoshi Takase, Nagoya, and Yoshihiro Kanaya, Konan, both of Japan, assignors to Rinnai Kabushiki Kaisha, Fukuzumi, Japan
Filed Feb. 22, 1980, Ser. No. 123,734
Claims priority, application Japan, Jul. 26, 1979, 54-102334[U]
Int. Cl.³ H05B *6/68*; H01H *9/22*
U.S. Cl. 219—10.55 C 3 Claims



1. A safety apparatus for a microwave cooking device, comprising, in combination, a source of electrical power; a load; a load circuit connected between said source and said load; door means with lock means; circuit breaking means and main interlocking switch means in said load circuit, the main interlocking switch means arranged to be opened upon an unlocking operation of said lock means; first door switch means mechanically coupled to the door means and arranged to be closed when said door means is opened by a predetermined amount, whereby a short circuit is established across the power source and in parallel with said load, the short circuit thereby detecting a failure of the main interlocking switch means to open in response to unlocking of the lock means, and whereby, upon the failure of the main interlocking switch means to open, the circuit breaking means will open to interrupt the circuit from the power source to the load; and a second door switch means connected to said load circuit on the electrical power source side of said first door switch means, said second door switch means being mechanically coupled to the door means and being opened when the door means is opened by a further predetermined amount, thereby disabling the short circuit once the failure of the main interlocking switch means has been detected and the circuit breaking means has been opened in response thereto.

4,323,748
POWER TRANSFER SYSTEM

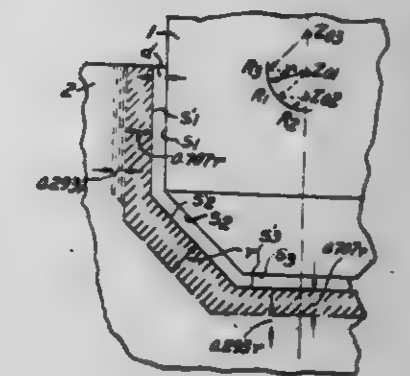
Robert W. Likins, Hoffman Estates, Ill., assignor to American Can Company, Greenwich, Conn.
Filed Apr. 11, 1980, Ser. No. 139,427
Int. Cl.³ H05B *6/04*; H01R *39/26*
U.S. Cl. 219—10.71 20 Claims



1. An apparatus comprising:
a first and second means operatively associated with one another for movement of at least one said means relative to the other from a position away from one another to a position in contact,
each of said means having a separated pair of surfaces positioned for rubbing engagement with each other when said means are in said contact position and one of said means having its said pair of surfaces elongated in the direction of said rubbing engagement,
a power supply connected across said elongated pair of surfaces for activation to a state of electrical potential therebetween and the other of said pair of surfaces being electrically connected in circuit with a load adapted to intermittently receive said potential,
said means with said pair of surfaces elongated being shunted at portions spaced apart from said power supply connection, and
said first and second means are arranged when moving from said away from position to said contact position to first cross one of said shunted portions and then said power supply connections and finally the other of said shunted portions.

4,323,749
PROCESS AND APPARATUS FOR MACHINING BY ELECTRICAL DISCHARGES ALONG A SLANT AXIS

Michel P. Mazond, Annemasse, France, and Alain Wavre, Geneva, Switzerland, assignors to Ateliers des Charmilles, S.A., Geneva, Switzerland
Filed Sep. 22, 1980, Ser. No. 189,798
Claims priority, application Switzerland, Oct. 9, 1980, 9053/79
Int. Cl.³ B23P *1/12*
U.S. Cl. 219—69 M 8 Claims



1. A process for electrical discharge machining of an elec-

trode workpiece by an electrode tool wherein said electrodes are displaced one relative to the other at least in one slant direction at a predetermined angle with the principal axis of feed motion of one electrode relative to the other, said process comprising setting the machining gap between said electrodes such as to maintain predetermined machining conditions, effecting consecutive machining passes in slant directions, displacing each of said slant directions as soon as the amplitude of said displacement reaches a predetermined value, and varying said limit value from one machining pass to the other, wherein the first of said slant directions is chosen in the course of the first machining pass such that machining is effected simultaneously on lateral and frontal surfaces of said electrode workpiece and each of said slanted directions is displaced in the course of subsequent machining passes such as to provide machining alternatively on lateral and on frontal surfaces of said electrode workpiece, and maintaining the speed of feed of said electrode tool into said electrode workpiece within predetermined limits in the course of each of said machining passes.

4,323,750

DEVICE FOR FEEDING, WITH ELONGATE LINING MATERIAL, AN INSTALLATION FOR LINING A TUBULAR MEMBER

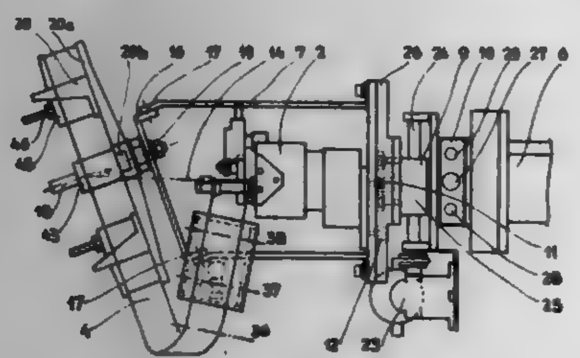
Andre Marmorat, Le Creusot, and Arnold-Michel Robert, Montchanin, both of France, assignors to Framatome, Courbevoie, France

Filed May 9, 1980, Ser. No. 149,471

Claims priority, application France, May 11, 1979, 79 12009

Int. Cl.³ B23K *9/04, 9/28*

U.S. Cl. 219—76.1 5 Claims



1. A device for feeding, with elongate lining material, an installation for lining a tubular member having a diameter of the order of 650 to 1,000 mm and which is arranged with its axis horizontal on a support enabling it to be rotated about its axis, said device comprising a horizontal arm mounted for vertical and horizontal translational motion and one end of which is introduced into the tubular member during the lining operation; a vertical welding head mounted on said one end of said arm and provided with means for guiding and carrying the elongate lining material along a path which has a vertical direction until the lining material is brought into contact with the internal surface of the tubular member to be welded to the internal surface thereof at a lower part of the tubular member during the rotation of the tubular member about its horizontal axis; a reel on which the elongate material is wound mounted in front of said welding head, that is to say on that side of said welding head closer to the end of the tubular member opposite that through which said welding head is introduced, said reel being mounted for rotation on an axle made fast with the front end of said arm and forming a small angle with the axis of said arm; and adjustable means for guiding the elongate material from a lower zone of said reel to an upper part of said welding head along a path which is adapted to the width and to the flexibility of the elongate material and terminates in a vertical path for introducing the elongate material into said means for guiding and carrying in said welding head.

4,323,751

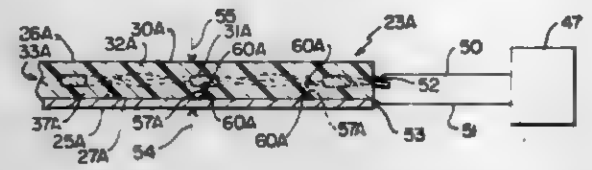
METHOD OF WELDING WEAR MEMBER FOR RAILWAY VEHICLE

Donald L. Kleykamp, Springboro, Ohio, assignor to Dayco Corporation, Dayton, Ohio

Division of Ser. No. 64,229, Aug. 6, 1979, Pat. No. 4,249,665. This application Sep. 22, 1980, Ser. No. 189,523

Int. Cl.³ B23K *11/10, 31/00*

U.S. Cl. 219—91.21 9 Claims



1. In a method of making a wear member for a railway vehicle wherein said vehicle comprises a pair of relatively moveable components and said wear member is adapted to be supported by one of said components and protects said components from wear during relative movement thereof; said method comprising the steps of; providing a metal support adapted to be supported on said one component; forming a reinforced antifriction liner having one surface thereof which is adapted to be disposed adjacent said metal support and having a smooth antifriction wear surface engageable by said other component; said forming step comprising, defining a plurality of openings in a metal structure and embedding said metal structure in polymeric material which serves as a matrix for and substantially completely surrounds said metal structure while simultaneously defining opposed surfaces of said polymeric material, said openings receiving said polymeric material completely therethrough during said embedding step resulting in better embedment of said metal structure, said structure providing reinforcement and preventing cold flow of said polymeric material; the improvement in said method comprising the step of securing said metal support to said metal structure after said embedding step with a plurality of metal members in mechanical and electrical contact between said metal structure and said metal support and extending through the thickness of polymeric material disposed between said metal structure and said metal support and its associated one of said opposed surfaces of said polymeric material, said step of securing comprising the steps of operatively connecting an electrical welding system between said metal structure and said metal support, holding said metal members in said mechanical and electrical contact, and electrically welding said metal members in position to said metal support with said electrical welding system thereby resulting in said liner of said wear member maintaining said smooth antifriction surface thereof yet being fixed to said metal support in a high strength manner.

4,323,752

PIPE RESISTANCE BUTT WELDING APPARATUS

Boris E. Paton, ulitsa Chkalova, 41-a, kv. 26; Vladimir K. Lebedev, ulitsa Engelsa, 25, kv. 12; Sergei I. Kuchuk-Yatsenko, ulitsa Filatova, 1/22, kv. 47; Vasily A. Sakharnov, ulitsa Solomenskaya, 41, kv. 93, and Boris A. Galyan, ulitsa Lenina, 88/92, kv. 110, all of Kiev, U.S.S.R.

Filed Apr. 2, 1980, Ser. No. 136,698

Claims priority, application U.S.S.R., Jun. 5, 1979, 2766303; Jun. 14, 1979, 2770751

Int. Cl.³ B23K *11/04, 37/04*

U.S. Cl. 219—101 5 Claims

1. A pipe resistance butt welding apparatus disposable within two pipes to be welded, comprising:

an elongated carrying body having means defining an inner surface and two coaxially mounted disks and carrying a plurality of elements, said elements including:

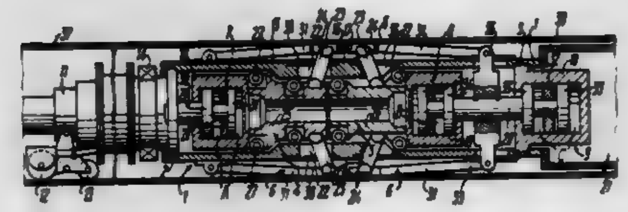
a fixed expanding clamp for holding one of the pipes to be welded in position with respect to said apparatus, comprising

first clamp elements and a first actuating cylinder, said first actuating cylinder consisting of a first movable part and a first fixed part, the first movable part of said first actuating cylinder being coupled with said first clamp elements and adapted for movement on the inner surface of said carrying body, and the first fixed part being rigidly attached to a respective one of said coaxially mounted disks;

a movable expanding clamp for locating said apparatus in the other of the pipes to be welded, comprising

second clamp elements and a second actuating cylinder, said second actuating cylinder consisting of a second movable part and a second fixed part, the second movable part of said second actuating cylinder being coupled with said second clamp elements and adapted for movement on the inner surface of said carrying body;

a third cylinder serving to move said movable expanding clamp axially for drawing together ends of the pipes to be welded and accomplishing upsetting of the pipe ends, said



third cylinder consisting of a third movable part and a third fixed part, of which the third movable part is connected with said second actuating cylinder of the movable expanding clamp and the third fixed part is rigidly attached to the other of said coaxially mounted disks, said fixed expanding clamp, movable expanding clamp, said first and said second actuating cylinders, and said third cylinder being installed in a coaxial relationship;

drive means for moving said apparatus along the pipes being welded, and

a ring welding transformer.

4,323,753

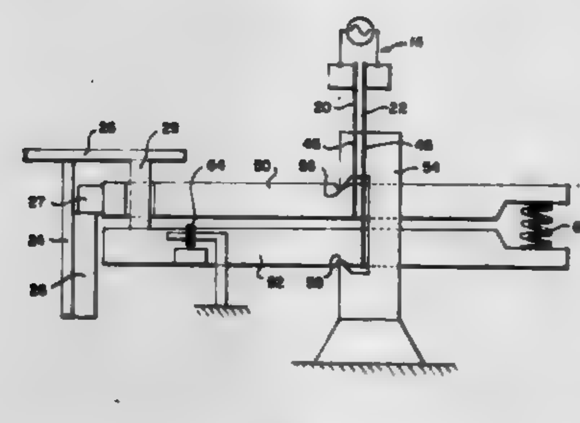
METHOD AND APPARATUS FOR WELDING AUTOMOTIVE BRAKE SHOES

Lawrence A. Boros, Ashtabula, Ohio, assignor to Rockwell International Corporation, Pittsburgh, Pa.

Filed Aug. 28, 1980, Ser. No. 182,048

Int. Cl.³ B23K *11/02, 11/32*

U.S. Cl. 219—107 11 Claims



7. In an apparatus for welding an edge surface of a curved metal brake shoe web to a metal brake shoe table having a greater radius of curvature than said brake shoe web edge includes means for positioning said brake shoe table in longitudinal alignment with said brake shoe web and means for completing a positive electrical connection between said brake shoe table and a first electrode and between said brake shoe web with a second electrode, the improvement comprising:

pressure responsive means mounting said first electrode;

means mounting said second electrode for movement capable of completing said positive electrical connection with said brake shoe web;

means for interlocking said means mounting said first electrode to said means mounting said second electrode to move said second electrode into completing said positive electrical connection with said brake shoe web in response to said first electrode completing said electrical connection with said brake shoe table; and

means for pressing the abutting surfaces of said brake shoe table and said brake shoe web together and for activating said pressure responsive means.

11. A method of welding an edge surface of a curved metal brake shoe to a metal brake shoe table surface having a greater radius of curvature than said brake shoe web edge which includes positioning said brake shoe table in longitudinal alignment with said brake shoe web with one end portion of said table surface abutting the brake shoe web surface over a predetermined distance and contacting said brake shoe table with a first electrode and said brake shoe web with a second electrode, wherein the improvement comprises:

compressing said brake shoe table into contact with said brake shoe web and simultaneously moving said first electrode into contact with said brake shoe table; and

completing a positive electrical connection between said second electrode and said brake shoe web in response to the movement of said first electrode into contact with said brake shoe table.

4,323,754

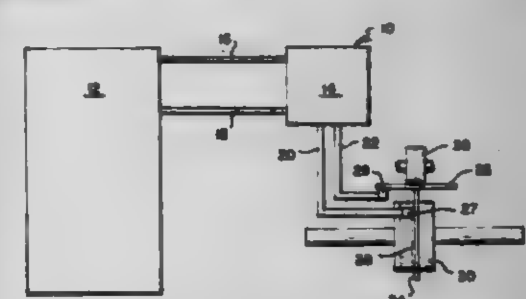
WELDING AUTOMOTIVE BRAKE SHOES BY HIGH FREQUENCY RESISTANCE WELDING

Lawrence A. Boros, Ashtabula, Ohio, assignor to Rockwell International Corporation, Pittsburgh, Pa.

Filed Aug. 28, 1980, Ser. No. 182,049

Int. Cl.³ B23K *11/32*

U.S. Cl. 219—107 8 Claims



1. A method of welding an edge surface of a curved metal brake shoe web to a metal brake shoe table surface having a greater radius of curvature than said brake shoe web edge comprising:

positioning said brake shoe table in longitudinal alignment with said brake shoe web with one end portion of said table surface abutting said brake shoe web surface over a predetermined distance and with said table surface diverging away from said brake shoe web edge surface and forming a vertex where said surfaces abut,

pressing said abutting surface together at said vertex,

contacting said diverging surface of said brake shoe table with an electrode spaced from said vertex,

contacting said brake shoe web with an electrode,

providing a high frequency alternating potential to said electrodes contacting said table and said web to induce current to flow therebetween and thereby heat the interfacing surfaces in the area of said vertex,

rotating said brake shoe table and said brake shoe web together along a curvelinear path while maintaining said

pressure and said high frequency heating current to melt said interfacing surfaces together, said rotation starting a predetermined time after said current is induced to flow between said table and said web,

stopping said rotation before said electrode contacting said table traverses the other side of said diverging table surface; and

reducing said alternating potential and thereby allowing said high frequency current to dissipate.

4,323,755

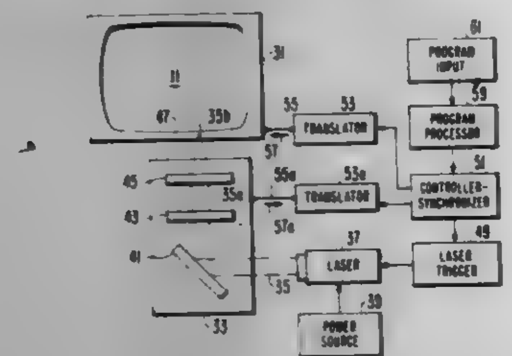
METHOD OF MAKING A MACHINE-READABLE MARKING IN A WORKPIECE

Morton J. Nierenberg, Lancaster, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Sep. 24, 1979, Ser. No. 77,915

Int. Cl.³ B23K *26/08;* G01D *15/14*

U.S. Cl. 219—121 LJ 4 Claims



1. A method for producing a machine-readable coded marking in a surface of a workpiece comprising:

(1) targetting a series of contiguous, substantially parallel strip-like areas of unit widths on said surface,

(2) and vaporizing simultaneously all of the surface portions of each of selected ones of said areas with radiant energy according to a prearranged program related to said marking, some of said selected areas being contiguous.

4,323,756

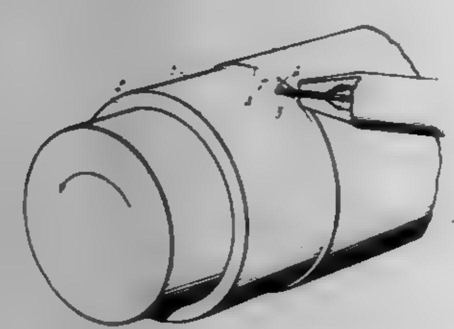
METHOD FOR FABRICATING ARTICLES BY SEQUENTIAL LAYER DEPOSITION

Clyde O. Brown, Newington; Edward M. Breinan, Glastonbury, and Bernard H. Kear, Madison, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Oct. 29, 1979, Ser. No. 88,808

Int. Cl.³ B23K *27/00*

U.S. Cl. 219—121 LF 11 Claims



1. A method for producing metallic articles including the steps of:

a. providing a starting substrate;

b. providing a focused energy beam having sufficient energy to melt the substrate and directing this beam so that it strikes the substrate, thereby establishing an interaction zone;

c. providing relative motion between the energy beam and the substrate so as to control the interaction between the energy beam and the substrate so that surface melting of the substrate occurs without significant surface vaporization;

d. introducing feedstock into the interaction zone in such a fashion that it combines with the surface melted region on the substrate and melts completely, with the volume of feedstock added being less than the volume of melted substrate material and with the melted zone solidifying rapidly after it leaves the interaction zone; and

e. repeating steps (a) through (d) (with the substrate being the original substrate plus the added solidified feedstock material) to build up the desired article whereby each portion of the applied feedstock is melted more than once during the process.

4,323,757

METHOD FOR CUTTING SPECIFIC LAYER OF SYNTHETIC RESIN LAMINATED FILM

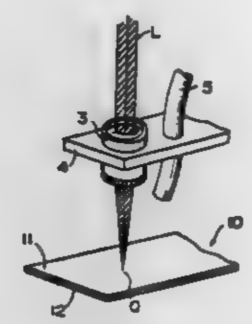
Yoshitake Oka, Kyoto; Tetsuo Ishihara, Itami; Masane Suzuki, and Motonori Kanaya, both of Ohmiya, all of Japan, assignors to Daicel Chemical Industries, Ltd., Osaka, Japan

Filed Jul. 31, 1980, Ser. No. 174,065

Claims priority, application Japan, Aug. 3, 1979, 54/99315

Int. Cl.³ B23K *27/00*

U.S. Cl. 219—121 LN 14 Claims



1. A cutting method, which comprises the steps of:

providing a laminated film comprising at least two layers made of synthetic resin, wherein one of said layers is strippable from the other layer and contains coloring matter so that its spectral absorption characteristic is different from the spectral absorption characteristic of the other layer;

focusing a laser beam on said one, strippable layer, said laser beam having a wave length such that it is absorbed by said one, strippable layer and is transmitted through said other layer;

effecting relative movement between said laminated film and said laser beam along a predetermined path, while maintaining said laser beam focused on said one, strippable layer, so that said one layer is cut along a line whereby to form a cut pattern in said one layer, without cutting the other layer.

4,323,758

UNIVERSAL CONTROL STRUCTURE FOR WELDING DEVICES OF AN AUTOMATIC WELDING MACHINE

Franz Vokurka, Vienna, Austria, assignor to IGM-Industriegeräte und Maschinenfabriks-Gesellschaft mbH, Wiener Neudorf, Austria

Filed Dec. 14, 1979, Ser. No. 103,795

Claims priority, application Austria, Dec. 18, 1978, 9026/78

Int. Cl.³ B23K *9/28*

U.S. Cl. 219—125.1 5 Claims

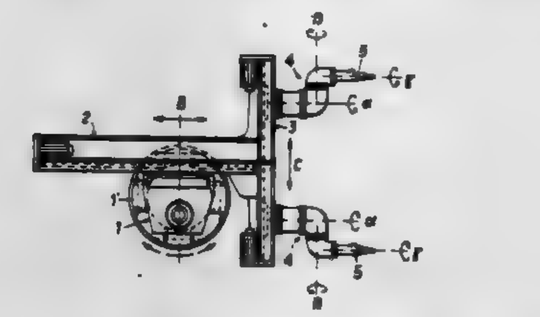
1. An automatic welding machine, comprising

a longitudinal column defining an axis A,

an elongated carrier defining a longitudinal axis B being displaceably mounted on said column in directions along said axis A and B, respectively,

a beam defining a longitudinal axis C perpendicular to said axes A and B rigidly connected to an end of said carrier, said beam by means of said carrier being movably supported by said column, said carrier is displaceably guided on said column both in the direction of the longitudinal axis B of said carrier as well as in the direction of axis A (perpendicularly to the axis B) such that said beam is displaceable both in a direction axis B (perpendicular to its longitudinal axis C) as well as in a direction axis A (perpendicular to its longitudinal axis C),

at least two holder means holding welders, respectively, said



holder means are independently displaceably, mounted on said beam along said axis C,

a plurality of articulation means on each of said holder means for swinging, deflection and rotation thereof about axes α, β and γ, respectively, thereof,

a plurality of drive means coordinated to said holder means and respectively to said welders held on said holder means, respectively, for welding seams non-symmetrically, parallel or symmetrically to each other, for displacing said at least two holder means independently and dependently, respectively, on said beam and for moving said articulation means on said holder means for the swinging, deflection and rotation of the articulation means and said welders held on said holder means respectively.

4,323,759

ELECTRICAL INTER-CONNECTION METHOD

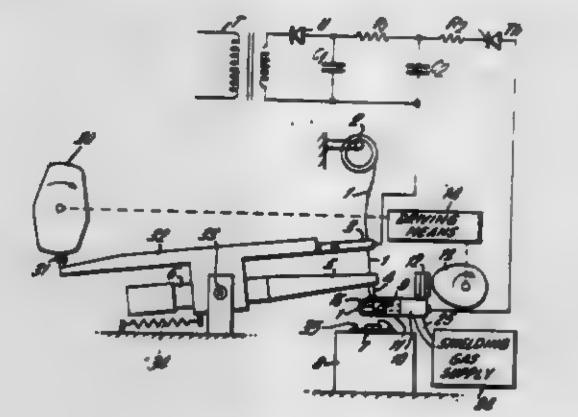
Donald A. Edson; Keith I. Johnson, and Michael H. Scott, all of Cambridge, England, assignors to The Welding Institute, Abington, England

Division of Ser. No. 925,458, Jul. 17, 1978, abandoned. This application Feb. 21, 1980, Ser. No. 123,492

Claims priority, application United Kingdom, Jul. 26, 1977, 31346/77

Int. Cl.³ B23K *11/22, 31/00*

U.S. Cl. 219—137 PS 1 Claim



1. A method of forming a ball on a wire of aluminium or aluminium alloy by spark discharge to permit ball bonding of the wire to a component or terminal, comprising the step of forming the spark discharge by applying a voltage between 350v and 10,000v across a gap between an electrode and the wire in a shielding atmosphere, the circuit resistance being such that the peak current density in the wire section is from $1.2\times10^9 A/m^2$ to $13.5\times10^9 A/m^2$.

4,323,760

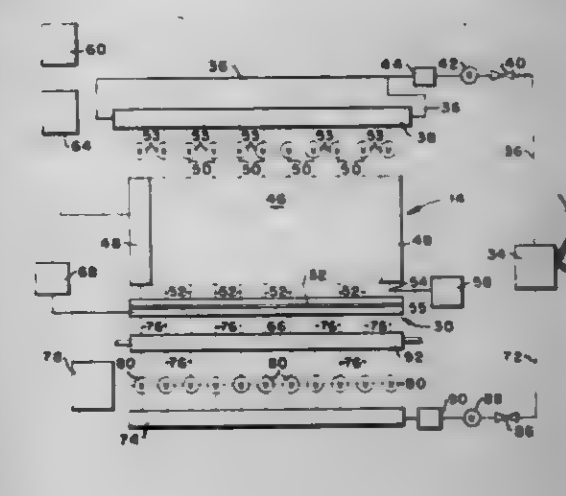
METHOD AND APPARATUS FOR TEMPERATURE CONTROL OF HEATED FLUID IN A FLUID HANDLING SYSTEM

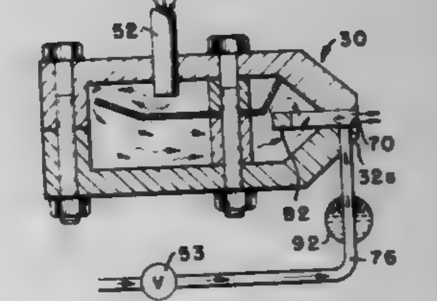
John M. Greenway, and Don M. Bylund, both of Spartanburg, S.C., assignors to Milliken Research Corporation, Spartanburg, S.C.

Filed Dec. 13, 1979, Ser. No. 103,255

Int. Cl.³ H05B *1/00;* D06C *29/00, 23/00*

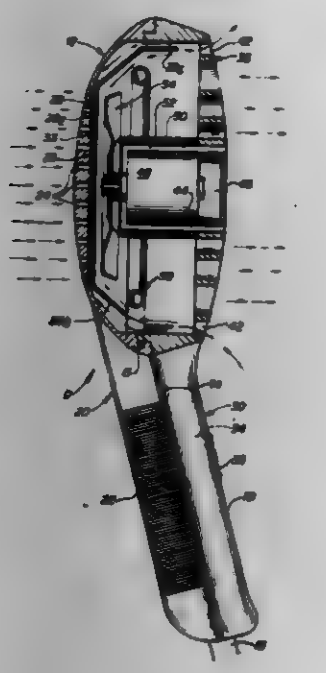
U.S. Cl. 219—364 8 Claims

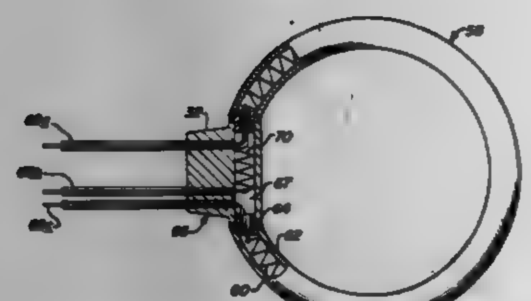




1. Apparatus for directing at least one stream of pressurized, heated fluid in a desired direction while maintaining generally uniform temperature in the heated fluid stream, comprising a manifold defining an elongate compartment for receiving pressurized heated fluid and including outlet means for directing heated fluid outwardly therefrom in at least one stream disposed along the length of the manifold compartment; a plurality of fluid inlet conduits respectively communicating with said manifold compartment at generally uniformly spaced locations along the length thereof; an individual heater associated with each of said fluid inlet conduits to heat fluid passing therethrough; means for supplying energy generally uniformly to each heater to heat the same; temperature determining means associated with each of said inlet conduits for determining the temperature of the heated fluid adjacent the location of communication of each of said inlet conduits with said compartment; and valve means in each inlet conduit for incrementally adjusting the flow of fluid through each inlet conduit and its associated heater to thereby regulate the temperature of the fluid in said spaced locations along said manifold compartment and establish a uniform temperature of the fluid along the length of the compartment as determined by said temperature determining means.

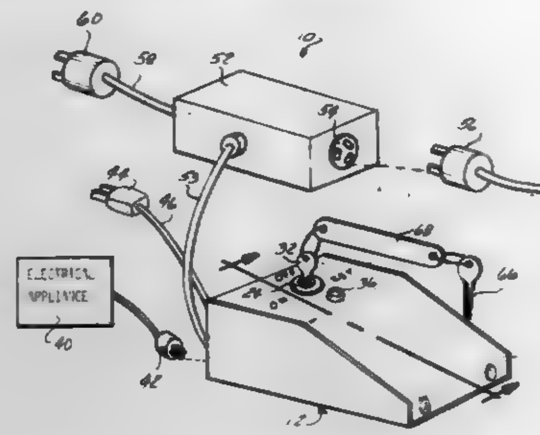
4,323,761
RADIANT HEAT HAIR DRYER
Otto Hubner, Mauerkircher Strasse 199, Herzog Park, Munich (8000 Munchen 81), Fed. Rep. of Germany
Filed Nov. 26, 1979, Ser. No. 97,404
Int. Cl.³ H05B *3/40*; A45D *20/10*
U.S. Cl. 219—377 8 Claims





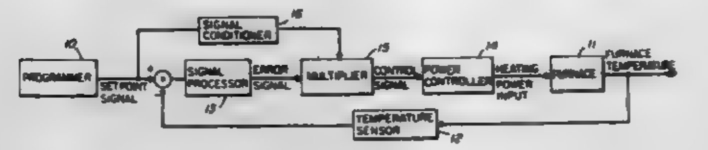
1. In a hand held hair dryer having means for directing air flow toward hair to be dried, the improvement comprising, in combination:
a casing having a forward grille-like support member adapted to be faced toward the hair to be dried;
an infra-red, ring-shaped, radiator in said casing spaced rearwardly of the grille-like member;
a motor carried on the grille-like member and extending rearwardly thereof centrally of said ring-shaped radiator;
shield means between the ring-shaped radiator and the motor for protecting the motor from the infra-red radiation;
radiation reflector means, including a portion spaced rearwardly of the ring-shaped radiator for directing reflected radiation toward and through the grille-like member;
a flat air propeller operatively associated with and driven by the motor and located spaced axially formed of the rearward portion of the reflector and rearward of the ring-shaped radiator, the propeller being operative to direct only a gentle flow of air through said grille toward the hair to be dried, to avoid destruction and disarray of the hairdo, but to move the top layers of hair sufficiently to permit radiation drying of the hair mass; and
means for introducing cooling air into the casing to cool portions of the casing and the motor.

4,323,762
ENERGY-TEMPERATURE OCCUPANT MONITOR APPARATUS
Ron E. Ervin, P.O. Box 117, Mt. Pleasant, Mich. 48858, and Noble Belcher, 806 N. Webster, Saginaw, Mich. 48602
Filed May 7, 1980, Ser. No. 147,477
Int. Cl.³ H05B *1/02*
U.S. Cl. 219—482 6 Claims



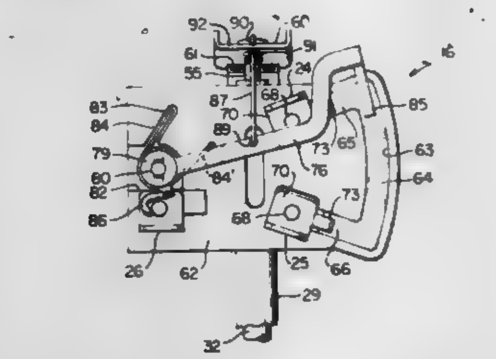
1. Apparatus selectively connecting an electrically powered device and a heating and cooling means located within a predetermined area having means for controlling access thereto to a source of electrical energy comprising:
an electrical switch means disposed within said predetermined area and switchable between first and second positions and connectable between said electrically powered device and said heating and cooling means and said source of electrical energy for selectively connecting and disconnecting said electrically powered device and said heating and cooling means to said source of electrical energy;
actuating means for switching said electrical switch means between a first position disconnecting said electrically powered device from said source of electrical energy and a second position connecting said electrically powered device to said source of electrical energy;
said actuating means being lockably engaged with said electrical switch means when said electrical switch means is in said second position thereby preventing the disengagement of said actuating means from said electrical switch means;
said actuating means secured to and carried by said access controlling means such that said electrical switch means must be switched to the first position in which said electrically powered device is disconnected from said source of electrical energy before said access controlling means can be removed from said predetermined area;
means for automatically maintaining the temperature of said predetermined area above a predetermined minimum temperature when said electrical switch means is disposed in the first position, said temperature maintaining means including a temperature responsive element connected so as to energize said heating and cooling means when the temperature of said predetermined area is below the predetermined minimum temperature; and
means, responsive to the temperature of said predetermined area, for automatically maintaining the temperature of said predetermined area within a predetermined temperature range when said electrical switch means is in said second position, said temperature responsive means including first and second temperature sensing means adapted to switch to a closed state at a preset first lower temperature and a preset second higher temperature, respectively, said first and second temperatures defining the predetermined temperature range, said first and second temperature sensing means being connected so as to disconnect said heating and cooling means from the source of electrical energy when the temperature of said predetermined area is outside of the predetermined temperature range.

4,323,763
PARAMETRIC POWER CONTROLLER
Jeff M. Goldsmith, Medford, Mass., assignor to GCA Corporation, Bedford, Mass.
Filed May 14, 1979, Ser. No. 38,646
Int. Cl.³ H05B *1/02*
U.S. Cl. 219—497 8 Claims



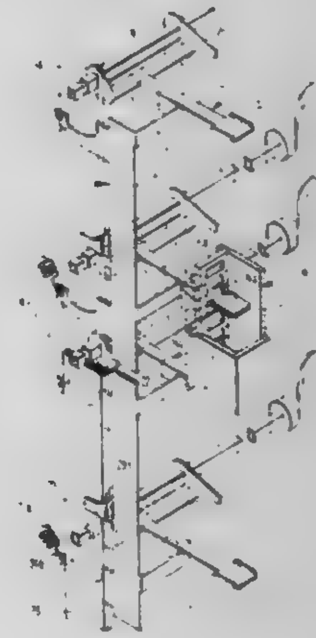
1. A furnace temperature controller comprising:
a programmer providing a set point signal representing a desired temperature;
temperature sensing means responsive to the furnace temperature for providing a feedback signal representing said furnace temperature;
power controller means for varying the heating power applied to the furnace as a function of a control signal applied to said power controller means;
means responsive to said set point signal and said feedback signal for generating an error signal which varies as a function of the difference between the furnace temperature and the desired temperature but which has a predetermined maximum value equal to the level of control signal corresponding to the maximum power available from said power controller means; and
a multiplier responsive to said set point signal and said error signal for providing to said power controller means a control signal having a range which varies as a function of said set point signal thereby to limit the heating power which can be applied to said furnace.

4,323,764
CONTROL SYSTEM AND CONTROL DEVICE FOR CONTROLLING A HEATING UNIT AND METHOD OF MAKING AND OPERATING THE SAME
James R. Willson; William H. Conway, and William N. Smith, all of Midlothian, Va., assignors to Robertshaw Controls Company, Richmond, Va.
Filed Jul. 21, 1980, Ser. No. 170,716
Int. Cl.³ H05B *1/02*
U.S. Cl. 219—497 2 Claims



1. In a control system for a heating means that has control means for comparing a variable electrical signal that has a value in relation to the output temperature of said heating means and a selected electrical signal that has a value in relation to a selected temperature setting to control the operation of said heating means to tend to produce an output temperature substantially equal to said selected temperature, the improvement wherein said control means comprises a control device having a rod and tube temperature sensing unit for providing linear motion of a part thereof in relation to the output temperature of said heating means and having a potentiometer provided with an electrical output producing means operatively interconnected to said part of said unit so as to produce said variable electrical signal in relation to the output temperature of said heating means, and means for terminating the operation of said heating means when the output temperature of said heating means exceeds a predetermined temperature, said means for terminating the operation of said heating means being operatively interconnected to said part of said control device, said means for terminating the operation of said heating means comprising an electrical switch carried by said control device and having a movable switching member, said unit comprising a tube means and a rod means, said rod means comprising said part of said unit and abutting said switching member to control movement thereof, a lever means pivotally mounted to said device and being operatively interconnected to said output producing means of said potentiometer to control the same in relation to movement of said lever means, and a movable plunger carried by said device and having opposed ends respectively abutting said switching member and said lever to translate movement of said switching member to said lever means and, thus, said linear motion of said rod means to said output producing means of said potentiometer.

4,323,765
VERTICAL REVERSIBLE LIFTER PIECE
Ransom F. Shoup, II, Quakertown, Pa., assignor to Ransom F. Shoup & Co., Inc., Bryn Mawr, Pa.
Filed Mar. 2, 1981, Ser. No. 239,465
Int. Cl.³ G07C *13/00*
U.S. Cl. 235—55 A 4 Claims



1. In a voting machine of the type which includes vertical columns of voting spindles, at least one interlock, each interlock having roller members retained in a channel of said interlock, a cam assembly on each spindle, each of said spindles connected to a pull strap for engaging said interlock, each of said pull straps having a wedge portion on one end, said wedge portion disposed between two of said roller members of said interlock, and shims selectively positioned in the channel of said interlock so that only a prescribed number of said wedge portions of said pull straps can be pulled between said roller members of said interlock, whereby only said preselected number of said pull straps can be activated into voting position, the improvement comprising:
A reversible lifter piece having a spine portion vertically disposed on said interlock, said lifter piece having a plurality of main guides, each of said main guides having a recessed portion contoured in a predetermined shape to accommodate movement of said spindle during voting,

and a plurality of fingers extending at about a 90° angle from said spine portion of said lifter piece, each of said fingers supporting pull straps at spaced intervals along each column assembly.

4,323,766

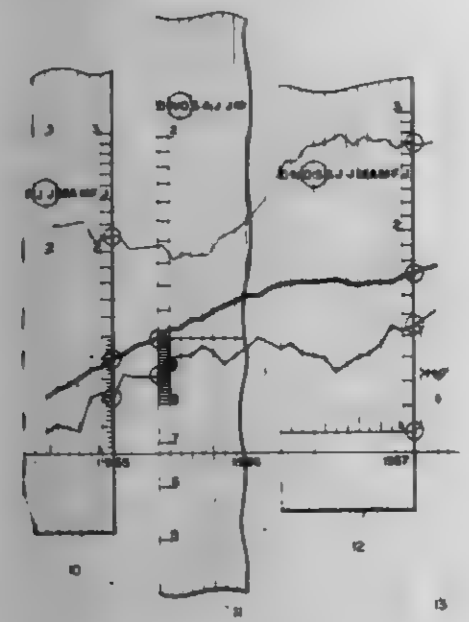
DIAGRAM ANALYZING DEVICE WITH TABLE OF EVENTS FOR COMBINED INTERPRETATION OF PLURAL CURVES

Norbert Brachthäuser, Rennbahnstrasse 38, 6000 Frankfurt am Main 71, Fed. Rep. of Germany

Filed Sep. 17, 1979, Ser. No. 75,950

Int. Cl.³ G06C *3/00*

U.S. Cl. 235—89 R 16 Claims



1. A diagram analyzing device for use in assisting in visual understanding of curves plotted as a function of time according to a standard logarithmic scale, said device comprising a rectangular calculating ruler which is fabricated from a transparent material and which can be freely moved within the plane of the curves to reading positions relative to the curves to be evaluated, said ruler including, located at one of the two longitudinal sides thereof, at least one standard logarithmic scale and located transverse to said logarithmic scale at least one linear time scale corresponding to the time units used in the curves and providing time subdivisions disposed in parallel to the elongate sides of the calculating ruler.

4,323,767

REPEATEDLY OPERABLE TIMER

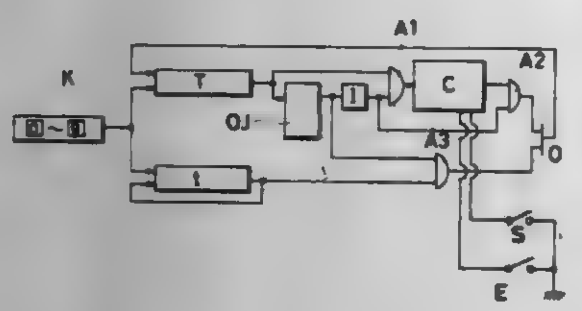
Kunio Yoshida, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed May 17, 1978, Ser. No. 906,787

Claims priority, application Japan, May 20, 1977, 52-59219

Int. Cl.³ H03K *27/00*

U.S. Cl. 235—92 SH 2 Claims



1. A continuously repeatable timer having a desired repeat time comprising:

circulating loop means including a first storage register, said circulating loop means decrementing an initial count stored in said first storage register corresponding to the desired repeat time and producing an output signal representative thereof;

a second storage register containing information indicative of said desired repeat time;

input means for preselectably introducing said desired repeat time into said first and second storage registers;

a zero detector means for monitoring the output signal produced by said circulating loop means and producing a zero signal each time the output signal produced by said circulation loop means is zero; and

means for repeatably placing the contents of said second storage register into said first storage register upon the receipt of each zero signal;

said circulating loop means further including;

subtractor means for decrementing the count in said first storage register, and

inhibit means for momentarily stopping the operation of said subtractor means when the zero signal is generated by said zero detector means.

4,323,768

APPARATUS FOR COUNTING SHEETS AND DISCRIMINATING DIFFERENT KINDS THEREOF

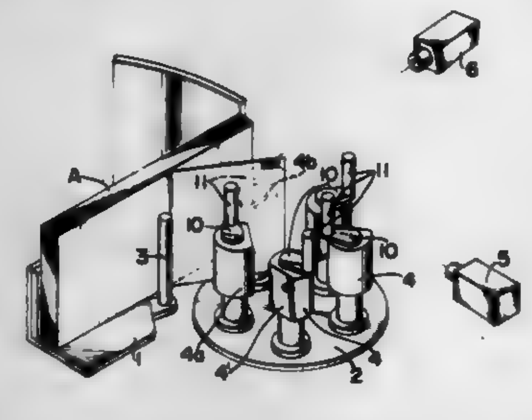
Shinya Uchida, Tokyo, Japan, assignor to Laurel Bank Machine Co., Ltd., Tokyo, Japan

Filed Nov. 7, 1979, Ser. No. 91,886

Claims priority, application Japan, Dec. 22, 1978, 53-159637

Int. Cl.³ B65H *3/12*

U.S. Cl. 235—92 SB 6 Claims



1. In an apparatus for counting bendable sheets and discriminating different kinds thereof including a holder for holding a stack of bendable sheets in a vertical direction, a plurality of rotary suction heads for suckingly attracting the sheets to deflect them one at a time away from the stack thereby to count the number of the sheets, and means for discriminating different kinds of sheets by optically detecting the height of the sheet deflected away from the sack, the improvement comprising: supporting members mounted at the tops of said plurality of suction heads for supporting the sheet, which has been deflected away from said stack of sheets, in an upright state by making engagement with the opposite surfaces of the sheet, each of said supporting members being a vertical rod extending upwardly from a position which is outward of the periphery of said suction head.

4,323,769

SELF-ALIGNING SCALING LOAD CELL

Johannes Sorteberg, 80 Delafield Island Rd., Darien, Conn. 06820

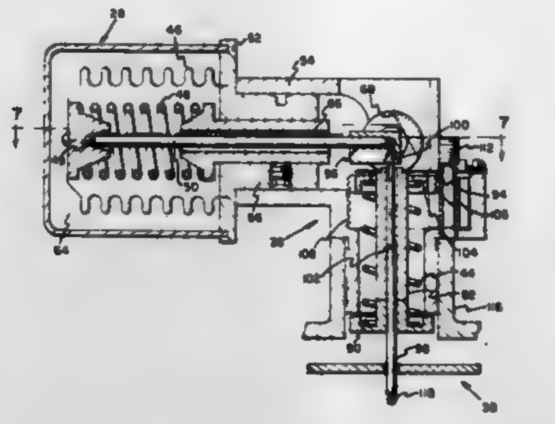
Filed Jun. 26, 1980, Ser. No. 163,226

Int. Cl.³ G06G *5/00*

U.S. Cl. 235—200 WB 18 Claims

1. In a scaling load cell comprising a pair of push rods acting on a carriage riding on a plane substantially perpendicular to the plane defined by said rods, said carriage having an axle,

said perpendicular plane angularly adjustable about an axis substantially perpendicular to the plane of said rods and intersecting said carriage whereby forces applied to one of said



push rods produce forces on the other push rod at a ratio adjustable by adjusting said adjustable plane; the improvement comprising said push rods being in physical contact with and applying said forces directly to said axle.

4,323,770

UNIT PARTICULARLY FOR TAKING STAKES AND POSSIBLY DETERMINING THE WINNERS IN A GAME SUCH AS A NATIONAL LOTTO GAME

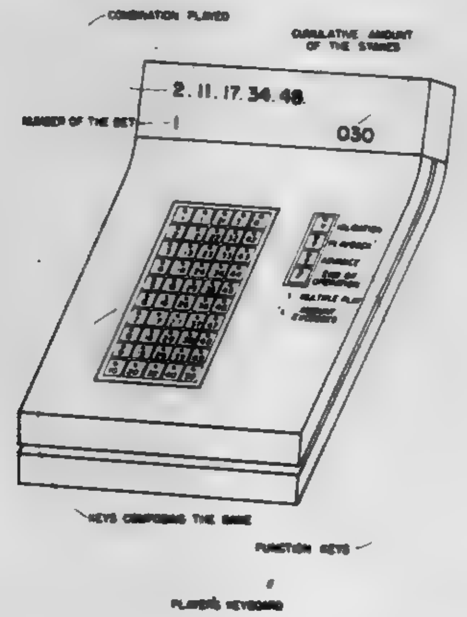
Gerard Dieulot; Mathias Juan, both of Paris, and Michel Fardeau, Les Milles, all of France, assignors to Societe d'Etude de Systems Avances et d'Amenagements, Neuilly-sur-Seine, France

Filed Jul. 16, 1979, Ser. No. 57,887

Claims priority, application France, Aug. 16, 1978, 78 23934

Int. Cl.³ G06F *15/20, 15/44;* G06K *3/12*

U.S. Cl. 235—375 8 Claims



1. An integrated assembly for taking and processing stakes particularly for the game of Lotto, this assembly comprising a micro-processor to which are connected:

(a) at least one keyboard for the players, which comprises a series of number keys on which the player can generate his forecast and on each of which is associated an indicator light which lights up when the key is activated once and goes out when the key is activated twice, and function keys comprising at least a bet validation key which controls the display of bets entered by the player and the cumulative amount of the stakes on a display unit, said cumulative amount being reported in such a way as to be read by an operator, a key to permit the retroactive display of the preceding bets on the said display unit, a key controlling the successive redisplay of the bets, and an end-of-play key to block the keyboard while waiting for payment;

(b) one keyboard for the cashier which comprises at least for each keyboard of the players, a validation key allowing to clear said player keyboard, after payment and to control the printing of a receipt ticket;

(c) an information recording unit proper to the play furnished by the said keyboards along with identification and checking information, this unit being controlled by the validation key of the cashier's keyboard;

(d) a printer to deliver the receipt ticket which forms the proof for payment of the possible winnings of the bettor and which reproduces the whole of the information acquired from the information recorded by the recording unit; and

(e) operations carried out for each of the keyboards by the micro-processor are the following:

(a) scanning of the keyboard and detection of the release of a key;

(b) determination of the code of the key considered;

(c) cancelling of the key when it is again actuated;

(d) processing of the numbers which comprises
buffer stacking of the numbers;
the checking of the number of the numbers per wager;
multiple wager information (for example by winking of the indicator lights);
checking the number of wages;
return to keyboard scanning;

(e) processing of the function keys which comprises:
validation which is only effected if the number of the numbers chosen is compatible with the rules of the game;
checking of the total amount to be paid;
display of the wager on a display unit;
resetting of the indicator lights of the keyboard
return to scanning the keyboard;

(f) display on request by pressing a key indicating an upward pointing arrow of the preceding play and scanning of the keyboard;

(g) display of the following bets by pressing a key indicating a downward pointing arrow this control being effected only after a control effectuated on the upward pointing arrow until the last wager, except if the amount is greater than the upper limit of the wagers, this operation being followed by return to scanning the keyboard;

(h) the end of the play order which is given if at least one bet is displayed on the display unit and which blocks the keyboard while waiting for payment and validation of the play by the cashier, which allows:

(i) the taking of bets by transfer of the list of bets, this operation comprising:
the order for printing from the recording unit with checking coders,
rereading of this tape,
the order for printing the receipt ticket,
resetting of all the displays,
return to scanning the keyboard.

4,323,771

AUTOMATED TIME AND ATTENDANCE SYSTEM

Oliver H. Chalker, Jr., 43 Meadowood La., Old Saybrook, Conn. 06475, and Robert J. Spooner, 65 Main St., Essex, Conn. 06426

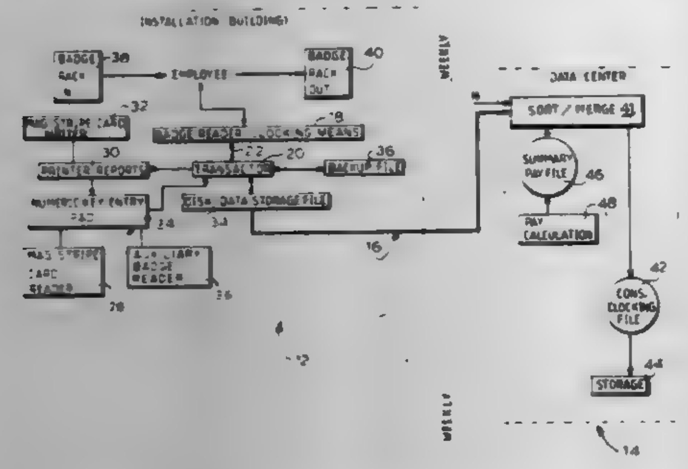
Filed Sep. 10, 1979, Ser. No. 74,134

Int. Cl.³ G06K *1/00*

U.S. Cl. 235—377 18 Claims

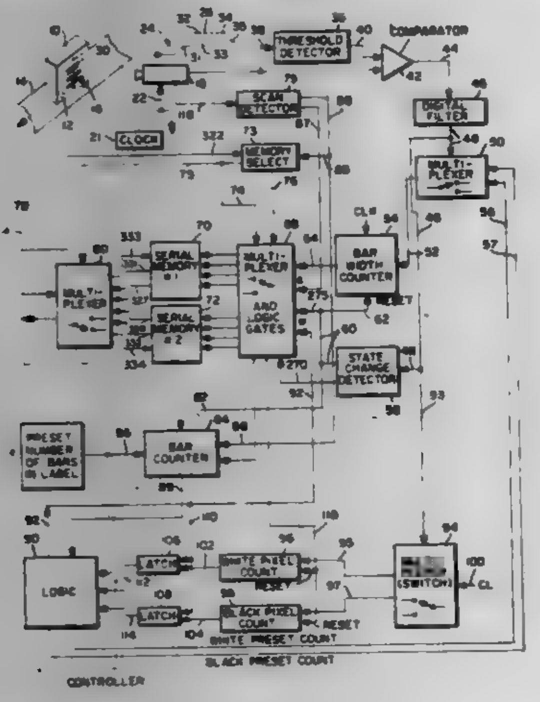
1. An employee time and attendance system having a central processor and a plurality of subsystems each capable of generating data in a form utilizable by the central processor, wherein at least one subsystem comprises: an identification means for each of a plurality of employees which includes identifying employee data particular for each employee; a transactor; a clocking means connected to said transactor and capable of providing clocking-in and clocking-out of employees and a

corresponding clocking data output; said clocking means is adapted to receive said identification means and convey the employee data along with the clocking data to the transactor; a data storage means connected to the transactor and capable



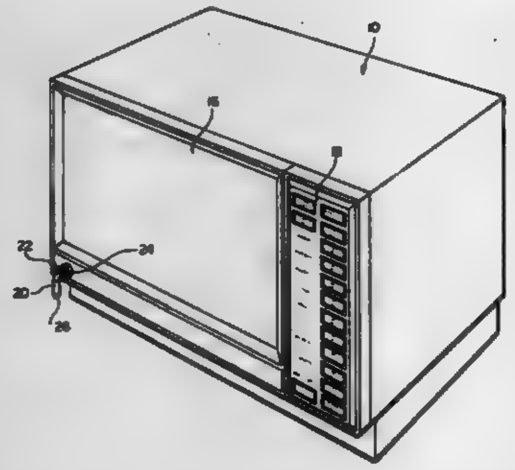
of storing clocking and employee data for a plurality of employees; and an input means connected to the transactor capable of supplying data thereto, adjusting data received by the transactor and recalling data from the data storage means.

4,323,772
BAR CODE READER SYSTEM
Richard F. Serge, Lewisville, N.C., assignor to R. J. Reynolds Tobacco Company, Winston Salem, N.C.
Filed Mar. 6, 1980, Ser. No. 127,674
Int. Cl.³ G06K *7/10*
U.S. Cl. 235—463 36 Claims



1. An optical reader system for bar codes having narrow and wide code bars of first and second contrasting optical characteristics, said system comprising:
Scanner means for optically scanning a bar code and for producing an analog signal corresponding to the bar code image;
said scanner means including a plurality of picture elements each responsive to that portion of the image of said bar code which impinges thereon to produce a corresponding pixel output signal, and means for sequentially scanning said pixel output signals to produce said analog signal; dynamic threshold detector means responsive to the amplitude of said analog signal to produce a D. C. threshold signal equal to the average value of said analog signal; comparator means responsive to said D. C. threshold signal and to said analog signal for converting said analog signal to a corresponding binary signal;
digital filter means for eliminating selected narrow-width binary signals caused by aberrations in said analog signal to produce a filtered binary signal;
means responsive to changes in the state of said filtered binary signal for producing a train of bar width signals, each bar width signal corresponding to, and providing a measure of, the width of a corresponding one of successive code bars, said train of bar width signals thereby providing an individual measure of the width of each bar of said bar code;
first logic means responsive to successive bar width signals for producing digital data signals corresponding to the code represented by said bar code;
digital memory means for serially receiving and storing said digital data signals; and
second logic means for selectively inhibiting and clearing said memory means, whereby data signals relating to only a single bar code at a time are entered in said memory means.

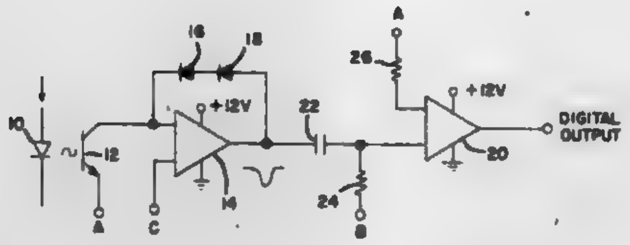
4,323,773
BAR CODE CONTROLLED MICROWAVE OVEN
Lowell L. Carpenter, New Hope, Minn., assignor to Litton Systems, Inc., Beverly Hills, Calif.
Filed Jan. 17, 1980, Ser. No. 112,997
Int. Cl.³ G06K *7/10;* H05B *6/64;* G06F *15/20*
U.S. Cl. 235—473 11 Claims



1. In a microwave oven including a magnetron power source and a control means for controlling said magnetron power source in response to input data manually entered by the oven user, the improvement comprising:
optical codes respectively associated with each of said input data, each code including a series of bars and spaces having distinguishable optical characteristics;
optical reading means, including a scanner movable adjacent said respective optical codes for reading same by determining the respective optically characteristic bars and spaces and providing a control signal representing said associated input data; and
means coupling and entering said control signal to said control means for controlling said magnetron power source in response to said optically read code.

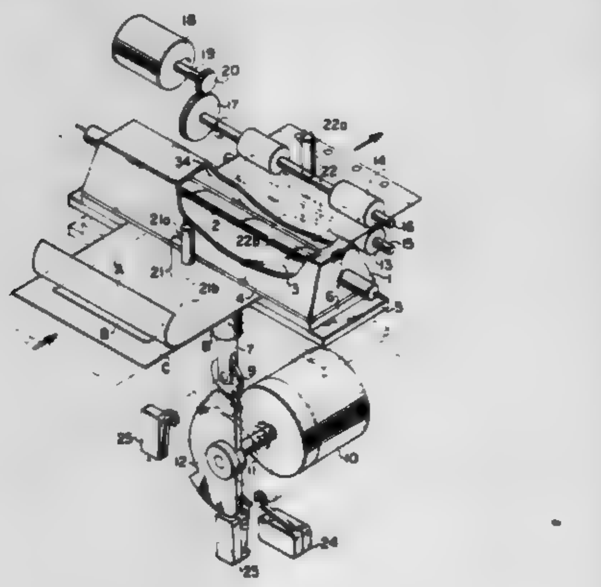
4,323,774
CIRCUIT FOR REFLECTIVE MODE OPTICAL READER
Arthur R. Kopp, Lewisberry, Pa., assignor to AMP Incorporated, Harrisburg, Pa.
Filed Jun. 2, 1980, Ser. No. 155,906
Int. Cl.³ H01J *40/14*
U.S. Cl. 250—214 A 6 Claims

1. In a reflective mode optical reader, an improved circuit for controlling a phototransistor in such manner as to be responsive to low reflected ligh levels, said circuit comprising:
a phototransister having its emitter connected to a bias voltage, an operational amplifier connected to the collector of said phototransister,



a pair of series connected diodes connected across said operational amplifier, and
bias voltage means applying bias voltage to said phototransister and said operational amplifier in such manner that said collector is biased one diode voltage drop more positive than said emitter so that collector to base voltage is zero and no leakage current present whereby the phototransistor is operational at current levels near ordinary leakage current levels.

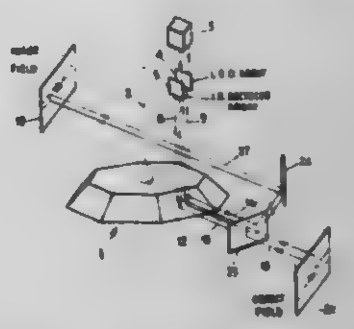
4,323,775
DIVIDED EXPOSURE METHOD AND DEVICE
Takanori Hasegawa, Hachioji; Takasobu Shimada, Machida; Takao Sato, Tokyo; Masakazu Kera, Yokohama; Shuntaro Yoshida, Tokyo, and Shinichi Shimoyama, Sendai, all of Japan, assignors to Riso Kagaku Corporation, Tokyo, Japan
Filed Jun. 12, 1980, Ser. No. 158,773
Claims priority, application Japan, Jul. 30, 1979, 54-97944
Int. Cl.³ G03C *5/16*
U.S. Cl. 250—317.1 10 Claims



1. A method for exposing a sheet assembly superposed one sheet over the other comprising the following steps:
subjecting a sheet of substantially transparent heat alterable substance and an original sheet with a totally integral image thereon to light radiation while under pressure, wherein successive portions of the sheet assembly which bear different parts of said image but slightly overlap one another are sequentially clamped between a pressure plate and a light transmitting plate, with the original sheet being closer to the pressure plate, and are irradiated with electromagnetic radiation through the light transmitting plate in the clamped condition.

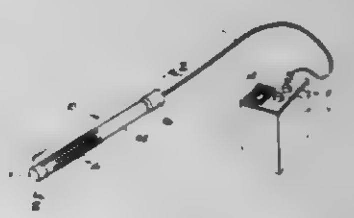
4,323,776
INFRARED PARALLEL SCANNING ARRANGEMENT
Clive A. Bridges, and Patrick J. O'Donnell, both of Berkshire, England, assignors to The Marconi Company Limited, Chelmsford, England
Filed Jul. 9, 1980, Ser. No. 166,802
Claims priority, application United Kingdom, Jul. 19, 1979, 25238/79
Int. Cl.³ H01J *31/49*
U.S. Cl. 250—332 10 Claims

1. An image translation device comprising:
(A) an object field and
(B) an image field,
(C) an array of electro-optical transducer elements,
(D) means for scanning said array of elements in parallel in a first direction across said object field repeatedly,
(E) means for periodically displacing the scan in a second direction transverse to said first direction by an amount which is at least subjectively random within limits,



(F) means responsive to the output of said transducer elements to display a corresponding image in said image field, and
(G) means responsive to the amount of the scan displacement to provide correlation between the elements of the object field and the elements of the image field.

4,323,777
HYDROCARBON GAS ANALYZER
Lowell L. Baskins, and Rodney M. Durham, both of Santa Barbara, Calif., assignors to Infrared Industries, Inc., Santa Barbara, Calif.
Filed May 19, 1980, Ser. No. 151,451
Int. Cl.³ G01N *21/26*
U.S. Cl. 250—339 11 Claims



1. Apparatus for determining the flammability index of hydrocarbon fuel vapors, comprising:
an infrared energy source for directing infrared energy therefrom along a predetermined path;
means for holding a sample of the fuel vapors in said path;
a filter located in the path to receive the infrared energy from said sample, said filter passing a range of infrared energy therethrough substantially corresponding to the absorption band of alkanes;
means responsive to the filtered infrared energy for generating a signal functionally related to the concentration of alkanes in the gas sample; and
temperature sensing means in thermal communicating relationship with the gas sample; and
means actuated by said temperature sensing means to compensate the signal for changes in gas sample temperature.

4,323,778

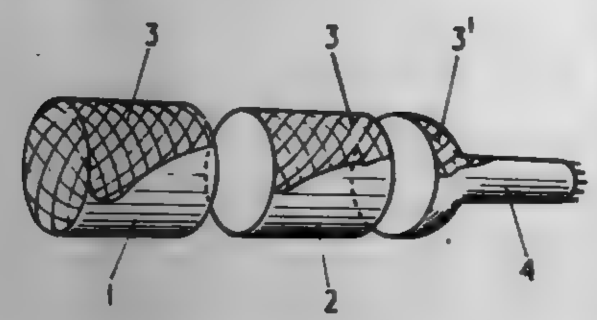
RADIATION DETECTORS SUPPORTED BY RESILIENT OPTICAL COUPLER

John S. Wykes, Allenton, and Ian Adsley, Branston, both of England, assignors to Coal Industry (Patents) Limited, London, England

Continuation-in-part of Ser. No. 911,247, May 31, 1978. This application Jun. 2, 1978, Ser. No. 911,868

Int. Cl.[2] G01T *1/20*

U.S. Cl. 250—367 6 Claims



1. A radiation sensor comprising at least two scintillation crystals, resilient support means for supporting the at least two crystals in a desired operational configuration and detector means for detecting scintillations caused in the crystals by radiation impinging thereon, said support means being transparent to electromagnetic radiation within a frequency range including that of the scintillations, the support means further allowing the crystals to mechanically vibrate independently of one another, and having cutouts adjacent to the scintillation crystals along a path followed by incident radiation into the sensor.

4,323,779

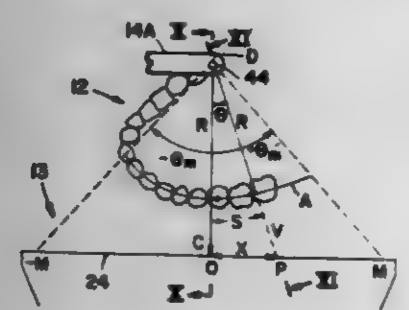
SCANNING RADIOGRAPHIC METHOD

Richard D. Albert, 317 Hartford Rd., Danville, Calif. 94526

Division of Ser. No. 803,077, Jun. 3, 1977, Pat. No. 4,196,351. This application Dec. 5, 1979, Ser. No. 100,422

Int. Cl.[3] H05G *1/26*

U.S. Cl. 250—401 6 Claims



1. A method for alleviating image distortion in a scanning X-ray system wherein an electron beam is scanned along a predetermined raster line on the target plate of an X-ray tube to produce a moving point source of X-rays and wherein the region of the subject which is to be imaged is situated between the target plate and an X-ray detector (having a radiation-sensitive area smaller than the area of said target plate is situated on the opposite side of a subject to be imaged,) comprising the step of varying the rate of scanning movement of said electron beam along said predetermined raster line in a programmed manner dependent on the position of a momentary point of impact of said electron beam on said target plate relative to the position of a fixed specific point on said predetermined raster line. (as a function of the distance of the point of impact of said electron beam on said target plate from the specific point on said predetermined raster line which is closest to said detector.)

4,323,780

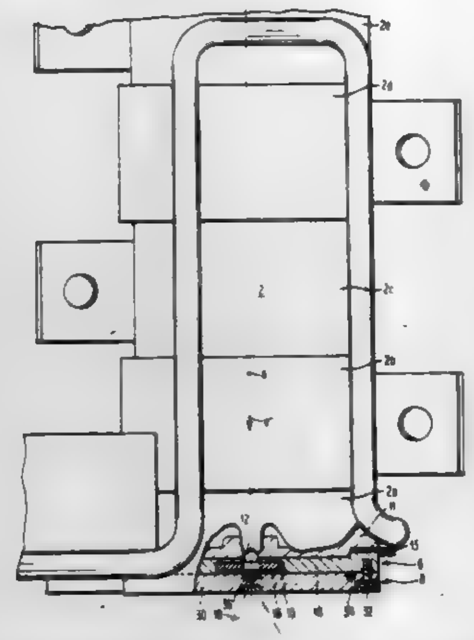
TARGET ASSEMBLY FOR A LINEAR ACCELERATOR

Dennis Tombaugh, Concord; Nick Martinsen, Pleasanton; Edgar B. Symmons, Walnut Creek, all of Calif., and Lothar Heinz, Neunkirchen, Fed. Rep. of Germany, assignors to Siemens Medical Laboratories, Inc., Walnut Creek, Calif.

Filed Jul. 21, 1980, Ser. No. 170,608

Int. Cl.[3] H05G *1/02;* H01J *35/08*

U.S. Cl. 250—419 14 Claims



1. A target assembly for a linear accelerator comprising, in combination:

(a) a metal plate having two end faces;

(b) a first recess in one of said end faces;

(c) a target for generating X-rays when hit by high-energy electrons, said target being arranged in said first recess such that said first recess is divided into two chambers; and

(d) a cooling channel in said metal plate for directing a cooling medium therethrough, said cooling channel passing through said two chambers thereby exposing said target directly to said cooling medium when said cooling medium is flowing through said cooling channel.

4,323,781

TOMOGRAPHIC X-RAY DIAGNOSTIC UNIT WITH THE SECONDARY OF THE HIGH VOLTAGE TRANSFORMER ROTATING WITH THE X-RAY SOURCE

Heinz Baumann; Werner Kuehnel, both of Uttenreuth, and Manfred Rattner, Buckenhof, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Nov. 16, 1979, Ser. No. 94,766

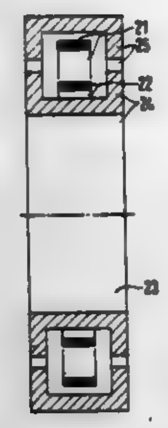
Claims priority, application Fed. Rep. of Germany, Dec. 21, 1978, 2855379

Int. Cl.[3] G21K *5/10*

U.S. Cl. 250—422 6 Claims

1. An X-ray diagnostic unit for producing layer images of a radiography subject, comprising a patient support, a rotatable scanning system for irradiating the radiography subject from various directions having an X-ray tube, which emits a beam of X-rays penetrating the layer to be examined and whose dimension perpendicular to the layer plane is equal to the layer thickness, a radiation receiver which supplies electrical output signals corresponding to the measured radiation intensity, an X-ray high voltage generator for supplying the X-ray tube and a processing unit connected to the radiation receiver for calculating the attenuation values of specific image points of the irradiated body layer from the output signals of the radiation receiver, characterized in that, an inductive coupling means (FIGS. 2, 5, 6, 7, 8) is provided for transmitting energy to the X-ray tube (7), having a secondary winding (22, 33, 41, 42, 43)

arranged in a fixed position relative to the X-ray tube (7) and rotating with the scanning system (7, 8) and having a primary winding (21, 32, 39) stationary in the unit, characterized in that



the primary winding (21, 32) and the secondary winding (22, 33) are constructed as concentric rings which enclose an opening (23) for receiving the radiography subject (1).

4,323,782

ABSORPTION RESOLUTION TESTING DEVICE

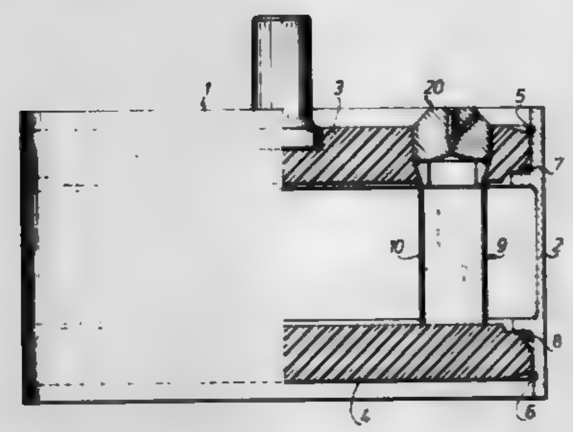
Esko Riihimaki, Espoo, and Seppo Savikurki, Helsinki, both of Finland, assignors to Hospital Physics Oy, Finland

Filed Feb. 29, 1980, Ser. No. 125,980

Claims priority, application Finland, Mar. 8, 1979, 790798

Int. Cl.[3] G02B *5/00;* A61B *6/00*

U.S. Cl. 250—252 10 Claims



1. An absorption resolution testing device for testing the spatial resolution and the absorption resolution of computer tomography devices, comprising a larger vessel, a first liquid within said larger vessel, and a plurality of smaller vessels disposed within said larger vessel and said first liquid, a second liquid inside the smaller vessels having absorption values which are different from the absorption values of the first liquid inside said larger vessel, wherein the first liquid is distilled water and the second liquid comprises sugar dissolved in water in an amount between 0.1 and 2.0 percent by weight, and wherein said smaller vessels are of a wall thickness and materials such that they are transparent in computer tomography pictures.

4,323,783

TOMOGRAPHIC APPARATUS FOR PRODUCING TRANSVERSE LAYER IMAGES

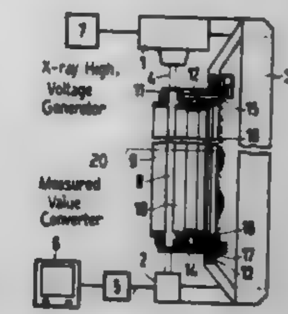
Walter Distler, and Erich Kintopp, both of Erlangen, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Apr. 17, 1980, Ser. No. 141,058

Claims priority, application Fed. Rep. of Germany, May 29, 1979, 2921820

Int. Cl.[3] A61B *6/00*

U.S. Cl. 250—445 T 3 Claims



1. Tomographic apparatus for producing transverse layer images of a radiography subject, comprising a radiation measuring arrangement which contains a radiation source which produces a beam of rays penetrating the radiography subject, the cross sectional extent of the beam perpendicular to the layer plane being equal to the layer thickness, as well as containing a radiation receiver which determines the radiation intensity behind the subject, a rotating device for the measuring arrangement for irradiating the radiography subject from different directions and a measured value converter for the transformation of the signal supplied by the radiation receiver into a layer image, and beam confining means between the radiation source and the radiation receiver comprising two hollow cylinders of radiation-absorbing material having the same diameters and a common axis, between which a radiation permeable gap for the passage of the x-ray beam is left open and into which the radiography subject can be inserted, characterized in that the two hollow cylinders (9, 10), for the adjustment of the gap width, are adjustably mounted for relative displacement in an axial direction.

4,323,784

DIAGNOSTIC RADIOLOGY APPARATUS FOR PRODUCING LAYER IMAGES

Bernhard Conrad, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Apr. 17, 1980, Ser. No. 141,059

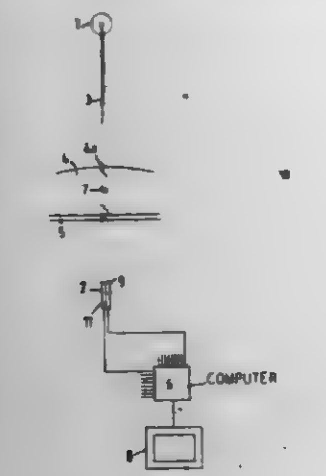
Claims priority, application Fed. Rep. of Germany, May 16, 1979, 2919810

Int. Cl.[3] A61B *6/00*

U.S. Cl. 250—445 T 1 Claim

1. Diagnostic radiology apparatus for producing layer images of a radiography subject with a patient support, having a measuring arrangement for irradiating the radiography subject from different directions, comprising a radiation source which emits a radiation beam which penetrates the layer to be examined, the dimensions of said radiation beam perpendicular to the layer plane being equal to the layer thickness, and a radiation receiver which supplies electrical output signals which correspond to the radiation intensity measured, and having a computer connected to the radiation receiver for calculating from the output signals of the radiation receiver the attenuation values of specific points of the irradiated body layer, said radiation receiver comprising correction detector and absorber means for the radiation disposed in series such that output signals are supplied defining the mean radiation energy of the radiation receiver, characterized in that said correction detector and absorber means comprises an absorber in the form of a luminescent layer (9c) and at least two correction detectors

(9a, 9b) arranged in series in the direction of radiation and separated from one another by the luminescent layer (9c), said luminescent layer converting the radiation received into light to which the correction detectors are sensitive characterized in that the correction detectors (9a, 9b) of said correction detec-



tor and absorber means (9) have respective correction detector outputs, and a summing circuit connected with said correction detector outputs and having an output channel for supplying a summation signal which is a function of the signals supplied by said correction detectors.

4,323,785

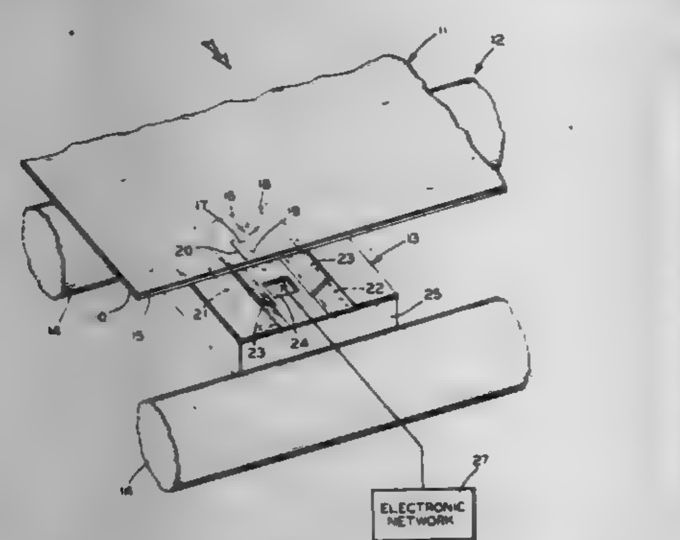
METHOD OF AND APPARATUS FOR OBSERVING SHEET SURFACES FOR TRACES OF FLUORESCENT MATERIALS THEREON

Walter D. McComb, Oregon, and Andrew W. Rudolph, Elmore, both of Ohio, assignors to Libbey-Owens-Ford Company, Toledo, Ohio

Filed May 16, 1980, Ser. No. 150,329

Int. Cl.³ G01N *21/64*

U.S. Cl. 250—461 R 17 Claims



1. A method of insuring that sheet articles having traces of fluorescent material deposited on one surface during their formation are oriented with said one surface in a prescribed direction as they advance along a conveyor, comprising the steps of

a. generating a signal in response to the arrival of each said sheet article at an inspection station along said conveyor;
b. utilizing said signal to initiate an inspection cycle including;
c. placing an ultraviolet light source in a delayed start mode;
d. checking a photocell positioned to receive fluorescent light from said sheet article for exposure to excess ambient light and activating an alarm in response to such excess light;
e. in the absence of excess ambient light, starting said ultraviolet source to expose the surface of said sheet article to ultraviolet light;
f. generating a signal from said photocell in response to fluorescent light from said surface, with no signal being generated in the absence of fluorescent light; and
g. utilizing the signal and lack of a signal from said photocell to differentiate between the two surfaces of said sheet article and activate an alarm to identify an improperly oriented sheet.

4,323,786

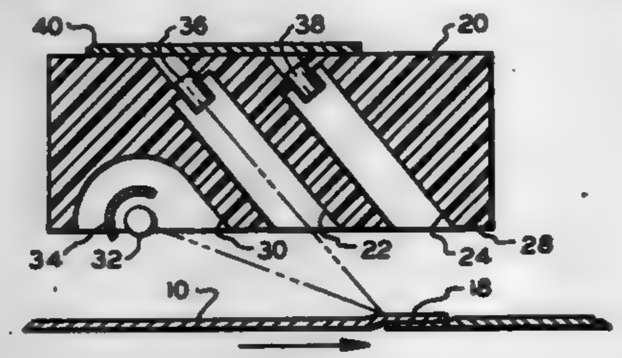
SEAM DETECTION AND CONTROL SYSTEM

David H. Snow, Jackson, Mich., assignor to Sparton Corporation, Jackson, Mich.

Filed Jul. 3, 1980, Ser. No. 165,541

Int. Cl.³ G01N *21/86*

U.S. Cl. 250—559 9 Claims



1. A seam detection and control system for fabric processing apparatus processing a strip of moving fabric having spaced seams comprising, in combination, a detector located adjacent the moving fabric strip, sensing means mounted upon said detector producing first and second electronic signals upon a seam passing said detector separated by a time duration proportional to the velocity of movement of the seam past the detector, first fabric processing means processing the fabric at a predetermined location behind said detector with respect to the direction of fabric movement and having first and second processing conditions, first actuating means associated with said first fabric processing means selectively shifting said processing means between said first and second conditions, a first electronic timer connected to said sensing means and producing a first control signal having characteristics determined by the time duration between said first and second signals indicating the velocity of movement of the fabric, and a second electronic timer controlling the operation of said first actuating means between said first and second conditions producing a second control signal determined by the distance between said detector and said first fabric processing means receiving and evaluating said first control signal and energizing said actuating means upon a seam arriving at said first fabric processing means as determined by a comparison of said first and second control signals.

4,323,787

AUTOMATIC POWER SUPPLY APPARATUS

Tadashi Sato; Toyoji Hara, and Tadashi Tomita, all of Toda, Japan, assignors to Clarion Co., Ltd., Tokyo, Japan

Filed Nov. 9, 1979, Ser. No. 92,891

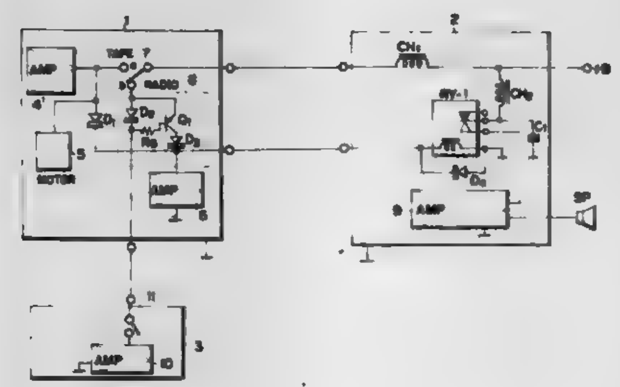
Claims priority, application Japan, Nov. 16, 1978, 53/156781[U]

Int. Cl.³ H02J *1/00*

U.S. Cl. 307—38 2 Claims

1. An automatic power supply apparatus for electrically connecting an electric power supply to a plurality of boxes including at least a cassette deck box; a tuner box and an audio box, which apparatus comprises:

an electric power supply line connected to an electric power supply;
a cassette responsive selector switch connected to said electric power supply line, said switch being located in said cassette deck box and being switched by loading of a cassette into said cassette deck box and by unloading of the cassette from such cassette deck box;
an automatic electric power supply circuit located within said cassette deck box, said circuit being connected to said cassette responsive switch and electrically energized thereby depending on the state of said cassette responsive switch;
a relay located within said audio amplifier box, said relay being connected to said automatic supply circuit to turn on said relay and thereby cause said relay to provide electric power from said power supply line to a circuit within said audio amplifier box in response to said cassette responsive switch being actuated to operate said automatic supply circuit; and
a manually operable switch located within said tuner box and connected between said automatic supply circuit and a circuit within said tuner box;
said automatic supply circuit including at least one transistor and a diode, said diode being coupled to said cassette responsive switch to turn on said transistor so as to provide said electric power to said relay and to a circuit within said cassette box when said cassette responsive switch is so actuated as to provide a forward voltage across the diode;



said cassette responsive switch being switchable between a tape operating terminal and a tuner operating terminal, said manually operable switch in said tuner box being connected in series with said tuner operating terminal of said cassette responsive switch through said diode, such that closure of said manually operable switch in said tuner box and switching of said cassette responsive switch to its tuner operating terminal are both required to turn on said transistor and thereby provided said electrical power to said relay and said circuit within said cassette deck box, the last-mentioned circuit being a control amplifier, a further diode connected between said tape operating terminal of said cassette responsive switch and a point at which said transistor applies said electric power to said control amplifier, said further diode being oriented to positively block electric current flow from said point back toward said tape operating terminal of said cassette responsive switch, said cassette deck box further including a tape pre-amp and cassette drive motor connected between said tape operating terminal of said cassette responsive switch and said further diode, such that said tape pre-amp and tape drive motor receive electric power only with said cassette responsive switch in its tape selecting position, and not from said transistor.

4,323,788

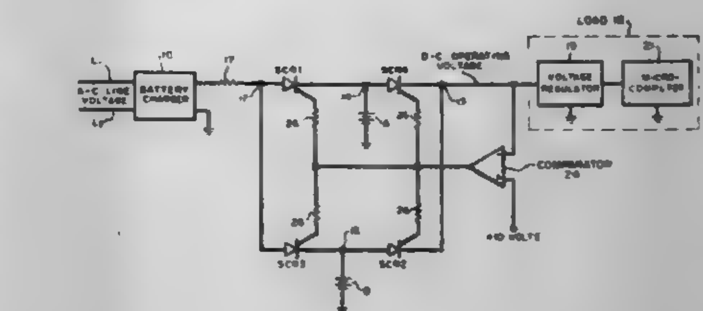
D-C POWER SUPPLY FOR PROVIDING NON-INTERRUPTIBLE D-C VOLTAGE

Edward M. Smith, Trumansburg, N.Y., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Oct. 2, 1980, Ser. No. 193,313

Int. Cl.³ H02J *7/00*

U.S. Cl. 307—66 7 Claims



1. A d-c power supply for providing a d-c operating voltage for powering a load, the magnitude of the operating voltage being held above a predetermined threshold level to maintain continuous uninterrupted operation of the load, said d-c power supply comprising:

a d-c power source for providing a d-c charging voltage;
first and second rechargeable batteries;
means, including a series-connected first SCR, for coupling said d-c power source to said first battery to charge said first battery;
means, including a series-connected second SCR, for coupling said second battery to the load to provide the required operating voltage for the load while said first battery is being charged;
means, including a series-connected third SCR, for coupling said d-c power source to said second battery, said third SCR being non-conductive while said first battery is being charged and when said second battery is supplying the operating voltage;
means, including a series-connected fourth SCR, for coupling said first battery to the load, said fourth SCR being non-conductive when said second battery supplies the operating voltage to the load;
and control means, responsive to the operating voltage, for turning on said third and fourth SCR's, and for turning off said first and second SCR's, when said second battery slowly discharges to the extent that the operating voltage drops to the predetermined threshold level, the charged first battery thereby being disconnected from the d-c power source and connected to the load to supply the required operating voltage while at the same time the discharged second battery is disconnected from the load and connected to the d-c power source for recharging.

4,323,789

SEQUENCER FOR POWER SUPPLY VOLTAGES

Donald F. Dion, Burlington, Mass., assignor to RCA Corporation, New York, N.Y.

Filed Mar. 31, 1980, Ser. No. 135,934

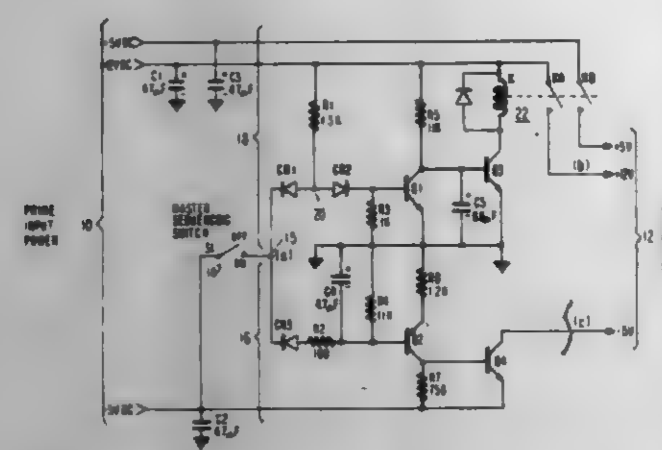
Int. Cl.³ H03K *17/60*

U.S. Cl. 307—81 7 Claims

1. A sequencer for switching two power supply voltages on and off, comprising

a master on-off switch,
a first transistor switch circuit operated by said master switch and operative to switch one of said power supply voltages on and off, said first transistor switch circuit including a first capacitor to cause the circuit to respond after a time delay to the opening of said master switch, and
a second transistor switch circuit operated by said master switch and operative to switch the second one of said

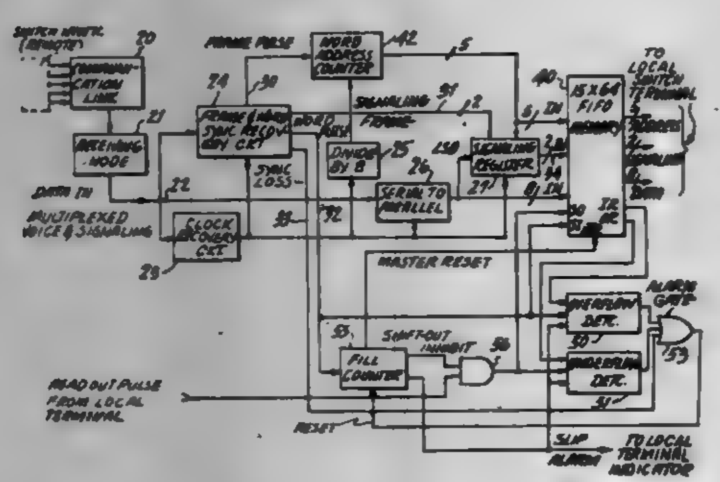
power supply voltages on and off, said second transistor switch circuit including a second capacitor to cause the



circuit to respond after a time delay to the closing of said master switch.

4,323,790
ELASTIC STORAGE AND SYNCHRONIZATION CONTROL APPARATUS FOR USE IN A TELEPHONE SWITCHING SYSTEM

Stephen C. Denning, Cary, and Joseph E. Sutherland, Raleigh, both of N.C., assignors to International Telephone and Telegraph Corporation, New York, N.Y.
Filed Jun. 5, 1980, Ser. No. 156,713
Int. Cl.³ H04J 3/07
U.S. Cl. 370—102 12 Claims



1. An elastic storage and synchronization apparatus for receiving a serial multiplexed signal of a given bit rate having a plurality of words, each of the same number of bits, with said words constituting a data frame having a fixed number of bits, comprising:

memory means having a plurality of addressable storage locations for storing at each location a given number of bits indicative of the number of bits in each of said words plus additional address bits manifesting the location of each of said words in said serial data stream,

timing means responsive to said multiplexed signal for providing clock pulses indicative of said given bit rate in said signal,

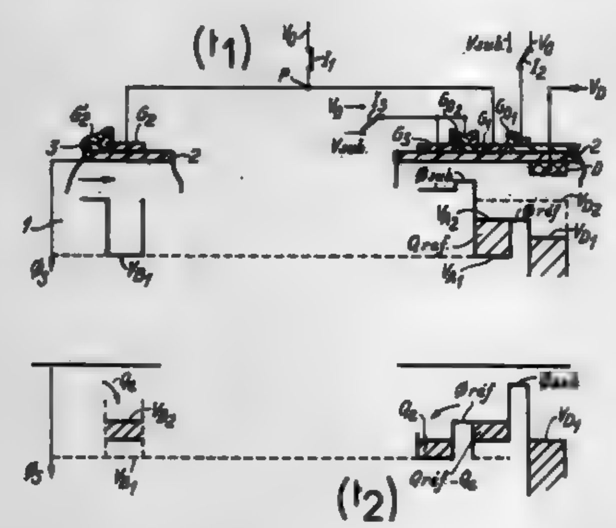
address access means coupled to said memory means and responsive to said clock pulses to provide at an output a plurality of unique address codes capable of accessing said memory means at each of said locations, to cause said memory means to store at each location said given number of bits,

capacity detecting means coupled to said memory means and operative to detect the magnitude of stored words in said memory means to determine a change in the rate of received data as compared to a desired rate, including means responsive to said change to clear all bits stored in said locations of said memory means, and

refilling means coupled to said capacity detecting means to fill a given number of said locations during a predetermined interval necessary to compensate for said change in rate.

4,323,791
SUBSTRACTION AND CHARGE QUANTITY GENERATION CHARGE TRANSFER DEVICE

Jean L. Berger, and Jean L. Coutures, both of Paris, France, assignors to Thomson-CSF, Paris, France
Filed Apr. 29, 1980, Ser. No. 144,855
Claims priority, application France, May 4, 1979, 79 11315
Int. Cl.³ G11C 19/28; H01L 29/78
U.S. Cl. 307—221 D 5 Claims



1. A subtraction and charge quantity generation charge transfer device ensuring the subtraction of n charge quantities from a reference charge quantity and the generation of a charge quantity equivalent to the n charge quantities and comprising a semiconductor substrate in which charges are stored, wherein it comprises a first storage electrode electrically connected at a point to n other storage electrodes, means ensuring the injection beneath the first storage electrode of the reference charge quantity prior to the arrival of the charges beneath the n storage electrodes and when the said point is at a constant voltage and means which maintain a constant surface potential beneath the first storage electrode during the arrival of the charges beneath the n storage electrodes and when the said point is left floating.

4,323,792
TWO TERMINAL CIRCUITRY FOR VOLTAGE LIMITATION

Günther Bergmann, Markbronner St. 20, Blaustein-Arnegg, Fed. Rep. of Germany (7906), and Arthur Kessler, Obererlenbacher St. 26, Friedrichsdorf, Fed. Rep. of Germany (6382)
Continuation of Ser. No. 858,046, Jun. 28, 1978, abandoned. This application Dec. 5, 1978, Ser. No. 966,689
Int. Cl.³ H03K 5/08
U.S. Cl. 307—549 2 Claims

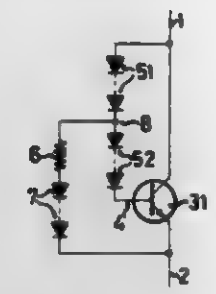
1. A two terminal circuitry for voltage limitation having a blocked state and a conductive state, said circuitry comprising a solid state device having two electrodes, a controllable current path between said two electrodes, and an additional control electrode, said two electrodes being conductively connected to said additional control electrode, wherein the improvement comprises

(a) a first shunt connecting said additional control electrode to one of said two electrodes of said solid state device;

(b) said first shunt having a tap dividing said first shunt into a first shunt portion and a second shunt portion arranged in series with said first shunt portion;

(c) said first shunt portion including first diode means allowing current flow from said first shunt portion toward said tap;

(d) said second shunt portion including second diode means

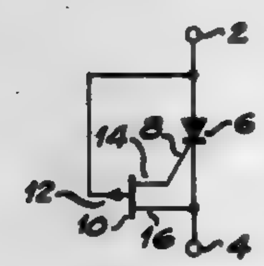


allowing current flow in said second shunt portion toward said additional control electrode; and

(e) a second shunt connecting said tap to said other of said two electrodes, said second shunt including a series arrangement of resistor means and third diode means oriented to allow a current flow from said tap to said other of said two electrodes.

4,323,793
THYRISTOR HAVING WIDENED REGION OF TEMPERATURE SENSITIVITY WITH RESPECT TO BREAKOVER VOLTAGE

Herman P. Schutten, Milwaukee; Stanley V. Jaskolski, Sussex; Gordon B. Spellman, Mequon, all of Wis.; Robert W. Lade, North Fort Myers, Fla., and Michael J. Schutten, Milwaukee, Wis., assignors to Eaton Corporation, Cleveland, Ohio
Continuation-in-part of Ser. No. 946,180, Sep. 27, 1978, abandoned. This application Nov. 14, 1979, Ser. No. 94,074
Int. Cl.³ H03K 17/72
U.S. Cl. 307—252 R 6 Claims



1. An electronic device comprising the combination of:

a thyristor having at least (a) a gate and (b) main terminals including an anode and a cathode, said thyristor being of a type exhibiting a breakover voltage at which said thyristor intrinsically switches between nonconductive and conductive states upon application of at least said breakover voltage between said anode and cathode,

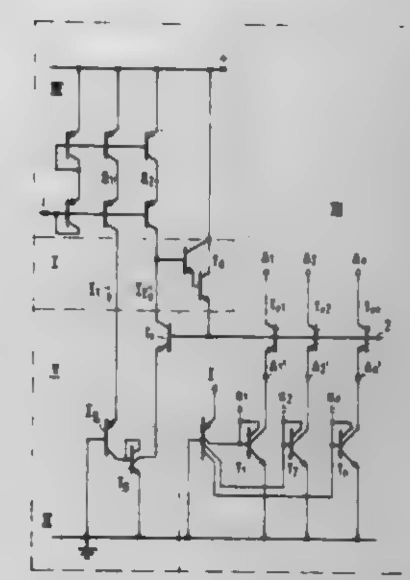
gate resistance means having resistance R between 10 kilohms and 1 megohm, connected between said gate and one of said main terminals, and adapted to increase and decrease its resistance R in response to increases and decreases respectively in amount of voltage V applied between said anode and cathode,

said thyristor moreover being of a type in which the value of said breakover voltage is responsive to both (1) the temperature Tsw of said thyristor at switching, said breakover voltage decreasing with increases in Tsw, and (2) the amount of said gate resistance R, said breakover voltage increasing with increases in gate resistance R;

whereby the value of said breakover voltage is only gradually responsive to temperature, so as to widen the region of temperature sensitivity of the device as a whole.

4,323,794
BIAS VOLTAGE GENERATOR FOR A MONOLITHIC INTEGRATED CIRCUIT

Wolfgang Hoehn, Kirchzarten, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.
Filed Jan. 30, 1980, Ser. No. 116,690
Int. Cl.² H03K 17/00
U.S. Cl. 307—296 R 2 Claims



1. A bias voltage generator having a plurality of I^2L current sources comprising;

a plurality of I^2L double-collector current source transistors, having uniform conductivity type and configuration,

a common injector connected to said I^2L double-collector current source transistors,

a plurality of bias voltage transistors having uniform conductivity type and configuration and each having its base connected to a single bias lead, each of said I^2L double-collector source transistors connected in series with one emitter of one bias voltage transistor,

a further bias voltage transistor of the same conductivity type and of the same configuration as said bias voltage transistors, having its base connected to said single bias lead,

a further I^2L double-collector current source transistor of the same conductivity type and of the same configuration as said I^2L double-collector current source transistors connected in series with the emitter of said further bias voltage transistor,

a further injector connected to the base of said further I^2L double-collector current source transistor,

a plurality of current sources supplying equally high currents,

one said current source connected to said further injector and one said current source connected to the collector of said further bias voltage transistor,

a current mirror circuit comprising said further I^2L current source transistor, said further injector and said further bias voltage transistor,

a non-inverting amplifier connected between the collector and the base of said further bias voltage transistor supplying a current for balancing said current mirror circuit.

4,323,795
BIAS CURRENT NETWORK FOR IC DIGITAL-TO-ANALOG CONVERTERS AND THE LIKE

Peter R. Holloway, Andover, and Douglas A. Mercer, Bradford, both of Mass., assignors to Analog Devices, Incorporated, Norwood, Mass.
Filed Feb. 12, 1980, Ser. No. 120,891
Int. Cl.³ H03F 3/187; H03K 13/25
U.S. Cl. 307—297 6 Claims

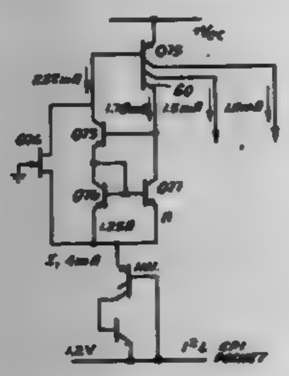
1. In an IC signal translation device such as a digital-to-

analog converter having a plurality of circuit sections requiring individual bias currents, a bias supply circuit comprising:

a PNP transistor with a split collector, said transistor being operated in high level injection;

means connecting one of said collectors and the base of said transistor to a current mirror;

control means responsive to the base current and the current



in said one collector for setting the current mirror ratio to a predetermined value;

means for combining said base current with said one collector current to supply one of said circuit sections with bias current; and

means connecting the other collectors of said transistor to said other circuit sections respectively, to supply them with their individual bias currents.

4,323,796

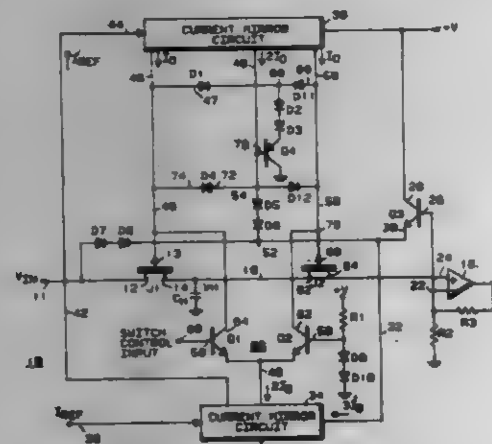
LOW TRANSIENT FEEDTHRU FET SAMPLE AND HOLD GATE

Michael F. Lathrope, Oak Forest, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 30, 1980, Ser. No. 116,739

Int. Cl.³ H03K *17/16, 17/687;* G11C *27/02*

U.S. Cl. 307—353 4 Claims



1. A low transient feedthru FET sample and hold switching circuit, having a supply voltage, and having an input terminal to which an input voltage is applied, comprising:

a. a switching FET, having a gate, and having a source and a drain coupled to a pair of terminals forming an input terminal and an intermediate terminal, said switching FET acting as a relatively high impedance between the input and intermediate terminals when it is in an OFF state and acting as a relatively low impedance between the input and the intermediate terminals when it is in an ON state;

b. means coupled to the intermediate terminal, for holding the voltage which is applied to the input terminal and coupled through the switching FET to the intermediate terminal when the FET is in the ON state;

c. means coupled to the intermediate terminal and to an output terminal, for tracking the voltage on the holding means and coupling the held voltage to the output terminal;

d. generating means, having a switch control input, and coupled to the tracking means and the FET gate, for generating a first switching voltage which is substantially equal to the held voltage and, for generating a second switching voltage which is substantially less than the supply voltage while sufficient to switch the FET to the OFF state, and

for switching said generating means, in response to a predetermined switching signal at the switch control input, such that the first voltage is generated to switch the FET to the ON state and the second voltage is generated to switch the FET to the OFF state;

e. diode means, coupled from the input terminal to the generating means, for maintaining the second switching voltage at a predetermined increment above the input voltage in response to the input voltage rising above the voltage on the holding means while the switching FET is in the OFF state.

4,323,797

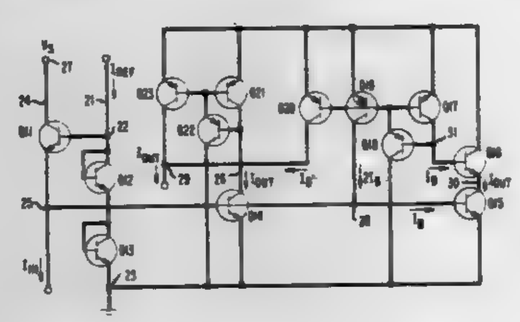
RECIPROCAL CURRENT CIRCUIT

Milton L. Embree, Reading, Pa., and William G. Garrett, Canton Township, Wayne County, Mich., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 9, 1980, Ser. No. 148,459

Int. Cl.³ G06G *7/12, 7/24*

U.S. Cl. 307—490 2 Claims



1. An electronic circuit having an output current which is the reciprocal of an input current comprising.

(a) a first terminal 13,

(b) a reference current branch 11 connected to the first terminal 13 and containing a first node 12,

(c) a pair of asymmetrically conducting semiconductor devices Q_2, Q_3 serially connected in the reference current branch 11 both poled for easy conduction in the same direction,

(d) an input current branch 14 including a first transistor Q_1 having its emitter and collector in said branch and including a second node 15 in the portion connected to the emitter,

(e) first interconnecting means coupling the base of the first transistor Q_1 to the first node 12 in the reference branch,

(f) an output current branch 16 including a second transistor Q_4 having its emitter and collector in said branch and having the portion connected to the emitter terminating at the first terminal 13, and having the portion connected to the collector terminating at a second terminal 18,

(g) second interconnecting means coupling the base of the second transistor to the second node 15 in the input branch 14,

(h) circuit compensating means comprising (1) a counterpart output branch 30 connected in parallel with said output current branch and including current replicating means having an input connection from the base of the second transistor; (2) first current mirror means connected to the counterpart output branch and having a feedback connection to said input connection to the replicating means; (3) a corrected output terminal 29; (4) second current mirror means connected between said output current branch and the corrected output terminal; (5) a connection from the first current mirror to the corrected output terminal.

4,323,798

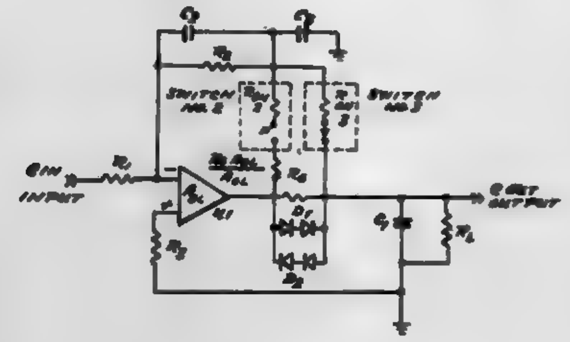
FAST OPERATING SWITCHABLE OPERATIONAL AMPLIFIER DRIVEN CIRCUITS

Grant H. Watkins, Upper Marlboro, Md., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Apr. 18, 1980, Ser. No. 141,501

Int. Cl.³ H03B *1/03;* H03F *1/36*

U.S. Cl. 307—491 8 Claims



1. An electronic circuit that is switchable into and out of an electronic system comprising,

input means,

output means,

an operational amplifier having first and second inputs and an output, said first operational amplifier input connected through a first resistor to said input means,

an electrical component connected between the output of said operational amplifier and said output means,

a first capacitance means connected between said output means and ground,

a first feedback loop comprised of a second resistor and a first switch means connected in series between the output and the first input of said operational amplifier, and

a second feedback loop comprised of said second resitor and a second switch means connected in series between the first operational amplifier input and said output means, said first switch means being closed when said electronic circuit is switched into said electronic system and open when said electronic circuit is switched out of said electronic system, and said second switch means being open when said electronic circuit is switched into said electronic system and closed when said electronic circuit is switched out of said electronic system.

4,323,799

IMPULSE ACTIVATED TIME DELAY SELF-RESTORING SWITCH

William C. King, Chatham Township, Morris County, and Stephen Knight, Murray Hill, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 9, 1979, Ser. No. 65,184

Int. Cl.³ H03K *17/687, 17/94*

U.S. Cl. 307—571 13 Claims

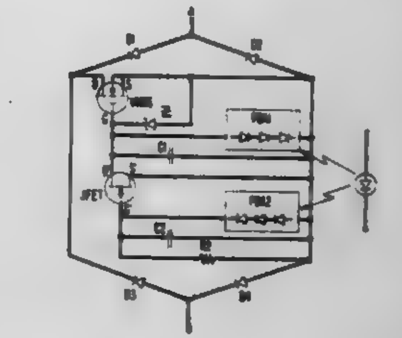
1. An impulse activated time delay self-restoring switch comprising:

a first field effect transistor (FET), said first transistor having source, gate and drain electrodes, said source and drain electrodes being connected to an electrical output circuit having first and second output terminals;

a light source, said light source being connected to an electrical input circuit;

a first series connected photodiode array, said array being optically coupled to said light source and connected to said field effect transistor whereby when said photodiode array is illuminated, said FET changes from an initial current conduction state to a complementary current conduction state; and

means for time delayed self-restoration from said complementary state to said initial state, said means being connected to said gate and source electrodes;



characterized in that said means comprises an RC timing network, said network comprising a parallel connected resistance and capacitance.

4,323,800

CONTROL OF COOLING OF SUPERCONDUCTING ROTOR

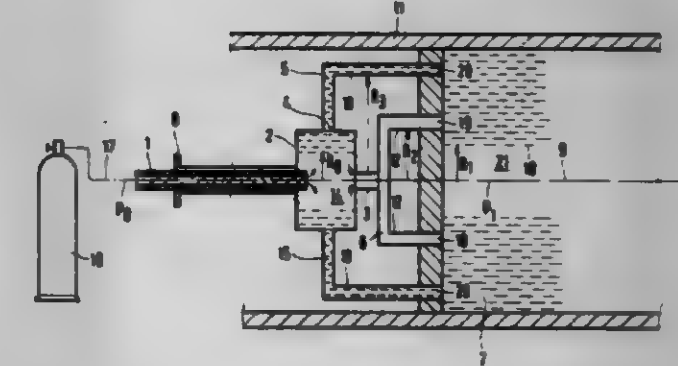
Albert Hofmann, Karlsruhe, Fed. Rep. of Germany, assignor to Kernforschungszentrum Karlsruhe Gesellschaft mit beschränkter Haftung, Karlsruhe, Fed. Rep. of Germany

Filed May 5, 1980, Ser. No. 146,402

Claims priority, application Fed. Rep. of Germany, May 5, 1979, 2918148

Int. Cl.³ H02K *9/00*

U.S. Cl. 310—52 4 Claims



1. In a method for effecting a self-regulating replenishment of helium from a reservoir into a helium pool in the superconducting rotor of a generator, in which helium in the pool boils at subatmospheric pressure, and a portion of the helium being transferred from the reservoir changes to the vapor phase, which method includes delivering both phases into the helium pool at a distance from the axis of rotor rotation, the improvement wherein said step of delivering comprises: separating the two phases of the helium from one another; and introducing the liquid and vapor phases separately into the pool at respectively different distances from the axis of rotor rotation, the liquid phase being introduced at a greater distance than the vapor phase from the axis, and the vapor phase being introduced into the pool at a distance from the axis of rotor rotation which is greater than that of the vapor/liquid interface in the pool.

4,323,801

BEARING SYSTEM FOR A ROTOR OF ELECTRIC MACHINES, ESPECIALLY FOR A ROTOR OF A TURBOGENERATOR WITH A SUPERCONDUCTIVE FIELD WINDING

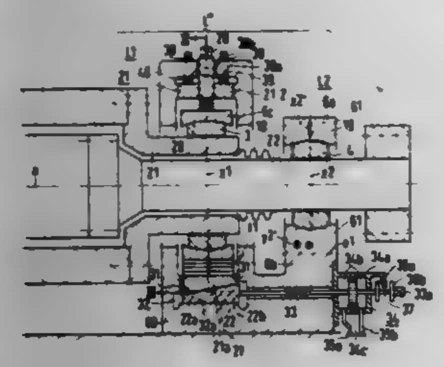
Erich Weghaupt, and Reinhold D'ham, both of Mulheim an der Ruhr, Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mulheim an der Ruhr, Fed. Rep. of Germany

Filed May 6, 1980, Ser. No. 147,153

Claims priority, application Fed. Rep. of Germany, May 9, 1979, 2918763

Int. Cl.³ H02K *9/00*

U.S. Cl. 310—52 **8 Claims**



1. Bearing system for a rotor of an electric machine having an outer rotor part formed as a hollow cylinder and an inner rotor part disposed therewithin, the rotor having a drive side and an exciter side at opposite ends thereof, the inner rotor part being operatable in cryogenic temperature range and being fastened thermally insulatingly with respect to the outer rotor part, which is warmer relative to the inner rotor part, the inner rotor part being firmly flanged to the outer rotor part at the exciter side, the outer and the inner rotor parts having separate outer and inner coaxial shaft shanks supported so as to be movable thermally in axial direction independently of one another, an expansion compensator being disposed between the outer and the inner coaxial shaft shanks and serving also for sealing from the outside a hollow space formed between the inner and the outer rotor part, comprising first and second separate shaft bearings with respective bearing boxes associated with the outer and inner shaft shanks, respectively, said shaft bearings being axially spaced from one another, said first shaft bearing being adjustable during operation independently of said second shaft bearing for influencing vibration behavior of the rotor.

4,323,802

BUNDLE OF LAMINATIONS FOR AN ELECTRIC MACHINE

Werner Leistner, Berlin, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Mar. 25, 1980, Ser. No. 133,959

Claims priority, application Fed. Rep. of Germany, Mar. 28, 1979, 2912592

Int. Cl.³ H02K *9/00*

U.S. Cl. 310—59 **12 Claims**

1. In a bundle of laminations for an electric machine, containing:

a plurality of stacks of laminations arranged in series in an axial direction;

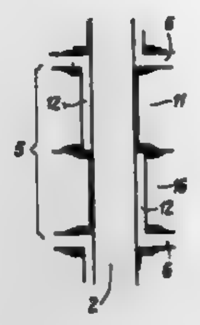
at least two radial cooling channels arranged between said stacks and each extending in radial direction, said radial directions being arranged perpendicularly to said axial direction;

a plurality of slots extending along the surface of said bundle of laminations, each slot having two elongated lateral edges and a slot floor;

at least one electric conductor of a winding arranged in each of said slots;

the improvement comprising:

in each stack between two radial cooling channels a first group of series arranged laminations containing a first portion of one of said slots, the width of said first slot portion being greater than the width of said conductor



arranged therein, said conductor and at least one lateral edge of said slot portion thereby forming a side duct for conducting a cooling medium therethrough; and

a recess at the floor of said first slot portion, said recess extending at least over a portion of said slot width and up to said one lateral edge, thereby forming a cooling channel which extends in an axial direction and opens at least on one side into one of said radial cooling channels.

4,323,803

ELECTRIC MACHINE

Vladimir G. Danko, bulvar Ivana, Karkacha, 2, kv. 89; Boris I. Ljuty, ulitsa Mira, 62, kv. 26; Alexandr A. Chigirinsky, ulitsa Kuibysheva 11, kv. 8; Vasily S. Kildishev, ulitsa Plekhanovskaya 41/43, kv. 55; Viktor V. Kuzmin, prospekt Gagarina, 92, kv. 43, all of, Kharkov; Yanush B. Danilevich, ulitsa Tipanova 29, kv. 681; Lidia I. Chubraeva, ulitsa Bestuzhevskaya, 34, kv. 55, both of Leningrad; Konstantin F. Potekhin, ulitsa Stanislavskogo, 11, kv. 186, Novosibirsk; Konstantin N. Maslennikov, ulitsa Petukhova, 138, kv. 87, Novosibirsk, and Valery K. Ivanov, ulitsa Zorge, 68, kv. 20, Novosibirsk, all of U.S.S.R.

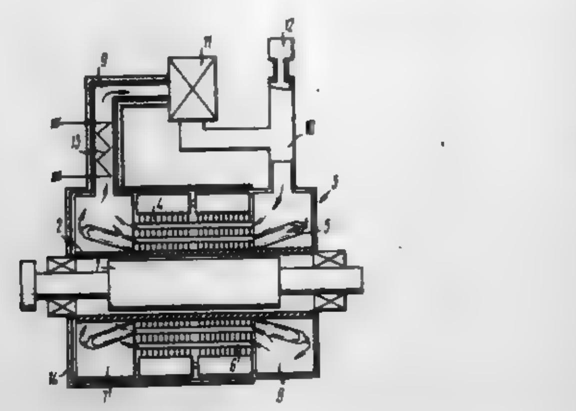
Filed Mar. 31, 1980, Ser. No. 135,324

Claims priority, application U.S.S.R., Jun. 5, 1978, 2624805

Int. Cl.³ H02K *9/00*

U.S. Cl. 310—59 **3 Claims**

1. An electric machine having a rotor and a stator circumferentially thereof, enclosure means enclosing the electric machine having a compartment divided by the stator into two chambers each on an opposite side of the stator, a jacket extending circumferentially about the rotor isolating the stator thermally from the rotor, said stator having means defining ducts therethrough for flowing a cooling fluid from one chamber to the other through the ducts in the stator, means for effecting a pressure differential of the cooling fluid in the two chambers as a function of a temperature differential and density of the cooling fluid in the two chambers comprising means defining an upward flow path for the cooling fluid above the level of said enclosure and in communication with one of said two chambers and a downward flow path for the cooling fluid above the level of the enclosure, in communication with the other chamber, and a cooler in a flow path between the upward and downward flow paths for selectively cooling the cooling fluid.



4,323,804

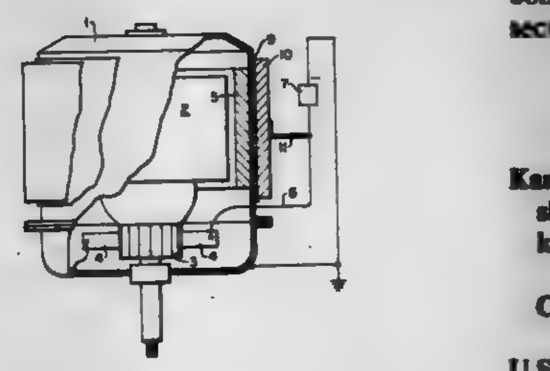
PERMANENT MAGNET FIELD MOTOR WITH RADIO FREQUENCY INTERFERENCE SUPPRESSING CAPACITOR

Edward J. Zelt, St. Marys, Pa., assignor to The Stackpole Corporation, St. Marys, Pa.

Filed Jul. 14, 1980, Ser. No. 168,071

Int. Cl.³ H02K *11/00*

U.S. Cl. 310—72 **9 Claims**



1. A direct current permanent magnet field motor comprising an armature, permanent magnet fields encircling the armature and spaced therefrom, a commutator connected to one end of the armature for rotation therewith, a pair of brushes engaging the commutator, a pair of radially spaced substantially cylindrical metal members encircling said permanent magnet fields, a substantially cylindrical dielectric member between the two metal members, means for grounding one of said metal members and one of the brushes, and means for electrically connecting the other brush and the other metal member with a direct current power supply, whereby a capacitor is formed by said pair of metal members and said dielectric member for suppressing radio frequency noise generated by sparking of the brushes at said commutator.

4,323,805

DIRECT CURRENT MICROMOTOR

Jean-Claude Caby, and Jean-Claude Girardin, both of La Chaux-de-Fonds, Switzerland, assignors to Portescap, La Chaux-de-Fonds, Switzerland

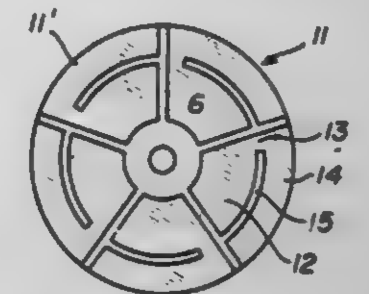
Filed Jun. 24, 1980, Ser. No. 162,483

Claims priority, application Switzerland, Jun. 25, 1979, 5511/79

Int. Cl.³ H02K *13/04*

U.S. Cl. 310—237 **3 Claims**

1. A direct current micromotor which comprises a stator having a fixed magnetic circuit, and an iron-free rotor comprising a coil support substantially in the form of a disc and a cylindrical coil fixed at one of its ends to the periphery of the said support, the coil support comprising collector segments and means for connecting the segments to respective portions of the coil, and the stator comprising commutator brushes arranged to co-operate with the said collector segments, wherein the coil support comprises a printed circuit board having an annular radially inner zone in which circular sectors of conducting material are formed and constitute the collector segments, the latter segments having a radial extension which extends to the periphery of the support, the printed circuit



board further having a peripheral annular zone in which peripheral sectors of conducting material are formed and cover the greater portion of said peripheral zone, at least the sectors of a first group of peripheral sectors being separated in the radial direction, from the collector segments, by way of an insulating zone, at least the sectors of a second group of peripheral sectors being part of the said radial extensions of the collector segments, the wire ends of the various portions of the coil being connected to at least one portion of the peripheral sectors.

4,323,806

MINIATURE ROTARY ELECTRIC MACHINE

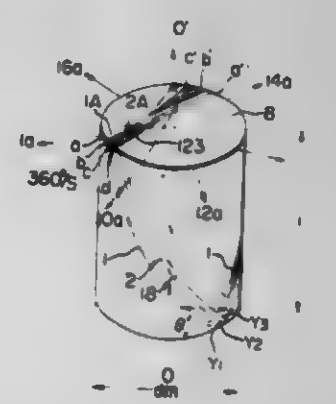
Kanemasa Aoki, Yokohama, Japan, assignor to Canon Kabushiki Kaisha and Canon Seiki Kabushiki Kaisha, both of Tokyo, Japan

Filed Jul. 9, 1979, Ser. No. 55,558

Claims priority, application Japan, Nov. 2, 1978, 53/135205

Int. Cl.³ H02K *1/22*

U.S. Cl. 310—266 **2 Claims**



1. A rotary coil for use in a coreless motor comprising:

(a) a plural number of first coil groups including

a first inclined coil part formed by winding a wire conductor for a rotary coil of said coreless motor in such manner that, to form a coil body in a shape of cup with one open end and another closed end constituted of an end connection part being a portion of said rotary coil, a winding extends obliquely from one point on one edge of a cylindrical circumferential surface of said coil body to another thereof at a predetermined inclination relative to a generatrix of said coil body,

a second inclined coil part formed by winding said wire conductor in such manner that said winding is turned back at a position in the vicinity of said open end and extends obliquely toward an edge nearly opposed to

said one edge of said cylindrical circumferential surface of said coil body, and

an end connection part for making a connection of said inclined coil parts across the area of the end surface of said cup-shaped body, and formed by winding said inclined coil parts and an end connection part a plural number of times at the same position in layer with the same number of turns so as to form said cup-shaped rotary coil;

(b) a plural number of second coil groups including

a transition part for changing the winding direction of each coil group relative to an adjacent one by a predetermined displacement angle,

a first inclined coil part formed by winding in such manner that said winding extends obliquely from a point displaced by a predetermined angle relative to said first coil group at said transition part along the upper periphery of said coil body to another point on an edge of the lower periphery thereof at a predetermined inclination,

a second inclined coil part formed by winding in such manner that said winding is turned back at a position in the vicinity of said open end of said coil body and said winding extends obliquely toward and edge nearly opposed to said one edge of the cylindrical circumferential surface of said coil body, and

an end connection part for making a connection of said inclined coil parts across the area of the end surface of said cup-shaped coil body, and formed by winding said inclined coil parts and said end connection part a plural number of times at the same position in layer with the same number turns so as to form said cup-shaped rotary coil; and

(c) a lead wire part formed as a portion of said transition part and brought out from said winding at the transition from one of said coil groups to an adjacent one to connect to a commutator for supplying power to said rotary coil.

4,323,807

LOCK STRUCTURE FOR INTEGRATING A CABINET COVER AND A BOTTOM PLATE

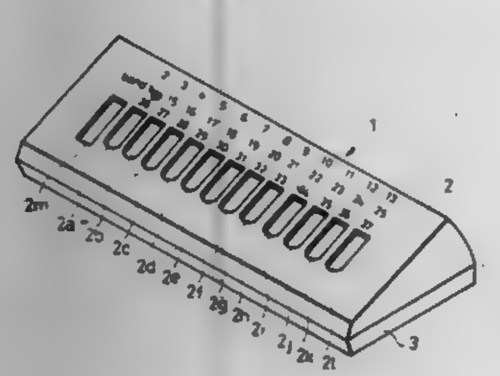
Shigekata Sugiura, Soma, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

Filed Sep. 2, 1980, Ser. No. 183,192

Claims priority, application Japan, Sep. 4, 1979, 54/122194

Int. Cl.³ A47B *81/06;* E05F *1/00;* B65D *45/00*

U.S. Cl. 312—284 **3 Claims**



1. In a lock structure for integrally locking a cabinet cover to a bottom plate, including first and second sets of co-engaging structures, said first set of co-engaging structure being at least constituted by a concavity and a corresponding convexity each formed on the inner surface of one of said cabinet cover and a facing inner surface of said bottom plate, respectively, said second co-engaging structure being at least constituted by a resilient anchor pawl having at the tip thereof a hook and a resilient latch member having at the center thereof an anchor hole to engage with said hook formed on the inner surface of said cabinet cover and a facing inner surface of said bottom plate, respectively, the improvement comprising a rod-like projection being formed adjacent to said anchor pawl so as to face respective one of said latch member when said second structure is co-engaged and, a gap being defined between said latch members and one frame side wall of said cabinet cover or said bottom plate for receiving said anchor pawl and said rod-like projection when said second structure is co-engaged and, when said cabinet cover and said bottom plate are opened on hinges from the opposite side to said frame side wall, said latch member is flexed by said rod-like projection thereby to release the lock of said second co-engaging structure.

4,323,808

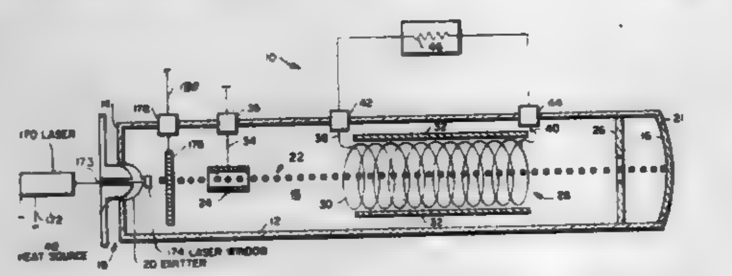
LASER EXCITED THERMIONIC ELECTRIC CONVERTER

Edwin D. Davis, Daytona Beach, Fla.

Continuation-in-part of Ser. No. 33,025, Apr. 24, 1979. This application Jul. 17, 1980, Ser. No. 169,799

Int. Cl.³ H01J *45/00*

U.S. Cl. 310—306 **7 Claims**



1. Apparatus for converting heat and light energy directly into electrical energy comprising:

(a) a cathode element having an electron emissive surface for emitting electrons in response to the application of heat energy to said surface;

(b) a grid for selectively trapping said electrons;

(c) a pulse laser positioned to direct a laser beam toward the trapped electrons to convert the electrons to electron boluses;

(d) a collecting element maintained at a positive electrical potential with respect to said cathode element for attracting, accelerating and collecting said electron boluses;

(e) an induction assembly comprised of a helical coil having a longitudinal axis and means for producing a stationary transversely oriented magnetic field in the interior region of said coil;

(f) an evacuated elongated container for fixedly housing said cathode element at a first end, and said collecting element at a second end, and said induction assembly at an intermediate location therein;

(g) whereby said electron boluses in accelerated transit towards said collecting element are caused to pass through said coil interior region therein individually exhibiting an oscillatory magnetic field action thus giving rise to an induced EMF in said coil.

4,323,809

SURFACE ACOUSTIC WAVE SUBSTRATE HAVING ORTHOGONAL TEMPERATURE COMPENSATED PROPAGATION DIRECTIONS AND DEVICE APPLICATIONS

Robert M. O'Connell, Columbia, Mo., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Dec. 19, 1979, Ser. No. 105,362

Int. Cl.³ H01L *41/08*

U.S. Cl. 310—313 A **2 Claims**

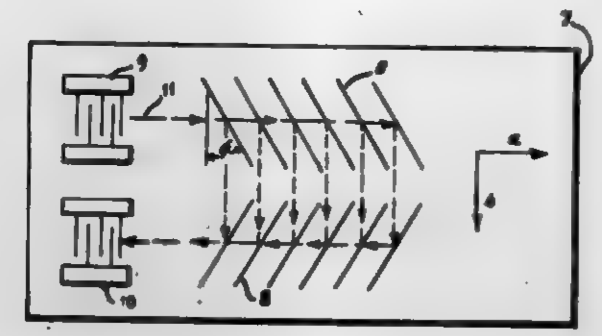
1. A reflective grating surface acoustic wave device comprising

a substrate member having a surface acoustic wave propagating surface and an equal temperature coefficient of delay in two non-parallel directions on said propagation surface, said substrate member comprising a single crystal quartz member having an acoustic surface wave propagation surface defined by a plane that substantially coincides

with the Euler angles Lambda=0.0°, mu=125.87 (+1−6)°, Theta=45/0°,

an input transducer on said propagation surface,

an output transducer on said propagation surface, and



reflective grating means on said propagation surface, the principal and secondary axes of propagation of said device being aligned with equal temperature coefficient of delay directions.

4,323,810

IRRADIATION APPARATUS INCLUDING A LOW-PRESSURE MERCURY LAMP WITH FLUID MEDIUM DUCT MEANS

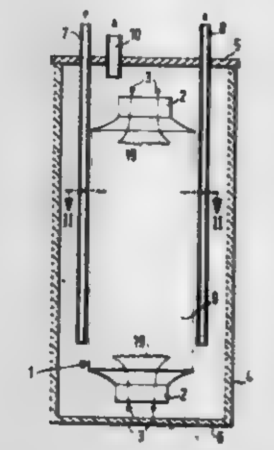
Georg Horstmann, Gerbelstr. 19, 4902 Bad Salzuflen, Fed. Rep. of Germany

Filed Jun. 1, 1979, Ser. No. 44,772

Claims priority, application Fed. Rep. of Germany, Jun. 5, 1978, 2825018

Int. Cl.³ H01J *61/33, 61/52*

U.S. Cl. 313—24 **9 Claims**



1. Irradiation apparatus including a low-pressure mercury lamp suitable for photochemical disinfecting and sterlization, said lamp including a lamp tube having a flat, elongated cross-section and including electrodes extending along the width direction of said lamp tube, wherein the improvement in said irradiation apparatus comprises:

an outer enveloping tube substantially surrounding said lamp tube in spaced relation thereto and having a shape substantially conforming to the shape of said lamp tube; and

duct means passing through said enveloping tube and formed and positioned along the narrow sides of said lamp tube for the discharge and withdrawal of a fluid medium into the space between said lamp tube and said enveloping tube along said narrow sides.

4,323,811

STREAKING IMAGE TUBE WITH CLOSELY SPACED PHOTOCATHODE, SUPPRESSOR MESH, AND ACCELERATOR MESH

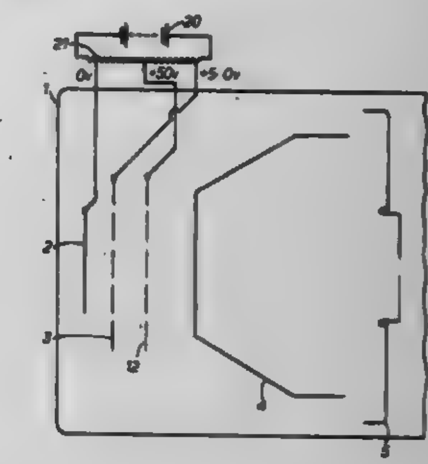
Brian R. C. Garfield, Essex, England, assignor to English Electric Valve Company Limited, Chelmsford, England

Continuation of Ser. No. 885,192, Mar. 10, 1978, abandoned, which is a continuation of Ser. No. 599,465, Jul. 28, 1975, abandoned. This application Oct. 29, 1979, Ser. No. 89,205

Claims priority, application United Kingdom, Aug. 3, 1974, 34304/74

Int. Cl.³ H01J *31/26, 39/04*

U.S. Cl. 313—99 **7 Claims**



1. In a streaking image tube of the type including photocathode means for receiving light images of picosecond duration and converting them to photoelectrons, accelerating mesh electrode means immediately adjacent said photocathode means for accelerating the photoelectrons away from the photocathode means, anode means spaced from said accelerating mesh electrode means for passing said photoelectrons therethrough, a screen for receiving said photoelectrons, and deflection means disposed between said anode means and said screen for deflecting said photoelectrons normally to their direction of movement to form a streak image on said screen, the improvement wherein:

the spacing of said accelerating mesh electrode from said photocathode is in the range 0.5 mm to 1 mm, and wherein further mesh electrode means is provided immediately adjacent said accelerating mesh electrode means at a spacing of 1.5 to 3.0 mm therefrom, and between the same and said anode means for causing secondary electrons produced by said accelerating mesh electrode means and/or spurious photoelectrons caused by light energy passing through said photocathode means to be attracted to said accelerating mesh electrode means, whereby to enhance the quality of said streak image.

4,323,812

ELECTRIC DISCHARGE LAMP

Elliot F. Wyner, Peabody, Mass., and Elvery D. Lowry, Hillsboro, N.H., assignors to GTE Service Corporation, Stamford, Conn.

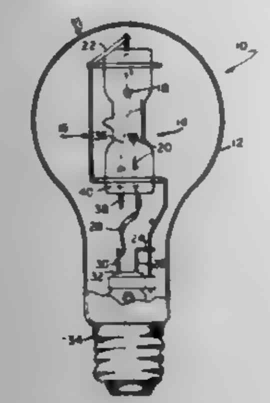
Filed Mar. 7, 1980, Ser. No. 127,720

Int. Cl.³ H01J *61/54*

U.S. Cl. 313—198 **4 Claims**

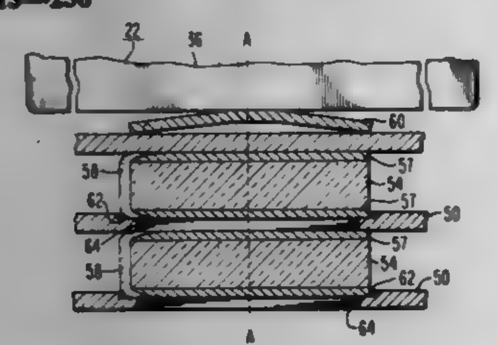
1. In a high pressure electric discharge lamp including an outer envelope containing an inert atmosphere, an arc discharge tube mounted within said outer envelope, said arc discharge tube containing first and second spaced apart main electrodes and an ionizable medium, the improvement comprising: means within said lamp for reducing the starting voltage of said lamp by an average of about 50% after said lamp has aged about 4000 hours, said means comprising at least one starting probe positioned in said arc tube, said starting probe

being adjacent only one of said main electrodes, and being electrically isolated at all times from any ohmic contact with



any other electrode of said lamp and from any ohmic contact or capacitive contact from associated ballast circuitry.

4,323,813
SPRING-LOADED RESISTIVE LENS STRUCTURE FOR ELECTRON GUN
Leon J. Vieland, Princeton, and Vincent M. Cannuli, Mercerville, both of N.J., assignors to RCA Corporation, Princeton, N.J.
Filed Jan. 23, 1980, Ser. No. 114,514
Int. Cl.³ H01J *1/88, 19/42*
U.S. Cl. 313—250 **7 Claims**

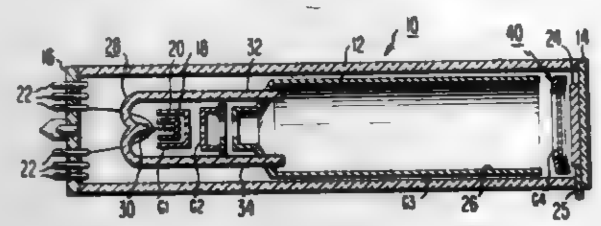


1. An electron gun comprising a cathode and two apertured terminal lens electrodes mounted in fixed relationship axially along a plurality of glass support rods, and a resistive lens stack disposed between said terminal electrodes and mechanically and electrically secured thereto, said resistive lens stack comprising a plurality of apertured electrode plates alternately stacked with a plurality of resistive spacer blocks, and spring means contacting said stack and axially urging said electrode plates and said resistive blocks into mutual electrical contact with each other and with said terminal electrodes, whereby said stack has a highly resistive electrically continuity from one of said terminal electrodes to the other of said terminal electrodes.

4,323,814
MESH ASSEMBLY HAVING REDUCED MICROPHONICS FOR A PICK-UP TUBE
Timothy E. Benner, and Alfred Month, both of Lancaster, Pa., assignors to RCA Corporation, New York, N.Y.
Filed May 16, 1980, Ser. No. 150,341
Int. Cl.³ H01J *29/02, 29/08*
U.S. Cl. 313—390 **7 Claims**

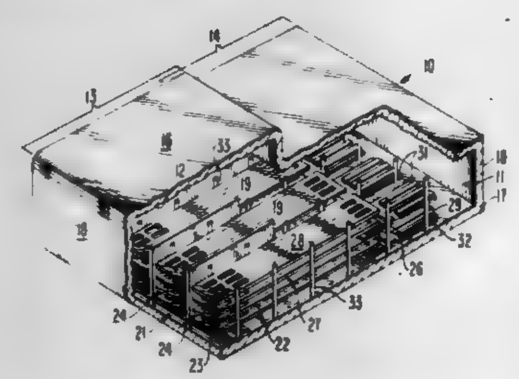
1. In a pick-up tube having a generally cylindrical envelope, a faceplate at one end of said envelope, a photoconductive target electrode adjacent to said faceplate, a cathode in the other end of said envelope and a mesh assembly disposed in spaced relation adjacent to said target electrode, between said target electrode and said cathode, the improvement wherein said mesh assembly comprises:

a mesh electrode disposed between a frustro-conically shaped mesh support ring and a dished, spring-like mesh damping ring, said mesh damping ring being fixedly attached at a plurality of spaced points around its outer periphery to said mesh electrode and said support ring, whereby said mesh damping ring is compressed into a



reversal of its dished shape and assumes an undulatory configuration contacting said mesh electrode periodically around the inner periphery of said damping ring, thereby retaining said mesh electrode with reduced microphonics.

4,323,815
UNITARY BEAM GUIDE/ELECTRON GUN ASSEMBLY FOR FLAT PANEL DISPLAY DEVICES
John P. Russell, Pennington, N.J., assignor to RCA Corporation, New York, N.Y.
Filed Feb. 29, 1980, Ser. No. 125,823
Int. Cl.³ H01J *29/02*
U.S. Cl. 313—422 **4 Claims**



1. In a flat panel display device including a beam guide along which electrons propagate as beams, a cathode, and modulation means for modulating said electrons, a unitary beam guide/electron gun assembly comprising:

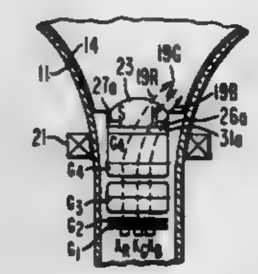
at least two guide meshes arranged in a parallel and spaced relationship to form at least one space along which said electrons propagate, at least a portion of said modulation means and a portion of said guide meshes overlapping in a parallel and spaced relationship, said modulation means including insulative modulator supports arranged on opposite sides of and substantially equally spaced from said cathode and modulation electrodes affixed to said supports;

at least one additional electrode parallel to and spaced from said guide meshes and at least a portion of said modulation means;

additional insulative support means for supporting said cathode along the plane of the center of said space; and

spacer means for maintaining said beam guides, said modulation supports, said additional insulative support means and said additional electrode in said spaced and parallel relationships, said spacer means being spaced along the length of said beam guide/electron gun assembly.

4,323,816
SYSTEM FOR ENHANCING DEFLECTION IN KINESCOPES
Kern K. N. Chang, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.
Filed May 30, 1980, Ser. No. 154,835
Int. Cl.³ H01J *29/72, 29/80*
U.S. Cl. 313—433 **4 Claims**



1. In a post-deflection acceleration kinescope including an evacuated envelope having a funnel portion, a neck portion, a screen hermetically affixed to the wide end of said funnel portion, and a conductive coating on the inside surface of said funnel portion, an electron gun for providing at least one electron beam arranged in said neck portion, and a deflection yoke for horizontally and vertically deflecting said electron beam so that said screen is scanned with said electron beam, a deflection system for enhancing said horizontal and vertical deflection comprising:

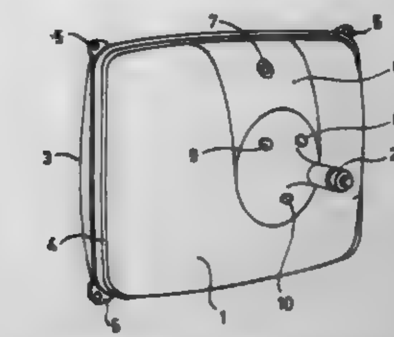
an electrostatic lens including said conductive coating and planar plates with curved edges on the screen side arranged parallel to the direction of said horizontal scanning and equally spaced about the center of said neck portion so that said electron beam passes between said plates and is horizontally unaffected by said electrostatic lens;

a quadrupole lens in combination with said electrostatic lens said quadrupole having an internal defocusing action acting in the direction of said vertical deflection and an internal focusing action acting in the direction of said horizontal deflection, and having a first pair of poles of said quadrupole arranged to produce a first magnetic field extending substantially parallel along the plane of one said plates and outwardly past the curved end of said plate, a second pair of poles of said quadrupole being arranged to produce a second magnetic field extending substantially parallel along the plane of another of said plates and outwardly past the curved end of said another plate so that electron beams exiting from said plates are deflected away from the center line of said kinescope by one of said magnetic fields, and

first low reluctance means arranged between the poles of said first pair to provide a first low reluctance return flux path and second low reluctance means arranged between the poles of said second pair to provide a second low reluctance return flux path so that the vertical and horizontal deflections of an electron beam are enhanced upon leaving said quadrupole and are unaffected while passing between said plates.

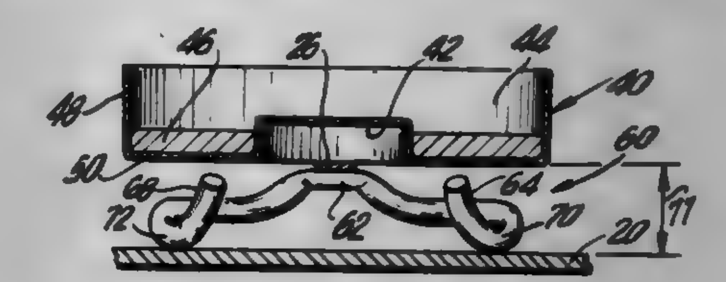
4,323,817
COLOR DISPLAY TUBE
Johannus A. Vennix, and Cornelis Stapel, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Dec. 10, 1979, Ser. No. 102,202
Claims priority, application Netherlands, Jan. 26, 1979, 7900623
Int. Cl.³ H01J *29/70*
U.S. Cl. 313—440 **9 Claims**

1. A colour display tube comprising a glass envelope including a display window, a cone and a neck, which envelope is provided, in the neck-cone transition part, with a number of reference studs on the outside of the envelope to adapt the tube for placement of a system of deflection coils thereon, characterized in that each reference stud consists of non-ferromag-



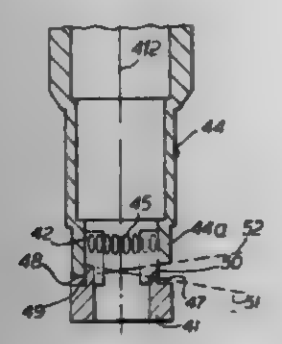
netic material, and at least the side of the stud which is secured against the glass envelope consists of stainless steel, titanium or a titanium alloy.

4,323,818
GETTER CONSTRUCTION FOR REDUCING THE ARC DISCHARGE CURRENT IN COLOR TV TUBES
Thomas H. Madden, Euclid, and Clair W. Reash, Fairview Park, both of Ohio, assignors to Union Carbide Corporation, New York, N.Y.
Continuation of Ser. No. 967,355, Dec. 7, 1978. This application Feb. 9, 1981, Ser. No. 232,960
Int. Cl.³ H01J *29/94*
U.S. Cl. 313—481 **1 Claim**



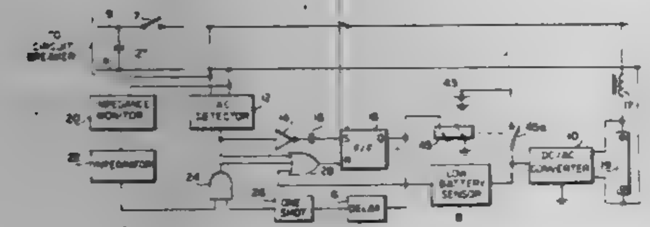
1. A getter assembly for a cathode ray tube having a funnel portion with a high resistance coating thereon of the order of 2,000 to 6,000 ohms per square to reduce arc current magnitude, said getter assembly being directly connected electrically to the electron gun of a cathode ray tube and comprising a cylindrically shaped metal receptacle having an open top; a side wall member; an upraised bottom portion which with said wall member defines in said receptacle an annular channel having a floor member, the height of said side wall member with respect to said floor member being about 2 times greater than the height of said upraised bottom portion; getter material within said annular channel; a wire support member depending from the bottom of said receptacle the ends of said wire support being bent inwardly toward each other, first downwardly and then upwardly to form two spaced apart curved bases for contacting the resistance coating on the funnel portion of said cathode ray tube, said curved bases being entirely located beneath said floor member and spaced inwardly from said side wall member toward said upraised portion and being located about 0.130 to 0.155 inch from said floor member whereby short circuiting of the resistive coating due to flashing of the getter is avoided.

4,323,819
SPIN-TUNED MAGNETRON
Alan B. Cutting, Maidenhead, England, assignor to E M I - Varian Limited, Hayes, England
Filed Apr. 8, 1980, Ser. No. 138,445
Claims priority, application United Kingdom, May 1, 1979, 15145/79
Int. Cl.³ H01G *25/50*
U.S. Cl. 315—39.61 **10 Claims**



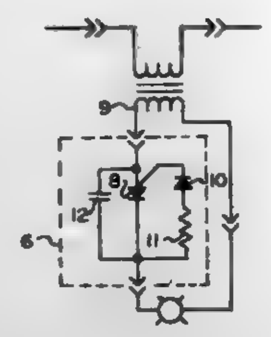
1. In a spin tuned magnetron including:
a spinner rotatable about an axis of rotation,
anode vanes,
an anode vane ring supporting the anode vanes, the ring having an annular flange extending parallel to the axis,
the spinner having a cylindrical portion which overlaps the anode vanes and which is disposed radially outwardly of the flange,
the improvement wherein axially facing end surfaces of the said cylindrical portion of the spinner and the flange lie in respective planes inclined relative to a reference plane perpendicular to the said axis.

4,323,820
EMERGENCY LIGHTING SYSTEM
Rudor M. Teich, South Orange, N.J., assignor to Foxmar Industries Inc., New York, N.Y.
Filed Mar. 27, 1980, Ser. No. 134,650
Int. Cl.³ H02J *9/00*
U.S. Cl. 315—86 **48 Claims**



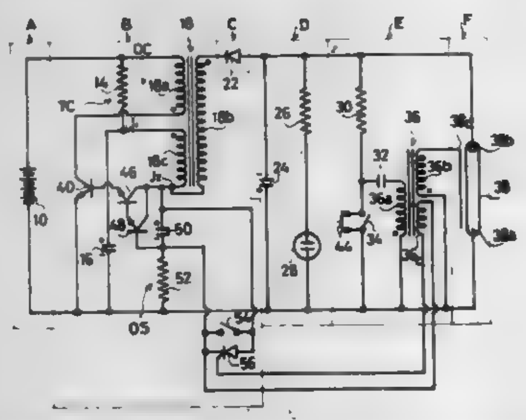
1. A system for controlling the operation of an emergency device connected to a power line having a switch therein comprising a secondary power source for powering said emergency device, means for detecting a first loss-of-power condition resulting from the opening of said switch and a second loss-of-power condition resulting from a line failure even when said switch is closed, means responsive to the detection only of said second condition for enabling the continued powering of said emergency device from said secondary power source, said secondary power source, said detecting means and said enabling means all being contained at the location of said emergency device, control means for initially causing said emergency device to be powered from said secondary power source immediately responsive to the loss of power on said power line, and means for controlling said enabling means to operate only a predetermined time interval after said loss of power.

4,323,821
LUMINAIRE CONVERTER
Thomas J. Day, Jefferson City, Mo., assignor to Central Electrical Company, Fulton, Mo.
Filed Jan. 30, 1980, Ser. No. 116,966
Int. Cl.³ H05B *39/10, 41/46*
U.S. Cl. 315—87 **10 Claims**



1. A converter circuit for use in changing a series wired primary ballast for a mercury vapor lamp circuit to one that can accommodate a high intensity discharge lamp in the category of a high pressure sodium lamp, and therein achieve substantial energy savings during operation of the said high pressure sodium lamp over the corresponding energy consumed during operation of the replaced mercury vapor lamp, comprising, a secondary circuit for the said ballast and having a lamp retaining socket also connected therein, a silicon controlled rectifier connected within the secondary circuit and useful for generating a direct current electrical pulse necessary for energization of such a high intensity discharge lamp, a trigger diode connecting with the gate of the said rectifier and when current conducting providing for a charging of the said rectifier, and a resistor series connected with the said trigger diode and useful for regulating the size of lamp to be accommodated by the converter circuit.

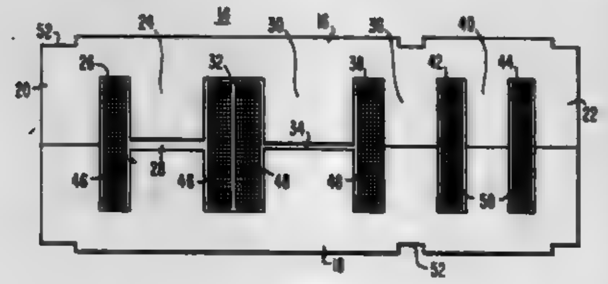
4,323,822
ELECTRIC FLASH DEVICE
Yoshiyuki Takematsu, Tokyo, Japan, assignor to Fuji Koeki Corporation, Tokyo, Japan
Filed Sep. 22, 1978, Ser. No. 944,893
Claims priority, application Japan, Sep. 25, 1977, 52-128649[U]; Oct. 22, 1977, 52-142363
Int. Cl.³ H05B *41/32*
U.S. Cl. 315—241 P **16 Claims**



1. An electric flash device comprising a direct current power source circuit including a direct current power source for providing a direct current voltage, a flash tube circuit including a flash tube, a voltage converter circuit for converting said direct current voltage of said direct current power source to an alternating current voltage, a rectifier circuit for rectifying said alternating current voltage to a direct current voltage, a charging circuit for storing an electric charge and for supplying electrical energy to said flash tube, and a trigger pulse generating circuit for triggering said flash tube of the flash tube circuit,

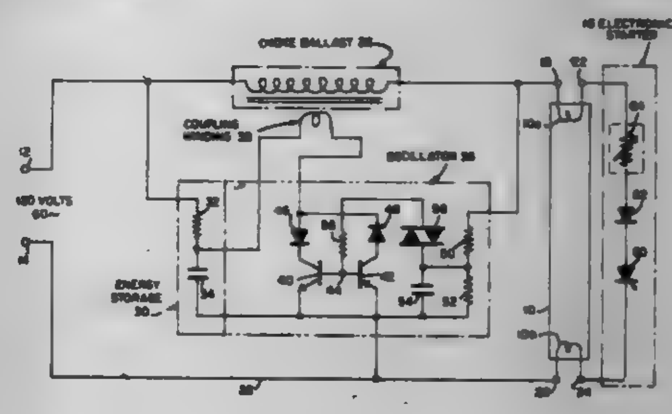
said voltage converter circuit comprising an oscillating transformer connected to said direct current power source for generating a high alternating current voltage and having a current flowing therein, an oscillator circuit for performing an oscillating operation including an oscillating switch element having a high leakage resistance for switching said current which flows in said oscillating transformer and functioning as a high resistance resistor when the oscillating operation of said oscillator circuit ceases, said oscillating switch element including a control electrode circuit, and an oscillation starting circuit including a switching means, provided in said control electrode circuit of said oscillating switch element of said oscillator circuit, for turning on said oscillating switch element of said oscillator circuit.

4,323,823
UNITARY BALLAST STRUCTURE FOR OPERATING FOUR FLUORESCENT LAMPS
Rao L. Boggavarapu, Monroeville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed May 16, 1980, Ser. No. 150,480
Int. Cl.³ H05B *41/23*
U.S. Cl. 315—254 **6 Claims**



1. A unitary ballast structure for starting and operating four fluorescent lamps, said ballast structure comprising stacked magnetic iron laminations and insulated coils retained thereon to provide as electrical components two separate inductor means and lamp electrode-coil-heating transformer means, with minimized magnetic coupling between different ones of said electrical components, said unitary structure comprising:
(a) a composite unitary magnetic core member formed of stacked magnetic iron laminations and having a shell-type configuration with two main leg members and six coil leg members which together define five wire-coil-receiving windows;
(b) said coil leg members including first and sixth coil leg members projecting respectively from the extremities of each said main leg member to form a continuous magnetic path about the periphery of said shell-type core;
(c) said coil leg members including a second coil leg member spaced by a predetermined distance from said first coil leg member to form a first inductor means coil-receiving window of predetermined dimensions, and said second coil leg member including therein an air gap of predetermined dimensions;
(d) said coil leg members including a third coil leg member spaced by a predetermined distance from said second coil leg member to form a second inductor means coil-receiving window of approximately double the size of said first coil-receiving window, and said third coil leg member including therein an air gap of predetermined dimensions;
(e) said coil leg members including a fourth coil leg member spaced from said third coil leg member by a predetermined distance to form a third coil-receiving window approximately the same size as said first coil-receiving window;
(f) said coil leg members including a fifth coil leg member spaced predetermined distances intermediate said fourth coil leg member and said sixth coil leg member to form fourth and fifth coil-receiving windows of predetermined dimensions;
(g) an insulated wire coil retained on second coil leg member to occupy said first window and approximately half said second window and terminating in a pair lead-in wires adapted to be connected in circuit to form a first inductor means;
(h) an insulated wire coil retained on said third coil leg member to occupy said third window and the remaining half of said second window and terminating in a pair of lead-in wires adapted to be connected in circuit to form a second inductor means; and
(i) a transformer primary winding coil and multiple secondary winding coils retained on said fifth coil leg member to occupy said fourth and said fifth windows, and each said transformer winding coil terminating in separate lead-in wires adapted to be connected in circuit; whereby the physical separation of said first and said second inductor means and said transformer means minimizes magnetic coupling therebetween while still providing a compact unitary structure.

4,323,824
LOW VOLTAGE FLUORESCENT OPERATING CIRCUIT
William J. Roche, Merrimac, and Carlo S. Bessone, Woburn, both of Mass., assignors to GTE Products Corporation, Stamford, Conn.
Filed Dec. 21, 1979, Ser. No. 106,171
Int. Cl.³ H05B *37/00, 39/00*
U.S. Cl. 315—289 **21 Claims**

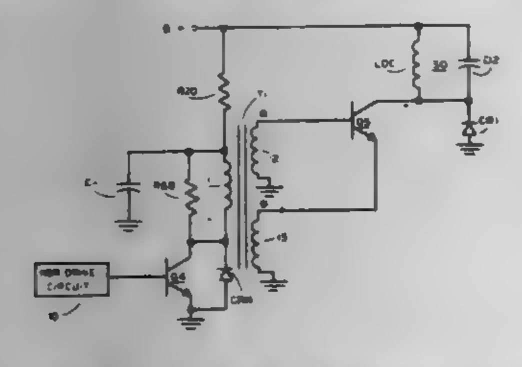


1. A circuit for starting and operating a fluorescent lamp from a source of AC line voltage comprising, in combination:
first and second input terminals for connection across said source of line voltage, and first and second output terminals for connection across said lamp;
a choke ballast series connected between said first input terminal and said first output terminal;
a common conductor connected between said second input terminal and said second output terminal;
energy storage means connected between said first and second input terminals;
a voltage sensitive relaxation oscillator connected between said first output terminal and said common conductor; and
means connected between said energy storage means and said oscillator including a winding for inductively coupling pulses to said choke ballast, said oscillator being operative during the process of starting said lamp to repeatedly switch said storage means across said coupling winding to provide a pulse train therefrom during a half cycle of said line voltage.

4,323,825
DEFLECTION SYSTEM WITH POSITIVE FEEDBACK
Robert S. Hayes, Pasadena, Calif., assignor to Mohawk Data Sciences Corp., Parsippany, N.J.
Filed Oct. 6, 1980, Ser. No. 193,909
Int. Cl.³ H01J *29/70, 29/72*
U.S. Cl. 315—387 **2 Claims**

1. In an electron beam deflection circuit which is coupled to

a source of operating energy and which is responsive to a source of periodic drive signal to provide a periodic sawtooth current in a deflection coil, each period of the signal having a retrace interval and a scanning interval, the sawtooth current having a substantially linear ramp during the scanning intervals thereby storing energy in the deflection coil, the deflection circuit including a switching transistor having its base lead coupled to respond to the periodic drive signal and having its collector lead connected in circuit with a tank network, the tank network including the deflection coil and a damping diode; the circuit operation being such that during the retrace intervals the transistor is cut off and the damping diode becomes forward biased after the stored energy completes about one-half cycle of an oscillation in the tank network and continues to be forward biased to damp such oscillation and to complete a current path for the sawtooth current until approximately the midpoint of the ensuing scanning interval when the forward bias of the diode is removed and the collector to emitter path of the switching transistor thereafter completes



the current path for the sawtooth current for the remainder of the scanning interval; the deflection circuit being further characterized by:

a transformer having a first primary winding coupled to receive the periodic drive signal, a second primary winding coupled to the emitter lead and a secondary winding coupled to the base lead of the switching transistor; the first primary winding conducting a current pulse during each retrace interval to cut off the switching transistor, the stored energy decaying and providing base current to the switching transistor during the first half of each scanning interval, the second primary winding providing base current during the second half of each scanning interval; and by

the transformer coupling between the switching transistor base and emitter leads providing positive feedback so as to control the base current for the switching transistor throughout the time that the switching transistor is conducting.

4,323,826

DRIVE CIRCUITS FOR A HIGH RESOLUTION CATHODE RAY TUBE DISPLAY

Frederick D. Lehman, Rockford, Minn., assignor to CPT Corporation, Eden Prairie, Minn.

Division of Ser. No. 896,81 3, Apr. 17, 1978, Pat. No. 4,238,774. This application Dec. 17, 1979, Ser. No, 103,999

Int. Cl.³ H01J *29/70, 29/76*

U.S. Cl. 315—408 13 Claims

1. A high frequency two way scan circuit for causing trace and retrace scans on a cathode ray tube having a yoke comprising:

sweep means connected to the yoke of the cathode ray tube for causing the trace to sweep from a first side of the tube to the other;

receiving means for receiving a retrace sync signal;

first circuit means connected to the sweep means for turning the sweep means off during retrace comprising:

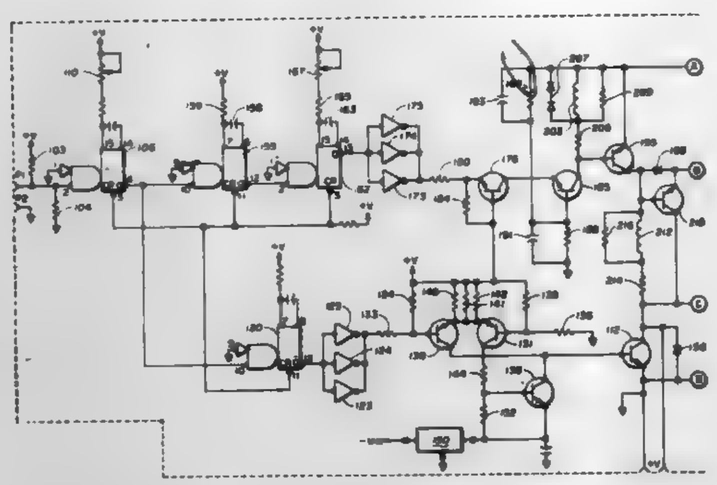
first timing means connected to the receiving means for generating a first timing interval during which the sweep means will be off;

electronic switching means connected to the first timing means and the sweep means for switching the sweep means off during the first timing interval and on after the timing interval established by the first timing means;

retrace means connected to the yoke of the tube for causing the trace to return to the first side of the tube; and

second circuit means connected to the retrace means for turning the retrace means on comprising:

second timing means connected to the receiving means for



generating a second time interval smaller in duration than the first time interval and which is initiated a finite time after the first time interval and which terminates prior to the termination of the first time interval; and

a second electronic switching circuit connected to the second timing means and the retrace means for switching the retrace means on during the second timing interval and off after the second timing interval.

4,323,827

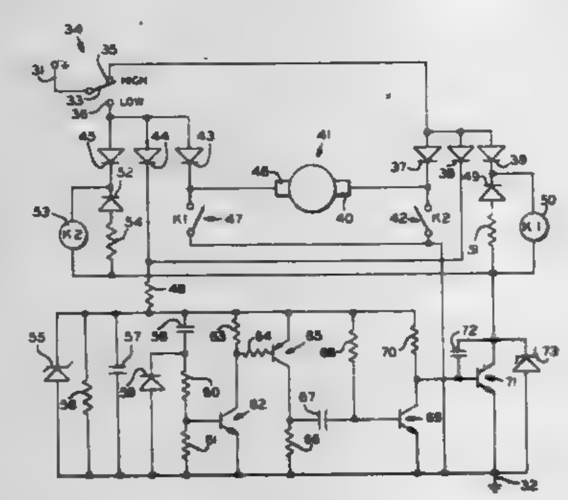
APPARATUS FOR CONTROLLING A TWO-SPEED SHIFT MOTOR

Richard N. Young, and James A. Williams, both of Richmond, Ind., assignors to Dana Corporation, Toledo, Ohio

Filed Aug. 6, 1980, Ser. No. 175,838

Int. Cl.³ H02K *7/14*

U.S. Cl. 318—3 13 Claims



1. In an electrically actuated shift apparatus for a multi-speed axle including an electric power source and an electric motor coupled to actuate means for shifting the axle, a control means comprising:

means for generating a shift signal;

means responsive to said shift signal for generating a first control signal for a first predetermined time;

means responsive to termination of said first control signal for generating a second control signal for a second predetermined time; and

means responsive to said second control signal for connecting the power source to the motor for said second predetermined time to shift the axle from one speed to another speed.

4,323,828

APPARATUS FOR USE WITH A MOTOR DRIVE

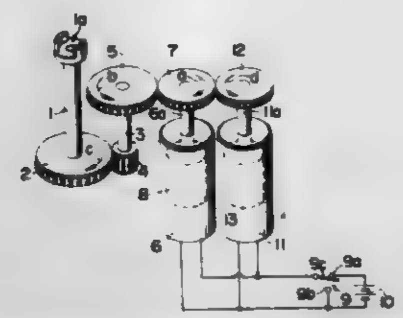
Katumi Terada, and Kazuyuki Nemoto, both of Hachioji, Japan, assignors to Olympus Optical Co. Ltd., Japan

Continuation-in-part of Ser. No. 807,396, Jun. 17, 1977, Pat. No. 4,219,764. This application May 4, 1979, Ser. No. 36,071

Claims priority, application Japan, Jul. 9, 1976, 51-92171

Int. Cl.³ H02P *1/54*

U.S. Cl. 318—45 9 Claims



1. Apparatus for use with a motor drive comprising:

a pair of motors each having a cooperating stator and rotor and an output shaft operatively driven by said rotor:

the moments of inertia of said motors being substantially equal;

circuit means including a power source for selectively energizing and deenergizing said pair of motors substantially simultaneously;

means for maintaining said motors in fixed positions relative to one another;

means including gear means operatively coupling the output shafts of said motors in such a manner that the output torque of the apparatus is substantially the sum of the torques of said motors and that the output shafts rotate in opposite directions, whereby the electromagnetic reaction energies developed by said motors when they are rapidly accelerated or decelerated, tend to cancel one another;

said circuit means including switch means for simultaneously coupling said motors to said power source when said switch means is moved to a first position; and

said switch means further including means for simultaneously applying dynamic braking to both of said motors when said switch means is moved to a second position.

4,323,829

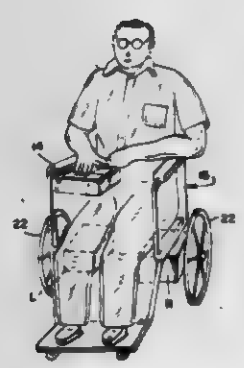
CAPACITIVE SENSOR CONTROL SYSTEM

Gary Witney, and Harry Visser, both of Thornhill, Canada, assignors to Barry M. Fish, Ontario, Canada

Filed Jul. 28, 1980, Ser. No. 172,529

Int. Cl.³ H02P *7/68*

U.S. Cl. 318—55 14 Claims



1. An electronic control system for controlling the operation of electromotive means, comprising:

electronically capacitive sensing means for detecting proximity thereto by a portion of a human body,

oscillator means responsive to said sensing means operative to produce a series of output pulses having a frequency in accordance with the capacitance input thereto by said sensing means,

discriminator means for detecting the trailing edges of said oscillator pulses and producing a series of fixed width pulses in response thereto,

integrator means operative to produce a D.C. voltage in accordance with said discriminator pulses, said D.C. integrator voltage corresponding to the magnitude of the coupled capacitance sensed by said capacitance sensing means.

4,323,830

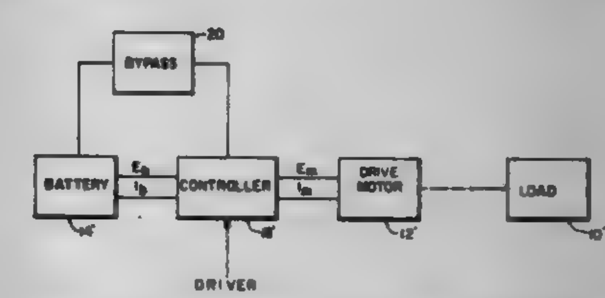
DC MOTOR CONTROL USING MOTOR-GENERATOR SET WITH CONTROLLED GENERATOR FIELD

Charles A. Beisterling, Norristown, Pa., and John Stone, Medford, N.J., assignors to The Franklin Institute, Philadelphia, Pa.

Filed May 21, 1980, Ser. No. 151,973

Int. Cl.³ H02P *5/20*

U.S. Cl. 318—158 17 Claims



1. A system for controlling a d.c. drive motor subject to variable load comprising:

a source of the d.c. current, a motor-generator set having a d.c. generator connected in series between the source of current and the drive motor such that common polarity terminals of the power source and the generator are connected together so that the generator generates a voltage in opposition to the power source, said generator having at least one field winding subject to control, and motor means rotationally coupled to the d.c. generator to drive the generator and electrically coupled to the source of d.c. power, and

means to vary said at least one field winding whereby, when the d.c. drive motor is at rest, the field of the generator is controlled so that its generator voltage output is equal to but opposite to the voltage output of the power source, the motor generator means alternately acting as a motor to drive the generator and as a generator driven by the generator acting as a motor whereby power corresponding to the unused excess energy is fed back into the power source.

4,323,831

COMMUTATOR MOTOR USEFUL FOR DRIVING AUTOMATIC WASHERS

Peter Bradler, Würzburg, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Sep. 21, 1979, Ser. No. 77,654

Claims priority, application Fed. Rep. of Germany, Sep. 28, 1978, 2842377

Int. Cl.³ H02K *23/64;* H02P *7/36*

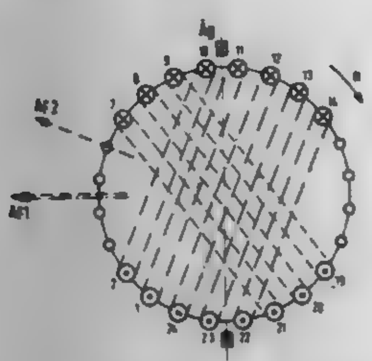
U.S. Cl. 318—245 5 Claims

1. A stator for a commutator motor useful for driving automatic washing machines, which is operable at different speeds by changing the external connections between an AC single-

phase supply and a stator field winding to change the stator field, comprising:

a stator bore containing slots around its circumference;

a stator field winding having at least first and second parts distributed in said slots around at least a portion of the



circumference, each winding part positioned to produce a field having a different axis; and

means for changing connections to the parts of the stator field winding so that, when going from a low speed to a high speed, the axis of the stator field is rotated in the direction of rotation of the motor.

4,323,832

SYSTEM FOR CONTROLLING THE SPEED OF A MAGNETIC TAPE TRANSPORT MOTOR

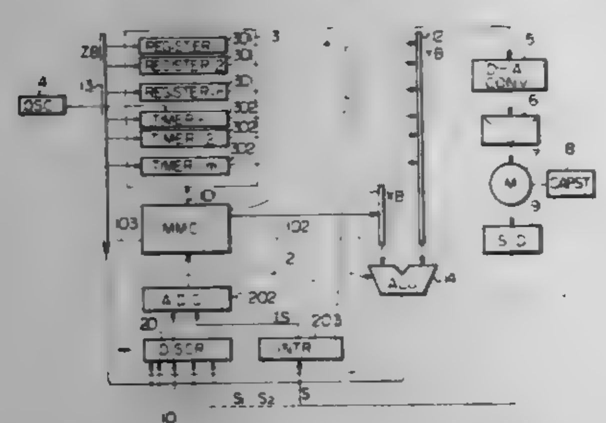
Eiji Okamura, Kamakura, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Jul. 26, 1978, Ser. No. 928,104

Claims priority, application Japan, Aug. 5, 1977, 52-93771

Int. Cl.³ H02P *5/16*

U.S. Cl. 318—341 **1 Claim**



1. A system for controlling the speed of a tape transport motor during each revolution of the motor and subsequently during each revolution for selectively controlling information transfers between said tape and an external master unit, said controlling of the speed and the termination of said selective information transfers occurring in correspondence to the rotational position of said motor, said system comprising:

a microcomputer having stored therein respective control programs for said speed control of said motor and for other control operations including said information transfers, said microcomputer outputting with each revolution of said motor a digital signal for controlling the speed of said motor during the following revolution of the motor,

a digital-to-analog converter for converting each said digital output of said microcomputer to a respective analog signal for controlling the speed of said motor during the corresponding revolution of the motor,

a speed detector connected to said motor, said speed detector comprising means for outputting two signals, each said signal comprising a repeated waveform with frequency proportional to the speed of said motor, and each of said two signals having a rising edge and falling edge corresponding to the respective rotational positions of said motor, said two signals differing at least in the phase of said repeated waveforms, and

an oscillator providing clock pulses to said microcomputer, said microcomputer comprising:

means for counting the number of said clock pulses occurring between selected consecutive ones of said edges of a first one of said two signals, said selected consecutive edges of said first signal being separated by one period of the periodic waveforms,

means for operating said speed control program in correspondence with each occurrence of said selected edge of said first signal, including means for transferring said counted number for storage in correspondence with each said selected edge of said first signal, and an arithmetic logic unit for comparing each said stored value with a corresponding value supplied by said speed control program for each said comparison, and for computing each said digital output signal for controlling the speed of said motor,

means for selectively operating said other control programs as time permits between each said operation of said speed control program and each respective subsequent occurrence of a selected one of said edges of the second signal, said selected edges of said second signal also being separated by one period of the periodic waveforms, and

means for stopping the operation of all said control programs in between each said selected edge of the second signal and said selected edge of the first signal,

wherein, the amount of time available for said processing of said other control operations increases as the speed of said motor decreases, and said speed control is initiated, and said processing of said other control operations is terminated, at the corresponding rotational positions of said motor corresponding to the selected edge of the first of said two signals and the selected edge of the second of said two signals.

4,323,833

SEWING MACHINE DRIVE MOTOR CONTROL SYSTEM

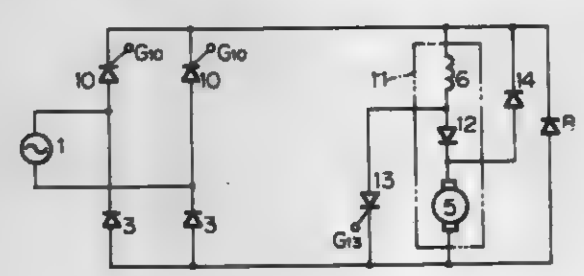
Kazuo Watanabe, Hachioji; Hachiro Makabe, Fussa; Akira Orii, Sagamihara; Michio Hisatake, Hino, and Kazuji Yamamoto, Koganei, all of Japan, assignors to Janome Sewing Machine Co., Ltd., Tokyo, Japan

Filed Apr. 9, 1979, Ser. No. 28,185

Claims priority, application Japan, Apr. 12, 1978, 53/42178; Apr. 20, 1978, 53/45905; May 18, 1978, 53/59428

Int. Cl.³ H02P *5/16*

U.S. Cl. 318—376 **6 Claims**



1. A braking and speed control circuit for use with a DC series motor having a field coil and an armature winding which are entirely in series with each other, which motor is driven by a phase-controlled AC source, comprising;

a forward-biased diode intermediate the field coil and the armature winding and in series therewith;

a first reverse-biased diode placed in parallel with a first series network including only the field coil and the forward biased diode;

a second reversed-biased diode placed in parallel with a second series network including only the field coil, the forward-biased diode and the armature winding; and

a forward-biased semiconductor switch placed in parallel with a third series network including only the forward biased diode and the armature winding.

4,323,834

MOVEMENT DETECTOR FOR A STEPPING MOTOR

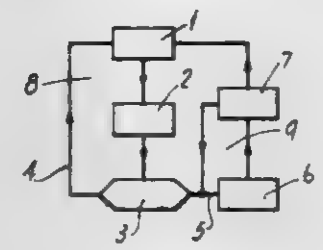
Mai T. Xuan, Chavannes; Marcel Jufer, Morges, both of Switzerland, and Andre Pittet, Bangalore, India, assignors to Societe Suisse pour l'Industrie Horlogere Management Services S.A., Bienne, Switzerland

Filed Aug. 27, 1980, Ser. No. 181,929

Claims priority, application France, Sep. 4, 1979, 79 22609

Int. Cl.³ G05B *19/40; G04C 3/00*

U.S. Cl. 318—696 **4 Claims**



1. A feed arrangement for a single phase timepiece stepping motor arranged to control the functioning of the motor by means of a first type of bipolar pulses of relatively small width or by a second type of bipolar pulses of greater width, a series of pulses of the second type being applied to the motor whenever said motor has failed to step in response to pulses of the first type wherein first means are provided which responsive to each bipolar pulse of the first type within a first time period 0–t_1 open circuit the motor during a second time period t_2–t_3 and second means are provided to detect a first signal Ui developed at the motor terminals during said second time period and to generate a second signal

$$Uc = \int_{t_2}^{t_3} Ui\, dt$$

which when of greater magnitude to a predetermined reference signal indicates that the motor has failed to step in response to a bipolar pulse of said first type.

4,323,835

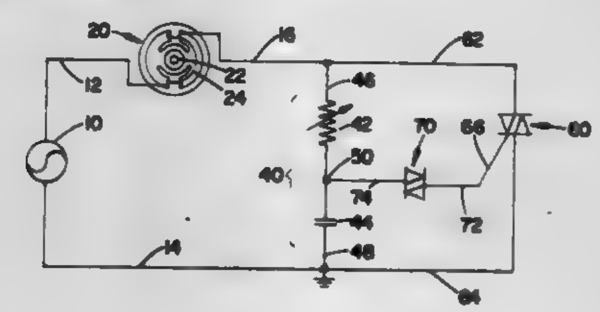
SIMPLIFIED POWER FACTOR CONTROLLER FOR INDUCTION MOTOR

Maw H. Lee, Broadview Hts., Ohio, assignor to The Scott & Fetzer Company, Cleveland, Ohio

Filed Mar. 5, 1980, Ser. No. 127,439

Int. Cl.³ H02P *7/36*

U.S. Cl. 318—729 **15 Claims**



1. A method of optimizing the power factor of a less than fully loaded generally constant speed AC induction motor by regulating the time duration of AC supply voltage application to the induction motor in electrical series relation with its AC supply and a gate-controlled, motor-energizing, semiconductor switch comprising the step of varying the time duration by varying the conduction period of the semiconductor switch in accordance with the amplitude of a control voltage generated by the generally constant speed motor during non-conduction periods of the semiconductor switch when the rotor of the motor is freewheeling, the amplitude of the control voltage varying as a function of mechanical loading on the rotating rotor shaft of the motor.

4,323,836

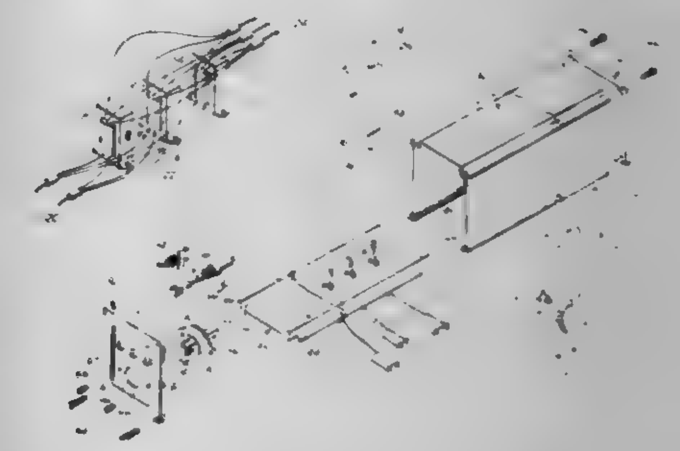
POWER SERVICE MOUNTING SYSTEM

Lawrence F. Rice, 120 Francis Wyman Rd., Burlington, Mass. 01803

Filed May 27, 1980, Ser. No. 153,339

Int. Cl.³ H01M *10/46;* H05K *5/04;* H02B *1/04*

U.S. Cl. 320—2 **8 Claims**



1. A power service mounting system comprising:

a plurality of wall mounting brackets, each having upper and lower spaced gripping means;

a power service housing having upper and lower engaging portions on one side for engagement with said gripping means to hold said housing on a wall and second upper and lower engaging portions on the opposite side, said housing including first electrical connection means for connection with an external power source, second electrical connection means for distributing power, and intermediate circuit means interconnecting said first and second electrical connection means; and

at least one equipment mounting bracket having upper and lower spaced gripping means for engagement with said second upper and lower engaging portions of said housing, one of said upper and lower spaced gripping means of said equipment mounting bracket including clamping means for urging said housing against the other of said upper and lower gripping means, and equipment mounting means for supporting equipment to be serviced by said system.

4,323,837

POWER SUPPLY CIRCUIT FOR AUTOMOTIVE VEHICLES

Kimio Nakamura, Kawasaki; Kimio Fujisawa, Yamato, and Kokichi Ochiai, Fujisawa, all of Japan, assignors to Nissan Motor Company, Limited, Tokyo, Japan

Filed Jul. 18, 1979, Ser. No. 58,473

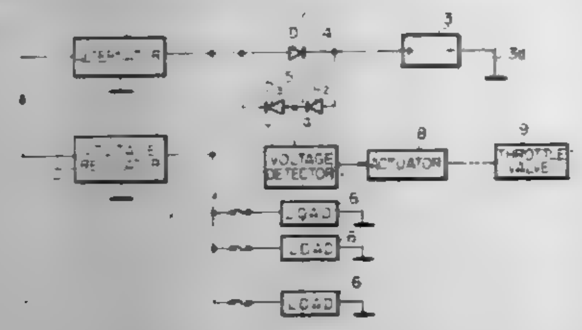
Claims priority, application Japan, Jul. 24, 1978, 53-100654[U]; Jul. 27, 1978, 53-90915; Aug. 8, 1978, 53-108002[U]

Int. Cl.³ H02J *7/14*

U.S. Cl. 322—7 **4 Claims**

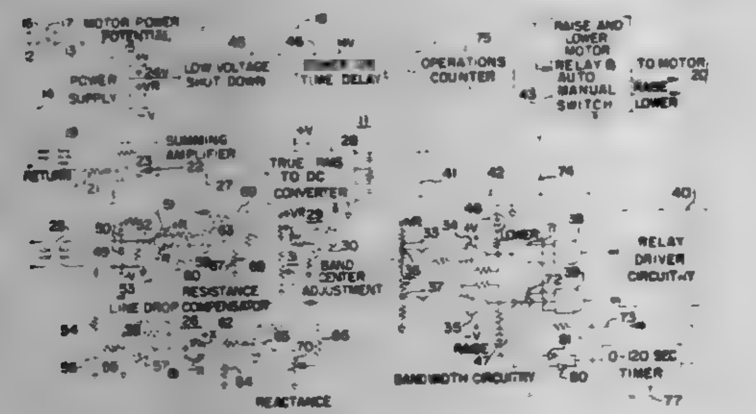
1. A circuit arrangement for an engine, said circuit arrangement comprising an alternator driven by said engine, a storage battery, a charging circuit connected between said alternator and said storage battery and including a diode having an anode terminal and a cathode terminal poled in a sense to conduct current from said alternator to said battery, a first plurality of conductors connected from the anode terminal of said diode to associated load circuits of a first group, a second plurality of

conductors connected from the cathode terminal of said diode to associated load circuits of a second group, means responsive to the speed of said engine execeeding a predetermined value,



and means for providing a short circuit across the anode and cathode terminals of said diode in response to said engine speed responsive means.

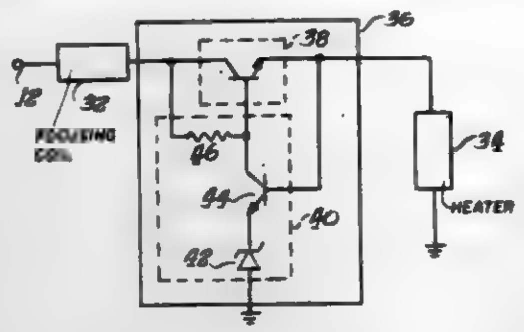
4,323,838
RMS CONTROLLED LOAD TAP CHANGING TRANSFORMER
Robert D. Pettigrew, Pinellas, Fla., assignor to Beckwith Electric Co., Inc., Largo, Fla.
Filed Feb. 9, 1981, Ser. No. 232,667
Int. Cl.³ H02J *3/12*
U.S. Cl. 323—256 7 Claims



1. In an A.C. power distribution system utilizing tap changing transformers having tap selector switches selectively actuatable by a motor, a tap changer control circuit comprising in combination, means for providing a first voltage representative of the potential to be measured, means for providing a second voltage representative of the system transmission line voltage drop, means for adjusting said first and second voltage, processing said first and second voltages for providing a composite voltage, an RMS to D.C. converter for receiving said composite voltage for providing a true RMS to D.C. output, means for determining a reference voltage range, means for providing a motor drive signal when the converter output is outside said range, and motor circuitry being responsive to said signal to energize said motor to actuate said tap selector switches to change the transformer setting.

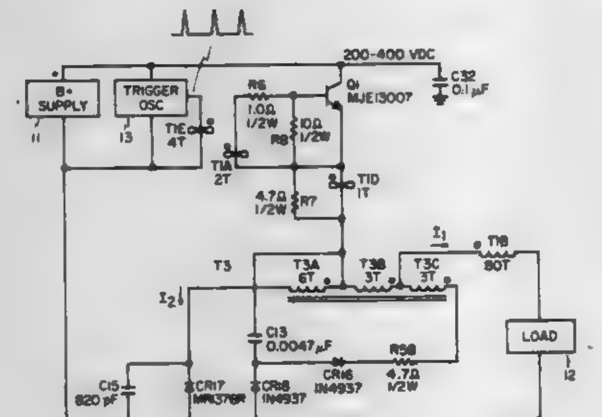
4,323,839
CONSTANT CURRENT LOAD AND CONSTANT VOLTAGE LOAD POWER SUPPLY
Kazuyoshi Imazeki, and Shozo Iguchi, both of 6-2-15 Roppongi, Minato-ku, Tokyo, Japan
Filed Dec. 22, 1980, Ser. No. 219,335
Int. Cl.³ G05F *1/56*
U.S. Cl. 323—267 5 Claims

1. A constant current, constant voltage power supply comprising current adjusting means and control circuit means for controlling said current adjusting means to feed a constant current to a load connected to an input side of said current adjusting means and a constant voltage to a load connected to the output side of said current adjusting means, respectively, said control circuit means being further responsive to a varia-



tion in said constant voltage load for controlling said current adjusting means to supply a constant current and a constant voltage to said two loads, respectively, at the same time.

4,323,840
SWITCHING MODE REGULATOR
Glenn B. Gawler, Liverpool, N.Y., assignor to General Electric Company, Syracuse, N.Y.
Filed Oct. 6, 1980, Ser. No. 194,052
Int. Cl.³ G05F *1/56*
U.S. Cl. 323—287 7 Claims



1. A switching mode regulator for energizing a load from a dc power supply comprising:

A. a first and a second input terminal for connection to said dc supply,
B. a pair of terminals between which a load may be connected,
C. an inductor,
D. an intermittently conducting transistor switch having a first and a second electrode, said first switch electrode being connected to said first input terminal;

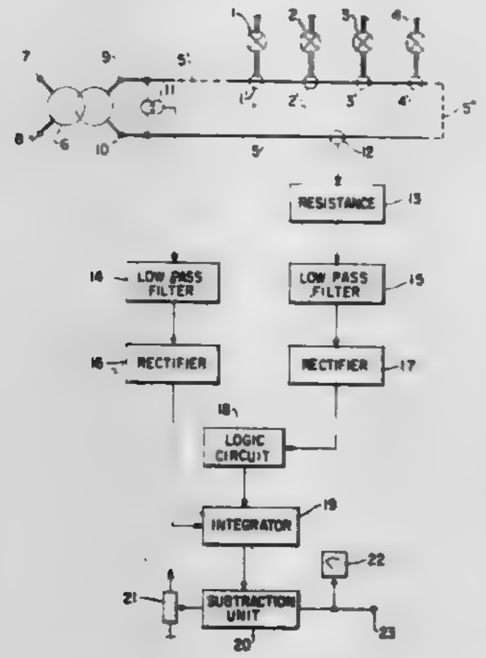
said inductor and said load terminals being connected to provide serial connection of said inductor and said load in a first path between said second switch electrode and said second input terminal;

E. a first diode connected in a second path, shunting said first path, to conduct inductively sustained current through said load when said switch is off;
F. means to reduce switching stresses on said semiconductor switch during the turn on current transient when stored charge is removed from said first diode comprising:
(1) a current transformer having a core and a first and a second winding closely magnetically coupled, with said first winding serially connected in said second path and the second winding serially connected in said first path,

current transformer action, during said transient, limiting current in said second path to approximate proportionality to said first path current, said first path current being limited by the inductance of said inductor, said

transformer transferring transient energy to said inductor and being magnetized in a set direction, and
(2) means for substantially resetting said transformer by the transfer of transient energy from said inductor through said transformer prior to turn off of said switch.

4,323,841
INDICATING DEVICE FOR USE IN AIRFIELD LIGHTING PLANTS TECHNICAL FIELD
Leif V. Jacobsen, Copenhagen, Denmark, assignor to Christian Gundorph Albertus, Naerum; Erik Steinmann Hansen, Soborg and Leif Heegaard Giortz, Copenhagen, all of, Denmark
Filed Apr. 1, 1980, Ser. No. 136,353
Claims priority, application Denmark, Apr. 4, 1979, 1382/79
Int. Cl.³ G01R *31/02;* G08B *21/00*
U.S. Cl. 324—51 14 Claims

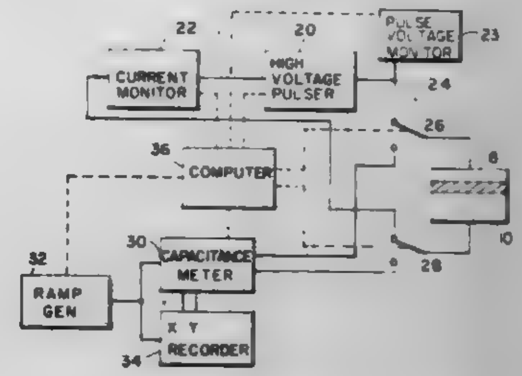


1. A device for detecting variation in the loading of a circuit coupled to an alternating current source, the circuit being loaded by a plurality of serially interconnected primary circuits of a like plurality of loading transformers having a like plurality of secondary circuits, each secondary circuit being coupled to a respective primary circuit, comprising current signal means for generating a current signal representative of the current flowing in the loaded circuit, voltage signal means for generating a voltage signal representative of the voltage supplied to the loaded circuit, detection means responsive to said current signal and said voltage signal for generating an output voltage signal proportional to the integration of the voltage supplied to the loaded circuit, said integration being from a first predetermined time corresponding to a first circuit current value of approximately zero and a second predetermined time corresponding to a second circuit current value approximately equal to the saturation current for the loading transformers, said output voltage signal being indicative of the number of primary circuits of the loading transformers being uncoupled to their respective secondary circuits.

4,323,842
METHOD AND APPARATUS FOR ELECTRICALLY TESTING RADIATION SUSCEPTIBILITY OF MOS GATE DEVICES
James M. McGarrity, Silver Spring, and Harold E. Boesch, Jr., Columbia, both of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Feb. 19, 1980, Ser. No. 122,208
Int. Cl.³ G01R *31/26*
U.S. Cl. 324—158 R 8 Claims

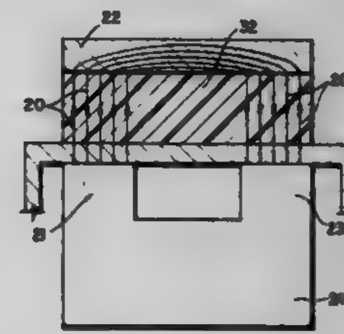
1. A method for electrically testing radiation susceptibility of an MOS gate device which comprises a silicon substrate, an insulating silicon dioxide layer and a metal gate comprising the steps of:

injecting a controlled number of electrons into said insulating silicon dioxide layer from said silicon substrate; and



measuring a shift in a capacitance-voltage characteristic of said device.

4,323,843
MAGNETIC CONTAMINATION DETECTOR
Ian N. Batham, Diery St., Warwick, Queensland 4370, Australia
Filed Nov. 30, 1979, Ser. No. 98,842
Claims priority, application Australia, Dec. 6, 1978, PD7019
Int. Cl.³ G01N *27/74;* G01R *33/12*
U.S. Cl. 324—204 19 Claims



1. Apparatus for detecting magnetisable electrically conductive particles in an electrically non-conductive fluid medium, including sensor means comprising: a plug shaped device having an axis and including means producing a magnetic flux in a flux path extending between two axially spaced apart electrode means electrically insulated one from the other and connectable to circuit means for signalling a condition in which an electrically conductive path is formed from one said electrode means to the other, the lines of force of said flux in said flux path extend substantially rectilinearly in an axial direction from one electrode to the other; and said means for producing the magnetic flux are ferromagnetic means for directing substantially the balance of said flux in a loop path said balance being substantially confined within said ferromagnetic means thereby substantially to prevent nonrectilinear portions of said flux from exerting an influence on magnetisable particles, if any, arranged between said electrode means.

4,323,844

TEST SYSTEM FOR DETECTING A PERMANENT DEFECT AND A TEMPORARY DEFECT IN MAGNETIC RECORDING TAPE

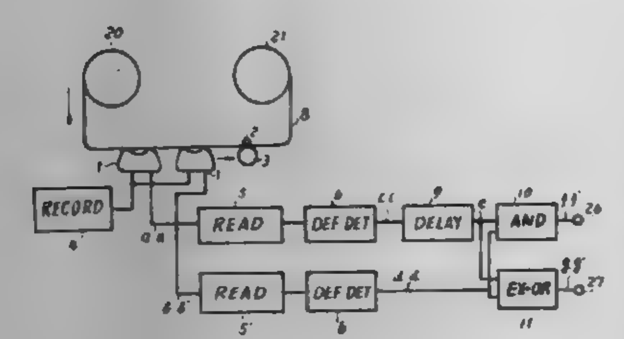
Yoshio Mikame, Saku, Japan, assignor to TDK Electronics Co., Ltd., Tokyo, Japan

Filed May 23, 1979, Ser. No. 41,760

Claims priority, application Japan, May 31, 1978, 53/65167

Int. Cl.³ G01R *33/12;* G01N *27/82;* H03K *5/22*

U.S. Cl. 324—212 2 Claims



1. A test system for detecting a permanent defect and a temporary defect in magnetic recording tape comprising;

(a) means including a single capstan roller and a single pinch roller for running magnetic tape linearly along a predetermined path in a predetermined direction,

(b) a first magnetic head assembly having a write-head and a read-head, said write-head positioned at a fixed distance from said read-head and at an upper stream side of said path,

(c) a second magnetic head assembly having a write-head and a read-head, said write-head positioned at a fixed distance from said read-head and at an upper stream side of said path, and having a length (l) between the read-head of said first magnetic head assembly and the read-head of said second magnetic head assembly,

(d) a record circuit for providing a signal to be recorded to said write-heads of both said first and said second magnetic head assemblies,

(e) a first and a second read circuit connected to outputs of the read-heads of the first magnetic head assembly and the second magnetic head assembly, respectively,

(f) a first and a second defective-portion-detecting circuit connected to outputs of said first and said second read circuit, respectively,

(g) a delay circuit connected to output of said first defective-portion-detecting-circuit, a delay time (t) of said delay circuit being $t = l/V$, where V is the tape feeding speed,

(h) an AND circuit having a first input connected to output of said delay circuit, and a second input connected to output of said second defective-portion-detecting-circuit, said AND circuit determining whether both said first magnetic head assembly and said second magnetic head assembly have sensed a permanent defect,

(i) an exclusive-OR circuit having a first input connected to output of said delay circuit, and a second input connected to output of said second defective-portion-detecting-circuit, said exclusive-OR circuit determining whether either said first magnetic head assembly or said second magnetic head assembly has sensed a temporary defect,

(j) a first output terminal connected to output of said AND circuit for providing permanent defect detection, and

(k) a second output terminal connected to output of said exclusive-OR circuit for providing temporary defect detection.

4,323,845

POWER REGULATING APPARATUS INCLUDING LOAD CURRENT SENSOR MEANS

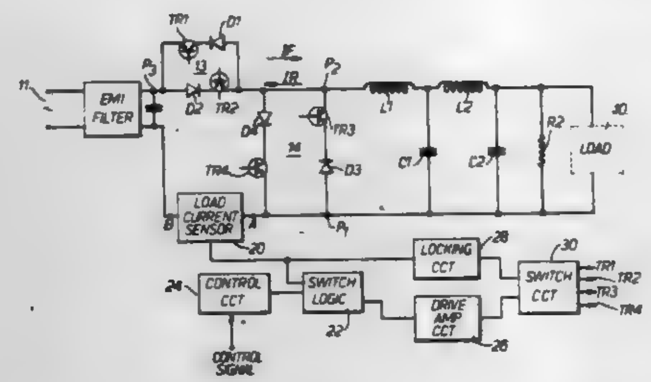
John M. Leach, Wrexham, Wales, assignor to Gould Advance Limited, Hainault, England

Filed Mar. 5, 1980, Ser. No. 127,510

Claims priority, application United Kingdom, Mar. 6, 1979, 07921/79

Int. Cl.³ G05F *1/44*

U.S. Cl. 323—224 10 Claims



1. In an electric regulating apparatus including

(a) input terminal means adapted for connection with a source of alternating current;

(b) output terminal means adapted for connection with a load;

(c) series chopper means connected in series between said input terminal means and said output terminal means, said series chopper means including two unidirectional controlled rectifying paths connected in parallel opposition;

(d) shunt chopper means connected in parallel across said output terminal means, said shunt chopper means including two unidirectional controlled rectifying paths connected in parallel opposition; and

(e) control means for controlling said rectifying paths of said series and shunt chopper means by providing switching signals to said series and shunt chopper means at a frequency higher than that of said alternating current source;

the improvement which comprises

(f) load current sensing means for sensing the direction of flow of current between said input and said output terminal means;

(g) said control means being responsive to said load current sensing means for rendering conductive first controlled rectifying paths in said series and in said shunt chopper means at said higher frequency when said flow of current is in one direction, and for alternately rendering conductive second controlled rectifying paths in said series and in said shunt rectifying means at said higher frequency when said flow of current is in the other direction, said alternately conductive paths in said series and shunt rectifying means being so selected as to enable flow of load current in the sensed direction, respectively.

4,323,846

RADIATION HARDENED MOS VOLTAGE GENERATOR CIRCUIT

Tegze P. Haraszti, Garden Grove, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Jun. 21, 1979, Ser. No. 50,724

Int. Cl.³ G05F *3/04*

U.S. Cl. 323—311 37 Claims

1. A voltage generator for tracking the threshold voltage variation of transistor devices comprising:

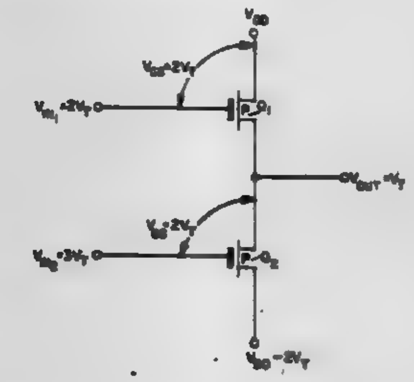
a pair of terminals for connection across first and second sources of potential;

first and second transistor devices connected in electrical series between said first and said second source of potential; each of said transistor devices having respective conduction path terminals and a control terminal; a first

node being formed at the common electrical junction between one of the conduction path terminals of said first transistor, and one of the conduction path terminals of said second transistor;

means for selectively applying a first potential to said control electrode of said first transistor device, comprising a field effect transistor source follower circuit, including:

third and fourth enhancement mode field effect transistors, each having respective conduction path terminals and a control electrode, the conduction path terminals thereof being connected in electrical series between said first source of potential and said control terminal of said first enhancement mode transistor, a second node being formed at the common electrical junction between the conduction path terminals of said third transistor being connected to said second node and the control terminal of said fourth transistor being connected to the control terminal of said first transistor;



first control means connected to said control terminals of said first and fourth enhancement mode field effect transistors for selectively turning said transistors on;

a fifth enhancement mode field effect transistor having respective conduction path terminals and a control electrode, said conduction path terminals thereof being connected in electrical series with the conduction path of said third and fourth enhancement mode field effect transistor, the first conduction path terminal of said fifth transistor connected to the control terminal of said first transistor, the control terminal of said fifth transistor being connected to the control terminal of said second enhancement mode transistor;

means for selectively applying a second predetermined potential to said control electrode of said second transistor device; so that a voltage is generated on said first node substantially equal to the threshold voltage of said first and said second transistor devices; and

an output connected to said first node.

4,323,847

OSCILLATOR TYPE METAL DETECTOR WITH SWITCH CONTROLLED FIXED BIASING

James P. Karbowski, Philomath, Oreg., assignor to Triple Dee Electronics Inc., Lebanon, Oreg.

Filed Jun. 11, 1979, Ser. No. 47,225

Int. Cl.³ G01V *3/165*

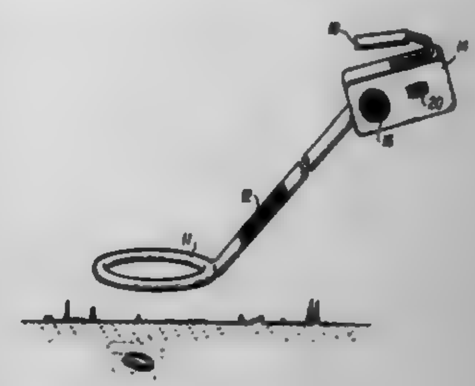
U.S. Cl. 324—327 7 Claims

1. A metal detecting device comprising:

(a) a transistor amplifier including a tuned resonant circuit in the collector circuit of said transistor amplifier; said tuned resonant circuit being adapted to be located near a metal object;

(b) a feedback circuit for providing a current from said resonant circuit to said transistor amplifier input for forcing said amplifier into an oscillating condition;

(c) means for supplying a fixed biasing current to said transistor amplifier in response to a voltage occuring at said amplifier output upon momentary closure of a switch means connected to said amplifier output for maintaining the minimum gain necessary to cause said amplifier to oscillate at substantially the resonant frequency of said tuned resonant circuit in the absence of a metal object in proximity of said resonant circuit, said means providing a new fixed biasing current upon subsequent momentary actuation and release of said switch for reestablishing a



minimum gain for producing oscillations in said amplifier compensating for a change in the effective Q of said resonant circuit due to the presence of said metal object; and

(d) means for indicating when the amplitude of oscillations produced by said transistor amplifier decreases whereby the presence of said object is detected.

4,323,848

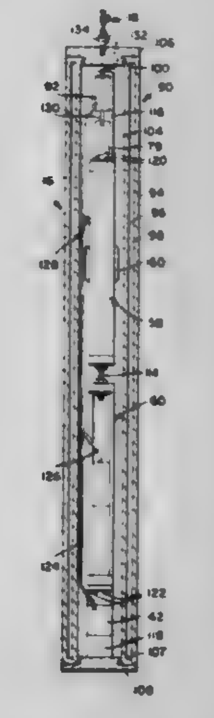
PLURAL SENSOR MAGNETOMETER ARRANGEMENT FOR EXTENDED LATERAL RANGE ELECTRICAL CONDUCTIVITY LOGGING

Arthur F. Kuckes, Ithaca, N.Y., assignor to Cornell Research Foundation, Inc., Ithaca, N.Y.

Filed Mar. 17, 1980, Ser. No. 130,764

Int. Cl.³ G01V *3/26*

U.S. Cl. 324—338 20 Claims



1. A magnetometer for use in measuring subsurface A.C. injected magnetic fields for borehole logging, comprising:

first and second magnetic field sensors, said first sensor lying in a first plane and said second sensor lying in a second plane;

fastening means for securing said sensors in axial alignment with the plane of said first sensor perpendicular to the plane of said second sensor;

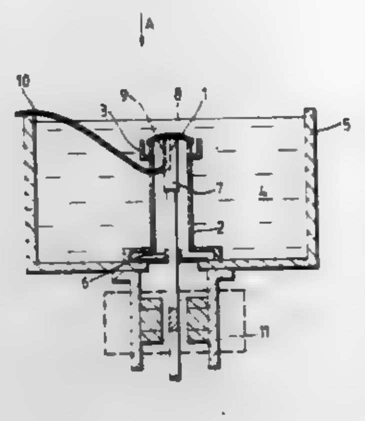
an elongated heat-insulating housing adapted to receive said sensors, said housing having a relatively small diameter and being adapted for insertion vertically into a borehole;

said first and second sensors each including:
first and second generally U-shaped core segments each having first and second spaced, parallel, elongated leg portions extending from opposite ends of a relatively short base portion, said first and second core segments being arranged in back-to-back relationship with their base portions abutting each other;
channel means securing corresponding leg portions of said core segments to hold said segments in assembled relationship to form a generally H-shaped core having elongated leg portions extending parallel to, and defining, the sensor axis; and
coil means surrounding said abutting base portions;
circuit means connected to the coil means of each said sensor for producing signals representing A.C. magnetic field components detected by said first and second sensors; and
means for securing said circuit means on at least one of said sensors.

4,323,849
COULOMETER
Stephen H. Smith, Playa del Rey, Calif., assignor to Hybricon, Inc., North Hollywood, Calif.
Filed Jan. 11, 1980, Ser. No. 111,261
Int. Cl.³ G01N *27/42*
U.S. Cl. 324—428 **15 Claims**

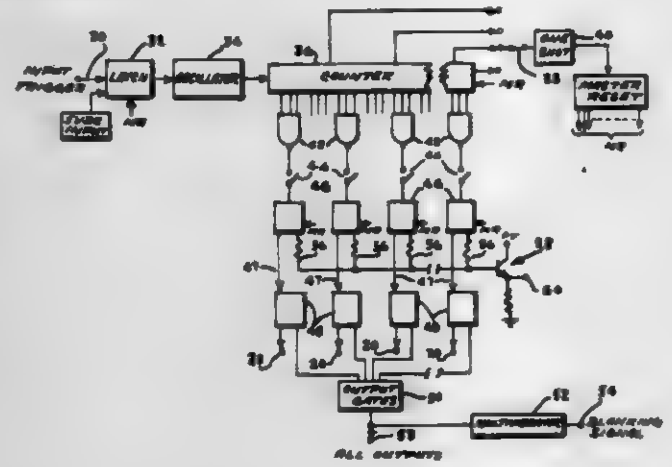
1. Apparatus for monitoring the amount of charge supplied by or to at least one storage battery comprising
input means adapted to receive an input signal representative of the current supplied by or to said at least one storage battery and for providing a signal proportional to said input signal,
integrator means responsive to said input means signal for integrating said signal to thereby develop an output signal representative of the charge supplied by or to said at least one storage battery,
threshold detection means responsive to said integrator means for detecting when the output signal of said integrator means exceeds a predetermined threshold,
means responsive to said threshold detection means for resetting said integrator means,
counter means responsive to said threshold detection means for indicating the charge available from said at least one storage battery, and
polarity inversion means responsive to said threshold detection means for inverting the polarity of said input means signal integrated by said integrator means when said integrator means is reset.

4,323,850
MEASUREMENT OF ARTICLES
Peter Dawson, Bingley, and John H. Phillips, Cheadle Hulme, both of England, assignors to Kelvin Lenses Limited, Denton, England
Filed Nov. 15, 1979, Ser. No. 94,467
Claims priority, application United Kingdom, Nov. 17, 1978, 44911/78
Int. Cl.³ G01N *27/07;* G01B *7/28*
U.S. Cl. 324—439 **19 Claims**



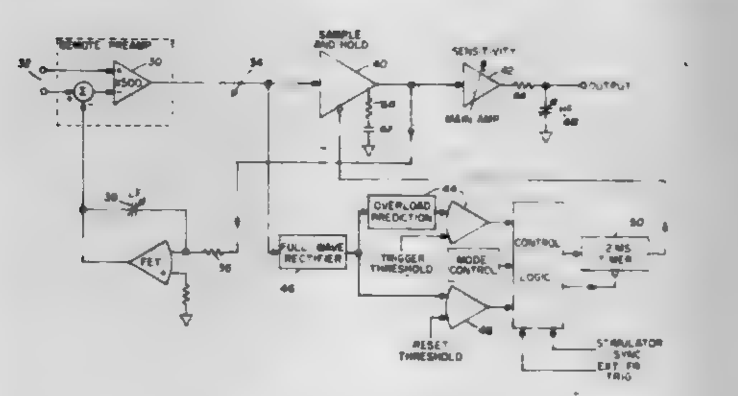
1. Apparatus for measuring an article comprising a mount for holding the article in a bath of electrolyte, a probe movable along one axis relative to said mount, a reference electrode, in use located in the bath, means for measuring the position of the probe along said axis and means for detecting and indicating when, during movement of the probe along said axis, the probe occupies a predetermined spaced position relative to the article on the mount on the basis of the electrical resistance or impedance between the probe and the reference electrode in the bath, thereby enabling the article to be measured without contact between the article and the probe.

4,323,851
WIDE RANGE MULTIPLE TIME MARK GENERATOR
Walter M. Shedd, Acton, and Donald C. LaPierre, West Acton, both of Mass., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Filed Mar. 7, 1980, Ser. No. 128,345
Int. Cl.³ H03K *17/00*
U.S. Cl. 328—72 **10 Claims**



1. A wide range variable multiple time pulse generator comprising: a housing having a control panel including means for accepting an input pulse, a plurality of pulse output means, a plurality of switching means corresponding to the output means for selecting discrete output pulses; said housing having mounted therein an electronic circuit connected to the control panel means for providing output signals in response to an input signal, said circuit including an oscillator for generating a series of pulses at a selected frequency, a latch circuit means connected between the means for accepting an input pulse and the oscillator, said latch circuit means activating the oscillator in response to a first input pulse; counter means connected to the oscillator for counting pulses generated by the oscillator; a plurality of NAND gate circuits connected to the counter producing a selected binary output; latch circuit means connected to the output of each NAND gate circuit, pulse generating means connected between each latch circuit and the pulse output means whereby a single pulse is generated as a result of the first output pulse from each NAND gate circuit.

4,323,852
FAST RECOVERY ELECTRODE AMPLIFIER
D. David Walker, Iowa City, Iowa, assignor to University of Iowa Research Foundation, Iowa City, Iowa
Filed Nov. 29, 1979, Ser. No. 98,544
Int. Cl.³ H03F *1/02*
U.S. Cl. 330—9 **4 Claims**



4. A fast recovery audio amplifier comprising a first stage amplifier having a differential input, a second stage amplifier having provision for gain selection and whose input is directcoupled to the output of said first stage amplifier, a feedback circuit responsive to the output of said first stage amplifier for selectively introducing into the input of said first stage amplifier an offset signal for varying the output of said first stage amplifier at sufficient gain to provide for cancellation of the expected common-mode signal of the differential input of said first stage amplifier, control means normally closing said feedback circuit, and a control circuit responsive to the output of said first stage amplifier so as to provide a signal to said control means immediately to open or close said feedback circuit depending upon the variance of said output signal from a threshold value so as to maintain said first stage amplifier at baseline, and said control circuit including predictive means responsive to the output signal of said first stage amplifier to predict whether or not said signal will vary from said threshold value within a predetermined time and to provide a control signal to said control means to close said feedback circuit if said output signal of said first stage amplifier is or is predicted to be within said threshold value before the expiration of said predetermined time.

4,323,853
CIRCUIT FOR PROTECTING TRAVELING-WAVE TUBES AGAINST FAULTS OF A POWER SUPPLY
Teruhiko Kurokawa, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan
Filed Feb. 22, 1980, Ser. No. 123,827
Claims priority, application Japan, Feb. 23, 1979, 54-21144
Int. Cl.³ H03F *5/38*
U.S. Cl. 330—43 **3 Claims**

1. A traveling-wave tube apparatus comprising:
AC power supply means;
traveling-wave tube means having a collector electrode, a slow-wave circuit electrode, an anode electrode and a cathode electrode;
power source means responsive to said AC power supply for providing DC voltages to each of said electrodes;
high-frequency oscillator means driven in response to the initiation, termination and interruption in the operation of said AC power for providing a high frequency output;
first rectifying and smoothing circuit means for rectifying and smoothing said high frequency output to provide said anode electrode with a control voltage, said control voltage preventing the electron beam from flowing from said cathode electrode to said slow-wave circuit electrode; and

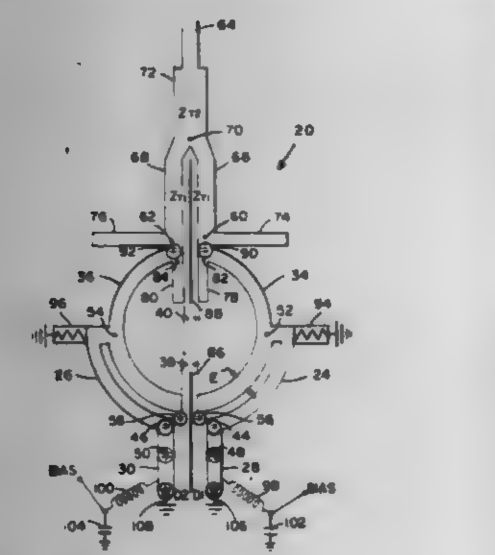
energizing means coupled between said AC power supply means and said high-frequency oscillator means for energizing said high-frequency oscillator means,
whereby said traveling-wave tube is protected from damage during said initiation, termination and interruption.

4,323,854
TEMPERATURE COMPENSATED CURRENT SOURCE
Richard E. Hester, Eden Prairie, Minn., assignor to Control Data Corporation, Minneapolis, Minn.
Filed Jan. 30, 1980, Ser. No. 116,698
Int. Cl.³ H03F *3/45;* H03K *3/26*
U.S. Cl. 330—256 **11 Claims**

1. A temperature compensated current source comprising:
a first semiconductor device for producing a first reference voltage,
means for establishing a first reference current dependent on said reference voltage and connected with said first semiconductor device,
a second semiconductor device adapted to be connected with said means for establishing a first reference current, said second semiconductor device establishing a second reference current in response to said first reference current,
a current source means connected to said second semiconductor device for generating a third reference current essentially identical to said second reference current,
means connected with said current source means for establishing a second reference voltage using the voltage created by passing said third reference current through a resistance,
means connected with said means for establishing a second reference voltage for generating a third voltage related to said second reference voltage by varying the same way

with respect to temperature and without affecting the source of said third reference current, and
means for impressing said third voltage across a resistance and thus creating a current which represents the output current of said circuit.

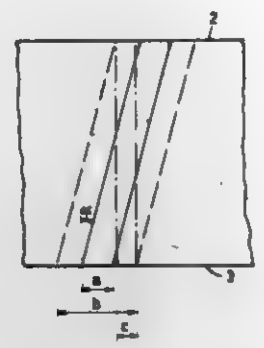
4,323,855
MIC COMBINER USING UNMATCHED DIODES
Horst W. A. Gerlach, Bethesda, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Apr. 9, 1980, Ser. No. 138,477
Int. Cl.³ H03B *7/14, 9/14;* H01P *7/08*
U.S. Cl. 331—56 **16 Claims**



1. A microstrip circuit having microstrip resonator means for oscillation in an even mode including:
(a) first and second microstrip resonator sections adapted to oscillate independently from one another;
(b) each of said first and second resonator sections having first and second ends;
(c) said resonator sections disposed in respective opposition to each other;
(d) first and second active elements;
(e) means for connecting said active elements to said first and second resonator sections;
(f) impedance transforming means connected between said second ends and a load, and
(g) means for decoupling said resonator sections from each other, comprising:
(h) first and second microstrip connecting lines including first and second tuning capacitors, said connecting lines coupled to said active elements, and
(i) first and second decoupling microstrip connectors each coupled to one of said first and second connecting lines, respectively, at its one end, and to said first and second resonator sections, respectively, at its other end.

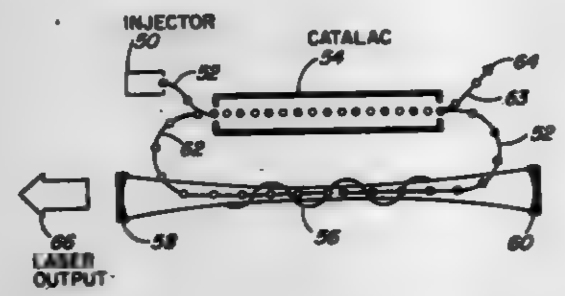
4,323,856
INJECTION LASER
Peter J. de Waard, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Continuation of Ser. No. 764,351, Jan. 31, 1977, abandoned. This application Jul. 3, 1978, Ser. No. 921,797
Claims priority, application Netherlands, Jul. 2, 1976, 7607299
Int. Cl.³ H01S *3/19*
U.S. Cl. 372—46 **17 Claims**

1. A semiconductor laser comprising:
a first layer of an N-type semiconductor material;
a second layer of P-type semiconductor material, said N-type and P-type layers forming a P-N junction in said laser;
means for injecting charge carriers across said P-N junction to induce charge recombination and emission of optical radiation;
a pair of mirrored faces perpendicular to said P-N junction; and



a stripe region adapted to laterally confine charge carrier flow across said P-N junction to a region which is substantially within the lateral boundaries of said stripe region, said stripe region being oriented at a non-zero angle with respect to an axis extending normally between said mirrored faces.

4,323,857
CATALAC FREE ELECTRON LASER
Charles A. Brau; Donald A. Swenson, and Thomas J. Boyd, Jr., all of Los Alamos, N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.
Filed Dec. 12, 1979, Ser. No. 102,804
Int. Cl.³ H01S *3/09*
U.S. Cl. 372—2 **16 Claims**

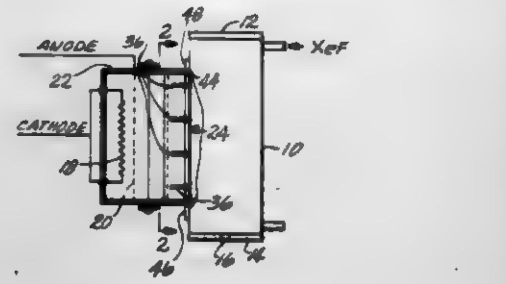


1. A free electron laser for amplifying coherent radiation comprising:
means for producing a beam of electrons;
means for accelerating said beam of electrons to a predetermined relativistic energy using rf accelerating fields;
wiggler means for inducing transverse oscillations in said beam of electrons to amplify said coherent radiation;
means for directing said beam of electrons emerging from said wiggler into said means for accelerating whereby electrons of said beam of electrons emerging from said wiggler are out-of-phase with said rf accelerating fields so as to transform energy from said electrons into energy of said accelerating fields to increase efficiency of said laser.

4,323,858
FOIL COOLING SYSTEM FOR HIGH CURRENT DENSITY ELECTRON-BEAM PUMPED LASERS
James G. Gerstley, Sherman Oaks, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.
Filed Jan. 25, 1980, Ser. No. 115,478
Int. Cl.³ H01S *3/02*
U.S. Cl. 372—107 **12 Claims**

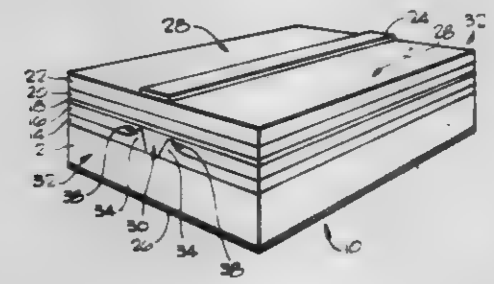
1. A window for transmitting an electron beam from a source contained within a high vacuum chamber into a gaseous region, said window comprising:

an aperture communicating said high vacuum chamber with said gaseous region;
a metallic foil covering said aperture and isolating said gaseous region from said high vacuum chamber;
a thin film of material transparent to the electron beam positioned between the foil and the electron beam source



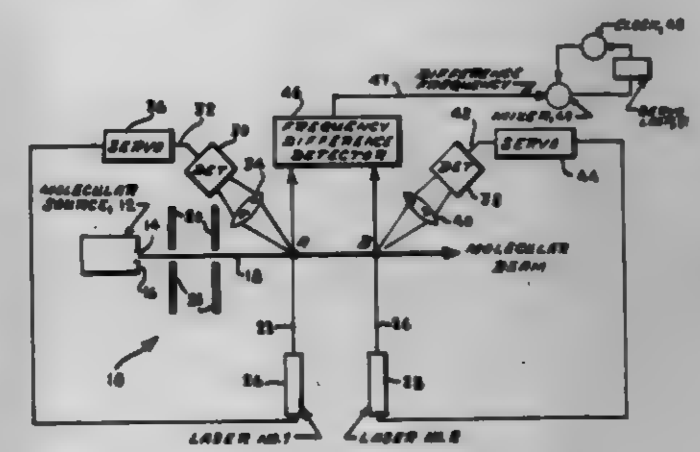
so that the electron beam passing from the source must pass through the film and through the foil to the gaseous region;
support means securing the foil and film in spaced gas-tight relationship; and
a cooling fluid in the space between the foil and the film.

4,323,859
CHANELLED SUBSTRATE DOUBLE HETEROSTRUCTURE LASERS
Julian P. Noad, Carp; Anthony J. Springthorpe, Richmond, and Christopher M. Look, Nepean, all of Canada, assignors to Northern Telecom Limited, Montreal, Canada
Filed Feb. 4, 1980, Ser. No. 118,653
Int. Cl.³ H01S *3/19*
U.S. Cl. 372—46 **4 Claims**



1. A double heterostructure semiconductor laser comprising:
a substrate;
a blocking layer;
a first confining layer;
an active layer;
a second confining layer;
top and bottom contacts for directing current across a pn junction existing between the active layer and the first confining layer to generate light thereat;
an np junction between the first confining layer and a blocking layer acting to confine current passage to a predetermined region of said pn junction;
the blocking layer having a channel underlying said predetermined region, said first confining layer extending into the channel;
the laser having opposed planar reflecting facets defining a resonant cavity;
and wherein the blocking layer has raised shoulder portions flanking the channel and the first confining layer is thinner where it overlies the raised shoulder portions than at a location remote from the channel.

4,323,860
LASER EXCITED MOLECULAR BEAM TIME AND FREQUENCY STANDARD
Clare C. Leiby, Jr., Bedford, and Shaoul Ezekiel, Lexington, both of Mass., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Filed Mar. 27, 1980, Ser. No. 134,358
Int. Cl.³ H01S *3/13*
U.S. Cl. 372—32 **10 Claims**



1. An optically excited molecular beam time and frequency standard comprising:
(a) means for producing a molecular beam
(b) means for producing a first beam of coherent electromagnetic radiation at a first preselected frequency and directing said first beam in a direction intersecting said molecular beam at a first preselected point,
whereby said first beam intersecting said molecular beam at said first preselected point excites the molecules of said molecular beam from an initial state to an intermediate state from which said molecules fluoresce to a final state,
(c) first means for detecting said fluorescence emitted from said intermediate state to said final state and producing a signal in accordance therewith,
(d) means operably connected between said first detecting means and said means for producing said first electromagnetic beam for feeding said signal thereto in order to lock said preselected frequency of said first beam to the resonant frequency corresponding to the transition between said initial state and said intermediate state,
(e) means for producing a second beam of coherent electromagnetic radiation at a second preselected frequency and directing said second beam in a direction intersecting said molecular beam at a second preselected point,
whereby said second beam intersecting said molecular beam at said second preselected point excites the molecules in said molecular beam from said final state back to said intermediate state from which said molecules fluoresce to said initial state,
(f) second means for detecting said fluorescence emitted from said intermediate state to said initial state and producing a signal in accordance therewith,
(g) means operably connected between said second detecting means and said means for producing said second electromagnetic beam for feeding said signal thereto in order to lock said preselected frequency of said second electromagnetic beam to a resonant frequency corresponding to the transition between said final state and said intermediate state, and
(h) means optically aligned with said first and second locked electromagnetic beams for detecting a difference in frequency therebetween, said frequency detecting means producing an output signal representative of said frequency difference.

4,323,861

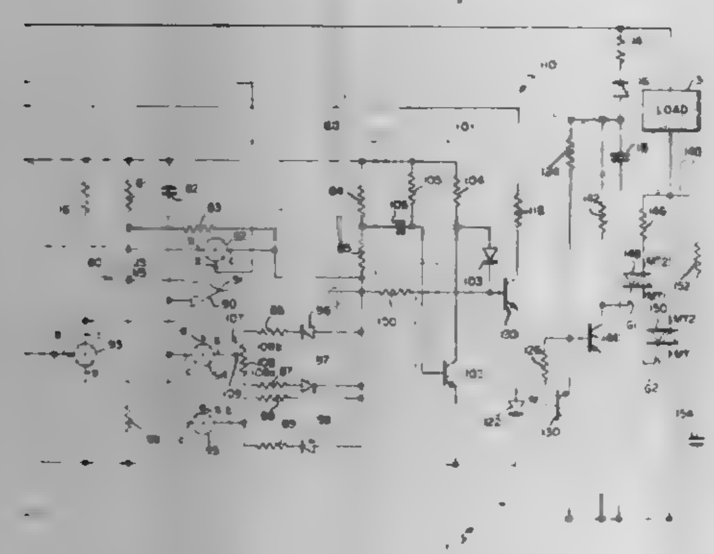
OSCILLATOR CIRCUIT FOR CONTROLLING THE POWER LEVEL OF A MICROWAVE OVEN

Louis M. Sandler, N. Reading; Walter R. Spofford, Bedford, both of Mass., and Charles E. Scott, Noblesville, Ind., assignors to Emhart Industries, Inc., Indianapolis, Ind.

Division of Ser. No. 865,309, Dec. 28, 1977. This application Mar. 29, 1979, Ser. No. 25,217

Int. Cl.³ H03K *3/023;* **H05B** *6/68*

U.S. Cl. 331—111 **5 Claims**



1. An oscillator circuit having a variable duty cycle for controlling the power level of a microwave oven, comprising:

a voltage comparator;

an adjustable RC time constant circuit including a capacitance branch and a resistance branch and first coupling means therebetween also connected to one input of said comparator;

a reference voltage source coupled to another input of said comparator;

second coupling means for coupling the output of said comparator to said RC time constant circuit for causing the charging and discharging of said capacitance branch in response to said comparator output and thereby the oscillation of said output;

means for controlling the heating power of a microwave oven in response to the duty cycle of said comparator output oscillations;

said resistance branch including a pair of alternately selectable current paths for the charging and discharging of said capacitance branch;

said first coupling means including semiconductor switch means for selecting and coupling either of said current paths to said capacitance branch for changing the charging and discharging of said capacitance branch in accordance with the selected current path; and

one of said current paths including a pair of parallel connected portions with each of said parallel portions having a diode connected therein for controlling the direction of current flow, said diodes being connected with opposite respective polarities for allowing current flow only in opposite directions in the respective portions, said one current path further including a potentiometer having a pair of fixed terminals each of which is connected to a separate said portion and a variable wiper terminal connected to said first coupling means for simultaneously inversely varying the resistance in said parallel portions, said potentiometer thereby providing for variation of the cooking power of said microwave oven by control of the duty cycle of said comparator output.

4,323,862

FREQUENCY SHIFT MODULATOR WITH CIRCUITRY FOR SIMPLE CHANGE-OVER BETWEEN HIGH AND LOW CHANNELS

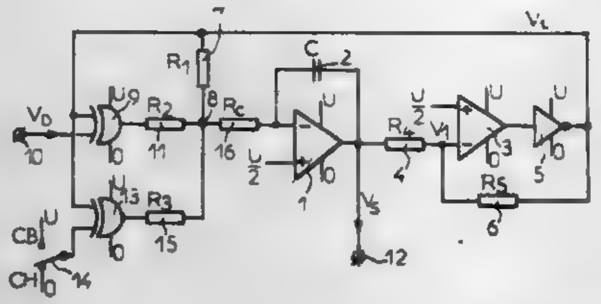
Robert Boudault, Limours, and Gerard Pouzoullic, Gif Zur Yvette, both of France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 7, 1980, Ser. No. 138,064

Claims priority, application France, Apr. 6, 1979, 79 08725

Int. Cl.³ H03C *3/02;* **H03K** *7/06*

U.S. Cl. 332—9 R **4 Claims**



1. A modulator for data transmission by frequency shift modulation comprising a first operational amplifier and an associated capacitor connected so as to form an integrating circuit, a bistable circuit having trigger hysteresis connected to the output of the first operational amplifier for producing a two-level voltage, a first resistor having one end connected to the output of the bistable circuit and the other end coupled to an input of the first operational amplifier so as to produce a triangular voltage at the output of the first operational amplifier, first logic means for applying a voltage equal or complementary to said two-level voltage, depending upon the value of the data signal, to one end of a second resistor whose other end is joined with said other end of the first resistor, characterized in that for generating a first or a second frequency shift modulated signal having different central frequencies and being modulated with the same frequency shift the modulator comprises second logic means for applying a voltage equal or complementary to said two-level voltage, depending on whether the desired modulated signal is said first or said second frequency shift modulated signal, to one end of a third resistor whose other end is joined with the joined ends of the first and second resistors, and a common resistor connected between the joined ends of the first, second and third resistors and the input of the first operational amplifier.

4,323,863

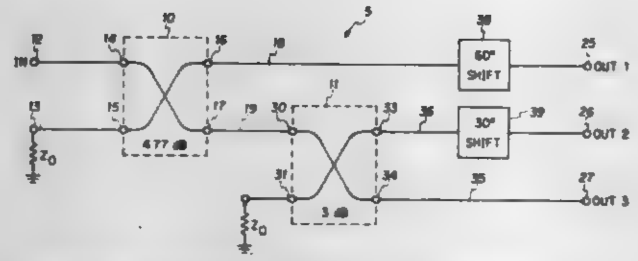
N-WAY POWER DIVIDER/COMBINER

Robert J. Weber, Marion, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.

Continuation of Ser. No. 869,877, Jan. 16, 1978, abandoned. This application Sep. 27, 1979, Ser. No. 79,616

Int. Cl.³ H01P *5/18*

U.S. Cl. 333—109 **4 Claims**



1. A power distribution network comprising:

first port means for receiving power input;

a plurality of second port means for providing outputs, the number of said second port means being equal to an integer which is not equal to an exponential power of two;

power transmission means coupled for transmitting power from said input port means to said plurality of output port means including,

power coupler means for controlling the magnitude of the power transmitted to said second port means for providing a plurality of power outputs, each of said second port means providing a reflected power wave appearing at said input port means in response to power transmitted by said power coupler means, and

phase shift means coupled for phase shifting selected ones of said power outputs and said reflected power waves,

said power coupler means and said phase shift means being constructed and cooperatively arranged to cause the vector sum of said reflected power waves appearing at said input port means to equal zero.

4,323,864

BINARY TRANSVERSAL FILTER

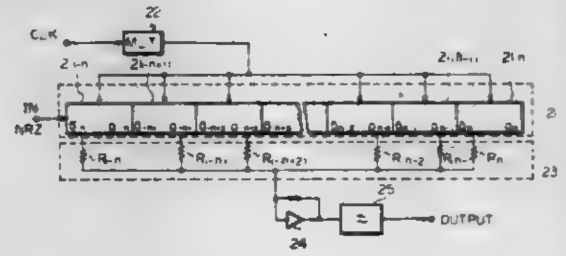
Kazuo Ogawa, Tokyo; Eiji Suzuki, Kawasaki; Osamu Kurita, Yokosuka, and Izumi Horikawa, Yokohama, all of Japan, assignors to Fujitsu Limited, Kawasaki and Nippon Telegraph and Telephone Public Corp., Tokyo, both of, Japan

Filed Mar. 3, 1980, Ser. No. 126,528

Claims priority, application Japan, Mar. 2, 1979, 54-24982

Int. Cl.³ H03H *15/00, 17/06*

U.S. Cl. 333—165 **7 Claims**



1. A binary transversal filter for receiving NRZ input signals synchronously with clock pulses, comprising:

a shift register, to which the NRZ input signals are fed directly, said register including a plurality of stages which are driven by timing signals of a frequency that is a multiplier M times that of the clock pulses of the input signals,

a weighting circuit for weighting and synthesizing the outputs of each of the stages of said shift register, and

a tap coefficient a_n of said weighting circuit connected to each of the stages of said shift register being given by a sampling value of an interval T/M of an inverse Fourier transform a(t) of

$$A(\omega) = \frac{H(\omega)}{\sum_{N=1}^{M} e^{j\omega\left(\frac{M-2N+1}{2M}\right)T}}$$

wherein H(ω) denotes a transfer coefficient which gives a response that is to be found, T denotes a repetitive period of the input NRZ signals, and M represents said multiplier.

4,323,865

LADDER-TYPE PIEZOELECTRIC FILTER

Yasuhiro Tanaka, Kashimamachi, and Sasuga Kakehi, Kanazawa, both of Japan, assignors to Murata Manufacturing Co., Ltd., Japan

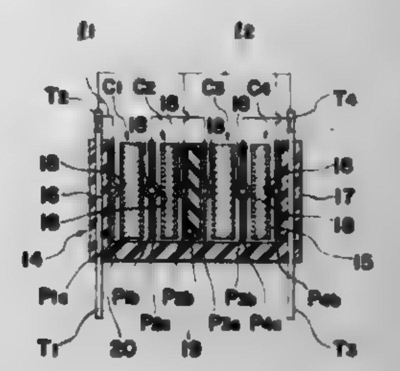
Filed Jan. 3, 1980, Ser. No. 109,283

Claims priority, application Japan, Jan. 11, 1979, 54-2495

Int. Cl.³ H03H *9/54, 9/58, 9/52*

U.S. Cl. 333—187 **6 Claims**

1. In a piezoelectric resonator to be used for a component of a ladder-type piezoelectric filter, said resonator being defined by an element made of a polycrystalline piezoelectric material and having electrode layers located on its opposing surfaces said electrode layers causing said resonator to vibrate in a length-wise extension mode at a predetermined fundamental frequency of said mode when a voltage at said predetermined frequency is applied thereto, the improvement of said piezo-



electric resonator having its said opposing surfaces of a rectangular shape and in whichh the ratio of a short side length to a long side length of the rectangular shape is less than a value of 0.7.

4,323,866

FILTER CIRCUIT

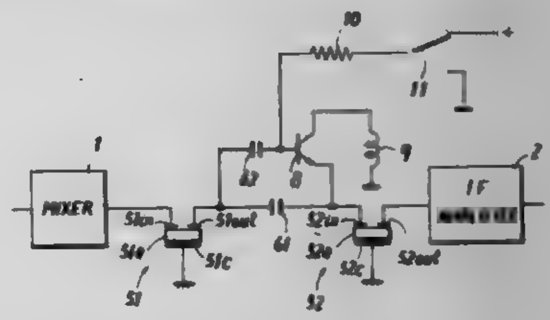
Jiro Inoue, Kanazawa, Japan, assignor to Murata Manufacturing Co., Ltd., Japan

Filed May 8, 1980, Ser. No. 147,720

Claims priority, application Japan, May 24, 1979, 54-69747[U]

Int. Cl.³ H03H *9/52, 9/56, 9/60*

U.S. Cl. 333—188 **2 Claims**



1. A filter circuit, comprising:

a first three-terminal type ceramic filter including an input electrode, an output electrode, and a common electrode, said input electrode of said first three-terminal type ceramic filter being adapted to receive and input signal and said common electrode of said first three-terminal type ceramic filter being connected to a reference potential;

a second three-terminal type ceramic filter including an input electrode, an output electrode, and a common electrode, said output electrode of said second three-terminal type ceramic filter outputting an output signal responsive to said first three-terminal type ceramic filter receiving said input signal, and said common electrode of said second three-terminal type ceramic filter being connected to said reference potential;

a first capacitor having one terminal connected to said output electrode of said first three-terminal type ceramic filter and having another terminal connected to said input electrode of said second three-terminal type ceramic filter;

a second capacitor;

an inductor;

switching means responsive to an enabling signal for selectively connecting said second capacitor between said output electrode of said first three-terminal type ceramic filter and said input electrode of said second three-terminal type ceramic filter and for simultaneously connecting said inductor between said input electrode of said second

three-terminal type ceramic filter and said reference potential; and

said switching means comprising a transistor having a first electrode, a second electrode and a control electrode; said second capacitor having one terminal connected to said output electrode of said first three-terminal type ceramic filter and having another terminal connected to said control electrode of said transistor; said input electrode of said second three-terminal type ceramic filter being connected to said first electrode of said transistor; said inductor being connected between said second electrode of said transistor and said reference potential; and said transistor being rendered conductive upon receipt of said enabling signal by said control electrode when it is desired to connect said second capacitor between said first and second ceramic filters.

4,323,867

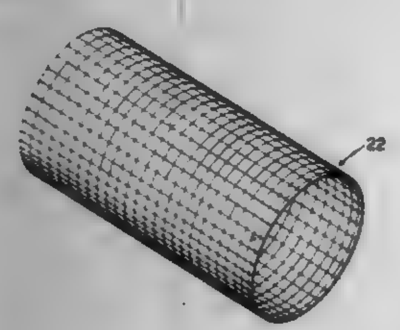
FRAGMENT-TOLERANT TRANSMISSION LINE

Clifford L. Temes, Alexandria, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 27, 1980, Ser. No. 181,926

Int. Cl.³ H01P *3/12*

U.S. Cl. 333—239 **1 Claim**



1. An improved waveguide for propagating electromagnetic energy comprising:

a tubular grid made from a brittle, non-conductive material for propagating electromagnetic energy therethrough,

wherein the openings in said grid are small compared to the wavelength of the electromagnetic energy to be propagated within said grid; and

a thin coating of conductive material applied to the interior surfaces of said tubular grid which form the electromagnetic energy propagating surface of the waveguide,

wherein said grid with its thin coating of conductive material is sufficiently brittle such that when penetrated by a projectile, it will have cleanly broken holes therethrough with substantially no inwardly protruding edges.

4,323,868

SETTING MECHANISM FOR SNAP ACTION CIRCUIT BREAKER

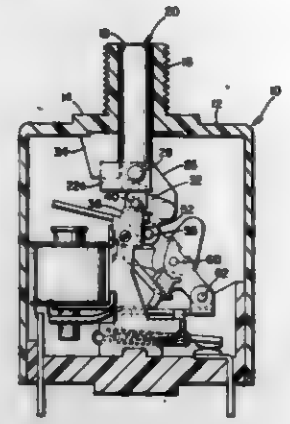
George S. Harper, Cambridge, Md., assignor to North American Philips Controls Corp., Cambridge, Md.

Filed Oct. 17, 1980, Ser. No. 198,190

Int. Cl.³ H01H *75/10, 5/00*

U.S. Cl. 335—38 **9 Claims**

1. A circuit breaker comprising an electrically insulating housing; an overcurrent sensor in said housing; a stationary and a movable contact in said housing; a latch mechanism coupled to said movable contact, and means for tripping said latch mechanism in response to a sensed overcurrent and for moving said latch mechanism between contacts open and contacts closed positions; means, including an overcenter spring, coupled to said movable contact for opening and closing said contacts with a snap action; a handle opening in said housing; an elongated handle member extending through said handle opening; means for permitting longitudinal axial movement of said handle member while inhibiting rotational movement thereof between a first, contacts open position and a second, contacts closed position; handle link means coupling said handle member to said latch mechanism, said handle link means being operative to translate a substantially linear movement of said handle member into a rotational movement of said link means for urging said latch mechanism into said contacts closed position, said handle link means being operable to retain



said handle member in its second position upon manual movement of the handle member from its first to its second position and for permitting tripping of said latch mechanism and opening of said contacts independently of movement of said handle member; and means normally biasing said handle member toward said first, contacts open position when said latch mechanism is tripped by said overcurrent sensor.

4,323,869

ARMATURE MOUNT FOR AN ELECTROMAGNETIC RELAY

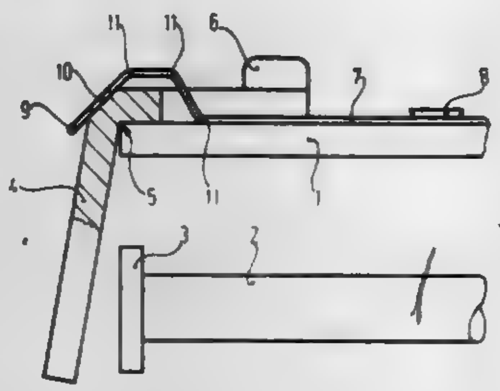
Werner Minks, Kleingeschaidt, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Jun. 6, 1980, Ser. No. 157,164

Claims priority, application Fed. Rep. of Germany, Jun. 15, 1979, 2924263

Int. Cl.³ H01H *51/08*; H01F *7/08*

U.S. Cl. 335—274 **5 Claims**



1. An armature mount for an electromagnetic relay having a yoke and core comprising an angle armature supported on the yoke's edge, which is retained in position by a flat spring secured on the yoke and which, towards the yoke's end, is bent off the yoke and, with its free end, presses from the outside against the angular edge of the armature, wherein the straight, free end of the flat spring is applied areally to a flattened part of the angular edge of the armature when said armature is in its end position in which it is lifted off the core, wherein said flat spring following the mounting point is applied with a portion of its length to the yoke and is provided with three obtuse-angled bends at is free end, and wherein the first bend extends angularly away from said yoke and said armature and joins the second bend which extends generally parallel to said yoke toward said end of said yoke and joins the third bend which extends angularly toward said armature for engaging said angular edge of said armature.

4,323,870

TRANSFORMER OR REACTOR HAVING A WINDING FORMED FROM SHEET MATERIAL

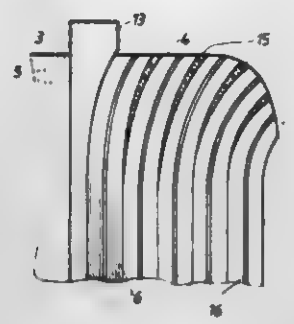
Bertil Moritz, and Ole Tönnesen, both of Västeras, Sweden, assignors to ASEA Aktiebolag, Västeras, Sweden

Filed Aug. 11, 1980, Ser. No. 176,918

Claims priority, application Sweden, Aug. 14, 1979, 7906766

Int. Cl.³ H01F *27/28*

U.S. Cl. 336—206 **9 Claims**



1. A reactor device comprising a core of magnetic material with at least one leg and one yoke and at least one winding including a plurality of turns of sheet-formed conductor material arranged substantially concentrically around the core leg, the conductor sheet having a width substantially equal to the axial length of the winding, said winding further including an inner winding portion and an outer winding portion positioned radially outside the inner winding portion, the conductor sheet in the edge regions of at least the outer turns of the outer winding portion being located at distances from the geometrical axis of the winding which increase successively towards the sheet edge in each respective outer turn, and the cross-sectional bending of the conductor sheet in the edge regions of said outer turns of the outer winding portion increasing with increasing distance from the geometrical axis of the winding in each respective outer turn.

4,323,871

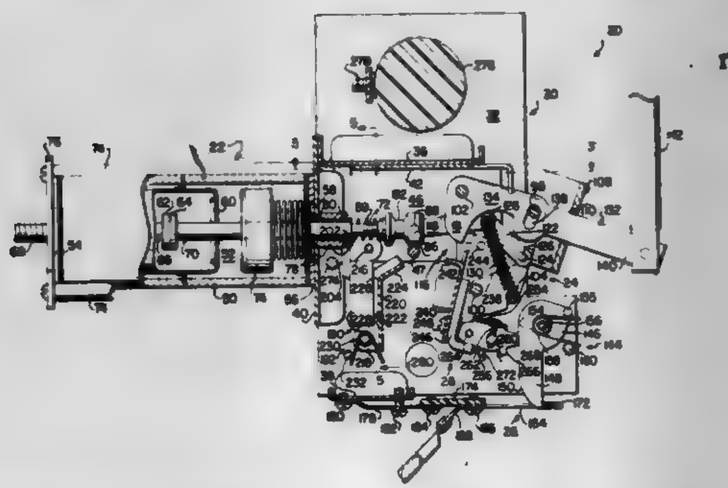
CIRCUIT PROTECTING APPARATUS INCLUDING RESETTABLE VACUUM FUSE AND SWITCH

Eugene L. Kamp, Fulton; Charles A. Popeck, and Armin M. Bruning, both of Centralia, all of Mo., assignors to A. B. Chance Company, Centralia, Mo.

Filed Mar. 21, 1980, Ser. No. 132,852

Int. Cl.³ H01H *85/00*

U.S. Cl. 337—7 **25 Claims**



1. A current interrupting device adapted to be interposed in an electrical circuit to protect the same from the effects of fault currents, comprising:

a tank adapted to hold a quantity of fluid dielectric material and

circuit protecting means immersed within said dielectric material and including

a current responsive low fault range vacuum interrupter including means defining a substantially evacuated chamber, a pair of normally closed electrical contacts within said chamber, and mechanism for opening said contacts in response to a relatively low magnitude fault current experienced by said circuit,

said mechanism comprising a motive assembly operatively coupled to one of said contacts and shiftable between a cocked position and a tripped position, a heat responsive latching element for releasably holding said motive assembly in said cocked position thereof and for delatching of the motive assembly upon heating of the latching element, and means for heating said latching element and consequent delatching of said motive assembly in response to a relatively low magnitude fault current experienced by said circuit,

a current limiting fuse including a sealed housing and a fusible element within the housing which fuses in response to a relatively high magnitude fault current experienced by said circuit, said housing including structure for retaining the energy of interruption within the housing upon fusing of said fusible element;

means mounting said latching element out of engagement with and in physically spaced relationship from said current limiting fuse, and with said fluid dielectric material interposed in the zone between said current limiting fuse and latching element; and

means electrically connecting said vacuum interrupter and current limiting fuse in series.

4,323,872

FUSE CARTRIDGES

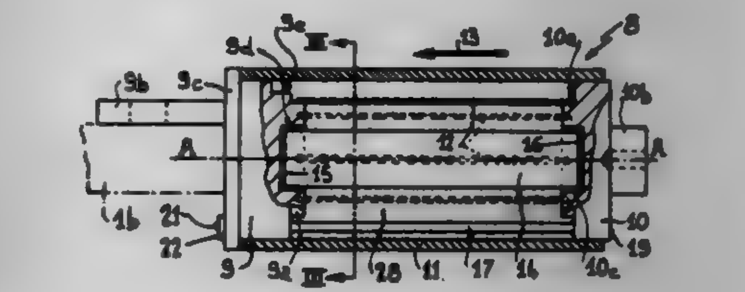
Jean-Claude Fontaine, 5 rue des Gantries, Ecully, France (69130)

Filed Dec. 27, 1977, Ser. No. 864,906

Claims priority, application France, Jan. 21, 1977, 77 02679

Int. Cl.³ H01H *85/04*

U.S. Cl. 337—158 **8 Claims**



1. A fuse cartridge adapted to be mounted on a support rotatable about a shaft, comprising:

a tubular insulating body having first and second ends, said tubular body having an axis normally disposed radially of the shaft of said rotatable support;

a first metal head at one end of said body, said first head including outwardly extending means for attachment to said rotatable support;

a second metal head at the other end of said body, said first and second heads having axially spaced inner surfaces facing each other;

insulated spacer means disposed axially within said tubular insulating body, said spacer means having a first end supported against the inner surface of said first metal head and having a second end supported against the inner surface of said second metal head, to oppose centrifugal forces and maintain said heads spaced from each other during rotation of said support, the diameter of said spacer means being small as compared with the inner diameter of said tubular insulating body, and said spacer means defining with said tubular insulating body a continuous intermediate annular space whose volume is larger than the volume within the outside diameter of the spacer means;

a plurality of elongated fusible electrical conductor elements disposed in circumferentially spaced relationship within

said continuous annular space and having opposite ends electrically connected with said first head and with said second head; and

a mass of arc quenching material surrounding said fusible elements and filling said continuous annular space.

4,323,873
FUSE

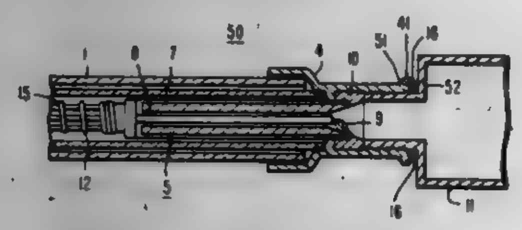
Michiyasu Nounen, and Yukio Iwasaki, both of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 18, 1980, Ser. No. 171,939

Claims priority, application Japan, Jul. 24, 1979, 54-102618[U]

Int. Cl.³ H01H *85/20*

U.S. Cl. 337—186 3 Claims



1. A fuse comprising

a hollow outer housing forming an arc extinguishing chamber interiorly thereof, said housing having a flange at one end thereof;

first and second spaced electrical contacts secured to said outer housing;

a fusible member electrically connecting said first and second contacts, said fusible member, upon fusing, causing an arc to be generated within said arc extinguishing chamber;

means for generating an arc extinguishing gas within said arc extinguishing chamber upon fusing of said fusible member;

means forming a cooling chamber disposed contiguously to said arc extinguishing chamber and cooling thereon said arc extinguishing gas, said cooling chamber means having a surface confronting said housing flange and being spaced-apart therefrom; and

a sealing member disposed between said cooling chamber means confronting surface and said housing flange.

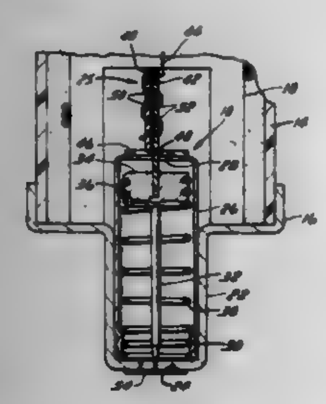
4,323,874
BLOWN FUSE INDICATOR

Edwin A. Link, Waukesha, Wis., assignor to RTE Corporation, Waukesha, Wis.

Filed Jul. 28, 1980, Ser. No. 173,028

Int. Cl.³ H01H *85/30*

U.S. Cl. 337—244 16 Claims



1. In a current limiting fuse of the type having a tubular casing of insulating material, an electrically conductive terminal cap mounted on each end of the casing, a fuse link positioned within the casing and interconnecting the terminal caps, and an arc quenching material completely filling the inside of the casing and embedding the fuse link, the improvement comprising a blown fuse indicator assembly supported by one of said caps; said assembly including, a housing, a striker pin positioned within said housing, means within the housing for driving the striker pin to an indicating position and a second means for holding the striker pin in a driving position; such second means including a vaporizable wire connected to the fuse link, a first non-conductive member connected to said pin, a second non-conductive member connected to said housing, said members each having a plurality of corresponding openings, said wire extending through said openings in said members whereby upon vaporizing of said wire said first non-conductive member is free to move with respect to said second non-conductive member.

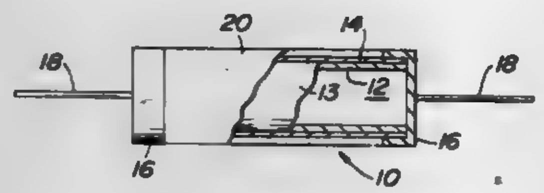
4,323,875
METHOD OF MAKING TEMPERATURE SENSITIVE DEVICE AND DEVICE MADE THEREBY

Joseph A. Tentarelli, Drexel Hill; Richard L. Wahlers, Churchville, and John G. Woods, Philadelphia, all of Pa., assignors to TRW, Inc., Cleveland, Ohio

Filed Jan. 21, 1981, Ser. No. 226,559

Int. Cl.³ H01C *3/04, 7/02;* B05D *5/12*

U.S. Cl. 338—25 38 Claims



1. A method of making a thin nickel film temperature sensitive device with a relatively high positive temperature coefficient of resistance utilizing a film of nickel deposited from a bulk nickel source onto an electrically insulating substrate, including the step of

heat treating a resistor element having a thin film of nickel deposited on an electrically insulating substrate by heating in a reducing atmosphere to a peak temperature of at least 550° C., over a heating cycle of at least about 20 minutes,

whereby the nickel film of the heat treated resistor element has a selected temperature coefficient of resistance which is at least 60% of the value of the coefficient for the bulk nickel and a sheet resistance of at least one ohm per square which properties are determined by the heat treating temperature and cycle time, and the thickness of the nickel film.

20. A thin film temperature sensitive device with a relatively high positive temperature coefficient of resistance utilizing a film of nickel deposited from a bulk nickel source onto an electrically insulating substrate, made by

heat treating a resistor element having a film of nickel deposited on an electrically insulating substrate by heating in a reducing atmosphere to a peak temperature of at least 550° C., over a heating cycle of at least about 20 minutes,

whereby the nickel film of the heat treated resistor element has a selected temperature coefficient of resistance which is at least 60% of the value of the coefficient for the bulk nickel and a sheet resistance of at least one ohm per square determined by the heat treating temperature and cycle time, and the thickness of the nickel film.

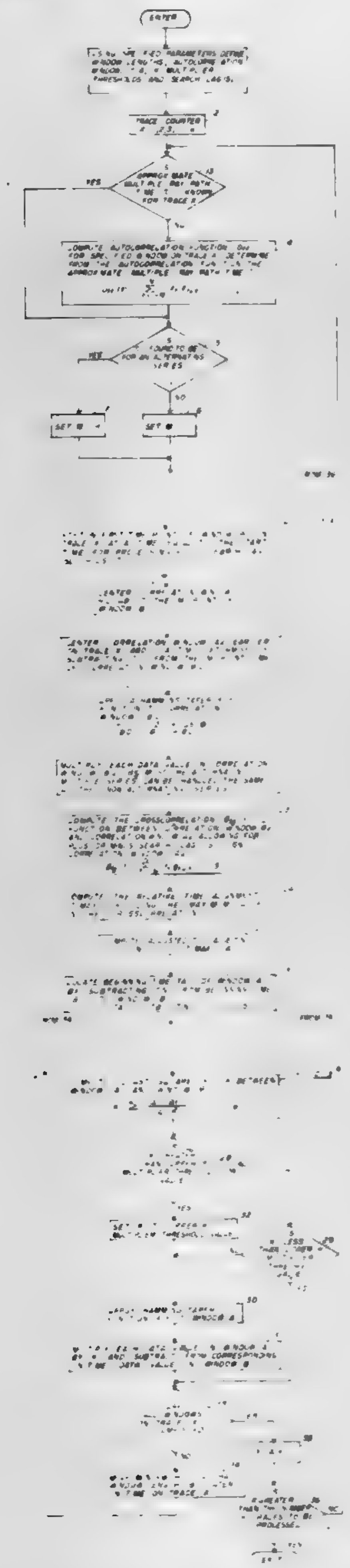
4,323,876
METHOD FOR REDUCING MULTIPLE EVENTS IN A SEISMIC RECORD

Alvin L. Parrack, Bellaire, and Delbert R. Lunsford, Houston, both of Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Jan. 29, 1973, Ser. No. 327,267

Int. Cl.² G01V *1/36*

U.S. Cl. 367—40 22 Claims



1. A process for suppressing multiple events in seismic traces comprising the steps of:

(a) comparing a first seismic trace segment with a second segment of the same trace to select that portion of the second segment which most closely resembles said first segment;

(b) determining the degree of similarity between said selected portion and said first segment; and

(c) extracting a part of said selected portion from said first portion, said part being a function of the degree of similarity between said selected portion and said first segment.

4,323,877
TURN DIRECTION DETECTOR FOR USE IN AUTOMOBILE

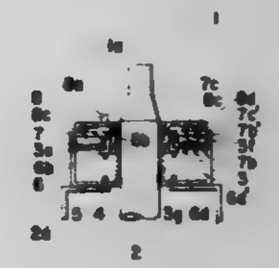
Masayuki Morita, Tokoname; Tasaku Nakano, Mizunami, and Kazuhisa Kubota, Ichinomiya, all of Japan, assignors to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Aichi, Japan

Filed Feb. 18, 1981, Ser. No. 235,736

Claims priority, application Japan, Feb. 22, 1980, 55-21102; Apr. 4, 1980, 55-44759

Int. Cl.³ B60Q *1/42*

U.S. Cl. 340—56 11 Claims



1. A turn direction detector for detecting the direction of turn of a steering wheel shaft of an automobile comprising:

a support member fixedly connected to a housing of said steering wheel shaft;

first and second terminal means provided on said support member at a predetermined angle spaced from each other about an axis of said steering wheel shaft;

a ring member loosely mounted on said steering wheel shaft, said ring member being rotatable about said steering wheel shaft between a first rotated position and a second rotated position;

first electrical contact means provided on said ring member, said first electrical contact means being moved to a position correlative with said first terminal means when said ring member is rotated to said first rotated position, and correlative with said second terminal means when said ring member is rotated to said second rotated position;

a drive member connected to said steering wheel shaft for effecting the simultaneous rotation with said steering wheel shaft, said drive member having a portion held in contact with said ring member for producing a frictional force between said portion and said ring member, said ring member being moved to said first rotated position when said steering wheel shaft is rotated in a first direction and to said second rotated position when said steering wheel shaft is rotated in a second direction by said frictional force; and

second electrical contact means provided on said drive member, said second electrical contact means slidingly mounting past said first electrical contact means during the rotation of said drive member, whereby a closed electrical circuit is established among said first and second electrical contact means and said first terminal means during the rotation of said steering wheel shaft in said first direction and among said first and second electrical contact means and said second terminal means during the rotation of said steering wheel shaft in said second direction.

4,323,878

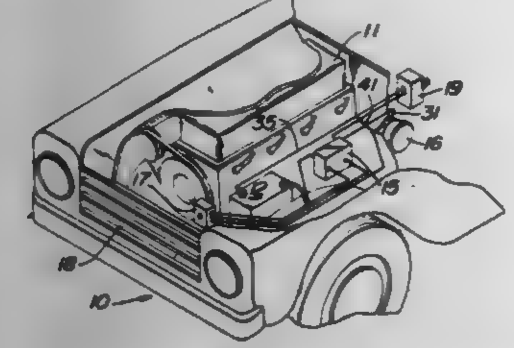
SECURITY DEVICE FOR MOTOR VEHICLES AND OTHER D.C. ELECTRICAL SYSTEMS

Anthony J. Lazynski, 3526 Sheffield Ave., Philadelphia, Pa. 19136

Filed Sep. 22, 1900, Ser. No. 189,106

Int. Cl.³ B60R *25/10*; G08B *13/22*

U.S. Cl. 340—63 7 Claims



1. A security device for use with a d.c. electrical system including a d.c. source, said device comprising an alarm element connected across said source, relay means including a relay coil and a normally open relay switch, said relay switch being connected to said alarm element to actuate the latter on energization of said relay coil, switch means connected to said relay coil to maintain the latter de-energized in the stand-by condition and energized in the alarm condition, operating means connected to said d.c. source and said switch means to maintain the latter open responsive to constant voltage of said source and effect closing of said switch means responsive to lowered voltage of said source, and delay means controlling the time required by said operating means to assume its open switch means maintaining condition, said relay including an additional relay switch adapted to close and open with said first mentioned relay switch, and timer means connected to said additional relay switch and said switch means for opening the latter and de-energizing the relay coil after a predetermined interval to open said first mentioned and additional relay switches and stop actuation of said alarm element.

4,323,879

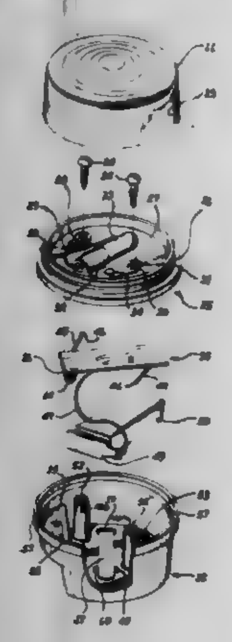
BICYCLE SAFETY FLASHER WITH OPTIONAL MOUNTING MEANS FOR OTHER USES

Dale T. Kelley, 2329 N. 39th Pl., Phoenix, Ariz. 85060

Filed Oct. 10, 1980, Ser. No. 195,755

Int. Cl.³ B60Q *1/30*; B62J *5/00*

U.S. Cl. 340—134 8 Claims



1. In a safety flasher having a battery case with two inwardly projecting bosses between which a battery is received, each of said bosses having an axial opening therein which is open at the inner end of said boss, a lens closing said battery case, a circuit board providing a flasher circuit, a reflector assembly carrying a lamp with terminals for shining light through said lens, and fasteners for fastening said reflector assembly to said bosses, the improvement wherein:

said bosses have transverse slots therein which intersect said axial openings and are open at the inner ends and at the opposite sides of the respective bosses;

said circuit board has wire terminations seated in said transverse slots and extending across said axial openings in the respective bosses;

and said fasteners extend into said axial openings in the bosses and contact said wire terminations seated in said transverse slots in the bosses, said fasteners also contacting said lamp terminals for completing electrical connections between said circuit board and said lamp.

4,323,880

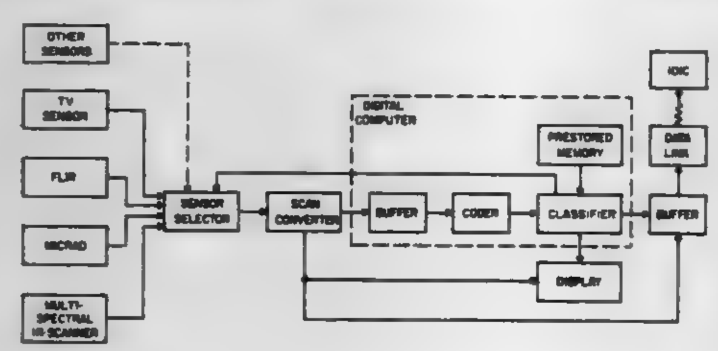
AUTOMATIC TARGET SCREENING

Bruce T. Lucas, China Lake, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 22, 1974, Ser. No. 490,431

Int. Cl.³ G06K *9/36, 9/62*

U.S. Cl. 340—146.3 AC 6 Claims



1. A system for recognizing the characteristics of man-made features within a scene of natural terrain, comprising:

sensing means for imaging said scene;

scanning means for scanning the image provided by said sensing means to identify preselected characteristics of man-made features;

means for generating at least one, three-dimensional phase histogram from the images scanned by plotting the probability of occurrence of the average and absolute difference angles that the gradient vectors make with the line joining adjacent points identified during said scan as having a characteristic of man-made features, wherein said gradient vectors are in the direction of said scan and the angles are measured counterclockwise from said gradient vector;

means for comparing said probability with preselected reference characteristics to recognize the scenes within which man-made features have a preselected probability of being present.

4,323,881

RADIO PAGER WITH REDUCED POWER CONSUMPTION

Toshihiro Mori, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Minato, Japan

Filed May 8, 1980, Ser. No. 147,920

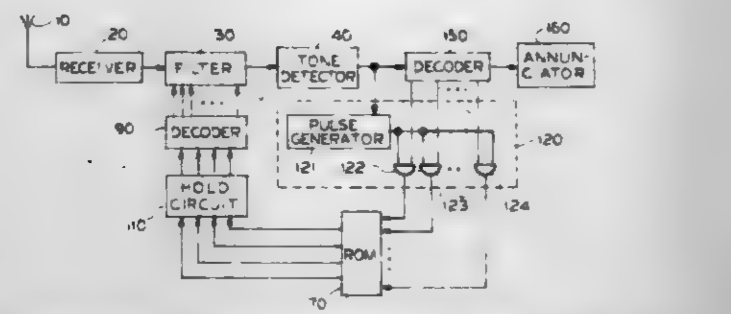
Claims priority, application Japan, May 10, 1979, 54-57241

Int. Cl.³ H04Q *9/10*; G11C *7/00*; H04B *5/04*

U.S. Cl. 340—825.48 9 Claims

1. A radio-paging receiver comprising means for receiving any of a plurality of tone signals, said tone signals occurring in a sequence corresponding to an identification of a paged receiver number; band pass filter means having means for selectively altering the center frequency of its pass band in response

to a first control signal in order to selectively pass a corresponding one of said tone signals; means for detecting said selectively passed tone signal; means for storing codes corresponding to a predetermined identification number for an individual receiver, means for successively reading out of said code storing means sequential ones of these codes in response to a second control signal; means responsive to the readout of these codes for holding said readout code in temporary stor-



age; decoding means responsive to the temporarily held code for supplying said first control signal to said band pass filter means; means for generating said second control signal in response to the output of said tone-detecting means; means for generating an annunciating signal when said receiver is paged; and gate means for selectively supplying said second control signal to said code storing means in order to sequentially read out said predetermined identification number.

4,323,882

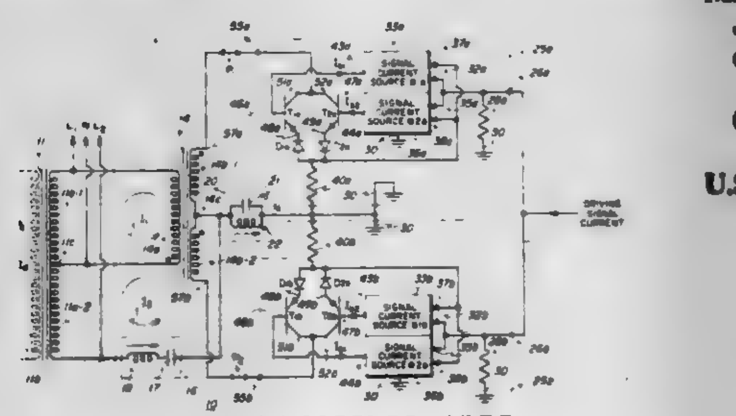
METHOD OF, AND APPARATUS FOR, INSERTING CARRIER FREQUENCY SIGNAL INFORMATION ONTO DISTRIBUTION TRANSFORMER PRIMARY WINDING

Jagdishchandra T. Gajjar, Saratoga, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jun. 2, 1980, Ser. No. 155,454

Int. Cl.³ H04B *3/56*

U.S. Cl. 340—310 R 14 Claims



1. A method for inserting an information-carrying carrier frequency signal onto a power distribution network connected to a primary winding of a distribution transformer having a plurality of secondary windings coupled thereto, comprising the steps of:

(a) causing a like plurality of currents to each flow through one of the distribution transformer secondary winding sections;

(b) modulating a characteristic of each of said like plurality of currents in accordance with the information to be transmitted; and

(c) establishing the instantaneous direction of current flow of each of said like plurality of currents to provide in-phase additive contributions to the transformer core flux and to the resulting current flowing in the distribution transformer primary winding to cause the carrier frequency signal current flowing therethrough to be proportional to the sum of the currents flowing in all of said plurality of secondary winding portions.

4,323,883

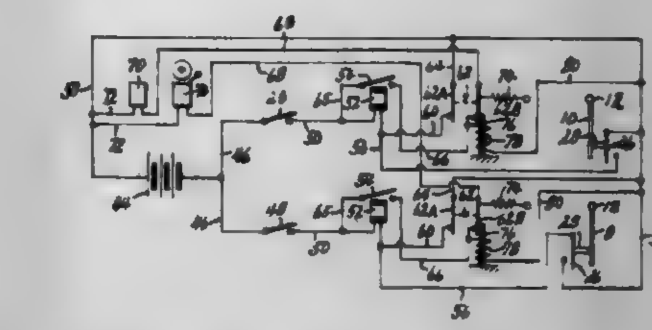
DOORBELL FOR PETS

Loris F. Sowards, P.O. Box 85, Brownville, Nebr. 68321

Filed Dec. 31, 1980, Ser. No. 221,546

Int. Cl.³ G08B *3/00*

U.S. Cl. 340—328 8 Claims



1. A doorbell for pets comprising:

a. a scratch plate,

b. means supporting said plate on a building door for movement toward said door, the plane of said plate normally being parallel to but spaced apart from said door, and against which a pet desiring passage through said door may scratch to move it toward said door,

c. an electrical switch mounted on said door and operable to be closed by movement of said scratch plate toward said door, and

d. an operative electrical circuit including said switch, an electrically operated signalling device, and a source of electric power.

4,323,884

DIGITAL-ANALOG INTERFACE FOR INSERTION BETWEEN A DIGITAL CONTROL SIGNAL TRANSMITTER AND A CONTROLLED MOVING ELEMENT

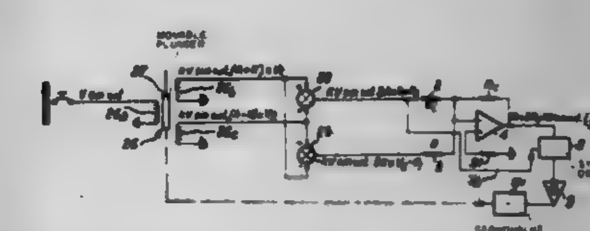
Michel Durandeau, Toulouse; Norbert Voisin, Bruguieres, and Jean P. Verdier, Cazeres-sur-Garonne, all of France, assignors to Societe Nationale Industrielle Aerospatiale, France

Filed Dec. 5, 1978, Ser. No. 966,722

Claims priority, application France, Dec. 7, 1977, 77 36822

Int. Cl.³ H03K *13/02*

U.S. Cl. 340—347 DA 5 Claims



1. In a closed servo-loop system for insertion between

on the one part a control circuit of a moving element, such as the servo-valve of an electrohydraulic servocontrol, whose position X is to be controlled by analog electrical signals, and

on the other part a transmitter of signals for controlling the position X to be imparted to the moving element, said transmitter providing digital electrical control signals,

said closed servo-loop system including

an inductive linear position detector having a movable plunger connected to said moving element and a differential transformer for detecting the position X of said moving element, said detector having a single primary winding and two secondary windings, said two secondary windings generating voltages V_1 and V_2 varying with the position of the movable plunger, the difference of voltages V_1 and V_2 being proportional to the position

X of the moving element and the sum of said voltages V_1 and V_2 being proportional to a constant A, and

a digital-analog interface unit including

first summing means connected to receive said voltages V_1 and V_2 and for adding voltages V_1 and V_2 and for forming an output signal,

second summing means connected to receive said voltages V_1 and V_2 and for subtracting voltage V_1 from voltage V_2 and for forming an output signal,

first resistance means having an adjustable value Ri and connected to receive said output signal of said first summing means,

second resistance means having a fixed value R and connected to receive said output signal of said second summing means,

means for adjusting the value of said first resistance means to $Ri=R\cdot A/X$,

summing circuit means having an input connected to said first and second resistance means, and

a synchronous demodulator having a signal input connected to the output of said summing circuit means and a synchronization input connected to receive said output signal of said first summing means, said demodulator having an output for transmitting an output signal of said interface unit to the control circuit.

4,323,885

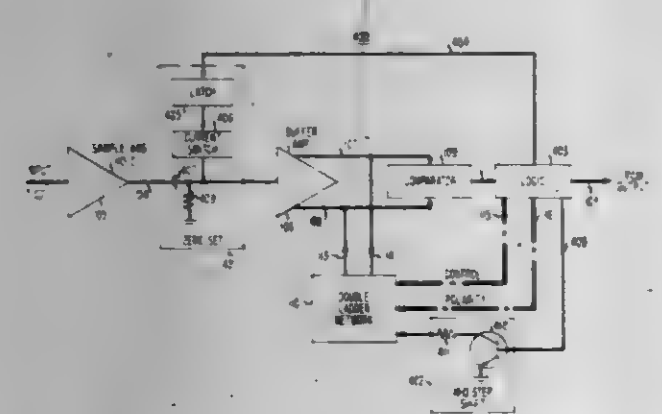
NOISE AND CROSSTALK REDUCTION IN MID-RISER BIASED ENCODERS

Joseph F. Carriere, Andover; Wilmer B. Gaunt, Jr., Boxford, both of Mass.; Joseph E. Landry, Atkinson, and Dewayne A. Spires, Plaistow, both of N.H., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sep. 29, 1980, Ser. No. 192,432

Int. Cl.[3] H03K *13/02*

U.S. Cl. 340—347 CC 14 Claims



1. A mid-riser biased, successive approximation encoder (400) for converting an analog signal sample to a multi-bit PCM code word comprising;

comparator means (109) for sequentially comparing said analog signal sample to a series of reference signals and generating an output from each comparison, the first comparison being a polarity decision,

reference signal generation means (110) for producing said series of reference signals,

logic means (715) responsive to said comparator output for controlling the sequential application of said reference signals to said comparator and converting said comparator output to a bit of said PCM code word, said encoder characterized by

feedback means (401) for receiving said polarity decision from said comparator and generating a signal therefrom to reduce any dc component in the analog sample signal to substantially zero,

second reference signal generating means (402, 110) for producing a non-zero offset reference signal corresponding to a predetermined intermediate position between two quantizing boundaries, and

control means (701, 702, 711, F1) for the application of said offset reference signal to said comparator immediately following said polarity decision to generate a second polarity decision from said comparator output, said offset reference signal being applied with said series of reference signals until said analog signal sample is coded, said control means also inhibiting said logic means from converting said polarity decision to a bit of said PCM code word and substituting instead said second polarity decision.

4,323,886

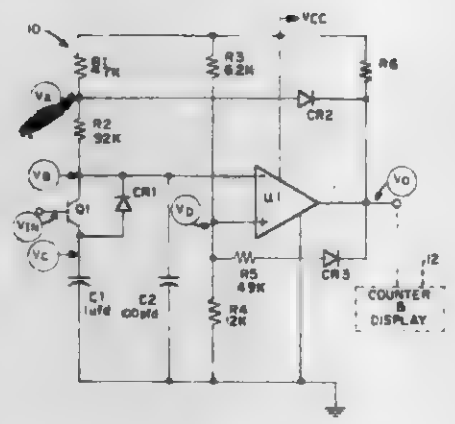
ANALOG-TO-DIGITAL CONVERTER CIRCUIT

Raymond S. Duley, Spring Valley, Ohio, assignor to NCR Corporation, Dayton, Ohio

Filed Oct. 6, 1980, Ser. No. 193,992

Int. Cl.[3] H03K *13/20*

U.S. Cl. 340—347 AD 15 Claims



1. A circuit for generating a digital output signal from an analog input signal applied to said circuit comprising:

a comparison means having first and second inputs thereto, an output therefrom, and a first reference voltage level at said first input thereof;

means for storing an electrical charge, said storing means being operatively coupled to said second input;

first charging means including a switching means for charging said storing means to a voltage which approaches the voltage of said analog input signal and thereafter effectively switching said storing means out of said first charging means;

second means, coupled to said second input for effectively switching the output of said comparison means from a first state to a second state after said storing means is effectively switched out of said first charging means; and

third means responsive to said second state of said comparison means for changing the voltage reference level at said first input of said comparison means to a second level, for reducing the voltage on said storing means, and also for enabling the output of said comparison means to switch to said first state when the voltage on said storing means is reduced to approximately said second level;

said output of said comparison means toggling between said first and second states at a frequency which is dependent upon the voltage of said analog input signal.

4,323,887

CMOS ANALOG TO DIGITAL CONVERTER WITH SELECTABLE VOLTAGE FOLLOWER BUFFERING

Gerald B. Buurma, San Jose, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

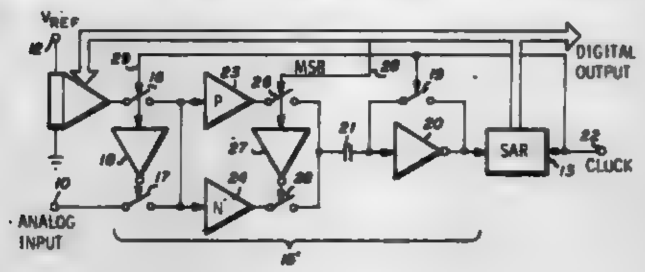
Filed Oct. 23, 1980, Ser. No. 199,890

Int. Cl.[3] H03K *13/02*

U.S. Cl. 340—347 AD 7 Claims

1. An input buffer circuit for a CMOS analog to digital converter, having an analog input terminal, a successive approximation register for developing a digital output, and a source of reference voltage, said circuit comprising:

first and second unity gain voltage follower devices having common inputs; means for coupling said common inputs to said analog input terminal; and means for selecting, as a function of the most significant bit of said digital output



determined by said successive approximation register, the output of one of said first and second voltage follower devices for coupling to said converter, said selecting being responsive to whether said analog voltage is greater or less than one-half of said reference voltage.

4,323,888

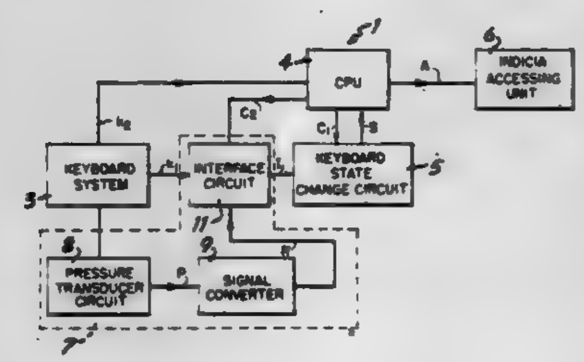
KEYBOARD SYSTEM WITH VARIABLE AUTOMATIC REPEAT CAPABILITY

James A. Cole, East Setauket, N.Y., assignor to Megadata Corporation, Bohemia, N.Y.

Filed Dec. 21, 1979, Ser. No. 106,362

Int. Cl.[3] G06F *3/02*

U.S. Cl. 340—365 A 8 Claims



1. Apparatus comprising in combination a keyboard system including a plurality of pressure actuatable keys, means including a transducer circuit and being responsive to the actuating pressure applied to any one of a number of said keys for generating an output signal having an amplitude related to said actuating pressure as applied to the actuated one of said number of keys, means responsive to actuation of all of said keys for accessing indicia corresponding to the actuated key, and a repeat circuit including said actuating pressure responsive means and having a converter circuit coupled to said last mentioned means for converting said output signal into a repeat signal during continued actuation of said one of said number of keys, said repeat signal undergoing repetitive state transition at a rate related to said amplitude of the output signal, and said means for accessing indicia further responds to said repeat signal by repetitively accessing the indicium corresponding to said one of said number of keys.

4,323,889

MATRIX DISPLAY DEVICES

Hassan P. A. Salam, London, England, assignor to Unisplay S.A., Geneva, Switzerland

Filed Aug. 11, 1980, Ser. No. 176,808

Claims priority, application United Kingdom, Aug. 16, 1979, 28559/79

Int. Cl.[3] G09F *11/00*

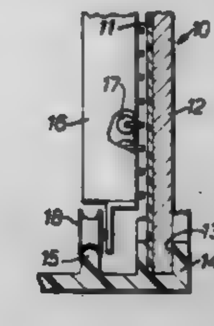
U.S. Cl. 340—373 16 Claims

1. Display apparatus comprising:

a flexible display matrix assembly having a plurality of display elements arranged in horizontal and vertical rows, support portions of said assembly being disposed adjacent opposite edges thereof;

movable electromagnetic head means having electromagnetic heads for activating the display elements in respective rows of said matrix assembly;

guide means extending the length of one of said horizontal and vertical rows for guiding said electromagnetic head means during movement thereof;



means attaching said guide means to one of said support portions of the matrix assembly so as to maintain a defined distance between said guide means and the display elements of said one of said horizontal and vertical rows of said matrix assembly; and

resilient means applying tension between said support portions so as to maintain said matrix assembly substantially flat.

4,323,890

SWITCHING CIRCUIT FOR MONITORING THE SWITCHING STATE OF SWITCH ELEMENTS

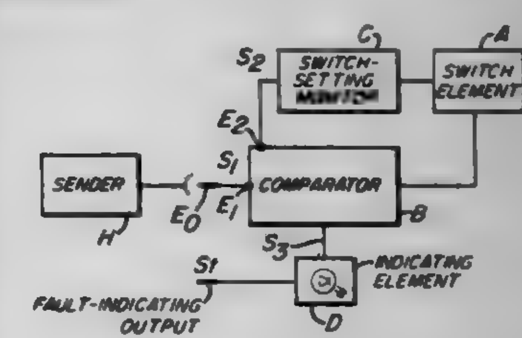
Andreas Lemke, Berlin, Fed. Rep. of Germany, assignor to Anergesellschaft GmbH, Berlin, Fed. Rep. of Germany

Filed May 5, 1980, Ser. No. 146,309

Claims priority, application Fed. Rep. of Germany, May 22, 1979, 2921095

Int. Cl.[3] G08B *21/00*

U.S. Cl. 340—524 6 Claims



1. A switching circuit for monitoring the switching state of switching elements, including a switching element responsive to a switch control signal connected thereto to switch from one switching state to another switching state, and a switch-setting monitor connected for recognizing the switching state of said switching element and accordingly producing a monitor signal which corresponds to the switching state, the improvement comprising:

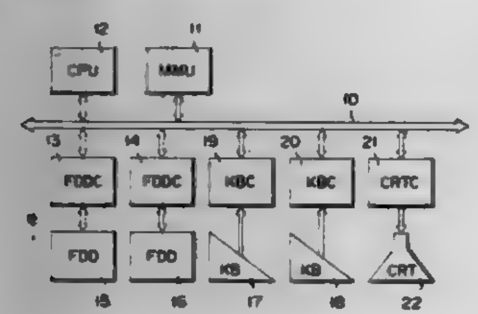
(a) a timing stage for producing clock impulse signals for synchronously controlling a synchronizing stage and a comparator stage;

(b) a synchronizing stage connected to receive a timing signal from said timing stage and an input signal, and adapted to transmit said input signal upon receipt of said impulse signals;

(c) a comparator stage connected to receive clock impulse signals from said timing stage, the input signal transmitted from said synchronizing stage, and the monitor signal from said switch-setting monitor, and adapted to switch

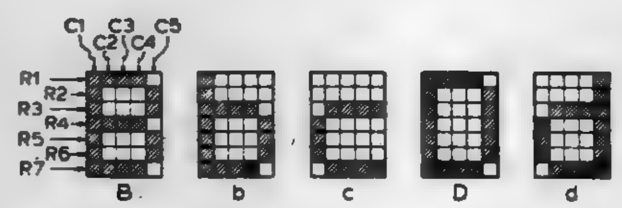
said switching element with and in response to said input signal and to compare said monitor signal and said input signal for producing a fault signal which is connected to said switching element to change the switching state when said monitor and input signals diversely indicate a fault in that said switching element is in different switching states.

4,323,891
CURSOR DISPLAY CONTROL SYSTEM FOR A RASTER SCAN TYPE DISPLAY SYSTEM
Kazuo Akashi, Ome, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan
Filed Apr. 25, 1980, Ser. No. 143,798
Claims priority, application Japan, Apr. 27, 1979, 54-51441
Int. Cl.³ G09G *1/16*
U.S. Cl. 340—709 7 Claims



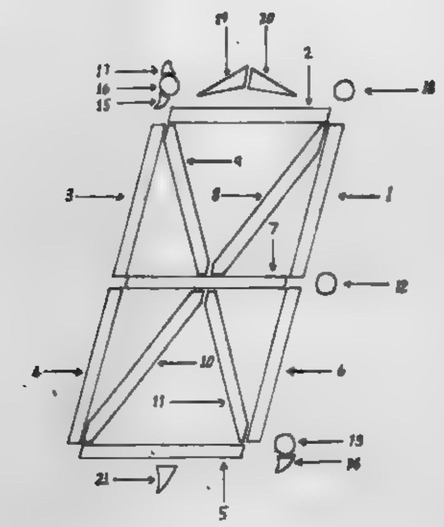
1. A cursor display control system for a raster scan type display system which divides a raster scan type display screen and provides the display information to the respective divided sides by using a mirror reflection comprising;
a display unit for displaying dot data in a raster scan manner;
a programmable CRT controller for interfacing the display unit of the raster scan type and for producing a refresh memory address, a raster address and timing signal for displaying data on the display screen in order that the screen can be programmably set;
a refresh memory for storing coded data to be displayed in response to the refresh memory address obtained from the controller;
raster address converting circuit means which receives the raster address obtained from the controller and converts the raster address to a converted raster address;
multiplexer means for selectively outputting the raster address from the controller and the converted raster address from the raster address converting circuit means on the basis of control information contained in the refresh memory address;
a character generator for converting the coded data inputted from the refresh memory into display pattern data on the basis of raster address information obtained from the multiplexer means;
bidirectional shift register means which receives the pattern information from the character generator, determines the shift direction on the basis of the control information contained in the refresh memory address, and produces serial dot data to the display unit;
cursor address information storing means for storing cursor address information supplied from a central processing element through a system bus;
comparing means which compares the cursor address information outputted from the cursor address information storage means with the refresh memory address outputted from the programmable CRT controller and produces a cursor display signal when both the cursor address information and the refresh memory address are coincident with each other.

4,323,892
ALPHA-NUMERIC CHARACTER GENERATOR ARRANGEMENT
John R. Kinghorn, Sutton, England, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Feb. 11, 1980, Ser. No. 120,218
Claims priority, application United Kingdom, Feb. 12, 1979, 04846/79
Int. Cl.³ G09G *00/00*
U.S. Cl. 340—724 2 Claims



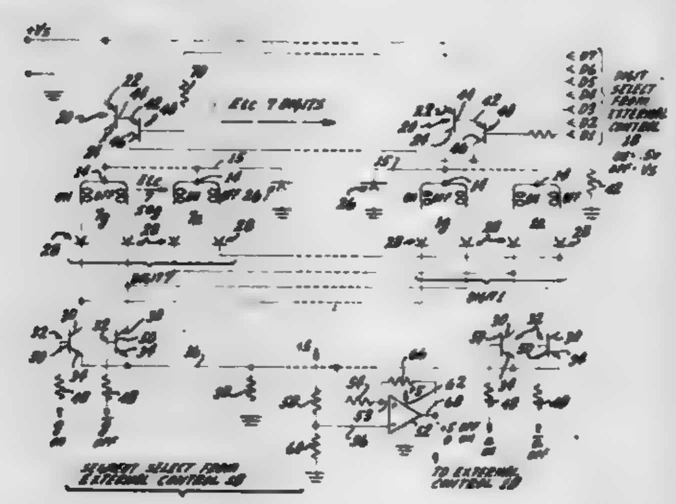
1. A character generator arrangement for generating alphanumeric characters for display by electrical means, said arrangement comprising:
a character store in which each of the different characters are stored in a co-ordinate matrix of discrete character elements, each of said matrix being addressable by row and column, said character elements for each character representing a decender letter—lower case letters g, j, p, q and y—being arranged in said matrix such that character elements forming the tail of each of said decender letters are stored in rows of said matrix which precede the rows in which the remaining character elements for the particular decender letter are stored;
addressing means having an input for receiving input signals corresponding to the address of a particular character, and a plurality of outputs, coupled to said character store for providing, in parallel, the address of said particular character;
row selection means coupled to said store for selecting, in sequence, the row addresses for any of said characters, said row selection means further including means for repeating the selection of said addresses, in sequence, whereby, in the case of said decender letters, at least the addresses of the character rows containing the character elements pertaining to the tails of the decender letters are repeated;
data output means coupled to said character store for providing character element data in the selected character element row of the selected character;
enabling means coupled to said row selection means for causing said data output means to generate said character element data by row in sequence for said selected character;
and
detector means coupled to said addressing means and said enabling means for indicating to said enabling means the selction of the address of any of said decender letters, whereby, when said detector means indicates the presence of a decender letter address, said enabling means suspends the operation of said data output means for the initial rows comprising the tail of the decender letter, thereafter allowing the data output means to supply the character element data for the remaining portion of said selected character address which would include the repeat of the first rows containing the character elements representing the tail of the decender letter.

4,323,893
MULTI-SEGMENT ALPHANUMERIC DISPLAY FOR GREEK AND ENGLISH CHARACTERS
John Ypsilantis, and Anna Ypsilantis, both of 1/124 Morts Rd., Mortdale, N.S.W. 2223., Sydney, Australia
Filed May 15, 1979, Ser. No. 39,149
Claims priority, application Australia, May 18, 1978, 499808
Int. Cl.³ G09G *3/04*
U.S. Cl. 340—756 10 Claims



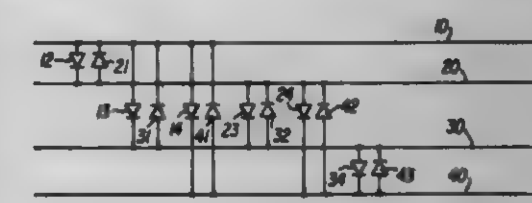
1. A device for displaying different languages which may include the English and Greek alphabets with punctuation, comprising:
a first parallelogram-shaped array of display segments which may be used to represent letters of said language alphabets;
a second array of display segments located outside of said parallelogram-shaped first array;
said second array including at least a first and a second shaped segment, each of said first and second shaped segments being located at the top of said first parallelogram-shaped array, and shaped and positioned to form a diacritical mark or punctuation mark; and
said first and second segments together forming a third mark.

4,323,894
CIRCUIT FOR DRIVING ELECTROMAGNETICALLY-ACTUATED DISPLAYS
William D. Wood, 141 - 22nd St., Del Mar, Calif. 92014, and Kenneth L. Davidson, 2320-1/2 Brant St., San Diego, Calif. 92101
Filed May 9, 1980, Ser. No. 148,386
Int. Cl.³ G09G *3/20*
U.S. Cl. 340—764 4 Claims



1. A low current drain circuit for selectively driving a plurality of electromagnetically actuated displays employing a plurality of digits, each of said digits having a plurality of indicator segments, each of said segments having on and off states, each of said states having an energizing coil associated therewith, said segments remaining in their last driven state until driven to their opposite state, said circuit comprising:
an external control means for selectively controlling said on and off states of said indicator segments;
a power drive means responsive to said external control means for providing a drive current through the coils requiring a change of state; and
feed-back means for maintaining said drive current within a predetermined value range by alternating the energizing and de-energizing of said external control means.

4,323,895
DISPLAY DEVICE FOR DASHBOARD OF AUTOMOBILE
Jean C. Coste, Marly le Roi, France, assignor to Regie Nationale des Usines Renault, Boulogne-Billancourt, France
Filed Apr. 24, 1980, Ser. No. 143,489
Claims priority, application France, May 11, 1979, 79 12073
Int. Cl.³ G09G *3/00*
U.S. Cl. 340—782 5 Claims



1. A display device comprising:
plural electroluminescent diode pairs, the diodes of each diode pair parallel connected anode-cathode;
n parallel power conductors ($n>2$), connected to said plural diode pairs with only one diode pair connected between any two respective power conductors; and
means for selectively supplying each of the conductors with a high voltage state, a low voltage state or a high impedance state;
wherein for each conductor said selectively supplying means comprises:
a series connection between a positive voltage source and ground of,
a resistor
a pair of transistors connected between said resistor and ground, the collector and emitter portions of said transistors being series connected at a common point coupled to a respective conductor, and each transistor having a base connected to a respective control voltage source through a respective base resistor.

4,323,896
HIGH RESOLUTION VIDEO DISPLAY SYSTEM
Wayne Fiedler, Burbank, and Gregory E. Slobodzian, Bartlett, both of Ill., assignors to Stewart-Warner Corporation, Chicago, Ill.
PCT No. PCT/US80/00280, § 371 Date Mar. 18, 1980, § 102(e) Date Mar. 18, 1980
PCT Filed Mar. 18, 1980, Ser. No. 245,344
Int. Cl.³ G09G *3/22, 3/26*
U.S. Cl. 340—800 9 Claims

1. A high resolution system for displaying video images on a plurality of variable intensity display devices in real time, said images representing selected portions of video frames received from a video source in raster (TV) format, said system comprising:
(a) a video converter receiving the raster lines of video information corresponding to each frame, said converter including quantizing means for generating digital data representative of the relative intensity of said video information at selected points on selected raster lines of said frames and means for selecting which lines and the number of said points per line for which digital data is generated, said digital

data being generated at a first rate, sufficient to keep up with the rate at which the video information is received;

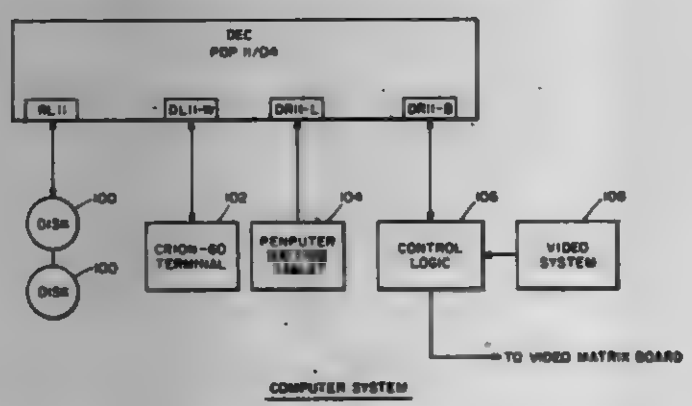
(b) transmitter means receiving said digital data at said first rate for transmitting it to said display devices in a modified raster line format without frame storage, said transmitter means including means for dividing each line of digital data into at least two segments and means for transmitting in parallel the data for each of said segments to said display devices,

whereby the line at a time raster format of the video information is retained but the effective rate of transmission of data to the display devices corresponding to each segment is reduced to a second rate approximately equal to said first rate divided by the number of said segments, the reduced data rate permitting display of an increased number of data points per raster line and/or the use of more raster lines from the video source;

(c) interface means for selectively connecting said converter to said transmitter means;

(d) means for controlling the operation of said interface means thereby directing the transfer of data between said converter and transmitter means.

9. A rotation circuit for manipulating digital data stored in a



buffer memory representing information to be displayed on a matrix of display devices for causing said information to appear to travel across the display matrix in a selected direction, said circuit comprising:

(a) means for cyclically and sequentially addressing selected memory locations in said buffer to cause data to be read from and restored to said locations;

(b) shift register means recieving the data from each addressed buffer location for shifting said data a selected number of bits in a selected direction and restoring the shifted data to the same buffer location;

(c) linking register means operatively connected to said shift register means for receiving and temporarily storing the bits shifted out one side of the shift register means during each shift cycle and for inserting the shifted bits back into the other side of said shift register means during the next shift cycle corresponding to the next buffer address in the sequence,

whereby the data in the addressed locations are shifted in a selected direction across the buffer so that a repetitive display of the data in the buffer, after each shift cycle is complete, will cause the data to appear to travel across the matrix in the manner of a travelling sign display.

4,323,897

TARGET DETECTING DEVICE WITH IMPROVED COUNTER-COUNTERMEASURES CAPABILITY

Robert A. Creighton, Scottsdale, Ariz., and Stephen M. Engel, Columbia, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 22, 1970, Ser. No. 40,522

Int. Cl.³ G01S *7/36*

U.S. Cl. 343—18 E 1 Claim

1. In a target detecting device having an improved counter-countermeasures capability, the combination comprising:

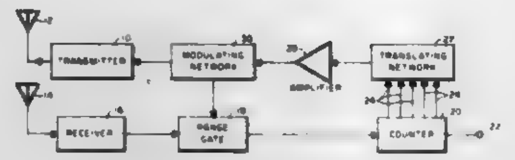
(a) transmitter circuit means for transmitting pulsed signals,

(b) receiver circuit means for receiving echos of said transmitted signals,

(c) modulating network circuit means coupled to said transmitter circuit means for controlling the pulse repetition frequency of the transmitted signals,

(d) range gate circuit means coupled to said receiver circuit means for passing signals of predetermined amplitude and time sequence,

(e) counter circuit means coupled to said range gate circuit means and having a plurality of outputs dependent upon the number of signals passed by said range gate circuit means,



(f) a summing network coupled to said counter circuit means for summing the outputs from said counter circuit means,

(g) an astable multivibrator coupled to said modulating network circuit means and to said summing network for randomly changing the output of said modulating network circuit means in response to and each time a received echo signal is accepted by said receiver circuit means and in accordance with the code generated when said received signals shifted through said counter circuit means.

4,323,898

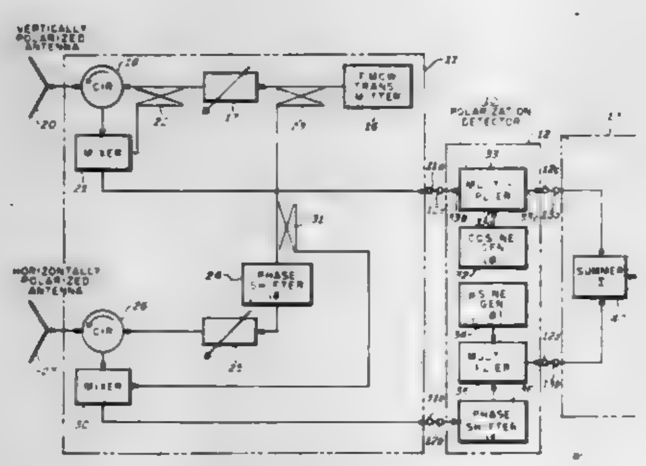
POLARIZATION DETECTOR

Richard M. Barnes, Acton; George M. Vachula, Harvard, and Clarence L. Bennett, Jr., Groton, all of Mass., assignors to Sperry Corporation, New York, N.Y.

Filed Jun. 23, 1980, Ser. No. 161,797

Int. Cl.³ G01S *13/02*

U.S. Cl. 343—5 SA 14 Claims



1. A radar target polarization detector comprising:

means for receiving electromagnetic signals having at least first and second signal components each having non-identical predetermined polarizations and for providing first and second signals representative thereof;

means coupled to said receiving means for modifying said received signals in accordance with preselected polarization angles and relative phase shifts for providing first and second modified representative signals, said modifying means comprising:

first input means for receiving said first representative signals;

second input means for receiving said second representative signals;

means coupled to said first input means for phase shifting said first representative signal;

means for generating signals representative of the sine of preselected polarization angles;

first multiplier means coupled to said sine generator and said phase shift means for multiplying said phase shifted signals by said sine representative signals;

means for generating signals representative of the cosine of said preselected polarization angles; and

second multiplier means coupled to said cosine generator and said second input means for multiplying said second representative signals by said cosine representative signals;

means coupled to said signal modifying means for processing said modified representative signals to establish time averages corresponding to said polarization of said received signals and for providing signals representative of said time averages; and

means coupled to said processor means for comparing said time averaged signals to predetermined threshold signals.

4,323,899

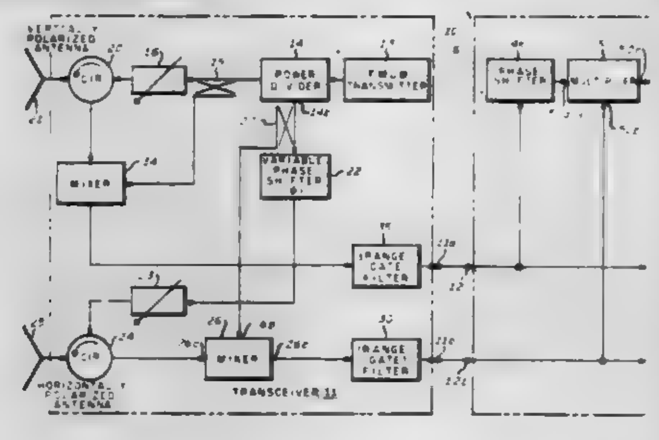
POLARIZATION DETECTOR

Richard M. Barnes, Acton, and George M. Vachula, Harvard, both of Mass., assignors to Sperry Corporation, New York, N.Y.

Filed Jun. 23, 1980, Ser. No. 161,798

Int. Cl.³ G01S *13/02*

U.S. Cl. 343—55 A 13 Claims



1. A radar polarization detector comprising:

means adapted to receive electromagnetic signals having a plurality of signal components each having nonidentical predetermined polarizations for providing signals representative of said received signal components;

means coupled to said receiving means for processing said representative signals to establish time averages corresponding to said polarization of said signals and for providing signals representative of said time averages; and

means coupled to said processor means for comparing said parameter representative signals to predetermined threshold signals and for providing signals indicative of said time average representative signals having a signal level greater than said threshold signal.

4,323,900

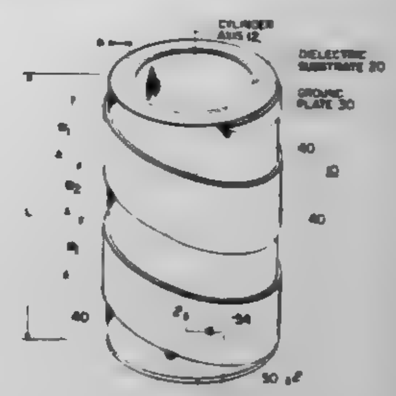
OMNIDIRECTIONAL MICROSTRIP ANTENNA

Albert D. Krall, Rockville; John W. McCorkle, College Park; John F. Scarzello, Columbia, and Albert M. Syeles, Silver Spring, all of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 1, 1979, Ser. No. 80,596

Int. Cl.³ H01Q *1/38*

U.S. Cl. 343—700 MS 8 Claims



1. An omnidirectional antenna, comprising:

a hollow right circular cylinder of a non-conducting material;

an electrically conducting medium covering the interior circumferential surface of the cylinder;

a strip conductor of uniform width spiraling to a narrow taper wound as an open loop about the exterior cylindrical surface of the cylinder and adapted to be connected to a feedline;

means for electrically coupling the coating at one base of the cylinder to the strip conductor.

4,323,901

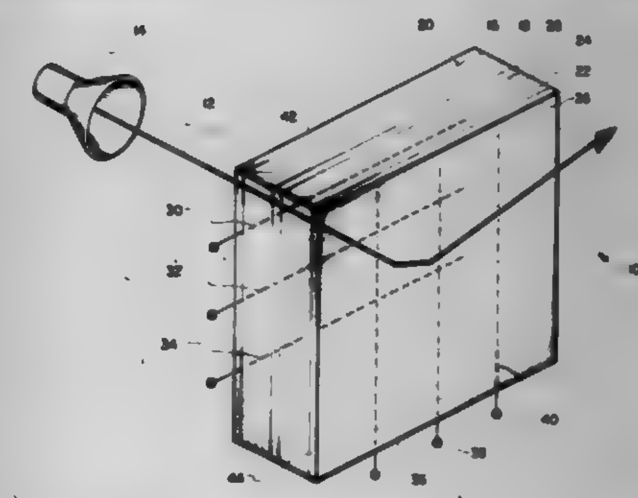
MONOLITHIC, VOLTAGE CONTROLLED, PHASED ARRAY

Roger E. De Wames; William F. Hall; William W. Ho, and Teong C. Lim, all of Thousand Oaks, Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Feb. 19, 1980, Ser. No. 122,331

Int. Cl.³ H01Q *19/06*

U.S. Cl. 343—754 19 Claims



1. A phased array for steering an electromagnetic wave, comprising:

a thin layer of active material having an n_o^3r product of at least 10^{-5} meters per Volt at microwave frequencies where n_o is the refractive index and r is the electro-optic coefficient of said material, said layer including first and second surfaces and defining a wave propagation direction therethrough;

- a first array of thin film electrodes disposed on said first surface and in electrical contact with spaced regions of said first surface;
- a first series of thin film conductors, each of said conductors electrically contacting one electrode in said first array;
- a second array of thin film electrodes disposed on said second surface and in electrical contact with spaced regions of said second surface; and
- a second surface of thin film conductors, each of said conductors electrically contacting one electrode in said second array such that an electric potential applied to corresponding electrodes in said first and second arrays will create an electric field across said layer and parallel to said wave propagation direction.

4,323,902

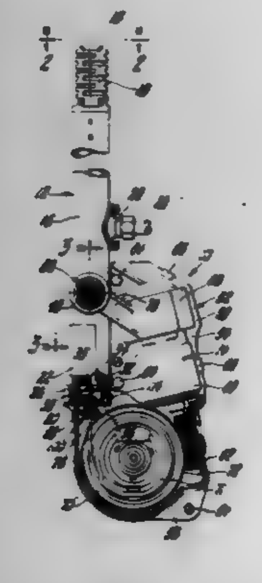
POWER ANTENNA WITH RESILIENT MOUNTING MEANS

James L. Hussey, Centerville; Michael B. Miller, Bellbrook, and William C. Staker, Jr., Springfield, all of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 3, 1980, Ser. No. 193,659

Int. Cl.³ H01Q *1/10*

U.S. Cl. 343—903 3 Claims



1. In a power operated antenna installation including a tubular antenna mast jacket disposed vertically and rigidly attached to a support structure, telescoping antenna means disposed on the longitudinal axis of said mast jacket for movement between an extended signal reception position and a retracted position within said mast jacket, power actuator means including a generally L-shaped housing portion having a first leg disposed parallel to said mast jacket and supporting thereon electric motor drive means and a second leg disposed below said mast jacket and supporting thereon a reel and storage means operable by said electric motor means, flexible drive means operative to transmit force in tension and in compression projecting into the lower end of said mast jacket and connected at one end to said antenna means and projecting into said housing portion immediately below said mast jacket for connection at the other end to said reel and storage means whereby said reel and storage means applies tension and compression on said flexible drive means to effect bodily shiftable movement thereof and consequent movement of said antenna means between said extended and said retracted positions, and a guide bushing on said mast jacket adjacent the lower end thereof engaging said flexible drive means and operative to center said drive means on the longitudinal axis of said mast jacket while simultaneously resisting lateral displacement of said flexible drive means relative to said mast jacket, in said antenna installation the improvement comprising, a pair of mounting pins rigidly attached to said mast jacket and aligned on a transverse axis thereof, a pair of support arms rigidly attached to said housing portion generally adjacent the upper end of said first leg and straddling said mast jacket, a pair of elastomeric grommets disposed between respective ones of said support arms and corresponding ones of said mounting pins, said grommets providing primary resilient support for said housing portion on said mast jacket by permitting controlled displacement of said housing portion relative to said mast jacket in resilient fashion whereby displacement is resisted by forces proportional to displacement, an elastomeric combination seal and grommet disposed on said second leg generally immediately below said mast jacket and slidably and sealingly receiving said flexible drive means, said combination seal and grommet being relatively stiffer than said elastomeric grommets and operative to resist displacement of said second leg laterally of said flexible drive means in resilient fashion whereby resistance is proportional to displacement, said flexible drive means and said guide bushing in close proximity to said combination seal and grommet cooperating to resist lateral displacement of said second leg of said housing portion relative to said mast jacket.

4,323,903

STRIP CHART RECORDER WITH A DIFFERENTIAL CAPACITOR SERVING AS POSITION SENSOR IN A POSITION SERVO FOR THE RECORDING PEN

Svend E. Fauerskov, Holte, and Svend O. Sjostrom, Copenhagen, both of Denmark, assignors to A/S Brüel & Kjaer, Naerum, Denmark

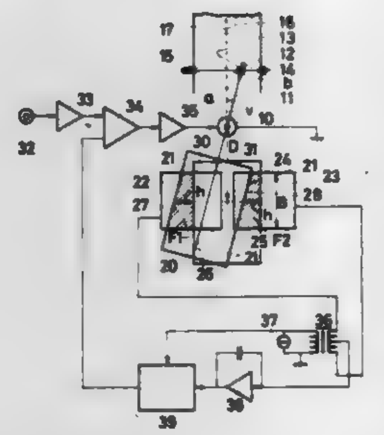
PCT No. PCT/DK80/00017, § 371 Date Nov. 22, 1980, § 102(e) Date Nov. 14, 1980, PCT Pub. No. WO80/02070, PCT Pub. Date Oct. 2, 1980

PCT Filed Mar. 21, 1980, Ser. No. 217,010

Claims priority, application Denmark, Mar. 22, 1979, 1171/79

Int. Cl.³ G01D *15/00*

U.S. Cl. 346—32 4 Claims



1. A strip chart recorder including a recording arm rotatable about a shaft perpendicular to the recording plane and the angular position of which is servo-controlled inasmuch as a position sensor of a differential capacitor type is incorporated in a position servo for the recording pen, characterized in that the rotor plate and the stator plates of the differential capacitor are so shaped that, for a rotation of the rotor plate through an angle v, the overlap area A of the plates changes by an amount ΔA which is proportional to the tangent of the angle v.

4,323,904

MAGNETIC PRINTING PROCESS AND APPARATUS

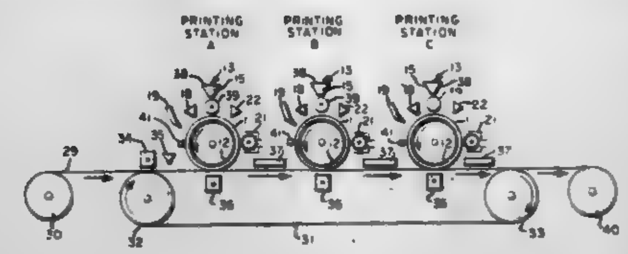
Donald W. Edwards, Wilmington, Del., and Emery J. Gorondy, Chadds Ford, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 777,242, Mar. 15, 1977, Pat. No. 4,195,303, which is a continuation-in-part of Ser. No. 771,062, Feb. 25, 1977, Pat. No. 4,117,498, which is a continuation-in-part of Ser. No. 672,553, Mar. 31, 1976, abandoned, and a continuation-in-part of Ser. No. 892,290, Mar. 31, 1978, abandoned, which is a division of Ser. No. 771,062, Feb. 25, 1977, Pat. No. 4,117,498. This application Sep. 13, 1979, Ser. No. 75,513

The portion of the term of this patent subsequent to Jul. 4, 1995, has been disclaimed.

Int. Cl.³ G11B *9/00*

U.S. Cl. 346—74.7 21 Claims



1. Magnetic printing apparatus, for use in forming on a substrate a colored print of an original colored design, comprising means for developing the magnetic image of a photocolor-separated film positive of the original design on a ferromagnetic material which is capable of continuously discharging an electric charge through its thickness to a grounded electrically conductive support on which it is imposed with a toner comprising a ferromagnetic component, a dye and a resin which substantially encapsulates said component and dye; and means for transferring the developed image directly or through an intermediate substrate to an ultimate substrate.

4,323,905

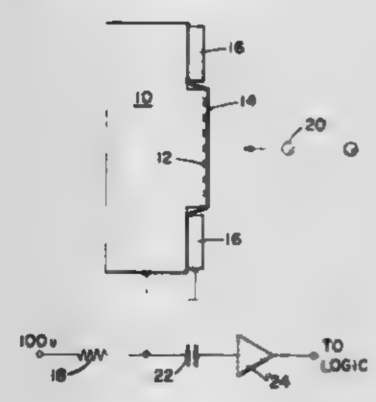
INK DROPLET SENSING MEANS

Peter H. Reitberger, Munich, and Helmut Weber, Augsburg, both of Fed. Rep. of Germany, assignors to NCR Corporation, Dayton, Ohio

Filed Nov. 21, 1980, Ser. No. 209,088

Int. Cl.³ G01D *15/18*

U.S. Cl. 346—75 15 Claims



1. Apparatus for detecting the presence of ink droplets comprising an

- electrode member having an uneven surface, an
- insulating sheet covering the uneven surface, said sheet having a conductive coating on one side thereof distal from the electrode member, and
- voltage means connected to said electrode and to the conductive coating and responsive to ink droplets impinging on and deflecting said insulating sheet thereby causing a change in voltage at the electrode to indicate the impact of the ink droplets and to generate a pulse in response thereto.

4,323,906

DEVICE FOR CORRECTING PITCH OF SCANNING LINES IN A LIGHT BEAM RECORDING SYSTEM

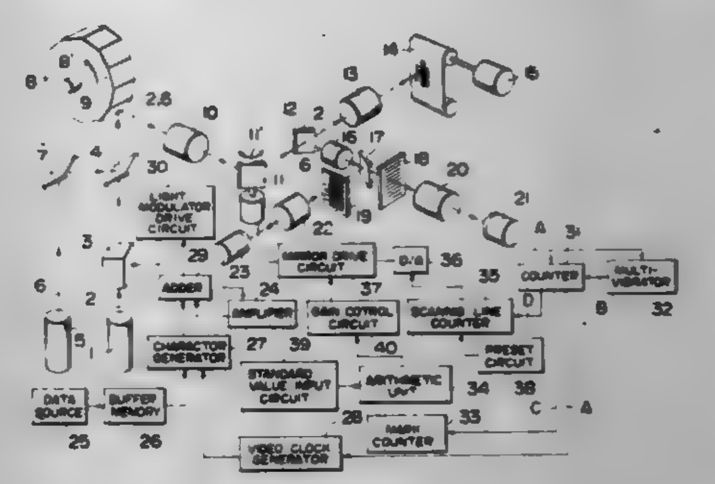
Masahiro Ohnishi, and Tsutomu Kimura, both of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Jul. 25, 1980, Ser. No. 172,249

Claims priority, application Japan, Jul. 26, 1979, 54-95359

Int. Cl.³ G01D *15/10, 9/42*

U.S. Cl. 346—76 L 2 Claims



1. A device for correcting pitch of scanning lines in a light beam recording system in which a light beam is horizontally deflected by a horizontal deflecting means and vertically deflected by a vibrating mirror, the horizontally deflected light beam scans a linear encoder to generate a photoelectric pulse signal, the number of the photoelectric pulses is counted to detect the position of the deflected light beam, the signal representing the vertically deflected position is inputed into a vibrating mirror driving circuit to rotate said vibrating mirror by predetermined angles, and the light beam thus horizontally and vertically deflected records an image of information on a recording material by raster scanning wherein the improvement comprises an optical mark provided on said linear encoder in the vicinity of the end of the raster scanning to receive a number of scanning lines, means for counting the number of the scanning lines received by said optical mark to detect fluctuation in the amplitude of said vibrating mirror, and means for controlling the gain of said vibrating mirror driving circuit according to the detected fluctuation.

4,323,907

VALVE FOR INK JET PRINTER

Victor J. Italiano, Ithaca, N.Y., assignor to NCR Corporation, Dayton, Ohio

Filed Jan. 2, 1980, Ser. No. 108,984

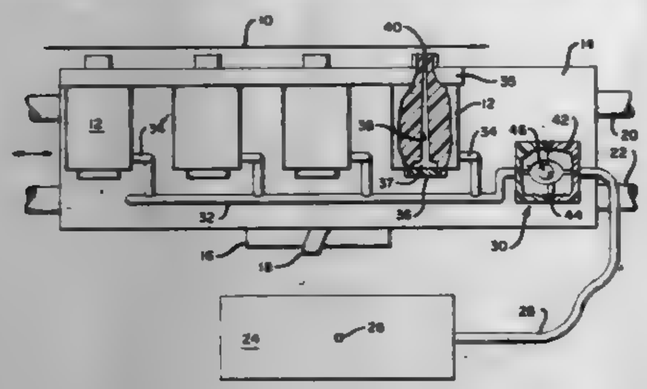
Int. Cl.³ G01D *15/18*

U.S. Cl. 346—140 R 15 Claims

1. A control system for an ink jet print head movable in bidirectional printing manner and having ink drive means for ejecting an ink droplet through a nozzle in the print head, said system comprising a

- stationary ink reservoir, an
- ink supply line connected with said ink reservoir and with said print head, and
- valve means having an inlet port and an outlet port and movable with said print head and interposed in said ink supply line and responsive upon acceleration and deceleration of said print head to open and close said ports wherein said ink supply line is closed on one side of said valve means when said print head is decelerated and accelerated at one end of travel, and said ink supply line is closed on the other side of said valve means when said

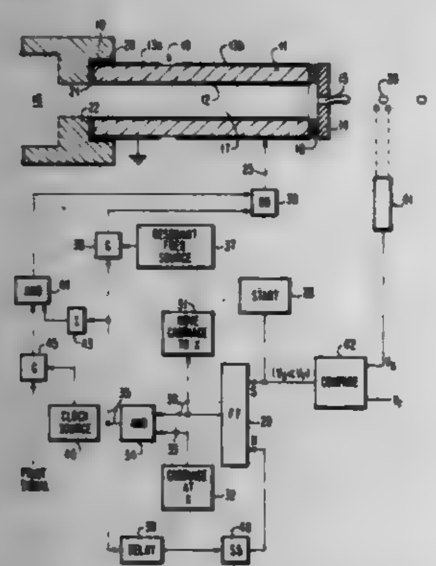
print head is decelerated and accelerated at the other end of travel of the print head by reason of the inertial forces acting on said valve means, and said ink supply line is open



on both sides of said valve means from the reservoir to the print head during printing operation when said print head is moving at printing speed.

4,323,908
RESONANT PURGING OF DROP-ON-DEMAND INK JET PRINT HEADS

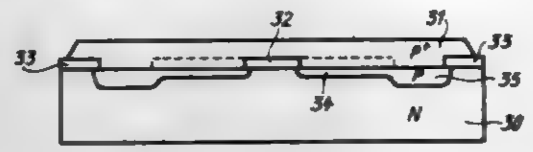
Francis C. Lee, San Jose; Ross N. Mills, and Frank E. Talke, both of Morgan Hill, all of Calif., assignors to International Business Machines Corp., Armonk, N.Y.
Filed Aug. 1, 1980, Ser. No. 174,335
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—140 R 7 Claims



1. A method of purging air from an ink-containing cavity in the print head of a drop-on-demand ink jet device, comprising the steps of:
providing a transducer in operative relationship with ink in the cavity,
energizing the transducer continuously, during purging time, with a series of pulses of at least a predetermined amplitude without application of supplemental pressure to the ink, said series of pulses being applied for a preselected period of time and at a repetition rate substantially equal to at least one resonant frequency of the cavity to purge any entrapped air from the cavity, and
thereafter, during printing time, energizing the same transducer with asynchronous pulses in a drop-on-demand mode at a frequency lower than any such resonant frequency.

4,323,909
PLANAR AVALANCHE DIODE WITH A BREAKDOWN VOLTAGE BETWEEN 4 AND 8 VOLTS

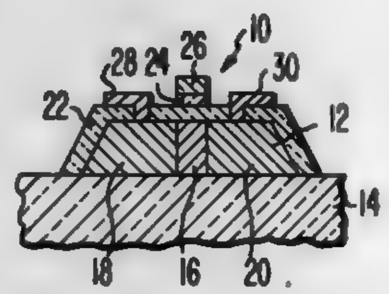
Henri Valdmans, Paris, France, assignor to Thomson-CSF, Paris, France
Filed Apr. 15, 1980, Ser. No. 140,486
Claims priority, application France, Apr. 20, 1979, 79 10065
Int. Cl.³ H01L *29/90*
U.S. Cl. 357—13 8 Claims



1. A planar avalanche diode with a breakdown voltage between 4 and 8 volts incorporating a silicon substrate of a first conductivity type coated with a silica mask through which there is a diffusion to supply a layer of a second conductivity type opposite to the first, the perimeter of the diffused zone being surrounded by a deeper diffusion zone, wherein the said mask blocks the diffusion in a region within the said perimeter and at least that part of the mask within the said perimeter is covered with a protective layer.

4,323,910
MNOS MEMORY TRANSISTOR

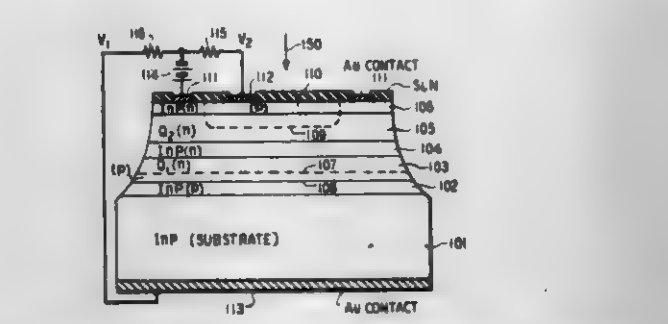
Joseph C. Sokoloski, East Brunswick, and Alfred C. Ipri, Princeton, both of N.J., assignors to RCA Corporation, New York, N.Y.
Filed Nov. 28, 1977, Ser. No. 855,087
Int. Cl.³ H01L *29/80*
U.S. Cl. 357—23 7 Claims



1. A MNOS memory transistor comprising:
a body of semiconductor material having along a surface thereof a source region, a drain region, and a channel region between said source and drain regions,
a channel insulation on said surface of the semiconductor body and over said channel region, said channel insulation including two layers of different material which are capable of storing at the interface electrons which are injected into the channel insulation, and
said channel being sufficiently narrow in width that the electrons will be injected into the channel insulation completely across the channel region by avalanche injection.

4,323,911
DEMULTIPLEXING PHOTODETECTORS

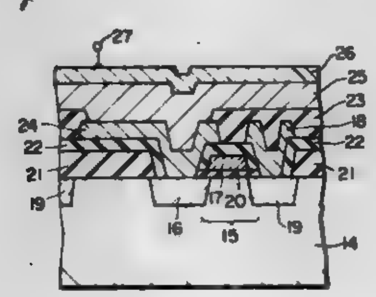
Joe C. Campbell, Middletown, and Tien P. Lee, Holmdel, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Continuation of Ser. No. 969,346, Dec. 14, 1978, Pat. No. 4,213,138. This application Mar. 7, 1980, Ser. No. 127,942
The portion of the term of this patent subsequent to Jul. 15, 1997, has been disclaimed.
Int. Cl.³ H01L *27/14, 29/161*
U.S. Cl. 357—30 4 Claims



1. A demultiplexing photodetector comprising an indium phosphide substrate, a bottom indium phosphide layer of one conductivity type epitaxially grown on said substrate, a plurality of semiconductor layers including a top layer all of the opposite conductivity type epitaxially grown on said bottom layer, and a region of said top semiconductor layer being doped such that said region is of said one conductivity type characterized in that said plurality of semiconductor layers includes a first quaternary layer having a first bandgap and being epitaxially grown on said bottom indium phosphide layer, said first quaternary layer having a diffused pn junction within the layer, at least one barrier layer epitaxially grown on said first quaternary layer, a second quaternary layer having a second bandgap potential and being epitaxially grown on said barrier layer, said second quaternary layer having a diffused pn junction within the layer created by said region of said one conductivity type, said barrier layer having a bandgap higher than either of said quaternary layers, and said photodetector further includes an electrode means for independently coupling potentials to the pn junctions in each of said quaternary layers.

4,323,912
SOLID-STATE IMAGING DEVICE

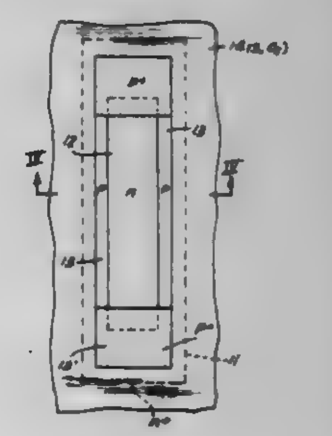
Norio Koike; Toshihisa Tsukada, both of Tokyo; Haruhisa Ando; Hideaki Yamamoto, both of Hachioji; Tadaaki Hirai, Koganei; Masaharu Kubo, Hachioji; Eiichi Maruyama, Kodaira; Toru Baji, Kikubunji; Yukio Takasaki, and Shusaku Nagahara, both of Hachioji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed May 23, 1980, Ser. No. 152,690
Claims priority, application Japan, Jun. 4, 1979, 54-68970
Int. Cl.³ H01L *27/14*
U.S. Cl. 357—31 5 Claims



1. In a solid-state imaging device having a semiconductor integrated circuit in which a plurality of switching elements for addressing positions of picture elements and scanning circuitry for turning the switching elements "on" and "off" in time sequence are disposed on an identical substrate, a photoconductive film which is disposed on the integrated circuit and which is connected with the respective switching elements, and a light transmitting electrode which is disposed on the photoconductive film, a voltage being applied to the light transmitting electrode thereby to bias a region of the photoconductive film on a light entrance side either positively or negatively with respect to a region thereof on the opposite side; a solid-state imaging device characterized in that said each switching element is an element which uses carriers of a polarity opposite to that of carriers having a greater mobility in said photoconductive film.

4,323,913
INTEGRATED SEMICONDUCTOR CIRCUIT ARRANGEMENT

Helmuth Murrmann, Ottobrunn; Ronald Rathbone, Taufkirchen, and Ulrich Schwabe, Munich, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany
Continuation of Ser. No. 867,429, Jan. 9, 1978, abandoned, which is a continuation of Ser. No. 664,872, Mar. 8, 1976, abandoned. This application Oct. 17, 1979, Ser. No. 85,735
Claims priority, application Fed. Rep. of Germany, Mar. 11, 1975, 2510593
Int. Cl.³ H01L *27/04;* H01C *7/00*
U.S. Cl. 357—51 2 Claims

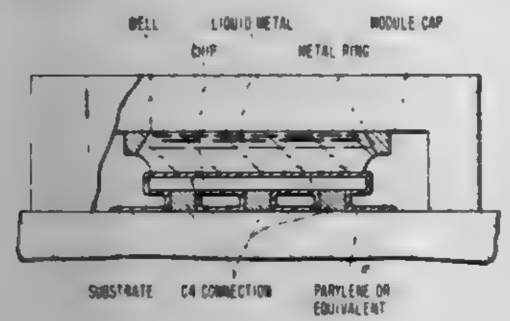


1. An integrated semiconductor circuit arrangement comprising: a semiconductor substrate of a first conductivity type; a semiconductor epitaxial layer of a second conductivity type on one surface of said substrate; oxide walls extending through said epitaxial layer to said substrate separating said epitaxial layer into isolated sections;
at least one of said isolated sections having spaced generally parallel sidewalls terminating in spaced end walls; first and second regions of said first conductivity type lining said oxide walls along said generally parallel sidewalls;
a third region of said first conductivity type located at one of said end walls, said third region having a lower resistivity than said first and second regions and being in electrical contact with said first and second regions; means of said first conductivity type in contact with said first and second regions at the one of said end walls spaced from said third region; and
said first and second regions being separated from each other by the second conductivity type material of said at least one of said isolated sections except at said end walls,
whereby said first and second regions form a resistor element between said means in contact therewith and said third region.

4,323,914
HEAT TRANSFER STRUCTURE FOR INTEGRATED CIRCUIT PACKAGE

Erich Berndlmaier, Wappingers Falls; Bernard T. Clark, Poughquag, and Jack A. Dorler, Wappingers Falls, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 1, 1979, Ser. No. 8,375
Int. Cl.³ H01L *25/04*
U.S. Cl. 357—82 3 Claims

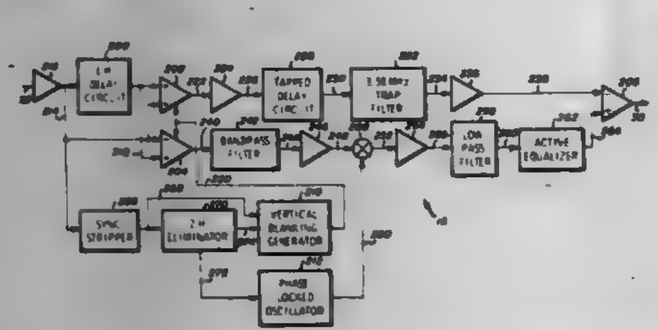


1. In an integrated circuit assembly including:
at least one semiconductor chip on a circuitized substrate with a cover mounted on said substrate to enclose said semiconductor chip;
said chip and said circuitized substrate being electrically connected one to the other by a plurality of discrete solder connections;
a formable electrically insulative film in physical contact with said chip and enclosing a thermally conductive material between said film and the underside of said cover, said formable electrically insulative film is a non-conductive protective film of vapor deposited parylene, said thermally conductive material enclosed between said film of vapor deposited parylene and the underside of said cover is a liquid metal and said liquid metal includes at least one selected from the group of Gallium, Indium and mercury,
said assembly being characterized by the provision of said non-conductive vapor deposited parylene protective film encompassing each of said solder connections.

4,323,915
METHOD AND AN APPARATUS FOR VIDEO TAPE RECORDING

Robert M. Cezar, and Alberto B. Paz, both of Sunnyvale, Calif., assignors to Cezar International, Ltd., Sunnyvale, Calif.

Filed Apr. 11, 1980, Ser. No. 139,238
Int. Cl.³ H04N *5/76, 9/42*
U.S. Cl. 358—4 7 Claims



1. An apparatus for developing an encoded-color signal suitable for recordation as a monochrome signal by a video tape recorder from a standard color-television signal, the apparatus comprising in combination:
filter means for separating the standard color-television signal to develop a signal representing the chrominance portion thereof and a signal representing the remainder thereof, said filter means including means for delaying said standard color-television signal one horizontal period thereof to develop a delayed signal, means for combining out of phase said standard color-television signal and said delayed signal to develop said separated chrominance signal and means for combining in phase said standard color-television signal and said delayed signal to develop said remainder signal;
phase-locked-oscillator means for developing a local-oscillator signal having a frequency which is locked to an even multiple of the half-horizontal frequency of said standard color-television signal;
mixer means coupled to said filter means and said phase-locked-oscillator means, said mixer means for combining said separated chrominance signal with said local-oscillator signal to develop a hetrodyned chrominance signal the spectrum of which lies substantially within the monochrome bandwidth of the video tape recorder;
signal-adder means coupled to said filter means and said mixer means, said signal adder means for combining said remainder signal and said hetrodyned chrominance signal to develop the encoded-color signal; and
gating-signal-generating means coupled to said filter means, said gating-signal-generating means being responsive to said standard color-television signal and operative to develop a gating signal during the vertical-retrace period thereof, and wherein said out-of-phase-combining means is responsive to said gating signal and operative to inhibit development of said separated chrominance signal during said vertical-retrace period and wherein said in-phase-combining means is responsive to said gating signal and operative to inhibit development of said remainder signal during said verical-retrace period.

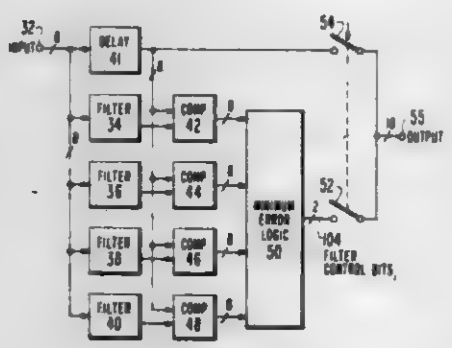
4,323,916
DATA RATE REDUCTION FOR DIGITAL VIDEO SIGNALS BY SUBSAMPLING AND ADAPTIVE RECONSTRUCTION

Robert A. Dischert, Burlington, and Glenn A. Reitmeier, Trenton, both of N.J., assignors to RCA Corporation, New York, N.Y.

Continuation of Ser. No. 132,137, Mar. 20, 1980, abandoned. This application Jul. 14, 1980, Ser. No. 168,077

Claims priority, application United Kingdom, Feb. 7, 1980, 04195/80

Int. Cl.³ H04N *9/32*
U.S. Cl. 358—13 29 Claims



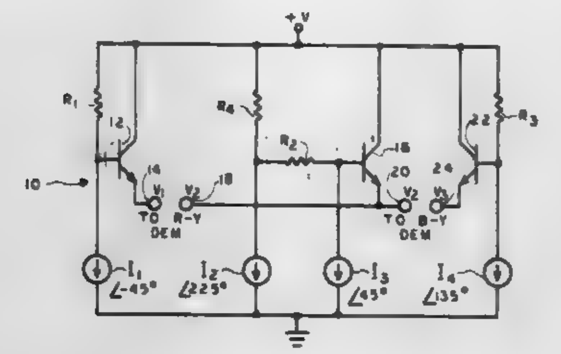
ENCODER

1. A method of transmitting data divided into first and second portions, each portion comprising a plurality of bytes, said method comprising transmitting said first portion, comparing at least one byte of the remaining untransmitted second portion to a plurality of selected combinations of bytes of said first portion, determining which of said selected combinations of bytes of said first portion is the closest match to said one byte of said second portion, and transmitting a control byte indicative of said closest match.

4,323,917
TINT CONTROL

Christopher M. Engel, Arlington Heights, and Daniel L. Reneau, Elmhurst, both of Ill., assignors to Zenith Radio Corporation, Glenview, Ill.

Filed Oct. 17, 1980, Ser. No. 197,861
Int. Cl.³ H04N *9/535*
U.S. Cl. 358—28 11 Claims

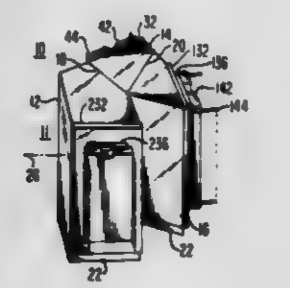


1. A tint control for use in a color television receiver, comprising:
means for generating first, second, third and fourth currents having substantially equal D.C. components and having respective color subcarrier A.C. components of four different quadrature phases, which phases are each variable over a selected range; and
means for coupling said currents to loads to develop three voltages, V_1, V_2 and V_3 having substantially equal D.C. components, having phases and amplitudes such that the angular difference between a vector corresponding to V_1-V_2 and a vector corresponding to V_3-V_2 is greater than 90 degrees, and such that said angular difference remains substantially constant as the phases of the A.C. components of said four currents are varied over the selected range,
whereby voltages corresponding to V_1-V_2 and V_3-V_2 are adapted to be D.C. coupled to a pair of color demodulators for demodulating color signals at a relative angle other than 90 degrees.

4,323,918
OPTICAL ASSEMBLY FOR COLOR TELEVISION

Sidney L. Bendell, Riverton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 25, 1980, Ser. No. 180,897
Int. Cl.³ H04N *9/09*
U.S. Cl. 358—50 13 Claims



1. An improved color television camera arrangement comprising:
rigid optical light-splitting means having a light input port and a plurality of light output ports to which light passes from said input port;
a plurality of transducers coupled to said output ports for generating electrical signals in response to said light;
wherein the improvement lies in that a portion of said plurality of transducers is bonded in a fixed position by a single-phase adhesive to a corresponding portion of said plurality of said output ports.

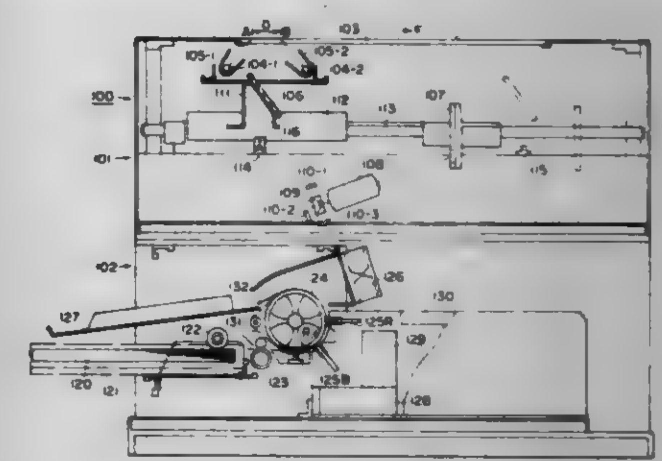
4,323,919
OPTICAL SCANNER FOR READING DATA RECORDED IN PLURAL COLORS

Motoharu Fujii, Tokyo; Noboru Koumura, Narashino; Naoki Ayata, Yokohama; Seiji Saito, Yokosuka, and Yasushi Sato, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 31, 1980, Ser. No. 173,890

Claims priority, application Japan, Aug. 9, 1979, 54-101675; Aug. 9, 1979, 54-101676

Int. Cl.³ H04N *1/46*
U.S. Cl. 358—75 7 Claims



1. A reader of the type in which an information bearing surface is optically scanned relatively in reciprocating motion to read the color informations on said surface, said reader comprising:
means for irradiating said information bearing surface by light;
optical separation means for separating the light coming from said information bearing surface into light of a long wavelength side and light of a short wavelength side; and
reading means having three photoreceptor elements of which the first and third elements are disposed to receive said light of long wavelength side and the second one is disposed to receive said light of short wavelength side and arranged for discriminating one of said color informations by said first photoreceptor element and the other color information by said second and third photoreceptor elements thereby producing electric output signals corresponding to the respective color informations.

4,323,920
STEREOSCOPIC TELEVISION (UNAIDED WITH LIP SYNC) ON STANDARD BANDWIDTH-METHOD AND APPARATUS

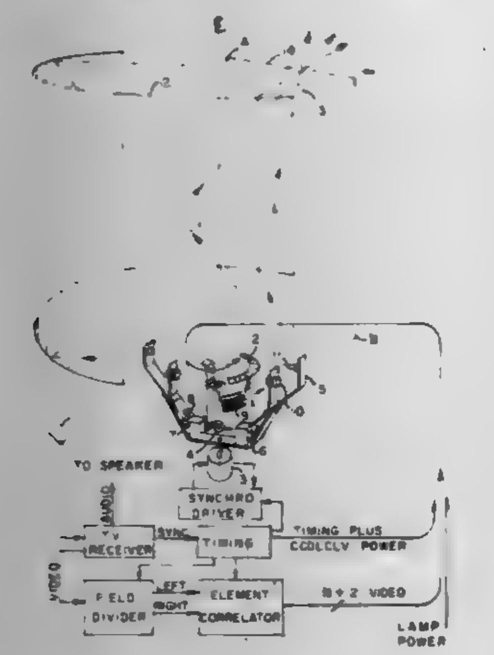
Robert B. Collender, 709 Patterson Ave., Glendale, Calif. 91203

Filed May 19, 1980, Ser. No. 150,982
Int. Cl.³ H04N *9/54*
U.S. Cl. 358—88 7 Claims

1. A method of stereoscopically reproducing television signals for observation by a plurality of observers without a need for visual aids at said observers eyes, comprising the following steps:
acquiring two views of a scene; synthesizing N views at a receiver between said two views;
placing N+2 frames or fields on an array of N+2 images;
scanning said image array by a scan projector having one or more identical facets;
causing any image of said image array to store a whole television field or frame during a scan interval by any single facet of said scan projector;
causing all images in said image array to advance to a next sequential television field or frame during a period between scans by adjacent facets of said scan projector;
projecting sequentially said images of said array onto a

semispecular screen, said scan projector being positioned during projection at successive positions about an arc of a projection circle, said screen being of larger radius compared with said projection circle;

causing said screen to vertically scatter and horizontally reflect incident light from said scan projector;



causing said reflected incident light from said screen to intersect on a line essentially tangent to said projection circle;

causing said intersected light to move along said line;

causing said scan projector interval between scans by adjacent facets to be within the period of persistence of vision of said observers.

4,323,921

SYSTEM FOR TRANSMITTING INFORMATION PROVIDED WITH MEANS FOR CONTROLLING ACCESS TO THE INFORMATION TRANSMITTED

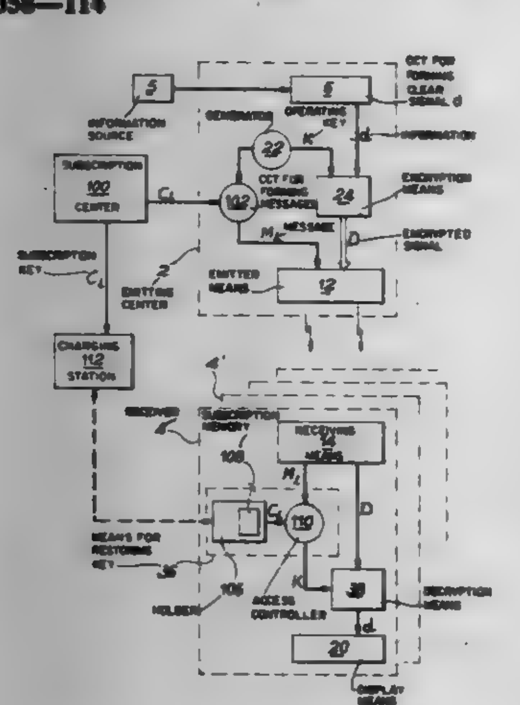
Louis C. Guillou, Bourgbarre, France, assignor to Etablissement Public de Diffusion dit "Telediffusion de France", Montrouge and L'Etat Francais, represente par le Secretaire d'Etat aux Postes et Telecommunications (Centre National d'Etudes des Telecommunications), Issy les Moulineaux, both of, France

Filed Jan. 23, 1980, Ser. No. 114,555

Claims priority, application France, Feb. 6, 1979, 79 02995

Int. Cl.³ H04L *9/00*

U.S. Cl. 358—114 5 Claims



1. A system for transmitting information between an emitting center and receiving stations, the emitting center comprising a circuit for forming signals carrying said information and means for emitting said signals, each receiving station comprising means for receiving the signals transmitted and means for displaying the information, wherein it also comprises:

(A) a subscription administration center generating a plurality of signals constituting subscriber's keys C_i, these subscriber's keys changing randomly at relatively long intervals of the order of a month;

(B) in the emitting center:

(a) a generator of a signal constituting an operating key K, this key changing randomly at relatively short intervals of the order of a few minutes,

(b) a circuit for forming messages M_i obtained from said subscriber's keys C_i and from the operating key K by means of an algorithm the parameters of which are provided by the subscriber's keys, namely $M_i=F_{Ci}(K)$, this circuit delivering as many messages as there are subscriber's keys, these messages changing with the operating key, all the messages M_i then being directed towards the emitter means,

(c) an automatic encryption means using the operating key K, this automatic means receiving signals carrying the information and delivering encrypted signals which are then directed towards the emitter means,

(c) in each receiving station:

(a) a subscription holder on which is recorded a signal corresponding to at least one of the subscriber's keys C_i,

(b) a circuit for restoring the operating key, receiving on the one hand the messages M_i received and, on the other hand, the subscriber's key C_i, this circuit working out an algorithm $K=G_{Ci}(M_i)$ for restoring the signal corresponding to the operating key K used in the emitting station from the messages M_i received and from the subscriber's key C_i,

(c) an automatic decryption means which is connected, on the one hand, to the receiving means from which it receives the encrypted signals and, on the other hand, to the restoring circuit from which it receives the operating key K, this automatic means decrypting the encrypted signals, by using the operating key, and delivering decrypted signals which are then directed towards the information display means,

(D) at least one charging station for the subscription holders, this station being connected to the subscription administration center from which it receives the signals corresponding to the different subscriber's keys C_i generated by this center, each station being capable of temporarily receiving the subscription holders and permanently recording one of the subscriber's key C_i thereon.

4,323,922

TELEVISION CODING SYSTEM WITH CHANNEL LEVEL IDENTIFICATION

Pieter den Toonder, Dordrecht, Netherlands; Glenn P. Doles, Wonder Lake, Ill.; John A. Lund, McHenry Shore's, Ill.; Richard G. Merrell, Hebron, Ill., and Graham S. Stubbs, Poway, Calif., assignors to Oak Industries Inc., Rancho Bernardo, Calif.

Filed Dec. 17, 1979, Ser. No. 104,147

Int. Cl.³ H04N *7/16*

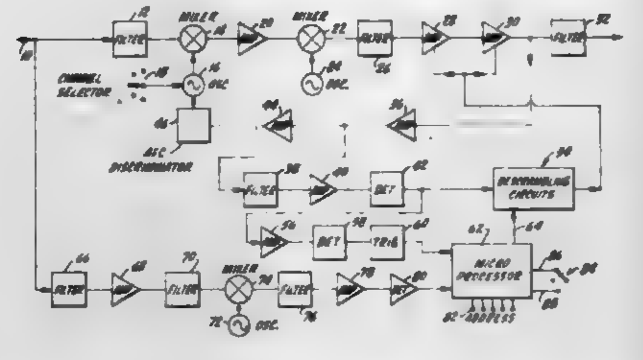
U.S. Cl. 358—117 12 Claims

5. A method of authorizing the presentation of electrically transmitted intelligence to separate subscribers including the steps of:

(a) transmitting an RF intelligence signal, which signal includes data as to the classification of said intelligence signal,

(b) transmitting, at a frequency distinct from said RF signal and along the some signal path as said RF signal, an authorization signal, which includes data as to the type of signal authorized for particular subscribers,

(c) comparing the authorization data and classification data, and



(d) presenting said transmitted intelligence in an understandable form upon correspondence between said separately transmitted classification data and authorization data.

4,323,923

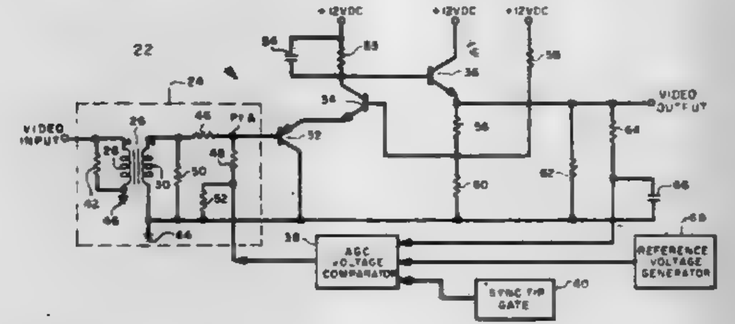
AGC-CLAMPED VIDEO AMPLIFIER

Daniel L. Reneau, Elmhurst, Ill., assignor to Zenith Radio Corporation, Glenview, Ill.

Filed Oct. 6, 1980, Ser. No. 194,170

Int. Cl.³ H04N *5/16*

U.S. Cl. 358—171 10 Claims



1. In a video display of a television receiver including a source of video signals having a given received signal amplitude, said video signals including horizontal and vertical sync pulses for synchronizing television receiver horizontal and vertical scan with said video signals, and automatic gain control for comparing horizontal sync pulse voltage level with a reference voltage level and for generating an automatic gain control signal for adjusting video signal DC voltage level, a video feedback amplifier coupled to said source of video signals for amplifying and maintaining said video signals at a first predetermined voltage level, said video feedback amplifier comprising:

signal level shifting means coupled to said source of video signals for receiving said video signals and for adjusting said video signals to a second predetermined voltage level;

amplifier means coupled to said level shifting means for receiving and amplifying said level-shifted video signals to generate video output signals; and

clamping means coupled in a feedback configuration to said amplifier means for receiving said video output signals, comparing the horizontal sync pulse level of said video output signals to said reference voltage level and for clamping a predetermined point of said amplifier means to a correction voltage produced by the comparison of said horizontal sync pulse level with said reference voltage level in controlling vertical sync pulse level in synchronizing television receiver vertical scan with said received video signals.

4,323,924

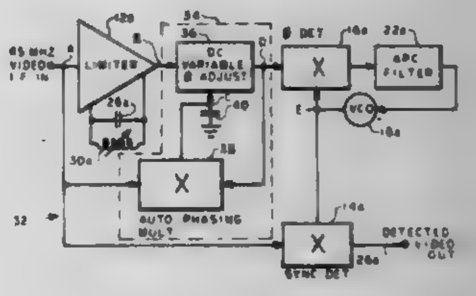
AUTOMATIC PHASE ADJUSTING CIRCUIT FOR A SYNCHRONOUS DETECTOR

Michael D. Flasza, Schaumburg, Ill., assignor to Zenith Radio Corporation, Glenview, Ill.

Filed Oct. 6, 1980, Ser. No. 194,169

Int. Cl.³ H04N *5/44*

U.S. Cl. 358—188 9 Claims



1. In a television receiver which develops a video I.F. signal and which has a phase locked loop for developing an oscillator signal whose phase tracks with the variations in the phase of the video I.F. signal, and a synchronous detector receiving the video I.F. signal and the oscillator signal for demodulating the video I.F. signal, a phasing circuit for automatically controlling the phase of the oscillator signal relative to the video signal input to the synchronous detector, comprising:

means including a phase adjustment network for coupling the video I.F. signal to the phase locked loop and for varying the phase of the latter signal input to the phase locked loop on a continuously variable basis in response to a phase correction signal; and

means sensing the video I.F. signal and the video input to the phase locked loop for developing and coupling to the phase adjustment network a phase correction signal such that the latter network varies the phase of the video I.F. input to the phase locked loop until the phase of the oscillator signal has a selected phase relationship to the video I.F. signal input to the synchronous detector.

4,323,925

METHOD AND APPARATUS FOR ARRAYING IMAGE SENSOR MODULES

Gurdon R. Abell, West Woodstock, Conn.; Francis J. Cook, Topsfield, and Peter D. Howes, Sudbury, both of Mass., assignors to Avco Everett Research Laboratory, Inc., Everett, Mass.

Filed Jul. 7, 1980, Ser. No. 166,922

Int. Cl.³ H04N *3/15*; H01L *27/14*

U.S. Cl. 358—213 30 Claims

1. An electrical-output optical image sensor for a two-dimensional optical image composed of an arrayed plurality of contiguous two-dimensional optical sub-images bearing light energy, said sensor comprising:

an image surface for receiving said two-dimensional optical image and transmitting a portion of the light energy of each said two-dimensional optical sub-image as a corresponding two-dimensional sub-image-bearing flux;

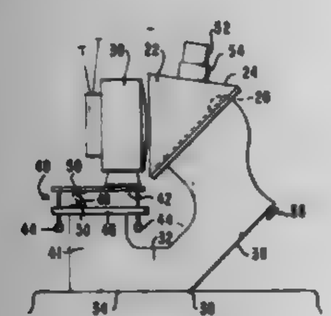
an arrayed plurality of minifying means including two-dimensional minified sub-image surfaces and corresponding in number and arrangement to said plurality of contiguous two-dimensional optical sub-images, said minifying means receiving and transmitting each said two-dimensional sub-image-bearing flux in image-coherent geometrically reduced form as a corresponding two-dimensional mini-

fied sub-image-bearing flux incident upon and through a corresponding said two-dimensional minified sub-image surface; and

arrayed flux-sensitive electrical-output image sensor modules, each having a flux-sensitive two-dimensional image-

input surface in register with a corresponding two-dimensional minified sub-image surface and receiving a corresponding two-dimensional minified sub-image-bearing flux, and having electrical means for converting said two-dimensional minified sub-image-bearing flux into a corresponding pattern of electrical signals.

4,323,926
TELEVISION PROJECTOR APPARATUS
Ira J. Newman, 6903 NW. 95th Ter., Tamarac, Fla. 33321
Filed Jan. 25, 1980, Ser. No. 115,377
Int. Cl.³ H04N *5/74*
U.S. Cl. 358—237 **4 Claims**



1. An apparatus for projecting an enlarged image from the viewing screen of a television receiver mounted therein, comprising:

a housing including a base, a pair of upstanding side walls, an inclined front wall, and a window opening for receiving the viewing screen of said television receiver, said base and front wall forming first and second support surfaces contained in respective intersecting planes which together form an obtuse angle, the window opening being contained in a plane substantially perpendicular to the plane containing the first support surface;

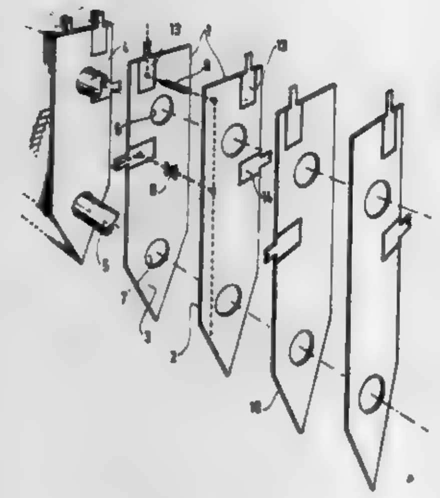
a mirror located within said housing and disposed between said side walls, said mirror being contained in a plane substantially parallel to the plane containing the second support surface;

a platform attached to said base of said housing for supporting the television receiver with its viewing screen received in said window opening in a position oriented toward said mirror, said platform being adjustable in height and angle to accommodate television receivers with differently sized viewing screens and/or with viewing screens disposed at different heights and/or different angles relative to the plane containing the receiver base and/or disposed above, below or to one side of the controls;

a projector lens means mounted on said front wall of said housing for receiving an image reflected by said mirror from said viewing screen and for projecting an enlargement of said image; and

said base of said housing being adapted to tilt from the first support surface wherein when a television receiver is mounted on said platform disposed in an upright position with its viewing screen contained in a plane disposed substantially perpendicularly to the first support surface into an operative position resting on the second support surface with the viewing screen received in the window opening and the screen contained in a plane disposed at an acute angle to the second support surface whereby said mirror will project the enlarged image of the viewing screen through said projection means in a desired direction.

4,323,927
BAR FOR PRINTING AN IMAGE
Marcel Yvard, Ollainville; Jean-Claude Decuyper, Elancourt, and Michel Beduchaud, Villebon Sur Yvette, all of France, assignors to Compagnie Industrielle des Telecommunications Cit-Alcatel, Paris, France
Continuation of Ser. No. 914,177, Jun. 9, 1978, abandoned. This application Feb. 11, 1980, Ser. No. 120,517
Claims priority, application France, Jun. 13, 1977, 77 18011
Int. Cl.³ H04N *1/24*
U.S. Cl. 358—296 **14 Claims**



1. A bar for printing an image on sensitive paper by scanning said paper along successive lines, comprising a stack of thin, electrically-conductive plates which are insulated one from the other, each of said plates having a first end which comprises a printing stylus, said printing styli being disposed along a scan line at the pitch of the printing dots there along, and n diagonal diode matrices for addressing said styli, the columns of said plates which are divided into n sets corresponding to the n matrices, the rows of said matrices being common to all n matrices and comprising at least one network of electrical conductors, and wherein in each of said n matrices:

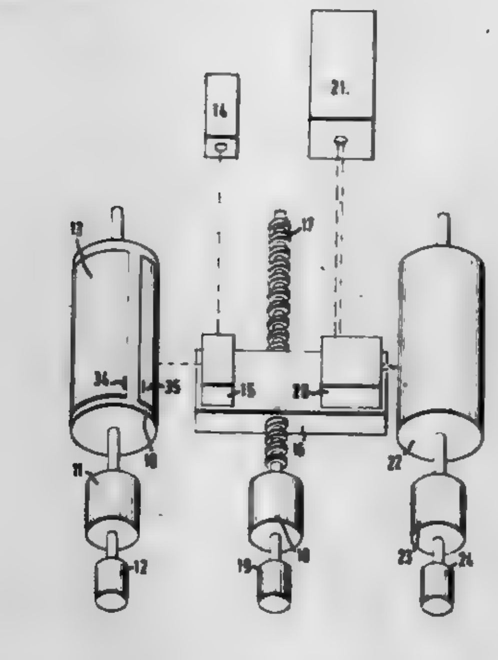
the columns of said matrix are connected to and fed by a first feed terminal via a corresponding plurality of resistances (R), one first feed terminal being associated with each of said n matrices;

each of said resistances (R) comprises a thin leaf of resistive material in substantially intimate, co-planar electrical contact with one of said plates and with a first contact terminal inserted in this plate or in an adjacent plate, said first contact terminal being insulated from the plate into which it is inserted and being electrically connected to said first feed terminal;

the rows of said matrix are connected to said plates via a corresponding plurality of electrical diodes (D) individually controlled from a plurality of second feed terminals equal in number to the number of rows in said matrix; and

each of said diodes (D) comprises a thin leaf of semi-conductive material in substantially intimate, co-planar electrical contact with one of said plates and with a second contact terminal inserted in this plate or in an adjacent plate, said second contact terminal being insulated from the plate in which it is inserted and being electrically connected to one of the conductors in said network of conductors.

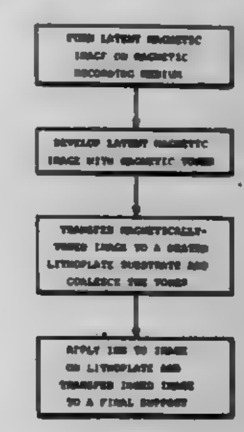
4,323,928
COPYING PROCESS FOR PRODUCING A SEAMLESS COPY FROM AN UNJOINTED ORIGINAL
Peter M. Zollman, Walton-on-Thames, and Keith G. Doyle, Sunbury-on-Thames, both of England, assignors to Zed Instruments Limited, West Molesey, England
Division of Ser. No. 967,841, Dec. 8, 1978, Pat. No. 4,232,345, which is a continuation-in-part of Ser. No. 928,410, Jul. 27, 1978, abandoned, which is a continuation of Ser. No. 805,980, Jun. 13, 1977, abandoned. This application Jun. 3, 1980, Ser. No. 156,105
Claims priority, application United Kingdom, Jun. 11, 1976, 24350/76; Jun. 23, 1976, 26126/76
Int. Cl.³ H04N *1/22, 1/26, 1/38*
U.S. Cl. 358—299 **9 Claims**



1. A copying process for producing a seamless, jointed copy from an unjointed original, said process comprising mounting the original on a first rotary carrier with a circumferential gap between the leading and trailing edges of the original, rotating the first carrier, initially scanning the original to measure the circumferential length of the original, continuing scanning of the original and storing the data obtained during the scan in a store, reading data from the store and modulating a power laser in accordance with the data read from the store, providing a second rotary carrier and rotating the second rotary carrier, directing the modulated laser beam towards the second rotary carrier to scan and engrave a laser-engravable surface of the second rotary carrier, and controlling the store according to the length measured in initially scanning the original to ensure that each scan of the second carrier is filled by data from the original outside the gap.

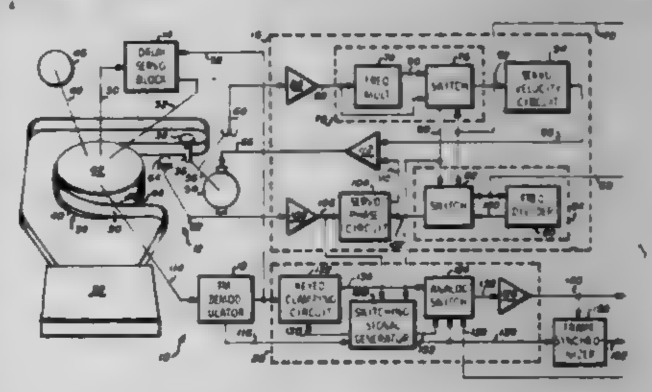
4,323,929
PRINTING PROCESS USING LITHOGRAPHIC PLATES MADE FROM TONED AMPLITUDE MODULATED MAGNETIC IMAGES
George R. Nacci, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Filed Nov. 30, 1979, Ser. No. 98,987
Int. Cl.³ H04N *1/28*
U.S. Cl. 358—301 **8 Claims**

1. A printing process comprising forming a latent magnetic image in a magnetic recording medium which is at least 100 μm thick by applying electric wave recording signal to a magnetic recording head with the amplitude of said signal a function of the optical density of the desired image, said magnetic recording head having a width between about 0.5 mil and 5 mils; causing said magnetic recording head to repeatedly traverse the magnetic record medium in a series of aligned parallel paths to form the latent magnetic image in the magnetic recording medium with the distance between the centers of the parallel paths being from about 1.2 to 2 times the width of the recording head and with a horizontal spatial frequency of from about 200 to 1000 cycles/in; decorating the latent magnetic image with oleophilic magnetic toner particles comprising magnetic particles, encapsulated in a coalescible polymer binder, having an average size of from about 2 to about 7 μm, dispersed in a liquid vehicle, thereby forming a decorated



image; rinsing said toned image with a liquid; drying said decorated image; bringing said toned image into momentary contact under pressure with a heated rigid, smooth lithoplate substrate having a roughness of less than about 10 μ inches, whereby said toner particles are transferred to said heated substrate to form an image of at least partially coalesced toner particles on said substrate; further coalescing said image if necessary thereby forming a lithographic printing plate which accepts ink in the toned areas containing the ink receptive polymer but does not accept ink in the areas free of toner; applying ink to said lithoplate; and transferring the ink to a final support.

4,323,930
SLOW MOVING VIDEO TAPE REPRODUCTION
David T. L. Chang, Palo Alto, Calif., assignor to Recortec, Inc., Mountain View, Calif.
Filed Oct. 6, 1980, Ser. No. 194,008
Int. Cl.³ H04N *5/78*
U.S. Cl. 360—10 **11 Claims**

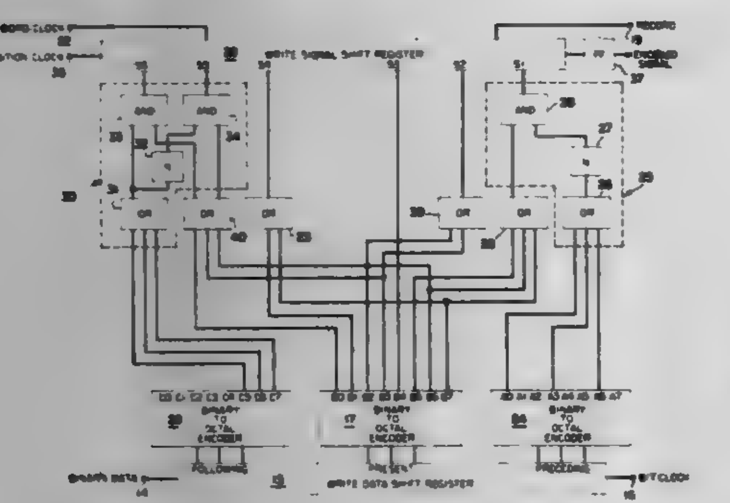


1. A video tape reproducer for developing a video signal representing in slow motion a signal previously encoded and recorded upon a plurality of video tracks on a length of magnetic recording tape in a helical-scan format wherein each field of the encoded signal is divided into a plurality of segments each recorded upon a respective one of the tracks of the tape, the reproducer comprising in combination:

scanner means including means for reproducing each one of the segments of the encoded signal which is recorded upon a corresponding one of the video tracks that is drawn past said scanner means;

capstan means for drawing said tape past said scanner;
means for rotating said capstan means at a rate wherein said one of said segments of said encoded signal is reproduced a plurality of times in succession;
means for decoding said segments of said encoded signal which are reproduced by said scanner means to develop corresponding segments of a decoded signal; and
switching means for developing the slow-motion signal by combining a one of each plurality of segments of said decoded signal which correspond to a unique one of said tracks with a black-level video signal.

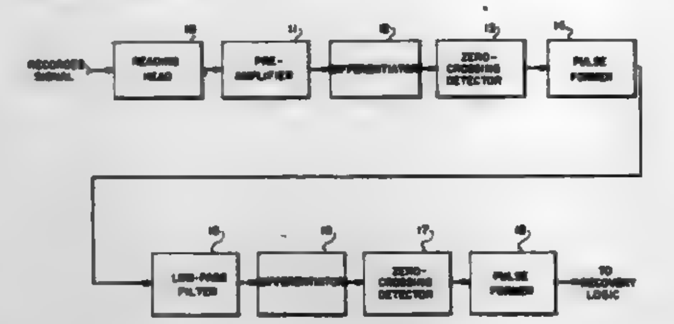
4,323,931
METHOD AND APPARATUS FOR ENCODING AND RECOVERING BINARY DIGITAL DATA
George V. Jacoby, Los Altos, Calif., assignor to Sperry Corporation, New York, N.Y.
Continuation-in-part of Ser. No. 705,199, Jul. 14, 1976. This application Jul. 3, 1980, Ser. No. 165,562
Int. Cl.³ G11B *5/09*
U.S. Cl. 360—40 40 Claims



1. Apparatus for converting binary data in the form of a series of data bits occurring at spaced intervals to a series of signal changes each located at a discrete selected signal change position of a plurality of signal change positions that are spaced from one another by an increment such that the selected signal change positions are spaced relative to one another at least a prescribed minimum amount greater than the increment, said apparatus comprising: data storage means for receiving the binary data and grouping data bits to form a plurality of data words, code signal generating means coupled to the data storage means and responsive to the data words for generating code signals each of which corresponds to a signal change, and means coupled to said code signal generating means and responsive to code signals generated thereby for merging plural code signals that correspond to signal changes at divers signal change positions spaced from one another less than the prescribed minimum amount into at least one code signal corresponding to a signal change at a signal change position different from said divers signal change positions such that all signal changes are spaced from one another by at least the prescribed minimum amount.

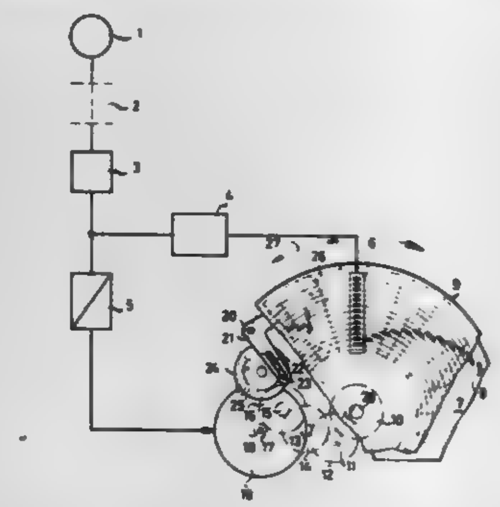
4,323,932
READBACK PULSE COMPENSATOR
Jules A. Eibner, Maple Glen, Pa., assignor to Sperry Corporation, New York, N.Y.
Filed Jul. 30, 1979, Ser. No. 62,279
Int. Cl.³ G11B *5/09*
U.S. Cl. 360—45 18 Claims

1. In a system for processing a first signal which has consecutive opposite-polarity peaks corresponding to information represented by transitions in a data bearing medium, and in which the said signal peaks are subject to misalignment with respect to the corresponding data transitions, the improvement which comprises:
means for producing a second signal from said first signal, which second signal has peaks with substantially the same said misalignment but of the same polarity;
means for subjecting the produced second signal to low-pass filtering; and



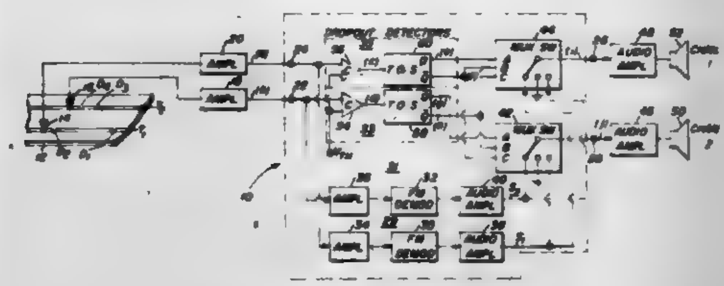
means for deriving from said low-pass filtering means a third signal having peaks substantially in alignment with respective peaks of the same polarity in said second signal;
whereby the misalignment between the peaks of the third signal and the data transitions is substantially less than the misalignment between the peaks of the first signal and the data transitions, reducing the misalignment between the data and the processed signal which is representative of said data.

4,323,933
DEVICE FOR ERASING A RECORD CARRIER RECORDED BY MAGNETIC FIELDS IN VISUALLY READABLE FORM
Manfred Fichter, Königsfeld, Fed. Rep. of Germany, assignor to Kienzle Apparate GmbH, Villingen, Fed. Rep. of Germany
Filed Oct. 29, 1979, Ser. No. 89,257
Claims priority, application Fed. Rep. of Germany, Nov. 3, 1978, 2847682
Int. Cl.³ G11B *5/02*
U.S. Cl. 346—74.3 4 Claims



1. In combination with a record carrier modifiable by magnetic fields wherein a magnetic recording means allows visually readable recordings of measured values and wherein drive means are used to drive a measuring device associated with said record carrier, an erasing device comprising at least one erasing magnet positioned directly on top of the record carrier and movable transverse to the transport direction of said record carrier so that the magnetic axis of said magnet is parallel to the plane of the record carrier, the movement of the erasing magnet being effective essentially in the direction of the magnetic axis wherein a permanent magnet is used as the erasing magnet; and a carrier for the erasing magnet, said carrier being in driving connection with the driving means of the measuring device.

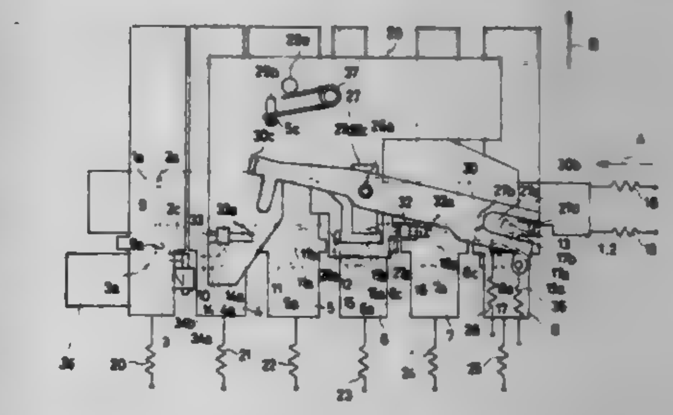
4,323,934
DROPOUT COMPENSATION CIRCUITRY
Andre Giraud, Champigny sur Marne, France, assignor to Spin Physics, Inc., San Diego, Calif.
Filed Mar. 27, 1980, Ser. No. 134,403
Int. Cl.³ G11B *15/12, 5/02*
U.S. Cl. 360—61 5 Claims



1. In an apparatus for translating a plurality of carrier-modulated, correlated input signals which occur simultaneously at a plurality of input terminals into corresponding output signals at a plurality of output terminals, the improvement comprising:
(a) means responsive to the carrier components of each of said input signals for continuously providing a plurality of control signals indicating the presence or absence of said input signals; and
(b) switching means responsive to said control signals and operable in a first state for selectively coupling said output signals to the output terminals therefor while the input signals to which said output signals correspond are present, and operable in a second state for selectively coupling said output signals to the output terminals for other of said output signals during the absence of the input signals to which said other output signals correspond,
said apparatus having a plurality of separate translation channels between each of said input and output terminals, one channel for each of said plurality of input signals and the output signal corresponding thereto, said switching means being connected in each of said channels for coupling said output signals to the output terminals therefor, and said means for providing said control signals being a plurality of control circuits separately connected between said input terminals and said switching means, and said control circuits each comprising means for detecting the absence or presence of the carrier component of said input signals for providing a separate one of said control signals, each of said detecting means comprising a comparator responsive to the amplitude of each cycle of the carrier component of the input signal applied thereto, and a one shot multivibrator triggerably connected to said comparator, said one shot multivibrator producing a pair of output levels which provide one of said plurality of control signals and represent the absence and presence of one of said plurality of input signals.

4,323,935
NONPROGRAM SECTION DETECTION MECHANISM IN A CASSETTE TAPE PLAYER
Satoru Koizumi; Takashi Shimamura, and Sadao Uchiyama, all of Higashihiroshima, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Nov. 15, 1979, Ser. No. 95,083
Claims priority, application Japan, Nov. 15, 1978, 53/140894; Nov. 15, 1978, 53/140895
Int. Cl.³ G11B *15/44, 19/26, 27/22*
U.S. Cl. 360—73 15 Claims

1. A nonprogram section detection mechanism in a cassette tape player comprising:
nonprogram section detection circuit means for locating a nonprogram section interposed between two adjacent programs recorded on a magnetic tape;
playback instruction means for conducting a reproduction operation of information recorded in said programs on the magnetic tape while the magnetic tape is driven to travel at a normal playback speed, said playback instruction means including a slidable subchassis, a magnetic reproduction head mounted on said subchassis, and a playback actuating means connected to said subchassis for sliding said subchassis and said magnetic reproduction head in one direction from a first position to a second position when actuated;
fast movement instruction means for driving the magnetic tape at a fast speed, said fast movement instruction means including a nonprogram section detection slidable plate and a fast movement actuating means connected to said nonprogram section detection slidable plate for sliding said slidable plate in said one direction from a first position to a second position when actuated; and
switching means for placing said nonprogram section detection circuit in an operative condition only when both said

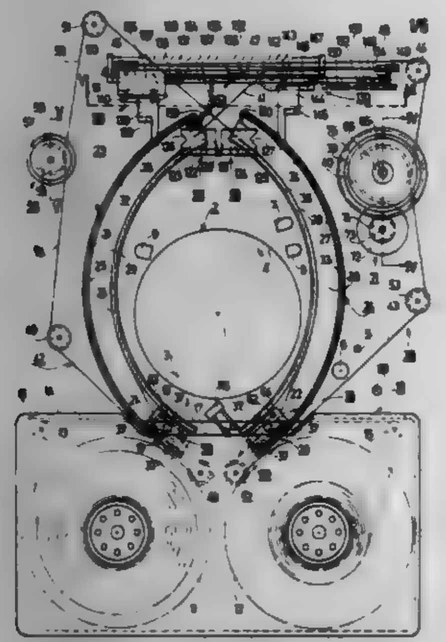


playback instruction means and said fast movement instruction means are actuated, said switching means including a rotatable lever means responsive to actuation of said fast movement actuating means for rotating when said nonprogram section detection slidable plate is slid in said one direction by said fast movement actuating means, and switch means connected between a power source and said nonprogram section detection circuit means and responsive to actuation of said playback actuating means for engaging with said rotatable lever means when said slidable subchassis is slid a certain amount in said one direction by said playback actuating means, said nonprogram section detection circuit means being energized when said switch means engages with said rotatable lever means and providing a detection output when said nonprogram section is located.

4,323,936
RECORDING AND/OR REPRODUCING APPARATUS
Franz Beitler, and Harald Nockemann, both of Vienna, Austria, assignors to U.S. Philips Corporation, New York, N.Y.
Filed May 12, 1980, Ser. No. 148,644
Claims priority, application Austria, Jun. 28, 1979, 4550/79
Int. Cl.³ G11B *15/66*
U.S. Cl. 360—85 14 Claims

1. A recording and/or reproducing apparatus for a record carrier in the form of a tape which is accommodated in a cassette which comprises at least one opening for the withdrawal of a portion of the record carrier from said cassette and which cassette can be supported on the apparatus, which apparatus is provided with a tape guide drum around whose circumferential surface can be wrapped the portion of the record carrier which has been withdrawn from the cassette, and with a tape guide device which is adapted to withdraw a portion of the record carrier from the cassette and wrap said portion of the record carrier around the tape guide drum, which tape guide device comprises two substantially cylindrical tape guides which are each arranged on an associated one of two movable supports in the apparatus, which supports are movable between a rest position, in which the tape guides engage behind the record carrier contained in the cassette at the loca-

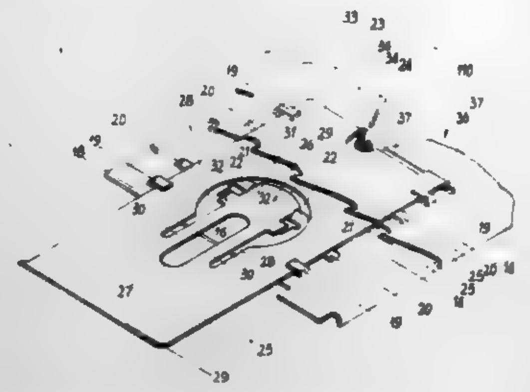
tion of the opening therein, an an operating position, in which the tape guides keep the portion of the record carrier which is moved by the tape guides when the supports are moved from their rest positions to their operating positions, wrapped around the tape guide drum, there being provided a wire drive arrangement for moving the two supports, which arrangement comprises a rotatable wire drum and two wires which each act on one of the two supports substantially in the direction of movement of the support from its rest position to its operating position and one of which passes to the rotatable wire drum via a wire guide, so as to be wound onto said wire drum, characterized in that the wire drive arrangement comprises two rotatable wire drums for winding in one wire each, the first wire which acts on a first one of the two supports substantially in



the direction of movement of said support from its rest position to its operating position passing to a first one of the two wire drums, in that the second wire which acts on the second one of the two supports substantially in the direction of movement of said support from its rest position to its operating position passes to the first support and acts on this support substantially in the direction of movement thereof from its operating position to its rest position, in that a third wire passes from the second of the two wire drums to the second support and acts on this support substantially in the direction of movement thereof from its operating position to its rest position, and in that for moving the two supports from their rest positions to their operating positions the first wire drum can be driven and for moving them from their operating positions to their rest positions the second wire drum can be driven.

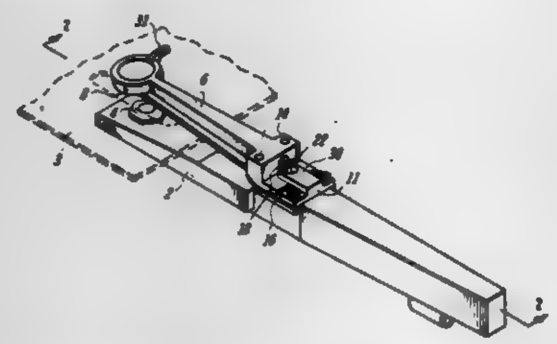
4,323,937
TAPE RECORDERS OF THE CASSETTE TYPE
Giovanni Santoro, Via Campodimele 55, Roma, Italy
Filed Apr. 25, 1980, Ser. No. 143,534
Claims priority, application Italy, Apr. 30, 1979, 48897 A/79
Int. Cl.³ G11B *15/24, 15/18*
U.S. Cl. 360—96.6 6 Claims

1. In a magnetic tape recorder of the cassette type comprising a mechanism provided with a suitable elastic means adapted to store energy during the first length of the cassette introduction stroke and then to release this energy both during the last length of said introduction stroke and during the necessary cassette ejection stroke, an improved mechanism for automatically controlling the introduction and "braked" ejection of the cassette, said improved mechanism comprising: a resilient guiding member adapted to perform an alternative sliding movement in parallel relationship with the introduction and ejection stroke on a supporting member placed above said cassette during said introduction and ejection stroke, wherein said supporting member has an elongated opening placed below said sliding guiding member and having a transversal straight edge and a stationary means protruding from the side edge thereof, and wherein said sliding guiding member comprises a rear pin adapted to cooperate with a cooperating member of said energy storing mechanism and a resilient member pre-bent in order to be normally bent in the path of said cassette for engaging the latter through said opening, said pre-bent member having matching protruding means adapted



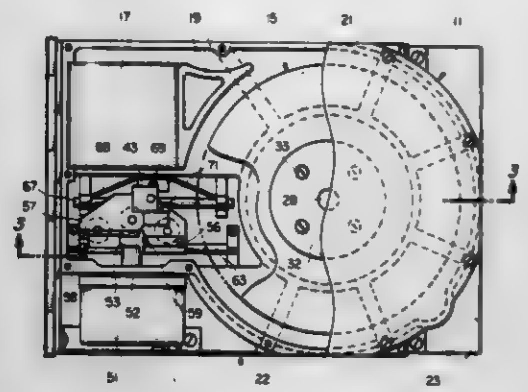
to engage said stationary protruding means in said opening during the alternate movement of said sliding guiding member in order to cause, together with said transversal straight edge of said opening, said elastic member to move from its pre-bent lowered position where said resilient member engages said cassette to a forced raised position where said resilient member does not engage said cassette.

4,323,938
ROLLING PIVOT FOR MAGNETIC HEAD
Herbert E. Thompson, Los Gatos, Calif., assignor to Xerox Corporation, Stamford, Conn.
Filed May 23, 1980, Ser. No. 152,975
Int. Cl.³ G11B *5/54, 5/56, 21/12, 21/24*
U.S. Cl. 360—105 5 Claims



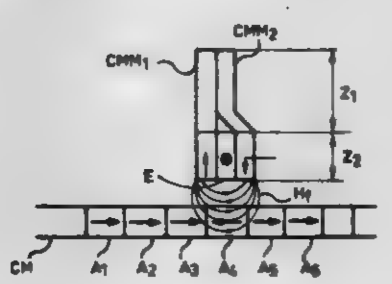
1. An apparatus for supporting a recording device comprising:
a support arm,
a carriage member,
a flexure spring,
means for securing a portion of said flexure spring to a first portion of an end section of said support arm and for securing another portion of said flexure spring to a portion of a section of said carriage member whereby said flexure spring couples said support arm to said carriage member,
said flexure spring being located between said section of said support arm and said section of said carriage member,
a second portion of said end section of said support arm having a smoothly curved surface adjacent a portion of said flexure spring whereby a rolling pivot along said curved surface is provided for said support arm when said support arm is moved relative to said carriage member.

4,323,939
HARD FIXED DISC DRIVE ASSEMBLY AND READ-WRITE HEAD ACTUATOR
Syed H. Iftikar, Fremont, and David L. Reeck, San Jose, both of Calif., assignors to Shugart Technology, Scotts Valley, Calif.
Filed Apr. 11, 1980, Ser. No. 139,428
Int. Cl.³ G11B *5/55, 5/012, 21/08*
U.S. Cl. 360—106 3 Claims



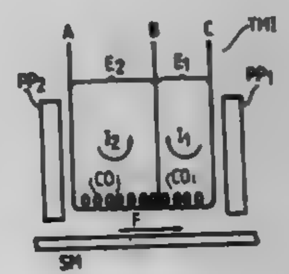
1. A disc drive including at least one disc,
means for mounting said disc;
means for driving said mounting means to rotate the disc;
at least one transducer cooperating with the surface of said disc to read and write information on the surface;
mounting means for mounting said transducer for cooperation with the disc;
a carriage for said transducer mounting means;
three spaced bearings having grooved outer surfaces mounted on said carriage;
a fixed cylindrical track adapted to receive two of said bearings to guide the carriage;
a spring-loaded cylindrical track adapted to engage the other bearing and urge said two bearings against the fixed tracks whereby the bearings are centered on said tracks for movement therealong; and
means for driving the carriage to move the carriage along said tracks so that the transducers are moved radially along the disc surface.

4,323,940
PROCESS, MAGNETIC TRANSDUCER AND SYSTEM FOR GENERATING A MAGNETIC INDUCTION FIELD WITHIN A MAGNETIC MEDIUM
Jean P. Lazzari, Montfort l'Amaury, France, assignor to Compagnie Internationale pour l'Informatique CII-Honeywell Bull (Societe Anonyme), Paris, France
Filed Dec. 18, 1979, Ser. No. 104,851
Claims priority, application France, Feb. 27, 1979, 79 05067
Int. Cl.³ G11B *5/12*
U.S. Cl. 360—113 14 Claims



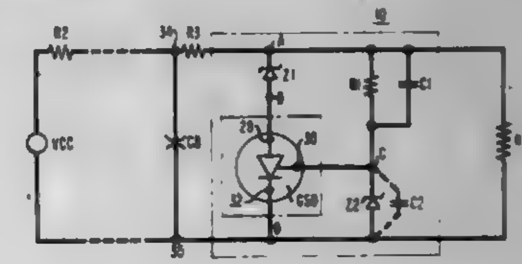
1. A process for generating a magnetic induction field within a magnetic medium having a magnetically unsaturated portion comprising producing within the unsaturated portion a magnetic energizing field, generating a selection wave and propagating said wave along at least one given path of said medium, starting from a given datum point and from a reference instant t_R, and reaching each point of the said path at an instant the selection wave and the energizing field acting simultaneously at the instant t_i on an area surrounding each point of the said path cause the magnetic properties of said area to be modified and the said induction field to be generated.

4,323,941
INTEGRATED MAGNETIC TRANSDUCER
Jean-Pierre Lazzari, Montfort L'amaury, and Jacques Desserre, Rambouillet, both of France, assignors to Compagnie International pour l'Informatique CII-Honeywell Bull (Societe Anonyme), Paris, France
Filed Jun. 9, 1980, Ser. No. 157,845
Claims priority, application France, Oct. 25, 1979, 79 26532
Int. Cl.³ G11B *5/20*
U.S. Cl. 360—123 6 Claims



1. In a transducer for reading and/or writing data contained on a magnetic carrier passing before the latter, comprising two thin magnetic layers constituting the first and second pole pieces of the transducer, said layers being superimposed and magnetically coupled at one end and arranged at the other end adjacent the carrier, substantially perpendicular to the latter to form an air-gap to establish a magnetic circuit for the transducer, a coil disposed between the thin magnetic layers, said coil being of thin conductive layers superimposed in a direction perpendicular to the plane of the said magnetic layers and separated from each other by thin electrically insulating layers, said coil comprising at least two windings having a common electrical point, the improvement comprising means for creating equal magnetic fluxes in the downstream pole piece, said downstream pole piece being defined as that pole piece which is last to be passed by a carrier moving substantially perpendicular to the plane of the layers and the air gap and successively past the first and second pole pieces.

4,323,942
SOLID-STATE PROTECTOR CIRCUITRY USING GATED DIODE SWITCH
Adrian R. Hartman; Robert S. Scott, both of New Providence, and Peter W. Shackle, Bridgewater, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Continuation-in-part of Ser. No. 972,055, Dec. 20, 1978, Pat. No. 4,271,445. This application Feb. 11, 1980, Ser. No. 120,283
The portion of the term of this patent subsequent to Jun. 2, 1998, has been disclaimed.
Int. Cl.³ H02H *3/20*
U.S. Cl. 361—56 7 Claims



1. Circuitry comprising:
a first device having first and second terminals and having the

characteristic that there is substantially no conduction therethrough in one direction until a threshold voltage is reached and thereafter the voltage across the device stays essentially constant for increasing conduction therethrough;

a second device having first and second terminals and characteristics similar to the first device;

a switch having first output, second output, and control terminals;

a resistor having first and second terminals with the first terminal being coupled to the second terminal of the first device and the second terminal of the resistor being coupled to the control terminal of the switch and to the second terminal of the second device;

the first terminal of the first device is connected to the first output terminal of the switch;

the first terminal of the second device being coupled to the second output terminal of the switch;

the switch being a device of the type comprising a semiconductor body a bulk portion of which is of a relatively high resistivity, a first region of a first conductivity type and of a relatively low resistivity, a second region of a second conductivity type opposite that of the first conductivity type, the first and second regions being connected to first and second output terminals, respectively, of the switching device, a gate region of the second conductivity type being connected to the control terminal of the switching device, the first, second, and gate regions being mutually separated by portions of the semiconductor body bulk portion.

4,323,943

PROTECTION CIRCUITS

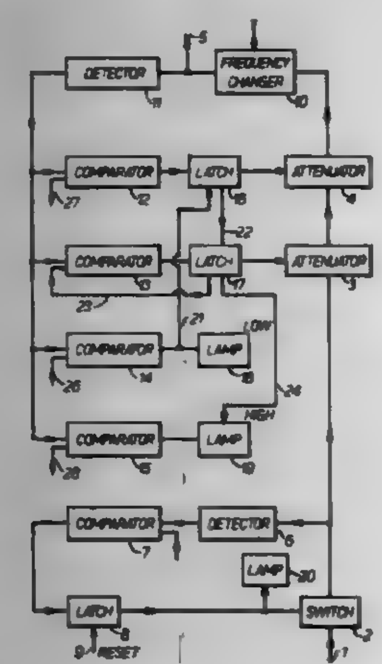
Victor F. Arnold, St. Albans, and Roger C. Dixon, Luton, both of England, assignors to Marconi Instruments Limited, Chelmsford, England

Filed Sep. 14, 1979, Ser. No. 78,597

Claims priority, application United Kingdom, Sep. 15, 1978, 37970/78

Int. Cl.³ H02H *3/00*

U.S. Cl. 361—114 **1 Claim**



1. An r.f. circuit for increasing the dynamic range of a measuring instrument while providing protection against overload, said r.f. circuit having an input terminal which in operation receives an applied r.f. input signal having wide variations in amplitude level and said circuit having an output terminal for connection to the measuring instrument;

said r.f. circuit including a switch connected to said input terminal and having an output;

switchable attenuator means connected between said output of the switch and said output terminal for selectively attenuating the r.f. input when the amplitude level thereof reaches a first predetermined amplitude level and including means for detecting the presence of said first predetermined amplitude level of the input signal;

latch means connected to said switch for latching the switch in open and closed conditions and including manual reset means for causing the switch to be latched in the closed condition; and

means connected to the output of said switch and to said latch means for detecting the presence of a second predetermined amplitude level of the r.f. input signal and actuating said latch means to cause said switch to be latched in the open condition, said second predetermined amplitude level being greater than said first predetermined level.

4,323,944

CONTROL CIRCUIT FOR AN ELECTROMAGNET

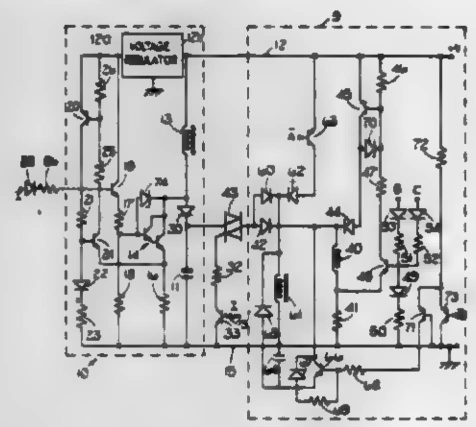
William F. Hill, Stafford, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Oct. 14, 1980, Ser. No. 196,430

Claims priority, application United Kingdom, Oct. 25, 1979, 36990/79

Int. Cl.³ H01H *47/32*

U.S. Cl. 361—152 **11 Claims**



1. A control circuit for an electromagnet comprising a converter circuit including a main energy storage element, a secondary energy storage element, and circuit means connecting the main storage element to the electromagnet and to the secondary energy storage element and operating to cause energy to be transferred from main energy storage element to the electromagnet, and also effecting transfer of energy from the main energy storage element to the secondary storage element for subsequent use in applying a reverse voltage to the electromagnet when the period of energisation thereof is terminated.

4,323,945

POLARIZED ELECTROMAGNETIC RELAY

Hans Sauer, Fichtenstrasse 5, Deisenhofen, Fed. Rep. of Germany (D-8024), assignor to Matsushita Electric Works, Ltd., Kadoma, Japan and Hans Sauer, Deisenhofen, Fed. Rep. of Germany

Filed Jan. 24, 1980, Ser. No. 115,056

Claims priority, application Fed. Rep. of Germany, Jan. 25, 1979, 2902870

Int. Cl.³ H01H *51/22, 51/30*

U.S. Cl. 361—160 **12 Claims**

1. A relay including:

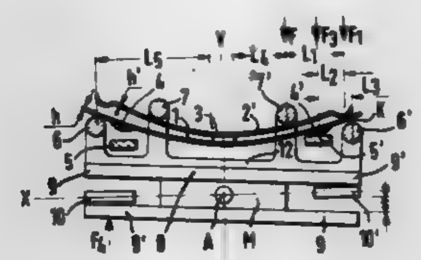
a stationary contact;

a first contact spring having a movable contact mounted thereon, said first contact spring being movable between a first position wherein said movable contact contacts said stationary contact, and a second position wherein said movable contact is spaced from said stationary contact;

a second contact spring disposed adjacent said first contact spring; said second contact spring containing a portion

touching said first contact spring when said first contact spring is in said first position;

armature means for moving said first contact spring between said first and second positions; said armature means including first actuator means for operatively engaging said second contact spring at a predetermined area and biasing said second contact spring against said first contact spring at said portion; and second actuator means for engaging said first contact spring at a predetermined area and moving said first contact spring to said second position; and wherein



$L_3/h < L_1/h'$:

L_1 is the length measured along said second contact spring between said area of operative engagement of said second contact spring with said first actuator means and said portion of said second contact spring;

L_3 is the length measured along said first contact spring between said area of engagement of said first contact spring with said second actuator means and said movable contact;

h is the thickness of said first contact spring; and

h' is the thickness of said second contact spring.

4,323,946

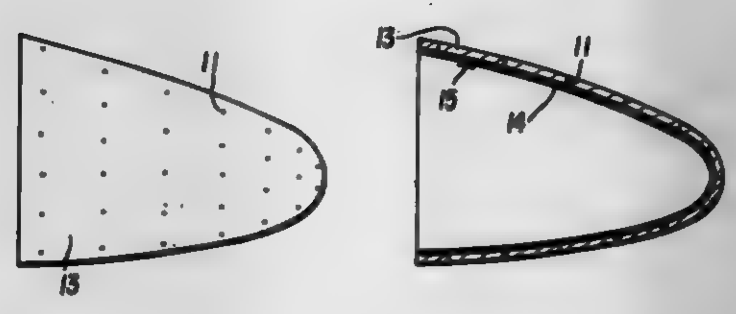
APPARATUS FOR REDUCING ELECTROSTATIC CHARGE STORAGE AND EMI ON DIELECTRIC SURFACES

Robert L. Truax, 604 Danley Dr., Fort Myers, Fla. 33907

Filed Sep. 20, 1979, Ser. No. 77,273

Int. Cl.³ H05F *3/00*

U.S. Cl. 361—218 **20 Claims**



1. Apparatus for reducing residual electrostatic charge levels on an exposed dielectric surface of an aircraft body, the apparatus comprising:

a plurality of small diameter charge collection conductors projecting through the body and terminating at least adjacent to the dielectric surface for collecting around the charge collection conductors electrostatic charges accumulated on the surface;

conductive connecting means electrically connected to the charge collection conductors and disposed behind the dielectric surface for conducting the charges collected around the charge collection conductors away from the dielectric surface, and

a conductive air frame disposed adjacent to the dielectric surface and connected to the conductive connecting means for grounding the electrostatic charges conducted through to the conductive connecting means by the charge collecting conductors.

4,323,947

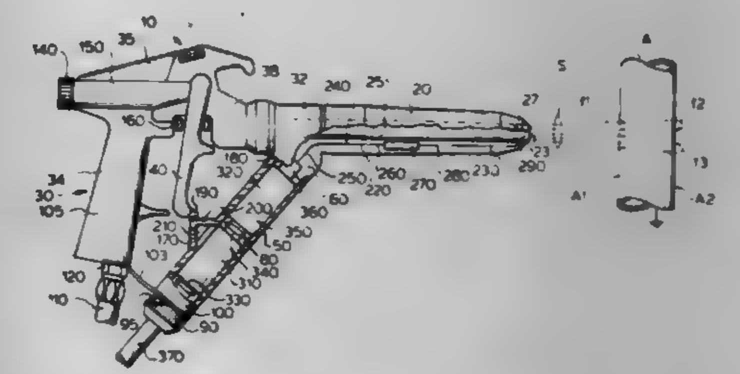
ELECTROSTATIC GUN WITH IMPROVED DIODE-CAPACITOR MULTIPLIER

Willi Huber, Altstätten, Switzerland, assignor to J. Wagner AG., Altstätten, Switzerland

Filed Aug. 13, 1979, Ser. No. 66,247

Int. Cl.³ B05B *5/02*

U.S. Cl. 361—228 **3 Claims**



1. In a diode-capacitor multiplier circuit usable to generate a selected output voltage within a selected range for use in an electrostatic spray apparatus to apply a coating to an article, the multiplier having a selected number of stages and with each stage including a plurality of interconnected diodes and capacitors, an improvement comprising:

a first selected number of two or more capacitors each having a first selected value of capacitance;

a second selected number of two or more capacitors each having a second, different, value of capacitance; and

wherein a ratio of said first selected value of capacitance to said second selected value of capacitance corresponds substantially to a ratio of 1 to 2;

said first selected number of capacitors corresponds to a number within a range of 5% to 10% of the total number of capacitors in the multiplier and,

said second selected number of capacitors corresponds to the remainder of capacitors in the multiplier.

4,323,948

CAPACITOR STRUCTURES WITH IMPROVED ELECTRICAL STRESS CAPABILITY

George E. Mercier; John H. Pickett, both of Bloomington, and Barry L. Holtzman, Ellettsville, all of Ind., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 857,479, Dec. 5, 1977, abandoned. This application Apr. 24, 1980, Ser. No. 143,202

Int. Cl.³ H01G *4/22*

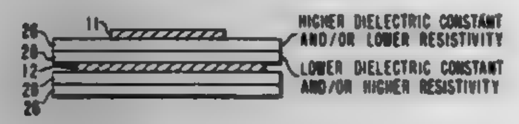
U.S. Cl. 361—315 **11 Claims**

1. A capacitor structure, particularly suitable for use in power capacitors having high electric stress capability, comprising:

a dielectric structure of sheet material including first and second layered portions, said sheet material being impregnated with a dielectric fluid;

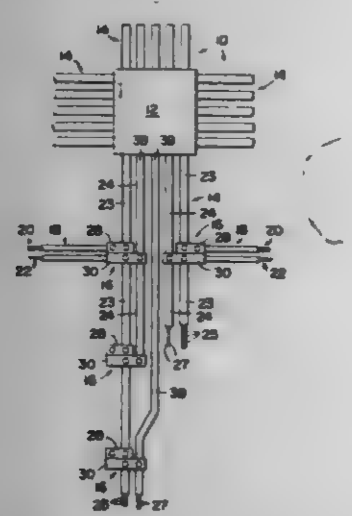
a first electrode layer adjacent said first portion of said dielectric structure;

a second electrode layer adjacent said second portion of said dielectric structure, said second electrode layer having a greater width than said first electrode layer and being located to extend on said dielectric structure beyond opposite edges of said first electrode layer;



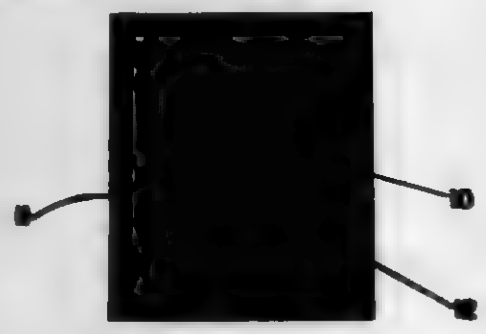
said first portion of said dielectric structure, as impregnated, having a higher dielectric constant or a lower electrical resistivity than said second portion;
said first portion of said dielectric structure comprising a material selected from the group consisting essentially of polyester film, polyphenylene oxide film and cyanoethyl cellulose film.

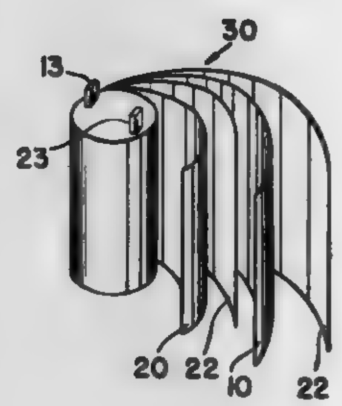
4,323,949
SERVICE CABLE DISTRIBUTION SYSTEM
Kenneth E. Garitz, 570 Emerald Harbor Dr., Longboat Key, Fla. 33548, and Michael L. Garitz, 6904 Manatee Ave. W., Bradenton, Fla. 33508
Filed May 8, 1980, Ser. No. 147,742
Int. Cl.³ H02B *1/20*
U.S. Cl. 361—428 **11 Claims**



1. A service cable distribution system of the type used for placement and supply of power and low tension service cables over a floor surface area, said distribution system comprising: supply channel means comprising a first channel assembly disposed between a control area and a junction box assembly, said first channel assembly structured and dimensioned to house power cable and a second channel assembly disposed between the control area and said junction box assembly in spaced, segregated relation to the interior of said first channel assembly, said second channel assembly structured for housing of low tension cables independent of power cable, distribution channel means interconnected in direct communicating relation to said supply channel means via said junction box assembly, circuit breaker means and operatively disposed within said junction box assembly and disposed for electrical interconnection between power cables within said first channel assembly and power cables within said distribution channel means, said distribution channel means disposed and structured for housing power cables and low tension cables therein and for disposing the service cables in electrically interconnected relation with service cables within said supply channel means via said circuit breaker means, said junction box assembly comprises a plurality of junction box means disposed in aligned spaced apart relation to one another, each of said junction box means disposed in interconnected, communicating relation between said supply channel means and at least one of a plurality of distribution channels defining said distribution channel means, said first channel assembly comprises a power cable channel extending outwardly from the control area a distance sufficient to supply power over a predetermined service area, said power cable channel interconnected to each of said plurality of junction box means in substantially aligned, spaced apart relation to one another, each of said junction box means structured for direct communication with power cables within said first channel assembly and interconnected with one of a plurality of distribution channels, said second channel assembly comprises at least a first low tension cable channel extending outwardly from the control area and disposed in interconnected relation with a first predetermined number of said plurality of junction box means, said second channel assembly comprising at least a second low tension cable channel disposed to extend outwardly from the control area and into interconnected, communicating relation with a second predetermined number of said plurality of junction box means.

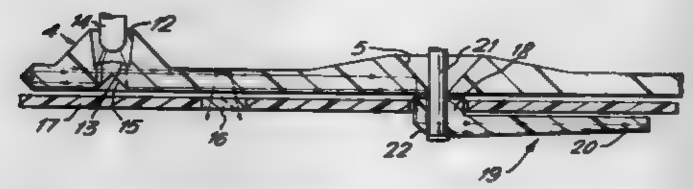
4,323,950
ELECTROLYTIC CAPACITOR WITH HIGH-PURITY ALUMINIZED CATHODE
Walter J. Bernard, Williamstown, Mass., assignor to Sprague Electric Company, North Adams, Mass.
Filed Oct. 31, 1979, Ser. No. 89,823
Int. Cl.³ H01G *9/00;* **B01J** *17/00*
U.S. Cl. 361—433 **4 Claims**





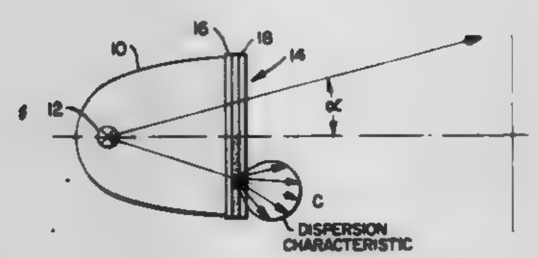
1. An electrolytic capacitor comprising a pair of convolutely wound electrodes with interleaved spacers in contact with an electrolyte, one of said electrodes being an anode and bearing a barrier dielectric oxide on the surface thereof, the other of said electrodes being a cathode of at least one sheet of a porous, non-calendered, high surface-area continuous substrate onto which aluminum has been deposited other than by spraying in a layer of about 2000 A to 5000 A thickness on each surface of said substrarte to provide a continuous high-purity cathode strip.

4,323,951
LAMINAR LIGHT GUIDE
Ian K. Pasco, Bracknell, England, assignor to Combined Optical Industries Ltd., Slough, England
Filed Jun. 16, 1980, Ser. No. 159,659
Claims priority, application United Kingdom, Nov. 27, 1979, 40914/79
Int. Cl.³ G01D *11/28*
U.S. Cl. 362—27 **9 Claims**



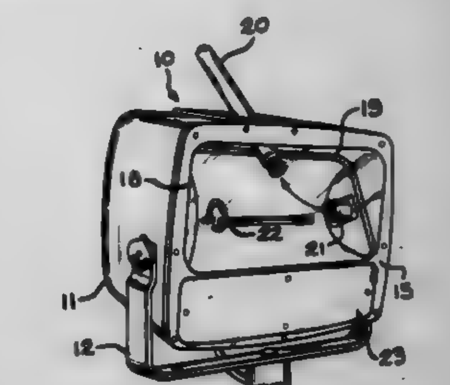
1. A light guide, comprising
(a) at least one generally planar transparent lamina (1, 2, 3) including at least one integral light input socket (4) having an axis arranged generally normal to the plane of said lamina;
(b) a light source (14) arranged within said socket; and
(c) means for directing light from said light source into said planar lamina, including
(1) first integral lens means (13) arranged adjacent said socket for focusing parallel beams of light into said lamina in a direction parallel to said socket axis; and
(2) deflecting means (15) arranged in said lamina opposite said lens means for radially deflecting said parallel beams of light from said lens means in a direction normal to said socket axis, whereby light is distributed throughout said lamina.

4,323,952
REFLECTOR FOR VARYING ILLUMINATION DISTRIBUTION
Joachim Proske, Brunswick, Fed. Rep. of Germany, assignor to Rollei-Werke Franke & Heidecke GmbH & Co., Brunswick, Fed. Rep. of Germany
Filed May 30, 1980, Ser. No. 154,968
Claims priority, application Fed. Rep. of Germany, Jun. 21, 1979, 2924956
Int. Cl.³ G03B *15/02*
U.S. Cl. 362—17 **3 Claims**



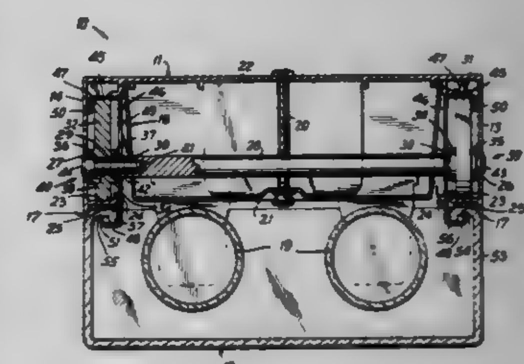
1. A camera and flash unit combination, said camera having a lens system with a variable focal length, and said flash unit comprising
a light source and a reflector mounted to effectively provide a front surface of said flash unit at which a selective portion of said light from said source is scattered, and
means for selectively controlling the relative angular distribution of the light that is transmitted through said front surface, by generating a control voltage and applying said control voltage to said at least one liquid-crystal cell to control the amount of said scattering, including at least one nematic liquid-crystal cell located in said transmitting surface of said flash unit and means for adjusting the magnitude of said control voltage in accordance with the focal length of said lens system to provide the corresponding relative angular distribution.

4,323,953
FLOODLIGHT
Mark A. Hutchison, Crawfordsville, Ind., assignor to National Service Industries, Inc., Crawfordsville, Ind.
Filed May 19, 1980, Ser. No. 151,262
Int. Cl.³ H01R *33/00*
U.S. Cl. 362—226 **5 Claims**



1. A lighting fixture comprising an enclosed housing including a side, said housing side defining an opening, a light transmitting lense enclosing said side opening, a reflector, hinge means connecting said reflector to said housing adjacent said lense to pivot said reflector relative to said housing between a normal operating position and a relamping position, latch means spaced from said hinge means for releasably holding said reflector in said normal position, a lamp socket mounted on said reflector for supporting a lamp between said reflector and said lense, and means in said housing for providing access to said latch means for releasing and pivoting said reflector and said lamp socket to said relamping position and for providing access to a lamp supported in said socket when said reflector is pivoted to said relamping position.

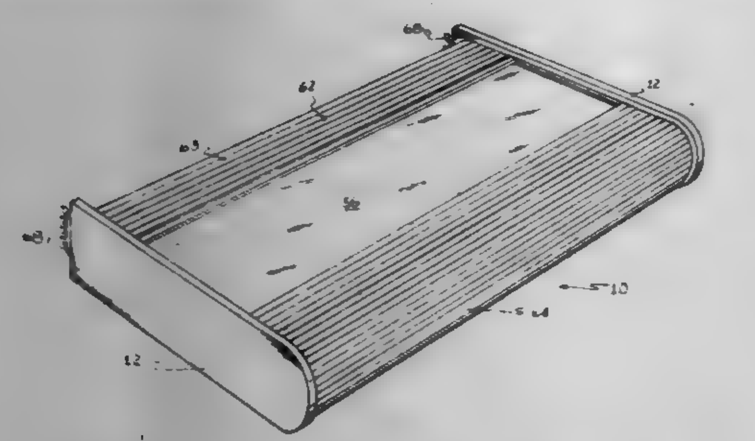
4,323,954
MOISTURE SEALED VANDAL-RESISTANT LIGHTING FIXTURE
Noel S. Florence, Cranford, and Norman Lynn, Hillsdale, both of N.J., assignors to Lightolier Incorporated, Jersey City, N.J.
Filed Jan. 30, 1980, Ser. No. 164,775
Int. Cl.³ F21V *29/00*
U.S. Cl. 362—267 **12 Claims**



1. A lighting fixture including a housing having a top wall and depending side walls defining a downwardly open mouth, a horizontally disposed short flange member formed on the inner surface of each side wall, said short flange members being disposed in coplanar alignment, an actuator channel vertically moveably mounted adjacent each said side wall, said actuator channels each including an upper flange overlying a said short flange and a lower flange underlying said short flange, a dif-

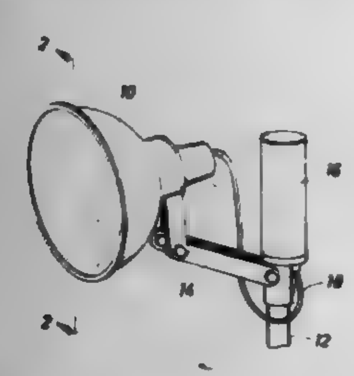
fuser member having an upwardly directed rim sized to seal said mouth portion, said diffuser member including horizontally disposed lip portions mounted on said lower flanges of said actuator channels, a spaced pair of cam means interposed between and reacting against said upper flanges for shifting said channels between a locked position whereat said rim is engaged against said mouth portion and a release position whereat said rim is spaced below said mouth portion, and cam actuator means accessible through a said sidewall and operatively connected to said cam means for shifting the same between said locked and release positions.

4,323,955
LIGHT WITH 360° ROTATABLE COVER
Edward H. Mark, U.S. 31 North, Niles, Mich. 49120
Filed Jul. 21, 1980, Ser. No. 170,857
Int. Cl.[3] F21V *1/10*
U.S. Cl. 362—278 3 Claims



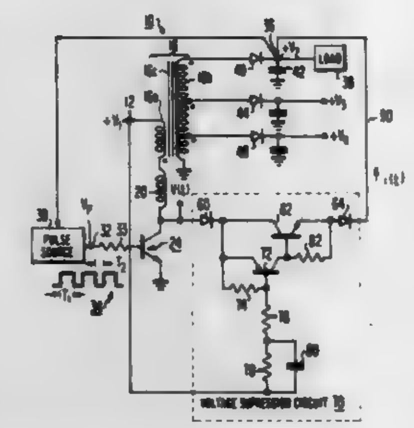
1. A lighting facility comprising a pair of spaced end plates having opposing side faces, a subassembly extending between said end plates from one side face to the other side face thereof, said subassembly including a light source, each end plate having a peripheral groove formed in its said side face circumscribing said subassembly at the end plate, a flexible cover extending between said end plates and including edges each fitted within a said groove, each groove constituting guide means wherein said cover can be rotated about said light source to various operative positions, said cover constituting means to control the direction of light from said light source when rotated about the source.

4,323,956
LENS CLOSURE FOR LIGHT FIXTURE AND METHOD FOR ATTACHMENT
Marvin J. Pustka, New Braunfels, Tex., assignor to Esquire, Inc., New York, N.Y.
Division of Ser. No. 953,271, Oct. 20, 1978, Pat. No. 4,240,853. This application Mar. 17, 1980, Ser. No. 130,841
Int. Cl.[3] F21V *17/00*
U.S. Cl. 362—374 5 Claims



1. A lighting fixture combination comprising
a housing for enclosing a light source therein, such that the light source is sufficiently recessed so that the plane of the opening through which light emanates does not intersect the light source, said housing means not having front entry means to access the light source; said housing including a radially outward projecting front flange;
an adhesive means applied to the outside perimeter of the radially outward projecting flange;
a plastic window lens for the housing united to the housing by the above mentioned adhesive means; and
a cored metal trim covering the plastic lens and adhesive means against the flange.

4,323,957
VOLTAGE SUPRESSION CIRCUIT FOR A VOLTAGE CONVERTER CIRCUIT
Charles A. Clark, Jr., Chatsworth, and Finis C. Easter, Canoga Park, both of Calif., assignors to Sperry Corporation, New York, N.Y.
Filed May 16, 1980, Ser. No. 150,284
Int. Cl.[3] H02M *3/335*; H02H *7/122*
U.S. Cl. 363—21 9 Claims

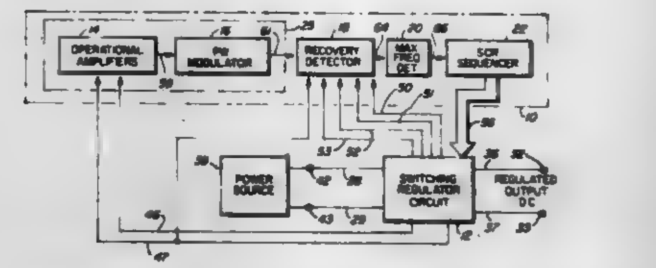


1. In a voltage conversion circuit which includes a transformer with a primary winding receptive of input DC voltage and a secondary winding and which includes a first switching means coupled in series with the primary winding for alternately applying and removing the input DC voltage to and from the primary winding, and wherein the removing of the input DC voltage from the primary winding normally produces an undesirable transient signal through the first switching means, the improvement which comprises:
first diode coupled to said first switching means and poled to conduct said transient signal, in the forward bias mode, away from said first switching means,
potential means for clamping said transient signal to a predetermined level,
second switching means having conductive and non-conductive states coupled to said first diode and coupled to said potential means for coupling, when conductive, said transient signal to said potential means, and
bias means coupled to said second switching means for maintaining said second switching means in said non-conductive state when said input DC voltage is applied to said primary winding and for maintaining said second switching means in said conductive state after said input DC voltage is removed from said primary winding.

4,323,958
CIRCUIT FOR CONTROLLING THE SWITCHING FREQUENCY OF SCR REGULATORS
John R. Nowell, Phoenix, Ariz., assignor to Honeywell Information Systems Inc., Phoenix, Ariz.
Filed Sep. 26, 1980, Ser. No. 191,112
Int. Cl.[3] H02P *13/22*
U.S. Cl. 363—28 12 Claims

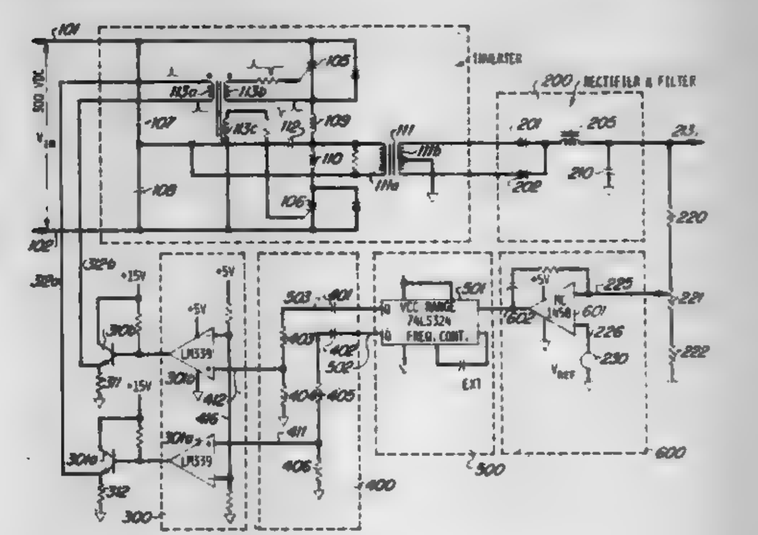
1. A method of controlling a switching regulator circuit having a plurality of SCRs and reactors comprising the steps of:
a. producing a continuous digital pulse stream,

b. varying the frequency of said digital pulse stream within the approximate range of 0–400 KHz in response to deviation of the output voltage of said switching regulator circuit from a predetermined voltage;
c. preventing said digital pulse stream from exceeding a certain maximum frequency; and



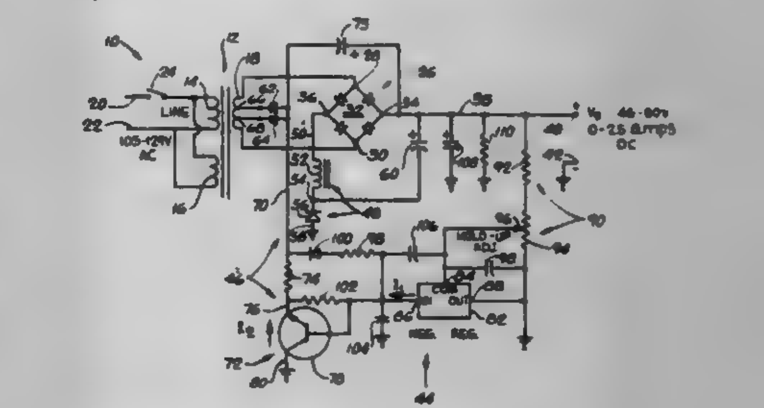
d. distributing one pulse of said digital pulse stream to each SCR of said plurality of SCRs in a preselected sequence for firing said SCR to maintain the output voltage of said switching regulator circuit approximately equal to said predetermined voltage.

4,323,959
POWER SUPPLY WITH RESONANT INVERTER CIRCUIT USING VARIABLE FREQUENCY CONTROL FOR REGULATION
Kenneth A. Check, Sunnyvale, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.
Continuation of Ser. No. 904,368, May 10, 1978, abandoned. This application Sep. 2, 1980, Ser. No. 183,532
Int. Cl.[3] H02M *3/315*
U.S. Cl. 363—40 1 Claim



1. A switching power supply circuit comprising:
input means for receiving a first alternating current (AC) signal;
first rectifying and filtering means coupled to said input means for providing a first direct current (DC) signal in response to said first AC signal;
inverter means generating minimal radio frequency interference (RFI) coupled to said first rectifying and filtering means for providing a second AC signal having a substantially sinusoidal waveform in response to the first DC signal and to an inverter control signal, said inverter consisting of a pair of SCR's alternately triggered and negatively biased;
inverter control means coupled to said inverter means for providing said inverter control signal and for varying the frequency of said inverter control signal in response to an indication of a desired power output from said inverter, said inverter control means further comprising:
a first comparator means for providing a first comparison signal in response to a comparison of a DC output signal with a preselected reference signal;
an oscillator coupled to said first comparator means for providing an oscillator output signal in response to said first comparison signal;
a differentiator means coupled to said oscillator for simultaneously providing a negative differentiated pulse to one and a positive differentiated pulse to the other of said pair of SCR's via a transformer in response to said oscillator output signal; and
means for providing said inverter control signal in response to said oscillator output signal; and
second means coupled to said inverter means for providing said DC output signal in response to said second AC signal.

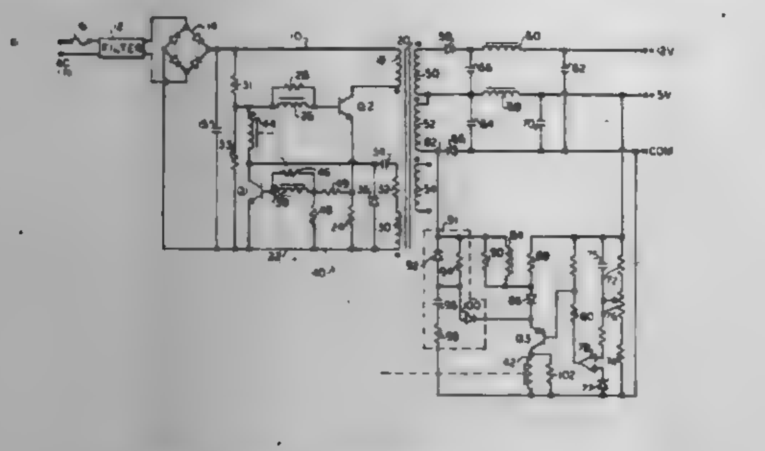
4,323,960
DUAL MODE DIRECT CURRENT POWER SUPPLY
Lee J. Jones, Gatlinburg, Tenn., assignor to Ten-Tec, Inc., Sevierville, Tenn.
Filed Jul. 31, 1980, Ser. No. 174,004
Int. Cl.[3] H02P *13/26*
U.S. Cl. 363—48 13 Claims



1. A dual mode power supply, comprising
power input means for providing alternating current power;
a pair of direct current output conductors;
and first and second rectifier-filter means connected between said power input means and said direct current output conductors;
said first and second rectifier-filter means being connected in parallel across said direct current output conductors;
said first rectifier-filter means comprising first rectifier means for producing first rectified voltage pulses,
a first filter capacitor connected across the output of said first rectifier means and adapted to be charged by said first rectified voltage pulses,
and electronic voltage regulator means including series transistor means connected between said first filter capacitor and said direct current output conductors;
said second rectifier-filter means including second rectifier means for producing second rectified voltage pulses,
a choke input filter connected to the output of said second rectifier means and including a filter inductance and a second filter capacitor adapted to be charged through said filter inductance to the average value of said second rectified voltage pulses;
said voltage regulator means causing said series transistor means to be substantially nonconductive for normal alternating current input voltage and low output load conditions;
said second rectifier-filter means being effective to supply output voltage and current under conditions of normal alternating current input voltage and low output load;
said first rectifier-filter means producing a higher output voltage than said second rectifier-filter means;
said voltage regulator means causing said transistor means to be conductive increasingly in response to decreasing output voltage across said output conductors due to increasing load or decreasing alternating current input voltage

whereby an increasing share of the direct current output power is supplied by said first rectifier-filter means.

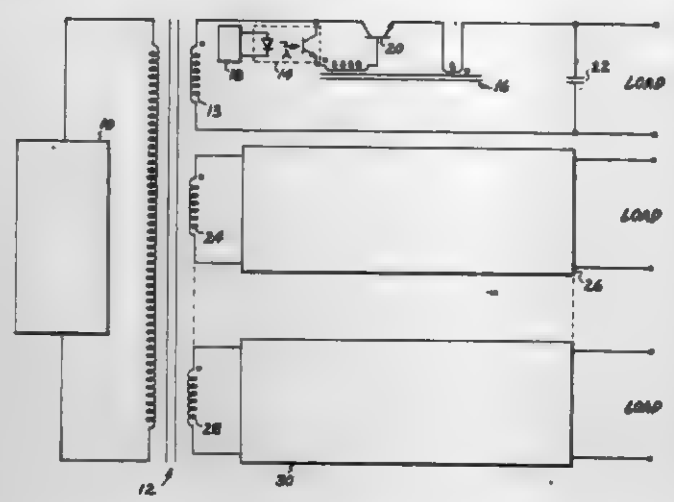
4,323,961
FREE-RUNNING FLYBACK DC POWER SUPPLY
Elliot Josephson, Los Altos, Calif., assignor to Astec Components, Ltd., Santa Clara, Calif.
Filed Sep. 12, 1980, Ser. No. 186,454
Int. Cl.³ H02H *7/122*
U.S. Cl. 363—56 10 Claims



1. A DC power supply comprising:
a power transformer having a primary winding and a secondary winding, one end of said primary winding being coupled to a source of DC;
electrical switching means coupled to the other end of said primary winding, said switching means when closed causing power to be stored in said power transformer, and when open enabling said power to be output through said secondary winding;
rectifier means attached to said secondary winding for generating an output DC voltage from said secondary winding output power;
pulse generator means for generating a pulse at a point in time after said switching means closes as a function of the present value of said output voltage;
means for coupling said pulse to said electrical switching means, said pulse causing said electrical switching means to switch off;
means for switching off said electrical switching means when said source of DC drops below a predetermined minimum;
means for switching off said electrical switching means when the current through said switching means exceeds a predetermined maximum; and
means for switching on said electrical switching means at a point in time after the switching off of said switching means.

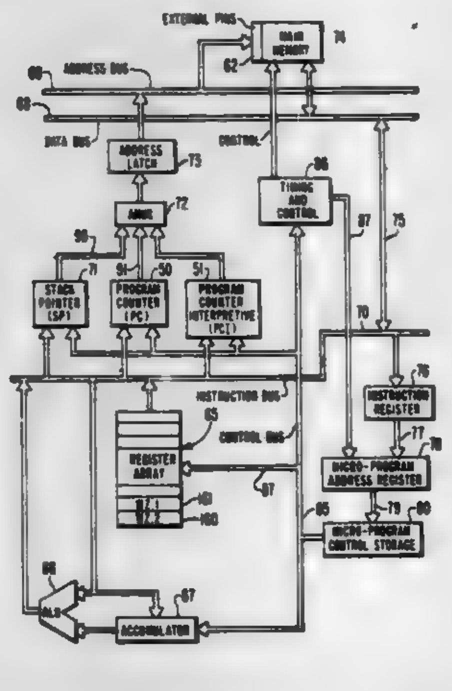
4,323,962
HIGH EFFICIENCY RECTIFIER WITH MULTIPLE OUTPUTS
Robert L. Steigerwald, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.
Filed Feb. 2, 1981, Ser. No. 230,927
Int. Cl.³ H02M *7/217*
U.S. Cl. 363—127 2 Claims

1. A high efficiency half-wave rectifier supplying at least one external load comprising:
a first transformer having a secondary winding for each load, and a primary winding adapted to be connected to an external alternating power source, one side of each of said secondary windings being connected to one side of the corresponding load;
a second transformer for each load to be supplied having a primary and a secondary winding;
controllable switch means connected between the other side of said secondary winding of each of said first transformers and one side of said secondary winding of each of said second transformers;
a transistor for each load to be supplied having a base, a collector and an emitter, the collector and emitter being connected in series between the other side of said secondary windings of each of said first transformers and each of said external loads, the base being connected to the other side of said secondary winding of each of said second transformers, the primary windings of each of said second transformers being connected in series between the sec-



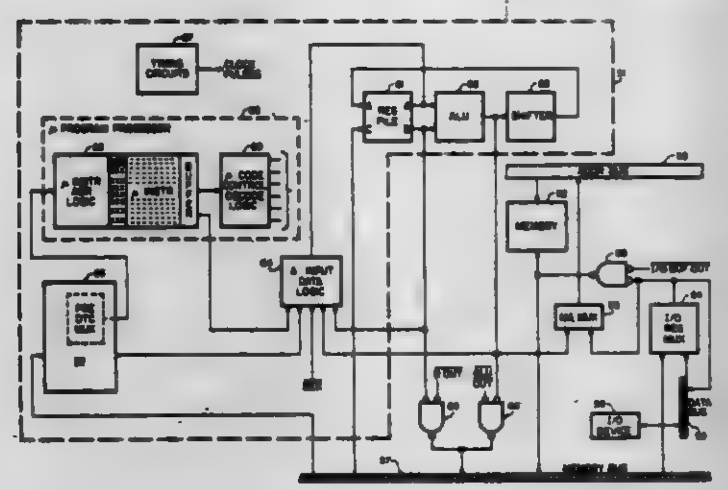
ondary winding of each of said first transformers and each of said loads so that when load current is passing through said primary windings of each of said second transformers when each of said switch means is closed, current is caused to flow by transformer action in the secondary of each of said second transformers driving each of said transistors into hard saturation; and
phase control regulator means for controlling the turn-on of each of said controllable switch means to control the power delivered to each of the external loads individually.

4,323,963
HARDWARE INTERPRETIVE MODE MICROPROCESSOR
Chin T. Wu, North Brunswick, N.J., assignor to RCA Corporation, New York, N.Y.
Filed Jul. 13, 1979, Ser. No. 57,497
Int. Cl.³ G06F *9/30*
U.S. Cl. 364—200 2 Claims



1. In a data processor comprising memory means containing subroutines each having low level instructions with the last instruction being an INTERPRET instruction, and high level language instructions which point to memory locations in said memory means containing the starting addresses of said subroutines said data processor having, a hardware high level language interpret capability and further comprising:
first and second program counter means which point respectively to said high level language instructions and to said subroutine instructions;
control and timing means responsive to said INTERPRET instruction to load said second program counter means with the subroutine starting address contained in the memory location accessed by the high level language instruction pointed to by said first program counter means;
said second program counter means responsive to signals generated by said control and timing means to act as program counter and point to the instructions in said subroutine; and
in which predetermined ones of said subroutines contain a BRANCH ON CONDITION ON PCI instruction which tests a condition and in which said control and timing means is responsive to said BRANCH ON CONDITION ON PCI instruction, when said tested condition is true and followed by said INTERPRET instruction, to load said first program counter means with the address contained in the next high level instruction pointed to by said first program counter means, and is further responsive to said BRANCH ON CONDITION ON PCI when said tested condition is false to increment said first program counter means to skip said next high level language instruction.

4,323,964
CPU EMPLOYING MICRO PROGRAMMABLE CONTROL FOR USE IN A DATA PROCESSING SYSTEM
Ronald H. Gruner, Framingham, Mass., assignor to Data General Corporation, Westboro, Mass.
Continuation of Ser. No. 737,624, Nov. 1, 1976, Pat. No. 4,205,372, which is a continuation of Ser. No. 509,186, Sep. 25, 1974, Pat. No. 3,990,052. This application Oct. 9, 1979, Ser. No. 83,048
The portion of the term of this patent subsequent to May 27, 1997, has been disclaimed.
Int. Cl.³ G06F *9/22*
U.S. Cl. 364—200 8 Claims

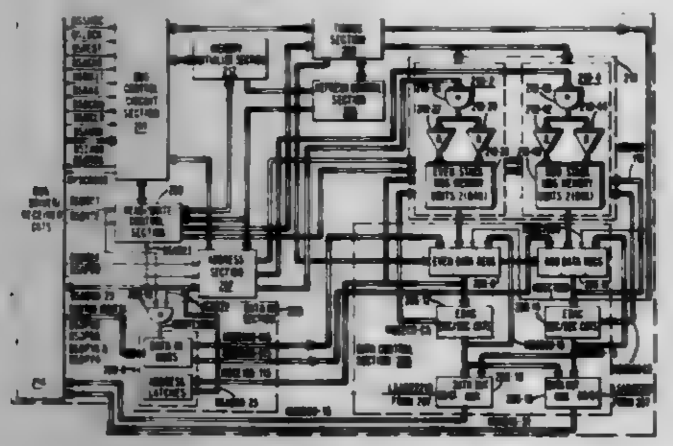


1. A data processing system, comprising:
processor means for processing data,
memory means for storing at least one sequence of instructions to be performed by said data processing means,
microprogram means for providing sequences of micro-instructions to said processor means for performing said instructions, said instructions including at least one no-op instruction to be performed by at least one of said sequence of micro-instructions selected from an extended set of micro-instructions, and
memory bus means connected from an output of said memory means and to an input of said micro-program means for conducting memory output signals representing said instructions to said microprogram means,
said processor means including
a quadriport register file having dual read ports and dual write ports,
an arithmetic-logic unit for performing arithmetic and logical operations on input information supplied thereto and having a pair of inputs and output,
a shifter unit for providing a shifted output therefrom to said register file and having an input and an output connected to an input of said register file,
means for connecting said dual read ports of said register file to said inputs of said arithmetic-logic unit
means for connecting at least one of said read ports of said register file to at least one of said write ports of said register file,
memory address register means for providing addresses to said memory means, and
means for connecting said output of said arithmetic-logic unit to an input of said memory address register means, to an input of said shifter unit, and to at least one of said write ports of said register file, and
said microprogram means including
micro-instruction control store means having first and second memory spaces for respectively storing and providing to said processor means a non-extended set of said micro-instructions and said extended set of micro-instructions, and
instruction decoding means having an input connected from said memory bus means and an output connected to an addressing input of said micro-instruction control store means and responsive to said instructions for decoding said instructions and providing address signals to said micro-instruction control store means for selecting each of said micro-instructions, including means responsive to first certain portions of said instructions for selecting said at least one sequence of micro-instructions from said extended set of micro-instructions when a present instruction is a said at least one no-op instruction, each one of said first certain portions of said instructions containing information for identifying whether each one of said instruction is said a said at least one no-op instruction,
whereby said micro-instruction control store means is responsive to said address signals provided by said instruction decoding means as a result of said decoding by said instruction decoding means of said first certain portions of said instructions to provide said at least one sequence of micro-instructions from said extended set of micro-instructions stored in said second memory space to said processor means when a said instruction present on said memory bus means is a said at least one no-op instruction.

4,323,965
SEQUENTIAL CHIP SELECT DECODE APPARATUS AND METHOD
Robert B. Johnson, Billerica; Chester M. Nibby, Jr., Peabody, and Dana Moore, Dover, all of Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.
Filed Jan. 8, 1980, Ser. No. 110,523
Int. Cl.³ G06F *13/00*
U.S. Cl. 364—200 38 Claims

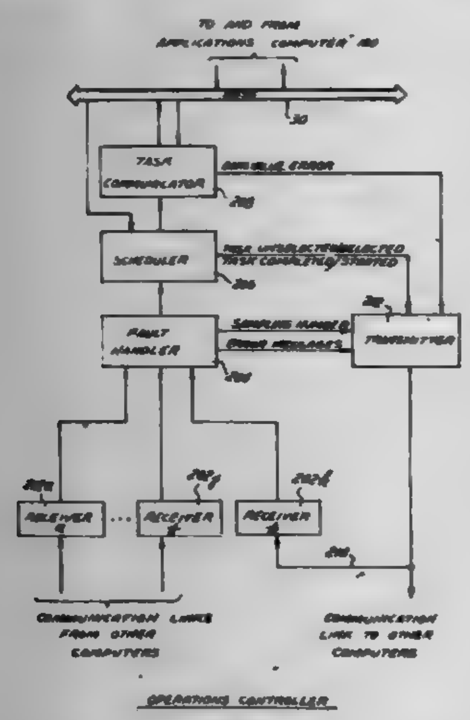
1. A memory subsystem for use in a system including a processing unit coupled to a multiword bus in common with said subsystem, said processing unit being operative to generate memory requests on said bus to said subsystem, each of said requests including a multibit address, said memory subsystem comprising:
a plurality of independently addressable memory module units, each memory unit being individually coupled to said multiword bus, said each memory unit including a plurality of rows of random access memory chips;
decode logic circuit means having a number of outputs, said decode logic circuit means generating decode outputs signals at said number of outputs in response to at least

significant portion of each said multibit address of each request received from said bus; and
gating means having a plurality of inputs and outputs, said outputs being selectively coupled to said plurality of rows of chips of said addressable memory module units and said gating means inputs being selectively connected to said



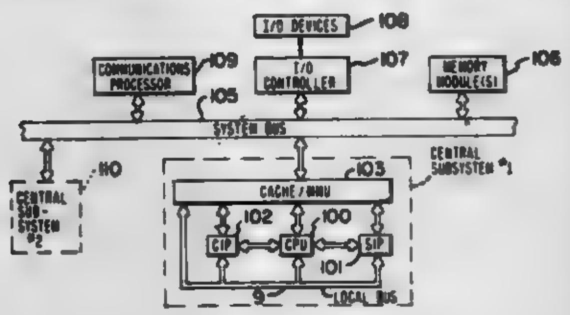
decoder means outputs so as to simultaneously generate at a plurality of sequential row address select signals at a plurality of said outputs in response to each said least significant address portion enabling simultaneous access to a plurality of word locations of said memory module units specified by another more significant portion of each said multibit address during a single bus cycle of operation.

4,323,966
OPERATIONS CONTROLLER FOR A FAULT-TOLERANT MULTIPLE COMPUTER SYSTEM
Arliss E. Whiteside, Royal Oak; Morris D. Freedman, Southfield, both of Mich.; Omur Tasar, Harvard, Mass., and Alexander M. Rothschild, Ann Arbor, Mich., assignors to The Bendix Corporation, Southfield, Mich.
Filed Feb. 5, 1980, Ser. No. 118,693
Int. Cl.³ G06F 15/16
U.S. Cl. 364—200 35 Claims



31. A method for controlling a plurality of computers to execute, in a coordinated fault tolerant manner, a predetermined set of tasks in response to inputs from external sources to produce an output to at least one external device, and wherein each computer includes an application computer capable of executing a subset of the predetermined set of tasks, and wherein the subset of tasks for each computer is different and includes at least one input/output task for receiving data variables from said external sources and outputing data variables to said at least one external device, and wherein said plurality of computers sends messages to every other computer including task selected messages identifying the tasks it has selected, task data value messages containing the values of the data variables resulting from the executed tasks, and error messages containing the identification of the computers which sent messages having detected errors, said method comprising the steps of:
checking all the messages received from said plurality of computers to detect any errors in said messages and to generate error signals identifying each computer which sent a message having a detected error;
counting the number of computers which sent said error messages identifying each computer which sent a message having a detected error;
comparing said number with a predetermined number to generate said error signal identifying each computer which sent a message having an error detected by a number of computers greater than said predetermined number;
recording as faulty, the identify of each computer identified in said error signals to generate a fault status table storing the identify of each computer which sent a message containing an error;
discarding all messages received from computers recorded as faulty in said fault status table;
storing by each computer its own subset of tasks in a task status table, said task status table listing each task of said subset in its order of execution priority;
recording in said task status table the receipt of each data variable required for the execution of each task in response to said task data value messages;
setting a task ready indicator signifying the task is ready for execution in response to the recording in said task status table all data variables required for the execution of that task;
setting in said task status table task selected indicators signifying the task has been selected by another computer in response to said task selected message received from other computers said task selected indicators further identifying the computer that selected the task;
selecting for execution from said task status table said at least one input/output task at predetermined intervals;
selecting for execution from said task status table in the interval between the selection of said input and output tasks the highest priority unselected task having its task ready indicator set;
setting the task selected indicator associated with its own computer in response to the selection of a task;
generating a dispatch signal identifying the selected task in response to selecting said task;
sending to all of the computers said task selected message identifying the selected task in response to selecting said task;
storing the values of the data variables input in response to said input/output tasks and the data variables contained in said data value messages to generate a data values table;
assembling the values of the data variables stored in the data values table for the selected task in response to said dispatch signal to generate a task input table;
forwarding to the applications computer the values of the data variables stored in said task input table when the applications computer signifies it has completed a preceeding task;
storing the values of the data variables generated by the applications computer in the execution of the selected task;
sending to all of the computers the values of the data variables stored in the task output table in response to the applications computer signifying it has completed the execution of the task; and
repetitively executing all of the above steps.

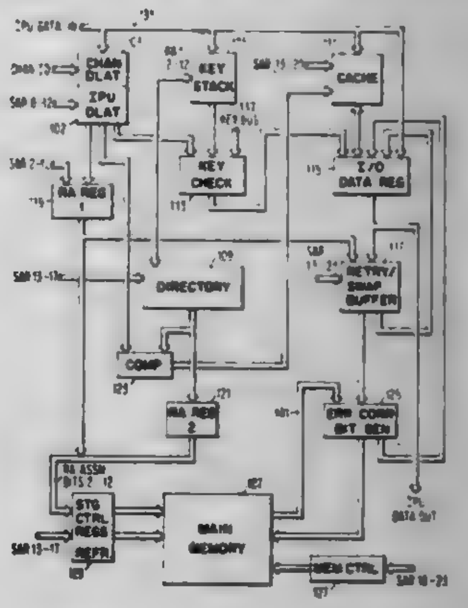
4,323,967
LOCAL BUS INTERFACE FOR CONTROLLING INFORMATION TRANSFERS BETWEEN UNITS IN A CENTRAL SUBSYSTEM
Arthur Peters, Sudbury; Virendra S. Negi, Pepperell; David E. Cushing, Chelmsford; Richard P. Brown, Acton, all of Mass., and Thomas F. Joyce, Phoenix, Ariz., assignors to Honeywell Information Systems Inc., Waltham, Mass.
Filed Apr. 15, 1980, Ser. No. 140,622
Int. Cl.³ G06F 3/00
U.S. Cl. 364—200 8 Claims



1. A data processing system including a main system having a plurality of main data processing units coupled by a system bus, the main data processing units including system memory modules and main system means for initiating information transfers, and a central subsystem comprising:
a plurality of subsystem processing means for independently initiating information transfers directed to said main processing units and to others of said subsystem processing means;
subsystem bus means coupled to each of said plurality of subsystem processing means for asynchronously permitting information transfers during subsystem bus cycles comprising predetermined time periods for using said subsystem bus to transmit said information transfers;
and bus control means coupled to said system bus and said subsystem bus means for selectively allocating said subsystem bus cycles to any of said main system means or any of said subsystem processing means to initiate said information transfers, said subsystem bus means further asynchronously permitting information transfers between said subsystem bus means and said system bus during said allocated bus cycles.

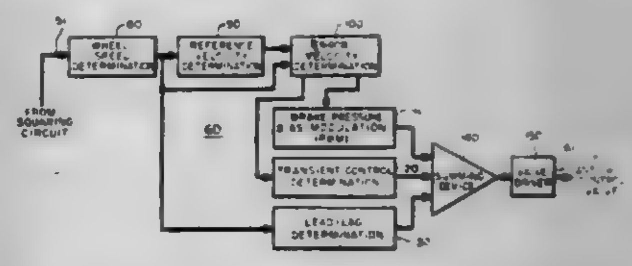
4,323,968
MULTILEVEL STORAGE SYSTEM HAVING UNITARY CONTROL OF DATA TRANSFERS
Anthony J. Capozzi, Binghamton, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Continuation of Ser. No. 955,031, Oct. 26, 1978, abandoned. This application Jul. 15, 1980, Ser. No. 169,008
Int. Cl.³ G06F 13/06
U.S. Cl. 364—200 1 Claim

1. In a data processing system including an information processing unit; a low speed, high capacity main memory; a high speed, low capacity cache for temporarily storing data being used by said information processing unit; at least one input/output channel for transferring information into or out of said information processing unit from devices other than said main memory or said cache; a data transfer and control means comprising:
a storage address register connected to said information processing unit for storing the address of data requested by said information processing unit;
a directory connected to said storage address register for storing addresses of data stored in said cache;
an error correction/bit generator connected to the output of said main memory for detecting memory errors and for generating correction bits;
an input/output data register connected to said information processing unit, said cache and said error correction/bit generator by a plurality of bidirectional data busses for transferring information into or out of said information processing unit from or to said main memory or said cache,
means including said directory and said storage address register for interrogating a data request from said information processing unit to determine if it is a hit indicating that said data is in said cache or a miss indicating that said data is not in said cache;
transfer means connected to said main memory, said cache, said error correction/bit generator and said interrogating means, and operative in response to a miss indication from said interrogating means to initiate the transfer of the requested data from said main memory to said cache; and
a unitary control connected to said information processing unit, said main memory, said cache and said error correc-



tion/bit generator operative to control all data transfers between said information processing unit, said cache and said main memory; said unitary control including said interrogating means, said transfer means, and a means connected to said main memory and said storage address register for maintaining the synchronization of each step in the transfer of data between said main memory and said error correction/bit generator, between said error correction/bit generator and said input/output data register, between said input/output data register and said cache, and between said information processing unit and said input/output data register, whereby said data transfers can take place simultaneously and in step-by-step synchronization.

4,323,969
APPARATUS FOR GENERATING A REFERENCE SIGNAL IN A BRAKE CONTROL SYSTEM
Thomas Skarvada, Woodland Hills, Calif., assignor to Crane Co., Chicago, Ill.
Filed Jul. 25, 1979, Ser. No. 60,573
Int. Cl.³ G06F 15/20; B60T 8/08
U.S. Cl. 364—426 16 Claims



1. An apparatus for generating a reference signal representative of a reference braking condition in a brake control system, said brake control system including means for generating a

wheel signal representative of a braking condition of a braked wheel, said apparatus comprising:

means for storing a reference signal representative of a reference braking condition;

means for storing a rate signal;

rate signal adjustment means for causing the stored rate signal to seek a value indicative of braking conditions by seeking a dynamic balance between increments and decrements to the stored rate signal, said rate signal adjustment means comprising:

rate signal increment means for increasing the stored rate signal by adding selected value to the stored rate signal solely when the stored reference signal is compared with the wheel signal and found to be greater than the wheel signal; and

rate signal decrement means for decreasing the stored rate signal by subtracting a selected value from the stored rate signal solely when the stored reference signal is compared with the wheel signal and found not to be greater than the wheel signal;

means for increasing the stored reference signal when the wheel signal is greater than the stored reference signal; and

means for decreasing the stored reference signal by an amount corresponding to the stored rate signal when the stored reference signal is greater than the wheel signal.

4,323,970

METHOD AND CIRCUIT ARRANGEMENT FOR GENERATING SETTING SIGNALS FOR SIGNAL GENERATORS OF A TRAFFIC SIGNAL SYSTEM, PARTICULARLY A STREET TRAFFIC SIGNAL SYSTEM

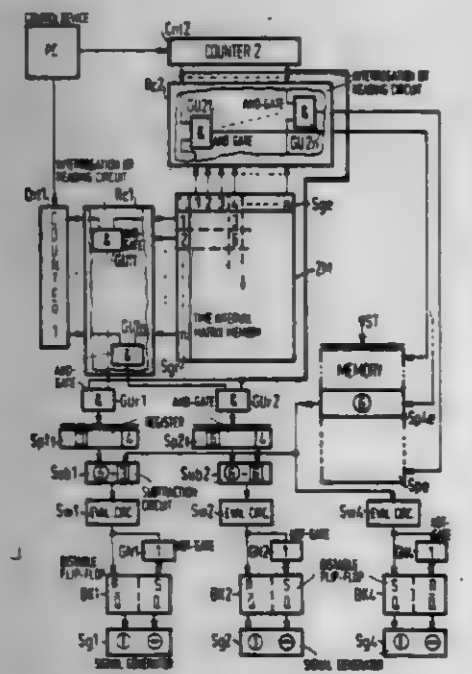
Heinrich Brunner, Rottach, and Karin Fischer, Munich, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jun. 2, 1980, Ser. No. 155,291

Claims priority, application Fed. Rep. of Germany, Jun. 22, 1979, 2925333; Sep. 24, 1979, 2938528

Int. Cl.³ G08G *1/07*

U.S. Cl. 364—436 **9 Claims**



1. A method for generating setting signals for operating traffic signal generators which control mutually hostile traffic flows, comprising the steps of:

storing in a matrix memory time intervals corresponding to entry signal groups representing release of traffic flow by respective traffic signal generators and associated to hostile clearing signal groups representing stoppage of traffic flow by respective traffic signal generators;

reading the time intervals corresponding to a distinct entry signal group and associated to clearing signal groups hostile to said entry signal group from the matrix memory;

storing the greatest time interval of said time intervals read from the matrix memory in a separate storage element and cyclically reducing said stored time interval to zero;

subtracting each of said time intervals read from the matrix memory from said stored greatest time interval being cyclically reduced;

detecting a zero difference of the subtraction results and emitting a respective block signal for a signal generator of the appertaining clearing signal group to which the respective subtracted time interval is associated; and

emitting a release signal to a signal generator of said distinct entry signal group upon detection of a zero value of said cyclically reduced greatest time interval.

4,323,971

ADJUSTMENT MEANS FOR STRETCH REDUCTION ROLLING MILLS

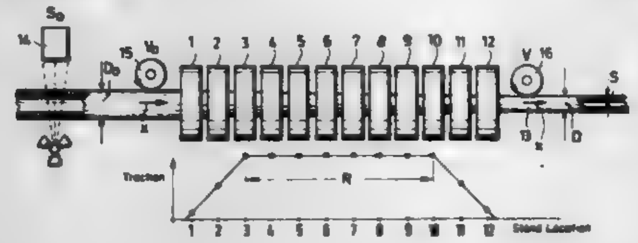
Hermann Möltner, Düsseldorf, and Wolfgang Siebenborn, Dormagen, both of Fed. Rep. of Germany, assignors to Kocks Technik GmbH & Co., Düsseldorf, Fed. Rep. of Germany

Filed Dec. 11, 1979, Ser. No. 102,411

Claims priority, application Fed. Rep. of Germany, Nov. 27, 1979, 2947233

Int. Cl.³ G06F *15/46*; B21B *37/00*

U.S. Cl. 364—469 **8 Claims**



1. Adjustment device for regulating the total degree of drawing of a multi-stand stretch-reduction rolling mill for the stretch-reduction of tube, by means of which the degree of drawing is adjustable as a function of the entrance measurements of the mean wall thickness of the tube in order to obtain a desired, uniform finished tube wall thickness, comprising means for measuring the wall thickness of a tube entering the stretch-reducing rolling mill and providing a signal relate to said wall thickness, means for measuring the speed of said tube entering the stretch-reducing rolling mill and providing a signal relate to said speed, means for measuring the speed of said tube leaving the stretch-reducing rolling mill and providing a signal related to said speed, a digital unit receiving said signals from the means for measuring wall thickness and the means for measuring entering speed and the means for measuring exit speed, a value for original diameter entering said stretching reducing mill and a value for desired final diameter, said digital unit calculating intermittently one of a desired and theoretical elongation ($\lambda_{theor.}$) from said wall thicknesses and external diameters of both the actually entering and desired finished tube sections and continuously calculating the actual elongations or stretchings ($\lambda_{act.}$) from the entrance and exit speeds (V_o,V) of the tube and regulator means adjusting the roll speeds r.p.m. (n) as a function of the differences in theoretical and actual elongation or stretchings ($\Delta\lambda$) present in a control loop, said regulator means receiving a control signal from said digital unit.

4,323,972

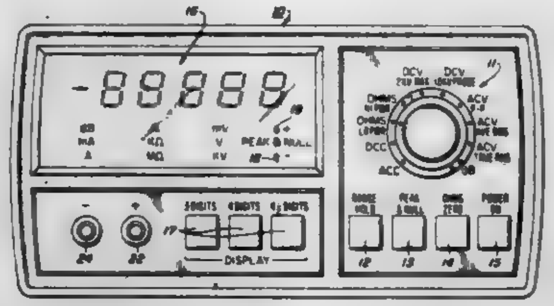
OHM METER WITH AUTOMATIC LEAD RESISTANCE COMPENSATION

Robert A. Winter, Sioux Falls, S. Dak., assignor to Sencore, Inc., Sioux Falls, S. Dak.

Filed Mar. 10, 1980, Ser. No. 128,914

Int. Cl.³ G01R *27/00*

U.S. Cl. 364—482 **5 Claims**



1. An instrument for measuring resistance, comprising a first input and a second input,

metering means connected to said inputs for providing an electric output signal representative of the resistance between said inputs,

microprocessor means to which said output signal is connected,

switch means connected to said microprocessor means,

said microprocessor means including data memory for storing a signal representative of the resistance value connected between said first and second inputs while said switch means is in a first switching mode,

display means for displaying a numerical value represented by an electric input signal applied thereto, and

said microprocessor means supplying to said display means said electric input signal when said switch means is in a second switch mode, said electric input signal representing the resistance value between said first and second inputs while said switch means is in said second switching mode minus the resistance value between said first and second inputs when said switch means was last in said f switch mode, said electric input signal representing the resistance value between said first and second inputs while said switch means is in said second switching mode minus the resistance value between said first and second inputs when said switch means was last in said first switch mode.

4,323,973

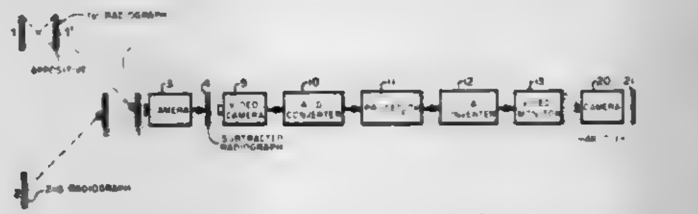
APPARATUS AND METHOD FOR ENHANCING RADIOGRAPHS

George B. Greenfield, 4855 Greenleaf Ave., Lincolnwood, Ill. 60646

Filed Dec. 20, 1979, Ser. No. 105,773

Int. Cl.³ H04N *5/14*; G06F *15/42*

U.S. Cl. 364—515 **39 Claims**



1. A method for enhancing radiographs comprising the following steps:

producing a first radiograph of an anatomical area;

producing a second radiograph of said anatomical area subsequent to introducing a radiographic contrast medium into preselected portions of said anatomical area;

forming a digitized, subtracted image from said first and second radiograph;

modifying said digitized, subtracted image by testing the light intensity of a plurality of portions of said subtracted image against a threshold and selectively increasing or decreasing said light intensity of said portions according to the result of said testing to obtain an image of increased contrast; and

displaying said modified image.

4,323,974

METHOD OF RESTORING A PICTURE THROUGH ESTIMATION

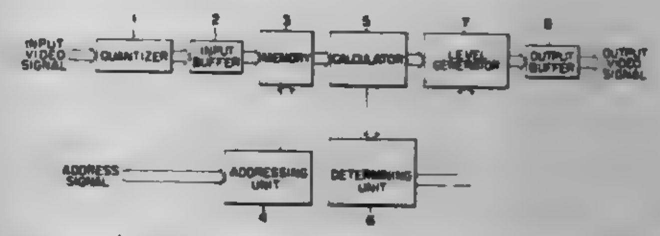
Keiji Sekigawa, Yokohama, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

Filed Mar. 5, 1980, Ser. No. 127,471

Claims priority, application Japan, Mar. 7, 1979, 54-26502

Int. Cl.³ G06F *15/20*; H04N *5/14*

U.S. Cl. 364—515 **2 Claims**



1. A method of restoring a picture through estimation, comprising the steps of:

reading an original picture into a plurality of first picture elements by sampling said original picture in relatively low picture element concentration, said first picture elements being divided into first picture element regions each of which has an arrangement of n×n first picture elements;

converting each first picture element region into a second picture element region which has an arrangement of 1.5 n×1.5 n second picture elements each of which is smaller in area than each first picture element;

subjecting the density levels of the first picture elements in each first picture element region to decimal quantization to provide the average value of the density levels thus decimal-quantized;

obtaining the density level data of predetermined second picture elements in each second picture element region by using predetermined equations corresponding to the distribution of the density levels of said first picture elements in each first picture element region; and

determining the density levels of said second picture elements in each second picture element region as black or white according to said average value and the order in magnitude of said density level data.

4,323,975

ARTICULATED LOADING ARM CONTROL SYSTEM

Peter Ball, Sheffield, England, assignor to FMC Corporation, Chicago, Ill.

Filed Jan. 28, 1980, Ser. No. 115,680

Claims priority, application United Kingdom, Jan. 31, 1979, 03468/79

Int. Cl.³ B67D *5/68*

U.S. Cl. 364—559 **5 Claims**

1. A system for controlling the position of an articulated loading arm used to load and unload a tanker, said loading arm being mounted on a loading station, said system comprising:

a computer for receiving signals from a plurality of signal sources and for producing control signals to control the movement of said loading arm;

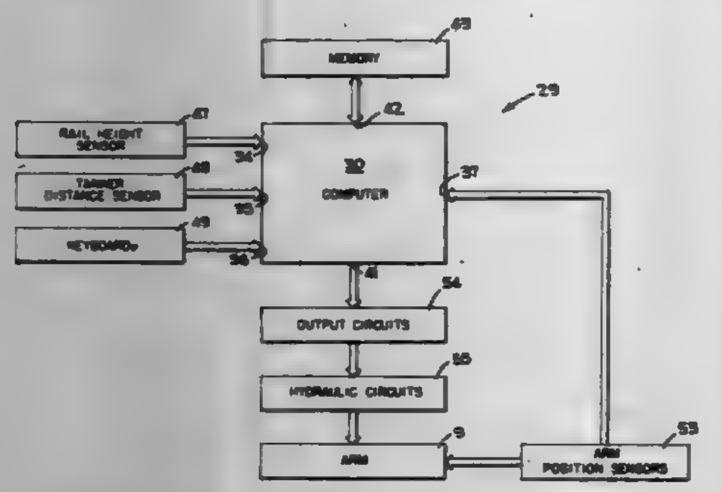
a distance sensor for providing a signal proportional to the distance between a tanker and said loading station;

a rail height sensor for providing a signal proportional to the height of a tanker rail relative to said loading station;

a plurality of arm position sensors for providing signals determined by the spatial position of an outer end of said loading arm relative to said loading station;

a computer memory connected to said computer and to said sensors for storing said arm position signals, said distance signals and said rail height signals; and

a keyboard connected to said computer for providing signals



to said computer to cause said computer to compare the spatial position of said outer end of said loading arm with the position of said tanker and cause said computer to develop said control signals to move said loading arm into position for connecting said loading arm to said tanker.

4,323,976

ELECTRONIC DEVICE FOR TAKING THE SPEED OF A ROTATING MEMBER

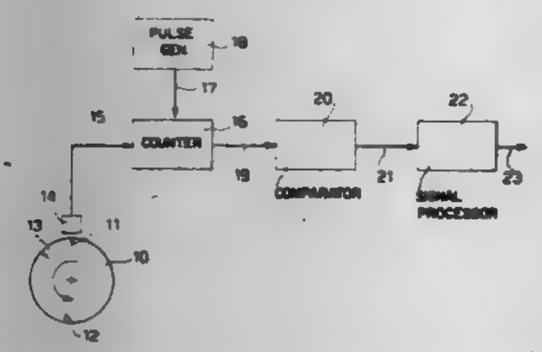
Dario Radaelli, Legnano; Giancarlo De Angelis, Milan, and Alberto Catastini, Corsico, all of Italy, assignors to Alfa Romeo S.p.A., Milan, Italy

Filed Jul. 31, 1979, Ser. No. 62,481

Claims priority, application Italy, Aug. 9, 1978, 26635 A/78

Int. Cl.³ G01P *3/42*

U.S. Cl. 364—565 4 Claims



1. An electronic device for providing a digital signal indicating the rotational speed of a rotating member which rotates at a variable speed within a preselected speed variation range, said speed variation range being subdivided into a preset number of zones and each zone being further subdivided into a preset number of intervals, sequential indicator numerals corresponding to said zones with said numerals being in a decreasing order of magnitude starting with a numeral indicating said zone of maximum speed, said device comprising transducer means operatively connected to said rotating member to generate for every revolution of said rotating member a first train of impulses spaced in time in a manner inversely proportional to the speed of rotation of said rotating member, impulse generating means for generating a second train of impulses at a constant frequency, counting means operatively connected to said transducer means and to said impulse generating means for receiving said trains of impulses, said counting means including means operable to effect the counting of the impulses of the second train of impulses and to be actuated to start and to stop said counting of impulses by two selected successive impulses of the first train of impulses, comparator means operatively connected to said counting means for comparing the number of impulses totalized by said counting means during the counting operation with reference values between a predetermined minimum value and a predetermined maximum value corresponding to the lower limit of said speed variation range and the maximum speed of said speed variation range and being operable to evaluate whether the number of impulses totalized is between said minimum value and said maximum value or whether said number of pulses is higher than said maximum value, processing means controlled by said comparator means for generating an output signal corresponding to said number of impulses totalized if said number is between said minimum value and said maximum value and to manipulate said number of impulses totalized if said number is greater than said maximum value until the number assumes a value between said minimum value and said maximum value to generate an output signal corresponding to the number of impulses calculated through said manipulation, said comparator means and said processor means being parts of a programmed microprocessor comprising a first register into which are successively loadable a first fixed value corresponding to the total number of intervals into which said speed variation range is subdivided, a second fixed value corresponding to said maximum value and a third fixed value corresponding to said minimum value and spaced from said second fixed value by a number corresponding to the number of intervals into which every zone of the range of speed is subdivided, a second register into which is loaded said number of impulses totalized by said counting means, a programmable counter for counting from one to another of said series of numerals indicative of the various zones of the speed variation range starting from that numeral corresponding to the zone of maximum speed, divisor means, subtractor means, and an output accumulating register to which said programmable counter delivers zone identifying numeral data as numeral data indicative of the counting state of said programmable counter, and said microprocessor being programmed to compare the number loaded into said second register with the fixed value loaded time by time into said first register and to divide said number loaded into said second register by selected coefficients of division to obtain a demultiplied number to be substituted for said loaded number in such a way that:

(a) if, with said first register loaded with said first fixed value, the number loaded into the second register is lower than said first fixed value, said microprocessor commands the commutation of said first register from said first fixed value to said second fixed value;

(b) if, with said first register loaded with said second fixed value, the number loaded into the second register is lower than said second fixed value, said microprocessor commands the commutation of said first register from said second fixed value to said third fixed value;

(c) if, with said first register loaded with said first fixed value or said second fixed value, the number loaded into said second register is higher than said first fixed value or respectively said second fixed value, said microprocessor commands the programming of said programmable counter and the actuation of said divisor means to obtain from said loaded number a demultiplied number and the loading of the demultiplied number, to be substituted for the number previously loaded, into said second register;

(d) if, with said first register loaded with said third fixed value, the number loaded into said second register is higher than said third fixed value, said microprocessor commands the subtractor means to subtract the loaded number from a fourth fixed value equal to said second fixed value minus one and to transmit the difference to said accumulating register as a datum of interval to be combined with the zone identifying datum delivered by said programmable counter; and

(e) if, with said first register loaded with said third fixed value, the number loaded into said second register is lower than said third fixed value, said microprocessor directly transmits to said accumulating register a signal indicative of a datum of interval higher than the maximum speed considered.

4,323,977

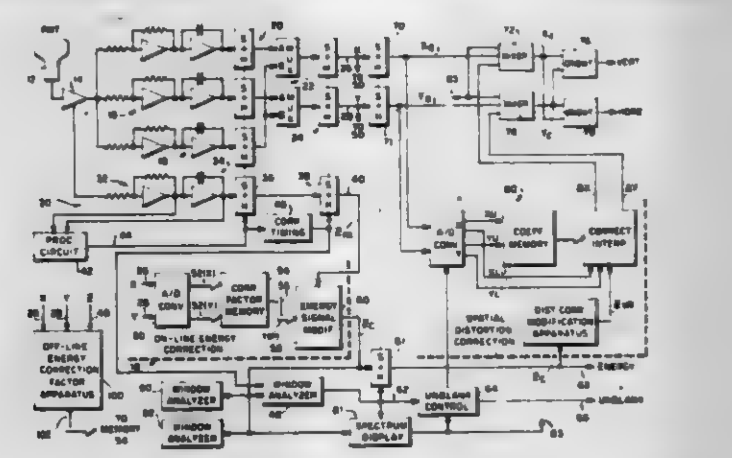
NON-UNIFORMITY ENERGY CORRECTION METHOD AND APPARATUS

Roger E. Arseneau, Arlington Heights, Ill., assignor to Siemens Gammasonics, Inc., Des Plaines, Ill.

Filed Nov. 20, 1979, Ser. No. 96,181

Int. Cl.³ G01T *1/20*

U.S. Cl. 364—571 10 Claims



1. Correction apparatus for a scintillation camera, the scintillation camera providing image event position coordinate data and image event energy signals for each image event that occurs during on-line use of the scintillation camera, the correction apparatus comprising:

memory means having stored therein correction factors in an addressable data array format, said correction factors representing the non-uniformity of the energy response of the scintillation camera as a function of image event position over the image field of the scintillation camera;

means responsive to the image event coordinate position signal of each image event to control the memory means to read out the correction factor corresponding to each image event; and

image event energy signal correction means responsive to the uncorrected image event energy signal for scaling said read-out correction factor and using said scaled correction factor for generating a corrected image event energy signal.

4,323,978

ARITHMETIC ELEMENT BASED ON THE DDA PRINCIPLE

Reimar Hoefert, Hamburg, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 10, 1979, Ser. No. 102,201

Claims priority, application Fed. Rep. of Germany, Dec. 12, 1978, 2853540

Int. Cl.³ G06F *7/64*

U.S. Cl. 364—702 6 Claims

1. An arithmetic element for processing digital input increment signals, the frequency of which indicates an analog quantity, notably digital input increment signals comprising a sign signal according to the DDA (digital differential analyzer) principle, comprising at least one arithmetic device for executing add and subtract operations (adder/subtractor) and at least one operand register which is connected to a data input of the arithmetic device, characterized in that the arithmetic device comprises:

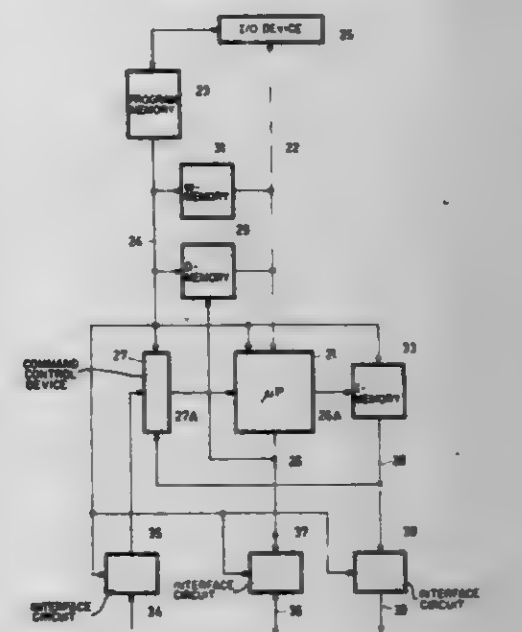
(a) a program memory (23) for supplying program signals on a first output (24);

(b) a microprocessor (21) with a first input which can be coupled to said first output and having an adder/subtractor (51) with a data output (26);

(c) a command control device (27) which is connected between said first input and first output and which comprises a second input for receiving a control signal in order to modify a program signal;

wherein there are furthermore provided:

first EXCLUSIVE-OR-means (71) having inputs connected to the most significant bit position (65) on said data output and to the most significant bit position on said operand



register (29) for generating a value signal (Δz) of an output increment signal and second EXCLUSIVE-OR-means (73) having inputs connected to the most significant bit position on said data output and to a location overflow bit position (66) for generating a sign signal (sign Δz) of the output increment signal.

4,323,979

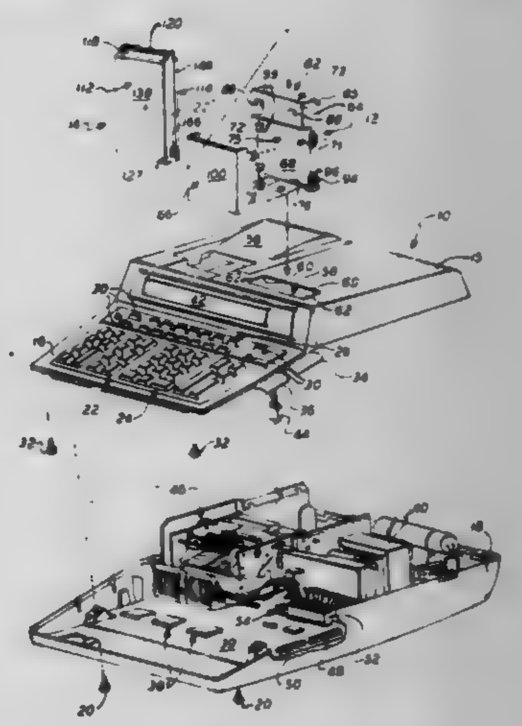
CARTRIDGE AND BEZEL ASSEMBLY FOR A CALCULATOR

John N. Johnston, North Plainfield, N.J., assignor to Litton Business Systems, Inc., Morris Plains, N.J.

Filed Aug. 20, 1979, Ser. No. 68,010

Int. Cl.³ G06F *1/00*

U.S. Cl. 364—708 11 Claims



1. In a calculator comprising:

a housing having a first opening in the surface thereof, said first opening having at least one first inner surface portion having a substantially larger first radius of curvature than the second radii of curvature of the other, second inner surface portions of said first opening; and

a connector having an outer surface and being disposed within the housing and rendered accessible from the exterior of the housing via the first opening for electrically connecting to the calculator circuitry disposed on a medium which is separate from the calculator;

the improvement comprising:

guide means having a cross-section which is sustantially the same shape as the first opening and is slightly smaller than the size of the first opening, said guide means being separate from the housing and insertable within the first opening for guiding the medium, during insertion thereof, through the first opening into effective electrical connection with the connector, the guide means defining at its inner end a second, inner opening which is the same shape as the outer surface of the connector and is slightly larger than the outer dimension of the connector, said guide means having first keying means comprising at least one of the outer surface portions of the guide means which corresponds to the first inner surface portion of the first opening and defines a bevelled surface, said guide means being insertable through the first opening only when the bevelled surface is aligned with the first inner surface portion of the first opening, said guide means further comprising second keying means for preventing the medium from being inserted through the first opening in other than a preferred orientation, said guide means further including means for snap-fitting the guide means within the first opening with the second, inner opening of the guide means engaging the outer surface of the connector when the guide means is inserted through and snap fit in the first opening, whereby the guide means remains fixed relative to the housing and the connector after the guide means is inserted into the first opening.

4,323,980

DIGITAL FILTER FOR SHARED-TIME PROCESSING ON SEVERAL CHANNELS

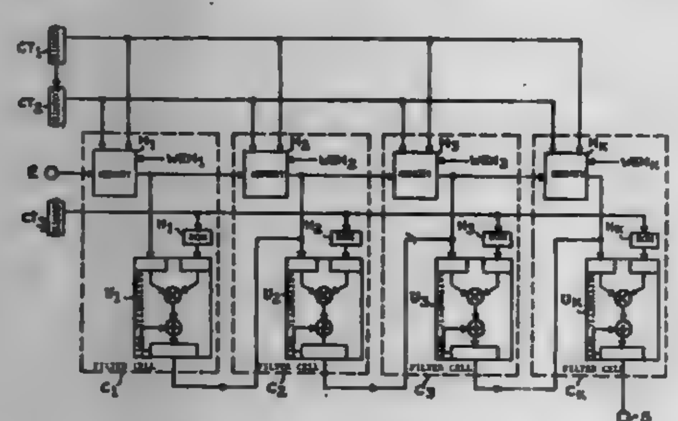
Jean-Pierre Houdard, Orsay; Jean-Jacques Julie, Paris, and Bernard G. Leoni, Brundy, all of France, assignors to Le Materiel Telephonique Thomson-CSF, Columbes, France

Filed Jan. 17, 1980, Ser. No. 113,039

Claims priority, application France, Jan. 29, 1979, 79 02163

Int. Cl.³ G06F *15/31*

U.S. Cl. 364—724 6 Claims



1. A method for processing successive signal samples, for example, the signals which appear on a plurality of time-multiplexed transmission channels, comprising the steps of: during each sampling time slot and for each channel, writing the current sample into one of a plurality of random access memories in place of the oldest priorly written sample, all of the samples for a given channel being read into said memory in succession starting with that which has just been written and progressing to other memories in the order of increasing age to the oldest sample; simultaneously reading all of said memories in the order of increasing age starting with the sample which has just been written; sending the samples thus read from each memory to a corresponding arithmetic unit; summing the results produced by the different arithmetic units; and then, said progressing of memories comprising transferring the oldest sample from each memory to the next memory, starting with the next to last memory, said memories being arranged in the order of increasing age of their contents.

4,323,981

CENTRAL PROCESSING UNIT WITH IMPROVED ALU CIRCUIT CONTROL

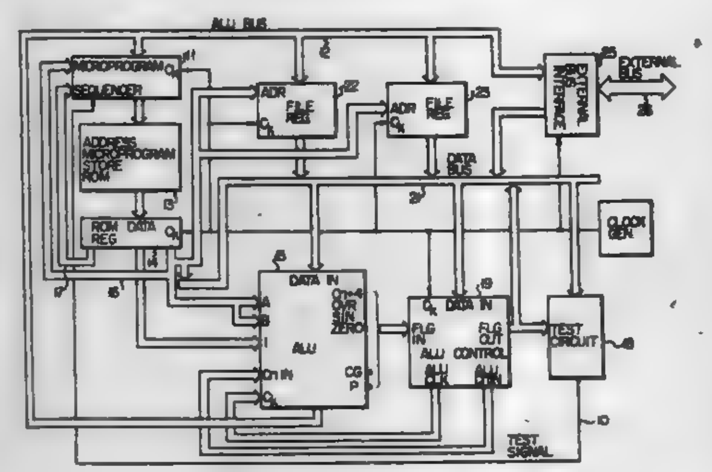
Norimitsu Nakamura, Oume, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Oct. 23, 1978, Ser. No. 953,743

Claims priority, application Japan, Oct. 21, 1977, 52-125778

Int. Cl.³ G06F *7/50*

U.S. Cl. 364—749 15 Claims



1. An information processor for performing processing operations upon externally supplied data including control data under the control of a microprogram comprising:

a read only memory for storing microprograms at associated execution addresses, each said microprogram comprising a set of processing instructions;

a microprogram sequencer connected to said read only memory for producing the execution address of a said stored microprogram and for controlling said read only memory to output said instructions comprising said microprogram associated with said produced execution address;

a read only memory data register connected to said read only memory for latching the instructions outputted from said read only memory;

a data bus for receiving said data including said control data;

a register file connected to said data bus for receiving data including said control data therefrom;

an arithmetic/logic unit comprising a plurality of ALU chips of a selected bit length connected to said read only memory data register for receiving said outputted instructions and to said register file for receiving data from said register file and for performing processing operations on said data received from said register file in response to said instructions received from said read only memory data register, each of said ALU chips having associated therewith flag data including a carry flag signal, a sign flag signal, a zero flag signal, and an overflow flag signal for indicating the status of said associated ALU chip; and

ALU circuit control means connected to said arithmetic/-logic unit and said data bus for selecting ALU chips in accordance with said instructions latched in said read only memory data register so as to carry out said processing operations on said data provided by said register file in accordance with said instructions of said latched microprogram, wherein each of said performed operations is constituted of bits the number of which is defined by the selected ALU chips, said ALU circuit control means for selecting said carry flag signal, said sign flag signal, said zero flag signal, and said overflow flag signal associated with one of said selected ALU chips in accordance with said received data to indicate the status of said arithmetic/logic unit.

4,323,982

LOGIC CIRCUIT ARRANGEMENT IN THE INTEGRATED MOS-CIRCUITRY TECHNIQUE

Dieter Eichrodt, and Friedhelm Elsen, both of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Continuation of Ser. No. 841,798, Oct. 13, 1977, abandoned. This application Nov. 16, 1979, Ser. No. 94,931

Claims priority, application Fed. Rep. of Germany, Oct. 22, 1976, 2647982

Int. Cl.³ G06F *7/50, 7/38*

U.S. Cl. 364—786 2 Claims

1. In a multi-stage logic circuit formed as an integrated MOS circuit,

an addition stage for each digit of multi-digit numbers to be added,

each one of said addition stages except the first one having an input for receiving a carry signal from a preceeding addition stage of a previous lower-value digit and each of said addition stages except the last one having a carry signal output which is coupled to the carry signal input of the following stage for the next higher value digit,

said addition stages having first and second adding means, said first adding means including inputs receiving said digits of said numbers to be added, said first adding means having a first output providing a first logic value representing the sum of said digits of said numbers to be added, and a second output providing a carry signal, and

said second adding means including inputs for receiving the carry value of the preceeding addition stage and and inputs for receiving the value representing the sum of said digits of said numbers to be added and an output providing a logic value representing the sum for the addition stage;

each of said addition stages having a transfer gate,

said transfer gates each having a first arm coupled between said second output of said first adding means and said carry signal output and including a single first transfer transistor, a second arm coupled between said carry signal input and said carry signal output and including a second single transfer transistor, and an inverter having an input coupled to said first output of said first adding means and an output coupled to a control electrode of said first single transfer transistor, a control electrode of said second single transfer transistor coupled to said first output of said first adding means, whereby a carry signal generated in said first adding means is transferred by said first single transfer transistor to said carry signal output and a carry signal from said carry signal input is transferred by said second single transfer transistor to said carry signal output.

4,323,983

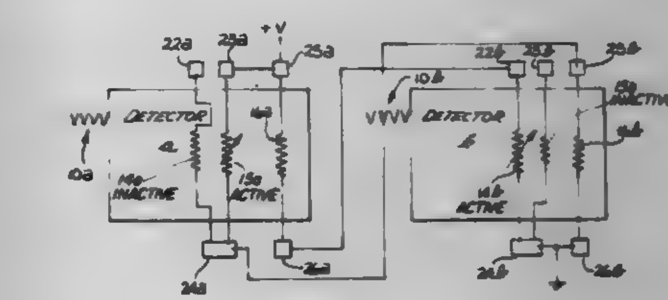
MAGNETIC BUBBLE DETECTOR

David M. Lee, Santa Clara; Donald K. Rose, Palo Alto, and Richmond B. Clover, Sunnyvale, all of Calif., assignors to Intel Magnetics, Inc., Santa Clara, Calif.

Filed Aug. 9, 1979, Ser. No. 65,361

Int. Cl.³ G11C *19/08*

U.S. Cl. 365—8 6 Claims



1. An apparatus for detecting magnetic bubbles which are propagated in a layer of magnetic material under the influence of a rotating magnetic field comprising:

a first and second magnetoresistive detector, each comprising:

an expander means for expanding the size of magnetic bubbles;

a first active magnetoresistive element adjacent to said expander means;

a second inactive magnetoresistive element adjacent to said first element; and

a dummy element for balancing out the effects of said rotating magnetic field;

sensing circuit for sensing the change of resistance in magnetoresistive elements, said sensing circuit coupled to said first element of said first detector and said second element of said second detector;

whereby two independent streams of spaced-apart bubbles coupled to said first and second detectors are sensed.

4,323,984

SWITCHING EQUIPMENT USING MAGNETIC DOMAINS

Hideo Ishihara, Kamakura; Shizuo Suzuki, Yokohama, and Satoru Nakabo, Tokyo, all of Japan, assignors to Kokusai Denshin Denwa Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 3, 1978, Ser. No. 957,347

Claims priority, application Japan, Nov. 4, 1977, 52-131488

Int. Cl.³ G11C *11/15, 13/06*

U.S. Cl. 365—10 11 Claims

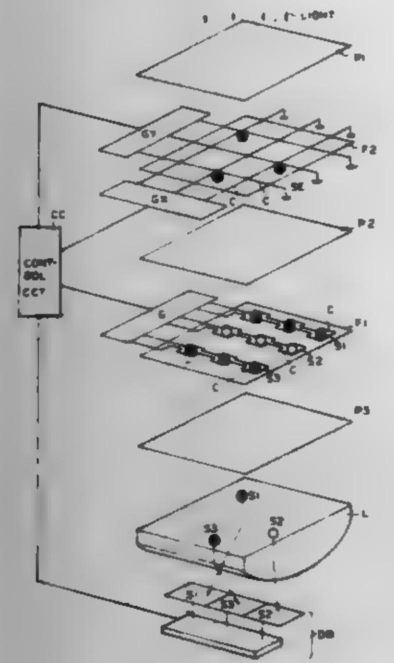
1. A switching equipment using magnetic domains, comprising:

a magnetic sheet having the property of producing magnetic domains respectively at a plurality of storage positions arranged in a matrix form,

first input control means responsive to selection signals for setting the magnetic domains at the plurality of storage positions on the magnetic sheet to either one of two states in accordance with the states of a plurality of selection signals,

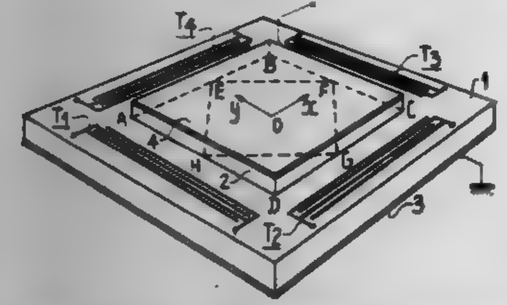
means defining an information surface in registration with said magnetic sheet and capable of indicating binary information at each of a plurality of indication positions arranged in a matrix respectively corresponding to the plurality of storage positions of the matrix of said magnetic sheet,

second input control means responsive to input signals for setting the state of the binary information of each of the plurality of indication positions along respective rows or columns of the matrix of the information surface to the same signal state as one another and to the states of respective ones of the input signals, and



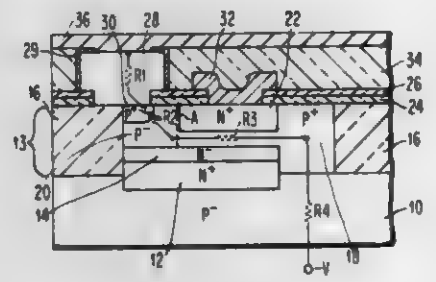
output means for obtaining a plurality of logical products of corresponding ones of the magnetic domains at the plurality of storage positions on the magnetic sheet and the binary information at the plurality of indication positions on the information surface to derive the logical products as one dimensional information, the input signals being exchanged in accordance with the states of the selection signals and provided as the one dimensional information.

4,323,985
TWO DIMENSIONAL ACOUSTO-ELECTRICAL DEVICE FOR STORING AND PROCESSING INFORMATION
Charles Maerfeld, and Herve Gautier, both of Paris, France, assignors to Thomson-CSF, Paris, France
Filed Jan. 29, 1980, Ser. No. 116,477
Claims priority, application France, Feb. 2, 1979, 79 02766
Int. Cl.³ G11C *13/00*
U.S. Cl. 365—157 **19 Claims**



1. A two dimensional acousto-electric device for storing and processing an analog input signal comprising:
a piezoelectric medium, carrying at least two electromechanical transducers capable of generating elastic waves at the surface of said piezoelectric medium in at least two separate directions;
an electrically non linear medium in which non linear interactions are apt to occur between electrical fields associated with said elastic waves;
a medium for storing electric charges, said medium being electrically coupled to said non linear medium;
the storage of said analog input signal being achieved by means of at least two auxiliary writing signals, at least two of these three signals, i.e. the analog input signal and the writing signals, being applied to said electro-mechanical transducers, and the third being applied to the device, the frequencies of said auxiliary signals being such that the non linear interaction of the three signals supplies a fourth signal, representing the input signal, independent of time, in the form of a periodic spatial distribution of electric charges stored in said storage medium.

4,323,986
ELECTRONIC STORAGE ARRAY HAVING DC STABLE CONDUCTIVITY MODULATED STORAGE CELLS
Shashi D. Malaviya, Fishkill, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Jan. 30, 1980, Ser. No. 164,646
Int. Cl.³ G11C *11/40*
U.S. Cl. 365—174 **14 Claims**

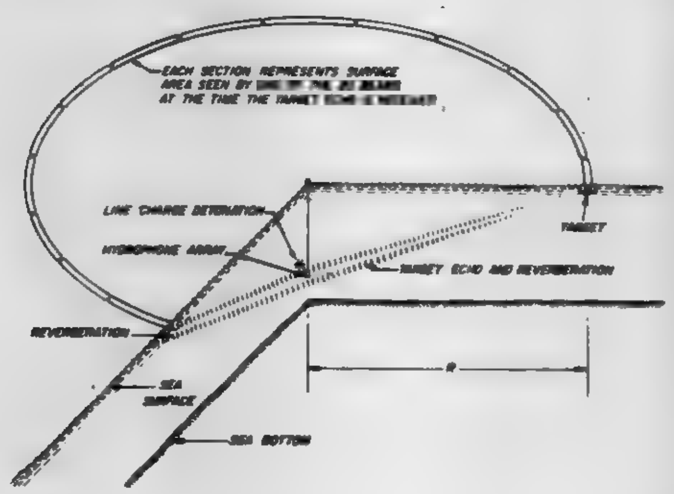


1. An integrated circuit semiconductor storage array formed on a monolithic substrate, having a plurality of conductivity modulated storage cells each contained within a single isolation zone of said substrate, at least one of a plurality of word lines and at least one of a plurality of bit lines electrically contacting each one of said plurality of conductivity modulated storage cells, comprising:
a first semiconductor region formed into said isolation zone and consisting of a lightly doped P type region forming a variable resistance and a highly doped P type region forming a fixed resistance, the difference in doping level between the lightly and highly doped regions being at least one order of magnitude;
a second semiconductor region formed into said first semiconductor region to form a PN junction therewith and consisting of a highly doped N type region;
an electrical path extending from said at least one of a plurality of word lines through at least a portion of said first and second semiconductor regions to said at least one of a plurality of bit lines;
a first potential source for applying a relatively positive potential to the said at least one word line;
a second potential source for applying a relatively negative potential to the highly doped portion of said first region; and
a third potential source for applying a variable potential, having first and second levels, to said at least one bit line, said third potential in its first level being insufficiently negative with respect to the level of said first potential source to establish a potential difference for forward biasing said PN junction thereby inhibiting current flow in said electrical path, said third potential in its second level being selectively more negative with respect to said first potential source sufficient to establish a potential difference for forward biasing said PN junction, thereby injecting electrons into said lightly doped portion of said first semiconductor region and lowering its resistivity;
whereby current flow is maintained through said electrical path after said third potential source is brought to its first level.

4,323,987
POWER FAILURE MEMORY SUPPORT SYSTEM
Earl B. Holtz, Huntington; Roger F. Lay, Newtown; Flavio M. Manduley, Woodbury, and Howard J. Moody, Monroe, all of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.
Filed Mar. 28, 1980, Ser. No. 134,738
Int. Cl.³ G11C *11/40*
U.S. Cl. 365—229 **17 Claims**

1. A data processing system comprising:
(a) volatile memory for storing data, said volatile memory having a given time within which data therein must be refreshed;
(b) first power supply for maintaining said data in said volatile memory;
(c) power sensing means for detecting a power failure of said first power supply;
(d) a second power supply for independently supplying power when said power sensing means detects a power failure of said first power supply;
(e) timing means operatively connected to said power sensing means for detecting a lapse of time from said power failure; and
(f) delay ouput means coupled to said volatile memory and connected to be operated by said second power supply for transferring said data from said volatile memory to an external device when said timing means indicates that a predetermined time interval has elapsed, said predetermined time interval being substantially greater than said time within which data in said volatile memory must be refreshed.

4,323,988
SONOBUOY SYSTEM
Albert S. Will, Bethesda; Earl A. Schuchard, Laurel; John P. Buckley; Armand Cioccio, both of Silver Spring; John C. Hetzler, Jr., Laurel; Sylvan Wolf, College Park, all of Md.; Donald E. Jefferson, Dobbs Ferry, N.Y.; Jim B. McQuitty, Hyattsville, and Robert A. Urick, Silver Spring, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Apr. 19, 1966, Ser. No. 545,209
Int. Cl.³ G01S *15/06*
U.S. Cl. 367—4 **10 Claims**



1. A sonobuoy system for underwater detection of a long range target over a wide detection area comprising,
a multibeam omnidirectional sonobuoy dropped in the vicinity of an underwater target having means for detecting acoustic signals in a plurality of beam sections simultaneously which sectors provide a 360° discrimination directional pattern, compass means for referencing said beam sectors and means for transmitting simultaneously compass information, and target range and target bearing information signals from each of said sectors to a remote location,
remote control means providing an initiating signal to said sonobuoy when the sonobuoy is in a predetermined detection position,
receiving means in said remote location for receiving and processing said information signals transmitted from said sonobuoy,
means electrically connected to said receiving means for discriminating between sectors having nontarget reverberation signals and a sector containing a target, and means for displaying said target range and bearing information.

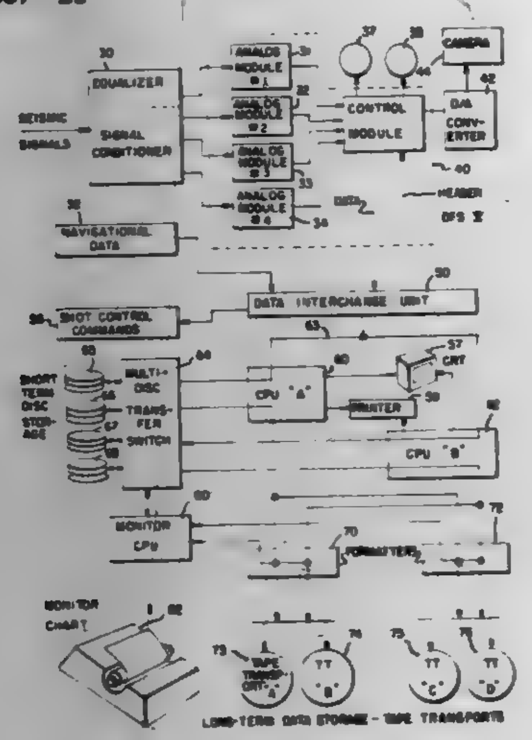
4,323,989
WIDE SEISMIC SOURCE
Kermit D. Huckabee, Mandeville, La.; James C Adair, Bellaire, and Gene T. Worrell, Houston, both of Tex., assignors to Shell Oil Company, Houston, Tex.
Filed May 29, 1980, Ser. No. 154,241
Int. Cl.³ G01V *1/38*
U.S. Cl. 367—17 **13 Claims**

1. A wide seismic source for towing by a vessel while conducting a marine survey comprising:
a plurality of elongated floats, a rudder means attached to the leading edge of each float, each of said rudder means comprising two separate rudders, one of said rudders being mounted with its vertical axis substantially normal to the surface of the water when said float is in its normal towed orientation, the second rudder being mounted with vertical axis at an angle to the rotational axis of said one of said rudders, the angle between the two rotational axes being chosen to position one of said rotational axes normal to the surface of the water when said float rotates when towed;
tow means attached to said floats and the vessel for towing said floats;
an elongated boom member suspended below each of said floats;
steering means disposed on said elongated floats to control said rudder means to maintain the floats in a desired lateral position with respect to the remainder of said floats;
a plurality of seismic sources attached to each elongated boom member; and,
means for firing said seismic sources.

4,323,990
SEISMIC EXPLORATION SYSTEM

James W. Goode, Dallas; Wayne A. Penner, Farmers Branch; Charles D. Ray, Dallas, and Robert G. Nelson, Carrollton, all of Tex., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Feb. 4, 1980, Ser. No. 118,299
Int. Cl.[3] G01V *1/24, 1/38*
U.S. Cl. 367—21 9 Claims



1. In a marine seismic exploration vessel having means for producing pulses of seismic energy and means for detecting seismic signals reflected from the earth's subsurface, a seismic signal recording system comprising:

analog-to-digital converter means for converting the seismic signals produced after each pulse of seismic energy to digital traces in an exploration format;

at least two digital computers each having means for converting the exploration format of said digital traces to digital records in a processing format;

means for recording said digital records; and

means for continuously alternating said digital traces of said analog-to-digital converter means to different ones of said computers so that capacity of said system for recording seismic records in processing format is increased.

4,323,991
FLUIDIC MUD PULSER

Allen B. Holmes, Rockville; Stacy E. Gehman, Takoma Park, and Maurice F. Funke, Columbia, all of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

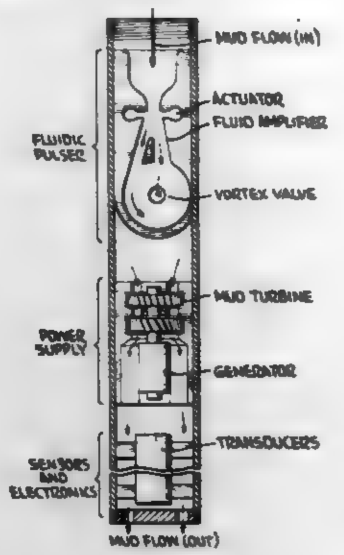
Filed Sep. 12, 1979, Ser. No. 74,636
Int. Cl.[3] G01V *1/40*
U.S. Cl. 367—83 11 Claims

1. Apparatus for producing pulses in a fluid passing through a conduit, comprising

a bi-stable fluid amplifier having an inlet means for receiving at least a portion of the fluid passing through the conduit, said bi-stable fluid amplifier further comprising two outlet paths, the fluid entering said inlet assuming and maintaining a stable flow condition through one of said two outlet paths,

a vortex valve associated with said fluid amplifier, a first of said outlet paths of the amplifier entering said vortex valve radially and a second of said outlet paths entering said vortex valve tangentially whereby said vortex valve will offer relatively low resistance to fluid flow when fluid enters said vortex valve through said first outlet path and relatively high resistance to fluid flow when fluid enters said vortex valve through said second outlet path,

control means associated with said fluid amplifier for abruptly altering said stable flow condition through said one outlet path, for deflecting the fluid entering said inlet toward the other of said outlet paths and for establishing and maintaining a stable flow condition through the other of said outlet paths,

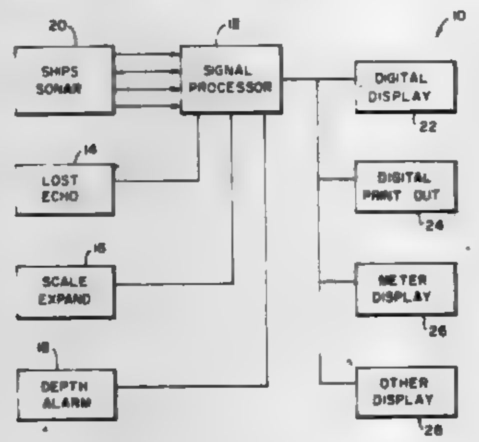


whereby the abrupt change in resistance to flow into and through said vortex valve results in abrupt changes in the rate of fluid flow into said inlet of said fluid amplifier, and pulses are generated in the fluid entering said amplifier.

4,323,992
DEPTH SOUNDER REPEATER STRUCTURE AND METHOD

Leo W. Tobin, Jr., Edwards Point Rd., Rumson, N.J. 07760

Continuation of Ser. No. 874,689, Feb. 2, 1978, abandoned, which is a continuation of Ser. No. 810,693, Jun. 28, 1977, abandoned, which is a continuation of Ser. No. 646,394, Jan. 2, 1976, abandoned. This application Nov. 1, 1979, Ser. No. 90,177
Int. Cl.[3] G01S *15/14*
U.S. Cl. 367—108 18 Claims

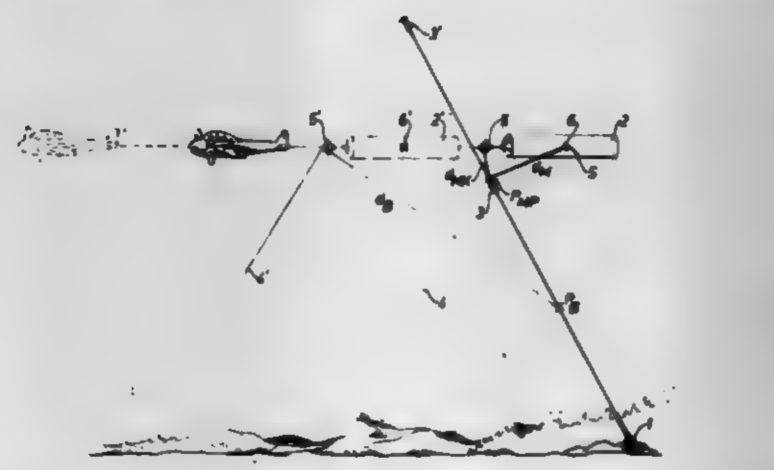


1. A depth sounder repeater structure for use in conjunction with shipboard sonar which shipboard sonar produces main transmitted pulses of high frequency energy and receives echo pulses from distant underwater objects the time between which is representative of an underwater distance, comprising a signal receiving circuit including a first inverter for receiving the main transmitted sonar pulses, a first multivibrator for receiving the output signal from the first inverter and the echo pulses for producing a square wave output signal, the pulse width of which is representative of the time between the main transmitted sonar pulse and the first corresponding echo signal, a first differentiator circuit for receiving the square wave signal and producing a positive and a negative going trigger signal in response thereto, a display timing circuit including a one-shot multivibrator for receiving the negative going trigger signal representative of the time of receipt of the echo signal operable to produce a second square wave output signal in response to the negative going trigger signal, and a second inverter circuit for inverting the second square wave signal, a differentiator connected to the second inverter for differentiating the inverted square wave output of the one-shot multivibrator to provide a display timing circuit trigger signal, a one and only one circuit including a third and fourth multivibrator, the third multivibrator being connected to the display timing circuit for receiving the display timing circuit trigger signal and operable on receipt of the display timing circuit trigger signal to prepare the fourth multivibrator to produce an output signal in response to the next following main transmitted sonar pulse through the first inverter, said fourth multivibrator being connected to receive the output signals from the first inverter and also being connected to receive echo input signals from the first differentiator operable to turn the fourth multivibrator off, said fourth multivibrator being operable on turning on to reset the third multivibrator so that the third multivibrator will not again prepare the fourth multivibrator to produce an output signal until the receipt of a further display timing circuit trigger signal, a timing oscillator, said fourth multivibrator being also operable to actuate the timing oscillator to produce periodic electric signals during the time the fourth multivibrator produces an output signal, and a display circuit including a plurality of binary coded decimal counters connected to receive the output impulses of the timing oscillator and to receive the display timing circuit trigger signal for resetting of the binary coded decimal counters, binary decoder structure connected to the binary coded decimal counters for decoding the binary coded decimal counter signals subsequent to the timing oscillator being shut off and a binary display circuit connected to the binary decoder circuits for providing a binary display of the distance between the sonar and the object which returned the first echo signal as represented by the electrical impulses from the timing oscillator in the time between a main sonar transmitted pulse and the corresponding first received echo pulse.

4,323,993
INDICATOR APPARATUS FOR DETERMINING THE MISS DISTANCE OF A PROJECTILE IN RELATION TO A FIXED OR MOVING TARGET

Olof Söderblom, Lidingö, and Lasse K. Karlsen, Solna, both of Sweden, assignors to Swedair AB, Stockholm, Sweden

PCT No. PCT/SE78/00106, § 371 Date Jul. 26, 1979, § 102(e) Date Jul. 26, 1979, PCT Pub. No. WO79/00452, PCT Pub. Date Jul. 26, 1979
PCT Filed Dec. 28, 1978, Ser. No. 154,406
Claims priority, application Sweden, Dec. 29, 1977, 7714913
Int. Cl.[3] G01S *5/18;* F41J *5/12*
U.S. Cl. 367—127 6 Claims



1. An indicator apparatus for determining a distance of a supersonic projectile in relation to a target, comprising:

at least four pressure sensing transducers for sensing the conical pressure wave generated by the supersonic projectile in at least four points, the at least four pressure transducers forming part of a first pressure transducer system,

means for measuring the time instants when the conical pressure wave is detected in the at least four transducers and for determining the time differences between the passages of the conical pressure wave past the at least four transducers in the first pressure transducer system;

means for detecting the pressure wave characteristics and generating electrical signals therefrom;

computing means coupled to said detecting means for calculating based on said electrical signals the distance from one pressure transducer to the point from which the conical pressure wave originated, the so-called "bang generation point";

said at least four transducers being arranged at the corners of a polyhedron, having as many corners as the number of transducers and being given fixed positions in a coordinate system with a known position relative to the target;

means for computing the direction of the speed vector of the conical pressure wave relative to said coordinate system from the determined time differences and thus the position of the bang generation point from the calculated distance to the bang generation point, thereby obtaining a first point on the projectile trajectory;

a second transducer system for sensing the firing time instant and including means for measuring the time from firing until the pressure wave is detected by said one pressure transducer in the first transducer system in order to determine the projectile speed and hence the apex angle of the conical pressure wave and thus the unit vector from the bang generation point to the firing point, said unit vector thereby defining the direction of the projectile trajectory, which together with the position of the bang generation point gives the trajectory per se; and

means for computing the size and direction of the vector between said coordinate system and the projectile at an arbitrary time instant and determining this vector when it has a certain size.

4,323,994
GEOPHONE SPRING

John M. Coogler, Houston, Tex., assignor to Geosource Inc., Houston, Tex.

Filed Mar. 31, 1980, Ser. No. 136,291
Int. Cl.[3] G01V *1/16;* F16F *1/34*
U.S. Cl. 367—183 4 Claims

1. A spring, for use in geophones to suspend an inertial mass structure from a fixed reference rigid support structure, which structures are coil and magnet assemblies, comprising:

an outer member;

an inner member; and

a plurality of leg members connecting the outer and inner members wherein each leg member is comprised of:

a substantially straight segment;

an outer arcuate segment connecting the substantially straight segment to the outer member; and

an inner arcuate segment connecting the substantially straight segment to the inner member.

4,323,995

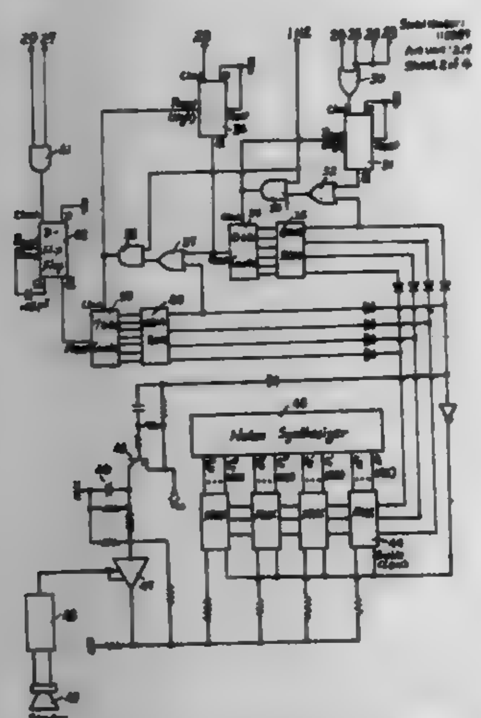
CHIME UNIT FOR ELECTRIC CLOCK AND MECHANICAL CLOCK

Te-Long Chiu, 6990 Grandwood Way, San Jose, Calif. 95120

Filed Jan. 18, 1980, Ser. No. 113,287

Int. Cl.³ G04B *21/02, 21/00*

U.S. Cl. 368—75 6 Claims



1. An electronic chime unit for electric and the mechanical clock comprising:

a quarter hourly signal generator consisting of quarter hourly position sensors, a flip flop, and a plurality of logic gates to receive a low frequency pulse as gating signal, and to a deliver quarter hourly triggering signal to a quarter hourly address counter and to provide a feedback signal to reset the said flip flop back to original state after delivering the quarter hourly signal to quarter a hourly address counter;

a quarter hourly address counter to receive the triggering signals from the said quarter hourly signal generator and from an output terminal of a quarter hourly chime memory, and to receive a reset signal from an hourly signal generator, and to provide address signals to the said quarter hourly chime memory;

a quarter hourly chime memory to receive address signals from the said quarter hourly address counter, and to provide notes selection signals to a chime note generation circuit, and to provide the triggering signal to the said quarter hourly address counter when the quarter hourly chime music is not completed, and to provide an enable signal to the chime note generation circuit, and to provide the activation signal to a decay generator to initiate the R C discharging of the voltage;

an hourly signal generator consisting of an hourly position sensor, a flip flop, and plurality of logic gates to receive a low frequency pulse as gating signal, and to deliver an hourly triggering signal to said hourly address counter, and to provide feedback signal to reset the said flip flop back to the original state after delivering the hourly triggering signal to an hourly address counter, and to deliver a reset signal to the said quarter hourly address counter;

an hourly address counter to receive triggering signals from the said hourly signal generator, and from an output terminal of an hourly chime memory, and to receive reset signal from post 12 o'clock signal generator, and to provide an address signal to said hourly chime memory;

an hourly chime memory to receive address signals from said hourly address counter, and to provide note selection signals to a chime note generation circuit, and to provide the triggering signal to the said hourly address counter when the hourly chime music is not completed, and to provide the enable signal to the chime note generation circuit, and to provide the activation signal to the decay generator to initiate the R C discharging of the voltage;

a post 12 o'clock signal generator consisting of post 12 o'clock position sensor, a flip flop, and a capacitor, and an AND gate to deliver post 12 o'clock reset signal to said hourly address counter;

a memory signals combiner consisting of a plurality of diodes to combine the output terminals of the said quarter hourly chime memory and those of the said hourly chime memory into a single set of common output terminals;

a notes synthesizer to generate a set of single frequency notes as the input signals to the input lines of a chime note generation circuit;

a chime note generation circuit consisting of a plurality of multiplexers having common address lines and a common enable terminal to receive a specific different single frequency note at each of their input lines from said notes synthesizer, and to receive from the said common output terminals of the said memory signals combiner the notes selection signals and enable signal, respectively, at the common address lines and the common enable line, and to mix the single frequency notes at the output terminals of the said multiplexers through resistors and deliver the mixed notes as a chime note to the input terminal of the voltage controlled amplifier;

a decay generator consisting of a transistor, and a plurality of resistors and capacitors to receive the activation signal from one of the common output terminals of the said memory signals combiner to initiate the R C discharging of the voltage, and to deliver the decaying voltage to a gain control terminal of a voltage controlled amplifier;

a voltage controlled amplifier to receive the decaying voltage from the said decay generator to the gain control terminal, and to receive the chime note from the said chime note generation circuit, and to deliver the decaying chime note at the output terminal to the input terminal of the audio amplifier;

an audio amplifier to receive the decaying chime note from the said voltage controlled amplifier, and to deliver the amplified decaying chime note at the output terminal to the input terminals of an electro-mechanical transducer;

an electro-mechanical transducer to convert the amplified decaying chime note from the said audio amplifier into the audible chime sound.

4,323,996

ELECTRONIC WRISTWATCH HAVING ELECTRIC TERMINAL CONTACTS

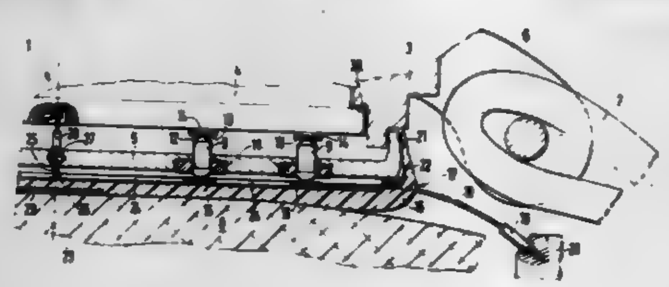
Wolfgang Ganter, Schramberg, Fed. Rep. of Germany, assignor to Gebruder Junghans GmbH, Schramberg, Fed. Rep. of Germany

Filed Sep. 16, 1980, Ser. No. 187,537

Claims priority, application Fed. Rep. of Germany, Oct. 4, 1979, 2940246

Int. Cl.³ G04C *23/02;* G04B *1/00, 37/00*

U.S. Cl. 368—88 13 Claims



1. An electronic wristwatch comprising:

a housing,

a clock module disposed within said housing,

said module including electric contact surfaces,

first electric contacts electrically connected with said contact surfaces and arranged on a bottom side of said housing, said first contacts enabling said module to be electrically connected to an auxiliary device, and

interchangeable bottom cap individually attachable to said housing over said first contacts and sized to enable the watch to be worn on a wearer's arm when a bottom cap is attached,

said bottom cap including second electric contacts arranged to engage different ones of said first contacts depending upon which bottom cap is attached to said watch, said bottom cap further including electrical connector means for attachment to an auxiliary device to electrically interconnect said module and the auxiliary device.

4,323,997

LINEAR-TRACKING PICK-UP ARM DRIVE ASSEMBLY

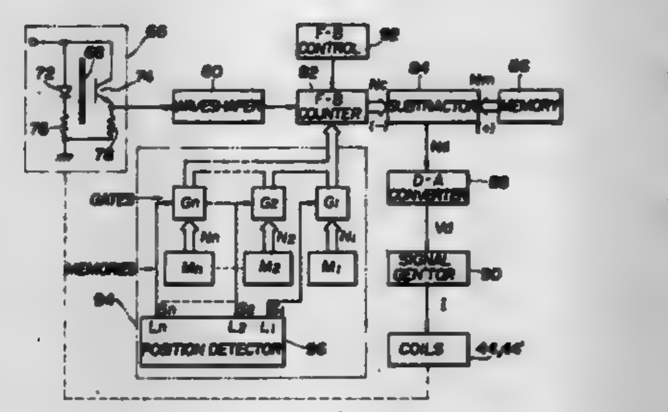
Hiroshi Kuribayashi, and Atsuo Ikeda, both of Tokorozawa, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Division of Ser. No. 41,403, May 21, 1979, abandoned. This application Sep. 29, 1980, Ser. No. 192,171

Claims priority, application Japan, May 23, 1978, 53-61228; May 12, 1979, 54-58179; 05121979, May 12, 1979, 54-58180

Int. Cl.³ G11B *19/14, 17/06*

U.S. Cl. 369—33 5 Claims



1. A linear-tracking pick-up arm drive assembly for a disc player, comprising at least one elongate stationary guide member, a movable unit having a pick-up arm supported thereon and longitudinally movable on and along said guide member, the pick-up arm being movable with said movable unit to and from a predetermined reference position, electrically operated drive means operative to drive said movable unit on and along said guide member, a rotary disc rotatable with the longitudinal movement of said movable unit, distance detecting means responsive to the rotational movement of said rotary disc and operative to produce a train of pulses representative of the distance of the pick-up arm moved from said reference position thereof, and a control circuit responsive to the pulses from said distance detecting means for energizing said drive means in accordance with the pulses from the distance detecting means, said control circuit comprising (A) a memory circuit operative to have stored therein a set of pulses representative of a predetermined distance of the pick-up arm from said reference position thereof, (B) a presettable forward-backward counter having a presetting terminal and an input terminal which is connected to said distance detecting means, the forward backward counter being operative to forwardly and backwardly count the pulses from said distance detecting means when said pick-up arm is being moved away from or toward said reference position thereof, (C) a subtractor connected between said memory circuit and said forward-backward counter and operative to produce a differential signal representative of the difference between the number of the pulses from the memory circuit and the number of the pulses from the forward-backward counter, (D) a control signal generator having an input terminal connected to said subtractor for converting said differential signal into a control signal for said drive means, and (D) signal correcting means responsive to predetermined transitive positions of the pick-up arm with respect to said reference position thereof and connected to the presetting terminal of said forward-backward counter, said signal correcting means being operative to produce pulses corresponding in number to each of said predetermined transitive positions of the pick-up arm and to preset the forward-backward counter when the pick-up arm is moved into each of said transitive positions, said signal correcting means comprising an arm position detector operative to produce pulses representative of said transitive positions of the pick-up arm, gate circuits having respective trigger terminals responsive to the pulses representative of said transitive positions, respectively, the gate circuits having respective output terminals jointly connected to the presetting terminal of said forward-backward counter; and memory circuits having respective output terminals respectively connected to the input terminals of said gate circuits, the memory circuits being operative to have stored therein signals which are respectively representative of the distances between said reference position and said transitive positions of the pick-up arm.

4,323,998

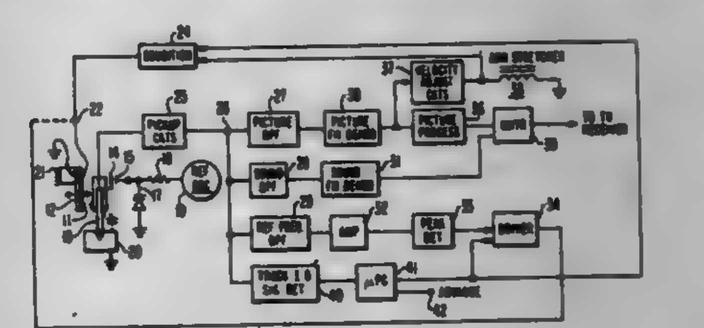
VIDEO DISC LOCKED GROOVE CORRECTOR

Kazuo Fukasawa, and Akira Yamada, both of Tokyo, Japan, assignors to RCA Corporation, New York, N.Y.

Filed Aug. 21, 1980, Ser. No. 180,325

Int. Cl.³ G11B *21/08*

U.S. Cl. 369—43 15 Claims



1. In a video disc player in which a signal pickup stylus cooperates with a disc record for recovering signals recorded in information bearing tracks during playback, said disc being subject to rotation to create relative velocity between the pickup stylus and the disc record, said information bearing tracks tending to be eccentric to the axis of rotation of said disc, and said disc being subject to having physical defects tending to disengage the pickup stylus from said tracks and to interfere with the normal progression of the signal pickup stylus across the record, apparatus for translating the signal pickup stylus radially across said disc comprising:

a carriage;

a stylus arm having said signal pickup stylus fixed at a first end, and having a second end;

means for securing the second end of the stylus arm to said carriage, the first end of the stylus arm being free to move relative to said carriage;

a longitudinal flexible member having a first end secured to said carriage at a point separate and distinct from said stylus arm and having a second end arranged proximate the first end of the stylus arm, said flexible member yieldably engaging the stylus arm during normal progression of the signal pickup stylus across the disc record and resisting disengagement of the pickup stylus from said information tracks due to disc defects.

4,323,999

AUTOMATIC TRANSMISSION OR RECORDING OR TRANSMISSION AND RECEPTION CONTROL SYSTEM

Naomi Yoshizawa, and Akira Terashima, both of Hatano, Japan, assignors to Pilot Mannenhitsu Kabushi Kaisha, Tokyo, Japan

Filed Apr. 28, 1980, Ser. No. 144,518

Claims priority, application Japan, Feb. 29, 1980, 55-24105

Int. Cl.³ G11B *15/00*

U.S. Cl. 369—19 13 Claims

6. An automatic recording control system employed in a recorder having a vibration pick-up microphone insertable in the external auditory canal of a user for picking up bone-conducted voice signals wherein tooth clicks of the user, transmitted through bones are picked up by the microphone means are provided for producing control signals from said tooth clicks, and means responsive to said control signals for the change-over of recording and end of recording stop according to the input order in which control signals are applied.

4,324,000

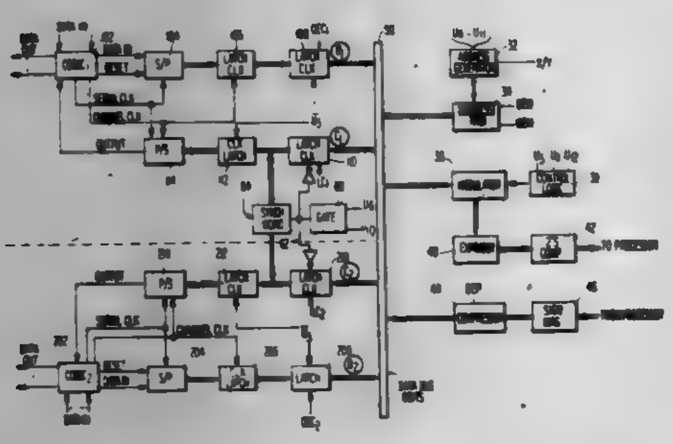
TERMINATION CIRCUIT FOR FDM/TDM PROCESSORS

Zaheer M. Ali, Santa Maria, Calif., assignor to Communications Satellite Corporation, Washington, D.C.

Filed Jan. 9, 1980, Ser. No. 110,590

Int. Cl.³ H04J *1/05, 3/02*

U.S. Cl. 370—85 11 Claims



11. In a data transmission system having first and second data sources each having a first number of channels, a memory for receiving data provided by said sources, data processing means for receiving data provided by said memory and having a second number of channels being greater than said first number of channels, data flow control means for controlling the flow of data from said first and second data sources to said memory and from said memory to said data processing means, and memory address control means for controlling the location of data received by and transmitted from said memory,

a method of multiplexing said first and second data sources comprising:

(a) alternately providing said memory with data from said first and second data sources;

(b) writing said alternately provided data into said memory at first and second alternating and increasing memory locations during memory write cycles said first and second alternating memory locations being separated in said memory by a number of locations substantially equal to said first number of channels;

(c) interleaving said memory write cycles with memory read cycles wherein data words are read from said memory at third increasing memory locations and provided to said data processing means.

4,324,001

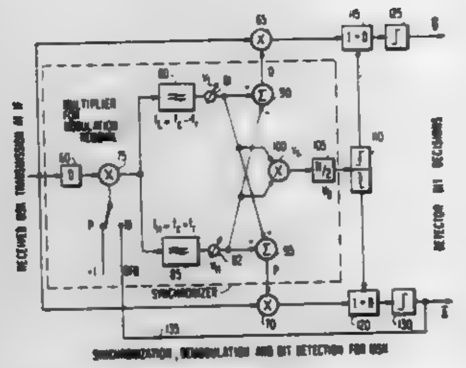
SYNCHRONIZER FOR MSK BURST COMMUNICATIONS

Smith A. Rhodes, Falls Church, Va., assignor to Communications Satellite Corporation, Washington, D.C.

Filed Aug. 15, 1980, Ser. No. 178,411

Int. Cl.³ H04L *27/10*

U.S. Cl. 375—90 12 Claims



1. An apparatus for demodulating a burst signal having a preamble portion and a message portion comprising

first (70) and second (65) mixers having said burst signal applied directly thereto;

a third mixer having said burst signal applied thereto by way of delay means;

first and second band pass filters receiving an output of said third mixer, said first and second band pass filters having upper and lower center frequencies, respectively;

first signal combining means (90, 95) receiving outputs from said first and second band pass filters for providing first and second reference signals in phase quadrature, said first and second reference signals being applied to said first and second mixers, respectively, to thereby demodulate said burst signal with (i) said first reference signal in said first mixer and (ii) said second reference signal in said second mixer;

second signal combining means receiving outputs from said first and second band pass filters for providing first and second timing signals;

first and second data generating means receiving outputs from said first and second mixers, respectively, for generating first and second binary signals under the control of said first and second timing signals;

means (135) for applying said first binary signal to said third mixer when said message portion of said burst signal is being received to thereby demodulate the polarity of said message portion in accordance with said first binary signal; and

means for applying a constant signal level to said third mixer when said preamble portion of said burst signal is being received to thereby avoid polarity demodulation of said preamble portion of said burst signal.

4,324,002

DELAY-MODULATED RANDOM ENERGY INTELLIGENCE COMMUNICATION SYSTEM

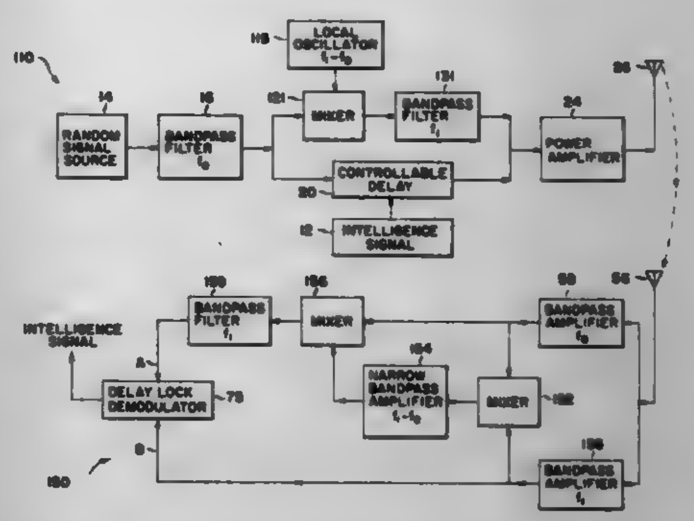
James J. Spilker, Jr., Palo Alto, Calif., assignor to Lockheed Missiles & Space Company, Inc., Sunnyvale, Calif.

Filed Mar. 18, 1960, Ser. No. 17,729

Int. Cl.³ H04K *1/00*

U.S. Cl. 455—27 8 Claims

1. An intelligence communication system comprising a transmitter and a receiver; said transmitter comprising nonperiodic energy means for generating a carrier, means for effecting a change in the time or frequency domain of the carrier signal whereby a reference signal is generated, means for effecting a variable delay in said carrier signal in accordance with the intelligence to be communicated whereby a message signal is generated, and means for radiating the reference and message signals; said receiver comprising means for picking up the reference and message signals, means for effecting a change in the picked up signal which change is complementary with that caused by first said change effecting means, and means responsive to said picking up means and last said



change effecting means for deriving the intelligence signal therefrom.

DESIGN PATENTS

GRANTED APR. 6, 1982

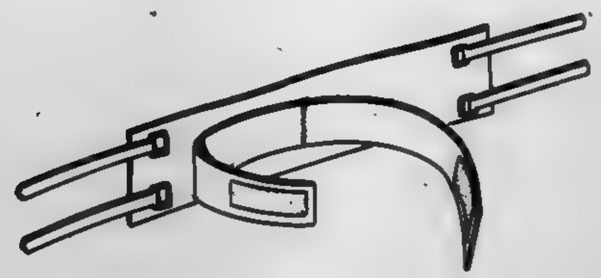
ERRATA

For CLASS	See PATENT NO.
D32–070	263,672
D34–024	263,690
D34–026	263,691
D34–029	263,692

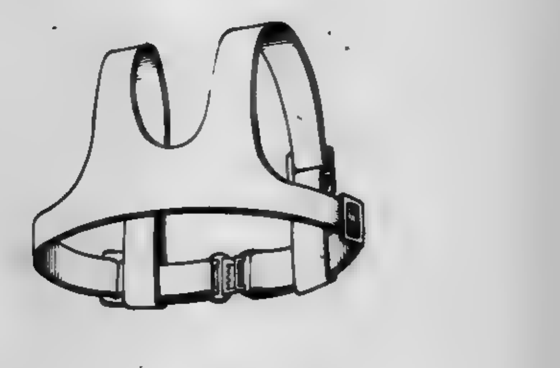
DESIGNS

APRIL 6, 1982

263,640
PATIENT SUPPORTING HARNESS OR SIMILAR ARTICLE
Rutger Nandorf, S-593 00 Västervik, Sweden
Filed Dec. 11, 1979, Ser. No. 102,565
Claims priority, application Sweden, Jun. 11, 1979, 79-1437
Term of patent 7 years
Int. Cl. D2—*02, 07*
U.S. Cl. D2—27

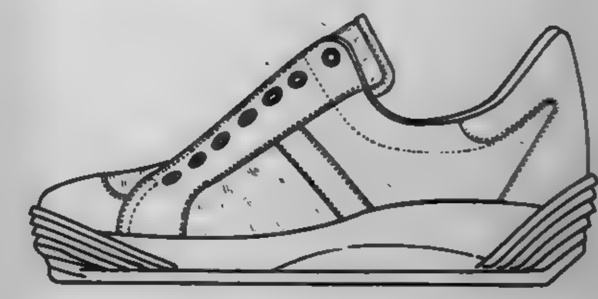


263,641
WHEEL CHAIR POSITIONING HARNESS OR THE LIKE
Rutger Nandorf, S-593 00 Västervik, Sweden
Filed Dec. 11, 1979, Ser. No. 102,631
Claims priority, application Sweden, Nov. 6, 1979, 79-1436
Term of patent 3½ years
Int. Cl. D2—*02*
U.S. Cl. D2—27

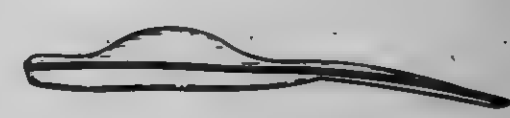


263,642
OVERSHOE
Shirley M. Colley, 410 Briar Ave., Ottawa, Canada (K1H 5H6)
Filed May 17, 1979, Ser. No. 39,764
Claims priority, application Canada, Mar. 15, 1979, 15-03-79-1
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—271

263,643
SHOE
Christian Vermonet, Cholet, France, assignor to Societe Technisynthese (S.A.R.L.), Saint Pierre, France
Filed May 6, 1980, Ser. No. 147,321
Term of patent 7 years
Int. Cl. D2—*04*
U.S. Cl. D2—309



263,644
INNERSOLE
Keith E. Vinnecour, Van Nuys, Calif., and Richard B. Schwartz, Woodcliff Lake, N.J., assignors to Apex Foot Products Corp., Englewood, N.J.
Filed Feb. 22, 1980, Ser. No. 123,843
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—318

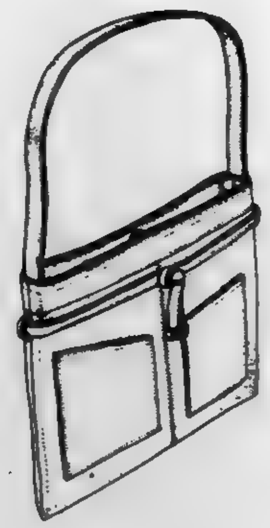


263,645
SOLE FOR A SHOE
Robert J. Mastrantuone, Waterbury, Conn., assignor to The Keds Corporation, Cambridge, Mass.
Filed Mar. 21, 1980, Ser. No. 133,482
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—320

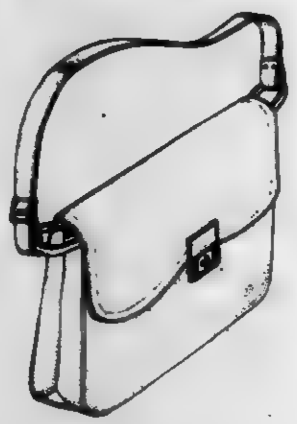
263,646
SHOE SOLE
Jeremy J. Railton, Los Angeles, Calif., assignor to Jungle Feet, Los Angeles, Calif.
Filed Apr. 21, 1980, Ser. No. 142,068
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—321

263,647
SHOE SOLE
Jeremy J. Railton, Los Angeles, Calif., assignor to Jungle Feet, Los Angeles, Calif.
Filed Apr. 21, 1980, Ser. No. 142,070
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—321

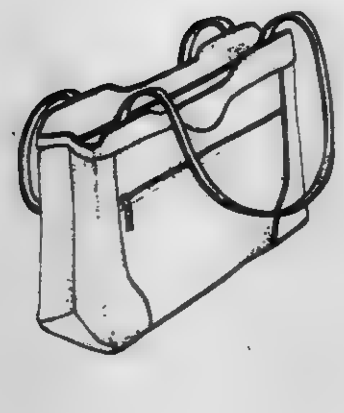
263,648
HANDBAG
Otto K. Schimmel, Scottsdale, Ariz., assignor to Amba Marketing Systems, Inc., Tempe, Ariz.
Filed Mar. 24, 1980, Ser. No. 133,546
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D3—44



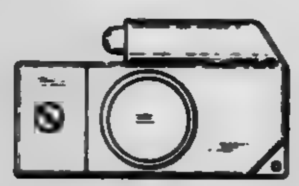
263,649
HANDBAG
Otto K. Schimmel, Scottsdale, Ariz., assignor to Amba Marketing Systems, Inc., Tempe, Ariz.
Filed Mar. 24, 1980, Ser. No. 133,547
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D3—52



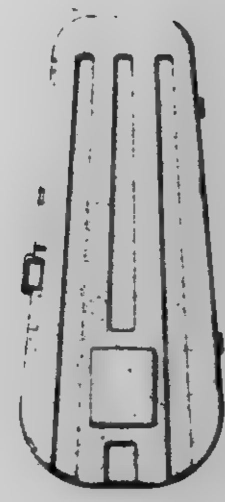
263,650
HANDBAG
Otto K. Schimmel, Scottsdale, Ariz., assignor to Amba Marketing Systems, Inc., Tempe, Ariz.
Filed Mar. 24, 1980, Ser. No. 133,545
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D3—53

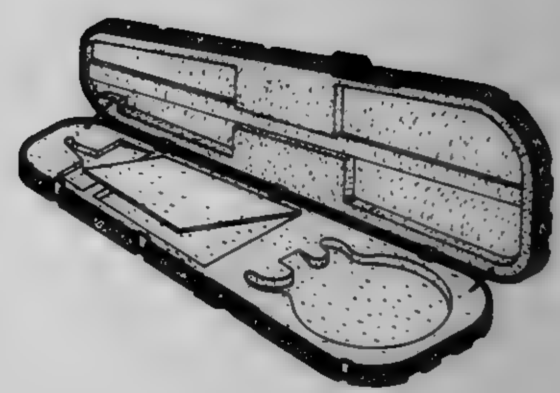


263,651
COMBINED KEY HOLDER AND LIGHT
Santino D. Mao, Oakland, Calif., assignor to Tri-Delta Industries, Inc., Hayward, Calif.
Continuation-in-part of Ser. No. 107,909, Dec. 28, 1979. This application Apr. 30, 1980, Ser. No. 141,296
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D3—63

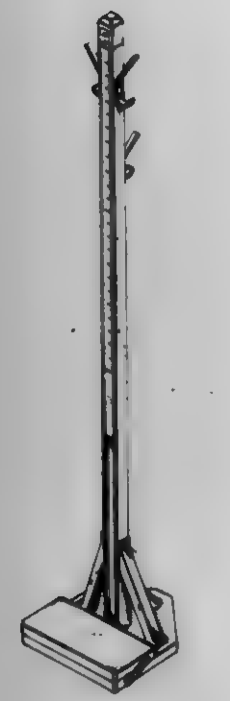


263,652
GUITAR CASE
Hartley D. Peavey, P.O. Box 2898, Meridian, Miss. 39301
Filed Mar. 25, 1980, Ser. No. 133,873
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D3—73

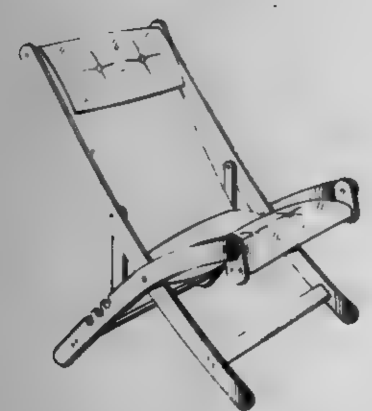




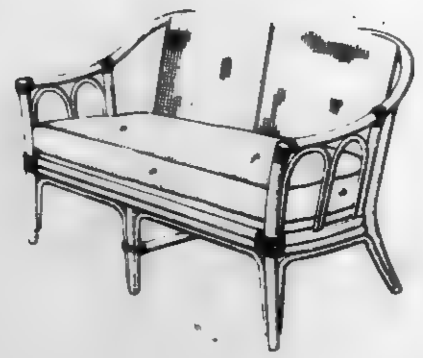
263,653
COMBINED CLOTHES TREE AND HEIGHT MEASURING UNIT
William Viets, 849 Barth La., Kettering, Ohio 45429
Filed May 19, 1980, Ser. No. 151,318
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—28



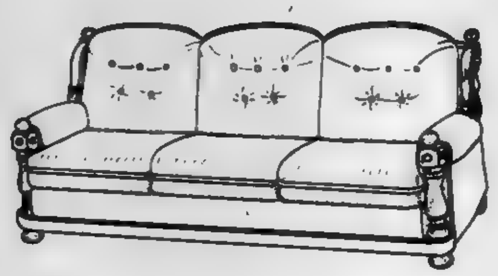
263,654
SLING CHAIR
Donald J. Borichevsky, Wells, Vt., assignor to The Telescope Folding Furniture Co., Inc., Granville, N.Y.
Filed Jun. 15, 1979, Ser. No. 48,835
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—41



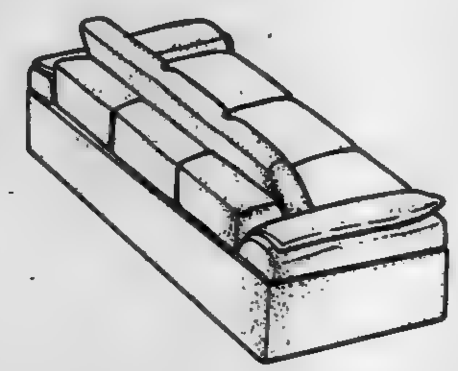
263,655
LOVESEAT
Mike T. Claman, New York, N.Y., assignor to Lewittes Furniture Enterprises, Inc., New York, N.Y.
Filed Jul. 19, 1979, Ser. No. 59,065
Term of patent 3½ years
Int. Cl. D6—*01*
U.S. Cl. D6—57



263,656
SEAT
David P. G. Williams, Englewood, N.J., assignor to The Bean Station Furniture Company, Bean Station, Tenn.
Filed Oct. 15, 1979, Ser. No. 85,224
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—62

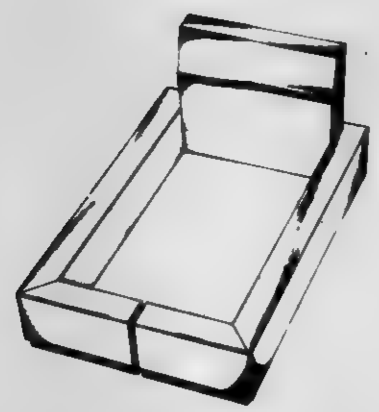


263,657
SOFA
Giorgia Saporiti, Besnate (Varese), Italy
Filed Apr. 30, 1979, Ser. No. 34,484
Claims priority, application Italy, Feb. 28, 1979, 60907 B/79
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—63

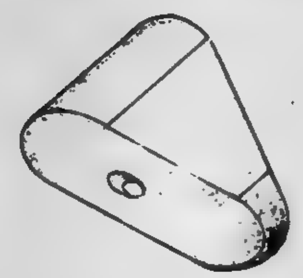


263,658
ARMCHAIR
Giorgia Saporiti, Besnate (Varese), Italy
Filed Apr. 30, 1979, Ser. No. 34,485
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—71

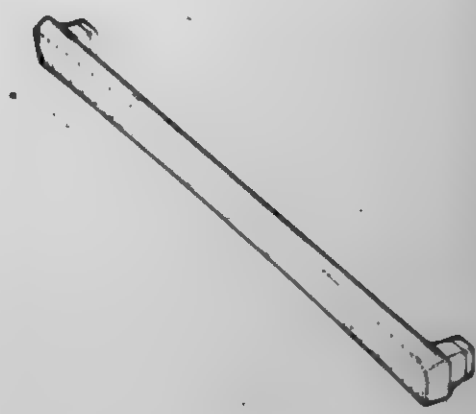
263,659
MATTRESS ENCLOSURE
Francine H. Cohen, and Arthur B. Cohen, both of 286 Redmond Rd., South Orange, N.J. 07079
Filed May 18, 1978, Ser. No. 907,068
Term of patent 3½ years
Int. Cl. D6—*01*
U.S. Cl. D6—83



263,660
BATH SAFETY HANDLE
Andre Primault, Garches, France, assignor to Societe Generale de Fonderie, Paris, France
Filed Jan. 31, 1979, Ser. No. 8,036
Claims priority, application France, Aug. 2, 1978, 78-76776
Term of patent 14 years
Int. Cl. D23—*02*; D8—*06*
U.S. Cl. D6—86



263,661
TOWEL RACK
Bruce R. Thompson, Tranmere, Australia, assignor to UPL Group Limited, Brisbane, Australia
Filed Feb. 13, 1980, Ser. No. 121,235
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D6—99

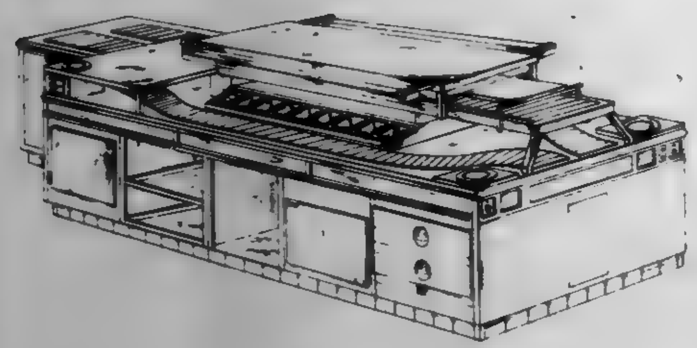


263,662
TOWEL RACK
Bruce R. Thompson, Tranmere, Australia, assignor to UPL Group Limited, Brisbane, Australia
Filed Feb. 22, 1980, Ser. No. 123,557
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D6—99

263,663
HAMMOCK
Roger C. Moreau, 7 Galway Grove, Tranmere, South Australia, Australia
Filed May 11, 1979, Ser. No. 38,220
Claims priority, application Australia, Apr. 6, 1979, 77536
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—113

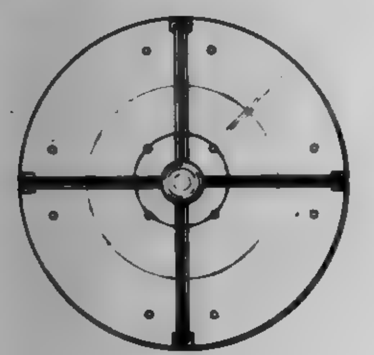
263,664
FAST FOOD SERVICE TABLE
Wayne C. Workman, 1002 Jarrett Cir., Ames, Iowa 50010
Filed Oct. 6, 1978, Ser. No. 949,106
Term of patent 14 years
Int. Cl. D6—*04*

U.S. Cl. D6—164



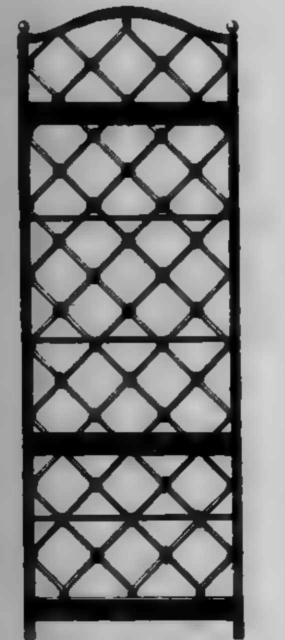
263,665
ROTATING MODULAR ALBUM HOLDER AND SUPPORTING BASE THEREFOR
Gerald R. Anderson, 2241 Donna Dr., Norman, Okla. 73069
Filed Jul. 17, 1978, Ser. No. 924,989
Term of patent 14 years
Int. Cl. D6—*04*

U.S. Cl. D6—185



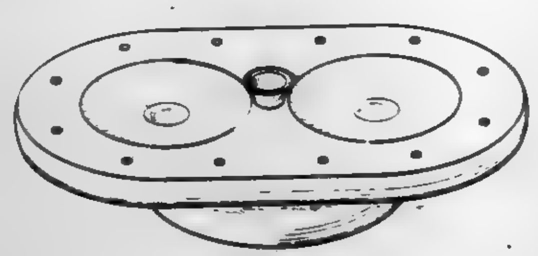
263,666
ETAGERE OR THE LIKE
Joseph E. Adkinson, 3807 Leland St., Chevy Chase, Md. 20015
Filed Aug. 28, 1979, Ser. No. 70,437
Term of patent 14 years
Int. Cl. D6—*04*

U.S. Cl. D6—186



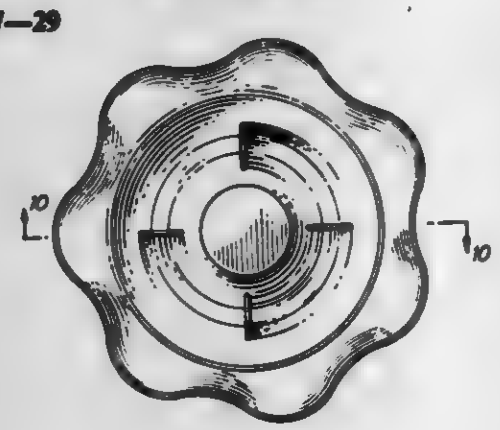
263,667
LIQUEUR SERVICE TRAY
Sidney Joseph E. Turcotte, Jr., 115 Main St. E., Hamilton, Ontario, Canada (L8N 1G5)
Filed Aug. 2, 1979, Ser. No. 63,065
Term of patent 14 years
Int. Cl. D7—*06, 99*

U.S. Cl. D7—22



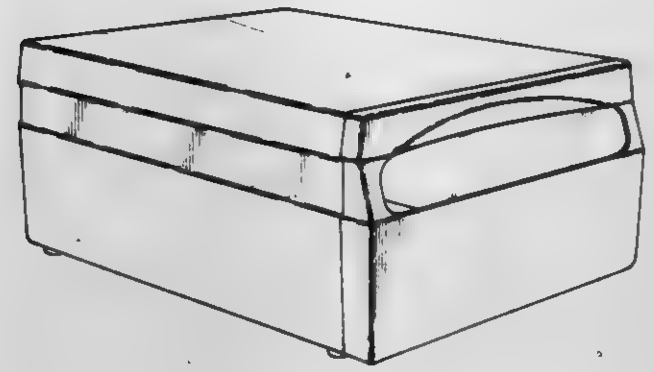
263,668
BOWL
Lawrence M. Knutson, Prior Lake, Minn., assignor to Decra-Stone, Inc., Prior Lake, Minn.
Filed Jan. 31, 1978, Ser. No. 873,965
Term of patent 14 years
Int. Cl. D7—*01*

U.S. Cl. D7—29



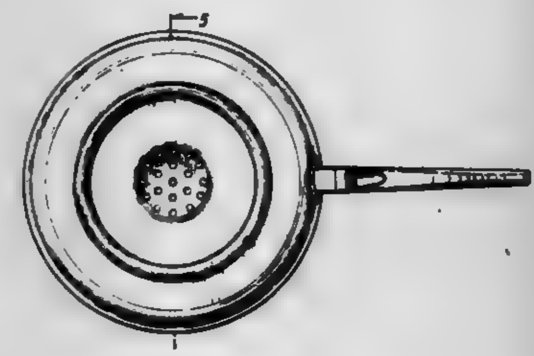
263,669
NAPKIN DISPENSER
Scott J. Collins, Brown Deer, Wis., assignor to Georgia-Pacific Corporation, Portland, Oreg.
Filed Jan. 11, 1980, Ser. No. 111,397
Term of patent 14 years
Int. Cl. D7—*06*

U.S. Cl. D7—72



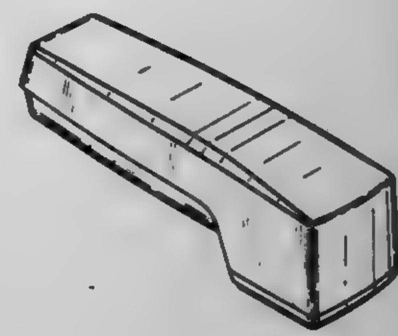
263,670
COOKING PAN
Albert C. Schawalder, Via Sorengo 2, 6900 Lugano-Besso, Switzerland
Filed Mar. 20, 1980, Ser. No. 132,361
Term of patent 14 years
Int. Cl. D07—*02*

U.S. Cl. D7—95



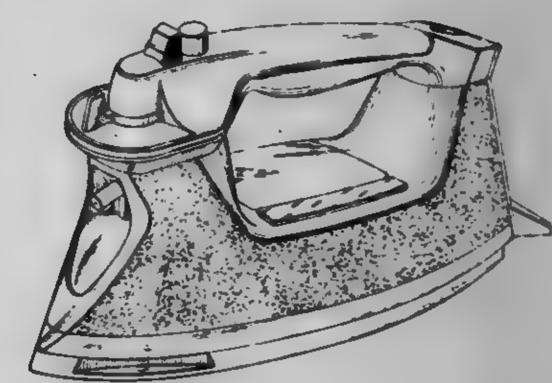
263,671
FOOD MIXER POWER UNIT
Ying H. Chan, Kowloon, Hong Kong, assignor to Starry Electric Manufactory Ltd., Hong Kong
Filed Nov. 1, 1979, Ser. No. 90,453
Claims priority, application United Kingdom, May 9, 1979, 989843
Term of patent 14 years
Int. Cl. D7—*04*

U.S. Cl. D7—158



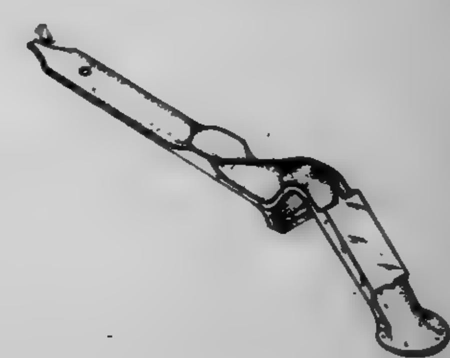
263,672
IRON OR SIMILAR ARTICLE
John C. Shalvoy, Fairfield, Conn., assignor to General Electric Company, New York, N.Y.
Filed Feb. 25, 1980, Ser. No. 124,424
Term of patent 14 years
Int. Cl. D7—*05*

U.S. Cl. D32—70



263,673
PRY TOOL FOR PLASTIC TUBS OR THE LIKE
John J. Sheehan, Carr Creek Rd., P.O. Box 38, Glencoe, Mo. 63038
Filed Feb. 21, 1980, Ser. No. 123,280
Term of patent 14 years
Int. Cl. D8—*05*

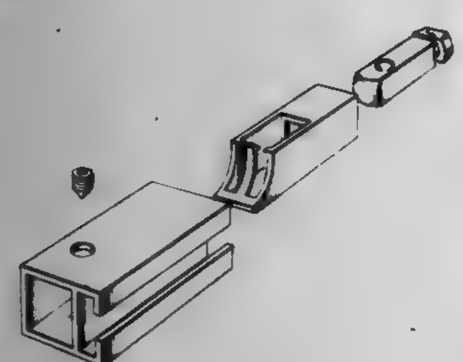
U.S. Cl. D8—18



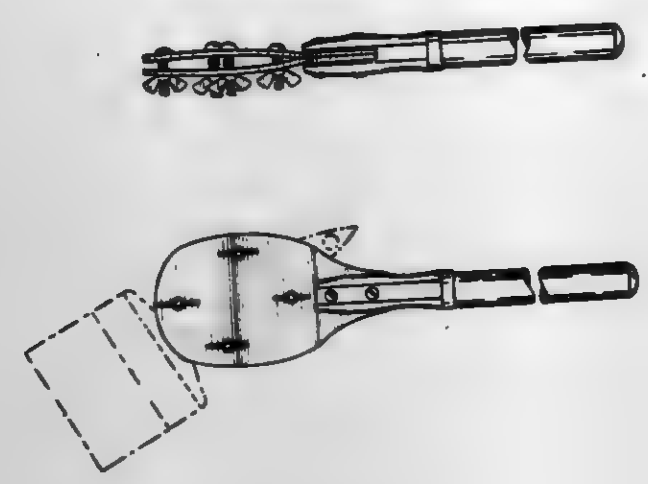
263,674
COMBINATION HYDRANT SPANNER AND LUG WRENCH
Karl Ebert, Giengen, Fed. Rep. of Germany, assignor to Max Widenmann Armaturenfabrik, Giengen, Fed. Rep. of Germany
Filed Feb. 12, 1979, Ser. No. 11,576
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—27

263,675
STRIKE PLATE
Steve P. Vorves, 6250 Lyons, Garland, Tex. 75043
Filed Mar. 19, 1979, Ser. No. 21,848
Term of patent 14 years
Int. Cl. D8—*07*
U.S. Cl. D8—343

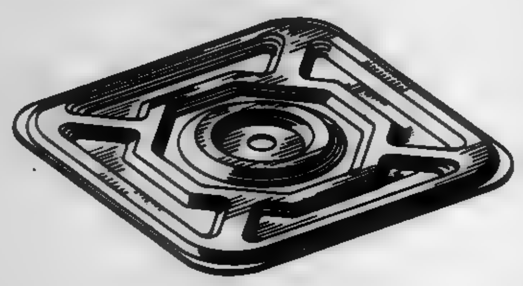
263,676
LOCK HOUSING WITH CONNECTING MECHANISMS
Olof B. Wahlin, Hinsholmsgatan 7, 421 77 Västra Frölunda, Sweden
Filed Oct. 29, 1979, Ser. No. 88,756
Claims priority, application Sweden, Apr. 27, 1979, 79-1090
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—382



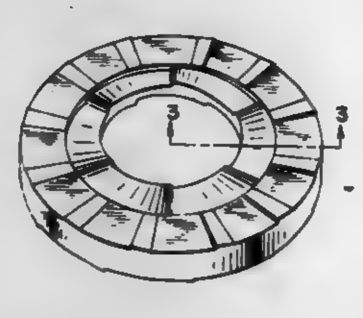
263,677
PAINT BRUSH EXTENSION CLAMP
Charles A. Clark, 764 N. Madison Ave., Los Angeles, Calif. 90029
Filed Dec. 11, 1978, Ser. No. 968,390
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D8—396



263,678
ROOF INSULATION WASHER
George G. Dewey, Prospect Heights, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.
Filed Nov. 7, 1979, Ser. No. 92,161
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—399



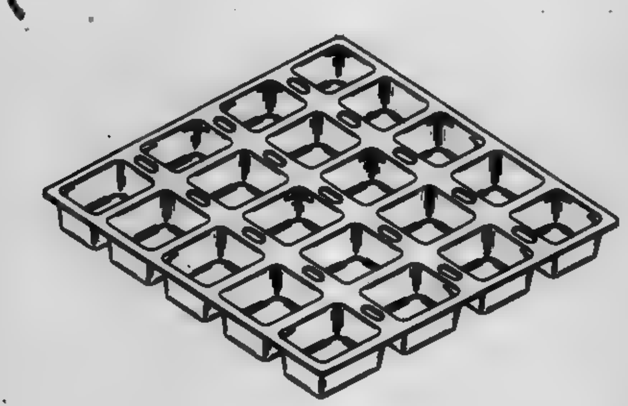
263,679
REVERSIBLE LOCK WASHER
Bengt O. Frieberg, 869 Picacho, La Habra Heights, Calif. 90631
Filed Aug. 22, 1980, Ser. No. 180,410
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—399



263,680
EGG CARTON
Jørgen Schrøder, Copenhagen, Denmark, assignor to Aktieselskabet Brødrene Hartmann, Lyngby, Denmark
Filed Jan. 30, 1979, Ser. No. 7,696
Claims priority, application Denmark, Aug. 1, 1978, 997/78
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—341

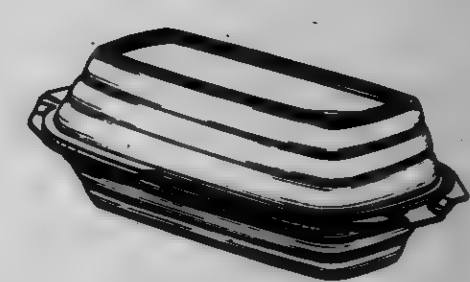
263,681
JELLY CUP TRAY
Raymond A. Parr, Sunnyvale, Calif., assignor to Guardian Packaging Corporation, Newark, Calif.
Filed May 17, 1979, Ser. No. 39,816
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—341

263,682
JELLY CUP TRAY
Henry R. Urciuoli, Brea, Calif., assignor to Guardian Packaging Corporation, Newark, Calif.
Filed May 17, 1979, Ser. No. 39,842
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—341

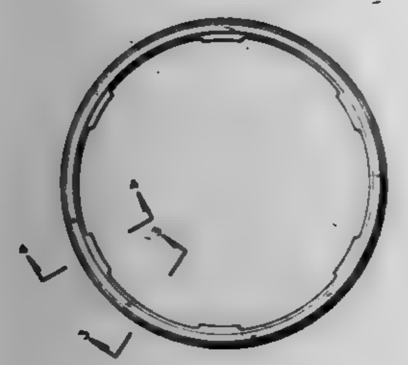


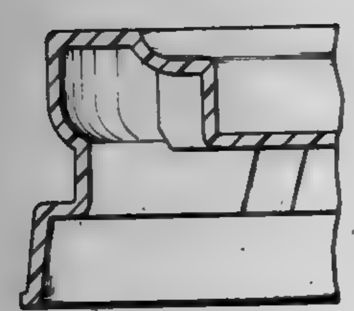
263,683
BOTTLE OR SIMILAR ARTICLE
Serge Manasse, Neuilly sur Seine, France, assignor to Lever Brothers Company, New York, N.Y.
Filed Jan. 28, 1980, Ser. No. 115,990
Claims priority, application United Kingdom, Aug. 28, 1979, 991332/79
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—400

263,684
CONTAINER FOR FOOD OR THE LIKE
Paul Davis, Swampscott, Mass., assignor to Sweetheart Plastics, Inc., Wilmington, Mass.
Filed Dec. 3, 1979, Ser. No. 99,595
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D9—426

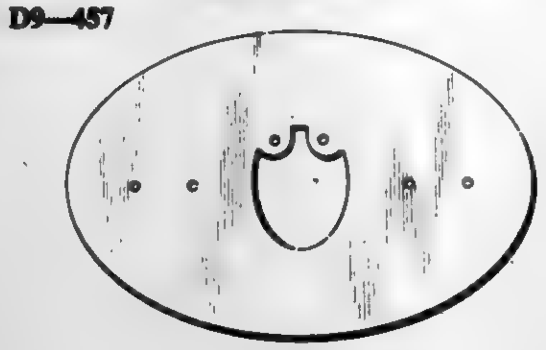


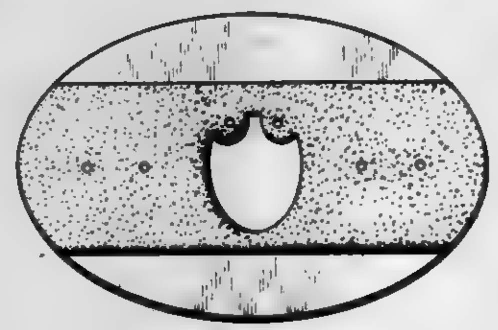
263,685
CLOSURE OR SIMILAR ARTICLE
Ernest L. Smith, Kansas City, Mo., assignor to Phillips Petroleum Company, Bartlesville, Okla.
Continuation of Ser. No. 851,652, Nov. 15, 1977, abandoned, which is a division of Ser. No. 675,404, Apr. 9, 1976, Pat. No. 249,643, which is a continuation-in-part of Ser. No. 588,122, Jun. 18, 1975, abandoned. This application Aug. 2, 1979, Ser. No. 63,327
Term of patent 14 years
Int. Cl. D09—*07*
U.S. Cl. D9—452

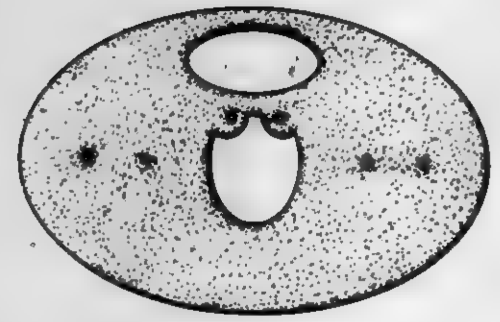




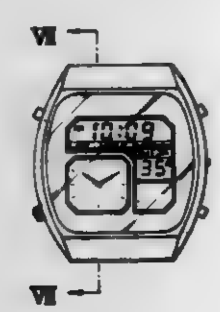
263,686
JEWELRY DISPLAY CARD
Bruce S. Jeremiah, 387 Charles St., Providence, R.I. 02904
Filed Dec. 31, 1979, Ser. No. 109,458
Term of patent 14 years
Int. Cl. D9—*99*
U.S. Cl. D9—457







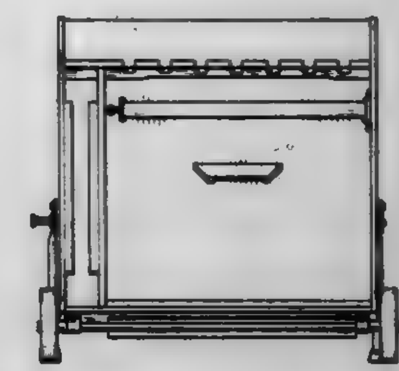
263,687
WRIST WATCH
Yutaka Fukumura, Murayama, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan
Filed Jun. 6, 1979, Ser. No. 47,826
Claims priority, application Japan, Jan. 22, 1979, 1439
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—39

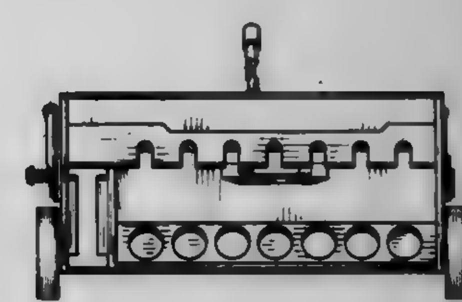


263,688
THERMOSTAT CASING
Joseph Bologna, Woodbury, N.Y.; William Blasnik, Demarest, N.J., and Philip Torbet, Port Washington, N.Y., assignors to Bogo Sales Co., W. Hempstead, N.Y.
Filed Jan. 8, 1979, Ser. No. 1,401
Term of patent 14 years
Int. Cl. D10—*07*
U.S. Cl. D10—60

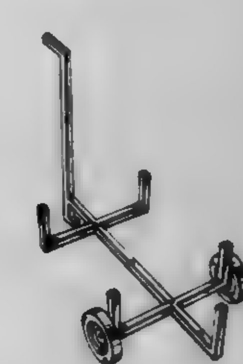
263,689
SEASHELL DISPLAY
Charles F. Moore, 3306 Beverly Rd., Baltimore, Md. 21214
Filed Jul. 18, 1979, Ser. No. 58,498
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—135

263,690
BASEBALL EQUIPMENT CART
Bernard C. Laub, Tulsa, Okla., assignor to Hugh J. Flanerty, Tulsa, Okla.
Filed Feb. 22, 1979, Ser. No. 13,882
Term of patent 14 years
Int. Cl. D12—*02*
U.S. Cl. D34—24

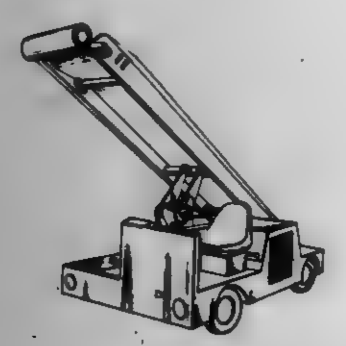




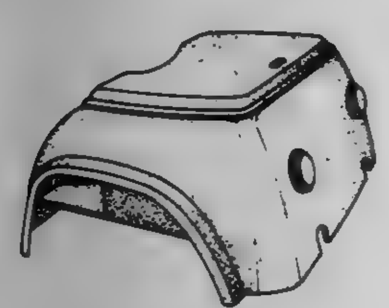
263,691
CART
W. Lynn Streiff, 3230 Inspiration Dr., Colorado Springs, Colo. 80917
Filed Mar. 22, 1979, Ser. No. 22,713
Term of patent 14 years
Int. Cl. D12—*02*
U.S. Cl. D34—26



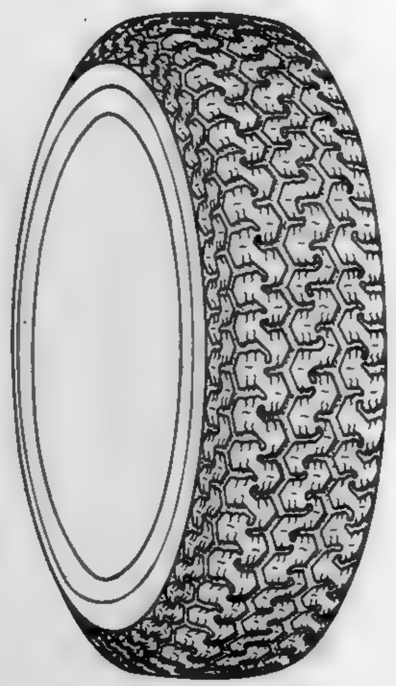
263,692
BELT LOADER
Walter W. Conrad, Terrance, Calif., assignor to W W Industries, Inc., Hawthorne, Calif.
Filed Dec. 10, 1979, Ser. No. 102,143
Term of patent 14 years
Int. Cl. D12—*05*
U.S. Cl. D34—19



263,693
THREE WHEEL MOTORCYCLE BODY
James S. Kaiser, Rte. #3 Crawford Dr., Proctorville, Ohio 45669; John D. Vincent, 585 McCutcheon, Columbus, Ohio 43230; Roger C. Vincent, 128 Cleveland Ave., Milford, Ohio 45150, and Ricky L. Davis, Orient, Ohio, assignors to James Stewart Kaiser, Proctorville; John Denny Vincent, Columbus and Roger C. Vincent, Milford, all of, Ohio
Filed Nov. 7, 1979, Ser. No. 92,201
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—110

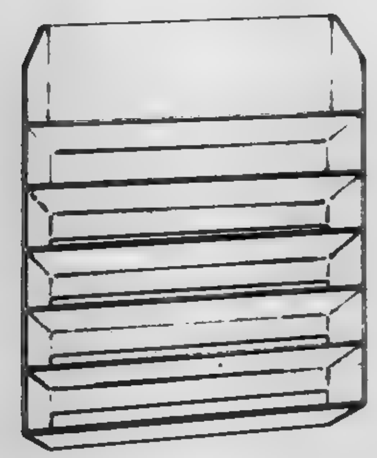


263,694
TIRE
Gernot Arendt, Tribuswinkel, Austria, assignor to Semperit Aktiongesellschaft, Vienna, Austria
Filed Jun. 11, 1979, Ser. No. 47,494
Claims priority, application Austria, Dec. 21, 1978, 514972
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—143

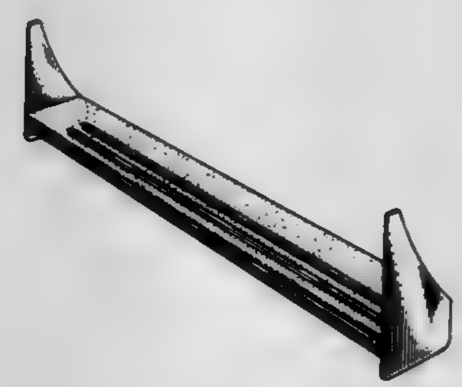


263,695
ANTENNA MOUNTING DEVICE
Russell A. Reber, 244 Neptune Ave., Beachwood, N.J. 08722
Filed Jan. 25, 1979, Ser. No. 6,315
Term of patent 14 years
Int. Cl. D12—*08*
U.S. Cl. D12—155

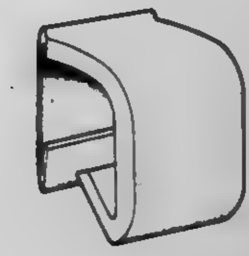
263,696
SPLASH GUARD FOR MOUNTING BEHIND A VEHICLE WHEEL
Ingemar Regler, Stocksund, Sweden, assignor to Safety Vehicles Development A.B., Stocksund, Sweden
Filed Apr. 2, 1979, Ser. No. 26,350
Claims priority, application Sweden, Oct. 2, 1978, 782258
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—185



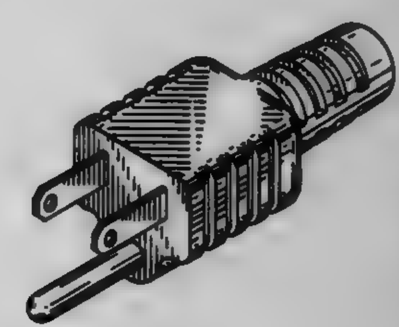
263,697
RUNNING BOARD
Thomas J. Mathews, 206 S. Locust, Canby, Oreg. 97013
Filed Oct. 15, 1979, Ser. No. 84,818
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—203



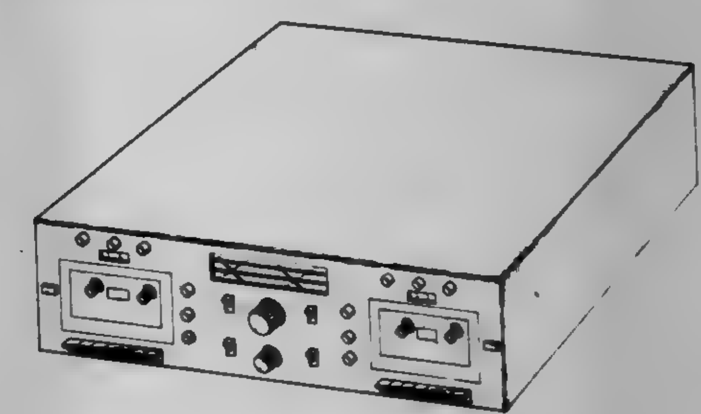
263,698
SLEEVE FOR MARKING ELECTRICAL WIRES AND CABLES
Göran Lööf, Gullspang, and Lars Skarin, Otterbäcken, both of Sweden, assignors to Partex Fabriksaktiebolag, Gullspang, Sweden
Filed Mar. 29, 1979, Ser. No. 25,154
Claims priority, application Sweden, Sep. 29, 1978, 78-2242
Term of patent 14 years
Int. Cl. D13—*99*
U.S. Cl. D13—13



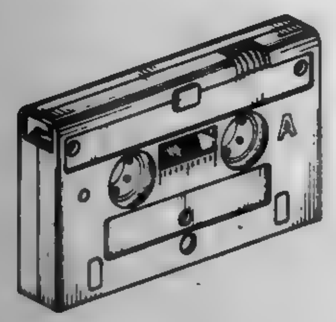
263,699
POWER CORD PLUG
Gary W. Vest, and John W. Marcuse, both of Cleveland, Ohio, assignors to New Era Products, Inc., Cleveland, Ohio
Filed Aug. 24, 1979, Ser. No. 69,273
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—28



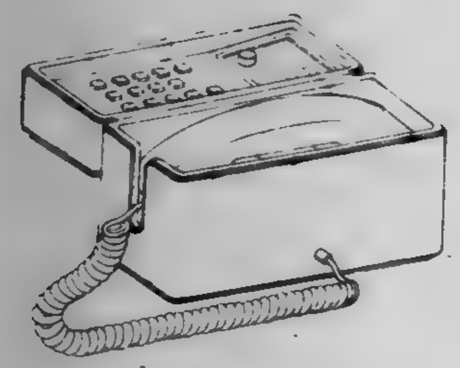
263,700
CASSETTE DECK
Warren B. Kice, Potomac, Md.
Filed Aug. 22, 1980, Ser. No. 181,642
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—6



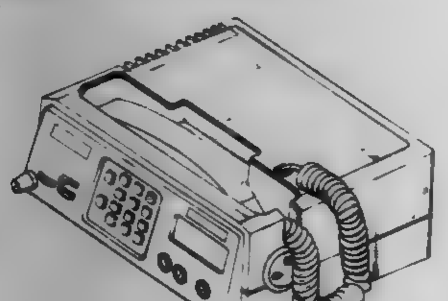
263,701
TAPE CARTRIDGE
Kaoru Morita, Yokohama, Japan, assignor to Echo Sonic Co., Ltd., Tokyo, Japan
Filed Feb. 5, 1980, Ser. No. 118,825
Claims priority, application Japan, Oct. 3, 1979, 54-04172
Term of patent 14 years
Int. Cl. D14—*99*
U.S. Cl. D14—11



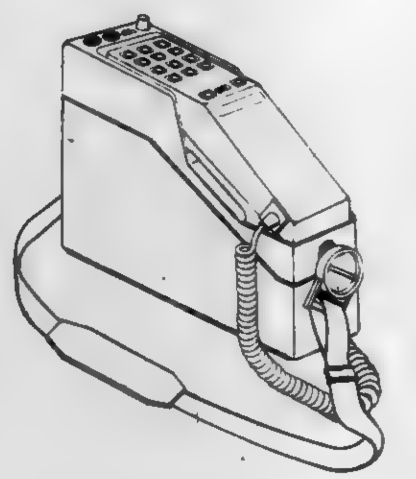
263,702
VEHICULAR TELEPHONE SET
Hisao Fukushima, and Junji Hirooka, both of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan
Filed Jul. 5, 1979, Ser. No. 54,839
Claims priority, application Japan, Jan. 25, 1979, 54-002012
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—53



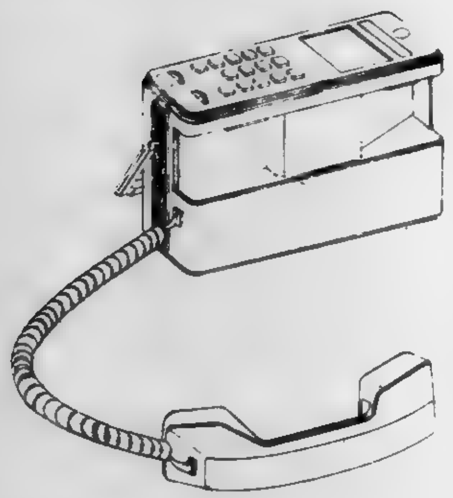
263,703
PORTABLE WIRELESS TELEPHONE SET
Hisao Fukushima, and Junji Hirooka, both of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan
Filed Sep. 4, 1979, Ser. No. 72,132
Claims priority, application Japan, Apr. 12, 1979, 54-014470
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—53



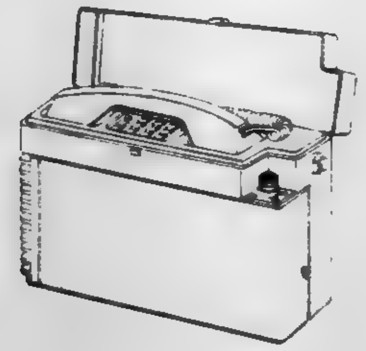
263,704
PORTABLE WIRELESS TELEPHONE SET
Hisao Fukushima, and Junji Hirooka, both of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan
Filed Sep. 4, 1979, Ser. No. 72,356
Claims priority, application Japan, Apr. 12, 1979, 54-014471
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—53

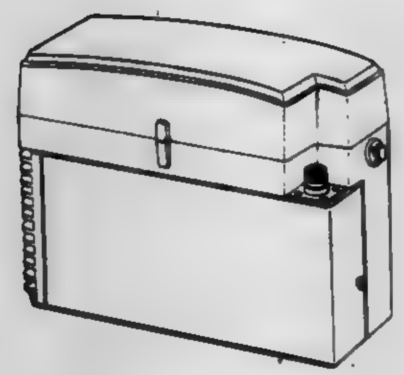


263,705
PORTABLE WIRELESS TELEPHONE SET
Hisao Fukushima, and Junji Hirooka, both of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan
Filed Sep. 4, 1979, Ser. No. 72,357
Claims priority, application Japan, Apr. 12, 1979, 54-014473
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—53

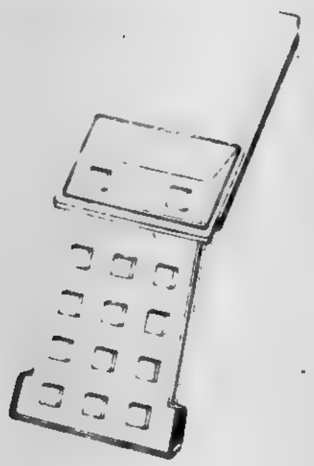


263,706
PORTABLE WIRELESS TELEPHONE SET
Hisao Fukushima, and Junji Hirooka, both of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan
Filed Sep. 24, 1979, Ser. No. 78,176
Claims priority, application Japan, Apr. 13, 1979, 54-014624
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—53

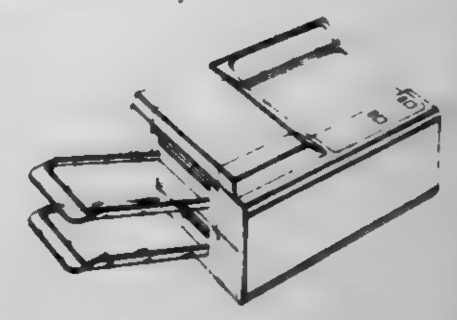




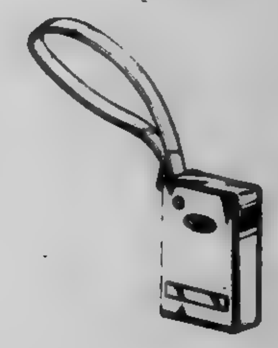
263,707
DIALING PAD
Hisao Fukushima, and Junji Hirooka, both of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan
Filed Nov. 16, 1979, Ser. No. 95,525
Claims priority, application Japan, Jun. 13, 1979, 54-024163
Term of patent 14 years
Int. Cl. D14—*02, 03;* D18—*01*
U.S. Cl. D14—66



263,708
FACSIMILE RECORDER AND TRANSCEIVER
Nobuki Matsumoto; Manzo Yoshikawa, both of Yokohama, and Fumiyo Kojima, Hiratsuka, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan
Filed Jun. 4, 1980, Ser. No. 156,637
Claims priority, application Japan, Dec. 6, 1979, 54-51018
Term of patent 7 years
Int. Cl. D14—*01*
U.S. Cl. D14—94

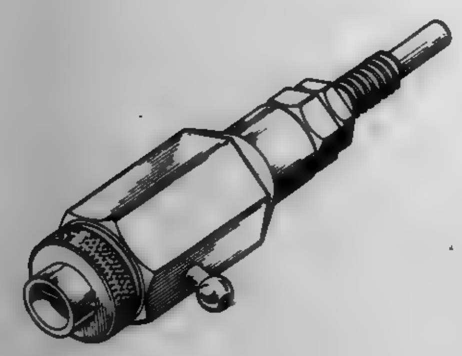


263,709
TRANSMITTER
Shoichi Ando, 3-3, 1-chome, Nakameguro, Meguro-ku, Tokyo, Japan
Filed Jul. 12, 1979, Ser. No. 57,035
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—95

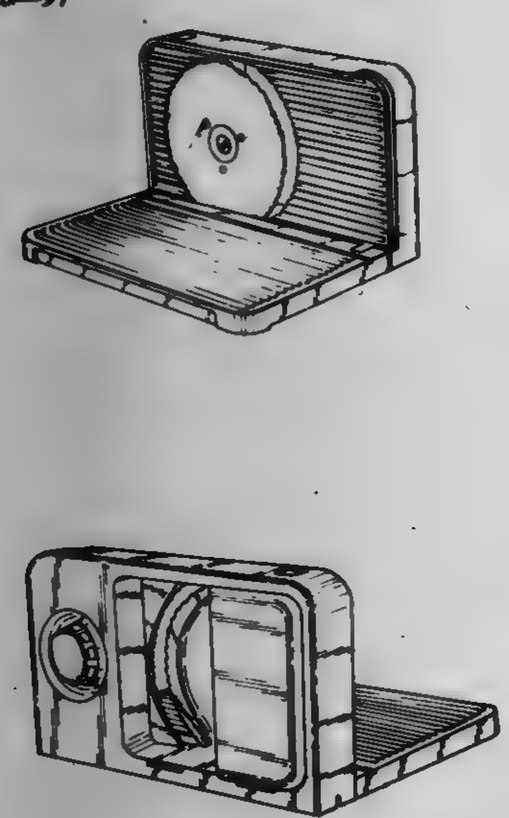


263,710
DISPLAY APPARATUS OR SIMILAR ARTICLE
Masakatsu Asano, Kawasaki, Japan, assignor to The General Corporation, Japan
Filed Feb. 13, 1980, Ser. No. 121,107
Claims priority, application Japan, Nov. 2, 1979, 54-46228; Dec. 20, 1979, 54-53354
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D14—106

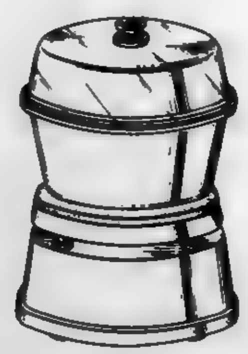
263,711
FUEL INJECTION NOZZLE
Dennis N. Dean, Fremont, Calif., assignor to Norman L. Modesett, Fremont, Calif.
Filed Dec. 31, 1979, Ser. No. 108,416
Term of patent 3½ years
Int. Cl. D15—*01*
U.S. Cl. D15—5



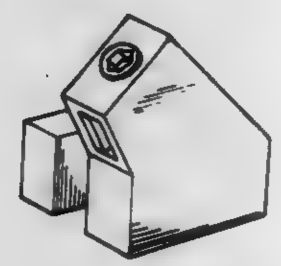
263,712
FOLDABLE SLICING MACHINE
Edgar Rixen, Solingen, Fed. Rep. of Germany, assignor to Firma Robert Krups, Solingen, Fed. Rep. of Germany
Filed Aug. 2, 1978, Ser. No. 930,545
Claims priority, application Fed. Rep. of Germany, Feb. 18, 1978, 58876
Term of patent 14 years
Int. Cl. D15—*08*
U.S. Cl. D15—97



263,713
VIBRATORY TUMBLER
William F. Baer, 1509 N. Darcy, Simi Valley, Calif. 93065
Filed Sep. 21, 1979, Ser. No. 77,637
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D15—124

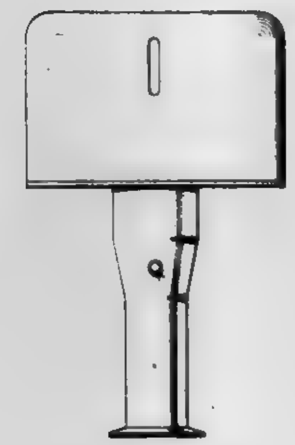


263,714
LATHE TOOL HOLDER
Howard A. Treloar, P.O. Box 86, Clarence Gardens, Australia (5039)
Filed Oct. 17, 1979, Ser. No. 85,516
Claims priority, application Australia, Apr. 23, 1979, 77675/79
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D15—140

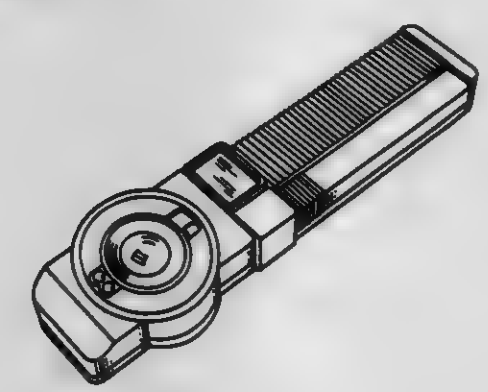


263,715
FUNNEL
Leonard J. Walter, 823 W. 187th St., Homewood, Ill. 60430
Filed Mar. 4, 1980, Ser. No. 127,225
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D15—199

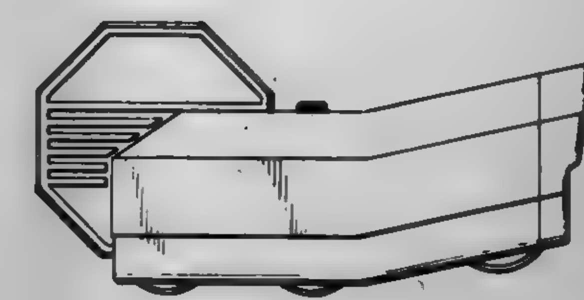
263,716
PANORAMIC CAMERA
Ronald P. Globus; Richard D. Globus, and Stephen E. Globus, all of New York, N.Y., assignors to Globuscope, Inc., New York, N.Y.
Filed Feb. 6, 1979, Ser. No. 9,809
Term of patent 14 years
Int. Cl. D16—*01*
U.S. Cl. D16—1



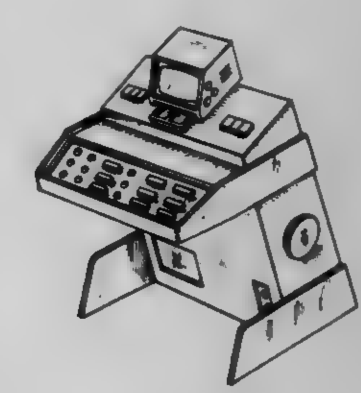
263,717
PHOTOGRAPHIC CAMERA
Norbert Schlagheck; Herbert Schulten, both of Fuerstenfeldbruck, and Karlheinz Rubner, Munich, all of Fed. Rep. of Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany
Filed Dec. 10, 1979, Ser. No. 102,319
Claims priority, application Fed. Rep. of Germany, Sep. 6, 1979, 5MR 559-G 163/79-4
Term of patent 14 years
Int. Cl. D16—*01*
U.S. Cl. D16—1



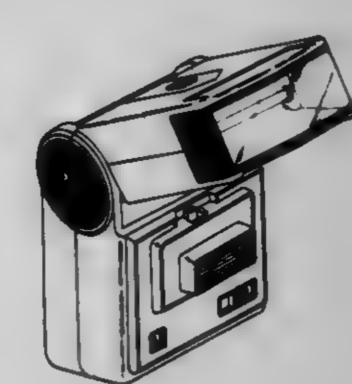
263,718
COMBINED VIEWER AND PROJECTOR
Wong Ming, Kowloon, Hong Kong, assignor to Desport Limited, Hong Kong, Hong Kong
Filed Aug. 9, 1979, Ser. No. 65,306
Claims priority, application United Kingdom, Feb. 16, 1979, 988595/79
Term of patent 14 years
Int. Cl. D16—*02*
U.S. Cl. D16—19



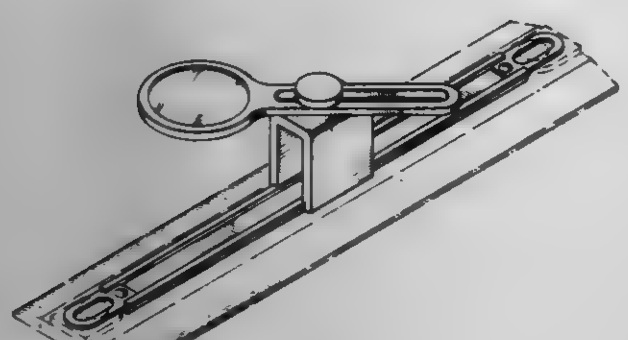
263,719
PHOTO VIDEO ANALYZER AND PRINTER OR SIMILAR ARTICLE
Robert D. McConnell, 180 Partridge Rd., Pittsfield, Mass. 01201
Filed Feb. 28, 1980, Ser. No. 125,378
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D16—28



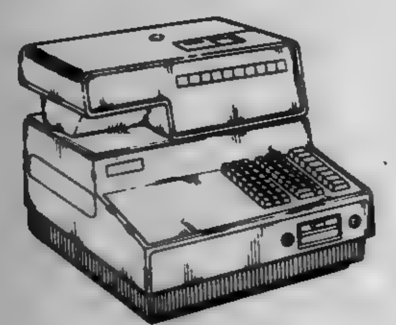
263,720
ELECTRIC FLASH DEVICE FOR CAMERA
Yoshiyuki Takematsu, 38-1 Komaba 1 Chome, Meguro-ku Tokyo, Japan
Filed Jun. 12, 1979, Ser. No. 47,704
Claims priority, application Japan, Dec. 17, 1978, 53-053137
Term of patent 14 years
Int. Cl. D16—*05*
U.S. Cl. D16—42



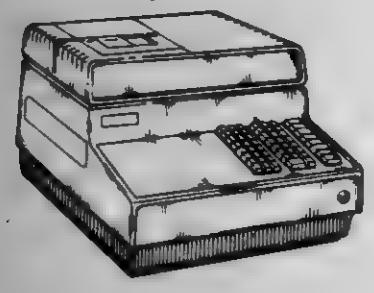
263,721
DRAFTING MACHINE SCALE MAGNIFIER ATTACHMENT
Michael L. Miller, Pasadena, Calif., assignor to Vemco Corporation, Pasadena, Calif.
Filed Apr. 4, 1980, Ser. No. 137,262
Term of patent 14 years
Int. Cl.³ D16—*06*
U.S. Cl. D16—135



263,722
CASH REGISTER HOUSING
Anthony Maladra, Moorestown; Adolf Frohlking, Willingboro, and George Horton, Englewood, all of N.J., assignors to Comtrex Systems Corporation, Mt. Laurel, N.J.
Filed Jul. 17, 1980, Ser. No. 169,891
Term of patent 14 years
Int. Cl. D18—*99*
U.S. Cl. D18—4



263,723
CASH REGISTER HOUSING
Anthony Maladra, Moorestown; Adolf Frohlking, Willingboro, and George Horton, Englewood, all of N.J., assignors to Comtrex Systems Corporation, Mt. Laurel, N.J.
Filed Jul. 17, 1980, Ser. No. 169,892
Term of patent 14 years
Int. Cl. D18—*99*
U.S. Cl. D18—4

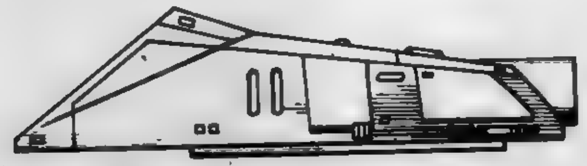


263,724
COMBINED PAPER TRAY AND PAPERWEIGHT
Clayton A. Laughlin, Minneapolis, Minn., assignor to Ketcham & McDougall, Inc., Roseland, N.J.
Filed Jul. 25, 1979, Ser. No. 60,523
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—92

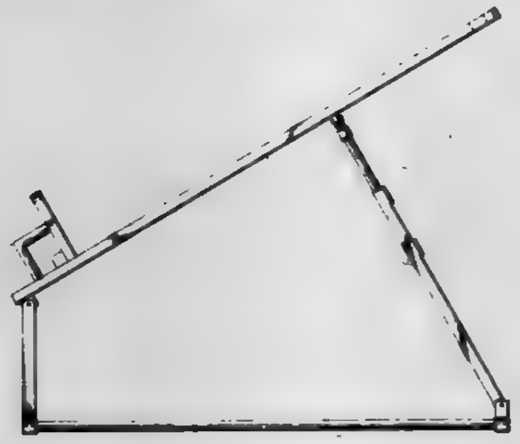
263,725
TABLE TOP GOLF GAME BOARD
Mark A. Booth, 4127 Maple St., Omaha, Nebr. 68111
Filed Feb. 21, 1979, Ser. No. 13,754
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—27

263,726
PLAYING SPINNING DISC INDICATOR
Viktor Andersson, Ringtofta, Postlada, 2552 S-243 00, Höör, Sweden
Filed Oct. 30, 1979, Ser. No. 89,313
Claims priority, application Sweden, Jun. 6, 1979, 791401
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—39

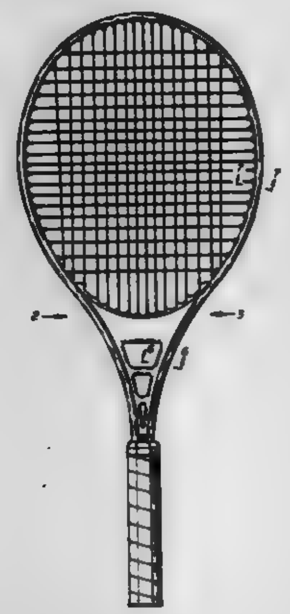
263,727
TOY SPACESHIP
Andrew G. Probert, El Segundo, Calif., assignor to Paramount Pictures Corporation, Los Angeles, Calif.
Filed May 7, 1979, Ser. No. 36,534
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—87



263,728
ADJUSTABLE EXERCISE BENCH
Lloyd J. Lambert, Jr., and Lloyd J. Lambert, Sr., both of 1538 College Ave., South Houston, Tex. 77587
Filed Dec. 4, 1979, Ser. No. 100,154
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—191

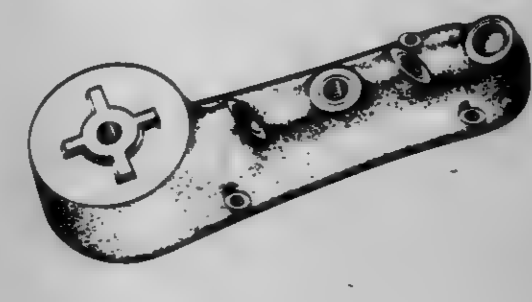


263,729
TENNIS RACKET
Charles M. Bash, Roosevelt, N.J., assignor to Prince Manufacturing, Princeton, N.J.
Filed Jun. 13, 1979, Ser. No. 48,552
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—212

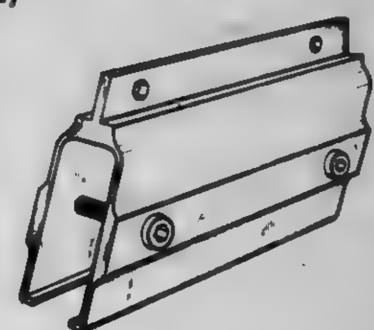


263,730
CONNECTOR BRACKET FOR A COLLAPSIBLE TENT FRAME
Edwin H. Oribin, 103 Elfin Rd., Launceston, Tasmania, Australia, assignor to Edwin Henry Oribin and Joyce Isobel Oribin, both of Victoria, Australia
Filed Jan. 28, 1980, Ser. No. 115,722
Claims priority, application Australia, Aug. 8, 1979, 78625/79
Term of patent 14 years
Int. Cl. D21—*04*
U.S. Cl. D21—254

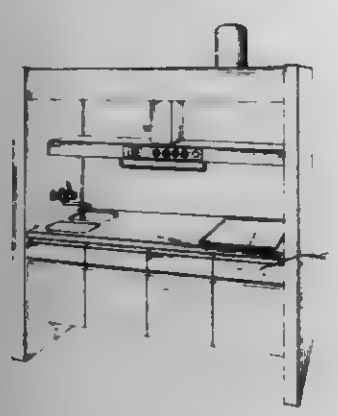
263,731
ROLLER SKATE PLATE
William Shepherd, Elizabeth, Australia, assignor to Youth Enterprises Trading Services Pty. Ltd., Elizabeth, Australia
Filed Nov. 29, 1979, Ser. No. 98,676
Claims priority, application Australia, Oct. 5, 1979, 79182/79
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—226



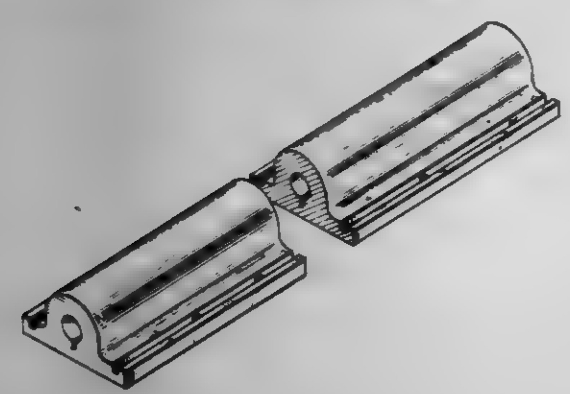
263,732
RIFLE TELESCOPE MOUNT
Daniel L. Bechtel, P.O. Box 11281, Fort Worth, Tex. 76109
Filed Apr. 18, 1980, Ser. No. 141,690
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—7



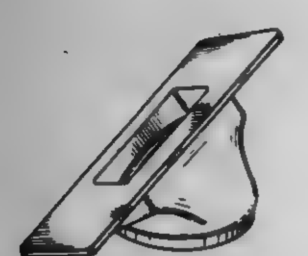
263,733
KITCHEN MODULE
Leonardus J. F. Van Schayik, Bosweg 160 C, Oisterwijk, Netherlands
Filed Sep. 15, 1978, Ser. No. 942,676
Claims priority, application Switzerland, May 10, 1978, 109826/78
Term of patent 14 years
Int. Cl. D23—*02*; D06—*04*
U.S. Cl. D23—50



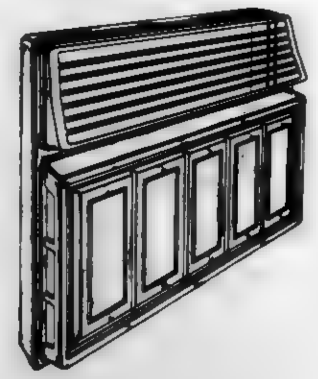
263,734
METAL EXTRUSION FOR AN ELECTRIC HEATING ELEMENT
Donald M. Cunningham; Richard W. Brent, both of Pittsburgh, and John C. Stover, Verona, all of Pa., assignors to Emerson Electric Co., St. Louis, Mo.
Filed Mar. 24, 1980, Ser. No. 132,790
Term of patent 14 years
Int. Cl. D23—*99*
U.S. Cl. D23—77



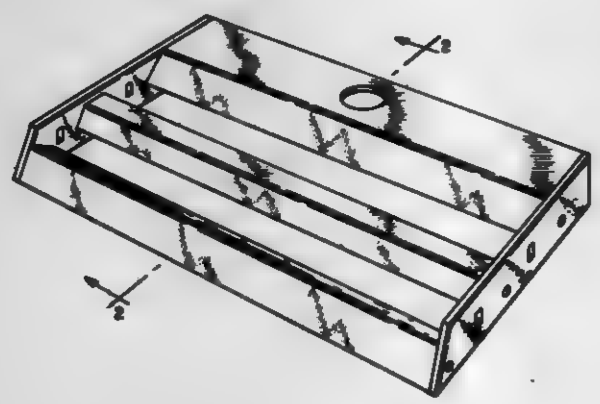
263,735
STOVEPIPE ADAPTOR FOR A FIREPLACE DAMPER
Stanley M. Oakwarek, Johnson Rd., Kent, Conn. 06757
Filed Oct. 29, 1979, Ser. No. 89,198
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—127



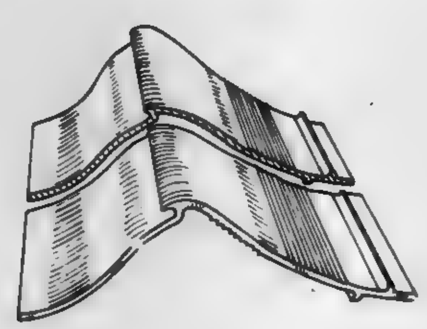
263,736
FRONT PANEL FOR AN AIR CONDITIONING UNIT
Walter W. Hoyle, Fayetteville, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.
Filed Aug. 3, 1979, Ser. No. 63,627
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—141



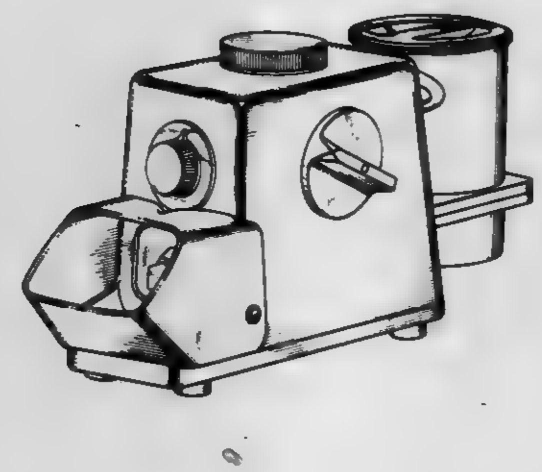
263,737
VENTILATING HOOD FOR AN ELECTROPLATING TANK
Steve A. Acero, 21089 Lavine Ct., Cupertino, Calif. 95014, and Edward L. Rougeau, 2592 Glade, Santa Clara, Calif. 95051
Filed Aug. 29, 1979, Ser. No. 70,853
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—151



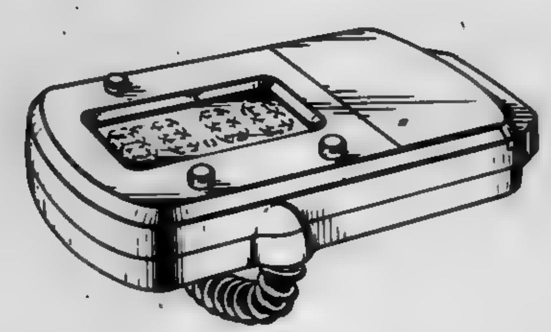
263,738
MIST ELIMINATOR BLADE FOR AIR HANDLING SYSTEMS
Richard Sixsmith, Burlington, Canada, assignor to Preciolouvering Limited, Scarborough, Canada
Filed Sep. 17, 1979, Ser. No. 76,331
Claims priority, application Canada, Jun. 5, 1979, 05-06-79-8
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—163



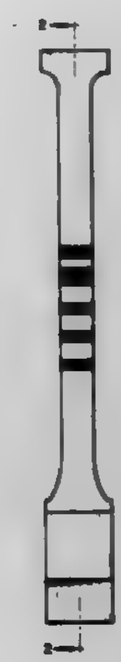
263,739
AMALGAMATOR
Meyer Piet, Arcadia, and Dean G. Giles, Valinda, both of Calif., assignors to Futurecraft Corporation, City of Industry, Calif.
Filed Jan. 22, 1979, Ser. No. 5,558
Term of patent 14 years
Int. Cl. D24—*02*; D15—*09*
U.S. Cl. D24—10



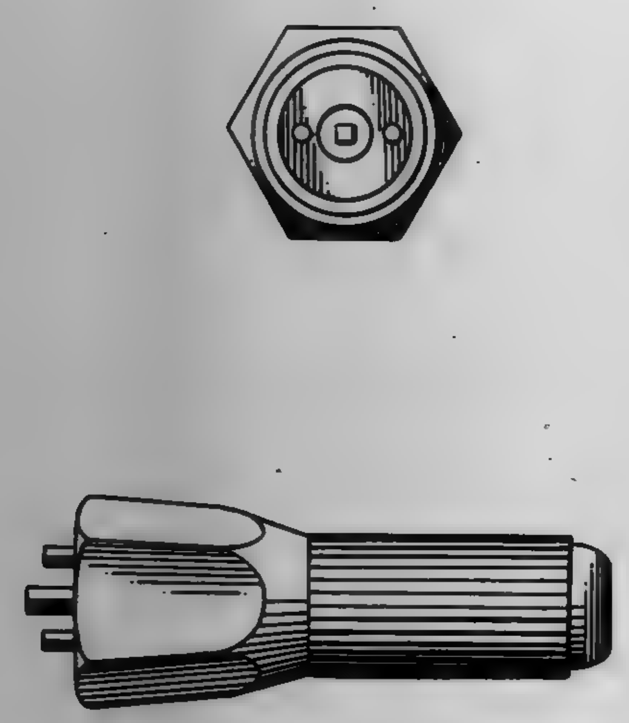
263,740
MINIATURE CARDIOTACHOMETER OR THE LIKE
Robert K. Rogers; Robert R. Steuer, both of Salt Lake City, Utah; F. Gordon Mackay, Tarzana; Spencer L. Mackay, Canoga Park, both of Calif., and Robert H. Horne, Holladay, Utah, assignors to Multitronics Corporation, Salt Lake City, Utah
Filed May 30, 1979, Ser. No. 43,840
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—17



263,741
TEST DEVICE
Kenneth D. Collister, Elkhart, Ind., assignor to Miles Laboratories, Inc., Elkhart, Ind.
Filed May 9, 1979, Ser. No. 37,298
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—21

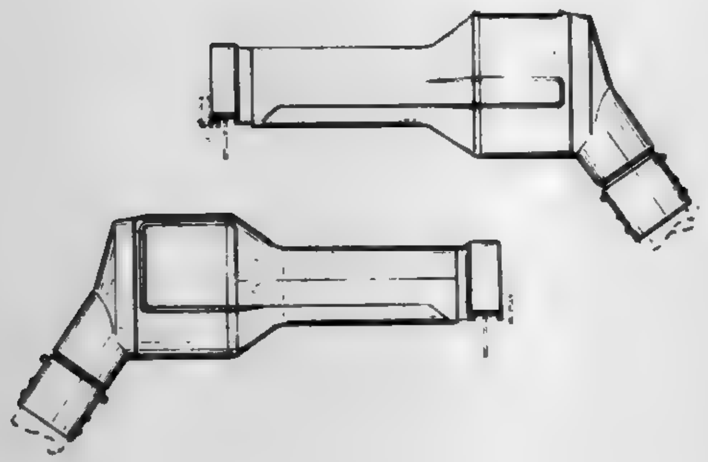


263,742
DENTAL HANDPIECE WRENCH
Thomas W. Albert, Bartlett, Ill., assignor to American Hospital Supply Corp., Evanston, Ill.
Filed Jan. 3, 1980, Ser. No. 109,311
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—12



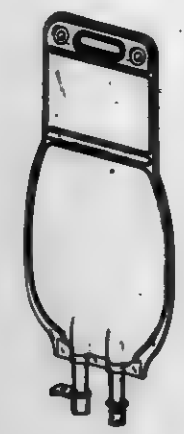
263,743
TONGUE DEPRESSOR
Anthony Priestman, Orillia, Canada, assignor to Intra-Medical Pharmaceuticals Ltd., Orillia, Canada
Filed Oct. 21, 1980, Ser. No. 199,253
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—19

263,744
CAST CUTTER
Robert P. Straub, Baltimore, Md., assignor to Black & Decker Inc., Newark, Del.
Filed Oct. 17, 1979, Ser. No. 86,204
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—28



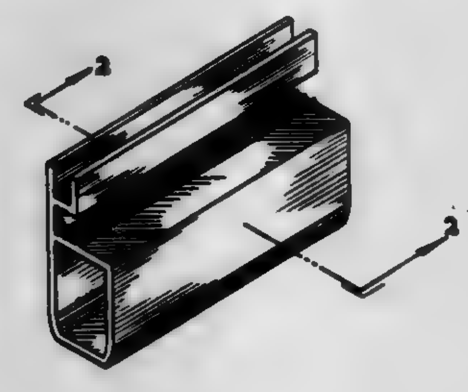
263,745
DESIGN FOR SURGICAL INSTRUMENT HOLDER
Dan Sandel, 19524 Halsted St., Northridge, Calif. 91324
Filed Oct. 29, 1979, Ser. No. 88,765
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—29

263,746
FLEXIBLE CONTAINER FOR MEDICAL LIQUIDS
Peter C. Johnson, Kenosha, Wis.; Ralph M. Quin, Jr., Ingleside, and John S. Ziegler, Arlington Heights, both of Ill., assignors to Abbott Laboratories, North Chicago, Ill.
Filed Aug. 30, 1979, Ser. No. 71,144
Term of patent 14 years
Int. Cl. D24—*04*; D9—*01*
U.S. Cl. D24—58

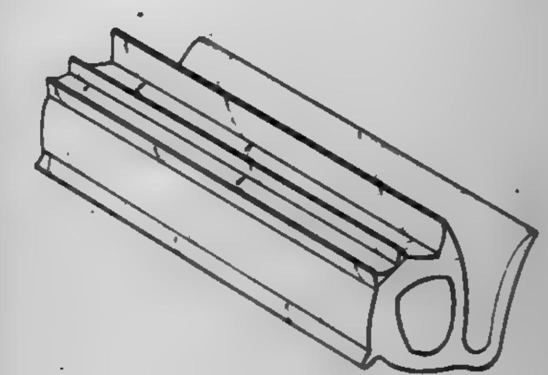


263,747
NOSE STRAIGHTENER
Guillermo Jaramillo, and Maria E. Jaramillo, both of P.O. Box 160667, Miami, Fla. 33116
Filed Oct. 17, 1979, Ser. No. 85,730
Term of patent 14 years
Int. Cl. D24—*99*
U.S. Cl. D24—64

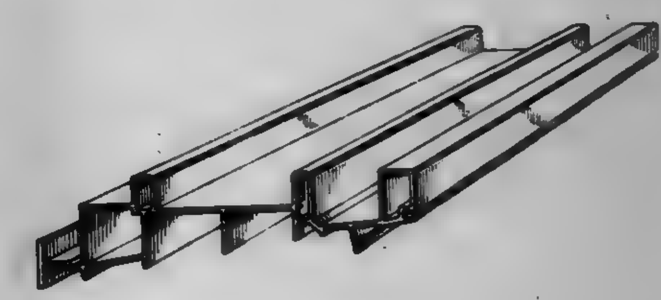
263,748
WINDOW COMPONENT EXTRUSION
Jack V. Miller, 700 N. Auburn Ave., Sierra Madre, Calif. 91024
Filed Oct. 22, 1979, Ser. No. 87,109
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—74



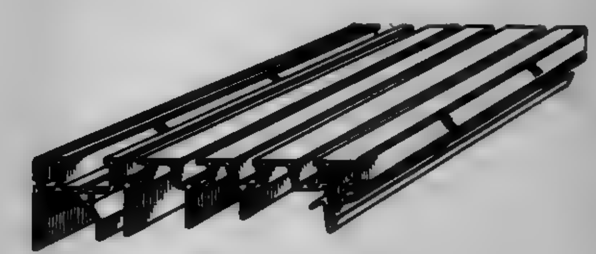
263,749
SUNROOF PANEL SEAL
Norman L. Sorensen, Detroit, Mich., assignor to Wisco Corporation, Livonia, Mich.
Filed Jan. 23, 1980, Ser. No. 114,607
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—74



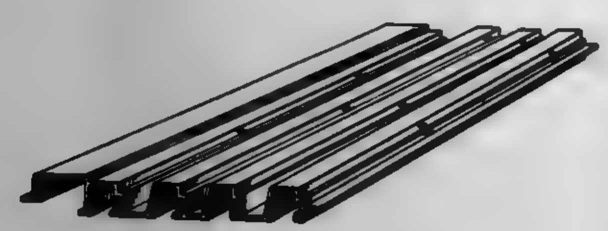
263,750
WINDOW COMPONENT EXTRUSION
Raymond Dallaire, P.O. Box 220, Levis, Quebec, Canada
Filed Apr. 30, 1980, Ser. No. 145,132
Claims priority, application France, Nov. 14, 1979, 78029
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—74



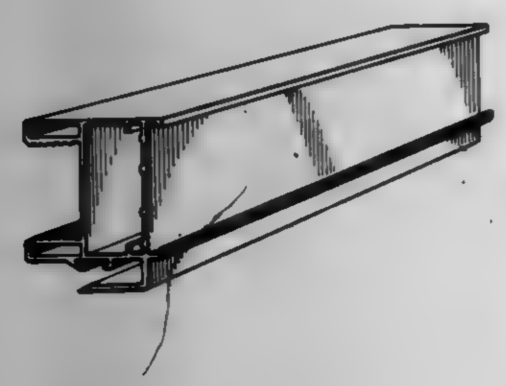
263,751
WINDOW COMPONENT EXTRUSION
Raymond Dallaire, P.O. Box 220, Levis, Quebec, Canada
Filed Apr. 30, 1980, Ser. No. 145,133
Claims priority, application France, Nov. 14, 1979, 78029
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—74



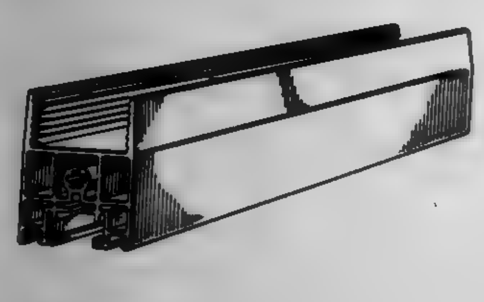
263,752
WINDOW COMPONENT EXTRUSION
Raymond Dallaire, P.O. Box 220, Levis, Quebec, Canada
Filed Apr. 30, 1980, Ser. No. 145,134
Claims priority, application France, Nov. 14, 1979, 78029
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—74



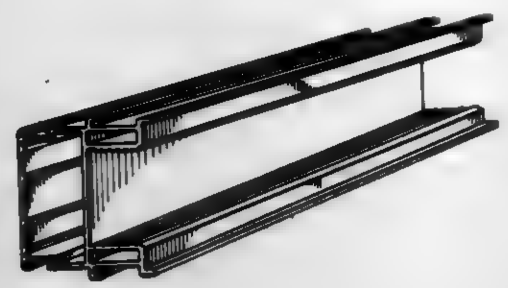
263,753
WINDOW COMPONENT EXTRUSION
Raymond Dallaire, P.O. Box 220, Levis, Quebec, Canada
Filed Apr. 30, 1980, Ser. No. 145,135
Claims priority, application France, Nov. 14, 1979, 78029
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—74



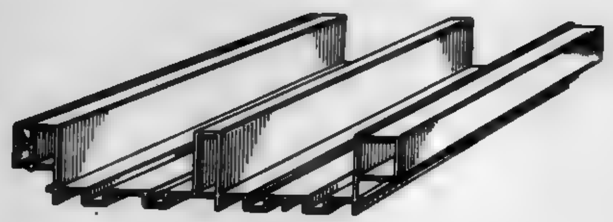
263,754
WINDOW COMPONENT EXTRUSION
Raymond Dallaire, P.O. Box 220, Levis, Quebec, Canada
Filed Apr. 30, 1980, Ser. No. 145,138
Claims priority, application France, Nov. 14, 1979, 78029
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—74



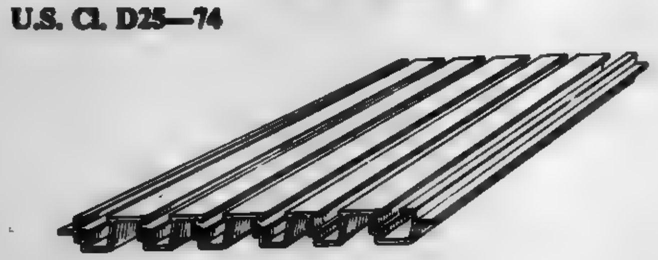
263,755
WINDOW COMPONENT EXTRUSION
Raymond Dallaire, P.O. Box 220, Levis, Quebec, Canada
Filed Apr. 30, 1980, Ser. No. 145,139
Claims priority, application France, Nov. 14, 1979, 78029
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—74



263,756
WINDOW COMPONENT EXTRUSION
Raymond Dallaire, P.O. Box 220, Levis, Quebec, Canada
Filed Apr. 30, 1980, Ser. No. 145,140
Claims priority, application France, Nov. 14, 1979, 78029
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—74

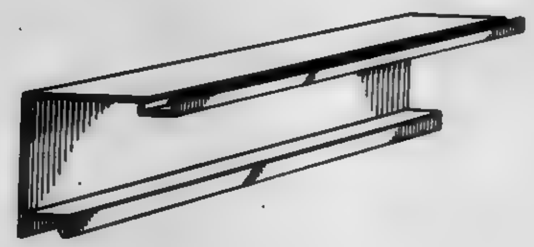


263,757
WINDOW COMPONENT EXTRUSION
Raymond Dallaire, P.O. Box 220, Levis, Quebec, Canada
Filed Apr. 30, 1980, Ser. No. 145,258
Claims priority, application France, Nov. 14, 1979, 78029
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—74

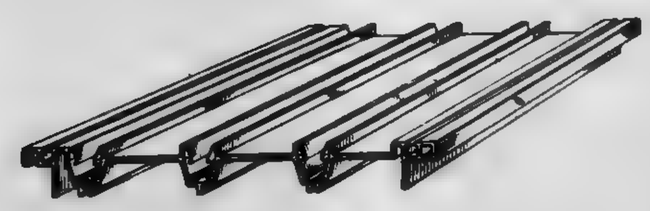


263,758
WINDOW COMPONENT EXTRUSION
Raymond Dallaire, P.O. Box 220, Levis, P. Q., Canada
Filed Apr. 30, 1980, Ser. No. 145,259
Claims priority, application France, Nov. 14, 1979, 78029
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—74

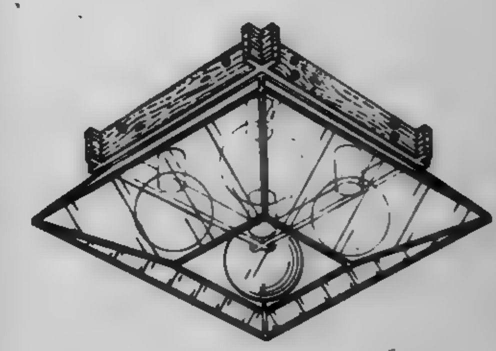
263,759
WINDOW COMPONENT EXTRUSION
Raymond Dallaire, P.O. Box 220, Levis, P. Q., Canada
Filed Apr. 30, 1980, Ser. No. 145,260
Claims priority, application France, Nov. 14, 1979, 78029
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—74



263,760
WINDOW COMPONENT EXTRUSION
Raymond Dallaire, P.O. Box 220, Levis, P. Q., Calif.X
Filed Apr. 30, 1980, Ser. No. 145,263
Claims priority, application France, Nov. 14, 1979, 78029
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—74

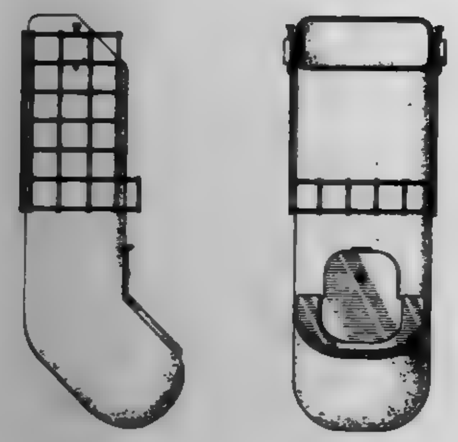


263,761
LIGHT FIXTURE
Fredrick R. Glassman, 16121 S. Carmenita Rd., Cerritos, Calif. 90701
Filed May 11, 1979, Ser. No. 38,369
Term of patent 14 years
Int. Cl. D26—*01*
U.S. Cl. D26—83



263,762
LAMP BASE
Abraham Franzblau, 726 S. Davis Blvd., Tampa, Fla. 33606
Filed Aug. 7, 1979, Ser. No. 64,471
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D26—93

263,763
ANIMAL FEEDER
Bjarne J. Bore, N-4060 Kleppe, Norway
Filed Sep. 17, 1979, Ser. No. 76,274
Claims priority, application Norway, Mar. 16, 1979, 59975
Term of patent 14 years
Int. Cl. D30—*03*
U.S. Cl. D30—15



263,764
ANIMAL IDENTIFICATION DISK AND THE LIKE
John P. McBride, II, 1365 McFarland Blvd., East, Tuscaloosa, Ala. 35405
Filed Oct. 29, 1979, Ser. No. 89,089
Term of patent 14 years
Int. Cl. D30—*08*
U.S. Cl. D30—43

LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 6TH DAY OF APRIL, 1982

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. B. Chance Company: *See*—
Kamp, Eugene L.; Popeck, Charles A.; and Bruning, Armin M., 4,323,871, Cl. 337-7.000.
A/S Bruel & Kjaer: *See*—
Fauerskov, Svend E.; and Sjostrom, Svend O., 4,323,903, Cl. 346-32.000.
A-T-O Inc.: *See*—
Mitchell, Hal D., 4,322,859, Cl. 2-2.000.
Abbas, Shakir A.; and Magdo, Ingrid E., to International Business Machines Corporation. Self-aligned metal process for integrated injection logic integrated circuits. 4,322,883, Cl. 29-578.000.
Abbott Laboratories: *See*—
Ours, Carroll W.; and Lee, Cheuk M., 4,323,691, Cl. 560-36.000.
Abele, Manlio; Passalaqua, Anthony M.; and Chase, Norman E., to New York University. Ultrasound scanner. 4,322,974, Cl. 73-602.000.
Abell, Gurdon R.; Cook, Francis J.; and Howes, Peter D., to Avco Everett Research Laboratory, Inc. Method and apparatus for arraying image sensor modules. 4,323,925, Cl. 358-213.000.
Abrasive Developments Limited: *See*—
Arthur, Geoffrey C., 4,323,450, Cl. 210-11.00S.
Acerbi, Leo, to Oil Control S.r.l. Balanced valve with unidirectional oleo-dynamic unlocking, in particular to allow a number of hydraulic actuators to be series controlled at high pressure. 4,323,095, Cl. 137-87.000.
ACF Industries, Incorporated: *See*—
Dugge, Richard H.; and Rollins, Dallas W., 4,323,096, Cl. 137-350.000.
Achen, John J. Turntable for colorant dispensers. 4,323,097, Cl. 141-168.000.
Acher, Jacques: *See*—
Thominet, Michel; Bulteau, Gerard; Acher, Jacques; and Collignon, Claude, 4,323,503, Cl. 260-340.300.
Acme Machine Company: *See*—
Carlson, Bertyl W., 4,323,034, Cl. 119-29.000.
Acro Matic, Inc.: *See*—
Terpening, George L., 4,323,232, Cl. 272-68.000.
Acrometal Products, Inc.: *See*—
Gerber, Dennis J., 4,322,919, Cl. 51-139.000.
Steinback, Clarence I., 4,322,918, Cl. 51-138.000.
Acushnet Company: *See*—
Keches, Leonidas A.; Goggin, Sharon R.; Isaac, Edward J.; and Rogers, Ronald J., 4,323,247, Cl. 273-235.00R.
Adair, James C: *See*—
Huckabee, Kermit D.; Adair, James C; and Worrell, Gene T., 4,323,989, Cl. 367-17.000.
Adams, Arthur C.; Alexander, Frank B., Jr.; Levinstein, Hyman J.; and Thibault, Louis R., to Bell Telephone Laboratories, Incorporated. Reducing charging effects in charged-particle-beam lithography. 4,323,638, Cl. 430-275.000.
Adams, Bevoley C. Structural connecting member. 4,323,319, Cl. 403-171.000.
Adams, Frank H. Combination breast pump and gavage feeding apparatus and method. 4,323,067, Cl. 128-281.000.
Adams, Frederick J.; and Downing, Philip A., to Cam Gears Limited. Variable ratio rack and pinion gear. 4,322,986, Cl. 74-89.180.
Adams, Thomas H.; Beck, James P.; and Menson, Robert C., to Baxter Travenol Laboratories, Inc. Novel particulate compositions. 4,323,478, Cl. 252-408.000.
Adaley, Ian: *See*—
Wykes, John S.; and Adaley, Ian, 4,323,778, Cl. 250-367.000.
Advanced Catheter Systems, Inc.: *See*—
Simpson, John B.; and Robert, Edward W., 4,323,071, Cl. 128-343.000.
Agencie Nationale de Valorisation de la Recherche (ANVAR): *See*—
Audibert, Francoise; and Lefrancier, Pierre, 4,323,559, Cl. 424-177.000.
AGFA-Gevaert Aktiengesellschaft: *See*—
Bergthaller, Peter; Himmelmann, Wolfgang; and Sobel, Johannes, 4,323,646, Cl. 430-622.000.
Kober, Heinrich; Nippe, Burkhard; and Seidel, Bernhard, 4,323,621, Cl. 428-216.000.
Aglietti, Giancarlo: *See*—
Canavesi, Roberto; Ligorati, Ferdinando; and Aglietti, Giancarlo, 4,323,716, Cl. 570-243.000.
Agusto, Robert G.: *See*—
Bass, Kenneth B.; and Agusto, Robert G., 4,323,583, Cl. 426-250.000.
Bass, Kenneth B.; and Agusto, Robert G., 4,323,587, Cl. 426-540.000.
Ahagon, Asahiro; Misawa, Makoto; Miyasaka, Kazuo; and Hirakawa, Hiroshi, to Yokohama Rubber Co., Ltd., The. Rubber compositions for tire treads having low rolling resistance. 4,323,485, Cl. 525-237.000.
Ahr, Nicholas A.; and Smith, Douglas J., to Procter & Gamble Company, The. Disposable absorbent article having an intermediate layer interposed between the topsheet and the absorbent core. 4,323,069, Cl. 128-287.000.
Ahrens, Robert O.; and Merkel, Jerry L., to McDonnell Douglas Corporation. Composite plastic structure and method for producing same. 4,323,623, Cl. 428-246.000.
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Iwasaki, Shinichiro, 4,322,973, Cl. 73-517.00R.
Ajinomoto Co., Inc.: *See*—
Takami, Toru; Takezawa, Misako; Ohashi, Hiroyuki; and Takeda, Shigeru, 4,323,563, Cl. 424-199.000.
Akashi, Kazuo, to Tokyo Shibaura Denki Kabushiki Kaisha. Cursor display control system for a raster scan type display system. 4,323,891, Cl. 340-709.000.
Akatsuka, Takao, to Toyota Jidosha Kogyo Kabushiki Kaisha. Oxygen sensor with protective shield and porous air filter. 4,323,440, Cl. 204-195.00S.
Akebono Brake Industry Co., Ltd.: *See*—
Negishi, Akio, 4,323,143, Cl. 188-71.900.
Akimura, Yoshitaka: *See*—
Mifune, Hiroyuki; Hirano, Shigeo; and Akimura, Yoshitaka, 4,323,643, Cl. 430-441.000.
Akitomo, Nobuo; and Tohyama, Shigeo, to Hitachi, Ltd. Spectro-photometer with arithmetic and control unit. 4,323,309, Cl. 356-319.000.
Akzona Incorporated: *See*—
Zeilstra, Jacobus J.; de Klein, Willem J.; and Bik, Joannes D., 4,323,495, Cl. 524-156.000.
Albany International Corp.: *See*—
Gladh, Arne I. L.; and Grondahl, Eric W., 4,323,622, Cl. 428-230.000.
Albert, Richard D. Scanning radiographic method. 4,323,779, Cl. 250-401.000.
Albertus, Christian Gundorph: *See*—
Jacobsen, Leif V., 4,323,841, Cl. 324-51.000.
Alderson, John M. Liquid fuel preheating means. 4,323,043, Cl. 123-557.000.
Alekhin, Stanislav A.; Kuznetsov, Eduard B.; Bakhir, Vitold M.; Klimenko, Vladimir I.; and Zadorozhny, Jury G. Apparatus for electrokinetically separating drilling mud. 4,323,445, Cl. 204-300.00R.
Alexander, Frank B., Jr.: *See*—
Adams, Arthur C.; Alexander, Frank B., Jr.; Levinstein, Hyman J.; and Thibault, Louis R., 4,323,638, Cl. 430-275.000.
Alfa Romeo S.p.A.: *See*—
Radaelli, Dario; De Angelis, Giancarlo; and Catastini, Alberto, 4,323,976, Cl. 364-565.000.
Alfano, Vincent J. Control device and method for conserving fuel in an absorption refrigeration system. 4,322,951, Cl. 62-101.000.
Ali, Zaheer M., to Communications Satellite Corporation. Termination circuit for FDM/TDM processors. 4,324,000, Cl. 370-85.000.
Allec, Josiane: *See*—
Grollier, Jean-Francois; and Allec, Josiane, 4,323,468, Cl. 252-174.170.
Allee, Jimmy L., to Baker Service Company, Inc. Removable anti-wear insert. 4,323,131, Cl. 175-413.000.
Allen, Clayton H. Vibration damping method and means having non-contacting sound damping means. 4,323,145, Cl. 188-322.110.
Allied Corporation: *See*—
Bonfield, John H.; Belsky, Stephen E.; and Pickens, Donald, 4,323,706, Cl. 564-253.000.
Allis-Chalmers Corporation: *See*—
Stikeleather, Larry F.; and Totten, David S., 4,323,126, Cl. 172-147.000.
Allo, Vincent F.: *See*—
Stafford, Donald C.; and Allo, Vincent F., 4,323,115, Cl. 165-79.000.
Alps Electric Co., Ltd.: *See*—
Sugiura, Shigekata, 4,323,807, Cl. 312-284.000.
Alt, Rudolph, to General Tire & Rubber Company, The. Apparatus and method for forming dielectrically sealed laminar sheet materials. 4,323,409, Cl. 156-219.000.
American Beverage Control: *See*—
Shannon, Joseph W., 4,323,173, Cl. 222-136.000.
American Can Company: *See*—
Likins, Robert W., 4,323,748, Cl. 219-10.710.
American Hoechst Corporation: *See*—
Seeley, Douglas A., 4,323,307, Cl. 355-51.000.
American Home Products Corporation: *See*—
Demerson, Christopher A.; Humber, Leslie G.; and Ferland, Jean-Marie, 4,323,572, Cl. 424-251.000.

Wolf, Milton; and Fenichel, Richard L., 4,323,681, Cl. 544-323.000.
American Standard Inc.: *See*—
Elder, J. Calvin, 4,323,210, Cl. 246-26.000.
Morris, Robert B.; and Clemmons, Quentin T., 4,323,144, Cl. 188-190.00A.
Ameron, Inc.: *See*—
Dana, William R.; Friedrich, Ralph S.; and McKenney, John D., 4,323,408, Cl. 156-175.000.
AMF Incorporated: *See*—
Kopp, Arthur R., 4,323,774, Cl. 250-214.00A.
AMSTED Industries Incorporated: *See*—
Radwill, Robert P., 4,322,981, Cl. 73-810.000.
Analog Devices, Incorporated: *See*—
Holloway, Peter R.; and Mercer, Douglas A., 4,323,795, Cl. 307-297.000.
Anchor Hocking Corporation: *See*—
Rubbright, Harry A.; and Springer, Donald A., 4,323,110, Cl. 165-2.000.
Andco Industries, Inc.: *See*—
Bruckenstein, Stanley, 4,323,462, Cl. 210-714.000.
Anderson, Willis H.: *See*—
Sheridan, John J.; Schwartz, Allen K.; and Anderson, Willis H., 4,323,744, Cl. 200-153.0LB.
Ando, Haruhisa: *See*—
Koike, Norio; Tsukada, Toshihisa; Ando, Haruhisa; Yamamoto, Hideaki; Hirai, Tadaaki; Kubo, Masaharu; Maruyama, Eiichi; Baji, Toru; Takasaki, Yukio; and Nagahara, Shusaku, 4,323,912, Cl. 357-31.000.
Andoh, Ikuhiro, to Fujitsu Limited. Connector. 4,323,296, Cl. 339-217.00S.
Andrea, Jiri: *See*—
Fajt, Ludvik; Didek, Stanislav; Kasparek, Jaromir; Storek, Jaroslav; Andrea, Jiri; Borovcova, Zelmira; Markova, Marie; Reymanova, Marketa; and Stepanek, Miroslav, 4,322,942, Cl. 57-411.000.
Andrews, Ralph L., to Gulf & Western Manufacturing Company. Article transfer mechanism. 4,323,151, Cl. 198-740.000.
Anstis, Dorothy Isobel: *See*—
Anstis, Lawrence G., 4,322,997, Cl. 84-479.00A.
Anstis, Lawrence G., to Anstis, Dorothy Isobel, a part interest. Keyboard. 4,322,997, Cl. 84-479.00A.
Aoki, Kanemasa, to Canon Kabushiki Kaisha; and Canon Seiki Kabushiki Kaisha. Miniature rotary electric machine. 4,323,806, Cl. 310-266.000.
Apt, Jerome, Jr.: *See*—
Lansberry, John B.; Apt, Jerome, Jr.; and Dury, Joseph D., Jr., 4,323,280, Cl. 299-1.000.
Apter, Robert; Philippi, John; Potichko, Nicholas; and Szablewski, Fred. C., to R. A. Industries. Piston metering pump. 4,323,333, Cl. 417-63.000.
Arai, Masatoshi: *See*—
Takago, Toshio; Arai, Masatoshi; and Futatsumori, Koji, 4,323,488, Cl. 528-21.000.
Araki, Kenzi: *See*—
Nakaoka, Kazuhide; Araki, Kenzi; Iwase, Kozi; Kubotera, Haruo; Kurihara, Takao; and Tanaka, Nobuo, 4,323,403, Cl. 148-134.000.
Arenhold, Knut. Universal mudguard flap and clamp for motor vehicles. 4,323,262, Cl. 280-154.50R.
Armah, Ben: *See*—
Stenzel, Wolfgang; Fleck, Wolfgang; Cohnen, Erich; and Armah, Ben, 4,323,570, Cl. 424-251.000.
Arnold, Victor F.; and Dixon, Roger C., to Marconi Instruments Limited. Protection circuits. 4,323,943, Cl. 361-114.000.
Arseneau, Roger E., to Siemens Gammasonics, Inc. Non-uniformity energy correction method and apparatus. 4,323,977, Cl. 364-571.000.
Arthur, Geoffrey C., to Abrasive Developments Limited. Apparatus for separating a solid or viscous liquid component from a mixture. 4,323,450, Cl. 210-11.00S.
Arvey Corporation: *See*—
Gillie, Raymond A., 4,323,187, Cl. 229-34.00R.
Regenstein, Joseph, Jr., 4,323,189, Cl. 229-62.000.
Asahi Glass Company, Ltd.: *See*—
Itoi, Eiji; Nakayama, Takashi; Nakao, Makoto; and Matsumura, Yukio, 4,323,436, Cl. 204-98.000.
Asahi Kasei Kogyo Kabushiki Kaisha: *See*—
Kawamura, Chikayuki; inoya, Toshiro; and Yamataka, Kazunori, 4,323,444, Cl. 204-269.000.
Yoshida, Mitsuo; Masuda, Yoshinori; and Kashiwada, Akio, 4,323,434, Cl. 204-98.000.
Asahi Kogaku Kogyo Kabushiki Kaisha: *See*—
Enomoto, Shigeo, 4,323,303, Cl. 354-25.000.
ASEA Aktiebolag: *See*—
Moritz, Bertil; and Tonnesen, Ole, 4,323,870, Cl. 336-206.000.
Ashworth, Robert W.; and Fu, Wallace Y., to Union Carbide Corporation. Method for making thiobiscarbamates. 4,323,516, Cl. 260-453.300.
Asics Corporation: *See*—
Inohara, Masanobu, 4,322,891, Cl. 36-29.000.
Inohara, Masanobu, 4,322,892, Cl. 36-29.000.
Astec Components, Ltd.: *See*—
Josephson, Elliot, 4,323,961, Cl. 363-56.000.
Aston, Thomas M. Stabilizing vent system for gun barrels. 4,322,999, Cl. 89-14.00C.
Aston, William C.; and Walker, Derek, to Imi Yorkshire Imperial Plastics Limited. Manufacture of thermoplastics pipe. 4,323,535, Cl. 264-573.000.
Atalla, Anwar A.: *See*—
Swin, Richard E., Sr.; and Atalla, Anwar A., 4,323,330, Cl. 415-207.000.
Ateliers des Charmilles, S.A.: *See*—
Mazond, Michel P.; and Wavre, Alain, 4,323,749, Cl. 219-69.00M.
Atlantic Richfield Company: *See*—
DiGiulio, Adolph V.; and Bauer, Jack N., 4,323,655, Cl. 521-88.000.
Wakefield, G. Felix, 4,323,419, Cl. 156-622.000.
Atmospheric Energy Systems: *See*—
Ramlow, Bryan L.; and Steele, Richard R., 4,322,953, Cl. 62-217.000.
Audibert, Francoise; and Lefrancier, Pierre, to Agencie Nationale de Valorisation de la Recherche (ANVAR). Compounds derived from N-acetyl-nor-muramyl-L-alanyl-D-isoglutamic acid and other compounds and biologically active compositions containing such compounds. 4,323,559, Cl. 424-177.000.
Auerbach, Les M.; and Ricker, William F., to Old King Coal, Ltd. Coal-burning furnace or boiler. 4,323,051, Cl. 126-77.000.
Auergesellschaft GmbH: *See*—
Lemke, Andreas, 4,323,890, Cl. 340-524.000.
Avco Corporation: *See*—
Sellers, David J.; Rhodes, William H.; and Vasilos, Thomas, 4,323,545, Cl. 423-625.000.
Avco Everett Research Laboratory, Inc.: *See*—
Abell, Gurdon R.; Cook, Francis J.; and Howes, Peter D., 4,323,925, Cl. 358-213.000.
Averbuch, Joseph. Machine for cutting precious stones. 4,323,050, Cl. 125-30.00R.
Ayata, Naoki: *See*—
Fujii, Motoharu; Koumura, Noboru; Ayata, Naoki; Saito, Seiji; and Sato, Yasushi, 4,323,919, Cl. 358-75.000.
Aziz, Mohammed I., to Procter & Gamble Company, The. Diaper with embossed textile sheet. 4,323,068, Cl. 128-287.000.
B.V.S.: *See*—
Denoor, Gaston; and Thillet, Georges, 4,323,200, Cl. 242-7.210.
Baba, Takao: *See*—
Yoshimoto, Takeo; Inoue, Takayuki; Michiyama, Hideo; Harayama, Takeo; Morikama, Osamu; Hojo, Yoshikata; Baba, Takao; Toyama, Teruhiko; Ura, Masaaki; and Takazawa, Yoshio, 4,323,389, Cl. 71-124.000.
Bach, William D. Vine support for plants. 4,322,911, Cl. 47-45.000.
Baird Corporation: *See*—
Brennan, Thomas M., 4,323,298, Cl. 350-36.000.
Baji, Toru: *See*—
Koike, Norio; Tsukada, Toshihisa; Ando, Haruhisa; Yamamoto, Hideaki; Hirai, Tadaaki; Kubo, Masaharu; Maruyama, Eiichi; Baji, Toru; Takasaki, Yukio; and Nagahara, Shusaku, 4,323,912, Cl. 357-31.000.
Baker Service Company, Inc.: *See*—
Allee, Jimmy L., 4,323,131, Cl. 175-413.000.
Bakhir, Vitold M.: *See*—
Alekhin, Stanislav A.; Kuznetsov, Eduard B.; Bakhir, Vitold M.; Klimenko, Vladimir I.; and Zadorozhny, Jury G., 4,323,445, Cl. 204-300.00R.
Balash, Frederick A., to Rogers Corporation. Keyboard actuator device and keyboard incorporating the device. 4,323,740, Cl. 200-5.00A.
Baldwin, Nealy B. Energy saving exhaust siphon. 4,323,139, Cl. 181-263.000.
Balkhanova, Galina F.: *See*—
Batalin, Oleg E.; Dykman, Arkady S.; Osadchenko, Alexandr I.; Balkhanova, Galina F.; Belgorodsky, Izrail M.; Nevstruev, Vladimir I.; Radionov, Valery A.; Tulchinsky, Eduard A.; Belyaev, Valentin M.; Smolin, Jury I.; Breiman, Mark I.; Orlyansky, Vitaly V.; Zhirnov, Nikolai Y.; Galibin, Nikolai V.; Troitsky, Andrian P.; and Kovalenko, Vladimir V., 4,323,479, Cl. 252-432.000.
Ball, Douglas C., to Hauserman Ltd. Desk or the like with wire management. 4,323,291, Cl. 312-194.000.
Ball, Frank C.; and Wardle, Edmund, to Hydro-Test, Inc. Gas pressure relieving hydrostatic tester. 4,322,969, Cl. 73-40.50R.
Ball, James, to British Aerospace. Folding fins. 4,323,208, Cl. 244-3.280.
Ball, Peter, to FMC Corporation. Articulated loading arm control system. 4,323,975, Cl. 364-559.000.
Ball, William J.; Palmer, Keith W.; and Stewart, David G., to British Petroleum Company Limited, The. Process for the production of amorphous aluminosilicates and their use as catalysts. 4,323,475, Cl. 252-373.000.
Balzer, Gerry C.; and Gordon, Alan M., to Bell Telephone Laboratories, Inc. Key telephone line shunt detector circuit. 4,323,735, Cl. 179-99.0LC.
Bambara, Joseph E.; and Sanville, W. Woodward, to Servo Corporation of America. Self adjusting wheel bearing heat signal processing circuit. 4,323,211, Cl. 246-169.00A.
Banba, Tosio: *See*—
Tsugekawa, Takanori; Banba, Tosio; and Matsui, Masakuni, 4,323,039, Cl. 123-275.000.
Bando, Niro; Miyata, Junji; Tone, Masatsugu; and Watanabe, Haruo, to Kubota, Ltd. Work vehicle. 4,323,137, Cl. 180-305.000.
Barber, Stanley. Dual fuel system for automobiles. 4,323,046, Cl. 123-575.000.
Barker, Andrew J.: *See*—
West, Robert N.; West, Patricia A.; Barker, Andrew J.; and Hall, Rosemary J., 4,323,311, Cl. 356-431.000.
Barnes, Richard M.; Vachula, George M.; and Bennett, Clarence L., Jr., to Sperry Corporation. Polarization detector. 4,323,898, Cl. 343-5.0SA.

Barnes, Richard M.; and Vachula, George M., to Sperry Corporation. Polarization detector. 4,323,899, Cl. 343-55.00A.
Bass, Kenneth B.; and Agusto, Robert G., to National Can Corporation. Colorants for lipid-based edible compositions and lipid-based compositions made therefrom. 4,323,583, Cl. 426-250.000.
Bass, Kenneth B.; and Agusto, Robert G., to National Can Corporation. Colorants for lipid-based edible compositions and lipid-based compositions made therefrom. 4,323,587, Cl. 426-540.000.
Baschang, Gerhard; Tarcsay, Lajos; Hartmann, Albert; and Stanek, Jaroslav, to Ciba-Geigy Corporation. Novel phosphorylmuramyl peptides and processes for the manufacture thereof. 4,323,560, Cl. 424-177.000.
BASF Aktiengesellschaft: *See*—
Degen, Hans-Juergen; and Grychtol, Klaus, 4,323,362, Cl. 8-506.000.
Hoch, Helmut; and Hiller, Heinrich, 4,323,510, Cl. 260-367.000.
Vogel, Hans-Henning; Strickler, Rainer; Oppenlaender, Knut; and Baur, Richard, 4,323,689, Cl. 548-336.000.
BASF Wyandotte Corporation: *See*—
Schmolka, Irving R., 4,323,552, Cl. 424-54.000.
Baskins, Lowell L.; and Durham, Rodney M., to Infrared Industries, Inc. Hydrocarbon gas analyzer. 4,323,777, Cl. 250-339.000.
Batalin, Oleg E.; Dykman, Arkady S.; Osadchenko, Alexandr I.; Balkhanova, Galina F.; Belgorodsky, Izrail M.; Nevstruev, Vladimir I.; Radionov, Valery A.; Tulchinsky, Eduard A.; Belyaev, Valentin M.; Smolin, Jury I.; Breiman, Mark I.; Orlyansky, Vitaly V.; Zhirnov, Nikolai Y.; Galibin, Nikolai V.; Troitsky, Andrian P.; and Kovalenko, Vladimir V. Catalyst for decomposition of 1,3-dioxanes. 4,323,479, Cl. 252-432.000.
Bateman, John M.: *See*—
Peters, Thomas E.; and Bateman, John M., 4,323,338, Cl. 425-174.80E.
Batham, Ian N. Magnetic contamination detector. 4,323,843, Cl. 324-204.000.
Baudry, Hugues; Morhaim, Claude; and Bricout, Dominique, to U.S. Philips Corporation. Starting mixture for a dielectric composition, screen printing paste having such a starting mixture, and product obtained. 4,323,652, Cl. 501-17.000.
Bauer, Jack N.: *See*—
DiGiulio, Adolph V.; and Bauer, Jack N., 4,323,655, Cl. 521-88.000.
Bauer, Kurt: *See*—
Glatt, Werner; and Bauer, Kurt, 4,323,312, Cl. 366-102.000.
Baum, Jonathan S., to FMC Corporation. Preparation of esters. 4,323,685, Cl. 546-300.000.
Baumann, Heinz; Kuehnel, Werner; and Rattner, Manfred, to Siemens Aktiengesellschaft. Tomographic X-ray diagnostic unit with the secondary of the high voltage transformer rotating with the X-ray source. 4,323,781, Cl. 250-422.000.
Baur, Richard: *See*—
Vogel, Hans-Henning; Strickler, Rainer; Oppenlaender, Knut; and Baur, Richard, 4,323,689, Cl. 548-336.000.
Baxter, Andrew J. G., to Beecham Group Limited. β-Lactam anti-bacterial, compositions containing them and a process for their preparation. 4,323,569, Cl. 424-251.000.
Baxter Travenol Laboratories, Inc.: *See*—
Adams, Thomas H.; Beck, James P.; and Menson, Robert C., 4,323,478, Cl. 252-408.000.
Kling, John E., 4,323,065, Cl. 128-214.00R.
Bayer Aktiengesellschaft: *See*—
Buxbaum, Gunter; Pflugmacher, Ingo; Hund, Franz; Hahnkamm, Volker; and Woditsch, Peter, 4,323,596, Cl. 427-127.000.
Bimers, Erich; Margotte, Dieter; Schmid, Helmut; and Dhein, Rolf, 4,323,501, Cl. 260-333.000.
Maurer, Fritz; Hammann, Ingeborg; and Homeyer, Bernhard, 4,323,571, Cl. 424-251.000.
Mazanek, Jan; Gipp, Roland; Zollner, Robert; Seifert, Peter; Wagner, Kuuno; and Blahak, Johannes, 4,323,657, Cl. 521-116.000.
Merten, Rudolf; and Rottmaier, Ludwig, 4,323,687, Cl. 548-264.000.
Neeff, Rutger; Rolf, Meinhard; and Muller, Walter, 4,323,670, Cl. 542-415.000.
Neeff, Rutger; Rolf, Meinhard; and Muller, Walter, 4,323,671, Cl. 542-415.000.
Schmitz-Josten, Robert; Borgardt, Manfred; Schulz, Hans-Hermann; and Walkowiak, Michael, 4,323,348, Cl. 433-228.000.
Schmitz-Josten, Robert; Dietrich, Manfred; and Bomer, Bruno, 4,323,696, Cl. 560-220.000.
Sesterhenn, Lothar; and Tomic, Milorad, 4,323,438, Cl. 204-128.000.
Baylis, Colin R., to BCIRA. Knock-out systems for foundries. 4,323,106, Cl. 164-260.000.
BCIRA: *See*—
Baylis, Colin R., 4,323,106, Cl. 164-260.000.
Beaman, Robert D. Amusement device formed of a plurality of differently shaped interfitting modular units. 4,323,245, Cl. 273-157.00R.
Beck, James P.: *See*—
Adams, Thomas H.; Beck, James P.; and Menson, Robert C., 4,323,478, Cl. 252-408.000.
Beckerman, Howard L.; and Dob, Allan M., to Singer Company, The. Instructional flip plate informational system. 4,323,023, Cl. 112-158.00F.
Beckley, Kenneth E. Directory assembly. 4,322,903, Cl. 40-489.000.
Beckwith Electric Co., Inc.: *See*—
Pettigrew, Robert D., 4,323,838, Cl. 323-256.000.
Beduchaud, Michel: *See*—
Yvard, Marcel; Decuyper, Jean-Claude; and Beduchaud, Michel, 4,323,927, Cl. 358-296.000.
Beecham Group Limited: *See*—
Baxter, Andrew J. G., 4,323,569, Cl. 424-251.000.
Beers, Melvin D., to General Electric Company. Extreme low modulus RTV compositions. 4,323,489, Cl. 524-788.000.
Beiersdorf Aktiengesellschaft: *See*—
Stenzel, Wolfgang; Fleck, Wolfgang; Cohnen, Erich; and Armah, Ben, 4,323,570, Cl. 424-251.000.
Beitler, Franz; and Neckamm, Harald, to U.S. Philips Corporation. Recording and/or reproducing apparatus. 4,323,936, Cl. 360-85.000.
Belcher, Noble: *See*—
Ervin, Ron E.; and Belcher, Noble, 4,323,762, Cl. 219-482.000.
Belden Corporation: *See*—
Kincaid, John W.; and Ward, Robert E., 4,323,721, Cl. 174-36.000.
Belgorodsky, Izrail M.: *See*—
Batalin, Oleg E.; Dykman, Arkady S.; Osadchenko, Alexandr I.; Balkhanova, Galina F.; Belgorodsky, Izrail M.; Nevstruev, Vladimir I.; Radionov, Valery A.; Tulchinsky, Eduard A.; Belyaev, Valentin M.; Smolin, Jury I.; Breiman, Mark I.; Orlyansky, Vitaly V.; Zhirnov, Nikolai Y.; Galibin, Nikolai V.; Troitsky, Andrian P.; and Kovalenko, Vladimir V., 4,323,479, Cl. 252-432.000.
Belke, William H.; Hafele, Joseph C.; Landen, Ernest W.; and Richards, Thomas J., to Caterpillar Tractor Co. Bearing having an array of microasperities. 4,323,401, Cl. 148-39.000.
Bell Telephone Laboratories, Incorporated: *See*—
Adams, Arthur C.; Alexander, Frank B., Jr.; Levinstein, Hyman J.; and Thibault, Louis R., 4,323,638, Cl. 430-275.000.
Balzer, Gerry C.; and Gordon, Alan M., 4,323,735, Cl. 179-99.0LC.
Campbell, Joe C.; and Lee, Tien P., 4,323,911, Cl. 357-30.000.
Carriere, Joseph F.; Gaunt, Wilmer B., Jr.; Landry, Joseph E.; and Spires, Dewayne A., 4,323,885, Cl. 340-347.0CC.
Dickey, Larry W., 4,323,206, Cl. 242-129.600.
Embree, Milton L.; and Garrett, William G., 4,323,797, Cl. 307-490.000.
Hartman, Adrian R.; Scott, Robert S.; and Shackle, Peter W., 4,323,942, Cl. 361-56.000.
King, William C.; and Knight, Stephen, 4,323,799, Cl. 307-571.000.
Klein, Theodore H., 4,323,421, Cl. 156-630.000.
Ott, Henry W.; and Tilson, Bernard A., 4,323,733, Cl. 179-6.30R.
Belsky, Stephen E.: *See*—
Bonfield, John H.; Belsky, Stephen E.; and Pickens, Donald, 4,323,706, Cl. 564-253.000.
Belsterling, Charles A.; and Stone, John, to Franklin Institute, The. DC Motor control using motor-generator set with controlled generator field. 4,323,830, Cl. 318-158.000.
Belyaev, Valentin M.: *See*—
Batalin, Oleg E.; Dykman, Arkady S.; Osadchenko, Alexandr I.; Balkhanova, Galina F.; Belgorodsky, Izrail M.; Nevstruev, Vladimir I.; Radionov, Valery A.; Tulchinsky, Eduard A.; Belyaev, Valentin M.; Smolin, Jury I.; Breiman, Mark I.; Orlyansky, Vitaly V.; Zhirnov, Nikolai Y.; Galibin, Nikolai V.; Troitsky, Andrian P.; and Kovalenko, Vladimir V., 4,323,479, Cl. 252-432.000.
Bendell, Sidney L., to RCA Corporation. Optical assembly for color television. 4,323,918, Cl. 358-50.000.
Bendix Corporation, The: *See*—
Sell, Robert C.; Sheler, John R.; and Juhasz, John M., 4,322,977, Cl. 73-701.000.
Whiteside, Arliss E.; Freedman, Morris D.; Taser, Omer; and Rothschild, Alexander M., 4,323,966, Cl. 364-200.000.
Benelli Armi S.p.A: *See*—
Civolani, Bruno, 4,322,906, Cl. 42-70.00E.
Benguerel, Francois, to Sandoz Ltd. Carbocyclic disazo compounds containing a 2-amino-8-hydroxy-5- or 6-sulfo-naphthalene-2 coupling component radical. 4,323,498, Cl. 260-187.000.
Benjamin, Milton L.; Miles, Wilbur N.; and Ecker, Samuel, to Erikson Tool Company. Device for setting end working tools of multiple spindle automatic bar machines. 4,322,990, Cl. 82-3.000.
Benner Ski KG.: *See*—
Benner, Wolfgang, 4,323,265, Cl. 280-604.000.
Benner, Timothy E.; and Month, Alfred, to RCA Corporation. Mesh assembly having reduced microphonics for a pick-up tube. 4,323,814, Cl. 313-390.000.
Benner, Wolfgang, to Benner Ski KG. Cross country ski. 4,323,265, Cl. 280-604.000.
Bennett, Clarence L., Jr.: *See*—
Barnes, Richard M.; Vachula, George M.; and Bennett, Clarence L., Jr., 4,323,898, Cl. 343-5.0SA.
Bentz, Rolf; and Fattinger, Volker, to Ciba-Geigy Corporation. Process for recovering nitrobenzene, dichlorobenzene and/or trichlorobenzene from exhaust gases, in particular spent air. 4,323,372, Cl. 55-59.000.
Bercha, Frank G.: *See*—
O'Rourke, J. Cam; Pilkington, G. Roger; and Bercha, Frank G., 4,323,322, Cl. 405-217.000.
Berdan, Betty L.; and King, William M., to Gould Inc. Metal composites and laminates formed therefrom. 4,323,632, Cl. 428-626.000.
Beretta, Paolo, to Minnesota Mining and Manufacturing Company. UV-Absorbing compounds and photographic elements containing them. 4,323,633, Cl. 430-17.000.
Berg, Arthur H., to Crouse-Hinds Company. Cable strain relief and sealing apparatus. 4,323,727, Cl. 174-135.000.

Berger, Jean L.; and Couteres, Jean L., to Thomson-CSF. Substraction and charge quantity generation charge transfer device. 4,323,791, Cl. 357-221.000.
Berger, Sol J. Hang-up fixture. 4,323,215, Cl. 248-544.000.
Berggren, Benny, to Stiftelsen Institutet for Mikrovagsteknik vid Tekniska Hogskolan i Stockholm. Method and apparatus for effecting by microwaves a substantially uniform heating of a material in a cavity. 4,323,745, Cl. 219-10.55A.
Bergman, Ola; Hagen, Rolf; Harenberg, Juergen; and Steiner, Herbert, to Siemens Aktiengesellschaft. Conversion circuit arrangement and method for switching digital encoded signals. 4,323,728, Cl. 178-3.000.
Bergmann, Conrad E. Apparatus for controlling and preventing oil blowouts. 4,323,118, Cl. 166-96.000.
Bergmann, Gunther; and Kessler, Arthur. Two terminal circuitry for voltage limitation. 4,323,792, Cl. 307-549.000.
Bergthaller, Peter; Himmelmann, Wolfgang; and Sobel, Johannes, to AGFA-Gevaert Aktiengesellschaft. Process for hardening a photographic material. 4,323,646, Cl. 430-622.000.
Berman, Joel; and Weinreich, Stephen D., to Berman, Joel. Window shade roller assembly. 4,323,105, Cl. 160-309.000.
Bernard, Walter J., to Sprague Electric Company. Electrolytic capacitor with high-purity aluminized cathode. 4,323,950, Cl. 361-433.000.
Berndlmaier, Erich; Clark, Bernard T.; and Dorler, Jack A., to International Business Machines Corporation. Heat transfer structure for integrated circuit package. 4,323,914, Cl. 357-82.000.
Bernhard, Horst, to Merck Patent Gesellschaft mit beschrankter Haftung. Preparation and use of improved pearlescent pigments of high light fastness. 4,323,554, Cl. 424-63.000.
Bertin, Jacques, to Hutchinson-Mapa. Seals of the type designed to ensure fluid-tightness between two rings of conical bearings. 4,323,254, Cl. 277-40.000.
Bessette, Norman F., to Bird Machine Company, Inc. Centrifuge bowl and attachment flanges. 4,323,190, Cl. 233-46.000.
Bessone, Carlo S.: *See*—
Roche, William J.; and Bessone, Carlo S., 4,323,824, Cl. 315-289.000.
Beu, Richard A., to Teledyne Hanau, a division of Teledyne, Inc. Dental articulator. 4,323,346, Cl. 433-58.000.
Beuthling, Gary J.: *See*—
Beuthling, Irvin C., 4,322,862, Cl. 6-5.000.
Beuthling, Irvin C., to Beuthling, Gary J.; and Miller, John A., a part interest. Apparatus and method for feeding bees. 4,322,862, Cl. 6-5.000.
Bickford, John H., to Raymond Engineering Inc.. Calibration test stand and method for hydraulic wrenches. 4,322,965, Cl. 73-1.00C.
Bik, Joannes D.: *See*—
Zeilstra, Jacobus J.; de Klein, Willem J.; and Bik, Joannes D., 4,323,495, Cl. 524-156.000.
Billett, Ronald J.: *See*—
Harper, Bruce M.; Billett, Ronald J.; Roberts, Thomas E.; and Viitanen, Veikko K., 4,323,336, Cl. 425-126.00S.
Bird Machine Company, Inc.: *See*—
Bessette, Norman F., 4,323,190, Cl. 233-46.000.
Birkelbach, Donald F.: *See*—
Lowery, Kirby, Jr.; Birkelbach, Donald F.; and Shipley, Randall S., 4,323,665, Cl. 526-122.000.
Bittar, Joseph, to Otis Elevator Company. Dynamically reevaluated elevator call assignments. 4,323,142, Cl. 187-29.00R.
Blahak, Johannes: *See*—
Mazanek, Jan; Gipp, Roland; Zollner, Robert; Seifert, Peter; Wagner, Kuuno; and Blahak, Johannes, 4,323,657, Cl. 521-116.000.
Blanchard, Clarence E., to Outboard Marine Corporation. Two-speed automatic transmission for a marine propulsion device. 4,323,354, Cl. 440-75.000.
Bleckmann, Hugo; and Kellerwessel, to Klockner-Humboldt-Deutz AG. Method for compressing and agglomerating coal dust. 4,323,532, Cl. 264-118.000.
Bloch, Bertrand; Meyer, Chantal C.; and Charrier, Denis, to Office National d'Etudes et de Recherches. Process for making an acrylic monomer. 4,323,695, Cl. 560-145.000.
Blocki, Roman, to Wytwornia Silnikow Wysokopreznych "PZL-Andrychow". Protecting an internal combustion fuel injection engine from overspeeding. 4,323,040, Cl. 123-389.000.
Blount, David H. Process for the production of cellulose-silicate products. 4,323,494, Cl. 524-858.000.
Bocca, Alberto; and Pagani, Mario, to Sagitta Officina Meccanica S.p.A. Binding machine for the application of a strip of flexible material around the outline of thin articles, particularly for edging parts for boots and shoes. 4,322,864, Cl. 12-24.500.
Bodine, Albert G. Vibratory apparatus for mining shale oil or the like. 4,323,119, Cl. 166-177.000.
Bodnar, Janos: *See*—
Lugosi, Gyorgy; May, Antal S.; Bodnar, Janos; Turcsan, Istvan; Jelinek, Istvan; Somfai, Eva; and Simandi, Laszlo, 4,323,469, Cl. 252-182.000.
Boehringer Ingelheim GmbH: *See*—
Voss, Gunther; and Gruber, Peter, 4,323,530, Cl. 264-109.000.
Boeing Company, The: *See*—
Loch, David M., 4,323,433, Cl. 204-56.00R.
Boesch, Harold E., Jr.: *See*—
McGarrity, James M.; and Boesch, Harold E., Jr., 4,323,842, Cl. 324-158.00R.
Boggavarapu, Rao L., to Westinghouse Electric Corp. Unitary ballast structure for operating four fluorescent lamps. 4,323,823, Cl. 315-254.000.
Bohner & Koehle GmbH & Co.: *See*—
Bosch, Walther, 4,322,960, Cl. 72-83.000.
Bolich, Raymond E., Jr.; Shaya, Steven A.; and Steuri, Christian, to Procter & Gamble Company, The. Process for making pyridinethione salts. 4,323,683, Cl. 546-6.000.
Bolleter, William T.; and Chandler, Carl D., Jr., to Hercules Incorporated. Process for purification of nitrocellulose. 4,323,669, Cl. 536-38.000.
Boman, Lars E.: *See*—
Ternstroem, Ingela M.; and Boman, Lars E., 4,323,070, Cl. 128-287.000.
Bomer, Bruno: *See*—
Schmitz-Josten, Robert; Dietrich, Manfred; and Bomer, Bruno, 4,323,696, Cl. 560-220.000.
Bonchek, Lawrence I.: *See*—
Rosenbluth, Robert F.; and Bonchek, Lawrence I., 4,323,072, Cl. 128-348.000.
Bonci, Frederick R.: *See*—
Greenwald, Edward H., Sr.; Greenwald, Edward H., Jr.; and Bonci, Frederick R., 4,323,281, Cl. 299-1.000.
Bond, Clarence D., to United States of America, Navy. Photographic image enhancement by a gold-toning neutron-activation process. 4,323,641, Cl. 430-370.000.
Bond, Joseph K.: *See*—
Korff, Wolfram G.; Emery, Vernon V.; and Bond, Joseph K., 4,323,337, Cl. 425-155.000.
Bonfield, John H.; Belsky, Stephen E.; and Pickens, Donald, to Allied Corporation. Production of acetaldehyde oxime. 4,323,706, Cl. 564-253.000.
Borg-Warner Corporation: *See*—
Smith, Edward M., 4,323,788, Cl. 307-66.000.
Wiese, Winfred J., 4,323,255, Cl. 277-81.00R.
Borgardt, Manfred: *See*—
Schmitz-Josten, Robert; Borgardt, Manfred; Schulz, Hans-Hermann; and Walkowiak, Michael, 4,323,348, Cl. 433-228.000.
Bornat, Alan, to Imperial Chemical Industries Limited; and University of Liverpool. Electrostatic spinning of tubular products. 4,323,525, Cl. 264-24.000.
Boros, Lawrence A., to Rockwell International Corporation. Method and apparatus for welding automotive brake shoes. 4,323,753, Cl. 219-107.000.
Boros, Lawrence A., to Rockwell International Corporation. Welding automotive brake shoes by high frequency resistance welding. 4,323,754, Cl. 219-107.000.
Borovcoova, Zelmira: *See*—
Fajt, Ludvik; Didek, Stanislav; Kasparek, Jaromir; Storek, Jaroslav; Andres, Jiri; Borovcova, Zelmira; Markova, Marie; Reymanova, Marketa; and Stepanek, Miroslav, 4,322,942, Cl. 57-411.000.
Borrelli, Nicholas F.; Luderer, Albert A.; and Panzarino, Joseph N., to Corning Glass Works. Radio frequency induced hyperthermia for tumor therapy. 4,323,056, Cl. 128-1.300.
Borrelli, Nicholas F.; and Young, Peter L., to Corning Glass Works. Positive imaging method using doped silver halide medium. 4,323,640, Cl. 430-353.000.
Bory, Barbara H.: *See*—
Curry, Janet C.; and Bory, Barbara H., 4,323,466, Cl. 252-106.000.
Bos, Wouter A., to Reba B.V. Cutter head with adjustable suction nozzle. 4,322,898, Cl. 37-64.000.
Bosch, Walther, to Bohner & Koehle GmbH & Co. Machine for forming of rotationally symmetrical workpieces. 4,322,960, Cl. 72-83.000.
Boshard, Hans; Rempfler, Hermann; and Zweifel, Hans, to Ciba-Geigy Corporation. Process for the preparation of indenonecarboxylic acids. 4,323,701, Cl. 562-462.000.
Bost, Benjamin S. Wood finishing machine. 4,323,099, Cl. 144-3.00R.
Bott, John A. Luggage carrier assembly. 4,323,182, Cl. 224-321.000.
Boudault, Robert; and Pouzoullic, Gerard, to U.S. Philips Corporation. Frequency shift modulator with circuitry for simple change-over between high and low channels. 4,323,862, Cl. 332-9.00R.
Boudreau, Robert J. Two wheel roller ice skate. 4,323,259, Cl. 280-7.130.
Bouillon, Claude; Vayssie, Charles; and Richard, Francoise, to L'Oreal. Anti-solar cosmetic composition. 4,323,549, Cl. 424-45.000.
Bouillon, Claude; and Darmenton, Patrick, to L'Oreal. Composition for strengthening and revitalizing brittle or damaged nails containing a salt of 2-benzylthio ethylamine. 4,323,553, Cl. 424-61.000.
Bourdon, Frederic. Syringe. 4,323,066, Cl. 128-218.00R.
Bourns, Inc.: *See*—
DeRouen, Joseph R.; and Smith, Ronald E., 4,323,293, Cl. 339-17.0CR.
Bousquet, Gilles: *See*—
Rambert, Andre; Bousquet, Gilles; and Rigal, Francois, 4,323,059, Cl. 128-90.00C.
Bouvaist, Jean: *See*—
Dubost, Bruno; and Bouvaist, Jean, 4,323,399, Cl. 148-12.70A.
Bowden, Robert L., Jr. Anatomical model. 4,323,350, Cl. 434-269.000.
Boyd, Thomas J., Jr.: *See*—
Brau, Charles A.; Swenson, Donald A.; and Boyd, Thomas J., Jr., 4,323,857, Cl. 372-2.000.
Brachten, Gert; Engelhardt, Friedrich; Helling, Heinz; and Ribka, Joachim, to Cassella Aktiengesellschaft. Dyeing of mixed fibers. 4,323,363, Cl. 8-532.000.
Brachthauser, Kunibert: *See*—
Herchenbach, Horst; Ramesohl, Hubert; and Brachthauser, Kunibert, 4,323,397, Cl. 106-100.000.

Brachthauser, Norbert. Diagram analyzing device with table of events for combined interpretation of plural curves. 4,323,766, Cl. 235-89.00R.
Bradler, Peter, to Siemens Aktiengesellschaft. Commutator motor useful for driving automatic washers. 4,323,831, Cl. 318-245.000.
Bradley, Norbert L.; Cleereman, Kenneth J.; and Wessling, Ritchie A., to Dow Chemical Company, The. Process for forming a plastic article. 4,323,531, Cl. 264-113.000.
Bradley, Richard S., to Weigh-Tronix, Inc. Mounting adapter for a fork lift truck. 4,323,132, Cl. 177-139.000.
Bradshaw, John: *See*—
Clitherow, John W.; Price, Barry J.; Bradshaw, John; Martin-Smith, Michael; MacKinnon, John W. M.; Judd, Duncan B.; and Carey, Linda, 4,323,566, Cl. 424-248.510.
Brady, Hugh D. Board game apparatus. 4,323,249, Cl. 273-249.000.
Bramhall, George H., to Monsanto Company. Rotary forming of articles. 4,323,533, Cl. 264-145.000.
Brandenfels, Carl. Folded box with puzzle. 4,323,154, Cl. 206-216.000.
Branick Mfg., Inc.: *See*—
Severson, Larry A., 4,323,414, Cl. 156-414.000.
Brannegan, Daniel P.: *See*—
Brennan, Thomas M.; Brannegan, Daniel P.; Weeks, Paul D.; and Kuhla, Donald E., 4,323,506, Cl. 260-345.80R.
Brassfield, Robert W. Airlift type dredging apparatus. 4,322,897, Cl. 37-62.000.
Brau, Charles A.; Swenson, Donald A.; and Boyd, Thomas J., Jr., to United States of America, Energy. Catalac free electron laser. 4,323,857, Cl. 372-2.000.
Braun, Albert; Portz, Willi; and Strauss, Georg. Agent for desulfurizing crude iron and steel melts, and process for making it. 4,323,392, Cl. 75-58.000.
Braun, Ernst; and Braun, Gert, to Halbach & Braun. Conveying trough with mining machine cutter guide surfaces. 4,323,282, Cl. 299-43.000.
Braun, Gert: *See*—
Braun, Ernst; and Braun, Gert, 4,323,282, Cl. 299-43.000.
Braverman, Milton. Method for filling and assembling extended dispensing device. 4,322,930, Cl. 53-471.000.
Brazzale, Anthony John: *See*—
Brazzale, Gina, 4,322,866, Cl. 15-180.000.
Brazzale, Gina, to Brazzale, Anthony John. Polisher mounting means. 4,322,866, Cl. 15-180.000.
Breiman, Mark I.: *See*—
Batalin, Oleg E.; Dykman, Arkady S.; Osadchenko, Alexandr I.; Balkhanova, Galina F.; Belgorodsky, Izrail M.; Nevstruev, Vladimir I.; Radionov, Valery A.; Tulchinsky, Eduard A.; Belyaev, Valentin M.; Smolin, Jury I.; Breiman, Mark I.; Orlyansky, Vitaly V.; Zhirnov, Nikolai Y.; Galibin, Nikolai V.; Troitsky, Andrian P.; and Kovalenko, Vladimir V., 4,323,479, Cl. 252-432.000.
Breinan, Edward M.: *See*—
Brown, Clyde O.; Breinan, Edward M.; and Kear, Bernard H., 4,323,756, Cl. 219-121.0LF.
Brennan, James F.: *See*—
Chen, Gwendyline Y. Y. T.; and Brennan, James F., 4,323,637, Cl. 430-271.000.
Brennan, Thomas M., to Baird Corporation. Wide field of view goggle system. 4,323,298, Cl. 350-36.000.
Brennan, Thomas M.; Brannegan, Daniel P.; Weeks, Paul D.; and Kuhla, Donald E., to Pfizer Inc. Preparation of gamma-pyrones. 4,323,506, Cl. 260-345.80R.
Breslow, Ronald C. D.; and Wilcox, Craig S., to Schering Corporation. Process for the preparation of steroidal 17α-arylcarboxylates. 4,323,512, Cl. 260-397.470.
Bricout, Dominique: *See*—
Baudry, Hugues; Morhaim, Claude; and Bricout, Dominique, 4,323,652, Cl. 501-17.000.
Bridges, Clive A.; and O'Donnell, Patrick J., to Marconi Company Limited, The. Infrared parallel scanning arrangement. 4,323,776, Cl. 250-332.000.
Bridgestone Tire Company Limited: *See*—
Kadono, Mamoru; and Saigusa, Tetsuji, 4,323,089, Cl. 138-109.000.
British Aerospace: *See*—
Ball, James, 4,323,208, Cl. 244-3.280.
British Petroleum Company Limited, The: *See*—
Ball, William J.; Palmer, Keith W.; and Stewart, David G., 4,323,475, Cl. 252-373.000.
British Steel Corporation: *See*—
Garner, Henry C.; and McGee, Lawrence, 4,323,717, Cl. 373-101.000.
Brock, James A. Pipe fitting device for plumbing systems. 4,323,270, Cl. 285-153.000.
Bromberg, Howard M., to Flexi-Group Inc., The. Rotatable wheel assembly. 4,323,609, Cl. 428-65.000.
Bronardi Inc.: *See*—
Magi, Hugo, 4,323,090, Cl. 141-70.000.
Brown, Anthony K. D., to Northern Telecom Limited. Idle channel noise suppressor for speech encoders. 4,323,730, Cl. 179-1.00P.
Brown, Clyde O.; Breinan, Edward M.; and Kear, Bernard H., to United Technologies Corporation. Method for fabricating articles by sequential layer deposition. 4,323,756, Cl. 219-121.0LF.
Brown, James N.; and Kalleberg, Melvin O., to Minnesota Mining and Manfacturing Company. Two strip materials used for forming fasteners. 4,322,875, Cl. 24-204.000.
Brown, Michael J.: *See*—
Wexler, Allan; Chakrabarti, Paritosh M.; and Brown, Michael J., 4,323,710, Cl. 568-315.000.
Brown, Richard P.: *See*—
Peters, Arthur; Negi, Virendra S.; Cushing, David E.; Brown, Richard P.; and Joyce, Thomas F., 4,323,967, Cl. 364-300.000.
Brown & Williamson Tobacco Corporation: *See*—
Cogbill, Philip H., II, 4,323,083, Cl. 131-305.000.
Jenkins, Carl B., Jr.; Porenski, Harry S., Jr.; and Turner, Paul N., 4,323,084, Cl. 131-319.000.
Broyhill Company, The: *See*—
Oberg, Robert E.; Stewart, Clarence E.; and Geelan, Thomas C., 4,323,313, Cl. 366-142.000.
Bruckenstein, Stanley, to Andco Industries, Inc. Process for purifying water containing fluoride ion. 4,323,462, Cl. 210-714.000.
Brunelle, Daniel J., to General Electric Company. (Ortho-alkoxycarbonyaryl)-carbonate transesterification. 4,323,668, Cl. 528-173.000.
Bruning, Armin M.: *See*—
Kamp, Eugene L.; Popeck, Charles A.; and Bruning, Armin M., 4,323,871, Cl. 337-7.000.
Brunner, Heinrich; and Fischer, Karin, to Siemens Aktiengesellschaft. Method and circuit arrangement for generating setting signals for signal generators of a traffic signal system, particularly a street traffic signal system. 4,323,970, Cl. 364-436.000.
Brunner, Josef: *See*—
Rock, Erich; and Brunner, Josef, 4,323,213, Cl. 248-222.100.
Brunner, Rudolf, to Heilmeier & Weinlein, Fabrik fur Oel-Hydraulik GmbH & Co. KG. Control valve. 4,323,087, Cl. 137-625.680.
Brunswick Corporation: *See*—
Neufeld, Henry L., 4,323,203, Cl. 242-84.20A.
Rush, Charles R., 4,323,605, Cl. 428-17.000.
Brzezinski, Vincent: *See*—
Flax, Louis; and Brzezinski, Vincent, 4,323,739, Cl. 179-189.00D.
Buck, Ollie G., to Phillips Petroleum Company. Conjugated diene/-monovinyl aromatic copolymer-based heat contractible film coatings on glass bottle. 4,323,606, Cl. 428-35.000.
Buckley, John P.: *See*—
Will, Albert S.; Schuchard, Earl A.; Buckley, John P.; Cioccio, Armand; Hetzler, John C.; Wolf, Sylvan; Jefferson, Donald E.; McQuitty, Jim B.; and Urick, Robert A., 4,323,988, Cl. 367-4.000.
Bugaut, Andree; and Junino, Alex, to L'Oreal. Dyeing compositions for hair which contain 2,4-diamino-butoxybenzene and/or a salt thereof as the coupling agent. 4,323,360, Cl. 8-407.000.
Buhring, Otto; Dreessen, Gerardus J. W.; Groeneveld, Jacob W. H.; Queck, Robert; Thome, Heinrich; and Willemsen, Gerrit J., to Hoechst Aktiengesellschaft. Arc furnace roof. 4,323,718, Cl. 373-73.000.
Buller-Colthurst, Guy E., to Knud Simonsen Industries Limited. Multiple stick for smoke house. 4,322,874, Cl. 17-44.400.
Bulteau, Gerard: *See*—
Thominet, Michel; Bulteau, Gerard; Acher, Jacques; and Collignon, Claude, 4,323,503, Cl. 260-340.300.
Burg, Karlheinz: *See*—
Muck, Karl-Friedrich; Sextro, Gunter; and Burg, Karlheinz, 4,323,502, Cl. 260-340.000.
Burroughs Wellcome Co.: *See*—
Morrison, Robert W., Jr.; Mallory, William R.; and Styles, Virgil L., 4,323,679, Cl. 544-256.000.
Schaeffer, Howard J., 4,323,573, Cl. 424-253.000.
Burst, Hermann: *See*—
Soderberg, Richard; Winter, Steven; and Burst, Hermann, 4,323,274, Cl. 296-1.00S.
Burton, Clark R., to Compair, Inc. Method and apparatus for open flow area classification. 4,322,887, Cl. 33-174.00C.
Busing, David W. Solid geometrical puzzle method of assembling means. 4,323,244, Cl. 273-155.000.
Buurma, Gerald B., to National Semiconductor Corporation. CMOS Analog to digital converter with selectable voltage follower buffering. 4,323,887, Cl. 340-347.0AD.
Buxbaum, Gunter; Pflugmacher, Ingo; Hund, Franz; Hahnkamm, Volker; and Woditsch, Peter, to Bayer Aktiengesellschaft. Coating iron oxide particles for magnetic recording. 4,323,596, Cl. 427-127.000.
Bylund, Don M.: *See*—
Greenway, John M.; and Bylund, Don M., 4,323,760, Cl. 219-364.000.
Byrne, Joe L.; Kobayashi, Robert J.; and Nancarrow, James H., to Garrett Corporation, The. Hydraulic assist turbocharger system. 4,322,949, Cl. 60-606.000.
C. L. Frost & Son, Inc.: *See*—
Smith, Harvey E., Sr.; and Weis, Siegfried K., 4,323,288, Cl. 308-196.000.
C. van der Lely N.V.: *See*—
van der Lely, Cornelis; and van der Lely, Ary, 4,323,136, Cl. 180-271.000.
Caby, Jean-Claude; and Girardin, Jean-Claude, to Portescap. Direct current micromotor. 4,323,805, Cl. 310-237.000.
Calawa, Arthur R.; Gormley, Joseph V.; and Manfra, Michael J. Method for preparing optically flat damage-free surfaces. 4,323,422, Cl. 156-636.000.
Callahan, James L.: *See*—
Hardman, Harley F.; Callahan, James L.; and Grasselli, Robert K., 4,323,520, Cl. 260-465.900.
Callahan, Kevin M., to International Paper Company. Method and apparatus for dispensing flexible trays. 4,323,168, Cl. 221-42.000.
Cam Gears Limited: *See*—
Adams, Frederick J.; and Downing, Philip A., 4,322,986, Cl. 74-89.180.

Campbell, Joe C.; and Lee, Tien P., to Bell Telephone Laboratories, Incorporated. Demultiplexing photodetectors. 4,323,911, Cl. 357-30.000.
Campen, David C.: *See*—
  Crosby, Alan C.; and Campen, David C., 4,323,365, Cl. 23-313.00R.
Camplin, Harry R.: *See*—
  Monson, Donald R.; and Camplin, Harry R., 4,323,369, Cl. 55-1.000.
Canavesi, Roberto; Ligorati, Ferdinando; and Aglietti, Giancarlo, to Societa' Italiana Resine S.I.R. S.p.A. Process and catalyst for the production of dichloroethane. 4,323,716, Cl. 570-243.000.
Cannuli, Vincent M.: *See*—
  Vieland, Leon J.; and Cannuli, Vincent M., 4,323,813, Cl. 113-291.000.
Canon Kabushiki Kaisha: *See*—
  Aoki, Kanemasa, 4,323,806, Cl. 310-266.000.
  Fujii, Motoharu; Koumura, Noboru; Ayata, Naoki; Saito, Seiji; and Sato, Yasushi, 4,323,919, Cl. 358-75.000.
  Ito, Yoshio; Yamada, Katuhiko; Kitajima, Tadayuki; Miyamoto, Koichi; Kobayashi, Hiroo; and Mohyama, Yoshikuni, 4,323,306, Cl. 355-15.000.
  Kawamura, Naoto; Masegi, Koichi; Hakamada, Isao; Uchiyama, Haruo; Kitamura, Takashi; and Ishii, Masaaki, 4,323,297, Cl. 350-6.800.
  Kitajima, Tadayuki; and Tohyama, Yoshikuni, 4,323,308, Cl. 355-57.000.
  Satoh, Toshihiko, 4,323,305, Cl. 354-106.000.
Canon Seiki Kabushiki Kaisha: *See*—
  Aoki, Kanemasa, 4,323,806, Cl. 310-266.000.
Canty, Herbert G., to Kendall Company, The. Surgical drape with retaining device. 4,323,062, Cl. 128-132.00D.
Capizzi, Amedeo: *See*—
  Dal Moro, Anacleto; Pinamonti, Franco; and Capizzi, Amedeo, 4,323,556, Cl. 424-84.000.
Capozzi, Anthony J., to International Business Machines Corporation. Multilevel storage system having unitary control of data transfers. 4,323,968, Cl. 364-200.000.
Carboline Company: *See*—
  Montle, John P.; Markowski, Henry J.; Lodewyck, Paul D.; and Schneider, Daniel F., III, 4,323,690, Cl. 556-470.000.
Carey, Linda: *See*—
  Clitherow, John W.; Price, Barry J.; Bradshaw, John; Martin-Smith, Michael; MacKinnon, John W. M.; Judd, Duncan B.; and Carey, Linda, 4,323,566, Cl. 424-248.510.
Carlin, Jack M. Automatic hose clamp. 4,323,219, Cl. 251-5.000.
Carlin, William W., to PPG Industries, Inc. Method of operating a solid polymer electrolyte chlor-alkali cell. 4,323,435, Cl. 204-98.000.
Carlson, Bertyl W., to Acme Machine Company. Dog jump apparatus. 4,323,034, Cl. 119-29.000.
Carolina Enterprises, Inc.: *See*—
  McIntosh, James K.; and Numata, M., 4,323,047, Cl. 124-1.000.
Carpenter, Lowell L., to Litton Systems, Inc. Bar code controlled microwave oven. 4,323,773, Cl. 235-473.000.
Carpenter, Richard: *See*—
  Stewart, William J.; Robinson, John A.; and Carpenter, Richard, 4,323,300, Cl. 350-96.210.
Carrier Corporation: *See*—
  Zimmerman, Charles J., 4,323,116, Cl. 165-97.000.
Carriere, Joseph F.; Gaunt, Wilmer B., Jr.; Landry, Joseph E.; and Spires, Dewayne A., to Bell Telephone Laboratories, Incorporated. Noise and crosstalk reduction in mid-riser biased encoders. 4,323,885, Cl. 340-347.0CC.
Cassella Aktiengesellschaft: *See*—
  Brachtea, Gert; Engelhardt, Friedrich; Helling, Heinz; and Ribka, Joachim, 4,323,363, Cl. 8-532.000.
Castro, Albert: *See*—
  Monji, Nobuo; and Castro, Albert, 4,323,647, Cl. 435-7.000.
Catastini, Alberto: *See*—
  Radaelli, Dario; De Angelis, Giancarlo; and Catastini, Alberto, 4,323,976, Cl. 364-565.000.
Caterpillar Tractor Co.: *See*—
  Belke, William H.; Hafele, Joseph C.; Landen, Ernest W.; and Richards, Thomas J., 4,323,401, Cl. 148-39.000.
  Witzenburg, Marion J., 4,323,452, Cl. 210-188.000.
Cegedur Societe de Transformation de l'Aluminium Pechiney: *See*—
  Dubost, Bruno; and Bouvaist, Jean, 4,323,399, Cl. 148-12.70A.
Central Electrical Company: *See*—
  Day, Thomas J., 4,323,821, Cl. 315-87.000.
Central Soya Company, Inc.: *See*—
  Saldien, Karel F., 4,323,584, Cl. 426-285.000.
Centro Di Ricera Enrico Longinotti Firenze S.p.A.: *See*—
  Longinotti, Alfredo, 4,323,178, Cl. 222-415.000.
Cezar International, Ltd.: *See*—
  Cezar, Robert M.; and Paz, Alberto B., 4,323,915, Cl. 358-4.000.
Cezar, Robert M.; and Paz, Alberto B., to Cezar International, Ltd. Method and an apparatus for video tape recording. 4,323,915, Cl. 358-4.000.
Chakrabarti, Paritosh M.: *See*—
  Wexler, Allan; Chakrabarti, Paritosh M.; and Brown, Michael J., 4,323,710, Cl. 568-315.000.
Chalker, Oliver H., Jr.; and Spooner, Robert J. Automated time and attendance system. 4,323,771, Cl. 235-377.000.
Chamness, Addison B., Jr.: *See*—
  Erwin, William L.; and Chamness, Addison B., Jr., 4,323,044, Cl. 121-557.000.
Chandler, Carl D., Jr.: *See*—
  Bolleter, William T.; and Chandler, Carl D., Jr., 4,323,669, Cl. 536-38.000.
Chang, David T. L., to Recortec, Inc. Slow moving video tape reproduction. 4,323,930, Cl. 360-10.000.
Chang, Kern K. N., to RCA Corporation. System for enhancing deflection in kinescopes. 4,323,816, Cl. 313-433.000.
Chang, Ying-Chung. Air separator for air compressor. 4,323,375, Cl. 55-270.000.
Chao, Sam T.: *See*—
  Varma, Ravi K.; and Chao, Sam T., 4,323,511, Cl. 260-397.450.
Charrier, Denis: *See*—
  Bloch, Bertrand; Meyer, Chantal C.; and Charrier, Denis, 4,323,695, Cl. 560-145.000.
Chase, Norman E.: *See*—
  Abele, Manlio; Passalaqua, Anthony M.; and Chase, Norman E., 4,322,974, Cl. 73-602.000.
Chattha, Mohinder S., to Ford Motor Company. Composition with latent reactive catalyst - 5. 4,323,660, Cl. 525-161.000.
Check, Kenneth A., to Hewlett-Packard Company. Power supply with resonant inverter circuit using variable frequency control for regulation. 4,323,959, Cl. 363-40.000.
Chen, Gwendyline Y. Y. T., to Du Pont de Nemours, E. I., and Company. Photosensitive block copolymer composition and elements. 4,323,636, Cl. 430-271.000.
Chen, Gwendyline Y. Y. T.; and Brennan, James F., to Du Pont de Nemours, E. I., and Company. Use of cover sheet and interposed flexible film with block copolymer composition. 4,323,637, Cl. 430-271.000.
Chervenak, Michael C.; Johanson, Edwin S.; and Rakow, Marvin S., to Hydrocarbon Research, Inc. Multi-zone coal conversion process using particulate carrier material. 4,323,446, Cl. 208-8.00R.
Chianelli, Russell R.: *See*—
  Dines, Martin B.; and Chianelli, Russell R., 4,323,480, Cl. 252-439.000.
Chiba, Kazumasa; Egawa, Keiichi; and Muraki, Toshio, to Toray Industries, Inc. Photosensitive polyamide resin composition. 4,323,639, Cl. 430-281.000.
Chicago Bridge & Iron Company: *See*—
  Stafford, Donald C.; and Allo, Vincent F., 4,323,115, Cl. 165-79.000.
Chiecchi, Cesare, to U.S. Philips Corporation. Method of introducing an anti-microphony sponge into an air-cored coil. 4,322,884, Cl. 29-602.00R.
Chigirinsky, Alexandr A.: *See*—
  Danko, Vladimir G.; Ljuty, Boris I.; Chigirinsky, Alexandr A.; Kildishev, Vasily S.; Kuzmin, Viktor V.; Danilevich, Yanush B.; Chubraeva, Lidia I.; Potekhin, Konstantin F.; Maslennikov, Konstantin N.; and Ivanov, Valery K., 4,323,803, Cl. 310-59.000.
Chikazumi, Nobutoshi: *See*—
  Mukoyama, Yoshiyuki; and Chikazumi, Nobutoshi, 4,323,664, Cl. 526-88.000.
Childers, John S.; and Mayo, Terry H., to Reed Rock Bit Company. Thrust face bearing structure for rolling cutter drill bit. 4,323,284, Cl. 308-8.200.
Chilson, Richard E. Apparatus for continuously leaching ore. 4,323,539, Cl. 422-278.000.
Chinoin Gyogyszer es Vegyeszeti Termekek Gyara R.T.: *See*—
  Lugosi, Gyorgy; May, Antal S.; Bodnar, Janos; Turcsan, Istvan; Jelinek, Istvan; Somfai, Eva; and Simandi, Laszlo, 4,323,469, Cl. 252-182.000.
Chisso Corporation: *See*—
  Kunimune, Kohichi; Hane, Teruaki; Inadomi, Seigo; and Furukawa, Yasuhiko, 4,323,626, Cl. 428-374.000.
Chiu, Te-Long. Chime unit for electric clock and mechanical clock. 4,323,995, Cl. 368-75.000.
Chiyoda, Tsuneyuki; and Ohtani, Masami, to Diesel Kiki Co., Ltd. Humidifying apparatus for an air-conditioning equipment. 4,323,191, Cl. 236-44.00A.
Chlad, Kenneth J., to Magnetics International, Inc. Hydraulic-driven electro-lifting device. 4,323,329, Cl. 414-737.000.
Chodorow, Marvin: *See*—
  Shaw, Herbert J.; and Chodorow, Marvin, 4,323,310, Cl. 356-350.000.
Chong, Sooi: *See*—
  Jardine, Colin D.; Chong, Sooi; Coles, Rodney H.; and Hebb, Stephen, 4,323,199, Cl. 241-284.000.
Chubraeva, Lidia I.: *See*—
  Danko, Vladimir G.; Ljuty, Boris I.; Chigirinsky, Alexandr A.; Kildishev, Vasily S.; Kuzmin, Viktor V.; Danilevich, Yanush B.; Chubraeva, Lidia I.; Potekhin, Konstantin F.; Maslennikov, Konstantin N.; and Ivanov, Valery K., 4,323,803, Cl. 310-59.000.
Ciba Geigy AG: *See*—
  Jan, Gerald; Hagen, Remon; and Lenoir, John, 4,323,682, Cl. 544-353.000.
Ciba-Geigy Corporation: *See*—
  Baschang, Gerhard; Tarcsay, Lajos; Hartmann, Albert; and Stanek, Jaroslav, 4,323,560, Cl. 424-177.000.
  Bentz, Rolf; and Fattinger, Volker, 4,323,372, Cl. 55-59.000.
  Bosshard, Hans; Rempfler, Hermann; and Zweifel, Hans, 4,323,701, Cl. 562-462.000.
  Ehrenfreund, Josef, 4,323,579, Cl. 424-322.000.
  Habicht, Ernst; Ferrini, Pier G.; and Sallmann, Alfred, 4,323,688, Cl. 548-330.000.
  Pissiotas, Georg; Durr, Dieter; Rohr, Otto; and Lukaszczyk, Alfons, 4,323,388, Cl. 71-88.000.

  Topfl, Rosemarie, 4,323,490, Cl. 523-409.000.
Cioccio, Armand: *See*—
  Will, Albert S.; Schuchard, Earl A.; Buckley, John P.; Cioccio, Armand; Hetzler, John C.; Wolf, Sylvan; Jefferson, Donald E.; McQuitty, Jim B.; and Urick, Robert A., 4,323,988, Cl. 367-4.000.
Civolani, Bruno, to Benelli Armi S.p.A. Trigger mechanism for automatic and semiautomatic firearms of any type. 4,322,906, Cl. 42-70.00E.
Claas OHG: *See*—
  Hollmann, Bernd, 4,322,937, Cl. 56-10.200.
Clarion Co., Ltd.: *See*—
  Sato, Tadashi; Hara, Toyoji; and Tomita, Tadashi, 4,323,787, Cl. 307-38.000.
Clark, Bernard T.: *See*—
  Berndlmaier, Erich; Clark, Bernard T.; and Dorler, Jack A., 4,323,914, Cl. 357-82.000.
Clark, Charles A., Jr.; and Easter, Finis C., to Sperry Corporation. Voltage supression circuit for a voltage converter circuit. 4,323,957, Cl. 363-21.000.
Clark, John P.; Michaelis, Jack H.; and Malcik, Frank J., to Wilson Jones Company. Slide compression mechanism for flexible post binder. 4,323,318, Cl. 402-17.000.
Claybaker, LeRoy A., to General Electric Company. Process of impregnating paper laminate plies with oil modified phenolic resole varnish. 4,323,412, Cl. 156-335.000.
Cleereman, Kenneth J.: *See*—
  Bradley, Norbert L.; Cleereman, Kenneth J.; and Wessling, Ritchie A., 4,323,531, Cl. 264-113.000.
Clemmons, Quentin T.: *See*—
  Morris, Robert B.; and Clemmons, Quentin T., 4,323,144, Cl. 188-196.00A.
Clippard Instrument Laboratory, Inc.: *See*—
  Clippard, William L., III, 4,323,003, Cl. 92-87.000.
Clippard, William L., III, to Clippard Instrument Laboratory, Inc. Fluid cylinder with replaceable rod seal and guide. 4,323,003, Cl. 92-87.000.
Clitherow, John W.; Price, Barry J.; Bradshaw, John; Martin-Smith, Michael; MacKinnon, John W. M.; Judd, Duncan B.; and Carey, Linda, to Glaxo Group Limited. Triazole acylamines, pharmaceutical compositions thereof and method of use thereof. 4,323,566, Cl. 424-248.510.
Close, Donald, to David Hudson, Inc. Fluoroelastomer film compositions containing silane compounds and method for the preparation thereof. 4,323,603, Cl. 524-545.000.
Close, Sam. Clamp assembly. 4,323,226, Cl. 269-208.000.
Clover, Richmond B.: *See*—
  Lee, David M.; Rose, Donald K.; and Clover, Richmond B., 4,323,983, Cl. 365-8.000.
Clune, Charles A., to Midmark Corporation. Self-propelled, non-riding trenching machine with a steering mechanism. 4,322,899, Cl. 37-86.000.
Coal Industry (Patents) Limited: *See*—
  Wykes, John S.; and Adsley, Ian, 4,323,778, Cl. 250-367.000.
Coalex, Inc.: *See*—
  Lansberry, John B.; Apt, Jerome, Jr.; and Dury, Joseph D., Jr., 4,323,280, Cl. 299-1.000.
Coats and Clark, Inc.: *See*—
  Jungerwirth, Bernard R., 4,323,237, Cl. 272-131.000.
Cogbill, Philip H., II, to Brown & Williamson Tobacco Corporation. Method for separating veins from lamina of tobacco leaf. 4,323,083, Cl. 131-305.000.
Coghill, Marvin: *See*—
  Eberhardt, Timothy J., 4,323,324, Cl. 408-124.000.
Cognion, Jean-Marie; and Kervennal, Jacques, to P C U K Produits Chimiques Ugine Kuhlmann. Process for the preparation of organic isocyanates from nitro derivatives. 4,323,515, Cl. 260-453.00P.
Cohnen, Erich: *See*—
  Stenzel, Wolfgang; Fleck, Wolfgang; Cohnen, Erich; and Armah, Ben, 4,323,570, Cl. 424-251.000.
Cole, James A., to Megadata Corporation. Keyboard system with variable automatic repeat capability. 4,323,888, Cl. 340-365.00A.
Coles, Rodney H.: *See*—
  Jardine, Colin D.; Chong, Sooi; Coles, Rodney H.; and Hebb, Stephen, 4,323,199, Cl. 241-284.000.
Collender, Robert B. Stereoscopic television (unaided with lip sync) on standard bandwidth-method and apparatus. 4,323,920, Cl. 358-88.000.
Collignon, Claude: *See*—
  Thominet, Michel; Bulteau, Gerard; Acher, Jacques; and Collignon, Claude, 4,323,503, Cl. 260-340.300.
Collins, Frederick H., to Valcour Imprinted Papers, Inc. Method and apparatus for making large size, low density, elongated thermoplastic cellular bodies. 4,323,528, Cl. 264-53.000.
Columbus, Richard L., to Eastman Kodak Company. Multi-analyte test device. 4,323,536, Cl. 422-56.000.
Combined Optical Industries Ltd.: *See*—
  Pasco, Ian K., 4,323,951, Cl. 362-27.000.
Comello, Corrado: *See*—
  Foscarini, Anthony; Foscarini, John; and Comello, Corrado, 4,323,140, Cl. 182-128.000.
Communications Satellite Corporation: *See*—
  Ali, Zaheer M., 4,324,000, Cl. 370-85.000.
  Rhodes, Smith A., 4,324,001, Cl. 375-90.000.
Compagnie Industrielle des Telecommunications Cit-Alcatel: *See*—
  Yvard, Marcel; Decuyper, Jean-Claude; and Beduchaud, Michel, 4,323,927, Cl. 358-296.000.
Compagnie International pour l'Informatique CII-Honeywell Bull (Societe Anonyme): *See*—
  Lazzari, Jean-Pierre; and Desserre, Jacques, 4,323,941, Cl. 360-121.000.
Compagnie Internationale pour l'Informatique CII-Honeywell Bull (Societe Anonyme): *See*—
  Lazzari, Jean P., 4,323,940, Cl. 360-113.000.
Compair, Inc.: *See*—
  Burton, Clark R., 4,322,887, Cl. 33-174.00C.
Compton, Donald B.; Lewis, William P.; and Trinh, Toan, to Procter & Gamble Company, The. Wick-type slow diffusion dispenser. 4,323,193, Cl. 239-44.000.
Connaught Laboratories Limited: *See*—
  Sun, Anthony M.; and Parisius, Wolf J., 4,323,457, Cl. 210-645.000.
Conrad, Bernhard, to Siemens Aktiengesellschaft. Diagnostic radiology apparatus for producing layer images. 4,323,784, Cl. 250-445.00T.
Conradsen, Arne: *See*—
  Heggebo, Trygve; and Conradsen, Arne, 4,323,386, Cl. 71-35.000.
Consortium fur elektrochemische Ind. GmbH: *See*—
  Schilling, Bernd, 4,323,678, Cl. 544-243.000.
Container Corporation of America: *See*—
  Dickerson, Robert B., 4,323,188, Cl. 229-41.00R.
Control Data Corporation: *See*—
  Hester, Richard E., 4,323,854, Cl. 330-256.000.
Conway, William H.: *See*—
  Willson, James R.; Conway, William H.; and Smith, William N., 4,323,764, Cl. 219-497.000.
Coogler, John M., to Geosource Inc. Geophone spring. 4,323,994, Cl. 367-183.000.
Cook, Craig A.; and Cook, Gary B. Bicycle front fork assembly. 4,323,263, Cl. 280-279.000.
Cook, Francis J.: *See*—
  Abell, Gurdon R.; Cook, Francis J.; and Howes, Peter D., 4,323,925, Cl. 358-213.000.
Cook, Gary B.: *See*—
  Cook, Craig A.; and Cook, Gary B., 4,323,263, Cl. 280-279.000.
Cooper, Christopher A., to Marley Tile AG. Roof ridge capping. 4,322,924, Cl. 52-57.000.
Cooper Tire & Rubber Company: *See*—
  Fitzpatrick, Cecil C.; and Spurgat, Jimmy C., 4,322,963, Cl. 72-387.000.
Coors Container Company: *See*—
  McMillin, Danny L.; and Stirbis, James S., 4,323,601, Cl. 427-287.000.
Copperthwaite, Martin: *See*—
  Roberts, Michael A.; and Copperthwaite, Martin, 4,323,529, Cl. 264-65.000.
Coran, Aubert Y.; and Patel, Raman, to Monsanto Company. Composites of grafted olefin polymers and cellulose fibers. 4,323,625, Cl. 428-361.000.
Cordes, William J. Hole digging apparatus and method. 4,323,129, Cl. 175-285.000.
Corey, Gerald D., to Fansteel Inc. Cluster heat exchanger. 4,323,114, Cl. 165-78.000.
Cornell Research Foundation, Inc.: *See*—
  Kuckes, Arthur F., 4,323,848, Cl. 324-338.000.
Corning Glass Works: *See*—
  Borrelli, Nicholas F.; Luderer, Albert A.; and Panzarino, Joseph N., 4,323,056, Cl. 128-1.300.
  Borrelli, Nicholas F.; and Young, Peter L., 4,323,640, Cl. 430-353.000.
  Gulati, Suresh T., 4,323,614, Cl. 428-116.000.
  Holland, Hans J.; and Megles, John E., Jr., 4,323,653, Cl. 501-32.000.
  Tick, Paul A.; and Sanford, Leon M., deceased, 4,323,654, Cl. 501-47.000.
Corvinus & Roth GmbH: *See*—
  Zabel, Bernd G., 4,323,092, Cl. 137-5.000.
COS Electronics Corporation: *See*—
  Ferris, Harold, 4,323,073, Cl. 128-419.00R.
Cosco Industries, Inc.: *See*—
  Laverty, Gerald C., 4,323,202, Cl. 242-68.500.
Coste, Jean C., to Regie Nationale des Usines Renault. Display device for dashboard of automobile. 4,323,895, Cl. 340-782.000.
Courtin, Gerard C. L. Display case for a luxury article. 4,323,153, Cl. 206-45.130.
Coutures, Jean L.: *See*—
  Begger, Jean L.; and Coutures, Jean L., 4,323,791, Cl. 307-221.00D.
Covington, John B.: *See*—
  Wendling, Larry A.; and Covington, John B., 4,323,591, Cl. 427-53.100.
Cowan, Wavell F.; Green, Marshall S.; and McGurk, Stanley E., to Inotech Process Ltd. Crafted paper making machine. 4,323,426, Cl. 162-398.000.
Cowgill, Ronald H., to Procter & Gamble Company, The. Use of a vibrating screen to separate small live insects from agricultural commodities. 4,323,160, Cl. 209-632.000.
CPT Corporation: *See*—
  Lehman, Frederick D., 4,323,826, Cl. 315-408.000.
Crane Co.: *See*—
  Skarvada, Thomas, 4,323,969, Cl. 364-426.000.
Creighton, Robert A.; and Engel, Stephen M., to United States of America, Navy. Target detecting device with improved counter-countermeasures capability. 4,323,897, Cl. 343-18.00E.
Cremona, Angelo. Log slicing process to produce veneer. 4,323,101, Cl. 144-323.000.

Crespi, Carlo. Metering device for liquids, in particular alcoholic liquors or spirits. 4,323,179, Cl. 222-449.000.
Crest Industries, Inc.: *See*—
Kimzey, Gene A., 4,323,734, Cl. 179-18.0FA.
Creusot-Loire: *See*—
Lantin, Patrice; and Pere, Gerard, 4,323,442, Cl. 204-237.000.
Pere, Gerard, 4,323,443, Cl. 204-253.000.
Criss, Russell C.; and Stofka, Edward J., to PPG Industries, Inc. Electrical bus bar assembly. 4,323,726, Cl. 174-68.500.
Crockford, David R.; and Rhodes, Buck A., to Nuc Med Inc.; and University Patents Inc. Method and composition for cancer detection in humans. 4,323,546, Cl. 424-1.000.
Crosby, Alan C.; and Campen, David C., to Occidental Research Corporation. Dewatering of solid residues of carbonaceous materials. 4,323,365, Cl. 23-313.00R.
Crosby, Samuel C., Jr.: *See*—
Whorton, Robert B., III; Crosby, Samuel C., Jr.; Iannelli, Frank M.; Denmark, James; and Jeans, Edward L., 4,323,171, Cl. 222-82.000.
Crouse-Hinds Company: *See*—
Berg, Arthur H., 4,323,727, Cl. 174-135.000.
Cruz, Frank, Sr.: *See*—
Remillard, Gerard J.; Cruz, Frank, Sr.; Devoss, Daniel W., Jr.; and Miller, Truman A., 4,322,992, Cl. 82-34.00R.
Culpeper, Michael L. Convertible coaster having runners or wheels. 4,323,258, Cl. 280-7.120.
Cunningham, James D. Electrically operated impact tool. 4,323,127, Cl. [illegible]
Curry, Janet C.; and Bory, Barbara H., to Lever Brothers Company. Germicide. 4,323,466, Cl. 252-106.000.
Cushing, David E.: *See*—
Peters, Arthur; Negi, Virendra S.; Cushing, David E.; Brown, Richard P.; and Joyce, Thomas F., 4,323,967, Cl. 364-200.000.
Cutting, Alan B., to E M I - Varian Limited. Spin-tuned magnetron. 4,323,819, Cl. 315-39.610.
D. Swarovski & Co.: *See*—
Poll, Martin, 4,323,611, Cl. 428-67.000.
Daicel Chemical Industries, Ltd.: *See*—
Oka, Yoshitake; Ishihara, Tetsuo; Suzuki, Masane; and Kanaya, Motonori, 4,323,757, Cl. 219-121.0LN.
Daimler-Benz Aktiengesellschaft: *See*—
Lutz, Horst, 4,323,228, Cl. 269-296.000.
Dal Moro, Anacleto; Pinamonti, Franco; and Capizzi, Amedeo, to Montedison S.p.A. Solid formulations containing pheromones and method of using same. 4,323,556, Cl. 424-84.000.
Dale, Charles H., to Pav-Saver Mfg. Co. Track driven machines with auxiliary cable-winch drive. 4,323,321, Cl. 404-105.000.
Damen, Johannes P. M.; and Pistorius, Johannes A., to U.S. Philips Corporation. Single crystal of calcium-gallium germanium garnet and substrate manufactured from such a single crystal and having an epitaxially grown bubble domain film. 4,323,618, Cl. 428-212.000.
D'Amico, John J., to Monsanto Company. N-Amides of 2-benzothiazolinone. 4,323,677, Cl. 544-135.000.
D'Amico, John J.; and Marvel, John T., to Monsanto Company. Benzothiazoleethanimidamides. 4,323,686, Cl. 548-165.000.
Dana Corporation: *See*—
Gray, Larry O., 4,323,134, Cl. 180-176.000.
Young, Richard N.; and Williams, James A., 4,323,827, Cl. [illegible]
Dana, William R.; Friedrich, Ralph S.; and McKenney, John D., to Ameron, Inc. Filament winding of plastic articles. 4,323,408, Cl. [illegible]
Danfoss A/S: *See*—
Hansen, Christian B., 4,323,335, Cl. 418-61.00B.
Huelle, Zbigniew R.; and Nielsen, Leif, 4,323,220, Cl. 251-11.000.
Danilevich, Yanush B.: *See*—
Danko, Vladimir G.; Ljuty, Boris I.; Chigirinsky, Alexandr A.; Kildishev, Vasily S.; Kuzmin, Viktor V.; Danilevich, Yanush B.; Chubraeva, Lidia I.; Potekhin, Konstantin F.; Maslennikov, Konstantin N.; and Ivanov, Valery K., 4,323,803, Cl. 310-59.000.
Danko, Vladimir G.; Ljuty, Boris I.; Chigirinsky, Alexandr A.; Kildishev, Vasily S.; Kuzmin, Viktor V.; Danilevich, Yanush B.; Chubraeva, Lidia I.; Potekhin, Konstantin F.; Maslennikov, Konstantin N.; and Ivanov, Valery K. Electric machine. 4,323,803, Cl. 310-59.000.
Danzin, Charles: *See*—
Metcalf, Brian W.; Jung, Michel; and Danzin, Charles, 4,323,704, Cl. [illegible]
Darmenton, Patrick: *See*—
Bouillon, Claude; and Darmenton, Patrick, 4,323,553, Cl. [illegible]
Data General Corporation: *See*—
Gruner, Ronald H., 4,323,964, Cl. 364-200.000.
Datho Mfg. Inc.: *See*—
Thompson, Elmer R., 4,323,020, Cl. 112-61.000.
David Hudson, Inc.: *See*—
Close, Donald, 4,323,603, Cl. 524-545.000.
Davidson, Kenneth L.: *See*—
Wood, William D.; and Davidson, Kenneth L., 4,323,894, Cl. [illegible]
Davis, Dwight M., Jr., to Western Electric Company, Incorporated. Two-piece strain relief and connectorized flat cable assembly formed therewith. 4,323,295, Cl. 339-107.000.
Davis, Edwin D. Laser excited thermionic electric converter. 4,323,808, Cl. 310-306.000.
Dawson, Peter; and Phillips, John H., to Kelvin Lenses Limited. Measurement of articles. 4,323,850, Cl. 324-439.000.
Day, Thomas J., to Central Elecfrical Company. Luminaire converter. 4,323,821, Cl. 315-87.000.
Dayco Corporation: *See*—
Kleykamp, Donald L., 4,323,751, Cl. 219-91.210.
Richmond, Kenneth D., 4,322,916, Cl. 51-78.000.
De Angelis, Giancarlo: *See*—
Radaelli, Dario; De Angelis, Giancarlo; and Catastini, Alberto, 4,323,976, Cl. 364-565.000.
DeCarlo, Joseph D.: *See*—
Paulis, George J.; and DeCarlo, Joseph D., 4,323,094, Cl. 137-[illegible]
Decuyper, Jean-Claude: *See*—
Yvard, Marcel; Decuyper, Jean-Claude; and Beduchaud, Michel, 4,323,927, Cl. 358-296.000.
Deepsea Ventures, Inc.: *See*—
Latimer, John P., 4,323,216, Cl. 248-550.000.
Degen, Hans-Juergen; and Grychtol, Klaus, to BASF Aktiengesellschaft. Dyed paper. 4,323,362, Cl. 8-506.000.
de Klein, Willem J.: *See*—
Zeilstra, Jacobus J.; de Klein, Willem J.; and Bik, Joannes D., 4,323,495, Cl. 524-156.000.
de Kok, Johan; and van Dongeren, Jan P., to Wavin B.V. Device for manufacturing plastics pipes with oblong channels. 4,323,339, Cl. 425-199.000.
Dell, Hans-Dieter: *See*—
Opitz, Wolfgang; Etscherberg, Eugen; Dell, Hans-Dieter; and Jacobi, Haireddin, 4,323,517, Cl. 260-455.00R.
DeLuca, Nicholas E. Book reading rest. 4,323,214, Cl. 248-452.000.
Demerson, Christopher A.; Humber, Leslie G.; and Ferland, Jean-Marie, to American Home Products Corporation. Antihypertensive tricyclic isoindole derivatives. 4,323,572, Cl. 424-251.000.
Demetrescu, Mihai C., to University of California, The Regents of the. Aperiodic analysis system, as for the electroencephalogram. 4,323,079, Cl. 128-731.000.
Demonte, Filippo; and Figini, Mario, to Ing. C. Olivetti & C., S.p.A. Electronic typewriter with display device. 4,323,315, Cl. 400-63.000.
Dempster, David F.; and Wilson, John J. Control systems for hydraulically operated elements circuits or systems. 4,323,222, Cl. 254-274.000.
Denmark, James: *See*—
Whorton, Robert B., III; Crosby, Samuel C., Jr.; Iannelli, Frank M.; Denmark, James; and Jeans, Edward L., 4,323,171, Cl. 222-82.000.
Dennis, Dwight L.; and Mannschreck, William A., to United States of America, Navy. Armor fabrication. 4,323,000, Cl. 89-36.00A.
Dennis, Mahlon, to Strata Bit Corporation. Drill bit. 4,323,130, Cl. 175-329.000.
Denny, Barry D.: *See*—
Denny, Russell W.; and Denny, Barry D., 4,323,608, Cl. 428-43.000.
Denny, Russell W.; and Denny, Barry D. Label. 4,323,608, Cl. 428-43.000.
Denoor, Gaston; and Thillet, Georges, to B.V.S. Apparatus and method for winding an elongate member onto a body under tension. 4,323,200, Cl. 242-7.210.
den Toonder, Pieter; Doles, Glenn P.; Lund, John A.; Merrell, Richard G.; and Stubbs, Graham S., to Oak Industries Inc. Television coding system with channel level identification. 4,323,922, Cl. 358-117.000.
DeRouen, Joseph R.; and Smith, Ronald E., to Bourns, Inc. Terminal lead with labyrinthine clip. 4,323,293, Cl. 339-17.0CR.
DesMarais, Thomas A., to Procter & Gamble Company, The. Extrusion process for thermoplastic resin composition for fabric fibers with exceptional strength and good elasticity. 4,323,534, Cl. 264-176.00R.
Despatch Industries, Inc.: *See*—
Melgaard, Hans L.; and Mercier, Gary H., 4,322,964, Cl. 73-1.00G.
Desserre, Jacques: *See*—
Lazzari, Jean-Pierre; and Desserre, Jacques, 4,323,941, Cl. 360-123.000.
Detty, Garnett E. Ankle brace. 4,323,058, Cl. 128-80.00H.
Deubel, Reinhold: *See*—
Ehl, Klaus; and Deubel, Reinhold, 4,323,396, Cl. 106-23.000.
Deutsch, Reinhard. Pinball game apparatus. 4,323,241, Cl. 273-121.00A.
Devoss, Daniel W., Jr.: *See*—
Remillard, Gerard J.; Cruz, Frank, Sr.; Devoss, Daniel W., Jr.; and Miller, Truman A., 4,322,992, Cl. 82-34.00R.
de Waard, Peter J., to U.S. Philips Corporation. Injection laser. 4,323,856, Cl. 372-46.000.
De Wames, Roger E.; Hall, William F.; Ho, William W.; and Lim, Teong C., to Rockwell International Corporation. Monolithic, voltage controlled, phased array. 4,323,901, Cl. 343-754.000.
D'ham, Reinhold: *See*—
Weghaupt, Erich; and D'ham, Reinhold, 4,323,801, Cl. 310-52.000.
Dhein, Rolf: *See*—
Eimers, Erich; Margotte, Dieter; Schmid, Helmut; and Dhein, Rolf, 4,323,501, Cl. 260-333.000.
Dickerson, Robert B., to Container Corporation of America. Collapsible container. 4,323,188, Cl. 229-41.00R.
Dickey, Larry W., to Bell Telephone Laboratories, Incorporated. Reel holder having brake action. 4,323,206, Cl. 242-129.600.
Didek, Stanislav: *See*—
Fajt, Ludvik; Didek, Stanislav; Kasparek, Jaromir; Storek, Jaroslav; Andres, Jiri; Borovcova, Zelmira; Markova, Marie; Reymanova, Marketa; and Stepanek, Miroslav, 4,322,942, Cl. 57-411.000.
Dieffenbacher, Albrecht, to Societe d'Assistance Technique pour Produits Nestle S.A. Coffee oil. 4,323,514, Cl. 260-412.300.

Diesel Kiki Co., Ltd.: *See*—
Chiyoda, Tsuneyuki; and Ohtani, Masami, 4,323,191, Cl. 236-44.00A.
Dietrich, Manfred: *See*—
Schmitz-Josten, Robert; Dietrich, Manfred; and Bomer, Bruno, 4,323,696, Cl. 560-220.000.
Dieulot, Gerard; Juan, Mathias; and Fardeau, Michel, to Societe d'Etude de Systems Avances et d'Amenagements. Unit particularly for taking stakes and possibly determining the winners in a game such as a national lotto game. 4,323,770, Cl. 235-375.000.
DiGiulio, Adolph V.; and Bauer, Jack N., to Atlantic Richfield Company. Rubber-modified fire-retardant anhydride copolymers. 4,323,655, Cl. 521-88.000.
Dines, Martin B.; and Chianelli, Russell R., to Exxon Research & Engineering Co. Method of preparing di and poly chalcogenides of group IVb, Vb, molybdenum and tungsten transition metals by low temperature precipitation from non-aqueous solution and the product obtained by said method. 4,323,480, Cl. 252-439.000.
Dion, Donald F., to RCA Corporation. Sequencer for power supply voltages. 4,323,789, Cl. 307-81.000.
Dischert, Robert A.; and Reitmeier, Glenn A., to RCA Corporation. Data rate reduction for digital video signals by subsampling and adaptive reconstruction. 4,323,916, Cl. 358-13.000.
Distler, Walter; and Kintopp, Erich, to Siemens Aktiengesellschaft. Tomographic apparatus for producing transverse layer images. 4,323,783, Cl. 250-445.00T.
Dixon, Roger C.: *See*—
Arnold, Victor F.; and Dixon, Roger C., 4,323,943, Cl. 361-114.000.
Dob, Allan M.: *See*—
Beckerman, Howard L.; and Dob, Allan M., 4,323,023, Cl. 112-158.00F.
Dochterman, Richard W., to General Electric Company. Motor mounting assembly including extendable band. 4,323,217, Cl. 248-604.000.
Dr. Ing. h.c.F. Porsche Aktiengesellschaft: *See*—
Soderberg, Richard; Winter, Steven; and Burst, Hermann, 4,323,274, Cl. 296-1.00S.
Doi, Hachiro, to Fuso Keigokin Co., Ltd. Lawn mower. 4,322,934, Cl. 56-11.100.
Dokoupil, Jiri: *See*—
Hacker, Kurt; and Dokoupil, Jiri, 4,322,900, Cl. 38-77.600.
Doles, Glenn P.: *See*—
den Toonder, Pieter; Doles, Glenn P.; Lund, John A.; Merrell, Richard G.; and Stubbs, Graham S., 4,323,922, Cl. 358-117.000.
Dombek, Bernard D., to Union Carbide Corporation. Production of methyl esters and ethylene glycol esters from reaction of carbon monoxide and hydrogen in presence of ruthenium catalyst. 4,323,513, Cl. 260-410.600.
Dome Petroleum Limited: *See*—
O'Rourke, J. Cam; Pilkington, G. Roger; and Beccha, Frank G., 4,323,322, Cl. 405-217.000.
Domes, E. A.; Taylor, Forrest C.; Vacval, Dusan M.; and Venere, Lawrence A., to International Harvester Company. Automatic tailgate for a dump truck. 4,323,279, Cl. 298-23.0DF.
Donaldson Company, Inc.: *See*—
Monson, Donald R.; and Camplin, Harry R., 4,323,369, Cl. 55-1.000.
Dorler, Jack A.: *See*—
Berndlmaier, Erich; Clark, Bernard T.; and Dorler, Jack A., 4,323,914, Cl. 357-82.000.
Dorma Glas GmbH & Co. KG: *See*—
Fuller, Herman, 4,323,382, Cl. 65-70.000.
Dorr-Oliver Incorporated: *See*—
Olear, John, 4,323,456, Cl. 210-529.000.
Douglas Equipment Manufacturing Co.: *See*—
Douglas, Huey, 4,322,858, Cl. 2-2.000.
Douglas, Huey, to Douglas Equipment Manufacturing Co. Protective garments for football players. 4,322,858, Cl. 2-2.000.
Dow Chemical Company, The: *See*—
Bradley, Norbert L.; Cleereman, Kenneth J.; and Wessling, Ritchie A., 4,323,531, Cl. 264-113.000.
Lowery, Kirby, Jr.; Birkelbach, Donald F.; and Shipley, Randall S., 4,323,665, Cl. 526-122.000.
Downey, Gale D.; and Lutz, Charles W., to FMC Corporation. Stabilized sodium sulfate-hydrogen peroxide-sodium chloride adduct and alkaline bleach composition containing same. 4,323,465, Cl. 252-102.000.
Downing, Philip A.: *See*—
Adams, Frederick J.; and Downing, Philip A., 4,322,986, Cl. 74-89.180.
Dowthwaite, Edwin; and Hiskens, Ian R., to Tenneco Chemicals, Inc. Paper sizing. 4,323,425, Cl. 162-168.00N.
Doyle, Keith G.: *See*—
Zollman, Peter M.; and Doyle, Keith G., 4,323,928, Cl. 358-299.000.
Drabert Sohne Minden (Ger. Body Corp.): *See*—
Riedel, Dieter, 4,323,407, Cl. 156-91.000.
Dreessen, Gerardus J. W.: *See*—
Buhring, Otto; Dreessen, Gerardus J. W.; Groeneveld, Jacob W. H.; Queck, Robert; Thome, Heinrich; and Willemsen, Gerrit J., 4,323,718, Cl. 373-73.000.
Dresser Industries, Inc.: *See*—
Young, James W., 4,323,128, Cl. 175-57.000.
Driver, George J., Jr. Laser-resistant warhead. 4,323,012, Cl. 102-489.000.
Dubost, Bruno; and Bouvaist, Jean, to Cegedur Societe de Transformation de l'Aluminium Pechiney. Process for the thermal treatment of aluminium - copper - magnesium - silicon alloys. 4,323,399, Cl. 148-12.70A.
Duchin, Daniel. Tag dispenser for hand-held attacher. 4,323,183, Cl. [illegible]
Dugge, Richard H.; and Rollins, Dallas W., to ACF Industries, Incorporated. Combination vacuum relief valve and pressure relief valve which are protected from the atmosphere. 4,323,096, Cl. 137-350.000.
Dukes, James S.: *See*—
Loveland, William A.; Dukes, James S.; and Sparks, Gregory W., 4,323,251, Cl. 273-407.000.
Duley, Raymond S., to NCR Corporation. Analog-to-digital converter circuit. 4,323,886, Cl. 340-347.0AD.
Dunning, Stephen C.; and Sutherland, Joseph E., to International Telephone and Telegraph Corporation. Elastic storage and synchronization control apparatus for use in a telephone switching system. 4,323,790, Cl. 370-102.000.
Du Pont de Nemours, E. I., and Company: *See*—
Chen, Gwendyline Y. Y. T., 4,323,636, Cl. 430-271.000.
Chen, Gwendyline Y. Y. T.; and Brennan, James F., 4,323,637, Cl. 430-271.000.
Edwards, Donald W.; and Gorondy, Emery J., 4,323,904, Cl. 346-74.100.
Grantham, Gary D., 4,323,580, Cl. 424-324.000.
Hall, Laurence W.; and Overman, Joseph D., 4,323,645, Cl. 430-564.000.
Middleton, William J., 4,323,578, Cl. 424-298.000.
Nacci, George R., 4,323,929, Cl. 358-301.000.
Rellick, Joseph R., 4,323,483, Cl. 252-512.000.
Durand, Dianne R. Pleating and smocking machine. 4,323,021, Cl. [illegible]
Durandeau, Michel; Voisin, Norbert; and Verdier, Jean P., to Societe Nationale Industrielle Aerospatiale. Digital-analog interface for insertion between a digital control signal transmitter and a controlled moving element. 4,323,884, Cl. 340-347.0DA.
Durham, Rodney M.: *See*—
Baskins, Lowell L.; and Durham, Rodney M., 4,323,777, Cl. [illegible]
Durr, Dieter: *See*—
Pissiotas, Georg; Durr, Dieter; Rohr, Otto; and Lukaszczyk, Alfons, 4,323,388, Cl. 71-88.000.
Dury, Joseph D., Jr.: *See*—
Lansberry, John B.; Apt, Jerome, Jr.; and Dury, Joseph D., Jr., 4,323,280, Cl. 299-1.000.
Dustell LTEE: *See*—
Jolin, Marcel, 4,323,377, Cl. 55-341.0HM.
Dutra, Gerard A., to Monsanto Company. N-Thiolcarbonyl derivatives of N-phosphonomethylglycinonitrile esters, herbicidal compositions and use thereof. 4,323,387, Cl. 71-87.000.
Dykes, William E. Surfing footwear. 4,322,894, Cl. 36-114.000.
Dykman, Arkady S.: *See*—
Batalin, Oleg E.; Dykman, Arkady S.; Osadchenko, Alexandr I.; Balkhanova, Galina F.; Belgorodsky, Izrail M.; Nevstruev, Vladimir I.; Radionov, Valery A.; Tulchinsky, Eduard A.; Belyaev, Valentin M.; Smolin, Jury I.; Breiman, Mark I.; Orlyansky, Vitaly V.; Zhirnov, Nikolai Y.; Galibin, Nikolai V.; Troitsky, Andrian P.; and Kovalenko, Vladimir V., 4,323,479, Cl. 252-412.000.
E & E Kaye Limited: *See*—
Plum, Douglas B., 4,323,218, Cl. 249-65.000.
E M I - Varian Limited: *See*—
Cutting, Alan B., 4,323,819, Cl. 315-39.610.
E. R. Squibb & Sons, Inc.: *See*—
Varma, Ravi K.; and Chao, Sam T., 4,323,511, Cl. 260-397.450.
E-Systems, Inc.: *See*—
Wilson, Lee E., 4,323,268, Cl. 285-41.000.
Easter, Finis C.: *See*—
Clark, Charles A., Jr.; and Easter, Finis C., 4,323,957, Cl. [illegible]
Eastman Kodak Company: *See*—
Columbus, Richard L., 4,323,536, Cl. 422-56.000.
Jadwin, Thomas A., 4,323,634, Cl. 430-110.000.
Levinson, Steven R., 4,323,642, Cl. 430-438.000.
Eaton Corporation: *See*—
Schutten, Herman P.; Jaskolski, Stanley V.; Spellman, Gordon B.; Lade, Robert W.; and Schutten, Michael J., 4,323,793, Cl. 307-252.00R.
Eavenson, Auchmuty & Greenwald: *See*—
Greenwald, Edward H., Sr.; Greenwald, Edward H., Jr.; and Bonci, Frederick R., 4,323,281, Cl. 299-1.000.
Eberhardt, Alfred F.: *See*—
Eberhardt, Timothy J., 4,323,324, Cl. 408-124.000.
Eberhardt, Timothy J., to Eberhardt, Alfred F.; and Coghill, Marvin, part interest to each. Chuck brake. 4,323,324, Cl. 408-124.000.
Ecker, Samuel: *See*—
Benjamin, Milton L.; Miles, Wilbur N.; and Ecker, Samuel, 4,322,990, Cl. 82-3.000.
Eckert, Josef. Dispenser utilizing a follower and delivery device for dispensing pastes, creams, etc. 4,323,175, Cl. 222-256.000.
Eckes, Helmut; Erckel, Rudiger; Martini, Thomas; and Rosch, Gunter, to Hoechst Aktiengesellschaft. Novel stilbene compounds: process for their manufacture and their use as optical brighteners. 4,323,675, Cl. 542-463.000.
Edson, Donald A.; Johnson, Keith I.; and Scott, Michael H., to Welding Institute, The. Electrical inter-connection method. 4,323,759, Cl. 219-137.0PS.

Edwards, Donald W.; and Gorondy, Emery J., to Du Pont de Nemours, E. I., and Company. Magnetic printing process and apparatus. 4,323,904, Cl. 346-74.700.
Efflandt, James F., to Outboard Marine Corporation. Deflector member for a rotary lawn mower. 4,322,938, Cl. 56-320.200.
Egawa, Keiichi: *See—*
  Chiba, Kazumasa; Egawa, Keiichi; and Muraki, Toshio, 4,323,639, Cl. 430-181.000.
Ehl, Klaus; and Deubel, Reinhold, to Hoechst Aktiengesellschaft. Process for the preparation of pigment formulations and their use. 4,323,396, Cl. 106-23.000.
Ehrenfreund, Josef, to Ciba-Geigy Corporation. Insecticidal N-(p-aminophenyl)-N'-benzoylureas. 4,323,579, Cl. 424-322.000.
Eibner, Jules A., to Sperry Corporation. Readback pulse compensator. 4,323,932, Cl. 360-45.000.
Eichrodt, Dieter; and Elsen, Friedhelm, to Siemens Aktiengesellschaft. Logic circuit arrangement in the integrated MOS-circuitry technique. 4,323,982, Cl. 364-786.000.
Eigemeier, Willi. Door lock with spring bolt and dead bolt. 4,322,958, Cl. 70-107.000.
Eimers, Erich; Margotte, Dieter; Schmid, Helmut; and Dhein, Rolf, to Bayer Aktiengesellschaft. Esters of phosphorous acid. 4,323,501, Cl. [illegible].
Ekstrom Industries, Inc.: *See—*
  Robinson, Darrell, 4,323,294, Cl. 339-19.000.
Elder, J. Calvin, to American Standard Inc. Manual block traffic control and signaling system for railroads. 4,323,210, Cl. 246-26.000.
Electro-Cap, Inc.: *See—*
  Sams, Marvin W., 4,323,076, Cl. 128-644.000.
Eli Lilly and Company: *See—*
  Suarez, Tulio; and Jones, C. David, 4,323,707, Cl. 564-324.000.
Elitex, koncern textilniho strojirenstvi: *See—*
  Sraitr, Stanislav; and Srejberova, Hana, 4,322,944, Cl. 57-328.000.
Elmquist, Lyle F.: *See—*
  Jones, Duane A.; and Elmquist, Lyle F., 4,323,487, Cl. 525-54.320.
Elsen, Friedhelm: *See—*
  Eichrodt, Dieter; and Elsen, Friedhelm, 4,323,982, Cl. 364-786.000.
Embree, Milton L.; and Garrett, William G., to Bell Telephone Laboratories, Incorporated. Reciprocal current circuit. 4,323,797, Cl. [illegible].
Emery, Vernon V.: *See—*
  Korff, Wolfram G.; Emery, Vernon V.; and Bond, Joseph K., 4,323,337, Cl. 425-155.000.
Emhart Industries, Inc.: *See—*
  Sandler, Louis M.; Spofford, Walter R.; and Scott, Charles E., 4,323,861, Cl. 331-111.000.
Emmenthal, Klaus-Dieter; and Hagemann, Gunter, to Volkswagenwerk Aktiengesellschaft. Internal combustion engine with an exhaust-driven turbocharger. 4,322,948, Cl. 60-602.000.
Endo, Yoshinori; and Yoshikawa, Masaaki, to Yamaha Hatsudoki Kabushiki Kaisha. Multi-cylinder internal combustion engine of fuel injection type. 4,323,041, Cl. 123-432.000.
Engel, Christopher M.; and Reneau, Daniel L., to Zenith Radio Corporation. Tint control. 4,323,917, Cl. 358-28.000.
Engel, Dusan J., to UOP Inc. Preparation of mono-tertiary butylhydroquinone. 4,323,713, Cl. 568-766.000.
Engel, Dusan J.; and Malloy, Thomas P., to UOP Inc. Preparation of mono-tertiary butylhydroquinone. 4,323,715, Cl. 568-766.000.
Engel, Dusan J.: *See—*
  Malloy, Thomas P.; and Engel, Dusan J., 4,323,714, Cl. 568-766.000.
Engel, Stephen M.: *See—*
  Creighton, Robert A.; and Engel, Stephen M., 4,323,897, Cl. 343-18.00E.
Engelhardt, Friedrich: *See—*
  Brachten, Gert; Engelhardt, Friedrich; Helling, Heinz; and Ribka, Joachim, 4,323,363, Cl. 8-532.000.
English Electric Valve Company Limited: *See—*
  Garfield, Brian R. C., 4,323,811, Cl. 313-99.000.
Enomoto, Shigeo, to Asahi Kogaku Kogyo Kabushiki Kaisha. Automatic focusing camera. 4,323,303, Cl. 354-25.000.
Enomoto, Tatsuya; and Shibata, Hiroshi, to VLSI Technology Research Association. Method for manufacturing semiconductor memory devices. 4,322,881, Cl. 29-571.000.
Entzmann, Karl, to Simmering-Graz-Pauker Aktiengesellschaft fur Maschinen-, Kessel-und Waggonbau. Process for activating treatment of crude oil. 4,323,448, Cl. 208-85.000.
Erckel, Rudiger: *See—*
  Eckes, Helmut; Erckel, Rudiger; Martini, Thomas; and Rosch, Gunter, 4,323,675, Cl. 542-463.000.
Erikson, Herman E.: *See—*
  Maltzman, Edward; and Erikson, Herman E., 4,323,349, Cl. 434-184.000.
Erikson Tool Company: *See—*
  Benjamin, Milton L.; Miles, Wilbur N.; and Ecker, Samuel, 4,322,990, Cl. 82-3.000.
Ervin, Ron E.; and Belcher, Noble. Energy-temperature occupant monitor apparatus. 4,323,762, Cl. 219-482.000.
Erwin, William L.; and Chamness, Addison B., Jr. Engine fuel vaporizing device and system. 4,323,044, Cl. 123-557.000.
Esquire, Inc.: *See—*
  Pustka, Marvin J., 4,323,956, Cl. 362-374.000.
Etablissement Public de Diffusion dit "Telediffusion de France": *See—*
  Guillou, Louis C., 4,323,921, Cl. 358-114.000.
Etablissements Pellenc & Motte: *See—*
  Pellenc, Roger, 4,323,269, Cl. 285-133.00R.
Etscherberg, Eugen: *See—*
  Opitz, Wolfgang; Etscherberg, Eugen; Dell, Hans-Dieter; and Jacobi, Haireddin, 4,323,517, Cl. 260-455.00R.
Exxon Research & Engineering Co.: *See—*
  Dines, Martin B.; and Chianelli, Russell R., 4,323,480, Cl. 252-439.000.
Eyelet Specialty Co., Inc.: *See—*
  Idec, Eric J., 4,323,157, Cl. 206-385.000.
Ezekiel, Shaoul: *See—*
  Leiby, Clare C.,Jr.; and Ezekiel, Shaoul, 4,323,860, Cl. 372-32.000.
Ezis, Andre: *See—*
  Samanta, Shyam K.; Subramanian, Krishnamoorthy; and Ezis, Andre, 4,323,325, Cl. 409-131.000.
F. L. Plastics Industries Pty. Ltd.: *See—*
  Lenthall, Frank C., 4,322,902, Cl. 40-322.000.
Facet Enterprises, Inc.: *See—*
  Mortensen, Harold R., 4,322,985, Cl. 74-6.000.
  Shearin, Robert W., 4,323,379, Cl. 55-511.000.
Fairchild Camera & Instrument Corp.: *See—*
  Vora, Madhukar D., 4,322,882, Cl. 29-571.000.
Faith, William N.: *See—*
  Seitel, Steven C.; Porteus, James O.; and Faith, William N., 4,322,967, Cl. 73-15.600.
Fajt, Ludvik; Didek, Stanislav; Kasparek, Jaromir; Storek, Jaroslav; Andres, Jiri; Borovcova, Zelmira; Markova, Marie; Reymanova, Marketa; and Stepanek, Miroslav, to Vyzkumny ustav bavlnarsky. Open-end spinning method and apparatus. 4,322,942, Cl. 57-411.000.
Fansteel Inc.: *See—*
  Corey, Gerald D., 4,323,114, Cl. 165-78.000.
Fardeau, Michel: *See—*
  Dieulot, Gerard; Juan, Mathias; and Fardeau, Michel, 4,323,770, Cl. 235-375.000.
Fass, Rudolf: *See—*
  Hoyer, Ernst; Meininger, Fritz; and Fass, Rudolf, 4,323,497, Cl. 260-146.00T.
Fattinger, Volker: *See—*
  Bentz, Rolf; and Fattinger, Volker, 4,323,372, Cl. 55-59.000.
Fauerskov, Svend E.; and Sjostrom, Svend O., to A/S Bruel & Kjaer. Strip chart recorder with a differential capacitor serving as position sensor in a position servo for the recording pen. 4,323,903, Cl. 346-32.000.
Feamster, William C., III. Canopy cutting device. 4,322,991, Cl. 82-4.00R.
Feldstein, Nathan. Colloidal dispersions for activating non-conductors prior to electroless plating. 4,323,594, Cl. 427-98.000.
Fenichel, Richard L.: *See—*
  Wolf, Milton; and Fenichel, Richard L., 4,323,681, Cl. 544-323.000.
Ferlan, Stephen J.: *See—*
  Schallenberger, John M.; Kmonk, Stanley; and Ferlan, Stephen J., 4,323,428, Cl. 376-353.000.
Ferland, Jean-Marie: *See—*
  Demerson, Christopher A.; Humber, Leslie G.; and Ferland, Jean-Marie, 4,323,572, Cl. 424-251.000.
Ferrantino, Stanislad: *See—*
  Lagana', Vincenzo; Saviano, Francesco; and Ferrantino, Stanislad, 4,323,252, Cl. 277-12.000.
Ferrari, Ivano: *See—*
  Grilli, Walter; Manicardi, Emidio; and Ferrari, Ivano, 4,323,185, Cl. 228-114.000.
Ferrini, Pier G.: *See—*
  Habicht, Ernst; Ferrini, Pier G.; and Sallmann, Alfred, 4,323,688, Cl. 548-330.000.
Ferris, Harold, to COS Electronics Corporation. Apparatus and method for controlling the application of therapeutic direct current to living tissue. 4,323,073, Cl. 128-419.00R.
Fichter, Manfred, to Kienzle Apparate GmbH. Device for erasing a record carrier recorded by magnetic fields in visually readable form. 4,323,933, Cl. 346-74.300.
Fiedler, Wayne; and Slobodzian, Gregory E., to Stewart-Warner Corporation. High resolution video display system. 4,323,896, Cl. 340-800.000.
Figini, Mario: *See—*
  Demonte, Filippo; and Figini, Mario, 4,323,315, Cl. 400-63.000.
Finetex, Inc.: *See—*
  Scala, Thomas L., Jr., 4,323,693, Cl. 560-103.000.
  Scala, Thomas L., Jr., 4,323,694, Cl. 560-103.000.
Fischer, Karin: *See—*
  Brunner, Heinrich; and Fischer, Karin, 4,323,970, Cl. 364-436.000.
Fish, Barry M.: *See—*
  Witney, Gary; and Visser, Harry, 4,323,829, Cl. 318-55.000.
Fisher, Seth G.; and Kowalyshyn, Stephen, to United States of America, Navy. Torpedo steering control system. 4,323,025, Cl. 114-25.000.
Fisichella, Jeanne M. Medical face mask. 4,323,063, Cl. 128-139.000.
Fitzpatrick, Cecil C.; and Spurgat, Jimmy C., to Cooper Tire & Rubber Company. Valve stem bender and/or marker. 4,322,963, Cl. 72-387.000.
Fives-Cail Babcock: *See—*
  Pietryka, Joseph, 4,323,107, Cl. 164-416.000.
Fiasza, Michael D., to Zenith Radio Corporation. Automatic phase adjusting circuit for a synchronous detector. 4,323,924, Cl. 358-188.000.
Flax, Louis; and Brzezinski, Vincent, to Televault, Inc. Telephone locking device. 4,323,739, Cl. 179-189.00D.

Fleck, Wolfgang: *See—*
  Stenzel, Wolfgang; Fleck, Wolfgang; Cohnen, Erich; and Armah, Ben, 4,323,570, Cl. 424-251.000.
Fleetwood Systems, Inc.: *See—*
  Mojden, Wallace W., 4,323,150, Cl. 198-690.000.
Flesher, Richard H.; and Massie, Lewis E. Warehouse pallet. 4,323,016, Cl. 108-51.100.
Fletcher Sutcliffe Wild Limited: *See—*
  Wake, Malcolm, 4,323,002, Cl. 91-25.000.
Flexi-Group Inc., The: *See—*
  Bromberg, Howard M., 4,323,609, Cl. 428-65.000.
Florence, Noel S.; and Lynn, Norman, to Lightolier Incorporated. Moisture sealed vandal-resistant lighting fixture. 4,323,954, Cl. 362-267.000.
FMC Corporation: *See—*
  Ball, Peter, 4,323,975, Cl. 364-559.000.
  Baum, Jonathan S., 4,323,685, Cl. 546-300.000.
  Downey, Gale D.; and Lutz, Charles W., 4,323,465, Cl. 252-102.000.
  Harper, Bruce M.; Billett, Ronald J.; Roberts, Thomas E.; and Viitanen, Veikko K., 4,323,336, Cl. 425-126.00S.
  Mucenieks, Paul R., 4,323,437, Cl. 204-98.000.
  Ragan, Marshall P.; and Sytsma, Peter H., 4,323,141, Cl. 187-8.470.
Fontaine, Jean-Claude. Fuse cartridges. 4,323,872, Cl. 337-158.000.
Ford Motor Company: *See—*
  Chattha, Mohinder S., 4,323,660, Cl. 525-161.000.
  Macroff, Bruce J., 4,323,166, Cl. 220-86.00R.
  Samanta, Shyam K.; Subramanian, Krishnamoorthy; and Ezis, Andre, 4,323,325, Cl. 409-131.000.
  Whitney, Douglas A., 4,323,093, Cl. 137-56.000.
Forg, Wolfgang: *See—*
  Muller, Karl-Heinz; and Forg, Wolfgang, 4,323,380, Cl. 62-28.000.
Fork, Frank W.; and Kelly, Charles J., to H. H. Robertson Company. Surface mounted outlet unit. 4,323,723, Cl. 174-48.000.
Fortier, J. Paul. Excrement pickup device. 4,323,272, Cl. 294-1.0BA.
Foscarini, Anthony; Foscarini, John; and Comello, Corrado. Safety landing. 4,323,140, Cl. 182-128.000.
Foscarini, John: *See—*
  Foscarini, Anthony; Foscarini, John; and Comello, Corrado, 4,323,140, Cl. 182-128.000.
Foulon, Raymond: *See—*
  Meyer, Nicolas; and Foulon, Raymond, 4,323,667, Cl. 528-138.000.
Fowler, Paul J.; and Zum Bahlen, Ralph E., to Stenograph Corporation. Shorthand machine paper gauge. 4,323,316, Cl. 400-91.000.
Fowler, Steven E.; Hennings, George N.; Hibbs, Joseph E.; Redmond, Stephen L.; and Swenson, Richard M., to United States of America, Navy. Integral store suspension and communication device. 4,322,998, Cl. 89-1.50D.
Foxmar Industries Inc.: *See—*
  Teich, Rudor M., 4,323,820, Cl. 315-86.000.
Fradenburgh, Evan A., to United Technologies Corporation. Hingeless helicopter rotor with elastic gimbal hub. 4,323,332, Cl. 416-134.00A.
Frahm, Veryl H., Jr.: *See—*
  Kruesi, Paul R.; and Frahm, Veryl H., Jr., 4,323,390, Cl. 75-0.50A.
Framatome: *See—*
  Marmorat, Andre; and Robert, Arnold-Michel, 4,323,750, Cl. 219-76.100.
Franklin Institute, The: *See—*
  Belsterling, Charles A.; and Stone, John, 4,323,830, Cl. 318-158.000.
Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H.: *See—*
  Theurer, Josef, 4,323,013, Cl. 104-7.00B.
Freedman, Morris D.: *See—*
  Whiteside, Arliss E.; Freedman, Morris D.; Tasar, Omur; and Rothschild, Alexander M., 4,323,966, Cl. 364-200.000.
Freiborg, Bennie. Asphalt composition shingles. 4,322,928, Cl. 52-521.000.
Freitag, Herbert; and Schnitzius, Klaus, to Stabilus GmbH. Gas spring with means for impeding piston movement away from one terminal position. 4,323,224, Cl. 267-64.120.
Fried, John H.; Kertesz, Denis J.; and Marx, Michael, to Syntex (U.S.A.) Inc. Esters of 6-chloro-11β, 17α,21-trihydroxypregna-1,4,6-triene-3,20-dione. 4,323,564, Cl. 424-241.000.
Friedrich, Ralph S.: *See—*
  Dana, William R.; Friedrich, Ralph S.; and McKenney, John D., 4,323,408, Cl. 156-175.000.
Frieseke & Hoepfner GmbH: *See—*
  Strobel, Heinrich, 4,322,971, Cl. 73-159.000.
Fritz, Frederick F., to Oxford Air Systems, Inc. Apparatus and method for cleaning air. 4,323,373, Cl. 55-96.000.
Fritzsche, Alfred K.; Holladay, Harry P.; and Woodcock, Maurice L., to Monsanto Company. Tube sheets for permeators. 4,323,454, Cl. 210-321.100.
Fromm, Ingrid, to Siemens Aktiengesellschaft. Optical device for measuring slight pressure differences by means of light intensity changes. 4,322,978, Cl. 73-705.000.
Fromm, Ingrid, to Siemens Aktiengesellschaft. Optical device for measuring slight differences of pressure by means of a change in light intensity. 4,322,979, Cl. 73-705.000.
Fu, Cherng-Chyi, to Syntex (U.S.A.) Inc. Contact lens cleaning, storing and wetting solutions. 4,323,467, Cl. 252-106.000.
Fu, Wallace Y.: *See—*
  Ashworth, Robert W.; and Fu, Wallace Y., 4,323,516, Cl. 260-453.300.
Fuji Koeki Corporation: *See—*
  Yakematsu, Yoshiyuki, 4,323,822, Cl. 315-241.00P.
Fuji Photo Film Co., Ltd.: *See—*
  Mifune, Hiroyuki; Hirano, Shigeo; and Akimura, Yoshitaka, 4,323,643, Cl. 430-441.000.
  Nakamura, Taku; Ogawa, Masaei; and Ishigaki, Kunio, 4,323,644, Cl. 430-518.000.
  Ohnishi, Masahiro; and Kimura, Tsutomu, 4,323,906, Cl. 346-76.00L.
  Oishi, Yasushi, 4,323,635, Cl. 430-217.000.
Fujii, Katsutoshi: *See—*
  Nakagami, Kazuto; Yokoi, Shinji; Nishimura, Kenji; Nagai, Shigeki; Honda, Takeo; Oda, Kiroku; Fujii, Katsutoshi; Kobayashi, Ryuji; and Kojima, Mikio, 4,323,680, Cl. 544-293.000.
Fujii, Motoharu; Koumura, Noboru; Ayata, Naoki; Saito, Seiji; and Sato, Yasushi, to Canon Kabushiki Kaisha. Optical scanner for reading data recorded in plural colors. 4,323,919, Cl. 358-75.000.
Fujimori, Shinichiro: *See—*
  Okushima, Hiromi; Fujimori, Shinichiro; Furuya, Rikizo; and Hayakawa, Shuzo, 4,323,500, Cl. 260-239.570.
Fujisawa, Kimio: *See—*
  Nakamura, Kimio; Fujisawa, Kimio; and Ochiai, Kokichi, 4,323,837, Cl. 322-7.000.
Fujita, Takashi: *See—*
  Kunieda, Toshiaki; Odagiri, Masaru; Fujita, Takashi; and Shinohara, Koichi, 4,323,629, Cl. 428-457.000.
Fujitsu Limited: *See—*
  Andoh, Ikuhiro, 4,323,296, Cl. 339-217.00S.
  Ogawa, Kazuo; Suzuki, Eiji; Kurita, Osamu; and Horikawa, Izumi, 4,323,864, Cl. 333-165.000.
  Okamura, Eiji, 4,323,832, Cl. 318-341.000.
Fujiwara, Yoshio: *See—*
  Watanabe, Masanao; Naito, Keiichi; Odajima, Tooru; and Fujiwara, Yoshio, 4,323,659, Cl. 525-108.000.
Fukami, Harukazu: *See—*
  Kikumoto, Kyoji; Ninomiya, Kunihiro; Fukami, Harukazu; and Hara, Hiroto, 4,323,568, Cl. 424-250.000.
Fukazawa, Kazuo; and Yamada, Akira, to RCA Corporation. Video disc locked groove corrector. 4,323,998, Cl. 369-43.000.
Fukuda, Shuzo; and Ohkubo, Yutaka, to Nippon Kokan Kabushiki Kaisha. Continuous dip-plating process on one-side of steel strip. 4,323,604, Cl. 427-433.000.
Fukuda, Takashi: *See—*
  Sawada, Susumu; Fukuda, Takashi; Tsuchiya, Katsuhiro; and Ito, Kazuo, 4,323,404, Cl. 148-148.000.
Fukui, Seiji, to Shimano Industrial Company, Limited. Coaster brake hub with a gear-transmission. 4,323,146, Cl. 192-6.00A.
Fuller, Herman, to Dorma Glas GmbH & Co. KG. Method of pressing glass articles, especially feet of glasses with integrally formed stems. 4,323,382, Cl. 65-70.000.
Funke, Maurice F.: *See—*
  Holmes, Allen B.; Gehman, Stacy E.; and Funke, Maurice F., 4,323,991, Cl. 367-83.000.
Furjes, Emil; and Kecskes, Istvan, to Ozdi Kohaszati Uzemek. Tundish and process for casting from charge to charge in continuous steel foundry. 4,323,108, Cl. 164-488.000.
Furukawa Electric Co., Ltd., The: *See—*
  Nishimura, Hiroshi; Monma, Tetsuo; Yoshida, Minoru; Kirimoto, Kazunari; Hayamizu, Yoshio; and Nagasawa, Toshio, 4,323,607, Cl. 219-213.000.
Furukawa, Yasuhiko: *See—*
  Kunimune, Kohichi; Hane, Teruaki; Inadomi, Seigo; and Furukawa, Yasuhiko, 4,323,626, Cl. 428-374.000.
Furuya, Kouhei: *See—*
  Tanzawa, Kazuhiko; Iwado, Seigo; Tsujita, Yoshio; Kuroda, Masao; and Furuya, Kouhei, 4,323,648, Cl. 435-125.000.
Furuya, Rikizo: *See—*
  Okushima, Hiromi; Fujimori, Shinichiro; Furuya, Rikizo; and Hayakawa, Shuzo, 4,323,500, Cl. 260-239.570.
Fuso Keigokin Co., Ltd.: *See—*
  Doi, Hachiro, 4,322,934, Cl. 56-11.100.
Futatsumori, Koji: *See—*
  Takago, Toshio; Arai, Masatoshi; and Futatsumori, Koji, 4,323,488, Cl. 528-32.000.
GAF Corporation: *See—*
  Wexler, Allan; Chakrabarti, Paritosh M.; and Brown, Michael J., 4,323,710, Cl. 568-315.000.
Gajjar, Jagdishchandra T., to General Electric Company. Method of, and apparatus for, inserting carrier frequency signal information onto distribution transformer primary winding. 4,323,882, Cl. 340-310.00R.
Gakh, Igor G.: *See—*
  Mischenko, Alexandr P.; Gryaznov, Vladimir M.; Gakh, Igor G.; Parbuzina, Iraida L.; Savitsky, Evgeny M.; Polyakova, Viktoria P.; and Roshan, Natalia R., 4,323,708, Cl. 564-418.000.
Galibin, Nikolai V.: *See—*
  Batalin, Oleg E.; Dykman, Arkady S.; Osadchenko, Alexandr I.; Balkhanova, Galina F.; Belgorodsky, Izrail M.; Nevstruev, Vladimir I.; Radionov, Valery A.; Tulchinsky, Eduard A.; Belyaev, Valentin M.; Smolin, Jury I.; Breiman, Mark I.; Orlyansky, Vitaly V.; Zhirnov, Nikolai Y.; Galibin, Nikolai V.; Troitsky, Andrian P.; and Kovalenko, Vladimir V., 4,323,479, Cl. 252-432.000.
Gallagher, John J. Drag reducing structure to minimize vessel collision damage. 4,323,026, Cl. 114-219.000.
Galyan, Boris A.: *See—*
  Paton, Boris E.; Lebedev, Vladimir K.; Kuchuk-Yatsenko, Sergei I.; Sakharnov, Vasily A.; and Galyan, Boris A., 4,323,752, Cl. 219-101.000.

Gander, Robert J., to Johnson & Johnson. Method of treating carcinogenesis. 4,323,581, Cl. 424-324.000.
Ganter, Wolfgang, to Gebruder Junghans GmbH. Electronic wristwatch having electric terminal contacts. 4,323,996, Cl. 368-88.000.
Garbo, Paul W. Cryogenic defoliation. 4,322,910, Cl. 47-1.700.
Garchinsky, John S., to Union Metal Manufacturing Company. Visual indicating system for tall pole carrier raising and lowing apparatus. 4,323,028, Cl. 116-285.000.
Garfield, Brian R. C., to English Electric Valve Company Limited. Streaking image tube with closely spaced photocathode, suppressor mesh, and accelerator mesh. 4,323,811, Cl. 313-99.000.
Garner, Henry C.; and McGee, Lawrence, to British Steel Corporation. Furnace electrode clamps. 4,323,717, Cl. 373-101.000.
Garolis, Joseph J. Power-operated gear-driven box wrench. 4,322,989, Cl. 81-57.130.
Garrett Corporation, The: *See—*
  Byrne, Joe L.; Kobayashi, Robert J.; and Nancarrow, James H., 4,322,949, Cl. 60-606.000.
Garrett, William G.: *See—*
  Embree, Milton L.; and Garrett, William G., 4,323,797, Cl. 507-490.000.
Gartner, Robert. Screw drive. 4,322,987, Cl. 74-424.80R.
Garzione, Michael. Multi-purpose gauge. 4,322,888, Cl. 33-178.00D.
Gaunt, Wilmer B., Jr.: *See—*
  Carriere, Joseph F.; Gaunt, Wilmer B., Jr.; Landry, Joseph E.; and Spires, Dewayne A., 4,323,885, Cl. 340-347.0CC.
Gautier, Herve: *See—*
  Maerfeld, Charles; and Gautier, Herve, 4,323,985, Cl. 365-157.000.
Gawler, Glenn B., to General Electric Company. Switching mode regulator. 4,323,840, Cl. 323-287.000.
GCA Corporation: *See—*
  Goldsmith, Jeff M., 4,323,763, Cl. 219-497.000.
Gebeke, Charles D., to Minnesota Mining and Manufacturing Company. Latch assembly for a video tape cassette. 4,323,207, Cl. 242-198.000.
Gebhard, Albert W., to Gerico, Inc. Pendulum swing. 4,323,233, Cl. 272-86.000.
Gebr. Bode & Co.: *See—*
  Heinrich, Siegfried, 4,322,912, Cl. 49-28.000.
Gebruder Junghans GmbH: *See—*
  Ganter, Wolfgang, 4,323,996, Cl. 368-88.000.
Gebrueder Buehler A.G.: *See—*
  Manser, Josef, 4,323,585, Cl. 426-394.000.
Geelan, Thomas C.: *See—*
  Oberg, Robert E.; Stewart, Clarence E.; and Geelan, Thomas C., 4,323,313, Cl. 366-142.000.
Gehman, Stacy E.: *See—*
  Holmes, Allen B.; Gehman, Stacy E.; and Funke, Maurice F., 4,323,991, Cl. 367-83.000.
Geisler, Alfred J., Jr. Mobile structure. 4,322,925, Cl. 52-143.000.
General Dynamics, Pomona Division: *See—*
  Lasker, George; and Redman, Paul G., 4,322,984, Cl. 74-51.000.
General Electric Company: *See—*
  Beers, Melvin D., 4,323,489, Cl. 524-788.000.
  Brunelle, Daniel J., 4,323,668, Cl. 528-173.000.
  Claybaker, LeRoy A., 4,323,412, Cl. 156-335.000.
  Dochterman, Richard W., 4,323,217, Cl. 248-604.000.
  Gajjar, Jagdishchandra T., 4,323,882, Cl. 340-310.00R.
  Gawler, Glenn B., 4,323,840, Cl. 323-287.000.
  Jamrus, Kenneth J., 4,323,427, Cl. 376-230.000.
  Jaster, Heinz, 4,323,109, Cl. 165-1.000.
  Olson, Daniel R., 4,323,597, Cl. 427-160.000.
  Smith, Lowell S., 4,323,077, Cl. 128-660.000.
  Sommers, Edward G., Jr.; and O'Connor, James G., 4,323,342, Cl. 431-66.000.
  Steigerwald, Robert L., 4,323,962, Cl. 363-127.000.
  Vohr, John H., 4,323,286, Cl. 308-160.000.
General Motors Corporation: *See—*
  Hussey, James L.; Miller, Michael B.; and Staker, William C., Jr., 4,323,902, Cl. 343-903.000.
  Savage, Jack W., 4,323,266, Cl. 280-707.000.
  Sheridan, John J.; Schwartz, Allen K.; and Anderson, Willis H., 4,323,744, Cl. 200-153.0LB.
General Tire & Rubber Company, The: *See—*
  Alt, Rudolph, 4,323,409, Cl. 156-219.000.
Geo. A. Hormel & Company: *See—*
  Lunn, John G., 4,322,873, Cl. 17-21.000.
Geosource Inc.: *See—*
  Coogler, John M., 4,323,994, Cl. 367-183.000.
Gerber, Dennis J., to Acrometal Products, Inc. Self-centering feed mechanism for an abrasive grinding machine. 4,322,919, Cl. 51-139.000.
Gerico, Inc.: *See—*
  Gebhard, Albert W., 4,323,233, Cl. 272-86.000.
Gerlach, Horst W. A., to United States of America, Army. MIC Combiner using unmatched diodes. 4,323,855, Cl. 331-56.000.
Gerling, John E., to Jova Enterprises, Inc. Microwave heating method and apparatus. 4,323,746, Cl. 219-10.55F.
Gerstley, James G., to Rockwell International Corporation. Foil cooling system for high current density electron-beam pumped lasers. 4,323,858, Cl. 372-107.000.
Ghosh, Sambhunath, to Institute of Gas Technology. Gas production by accelerated in situ bioleaching of landfills. 4,323,367, Cl. 48-197.00A.
Giebel, Gerhard, to USM Corporation. Machine for lasting heel seat portions of shoes. 4,322,863, Cl. 12-12.500.
Gilliam, Dennis D. Method of forming electrical discharge machine tools. 4,322,922, Cl. 51-325.000.
Gillie, Raymond A., to Arvey Corporation. Telescopic carton assembly. 4,323,187, Cl. 229-34.00R.
Gilligan, William H., to United States of America, Navy. Polynitroethylthionocarbonates and method of preparation. 4,323,518, Cl. 260-455.00B.
Gilson, Dale P., to Kobe, Inc. Dual thrust bearing for a shaft. 4,323,285, Cl. 308-160.000.
Ginsburgh, Irwin; and Hall, Robert D., to Standard Oil Company (Indiana). Method for controlling underground combustion. 4,323,120, Cl. 166-251.000.
Ginsburgh, Irwin; and Hall, Robert D., to Standard Oil Company (Indiana). Method for controlling underground combustion. 4,323,121, Cl. 166-251.000.
Gintert, Dean W.; and Waksmunski, Raymond A., to PPG Industries, Inc. Nozzle arrangement for glass sheet tempering apparatus. 4,323,385, Cl. 65-351.000.
Giortz, Leif Heegaard: *See—*
  Jacobsen, Leif V., 4,323,841, Cl. 324-51.000.
Gipp, Roland: *See—*
  Mazanek, Jan; Gipp, Roland; Zollner, Robert; Seifert, Peter; Wagner, Kuuno; and Blahak, Johannes, 4,323,657, Cl. 521-116.000.
Girardin, Jean-Claude: *See—*
  Caby, Jean-Claude; and Girardin, Jean-Claude, 4,323,805, Cl. 310-237.000.
Giraud, Andre, to Spin Physics, Inc. Dropout compensation circuitry. 4,323,934, Cl. 360-61.000.
Gladh, Arne I. L.; and Grondahl, Eric W., to Albany International Corp. High-elasticity press felt. 4,323,622, Cl. 428-230.000.
Glaese, Edna R. Jump reach physical training system. 4,323,234, Cl. 272-93.000.
Glassman, Donald; and Maier, Edward E., to United States Steel Corporation. Process for separating ammonia and acid gases from streams containing fixed ammonia salts. 4,323,430, Cl. 203-7.000.
Glatt, Werner; and Bauer, Kurt. Fluidized bed apparatus. 4,323,312, Cl. 366-102.000.
Glauner, Wolfgang: *See—*
  Muller, Stefan; Thun, Gerhard; and Glauner, Wolfgang, 4,322,982, Cl. 73-861.220.
Glaxo Group Limited: *See—*
  Clitherow, John W.; Price, Barry J.; Bradshaw, John; Martin-Smith, Michael; MacKinnon, John W. M.; Judd, Duncan B.; and Carey, Linda, 4,323,566, Cl. 424-248.510.
Globe-Union Inc.: *See—*
  Mahato, Basanta K.; and Laird, Edwin C., 4,323,470, Cl. 252-182.100.
Gneiding, Donald R., to Robertshaw Controls Company. Pressure responsive flow control apparatus for breathing system. 4,323,086, Cl. 137-495.000.
Goggin, Sharon R.: *See—*
  Keches, Leonidas A.; Goggin, Sharon R.; Isaac, Edward J.; and Rogers, Ronald J., 4,323,247, Cl. 273-235.00R.
Golabek, Robert S., to United States of America, Army. Weapon cycle or shot counter. 4,322,966, Cl. 73-7.000.
Goldsmith, Bruce W., to Space Odyssey Ltd. Visual display apparatus for the display of the autonomic nervous system and musculature and spinal nerves and related method. 4,323,351, Cl. 434-274.000.
Goldsmith, Jeff M., to GCA Corporation. Parametric power controller. 4,323,763, Cl. 219-497.000.
Gonzalez, Joe. Automatic film de-splicer and winder. 4,323,201, Cl. 242-56.00R.
Goode, James W.; Penner, Wayne A.; Ray, Charles D.; and Nelson, Robert G., to Mobil Oil Corporation. Seismic exploration system. 4,323,990, Cl. 367-21.000.
Goodyear Tire & Rubber Company, The: *See—*
  Hall, Robert E., 4,323,102, Cl. 152-175.000.
Gordon, Alan M.: *See—*
  Balzer, Gerry C.; and Gordon, Alan M., 4,323,735, Cl. 179-99.0LC.
Gormley, Joseph V.: *See—*
  Calawa, Arthur R.; Gormley, Joseph V.; and Manfra, Michael J., 4,323,422, Cl. 156-636.000.
Gorondy, Emery J.: *See—*
  Edwards, Donald W.; and Gorondy, Emery J., 4,323,904, Cl. 346-74.700.
Gould Advance Limited: *See—*
  Leach, John M., 4,323,845, Cl. 323-224.000.
Gould, Henry D., to Shasta Industries, Inc. Pool cleaning head with rotary pop-up jet producing element. 4,322,860, Cl. 4-490.000.
Gould Inc.: *See—*
  Berdan, Betty L.; and King, William M., 4,323,632, Cl. 428-626.000.
Goupil, Jean-Jacques. Halogenohydrates of N,N-disubstituted derivatives of piperazine having anticariogenic properties. 4,323,550, Cl. 424-32.000.
Graco, Inc.: *See—*
  Krohn, Duane D., 4,323,741, Cl. 200-81.90R.
Graham, John F.; and Holt, Richard R. D. Dyeing method. 4,323,361, Cl. 8-444.000.
Grantham, Gary D., to Du Pont de Nemours, E. I., and Company. Miticidal, fungicidal and ovicidal diphenylsulfenamides. 4,323,580, Cl. 424-324.000.
Grasselli, Robert K.; Miller, Arthur F.; and Hardman, Harley F., to Standard Oil Company. Process for the oxidation of olefins to aldehydes and acids. 4,323,703, Cl. 562-546.000.

Grasselli, Robert K.: *See—*
  Hardman, Harley F.; Callahan, James L.; and Grasselli, Robert K., 4,323,520, Cl. 260-465.900.
Gray, Larry O., to Dana Corporation. Vehicle speed control circuit. 4,323,134, Cl. 180-176.000.
Green, Marshall S.: *See—*
  Cowan, Wavell F.; Green, Marshall S.; and McGurk, Stanley E., 4,323,426, Cl. 162-398.000.
Green, Martin A., to Unisearch Limited. Integrated solar cells and shunting diodes. 4,323,719, Cl. 136-249.000.
Greenfield, George B. Apparatus and method for enhancing radiographs. 4,323,973, Cl. 364-515.000.
Greenwald, Edward H., Jr.: *See—*
  Greenwald, Edward H., Sr.; Greenwald, Edward H., Jr.; and Bonci, Frederick R., 4,323,281, Cl. 299-1.000.
Greenwald, Edward H., Sr.; Greenwald, Edward H., Jr.; and Bonci, Frederick R., to Eavenson, Auchmuty & Greenwald. Method of surface mining. 4,323,281, Cl. 299-1.000.
Greenway, John M.; and Bylund, Don M., to Milliken Research Corporation. Method and apparatus for temperature control of heated fluid in a fluid handling system. 4,323,760, Cl. 219-364.000.
Greis, Howard A., to Kinefac Corp. Die rolling machine. 4,322,961, Cl. 72-95.000.
Grilli, Walter; Manicardi, Emidio; and Ferrari, Ivano, to Italtractor I.T.M. S.p.A. Friction welding process for making hollow bodies such as rollers and similar articles. 4,323,185, Cl. 228-114.000.
Groeger, Heinz K.: *See—*
  Malthouse, Martin D.; and Groeger, Heinz K., 4,323,416, Cl. 156-321.000.
Groeneveld, Jacob W. H.: *See—*
  Buhring, Otto; Dreessen, Gerardus J. W.; Groeneveld, Jacob W. H.; Queck, Robert; Thome, Heinrich; and Willemsen, Gerrit J., 4,323,718, Cl. 373-73.000.
Grollier, Jean-Francois; and Allec, Josiane, to L'Oreal. Make-up remover composition for the face and eyes. 4,323,468, Cl. 252-174.170.
Gromov, Valery V.: *See—*
  Shirinian, Vram T.; Mnatsakanov, Suren S.; Pavljuchenko, Valery N.; Rozenberg, Mark E.; Gromov, Valery V.; and Ivanchev, Sergei S., 4,323,666, Cl. 526-329.000.
Grondahl, Eric W.: *See—*
  Gladh, Arne I. L.; and Grondahl, Eric W., 4,323,622, Cl. 428-230.000.
Gruber, Peter: *See—*
  Voss, Gunther; and Gruber, Peter, 4,323,530, Cl. 264-109.000.
Grudno, Hans-Dieter, to Krupp Polysius AG. Apparatus for heat treating fine-grain material. 4,323,344, Cl. 432-106.000.
Grueneberg, Bevan E., to Pioneer Container Corp. Battery container. 4,323,156, Cl. 206-333.000.
Gruner, Ronald H., to Data General Corporation. CPU Employing micro programmable control for use in a data processing system. 4,323,964, Cl. 364-200.000.
Gryaznov, Vladimir M.: *See—*
  Mischenko, Alexandr P.; Gryaznov, Vladimir M.; Gakh, Igor G.; Parbuzina, Iraida L.; Savitsky, Evgeny M.; Polyakova, Viktoria P.; and Roshan, Natalia R., 4,323,708, Cl. 564-418.000.
Grychtol, Klaus: *See—*
  Degen, Hans-Juergen; and Grychtol, Klaus, 4,323,362, Cl. 8-506.000.
GTE Products Corporation: *See—*
  Roche, William J.; and Bessone, Carlo S., 4,323,824, Cl. 315-289.000.
GTE Service Corporation: *See—*
  Wyner, Elliot F.; and Lowry, Elvery D., 4,323,812, Cl. 313-198.000.
Gueuter, Erwin, to Maag Gear-Wheel & Machine Co. Ltd. Testing apparatus for involute and helical gear teeth. 4,322,889, Cl. 33-179.50R.
Guigan, Jean. Dispenser for dispensing frozen goods. 4,323,169, Cl. 221-124.000.
Guillou, Louis C., to Etablissement Public de Diffusion dit "Telediffusion de France"; and L'Etat Francais, represente par le Secretaire d'Etat aux Poste et Telecommunications (Centre National d'Etudes des Telecommunications). System for transmitting information provided with means for controlling access to the information transmitted. 4,323,921, Cl. 358-114.000.
Gulati, Suresh T., to Corning Glass Works. Ceramic honeycomb structure. 4,323,614, Cl. 428-116.000.
Gulf Research & Development Company: *See—*
  Tsai, Shirley C.; and McIlvried, Howard G., III, 4,323,447, Cl. 208-8.0LE.
Gulf & Western Corporation: *See—*
  Pavone, Robert J., 4,323,149, Cl. 198-471.000.
Gulf & Western Manufacturing Company: *See—*
  Andrews, Ralph L., 4,323,151, Cl. 198-740.000.
Gunson S.A. (Proprietary) Limited: *See—*
  Wolf, Peter, 4,323,159, Cl. 209-548.000.
Guritz, Kenneth E.; and Guritz, Michael L. Service cable distribution system. 4,323,949, Cl. 361-428.000.
Guritz, Michael L.: *See—*
  Guritz, Kenneth E.; and Guritz, Michael L., 4,323,949, Cl. 361-428.000.
Guttman, Milton. Protective means for door and window openings. 4,323,104, Cl. 160-92.000.
H. H. Robertson Company: *See—*
  Fork, Frank W.; and Kelly, Charles J., 4,323,723, Cl. 174-48.000.
Haag, Werner O.; and Whitehurst, Darrell D., to Mobil Oil Corporation. Resin-metal compound complex for catalyzing chemical reactions. 4,323,698, Cl. 560-233.000.
Haavik, Harold K., to Nash Engineering Company, The. Two stage liquid ring pump. 4,323,334, Cl. 417-68.000.
Habicht, Ernst; Ferrini, Pier G.; and Sallmann, Alfred, to Ciba-Geigy Corporation. Benzimidazole-2-carboxylic acid and derivatives thereof. 4,323,688, Cl. 548-330.000.
Hachino, Hiroaki: *See—*
  Suzuki, Seikou; Nishihara, Motohisa; Kawakami, Kanji; Sato, Hideo; Kobori, Shigeyuki; Hachino, Hiroaki; and Takahashi, Minoru, 4,322,980, Cl. 73-727.000.
Hacker, Kurt; and Dokoupil, Jiri. Ironing device for industrial use and associated iron. 4,322,900, Cl. 38-77.600.
Haddock, William H., to North Carolina State University. Method and apparatus for planting seedlings. 4,323,019, Cl. 111-2.000.
Hafele, Joseph C.: *See—*
  Belke, William H.; Hafele, Joseph C.; Landen, Ernest W.; and Richards, Thomas J., 4,323,401, Cl. 148-39.000.
Hagemann, Gunter: *See—*
  Emmenthal, Klaus-Dieter; and Hagemann, Gunter, 4,322,948, Cl. 60-602.000.
Hagen, Remon: *See—*
  Jan, Gerald; Hagen, Remon; and Lenoir, John, 4,323,682, Cl. 544-353.000.
Hagen, Rolf: *See—*
  Bergman, Ola; Hagen, Rolf; Harenberg, Juergen; and Steiner, Herbert, 4,323,728, Cl. 178-3.000.
Hagihara, Tadashi. Array of filter elements. 4,323,451, Cl. 210-160.000.
Hahnkamm, Volker: *See—*
  Buxbaum, Gunter; Pflugmacher, Ingo; Hund, Franz; Hahnkamm, Volker; and Woditsch, Peter, 4,323,596, Cl. 427-127.000.
Hakamada, Isao: *See—*
  Kawamura, Naoto; Masegi, Koichi; Hakamada, Isao; Uchiyama, Haruo; Kitamura, Takashi; and Ishii, Masaaki, 4,323,297, Cl. 350-6.[illegible]
Halbach & Braun: *See—*
  Braun, Ernst; and Braun, Gert, 4,323,282, Cl. 299-43.000.
Halcon SD Group, Inc., The: *See—*
  Rizkalla, Nabil, 4,323,697, Cl. 560-232.000.
Halfon, Leon. Fish tank and aquarium. 4,323,032, Cl. 119-5.000.
Hall, Laurence W.; and Overman, Joseph D., to Du Pont de Nemours, E. I., and Company. Organic halogen compounds for negative-working silver halide emulsions. 4,323,645, Cl. 430-564.000.
Hall, Robert D.: *See—*
  Ginsburgh, Irwin; and Hall, Robert D., 4,323,120, Cl. 166-251.000.
  Ginsburgh, Irwin; and Hall, Robert D., 4,323,121, Cl. 166-251.000.
Hall, Robert E., to Goodyear Tire & Rubber Company, The. Dirt seal for removable rubber belts. 4,323,102, Cl. 152-175.000.
Hall, Rosemary J.: *See—*
  West, Robert N.; West, Patricia A.; Barker, Andrew J.; and Hall, Rosemary J., 4,323,311, Cl. 356-431.000.
Hall, William F.: *See—*
  De Wames, Roger E.; Hall, William F.; Ho, William W.; and Lim, Teong C., 4,323,901, Cl. 343-754.000.
Halvorsen, Norrine M. Independent insole assembly. 4,322,893, Cl. 36-43.000.
Hamilton, Joel A. Actuating stamp with free-turning inking roller. 4,323,011, Cl. 101-305.000.
Hamisch, Paul H., Jr., to Monarch Marking Systems, Inc. Selective printing apparatus. 4,323,010, Cl. 101-110.000.
Hammann, Ingeborg: *See—*
  Maurer, Fritz; Hammann, Ingeborg; and Homeyer, Bernhard, 4,323,571, Cl. 424-251.000.
Hammond, Ogden H., to Massachusetts Institute of Technology. Gasification of coal. 4,323,368, Cl. 48-202.000.
Hane, Teruaki: *See—*
  Kunimune, Kohichi; Hane, Teruaki; Inadomi, Seigo; and Furukawa, Yasuhiko, 4,323,626, Cl. 428-374.000.
Hanna Mining Company, The: *See—*
  Jardine, Colin D.; Chong, Sooi; Coles, Rodney H.; and Hebb, Stephen, 4,323,199, Cl. 241-284.000.
Hansen, Christian B., to Danfoss A/S. Distributor valve for hydraulic planetary piston machine. 4,323,335, Cl. 418-61.00B.
Hansen, Erik Steinmann: *See—*
  Jacobsen, Leif V., 4,323,841, Cl. 324-51.000.
Hansen, Niels H. V.; Mikkelsen, Erling H.; and Vissing, Soren, to P. Campen Maskinfabrik A/S. Method of producing foam material and apparatus therefor. 4,323,474, Cl. 252-307.000.
Hanson, Steven P.; Morrison, Howard J.; and Montague, Douglas P., to Marvin Glass & Associates. Electrical board game device. 4,323,243, Cl. 273-153.00S.
Hanyu, Susumu; and Kato, Kenji, to Janome Sewing Machine Co. Ltd. Pattern selecting system for electronic sewing machine. 4,323,022, Cl. 112-158.00E.
Hara, Hiroto: *See—*
  Kikumoto, Kyoji; Ninomiya, Kunihiro; Fukami, Harukazu; and Hara, Hiroto, 4,323,568, Cl. 424-250.000.
Hara, Toyoji: *See—*
  Sato, Tadashi; Hara, Toyoji; and Tomita, Tadashi, 4,323,787, Cl. 307-38.000.
Haraszti, Tegze P., to Rockwell International Corporation. Radiation hardened MOS voltage generator circuit. 4,323,846, Cl. 323-311.000.
Harayama, Takeo: *See—*
  Yoshimoto, Takeo; Inoue, Takayuki; Michiyama, Hideo; Harayama, Takeo; Morikama, Osamu; Hojo, Yoshikata; Baba,

Takao; Toyama, Teruhiko; Ura, Masaaki; and Takasawa, Yoshio, 4,323,389, Cl. 71-124.000.
Hardman, Harley F.; Callahan, James L.; and Grasselli, Robert K., to Standard Oil Co., The. Preparation of methacrylic derivatives from tertiary-butyl-containing compounds. 4,323,520, Cl. 260-465.900.
Hardman, Harley F.: *See—*
Grasselli, Robert K.; Miller, Arthur F.; and Hardman, Harley F., 4,323,703, Cl. 562-546.000.
Harenberg, Juergen: *See—*
Bergman, Ola; Hagen, Rolf; Harenberg, Juergen; and Steiner, Herbert, 4,323,728, Cl. 178-3.000.
Harper, Bruce M.; Billett, Ronald J.; Roberts, Thomas E.; and Viitanen, Veikko K., to FMC Corporation. Inserting sticks into confections. 4,323,336, Cl. 425-126.00S.
Harper, George S., to North American Philips Controls Corp. Setting mechanism for snap action circuit breaker. 4,323,868, Cl. 335-38.000.
Harreus, Albrecht: *See—*
Zimmermann, Wolfgang; and Harreus, Albrecht, 4,323,492, Cl. 524-388.000.
Harris Corporation: *See—*
Hershberger, David L., 4,323,731, Cl. 179-1.0GS.
Harris, Loren A. Burner apparatus. 4,323,017, Cl. 110-110.000.
Hartman, Adrian R.; Scott, Robert S.; and Shackle, Peter W., to Bell Telephone Laboratories, Incorporated. Solid-state protector circuitry using gated diode switch. 4,323,942, Cl. 361-56.000.
Hartmann, Albert: *See—*
Beschang, Gerhard; Tarcsay, Lajos; Hartmann, Albert; and Stanek, Jaroslav, 4,323,560, Cl. 424-177.000.
Hasegawa, Masayasu; Nishikawa, Hideo; and Yoshida, Kayoko, to Nippon Gohsei Kagaku Kogyo Kabushiki Kaisha. Antibacterial and antifungal composition. 4,323,565, Cl. 424-246.000.
Hasegawa, Takanori; Shimada, Takanobu; Sato, Takao; Kera, Masakazu; Yoshida, Shuntaro; and Shimoyama, Shinichi, to Riso Kagaku Corporation. Divided exposure method and device. 4,323,775, Cl. 250-317.100.
Hasegawa, Yasuyuki, to Shibuya Kogyo Company, Ltd. Pattern controlling device for laser marker. 4,323,317, Cl. 400-118.000.
Hasegawa, Yugo: *See—*
Sakata, Kenji; Yamada, Toshiaki; Uchiyama, Kenji; and Hasegawa, Yugo, 4,323,600, Cl. 427-202.000.
Hashimoto, Isao; and Nambu, Hirohiko, to Mitsui Petrochemical Industries, Ltd. Polyalkylhydroxychromene and process for preparing the same. 4,323,505, Cl. 260-345.200.
Hattori, Masumi; Ishida, Toru; and Tanaka, Shinichi, to Matsushita Electric Industrial Co., Ltd. Glaze resistor composition. 4,323,484, Cl. 252-521.000.
Hauni-Werke Korber & Co. KG.: *See—*
Helms, Adolf; and Lorenzen, Heinz-Christen, 4,323,082, Cl. 131-281.000.
Hauserman Ltd.: *See—*
Ball, Douglas C., 4,323,291, Cl. 312-194.000.
Hayakawa, Shuzo: *See—*
Okushima, Hiromi; Fujimori, Shinichiro; Furuya, Rikizo; and Hayakawa, Shuzo, 4,323,500, Cl. 260-239.570.
Hayamizu, Yoshio: *See—*
Nishimura, Hiroshi; Monma, Tetsuo; Yoshida, Minoru; Kirimoto, Kazunari; Hayamizu, Yoshio; and Nagasawa, Toshio, 4,323,607, Cl. 219-213.000.
Hayes, Robert S., to Mohawk Data Sciences Corp. Deflection system with positive feedback. 4,323,825, Cl. 315-387.000.
Hazemeijer B. V.: *See—*
Lipperts, Joseph H., 4,323,590, Cl. 427-38.000.
Healy, Kenneth T. Entrance for a beehive. 4,322,861, Cl. 6-4.00R.
Hebb, Stephen: *See—*
Jardine, Colin D.; Chong, Sooi; Coles, Rodney H.; and Hebb, Stephen, 4,323,199, Cl. 241-284.000.
Heggebo, Trygve; and Conradsen, Arne, to Norsk Hydro a.s. Method of manufacturing NP- or NPK-containing fertilizers from magnesium containing phosphate. 4,323,386, Cl. 71-35.000.
Heilmeier & Weinlein, Fabrik fur Oel-Hydraulik GmbH & Co. KG: *See—*
Brunner, Rudolf, 4,323,087, Cl. 137-625.680.
Heimlich, Henry J. Collapsible respiratory exerciser. 4,323,078, Cl. 128-728.000.
Heinrich, Siegfried, to Gebr. Bode & Co. Safety device for a vehicle door actuated by a turnable shaft. 4,322,912, Cl. 49-28.000.
Heinz, Lothar: *See—*
Tombaugh, Dennis; Martinsen, Nick; Symmons, Edgar B.; and Heinz, Lothar, 4,323,780, Cl. 250-419.000.
Helling, Heinz: *See—*
Brachten, Gert; Engelhardt, Friedrich; Helling, Heinz; and Ribka, Joachim, 4,323,363, Cl. 8-532.000.
Helms, Adolf; and Lorenzen, Heinz-Christen, to Hauni-Werke Korber & Co. KG. Apparatus for making holes in webs of wrapping material for cigarettes or the like. 4,323,082, Cl. 131-281.000.
Helwerth, Rainer; and Lorke, Horst, to Hoechst Aktiengesellschaft. Anticorrosive agent for aluminium and aluminium alloys. 4,323,476, Cl. 252-389.00R.
Henderson, Alva E.: *See—*
Wiggins, Richard H.; and Henderson, Alva E., 4,323,732, Cl. [illegible]
Henkel Corporation: *See—*
Jones, Duane A.; and Elmquist, Lyle F., 4,323,487, Cl. 525-54.320.
Henning, William J. Articles having an insulative coating containing kaolin and staple fibers. 4,323,400, Cl. 428-36.000.
Hennings, George N.: *See—*
Fowler, Steven E.; Hennings, George N.; Hibbs, Joseph E.; Redmond, Stephen L.; and Swenson, Richard M., 4,322,998, Cl. 89-1.50D.
Henrick, Clive A., to Zoecon Corporation. Cis and trans isomers of α-methyl(6-phenoxy-2-pyridyl)methyl-3-(2,2-dichloroethenyl)-2,2-dimethylcyclopropanecarboxylates and derivatives thereof. 4,323,574, Cl. 424-263.000.
Herchenbach, Horst; Ramesohl, Hubert; and Brachthauser, Kunibert, to Klockner-Humboldt-Deutz AG. Method and apparatus for the thermal treatment of fine-grained material with hot gases. 4,323,397, Cl. 106-100.000.
Hercules Incorporated: *See—*
Bolleter, William T.; and Chandler, Carl D., Jr., 4,323,669, Cl. 536-38.000.
Herkules AG: *See—*
Weick, Heinz H., 4,323,165, Cl. 215-320.000.
Herrington, Daniel R.; and Schwerko, Albert P., to Standard Oil Company, The. Process for the manufacture of furan compounds. 4,323,508, Cl. 260-346.110.
Hershberger, David L., to Harris Corporation. Variable-angle, multiple channel amplitude modulation system. 4,323,731, Cl. 179-1.0GS.
Hess, George M.; and Zils, James A., to Russell, Burdsall & Ward Corporation. Roller side bearing mounting system and method. 4,323,015, Cl. 105-199.0CB.
Hester, Richard E., to Control Data Corporation. Temperature compensated current source. 4,323,854, Cl. 330-256.000.
Hetzler, John C.: *See—*
Will, Albert S.; Schuchard, Earl A.; Buckley, John P.; Cioccio, Armand; Hetzler, John C.; Wolf, Sylvan; Jefferson, Donald E.; McQuitty, Jim B.; and Urick, Robert A., 4,323,988, Cl. 367-4.000.
Hewett, Thomas A.: *See—*
McCullough, Robert W.; and Hewett, Thomas A., 4,323,053, Cl. 126-441.000.
Hewlett-Packard Company: *See—*
Check, Kenneth A., 4,323,959, Cl. 363-40.000.
Hibbs, Joseph E.: *See—*
Fowler, Steven E.; Hennings, George N.; Hibbs, Joseph E.; Redmond, Stephen L.; and Swenson, Richard M., 4,322,998, Cl. 89-1.50D.
Hickman, John S.; Olson, John B.; and Jeanson, Richard L., to Utility Products, a division of Reliable Electric Co. Telephone enclosure assembly and directory holder apparatus. 4,323,290, Cl. 312-100.000.
Hicks, Floyd E.: *See—*
Stewart, Charles G.; Stewart, Nellie R.; Hicks, Floyd E.; and Hicks, Maxine, 4,323,240, Cl. 273-85.00R.
Hicks, Maxine: *See—*
Stewart, Charles G.; Stewart, Nellie R.; Hicks, Floyd E.; and Hicks, Maxine, 4,323,240, Cl. 273-85.00R.
Higgins, Irving J., to Imperial Chemical Industries Limited. Biotransformations using methane-utilizing bacteria. 4,323,649, Cl. 435-136.000.
Hilbush, Edward O., III, to Rubco Products, Inc. Method for sealing pipe joints. 4,323,526, Cl. 264-36.000.
Hill, Charles S. Fluid braked planetary transmission. 4,322,988, Cl. 74-774.000.
Hill, Robert E., to Koppers Company, Inc. Acid copper chromate concentrates. 4,323,477, Cl. 252-397.000.
Hill, William F., to Lucas Industries Limited. Control circuit for an electromagnet. 4,323,944, Cl. 361-152.000.
Hiller, Heinrich: *See—*
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Himmelmann, Wolfgang: *See—*
Bergthaller, Peter; Himmelmann, Wolfgang; and Sobel, Johannes, 4,323,646, Cl. 430-622.000.
Himmer, Robert D. Automatic door for pets. 4,322,913, Cl. 49-168.000.
Hinson, Virgil H.: *See—*
Jarman, Davis R.; and Hinson, Virgil H., 4,322,890, Cl. 33-288.000.
Hioka, Minoru: *See—*
Tanaka, Yoshinobu; Ogawa, Koichi; and Hioka, Minoru, 4,323,455, Cl. 210-321.200.
Hira, Kazumi; and Tasho, Masao, to Nissan Motor Company, Limited. Vehicle roof structure. 4,323,276, Cl. 296-214.000.
Hirai, Masahide: *See—*
Uejima, Hiroyuki; Hirai, Masahide; and Sakaida, Tsutomu, 4,323,458, Cl. 210-688.000.
Hirai, Tadaaki: *See—*
Koike, Norio; Tsukada, Toshihisa; Ando, Haruhisa; Yamamoto, Hideaki; Hirai, Tadaaki; Kubo, Masaharu; Maruyama, Eiichi; Baji, Toru; Takasaki, Yukio; and Nagahara, Shusaku, 4,323,912, Cl. 357-31.000.
Hirakawa, Hiroshi: *See—*
Ahagon, Asahiro; Misawa, Makoto; Miyasaka, Kazuo; and Hirakawa, Hiroshi, 4,323,485, Cl. 525-237.000.
Hirano, Shigeo: *See—*
Mifune, Hiroyuki; Hirano, Shigeo; and Akimura, Yoshitaka, 4,323,643, Cl. 430-441.000.
Hisada, Hideo: *See—*
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Hisatake, Michio: *See—*
Watanabe, Kazuo; Makabe, Hachiro; Orii, Akira; Hisatake, Michio; and Yamamoto, Kazuji, 4,323,833, Cl. 318-376.000.
Hiskens, Ian R.: *See—*
Dowthwaite, Edwin; and Hiskens, Ian R., 4,323,425, Cl. 162-168.00N.

Hitachi Chemical Company, Ltd.: *See—*
Mukoyama, Yoshiyuki; and Chikazumi, Nobutoshi, 4,323,664, Cl. 526-88.000.
Hitachi, Ltd.: *See—*
Akitomo, Nobuo; and Tohyama, Shigeo, 4,323,309, Cl. 356-319.000.
Kobayashi, Toshio; and Oi, Tetsu, 4,323,418, Cl. 156-617.0SP.
Koike, Norio; Tsukada, Toshihisa; Ando, Haruhisa; Yamamoto, Hideaki; Hirai, Tadaaki; Kubo, Masaharu; Maruyama, Eiichi; Baji, Toru; Takasaki, Yukio; and Nagahara, Shusaku, 4,323,912, Cl. 357-31.000.
Matsuyama, Iwao; Susa, Kenzo; Suganuma, Tsuneo; Satoh, Shin; Katsuyama, Toshio; and Obayashi, Hidehito, 4,323,381, Cl. 65-32.000.
Saita, Shigeaki; and Nakaoka, Manabu, 4,323,225, Cl. 269-43.000.
Suzuki, Seikou; Nishihara, Motohisa; Kawakami, Kanji; Sato, Hideo; Kobori, Shigeyuki; Hachino, Hiroaki; and Takahashi, Minoru, 4,322,980, Cl. 73-727.000.
Hitomi, Kiyoshi: *See—*
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Ho, William W.: *See—*
De Wames, Roger E.; Hall, William F.; Ho, William W.; and Lim, Teong C., 4,323,901, Cl. 343-754.000.
Hoch, Helmut; and Hiller, Heinrich, to BASF Aktiengesellschaft. Brown vat dye and its preparation. 4,323,510, Cl. 260-367.000.
Hockerson, Stan. Stabilized athletic shoe. 4,322,895, Cl. 36-129.000.
Hoechst Aktiengesellschaft: *See—*
Buhring, Otto; Dreessen, Gerardus J. W.; Groeneveld, Jacob W. H.; Queck, Robert; Thome, Heinrich; and Willemsen, Gerrit J., 4,323,718, Cl. 373-73.000.
Eckes, Helmut; Erckel, Rudiger; Martini, Thomas; and Rosch, Gunter, 4,323,675, Cl. 542-463.000.
Ehl, Klaus; and Deubel, Reinhold, 4,323,396, Cl. 106-23.000.
Helwerth, Rainer; and Lorke, Horst, 4,323,476, Cl. 252-389.00R.
Hoyer, Ernst; Meininger, Fritz; and Fass, Rudolf, 4,323,497, Cl. 260-146.00T.
Knorr, Harald, 4,323,705, Cl. 564-151.000.
Kraus, Helmut; Weinlich, Jurgen; and Plewan, Otto, 4,323,661, Cl. 525-259.000.
Muck, Karl-Friedrich; Sextro, Gunter; and Burg, Karlheinz, 4,323,502, Cl. 260-340.000.
Zimmermann, Wolfgang; and Harreus, Albrecht, 4,323,492, Cl. 524-388.000.
Hoefert, Reimar, to U.S. Philips Corporation. Arithmetic element based on the DDA principle. 4,323,978, Cl. 364-702.000.
Hoehn, Wolfgang, to ITT Industries, Inc. Bias voltage generator for a monolithic integrated circuit. 4,323,794, Cl. 307-296.00R.
Hoenig, Richard J.; and Klinikowski, James J., to Puritan-Bennett Corporation. Volume ventilator. 4,323,064, Cl. 128-204.210.
Hoffmann-La Roche Inc.: *See—*
Lukac, Teodor; Widmer, Erich; and Zell, Reinhard, 4,323,711, Cl. [illegible]
Hoffmuller, Wilhelm; Rossmann, Axel; and Schreiber, Franz, to Motoren-und Turbinen-Union Munchen GmbH. Method for manufacturing turborotors such as gas turbine rotor wheels, and wheel produced thereby. 4,323,394, Cl. 75-208.00R.
Hofmann, Albert, to Kernforschungszentrum Karlsruhe Gesellschaft mit beschrankter Haftung. Control of cooling of superconducting rotor. 4,323,800, Cl. 310-52.000.
Hojo, Yoshikata: *See—*
Yoshimoto, Takeo; Inoue, Takayuki; Michiyama, Hideo; Harayama, Takeo; Morikama, Osamu; Hojo, Yoshikata; Baba, Takao; Toyama, Teruhiko; Ura, Masaaki; and Takasawa, Yoshio, 4,323,389, Cl. 71-124.000.
Hokkaido Sugar Co., Ltd.: *See—*
Iwasaki, Yosimi, 4,323,018, Cl. 110-208.000.
Holahan, Edward T.; and Meyer, Burton C., to Marvin Glass & Associates. Toy food processor. 4,322,909, Cl. 46-14.000.
Holladay, Harry P.: *See—*
Fritzsche, Alfred K.; Holladay, Harry P.; and Woodcock, Maurice L., 4,323,454, Cl. 210-321.100.
Holland, Hans J.; and Megles, John E., Jr., to Corning Glass Works. Inhibiting crystallization of opal glass compositions. 4,323,653, Cl. 501-32.000.
Hollmann, Bernd, to Claas OHG. Harvester with internal metal detector. 4,322,937, Cl. 56-10.200.
Holloway, Peter R.; and Mercer, Douglas A., to Analog Devices, Incorporated. Bias current network for IC digital-to-analog converters and the like. 4,323,795, Cl. 307-297.000.
Holmes, Allen B.; Gehman, Stacy E.; and Funke, Maurice F., to United States of America, Army. Fluidic mud pulser. 4,323,991, Cl. [illegible]
Holt, Richard R. D.: *See—*
Graham, John F.; and Holt, Richard R. D., 4,323,361, Cl. 8-444.000.
Holtz, Earl B.; Lay, Roger F.; Manduley, Flavio M.; and Moody, Howard J., to Pitney Bowes Inc. Power failure memory support system. 4,323,987, Cl. 365-229.000.
Holtzman, Barry L.: *See—*
Mercier, George E.; Pickett, John H.; and Holtzman, Barry L., 4,323,948, Cl. 361-315.000.
Homeyer, Bernhard: *See—*
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Honda Giken Kogyo Kabushiki Kaisha: *See—*
Miyazawa, Takeshi; and Ono, Naotoshi, 4,322,896, Cl. 37-43.00E.
Honda, Keisuke: *See—*
Schaer, Glenn R.; Touyama, Tasuku; Yamamoto, Teruaki; Honda, Keisuke; and Wada, Tatsuo, 4,323,441, Cl. 204-224.00R.
Honda, Masakazu: *See—*
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Honda, Takeo: *See—*
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Honda, Tsuneo; Nishina, Haruo; and Uehara, Shuichi, to Toho Aen Kabushiki Kaisha. Process for recovering zinc. 4,323,391, Cl. 75-14.000.
Honeywell Information Systems Inc.: *See—*
Johnson, Robert B.; Nibby, Chester M., Jr.; and Moore, Dana, 4,323,965, Cl. 364-200.000.
Nowell, John R., 4,323,958, Cl. 363-28.000.
Peters, Arthur; Negi, Virendra S.; Cushing, David E.; Brown, Richard P.; and Joyce, Thomas F., 4,323,967, Cl. 364-200.000.
Hoover, Jack W. Spent solvent purification apparatus. 4,323,429, Cl. 202-83.000.
Horikawa, Izumi: *See—*
Ogawa, Kazuo; Suzuki, Eiji; Kurita, Osamu; and Horikawa, Izumi, 4,323,864, Cl. 333-165.000.
Horner Industries: *See—*
Horner, Larry D., 4,323,138, Cl. 181-147.000.
Horner, Larry D., to Horner Industries. Automotive loud speaker enclosure. 4,323,138, Cl. 181-147.000.
Horstmann, Georg. Irradiation apparatus including a low-pressure mercury lamp with fluid medium duct means. 4,323,810, Cl. 313-24.000.
Hosaka, Akihiko: *See—*
Okuyama, Kiyotaka; and Hosaka, Akihiko, 4,323,628, Cl. 428-425.900.
Hospital Physics Oy: *See—*
Riihimaki, Esko; and Savikurki, Seppo, 4,323,782, Cl. 250-252.000.
Houdard, Jean-Pierre; Julie, Jean-Jacques; and Leoni, Bernard G., to Le Materiel Telephonique Thomson-CSF. Digital filter for shared-time processing on several channels. 4,323,980, Cl. 364-724.000.
Houghton, Curtis C.: *See—*
Wheaton, Frank H., III; and Houghton, Curtis C., 4,323,158, Cl. 209-524.000.
Howes, Peter D.: *See—*
Abell, Gurdon R.; Cook, Francis J.; and Howes, Peter D., 4,323,925, Cl. 358-213.000.
Hoyer, Ernst; Meininger, Fritz; and Fass, Rudolf, to Hoechst Aktiengesellschaft. Water-soluble disazo dyestuffs. 4,323,497, Cl. 260-146.00T.
Huber, Willi, to J. Wagner AG. Electrostatic gun with improved diode-capacitor multiplier. 4,323,947, Cl. 361-228.000.
Hubner, Otto. Radiant heat hair dryer. 4,323,761, Cl. 219-377.000.
Huckabee, Kermit D.; Adair, James C; and Worrell, Gene T., to Shell Oil Company. Wide seismic source. 4,323,989, Cl. 367-17.000.
Huelle, Zbigniew R.; and Nielsen, Leif, to Danfoss A/S. Actuating apparatus for adjusting a movable element, particularly the closure member of a valve. 4,323,220, Cl. 251-11.000.
Humber, Leslie G.: *See—*
Demerson, Christopher A.; Humber, Leslie G.; and Ferland, Jean-Marie, 4,323,572, Cl. 424-251.000.
Hummel, Richard L. Solar energy collection system. 4,323,054, Cl. 126-449.000.
Hund, Franz: *See—*
Buxbaum, Gunter; Pflugmacher, Ingo; Hund, Franz; Hahnkamm, Volker; and Woditsch, Peter, 4,323,596, Cl. 427-127.000.
Hunsucker, Jerry H.; and Woods, Milton E., to International Minerals & Chemical Corp. Method of preparing wrinkle-resistant fabric. 4,323,624, Cl. 428-270.000.
Hunt, Arthur J.; and Hunt, Arthur J., Jr. Method of extraction of juice from fruit. 4,323,007, Cl. 100-37.000.
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Hunt, Arthur J.; and Hunt, Arthur J., Jr., 4,323,007, Cl. 100-37.000.
Hunt, James G., to Polymet Corporation. Manufacture of high performance alloy in elongated form. 4,323,186, Cl. 228-173.00E.
Hunter, Charles R.: *See—*
Murch, Charles K.; and Hunter, Charles R., 4,322,946, Cl. [illegible]
Hussey, James L.; Miller, Michael B.; and Staker, William C., Jr., to General Motors Corporation. Power antenna with resilient mounting means. 4,323,902, Cl. 343-903.000.
Hutchinson-Mapa: *See—*
Bertin, Jacques, 4,323,254, Cl. 277-40.000.
Hutchison, Mark A., to National Service Industries, Inc. Floodlight. 4,323,953, Cl. 362-226.000.
Huwa, Yoshio: *See—*
Kondo, Katsumi; Huwa, Yoshio; and Miyazaki, Syouzi, 4,323,257, Cl. 277-224.000.
Hybricon, Inc.: *See—*
Smith, Stephen H., 4,323,849, Cl. 324-428.000.
Hydril Company: *See—*
Miyagishima, Tosh; and Motoda, Calvin, 4,323,256, Cl. 277-126.000.
Hydro-Test, Inc.: *See—*
Ball, Frank C.; and Wardle, Edmund, 4,322,969, Cl. 73-40.50R.
Hydrocarbon Research, Inc.: *See—*
Chervenak, Michael C.; Johanson, Edwin S.; and Rakow, Marvin S., 4,323,446, Cl. 208-8.00R.

Iannelli, Frank M.: *See*—
Whorton, Robert B., III; Crosby, Samuel C., Jr.; Iannelli, Frank M.; Denmark, James; and Jeans, Edward L., 4,323,171, Cl. 222-82.000.
Ibuki, Yasuhiro, to Meinan Machinery Works, Inc. Reinforced veneer sheet and the method of manufacturing the reinforced veneer sheet. 4,323,616, Cl. 428-134.000.
Idec, Eric J., to Eyelet Specialty Co., Inc. Bottom-fillable lipstick or the like container. 4,323,157, Cl. 206-385.000.
Idzu, Genichi: *See*—
Ohkuma, Takaaki; Ninomiya, Hiroshi; Nakamura, Masaaki; and Idzu, Genichi, 4,323,577, Cl. 424-298.000.
Iftikar, Syed H.; and Reeck, David L., to Shugart Technology. Hard fixed disc drive assembly and read-write head actuator. 4,323,939, Cl. 360-106.000.
IGM-Industriegerate und Maschinenfabriks-Gesellschaft mbH: *See*—
Vokurka, Franz, 4,323,758, Cl. 219-125.100.
Iguchi, Shozo: *See*—
Imazeki, Kazuyoshi; and Iguchi, Shozo, 4,323,839, Cl. 323-267.000.
Iijima, Tetsuya, to Nissan Motor Co., Ltd. Temperature control device for automobile air conditioner. 4,323,111, Cl. 165-25.000.
Ikeda, Atsuo: *See*—
Kuribayashi, Hiroshi; and Ikeda, Atsuo, 4,323,997, Cl. 369-33.000.
Ikeda, Yoshio, to Tokyo Shibaura Denki Kabushiki Kaisha. Cleaning material supplying apparatus with cleaning material storing vessel controlled by lid position. 4,323,170, Cl. 222-70.000.
Imai, Tamotsu, to UOP Inc. Etherification of olefinic hydrocarbons. 4,323,712, Cl. 568-697.000.
Imazeki, Kazuyoshi; and Iguchi, Shozo. Constant current load and constant voltage load power supply. 4,323,839, Cl. 323-267.000.
Imi Yorkshire Imperial Plastics Limited: *See*—
Aston, William C.; and Walker, Derek, 4,323,535, Cl. 264-528.000.
Imperial Chemical Industries Limited: *See*—
Bornat, Alan, 4,323,525, Cl. 264-24.000.
Higgins, Irving J., 4,323,649, Cl. 435-136.000.
Jones, Geraint, 4,323,575, Cl. 424-267.000.
Milner, David J., 4,323,509, Cl. 260-346.110.
Norval, Stephen V., 4,323,699, Cl. 562-416.000.
Snowden, Paul, 4,323,524, Cl. 264-8.000.
Inadomi, Seigo: *See*—
Kunimune, Kohichi; Hane, Teruaki; Inadomi, Seigo; and Furukawa, Yasuhiko, 4,323,626, Cl. 428-374.000.
Incom International, Inc.: *See*—
Kirkwood, Creal E., 4,323,353, Cl. 440-63.000.
Industrie Pirelli S.p.A.: *See*—
Sarracino, Marcello, 4,322,941, Cl. 57-16.000.
Infrared Industries, Inc.: *See*—
Beskins, Lowell L.; and Durham, Rodney M., 4,323,777, Cl. 250-339.000.
Ing. C. Olivetti & C., S.p.A.: *See*—
Demonte, Filippo; and Figini, Mario, 4,323,315, Cl. 400-63.000.
Inohara, Masanobu, to Asics Corporation. Sport shoe sole. 4,322,891, Cl. 36-29.000.
Inohara, Masanobu, to Asics Corporation. Sport shoe sole. 4,322,892, Cl. 36-[illegible].
Inotech Process Ltd.: *See*—
Cowan, Wavell F.; Green, Marshall S.; and McGurk, Stanley E., 4,323,426, Cl. 162-398.000.
Inoue, Jiro, to Murata Manufacturing Co., Ltd. Filter circuit. 4,323,866, Cl. 333-[illegible].
Inoue, Takayuki: *See*—
Yoshimoto, Takeo; Inoue, Takayuki; Michiyama, Hideo; Harayama, Takeo; Morikame, Osamu; Hojo, Yoshikata; Baba, Takao; Toyama, Teruhiko; Ura, Masaaki; and Takasawa, Yoshio, 4,323,389, Cl. 71-124.000.
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Shinagawa, Takehisa; and Inoue, Tsunehiko, 4,323,374, Cl. 55-132.000.
Institute of Gas Technology: *See*—
Ghosh, Sambhunath, 4,323,367, Cl. 48-197.00A.
Instrumentation Laboratory Inc.: *See*—
Mody, Dinesh I., 4,323,537, Cl. 422-63.000.
Intel Magnetics, Inc.: *See*—
Lee, David M.; Rose, Donald K.; and Clover, Richmond B., 4,323,983, Cl. 365-8.000.
International Business Machines Corporation: *See*—
Abbas, Shakir A.; and Magdo, Ingrid E., 4,322,883, Cl. 29-578.000.
Berndlmaier, Erich; Clark, Bernard T.; and Dorler, Jack A., 4,323,914, Cl. 357-82.000.
Capozzi, Anthony J., 4,323,968, Cl. 364-200.000.
Lee, Francis C.; Mills, Ross N.; and Talke, Frank E., 4,323,908, Cl. 346-140.00R.
Malaviva, Shashi D., 4,323,986, Cl. 365-174.000.
Ray, Asit K.; and Reisman, Arnold, 4,323,589, Cl. 427-38.000.
International Harvester Company: *See*—
Domes, E. A.; Taylor, Forrest C.; Vacval, Duane M.; and Venere, Lawrence A., 4,323,279, Cl. 298-23.0DF.
International Minerals & Chemical Corp.: *See*—
Hunsucker, Jerry H.; and Woods, Milton E., 4,323,624, Cl. 428-270.000.
International Paper Company: *See*—
Callahan, Kevin M., 4,323,168, Cl. 221-42.000.
International Standard Electric Corporation: *See*—
Schmidt, Peter; and Muhlberger, Emil, 4,322,876, Cl. 29-25.190.
International Telephone and Telegraph Corporation: *See*—
Dunning, Stephen C.; and Sutherland, Joseph E., 4,323,790, Cl. 370-102.000.
IPCO Corporation: *See*—
Weissman, Bernard, 4,323,347, Cl. 433-141.000.
Ipri, Alfred C.: *See*—
Sokoloski, Joseph C.; and Ipri, Alfred C., 4,323,910, Cl. 357-23.000.
IRD Mechanalysis, Inc.: *See*—
Sisson, Edwin D.; Stoutenburg, Donn V.; and Thomas, Glen H., 4,322,976, Cl. 73-659.000.
Isaac, Edward J.: *See*—
Keches, Leonidas A.; Goggin, Sharon R.; Isaac, Edward J.; and Rogers, Ronald J., 4,323,247, Cl. 273-235.00R.
Ishida, Toru: *See*—
Hattori, Masumi; Ishida, Toru; and Tanaka, Shinichi, 4,323,484, Cl. 252-521.000.
Ishigaki, Kunio: *See*—
Nakamura, Taku; Ogawa, Masasi; and Ishigaki, Kunio, 4,323,644, Cl. 430-518.000.
Ishihara, Hideo; Suzuki, Shizuo; and Nakabo, Satoru, to Kokusai Denshin Denwa Kabushiki Kaisha. Switching equipment using magnetic domains. 4,323,984, Cl. 365-10.000.
Ishihara, Tetsuo: *See*—
Oka, Yoshitake; Ishihara, Tetsuo; Suzuki, Masane; and Kanaya, Motonori, 4,323,757, Cl. 219-121.0LN.
Ishii, Fumiaki, to Olympus Optical Co., Ltd. Device for fitting an attachment to an endoscope ocular section. 4,323,304, Cl. 354-62.000.
Ishii, Junichi. Baseball bat. 4,323,239, Cl. 273-72.00A.
Ishii, Masaaki: *See*—
Kawamura, Naoto; Masegi, Koichi; Hakamada, Isao; Uchiyama, Haruo; Kitamura, Takashi; and Ishii, Masaaki, 4,323,297, Cl. 190-6.100.
Isover Saint-Gobain: *See*—
Meunier, Georges, 4,323,384, Cl. 65-335.000.
isoya, Toshiro: *See*—
Kawamura, Chikayuki; isoya, Toshiro; and Yamataka, Kazunori, 4,323,444, Cl. 204-269.000.
Italiano, Victor J., to NCR Corporation. Valve for ink jet printer. 4,323,907, Cl. 346-140.00R.
Italtractor I.T.M. S.p.A.: *See*—
Grilli, Walter; Manicardi, Emidio; and Ferrari, Ivano, 4,323,185, Cl. 228-114.000.
Ito, Kazuo: *See*—
Sawada, Susumu; Fukuda, Takashi; Tsuchiya, Katsuhiro; and Ito, Kazuo, 4,323,404, Cl. 148-148.000.
Ito, Yoshio; Yamada, Katuhiko; Kitajima, Tadayuki; Miyamoto, Koichi; Kobayashi, Hiroo; and Mohvama, Yoshikuni, to Canon Kabushiki Kaisha. Developer cleaning device for electrophotography. 4,323,306, Cl. 355-15.000.
Itoh Metal Abrasive Co., Ltd.: *See*—
Ueda, Setsuo; Yasuda, Takashi; Yamada, Tokuyoshi; and Kobayashi, Shigeki, 4,323,523, Cl. 264-8.000.
Itoi, Eiji; Nakayama, Takashi; Nakao, Makoto; and Matsumura, Yukio, to Asahi Glass Company, Ltd. Purification of aqueous solution of potassium chloride. 4,323,436, Cl. 204-98.000.
ITT Industries, Inc.: *See*—
Hoehn, Wolfgang, 4,323,794, Cl. 307-296.00R.
Minks, Werner, 4,323,869, Cl. 335-274.000.
Ivanchev, Sergei S.: *See*—
Shirinian, Vram T.; Mnatsakanov, Suren S.; Pavljuchenko, Valery N.; Rozenberg, Mark E.; Gromov, Valery V.; and Ivanchev, Sergei S., 4,323,666, Cl. 526-329.000.
Ivanov, Valery K.: *See*—
Danko, Vladimir G.; Ljuty, Boris I.; Chigirinsky, Alexandr A.; Kildishev, Vasily S.; Kuzmin, Viktor V.; Danilevich, Yanush B.; Chubraeva, Lidia I.; Potekhin, Konstantin F.; Maslennikov, Konstantin N.; and Ivanov, Valery K., 4,323,803, Cl. 310-59.000.
Iwabuchi, Suminobu; and Matsui, Kazumasa, to Yuasa Battery Company Limited. Multilayer heat insulator. 4,323,620, Cl. 428-215.000.
Iwado, Seigo: *See*—
Tanzawa, Kazuhiko; Iwado, Seigo; Tsujita, Yoshio; Kuroda, Masao; and Furuya, Kouhei, 4,323,648, Cl. 435-125.000.
Iwasaki, Hiroshi: *See*—
Kondo, Mitsuru; Iwasaki, Hiroshi; Yasui, Kiyoshi; and Miyake, Makoto, 4,323,700, Cl. 562-460.000.
Iwasaki, Shinichiro, to Aisin Seiki Company, Limited. Acceleration and deceleration sensor. 4,322,973, Cl. 73-517.00R.
Iwasaki, Yosimi, to Hokkaido Sugar Co., Ltd. Method for generation of hot gas by incineration of combustile material and apparatus for generation of hot gas by incineration of combustible material. 4,323,018, Cl. 110-208.000.
Iwasaki, Yukio: *See*—
Nounen, Michiyasu; and Iwasaki, Yukio, 4,323,873, Cl. 337-116.000.
Iwase, Kozi: *See*—
Nakaoka, Kazuhide; Araki, Kenzi; Iwase, Kozi; Kubotera, Haruo; Kurihara, Takao; and Tanaka, Nobuo, 4,323,403, Cl. 148-134.000.
J. Wagner AG.: *See*—
Huber, Willi, 4,323,947, Cl. 361-228.000.
Jackson, Harold E., to Plympton Patents Limited. Control arrangements for heating circuits. 4,323,192, Cl. 236-46.00R.
Jacobi, Haireddin: *See*—
Opitz, Wolfgang; Etscherberg, Eugen; Dell, Hans-Dieter; and Jacobi, Haireddin, 4,323,517, Cl. 260-455.00R.

Jacobsen, Leif V., to Albertus, Christian Gundorph; Hansen, Erik Steinmann; and Giortz, Leif Heegaard. Indicating device for use in airfield lighting plants technical field. 4,323,841, Cl. 324-51.000.
Jacoby, George V., to Sperry Corporation. Method and apparatus for encoding and recovering binary digital data. 4,323,931, Cl. 360-40.000.
Jadwin, Thomas A., to Eastman Kodak Company. Electrographic toner and developer composition containing quaternary ammonium salt charge control agent. 4,323,634, Cl. 430-110.000.
Jaeggli Maschinenfabrik AG: *See*—
Keller, Werner, 4,323,359, Cl. 8-155.000.
Jagenberg Werke AG: *See*—
Knuppertz, Heinz W.; and Lederer, Hans, 4,323,029, Cl. 118-231.000.
James Howden Australia Pty. Limited: *See*—
Miljoen, Rodney W., 4,323,378, Cl. 55-378.000.
Jamieson, David J. Self retaining uterine elevator. 4,323,057, Cl. 128-17.000.
Jamrus, Kenneth J., to General Electric Company. Deceleration buffer for hydraulic linear motion drive. 4,323,427, Cl. 376-230.000.
Jan, Gerald; Hagen, Remon; and Lenoir, John, to Ciba Geigy AG. Quinoxalines and their use in photographic processes. 4,323,682, Cl. 544-353.000.
Janome Sewing Machine Co. Ltd.: *See*—
Hanyu, Susumu; and Kato, Kenji, 4,323,022, Cl. 112-158.00E.
Watanabe, Kazuo; Makabe, Hachiro; Orii, Akira; Hisatake, Michio; and Yamamoto, Kazuji, 4,323,833, Cl. 318-376.000.
Japan Steel Works Ltd., The: *See*—
Sawada, Susumu; Fukuda, Takashi; Tsuchiya, Katsuhiro; and Ito, Kazuo, 4,323,404, Cl. 148-148.000.
Jardine, Colin D.; Chong, Sooi; Coles, Rodney H.; and Hebb, Stephen, to Hanna Mining Company, The. Mill liner for dry autogenous mills. 4,323,199, Cl. 241-284.000.
Jarman, Davis R.; and Hinson, Virgil H. Datum line gauge system. 4,322,890, Cl. 33-288.000.
Jarvis, Michael F.: *See*—
Nolte, Robert K.; Rath, Robert E.; and Jarvis, Michael F., 4,323,091, Cl. 134-60.000.
Jaskolski, Stanley V.: *See*—
Schutten, Herman P.; Jaskolski, Stanley V.; Spellman, Gordon B.; Lade, Robert W.; and Schutten, Michael J., 4,323,793, Cl. 307-252.00R.
Jaster, Heinz, to General Electric Company. Open cycle heat pump system and process for transferring heat. 4,323,109, Cl. 165-1.000.
Jeans, Edward L.: *See*—
Whorton, Robert B., III; Crosby, Samuel C., Jr.; Iannelli, Frank M.; Denmark, James; and Jeans, Edward L., 4,323,171, Cl. 222-82.000.
Jeanson, Richard L.: *See*—
Hickman, John S.; Olson, John B.; and Jeanson, Richard L., 4,323,290, Cl. 312-100.000.
Jefferson, Donald E.: *See*—
Will, Albert S.; Schuchard, Earl A.; Buckley, John P.; Cioccio, Armand; Hetzler, John C.; Wolf, Sylvan; Jefferson, Donald E.; McQuitty, Jim B.; and Urick, Robert A., 4,323,988, Cl. 367-4.000.
Jelinek, Istvan: *See*—
Lugosi, Gyorgy; May, Antal S.; Bodnar, Janos; Turcsan, Istvan; Jelinek, Istvan; Somfai, Eva; and Simandi, Laszlo, 4,323,469, Cl. 252-182.000.
Jenkins, Carl B., Jr.; Porenski, Harry S., Jr.; and Turner, Paul N., to Brown & Williamson Tobacco Corporation. Method and apparatus for tobacco leaf destemming. 4,323,084, Cl. 131-319.000.
Jepsen, Marshall P. Combined internal combustion and steam engine. 4,322,950, Cl. 60-712.000.
Jernstrom Design Workshop, Inc.: *See*—
Jernstrom, Hans E. I.; Long, Thomas L.; and Liedtke, Ronald, 4,323,238, Cl. 273-1.00G.
Jernstrom, Hans E. I.; Long, Thomas L.; and Liedtke, Ronald, to Jernstrom Design Workshop, Inc. Action toy requiring space perception and eye/hand coordination. 4,323,238, Cl. 273-1.00G.
Joh, Yasushi, to Nippon Zeon Co., Ltd. Hollow fiber and method of manufacturing the same. 4,323,627, Cl. 428-398.000.
Johanson, Edwin S.: *See*—
Chervenak, Michael C.; Johanson, Edwin S.; and Rakow, Marvin S., 4,323,446, Cl. 208-8.00R.
John Zink Company: *See*—
Reed, Robert D.; and Schwartz, Robert E., 4,323,343, Cl. 431-202.000.
Johns, Robert L. Article display units and members for forming them. 4,323,163, Cl. 211-189.000.
Johnson & Johnson: *See*—
Gander, Robert J., 4,323,581, Cl. 424-324.000.
Johnson, Keith I.: *See*—
Edson, Donald A.; Johnson, Keith I.; and Scott, Michael H., 4,323,759, Cl. 219-137.0PS.
Johnson, Robert B.; Nibby, Chester M., Jr.; and Moore, Dana, to Honeywell Information Systems Inc. Sequential chip select decode apparatus and method. 4,323,965, Cl. 364-200.000.
Johnson, Roy A.; Lincoln, Frank H.; and Pike, John E., to Upjohn Company, The. PGI_2 Amides. 4,323,672, Cl. 542-421.000.
Johnson, Roy A.; Lincoln, Frank H.; and Pike, John E., to Upjohn Company, The. 2-Decarboxy-2-aminomethyl-PGI_2 compounds. 4,323,673, Cl. 542-426.000.
Johnson, Roy A.; Lincoln, Frank H.; and Pike, John E., to Upjohn Company, The. PGI_2 Analogs. 4,323,674, Cl. 542-426.000.
Johnston, John N., to Litton Business Systems, Inc. Cartridge and bezel assembly for a calculator. 4,323,979, Cl. 364-708.000.
Jolin, Marcel, to Dustell LTEE. Mobile dust collector. 4,323,377, Cl. 55-341.00M.
Jones, C. David: *See*—
Suarez, Tulio; and Jones, C. David, 4,323,707, Cl. 564-324.000.
Jones, Duane A.; and Elmquist, Lyle F., to Henkel Corporation. Absorbent starch graft polymer and method of its preparation. 4,323,487, Cl. 525-54.100.
Jones, Gary D.; Laidig, Manfred R.; and Weisz, William, to Singer Company, The. Presser bar guide. 4,323,024, Cl. 112-237.000.
Jones, Geraint, to Imperial Chemical Industries Limited. 1-Phenyl-2-aminoethanol derivatives. 4,323,575, Cl. 424-267.000.
Jones, Lee J., to Ten-Tec, Inc. Dual mode direct current power supply. 4,323,960, Cl. 363-48.000.
Jordan, Gerald J. Wheel assembly. 4,322,869, Cl. 16-46.000.
Josephson, Elliot, to Astec Components, Ltd. Free-running flyback DC power supply. 4,323,961, Cl. 363-56.000.
Jova Enterprises, Inc.: *See*—
Gerling, John E., 4,323,746, Cl. 219-10.55F.
Joy, George C., III, to UOP Inc. Catalytic conversion of carbon monoxide, hydrocarbons and oxides of nitrogen. 4,323,542, Cl. 423-213.500.
Joyce, Thomas F.: *See*—
Peters, Arthur; Negi, Virendra S.; Cushing, David E.; Brown, Richard P.; and Joyce, Thomas F., 4,323,967, Cl. 364-200.000.
Juan, Mathias: *See*—
Dieulot, Gerard; Juan, Mathias; and Fardeau, Michel, 4,323,770, Cl. 235-375.000.
Judd, Duncan B.: *See*—
Clitherow, John W.; Price, Barry J.; Bradshaw, John; Martin-Smith, Michael; MacKinnon, John W. M.; Judd, Duncan B.; and Carey, Linda, 4,323,566, Cl. 424-248.510.
Jufer, Marcel: *See*—
Xuan, Mai T.; Jufer, Marcel; and Pittet, Andre, 4,323,834, Cl. 318-696.000.
Juhasz, John M.: *See*—
Sell, Robert C.; Sheler, John R.; and Juhasz, John M., 4,322,977, Cl. 73-701.000.
Julie, Jean-Jacques: *See*—
Houdard, Jean-Pierre; Julie, Jean-Jacques; and Leoni, Bernard G., 4,323,980, Cl. 364-724.000.
Julius Blum Gesellschaft m.b.H.: *See*—
Rock, Erich; and Brunner, Josef, 4,323,213, Cl. 248-222.100.
Jump for Joy Ltd.: *See*—
Wilson, Robert M., 4,323,231, Cl. 272-65.000.
Jung, Michel: *See*—
Metcalf, Brian W.; Jung, Michel; and Danzin, Charles, 4,323,704, Cl. 562-561.000.
Jungerwirth, Bernard R., to Coats and Clark, Inc. Adaptive exercise apparatus. 4,323,237, Cl. 272-131.000.
Junino, Alex: *See*—
Bugaut, Andree; and Junino, Alex, 4,323,360, Cl. 8-407.000.
Kabushiki Kaisha Komatsu Seisakusho: *See*—
Muramoto, Ei-ichi; and Matsui, Motomu, 4,323,283, Cl. 305-10.000.
Kabushiki Kaisha Shibaura Seisakusho: *See*—
Yamazaki, Kazuhide; Ogawa, Shigetoshi; Suma, Atsushi; and Nakajima, Maki, 4,323,014, Cl. 104-13.000.
Kabushiki Kaisha Tokai Rika Denki Seisakusho: *See*—
Morita, Masayuki; Nakano, Tasuku; and Kubota, Kazuhisa, 4,323,877, Cl. 340-56.000.
Kabushiki Kaisha Tokiwa Seisakusho: *See*—
Saito, Retsuo; and Nagase, Junji, 4,323,048, Cl. 124-78.000.
Kadono, Mamoru; and Saigusa, Tetsuji, to Bridgestone Tire Company Limited. Hose end construction. 4,323,089, Cl. 138-109.000.
Kaduk, James A., to Standard Oil Company (Indiana). Synthesis of molecular sieves using beta-diketones as organic templates. 4,323,481, Cl. 252-455.00Z.
Kai Cutlery Center Co., Ltd.: *See*—
Osada, Hiroshi, 4,322,885, Cl. 30-162.000.
Kaiser-Wirz, Max. Process and apparatus for adding liquid components to pourable powdered or granular materials. 4,323,314, Cl. 366-167.000.
Kakehi, Sasuga: *See*—
Tanaka, Yasuhiro; and Kakehi, Sasuga, 4,323,865, Cl. 333-187.000.
Kalleberg, Melvin O.: *See*—
Brown, James N.; and Kalleberg, Melvin O., 4,322,875, Cl. 24-204.000.
Kamp, Eugene L.; Popeck, Charles A.; and Bruning, Armin M., to A. B. Chance Company. Circuit protecting apparatus including resettable vacuum fuse and switch. 4,323,871, Cl. 337-7.000.
Kanaya, Motonori: *See*—
Oka, Yoshitake; Ishihara, Tetsuo; Suzuki, Masane; and Kanaya, Motonori, 4,323,757, Cl. 219-121.0LN.
Kanaya, Yoshihiro: *See*—
Takase, Tadayoshi; and Kanaya, Yoshihiro, 4,323,747, Cl. 219-10.55C.
Kanzaki Paper Manufacturing Co., Ltd.: *See*—
Kondo, Mitsuru; Iwasaki, Hiroshi; Yasui, Kiyoshi; and Miyake, Makoto, 4,323,700, Cl. 562-460.000.
Kaplan, Alan. Crystal plating apparatus. 4,323,031, Cl. 118-720.000.
Karbowski, James P., to Triple Dee Electronics Inc. Oscillator type metal detector with switch controlled fixed biasing. 4,323,847, Cl. 324-327.000.
Karjala, Arnold L. Method and apparatus for flow-rate verification and calibration. 4,322,972, Cl. 73-168.000.

Karl Lautenschlager KG., Mobelbeschlagfabrik: *See*—
Lautenschlager, Gerhard W., 4,322,870, Cl. 16-235.000.
Karl M. Reich Maschinenfabrik GmbH, Firma: *See*—
Maurer, Werner, 4,323,184, Cl. 227-120.000.
Karlsen, Erich: *See*—
Zira, Rudolf F.; and Karlsen, Erich, 4,323,167, Cl. 220-408.000.
Karlsen, Lasse K.: *See*—
Soderblom, Olof; and Karlsen, Lasse K., 4,323,993, Cl. 367-127.000.
Kashiwada, Akio: *See*—
Yoshida, Mitsuo; Masuda, Yoshinori; and Kashiwada, Akio, 4,323,434, Cl. 204-98.000.
Kasparek, Jaromir: *See*—
Fajt, Ludvik; Didek, Stanislav; Kasparek, Jaromir; Storek, Jaroslav; Andres, Jiri; Borovcova, Zelmira; Markova, Marie; Reymanova, Marketa; and Stepanek, Miroslav, 4,322,942, Cl. 17-411.000.
Kato, Kenji: *See*—
Hanyu, Susumu; and Kato, Kenji, 4,323,022, Cl. 112-158.00E.
Katsuyama, Toshio: *See*—
Matsuyama, Iwao; Susa, Kenzo; Suganuma, Tsuneo; Satoh, Shin; Katsuyama, Toshio; and Obayashi, Hidehito, 4,323,381, Cl. 65-31.000.
Katzenberger, Helmut. Method for making light weight concrete building elements. 4,323,527, Cl. 264-45.100.
Kawabata, Nariyoshi; Yasuda, Shinichi; and Yamazaki, Takeshi, to Koei Chemical Co., Ltd. Process for recovering a carboxylic acid. 4,323,702, Cl. 562-485.000.
Kawakami, Kanji: *See*—
Suzuki, Seikou; Nishihara, Motohisa; Kawakami, Kanji; Sato, Hideo; Kobori, Shigeyuki; Hachino, Hiroaki; and Takahashi, Minoru, 4,322,980, Cl. 73-727.000.
Kawamata, Motoo: *See*—
Oba, Masayuki; Kawamata, Motoo; Tsuboi, Hikotada; and Koga, Nobuhito, 4,323,662, Cl. 525-281.000.
Kawamoto, Akira: *See*—
Nakagawa, Noboru; Oonishi, Toshiyuki; Tsutsumi, Masato; and Kawamoto, Akira, 4,322,952, Cl. 62-198.000.
Kawamura, Chikayuki; Isoya, Toshiro; and Yamataka, Kazunori, to Asahi Kasei Kogyo Kabushiki Kaisha. Filter press-type electrolytic cell. 4,323,444, Cl. 204-269.000.
Kawamura, Naoto; Masegi, Koichi; Hakamada, Isao; Uchiyama, Haruo; Kitamura, Takashi; and Ishii, Masaaki, to Canon Kabushiki Kaisha. Image forming optical system using a semiconductor laser. 4,323,297, Cl. 350-6.800.
Kawasaki Steel Corporation: *See*—
Nakanishi, Teruyuki; and Hitomi, Kiyoshi, 4,322,962, Cl. 72-234.000.
KCS Industries, Inc.: *See*—
Muderlak, Kenneth J., 4,322,904, Cl. 40-495.000.
Kear, Bernard H.: *See*—
Brown, Clyde O.; Breinan, Edward M.; and Kear, Bernard H., 4,323,756, Cl. 219-121.0LF.
Keches, Leonidas A.; Goggin, Sharon R.; Isaac, Edward J.; and Rogers, Ronald J., to Acushnet Company. Golf ball cover. 4,323,247, Cl. 273-235.00R.
Kecskes, Istvan: *See*—
Furjes, Emil; and Kecskes, Istvan, 4,323,108, Cl. 164-488.000.
Keller, Werner, to Jaeggli Maschinenfabrik AG. Machine for the continuous wet treatment of textile thread formations, the process for operating the machine, as well as a non-touching catch-thread device. 4,323,359, Cl. 8-155.000.
Kellerwessel: *See*—
Bleckmann, Hugo; and Kellerwessel, 4,323,532, Cl. 264-118.000.
Kelley, Dale T. Bicycle safety flasher with optional mounting means for other uses. 4,323,879, Cl. 340-134.000.
Kelly, Charles J.: *See*—
Fork, Frank W.; and Kelly, Charles J., 4,323,723, Cl. 174-48.000.
Kelly, Thomas: *See*—
Krober, Hubert D.; and Kelly, Thomas, 4,323,221, Cl. 251-58.000.
Kelvin Lenses Limited: *See*—
Dawson, Peter; and Phillips, John H., 4,323,850, Cl. 324-439.000.
Kendall Company, The: *See*—
Canty, Herbert G., 4,323,062, Cl. 128-132.00D.
Kennecott Corporation: *See*—
Marshall, David W., 4,323,599, Cl. 427-181.000.
Kenscot Industries Limited: *See*—
Scott, Kenneth E., 4,322,927, Cl. 52-188.000.
Kera, Masakazu: *See*—
Hasegawa, Takanori; Shimada, Takanobu; Sato, Takao; Kera, Masakazu; Yoshida, Shuntaro; and Shimoyama, Shinichi, 4,323,775, Cl. 250-317.100.
Kernforschungsanlage Julich GmbH: *See*—
Knust, Ernst J.; Kupfernagel, Christiane; and Stocklin, Gerhard, 4,323,547, Cl. 424-1.000.
Kernforschungszentrum Karlsruhe Gesellschaft mit beschrankter Haftung: *See*—
Hofmann, Albert, 4,323,800, Cl. 310-52.000.
Muller, Stefan; Thun, Gerhard; and Glauner, Wolfgang, 4,322,982, Cl. 73-861.220.
Kertesz, Denis J.: *See*—
Fried, John H.; Kertesz, Denis J.; and Marx, Michael, 4,323,564, Cl. 434-341.000.
Kervennal, Jacques: *See*—
Cognion, Jean-Marie; and Kervennal, Jacques, 4,323,515, Cl. 260-453.00P.
Keske, Robert G.; and Stephens, James R., to Standard Oil Company (Indiana). Injection moldable amide-imide polymers containing divalent aliphatic radicals derived from aliphatic diamines. 4,323,493, Cl. 524-451.000.
Kessler, Arthur: *See*—
Bergmann, Gunther; and Kessler, Arthur, 4,323,792, Cl. 307-549.000.
Kienzle Apparate GmbH: *See*—
Fichter, Manfred, 4,323,933, Cl. 346-74.300.
Kikumoto, Kyoji; Ninomiya, Kunihiro; Fukami, Harukazu; and Hara, Hiroto, to Mitsubishi Chemical Industries Limited. Pharmaceutically active (omega-aminoalkoxy)bibenzyls. 4,323,568, Cl. 424-250.000.
Kildishev, Vasily S.: *See*—
Danko, Vladimir G.; Ljuty, Boris I.; Chigirinsky, Alexandr A.; Kildishev, Vasily S.; Kuzmin, Viktor V.; Danilevich, Yanush B.; Chubraeva, Lidia I.; Potekhin, Konstantin F.; Maslennikov, Konstantin N.; and Ivanov, Valery K., 4,323,803, Cl. 310-59.000.
Kim, Dae-Eun. Adjuvant for stimulating production of lymphocytes. 4,323,562, Cl. 424-195.000.
Kim, Yoobong. Anti-skid tire guard. 4,323,103, Cl. 152-213.00A.
Kimura, Tadashi, to Olympus Optical Co., Ltd. Wide-angle zoom lens system. 4,323,302, Cl. 350-426.000.
Kimura, Tsutomu: *See*—
Ohnishi, Masahiro; and Kimura, Tsutomu, 4,323,906, Cl. 346-76.00L.
Kimzey, Gene A., to Crest Industries, Inc. Interface circuit for telephone line to equipment signal coupling. 4,323,734, Cl. 179-18.0FA.
Kincaid, John W.; and Ward, Robert E., to Belden Corporation. Electric cables with improved shielding member. 4,323,721, Cl. 174-36.000.
Kindig, Morris L. Apparatus for beveling glass. 4,322,915, Cl. 51-3.000.
Kinefac Corp.: *See*—
Greis, Howard A., 4,322,961, Cl. 72-95.000.
King, William C.; and Knight, Stephen, to Bell Telephone Laboratories, Incorporated. Impulse activated time delay self-restoring switch. 4,323,799, Cl. 307-571.000.
King, William M.: *See*—
Berdan, Betty L.; and King, William M., 4,323,632, Cl. 428-626.000.
Kinghorn, John R., to U.S. Philips Corporation. Alpha-numeric character generator arrangement. 4,323,892, Cl. 340-724.000.
Kintopp, Erich: *See*—
Distler, Walter; and Kintopp, Erich, 4,323,783, Cl. 250-445.00T.
Kirimoto, Kazunari: *See*—
Nishimura, Hiroshi; Monma, Tetsuo; Yoshida, Minoru; Kirimoto, Kazunari; Hayamizu, Yoshio; and Nagasawa, Toshio, 4,323,607, Cl. 219-213.000.
Kirkwood, Creal E., to Incom International, Inc. Boat steering apparatus. 4,323,353, Cl. 440-63.000.
Kitajima, Tadayuki; and Tohyama, Yoshikuni, to Canon Kabushiki Kaisha. Copy magnification modifying apparatus. 4,323,308, Cl. 355-57.000.
Kitajima, Tadayuki: *See*—
Ito, Yoshio; Yamada, Katuhiko; Kitajima, Tadayuki; Miyamoto, Koichi; Kobayashi, Hiroo; and Mohvama, Yoshikuni, 4,323,306, Cl. 355-15.000.
Kitamura, Takashi: *See*—
Kawamura, Naoto; Masegi, Koichi; Hakamada, Isao; Uchiyama, Haruo; Kitamura, Takashi; and Ishii, Masaaki, 4,323,297, Cl. 350-6.800.
Klein, Theodore H., to Bell Telephone Laboratories, Incorporated. Fabrication of conductor-clad composites using molding compounds and techniques. 4,323,421, Cl. 156-630.000.
Kleykamp, Donald L., to Dayco Corporation. Method of welding wear member for railway vehicle. 4,323,751, Cl. 219-91.210.
Klimenko, Vladimir I.: *See*—
Alekhin, Stanislav A.; Kuznetsov, Eduard B.; Bakhir, Vitold M.; Klimenko, Vladimir I.; and Zadorozhny, Jury G., 4,323,445, Cl. 204-300.00R.
Kling, Jarrett B. Integrated circuit carrier. 4,323,155, Cl. 206-328.000.
Kling, John E., to Baxter Travenol Laboratories, Inc. Attachable connector for catheter. 4,323,065, Cl. 128-214.00R.
Klinikowski, James J.: *See*—
Hoenig, Richard J.; and Klinikowski, James J., 4,323,064, Cl. 128-204.210.
Klockner-Humboldt-Deutz AG: *See*—
Bleckmann, Hugo; and Kellerwessel, 4,323,532, Cl. 264-118.000.
Herchenbach, Horst; Ramesohl, Hubert; and Brachthauser, Kunibert, 4,323,397, Cl. 106-100.000.
Kmonk, Stanley: *See*—
Schallenberger, John M.; Kmonk, Stanley; and Ferlan, Stephen J., 4,323,428, Cl. 376-353.000.
Knight, Stephen: *See*—
King, William C.; and Knight, Stephen, 4,323,799, Cl. 307-571.000.
Knopik, Dwayne L. Process for recovering organic liquids from underground areas. 4,323,122, Cl. 166-267.000.
Knorr, Harald, to Hoechst Aktiengesellschaft. Process for the preparation of N,N'-diformylhydrazine. 4,323,705, Cl. 564-151.000.
Knud Simonsen Industries Limited: *See*—
Buller-Colthurst, Guy E., 4,322,874, Cl. 17-44.400.
Knuppertz, Heinz W.; and Lederer, Hans, to Jagenberg Werke AG. Labeling machine, especially for bottles having a four-way toggle mechanism as a drive. 4,323,029, Cl. 118-231.000.
Knust, Ernst J.; Kupfernagel, Christiane; and Stocklin, Gerhard, to Kernforschungsanlage Julich GmbH. Labeled fatty acids and method of making and using same. 4,323,547, Cl. 424-1.000.

Kobayashi, Hiroo: *See*—
Ito, Yoshio; Yamada, Katuhiko; Kitajima, Tadayuki; Miyamoto, Koichi; Kobayashi, Hiroo; and Mohvama, Yoshikuni, 4,323,306, Cl. 355-15.000.
Kobayashi, Robert J.: *See*—
Byrne, Joe L.; Kobayashi, Robert J.; and Nancarrow, James H., 4,322,949, Cl. 60-606.000.
Kobayashi, Ryuji: *See*—
Nakagami, Kazuto; Yokoi, Shinji; Nishimura, Kenji; Nagai, Shigeki; Honda, Takeo; Oda, Kiroku; Fujii, Katsutoshi; Kobayashi, Ryuji; and Kojima, Mikio, 4,323,680, Cl. 544-293.000.
Kobayashi, Shigeki: *See*—
Ueda, Setsuo; Yasuda, Takashi; Yamada, Tokuyoshi; and Kobayashi, Shigeki, 4,323,523, Cl. 264-8.000.
Kobayashi, Toshio; and Oi, Tetsu, to Hitachi, Ltd. Method for growing a pipe-shaped single crystal. 4,323,418, Cl. 156-617.0SP.
Kobe, Inc.: *See*—
Gilson, Dale P., 4,323,285, Cl. 308-160.000.
Kober, Heinrich; Nippe, Burkhard; and Seidel, Bernhard, to Agfa-Gevaert Aktiengesellschaft. Magnetic recording medium. 4,323,621, Cl. 428-216.000.
Kobori, Shigeyuki: *See*—
Suzuki, Seikou; Nishihara, Motohisa; Kawakami, Kanji; Sato, Hideo; Kobori, Shigeyuki; Hachino, Hiroaki; and Takahashi, Minoru, 4,322,980, Cl. 73-727.000.
Kocks Technik GmbH & Co.: *See*—
Moltner, Hermann; and Siebenborn, Wolfgang, 4,323,971, Cl. 364-469.000.
Koei Chemical Co., Ltd.: *See*—
Kawabata, Nariyoshi; Yasuda, Shinichi; and Yamazaki, Takeshi, 4,323,702, Cl. 562-485.000.
Koga, Nobuhito: *See*—
Oba, Masayuki; Kawamata, Motoo; Tsuboi, Hikotada; and Koga, Nobuhito, 4,323,662, Cl. 525-281.000.
Kohyama, Katsuhisa: *See*—
Mori, Hazime; Kohyama, Katsuhisa; Nakamura, Katsuhiko; and Takamatsu, Shinichi, 4,323,519, Cl. 528-499.000.
Mori, Hazime; Kohyama, Katsuhisa; and Nakamura, Katsuhiko, 4,323,663, Cl. 525-470.000.
Koike, Norio; Tsukada, Toshihisa; Ando, Haruhisa; Yamamoto, Hideaki; Hirai, Tadaaki; Kubo, Masaharu; Maruyama, Eiichi; Baji, Toru; Takasaki, Yukio; and Nagahara, Shusaku, to Hitachi, Ltd. Solid-state imaging device. 4,323,912, Cl. 357-31.000.
Koito Seisakusho Co. Ltd.: *See*—
Schaer, Glenn R.; Touyama, Tasuku; Yamamoto, Teruaki; Honda, Keisuke; and Wada, Tatsuo, 4,323,441, Cl. 204-224.00R.
Koizumi, Satoru; Shimamura, Takashi; and Uchiyama, Sadao, to Sharp Kabushiki Kaisha. Nonprogram section detection mechanism in a cassette tape player. 4,323,935, Cl. 360-73.000.
Kojima, Mikio: *See*—
Nakagami, Kazuto; Yokoi, Shinji; Nishimura, Kenji; Nagai, Shigeki; Honda, Takeo; Oda, Kiroku; Fujii, Katsutoshi; Kobayashi, Ryuji; and Kojima, Mikio, 4,323,680, Cl. 544-293.000.
Kokusai Denshin Denwa Kabushiki Kaisha: *See*—
Ishihara, Hideo; Suzuki, Shizuo; and Nakabo, Satoru, 4,323,984, Cl. 365-10.000.
Kolbl, Richard; and Mehlan, Bernd, to Sielaff GmbH & Co. Coin-operated dispensing device reflecting the selling price of items to be dispensed. 4,323,147, Cl. 194-48.000.
Kondo, Katsumi; Huwa, Yoshio; and Miyazaki, Syouzi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Piston ring with a Cr-C-Fe inlaid ring in its outer surface, and a method of making it. 4,323,257, Cl. 277-224.000.
Kondo, Mitsuru; Iwasaki, Hiroshi; Yasui, Kiyoshi; and Miyake, Makoto, to Kanzaki Paper Manufacturing Co., Ltd. Process for preparing benzophenone derivatives. 4,323,700, Cl. 562-460.000.
Kondo, Yasuo, to Yamaha Hatsudoki Kabushiki Kaisha. Splash plate for marine propulsion devices. 4,323,355, Cl. 440-76.000.
Kopp, Arthur R., to AMP Incorporated. Circuit for reflective mode optical reader. 4,323,774, Cl. 250-214.00A.
Koppers Company, Inc.: *See*—
Hill, Robert E., 4,323,477, Cl. 252-397.000.
Korff, Wolfram G.; Emery, Vernon V.; and Bond, Joseph K. Selective multiple pipe compression belling machine. 4,323,337, Cl. 425-155.000.
Kotera, Norio: *See*—
Takahashi, Masatoshi; Kotera, Norio; Uegaki, Masatoshi; Miyaoka, Takashi; and Maegawa, Yuzo, 4,323,431, Cl. 203-72.000.
Koumura, Noboru: *See*—
Fujii, Motoharu; Koumura, Noboru; Ayata, Naoki; Saito, Seiji; and Sato, Yasushi, 4,323,919, Cl. 358-75.000.
Kovalenko, Vladimir V.: *See*—
Batalin, Oleg E.; Dykman, Arkady S.; Osadchenko, Alexandr I.; Balkhanova, Galina F.; Belgorodsky, Izrail M.; Nevstruev, Vladimir I.; Radionov, Valery A.; Tulchinsky, Eduard A.; Belyaev, Valentin M.; Smolin, Jury I.; Breiman, Mark I.; Orlyansky, Vitaly V.; Zhirnov, Nikolai Y.; Galibin, Nikolai V.; Troitsky, Andrian P.; and Kovalenko, Vladimir V., 4,323,479, Cl. 252-432.000.
Kowalyshyn, Stephen: *See*—
Fisher, Seth G.; and Kowalyshyn, Stephen, 4,323,025, Cl. 114-25.000.
Kraftwerk Union Aktiengesellschaft: *See*—
Weghaupt, Erich; and D'ham, Reinhold, 4,323,801, Cl. 310-52.000.
Krall, Albert D.; McCorkle, John W.; Scarzello, John F.; and Syeles, Albert M., to United States of America, Navy. Omnidirectional microstrip antenna. 4,323,900, Cl. 343-700.0MS.
Kraus, Helmut; Weinlich, Jurgen; and Plewan, Otto, to Hoechst Aktiengesellschaft. Sinterable, finely divided vinyl chloride molding composition and a process for its manufacture and use. 4,323,661, Cl. 525-259.000.
Krober, Hubert D.; and Kelly, Thomas. Power actuated valve. 4,323,221, Cl. 251-58.000.
Krohn, Duane D., to Graco, Inc. Mechanical deflection apparatus for sensing fluid pressure. 4,323,741, Cl. 200-81.90R.
Kruesi, Paul R.; and Frahm, Veryl H., Jr., to Southern Foundry Supply Company. Process for converting brass scrap to copper powder. 4,323,390, Cl. 75-0.50A.
Krupp Polysius AG: *See*—
Grudno, Hans-Dieter, 4,323,344, Cl. 432-106.000.
Kruse, Robert A. Portable display unit. 4,322,905, Cl. 40-606.000.
Kubiatowicz, David O., to Minnesota Mining and Manufacturing Company. Radioactive iodine seed. 4,323,055, Cl. 128-1.200.
Kubo, Masaharu: *See*—
Koike, Norio; Tsukada, Toshihisa; Ando, Haruhisa; Yamamoto, Hideaki; Hirai, Tadaaki; Kubo, Masaharu; Maruyama, Eiichi; Baji, Toru; Takasaki, Yukio; and Nagahara, Shusaku, 4,323,912, Cl. 357-31.000.
Kubota, Kazuhisa: *See*—
Morita, Masayuki; Nakano, Tasuku; and Kubota, Kazuhisa, 4,323,877, Cl. 340-56.000.
Kubota, Ltd.: *See*—
Bando, Niro; Miyata, Junji; Tone, Masatsugu; and Watanabe, Haruo, 4,323,137, Cl. 180-305.000.
Kubota, Naohiro; and Shibata, Toshihiro. Process for preparing a 2,2,6,6-tetraalkyl-4-piperidyl spiro aliphatic ether. 4,323,684, Cl. 546-19.000.
Kubotera, Haruo: *See*—
Nakaoka, Kazuhide; Araki, Kenzi; Iwase, Kozi; Kubotera, Haruo; Kurihara, Takao; and Tanaka, Nobuo, 4,323,403, Cl. 148-134.000.
Kuchuk-Yatsenko, Sergei I.: *See*—
Paton, Boris E.; Lebedev, Vladimir K.; Kuchuk-Yatsenko, Sergei I.; Sakharnov, Vasily A.; and Galyan, Boris A., 4,323,752, Cl. 219-101.000.
Kuckes, Arthur F., to Cornell Research Foundation, Inc. Plural sensor magnetometer arrangement for extended lateral range electrical conductivity logging. 4,323,848, Cl. 324-338.000.
Kuehnel, Werner: *See*—
Baumann, Heinz; Kuehnel, Werner; and Rattner, Manfred, 4,323,781, Cl. 250-422.000.
Kuhla, Donald E.: *See*—
Brennan, Thomas M.; Brannegan, Daniel P.; Weeks, Paul D.; and Kuhla, Donald E., 4,323,506, Cl. 260-345.80R.
Kunieda, Toshiaki; Odagiri, Masaru; Fujita, Takashi; and Shinohara, Koichi, to Matsushita Electric Industrial Co., Ltd. Metallic thin film magnetic recording medium. 4,323,629, Cl. 428-457.000.
Kunimune, Kohichi; Hane, Teruaki; Inadomi, Seigo; and Furukawa, Yasuhiko, to Chisso Corporation. Heat-adhesive composite fibers. 4,323,626, Cl. 428-374.000.
Kupfernagel, Christiane: *See*—
Knust, Ernst J.; Kupfernagel, Christiane; and Stocklin, Gerhard, 4,323,547, Cl. 424-1.000.
Kurai, Nobuyoshi: *See*—
Tominaga, Nobuyoshi; Kurai, Nobuyoshi; Ueno, Hajime; and Suzuki, Sadahide, 4,323,135, Cl. 180-228.000.
Kuraray Co., Ltd.: *See*—
Tanaka, Yoshinobu; Ogawa, Koichi; and Hioka, Minoru, 4,323,455, Cl. 210-321.200.
Kuribayashi, Hiroshi; and Ikeda, Atsuo, to Pioneer Electronic Corporation. Linear-tracking pick-up arm drive assembly. 4,323,997, Cl. 369-33.000.
Kurihara, Takao: *See*—
Nakaoka, Kazuhide; Araki, Kenzi; Iwase, Kozi; Kubotera, Haruo; Kurihara, Takao; and Tanaka, Nobuo, 4,323,403, Cl. 148-134.000.
Kurita, Osamu: *See*—
Ogawa, Kazuo; Suzuki, Eiji; Kurita, Osamu; and Horikawa, Izumi, 4,323,864, Cl. 333-165.000.
Kuroda, Masao: *See*—
Tanzawa, Kazuhiko; Iwado, Seigo; Tsujita, Yoshio; Kuroda, Masao; and Furuya, Kouhei, 4,323,648, Cl. 435-125.000.
Kurokawa, Teruhisa, to Nippon Electric Co., Ltd. Circuit for protecting traveling-wave tubes against faults of a power supply. 4,323,853, Cl. 330-43.000.
Kushi, Kenji: *See*—
Sasaki, Isao; and Kushi, Kenji, 4,323,592, Cl. 427-54.100.
Kuwakado, Satosi: *See*—
Tsuge, Noboru; Kuwakado, Satosi; and Shimogawa, Toshiaki, 4,323,205, Cl. 242-107.40A.
Kuxin, Anatoly N.: *See*—
Veselovsky, Roman A.; Kuxin, Anatoly N.; Mudrov, Oleg A.; and Roitenberg, Yakov I., 4,323,491, Cl. 524-144.000.
Kuzmin, Viktor V.: *See*—
Danko, Vladimir G.; Ljuty, Boris I.; Chigirinsky, Alexandr A.; Kildishev, Vasily S.; Kuzmin, Viktor V.; Danilevich, Yanush B.; Chubraeva, Lidia I.; Potekhin, Konstantin F.; Maslennikov, Konstantin N.; and Ivanov, Valery K., 4,323,803, Cl. 310-59.000.
Kuznetsov, Eduard B.: *See*—
Alekhin, Stanislav A.; Kuznetsov, Eduard B.; Bakhir, Vitold M.; Klimenko, Vladimir I.; and Zadorozhny, Jury G., 4,323,445, Cl. 204-300.00R.

Kwong, Gary W. Y., to UOP Inc. Preparation of polymeric reaction products of poly(alkoxyalkylene)amines and epihalohydrins. 4,323,709, Cl. 564-476.000.
Ladd, Floyd R.: *See—*
Townsend, Ray T.; and Ladd, Floyd R., 4,322,871, Cl. 17-1.00F.
Lade, Robert W.: *See—*
Schutten, Herman P.; Jaskolski, Stanley V.; Spellman, Gordon B.; Lade, Robert W.; and Schutten, Michael J., 4,323,793, Cl. 307-252.00R.
Lagana', Vincenzo; Saviano, Francesco; and Ferrantino, Stanislad, to Snamprogetti S.p.A. Gland seal system for use with a methanation reactor. 4,323,252, Cl. 277-12.000.
Laidig, Manfred R.: *See—*
Jones, Gary D.; Laidig, Manfred R.; and Weisz, William, 4,323,024, Cl. 112-237.000.
Laird, Edwin C.: *See—*
Mahato, Basanta K.; and Laird, Edwin C., 4,323,470, Cl. 252-182.100.
Lam, Hon W., to Texas Instruments Incorporated. Method of producing monocrystal on insulator. 4,323,417, Cl. 156-613.000.
Lampe, Robert F., to United States of America, Energy. Method of fabricating a prestressed cast iron vessel. 4,322,880, Cl. 29-452.000.
Landen, Ernest W.: *See—*
Belke, William H.; Hafele, Joseph C.; Landen, Ernest W.; and Richards, Thomas J., 4,323,401, Cl. 148-39.000.
Landry, Joseph E.: *See—*
Carriere, Joseph F.; Gaunt, Wilmer B., Jr.; Landry, Joseph E.; and Spires, Dewayne A., 4,323,885, Cl. 340-347.0CC.
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Lansberry, Delbert B. Target game. 4,323,250, Cl. 273-400.000.
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Shedd, Walter M.; and LaPierre, Donald C., 4,323,851, Cl. 178-72.000.
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Wiknich, Douglas D., 4,323,152, Cl. 198-751.000.
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Lathrope, Michael F., to Motorola, Inc. Low transient feedthru FET sample and hold gate. 4,323,796, Cl. 307-353.000.
Latimer, John P., to Deepsea Ventures, Inc. Balanced support plates. 4,323,216, Cl. 248-550.000.
Laurel Bank Machine Co., Ltd.: *See—*
Uchida, Shinya, 4,323,768, Cl. 235-92.0SB.
Lautenschlager, Gerhard W., to Karl Lautenschlager KG., Mobelbeschlagfabrik. Hinge for all-glass doors of cabinets. 4,322,870, Cl. 16-235.000.
Laverty, Gerald C., to Cosco Industries, Inc. Adaptor core. 4,323,202, Cl. 242-68.500.
Lay, Roger F.: *See—*
Holtz, Earl B.; Lay, Roger F.; Manduley, Flavio M.; and Moody, Howard J., 4,323,987, Cl. 365-229.000.
Lazzari, Jean P., to Compagnie Internationale pour l'Informatique CII-Honeywell Bull (Societe Anonyme). Process, magnetic transducer and system for generating a magnetic induction field within a magnetic medium. 4,323,940, Cl. 360-113.000.
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Le Materiel Telephonique Thomson-CSF: *See—*
Houdard, Jean-Pierre; Julie, Jean-Jacques; and Leoni, Bernard G., 4,323,980, Cl. 364-724.000.
Leach, John M., to Gould Advance Limited. Power regulating apparatus including load current sensor means. 4,323,845, Cl. 323-224.000.
Lebedev, Vladimir K.: *See—*
Paton, Boris E.; Lebedev, Vladimir K.; Kuchuk-Yatsenko, Sergei I.; Sakharnov, Vasily A.; and Galyan, Boris A., 4,323,752, Cl. 219-101.000.
Lederer, Hans: *See—*
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Lee, Cheuk M.: *See—*
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Lee, Chin K.: *See—*
Long, Margaret E.; and Lee, Chin K., 4,323,651, Cl. 435-207.000.
Lee, David M.; Rose, Donald K.; and Clover, Richmond B., to Intel Magnetics, Inc. Magnetic bubble detector. 4,323,983, Cl. 365-8.000.
Lee, Francis C.; Mills, Ross N.; and Talke, Frank E., to International Business Machines Corp. Resonant purging of drop-on-demand ink jet print heads. 4,323,908, Cl. 346-140.00R.
Lee, Maw H., to Scott & Fetzer Company, The. Simplified power factor controller for induction motor. 4,323,835, Cl. 318-729.000.
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Lehman, Frederick D., to CPT Corporation. Drive circuits for a high resolution cathode ray tube display. 4,323,826, Cl. 315-408.000.
Lehmann, Jr. Ernst. Spray coating device. 4,323,030, Cl. 118-309.000.
Leiby, Clare C., Jr.; and Ezekiel, Shaoul, to United States of America, Air Force. Laser excited molecular beam time and frequency standard. 4,323,860, Cl. 372-32.000.
Leistner, Werner, to Siemens Aktiengesellschaft. Bundle of laminations for an electric machine. 4,323,802, Cl. 310-59.000.
Leitgeb, Paul, to Linde Aktiengesellschaft. Adsorption process producing varying amounts of product gas of a constant purity. 4,323,370, Cl. 55-18.000.
Lemke, Andreas, to Auergesellschaft GmbH. Switching circuit for monitoring the switching state of switch elements. 4,323,890, Cl. 340-524.000.
Lenoir, John: *See—*
Jan, Gerald; Hagen, Remon; and Lenoir, John, 4,323,682, Cl. 544-353.000.
Lenthall, Frank C., to F. L. Plastics Industries Pty. Ltd. Indicators for garment hangers. 4,322,902, Cl. 40-322.000.
Lentz, David J.; and Pollock, Elisabeth M., to Vascor, Inc. Method for inhibiting mineralization of natural tissue during implantation. 4,323,358, Cl. 8-94.110.
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Guillou, Louis C., 4,323,921, Cl. 358-114.000.
Leung, Danton K.; and Singh, Prithipal, to Syva Company. Valproate conjugation using dicarbonyls. 4,323,507, Cl. 260-345.90R.
Levason, William: *See—*
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Lever Brothers Company: *See—*
Curry, Janet C.; and Bory, Barbara H., 4,323,466, Cl. 252-106.000.
Leverich, George C. Foot protector for furniture. 4,323,610, Cl. 428-68.000.
Levinson, Steven R., to Eastman Kodak Company. Stable photographic developers containing an indazole antifoggant and a lignosulfonate. 4,323,642, Cl. 430-438.000.
Levinstein, Hyman J.: *See—*
Adams, Arthur C.; Alexander, Frank B., Jr.; Levinstein, Hyman J.; and Thibault, Louis R., 4,323,638, Cl. 430-275.000.
Lewis, Norris E.; and Walker, Herbert C., to Litton Systems, Inc. High voltage slip ring assembly. 4,323,292, Cl. 339-5.00M.
Lewis, William P.: *See—*
Compton, Donald B.; Lewis, William P.; and Trinh, Toan, 4,323,193, Cl. 239-44.000.
Li, Chou H. Powder metallurgy process and product. 4,323,395, Cl. 75-212.000.
LIBA Maschinenfabrik GmbH: *See—*
Wunner, Roland, 4,322,956, Cl. 66-203.000.
Libbey-Owens-Ford Company: *See—*
McComb, Walter D.; and Rudolph, Andrew W., 4,323,785, Cl. 250-461.00R.
Liebrich, Wolfgang; and Schneider, Dieter, to Odenwalder Kunststoffwerke GmbH. Light-reflecting arrangement for use in traffic control devices. 4,323,320, Cl. 404-10.000.
Liedtke, Ronald: *See—*
Jernstrom, Hans E. I.; Long, Thomas L.; and Liedtke, Ronald, 4,323,238, Cl. 273-1.00G.
Life Savers, Inc.: *See—*
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Lightolier Incorporated: *See—*
Florence, Noel S.; and Lynn, Norman, 4,323,954, Cl. 362-267.000.
Ligorati, Ferdinando: *See—*
Canavesi, Roberto; Ligorati, Ferdinando; and Aglietti, Giancarlo, 4,323,716, Cl. 570-243.000.
Likins, Robert W., to American Can Company. Power transfer system. 4,323,748, Cl. 219-10.710.
Lim, Ho S. Liquid container with cup holder. 4,323,172, Cl. 222-130.000.
Lim, Teong C.: *See—*
De Wames, Roger E.; Hall, William F.; Ho, William W.; and Lim, Teong C., 4,323,901, Cl. 343-754.000.
Lincoln, Frank H.: *See—*
Johnson, Roy A.; Lincoln, Frank H.; and Pike, John E., 4,323,672, Cl. 542-421.000.
Johnson, Roy A.; Lincoln, Frank H.; and Pike, John E., 4,323,673, Cl. 542-426.000.
Johnson, Roy A.; Lincoln, Frank H.; and Pike, John E., 4,323,674, Cl. 542-426.000.
Linde Aktiengesellschaft: *See—*
Leitgeb, Paul, 4,323,370, Cl. 55-18.000.
Muller, Karl-Heinz; and Forg, Wolfgang, 4,323,380, Cl. 62-28.000.
Link, Edwin A., to RTE Corporation. Blown fuse indicator. 4,323,874, Cl. 337-244.000.
Lipperts, Joseph H., to Hazemeijer B. V. Method for improving switch contacts, in particular for vacuum switches. 4,323,590, Cl. 427-38.000.
List, Hans: *See—*
Pomfret, Colin T., 4,323,253, Cl. 277-12.000.
Litton Business Systems, Inc.: *See—*
Johnston, John N., 4,323,979, Cl. 364-708.000.
Litton Systems, Inc.: *See—*
Carpenter, Lowell L., 4,323,773, Cl. 235-473.000.

Lewis, Norris E.; and Walker, Herbert C., 4,323,292, Cl. 339-5.00M.
Ljuty, Boris I.: *See—*
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Loch, David M., to Boeing Company, The. Anodizing process employing adjustable shield for suspended cathode. 4,323,433, Cl. 204-56.00R.
Lockheed Missiles & Space Company, Inc.: *See—*
Spilker, James J., Jr., 4,324,002, Cl. 455-27.000.
Lodewyck, Paul D.: *See—*
Montle, John F.; Markowski, Henry J.; Lodewyck, Paul D.; and Schneider, Daniel F., III, 4,323,690, Cl. 556-470.000.
Logue, Gerald W.; and Schnepel, Rudolph R. Paint spraying apparatus. 4,323,196, Cl. 239-532.000.
Long, Florren E., to Ludlow Corporation. Thermally-processable flexible package and process for using same. 4,323,586, Cl. 426-412.000.
Long, Margaret E.; and Lee, Chin K., to R. J. Reynolds Tobacco Company. Thermostable lactase derived from bacillus. 4,323,651, Cl. 435-207.000.
Long, Thomas L.: *See—*
Jernstrom, Hans E. I.; Long, Thomas L.; and Liedtke, Ronald, 4,323,238, Cl. 273-1.00G.
Longinotti, Alfredo, to Centro Di Ricera Enrico Longinotti Firenze S.p.A. Apparatus to provide an even layer or loose material to a suction conveyor. 4,323,178, Cl. 222-415.000.
Look, Christopher M.: *See—*
Noad, Julian P.; Springthorpe, Anthony J.; and Look, Christopher M., 4,323,859, Cl. 372-46.000.
L'Oreal: *See—*
Bouillon, Claude; Vayssie, Charles; and Richard, Francoise, 4,323,549, Cl. 424-45.000.
Bouillon, Claude; and Dermenton, Patrick, 4,323,553, Cl. 424-61.000.
Bugaut, Andree; and Junino, Alex, 4,323,360, Cl. 8-407.000.
Grollier, Jean-Francois; and Allec, Josiane, 4,323,468, Cl. 252-174.170.
Lorenzen, Heinz-Christen: *See—*
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Loveland, William A.; Dukes, James S.; and Sparks, Gregory W. Target holder. 4,323,251, Cl. 273-407.000.
Lowery, Kirby, Jr.; Birkelbach, Donald F.; and Shipley, Randall S., to Dow Chemical Co., The. High efficiency catalyst for polymerizing olefins. 4,323,665, Cl. 526-122.000.
Lowry, Elvery D.: *See—*
Wyner, Elliot F.; and Lowry, Elvery D., 4,323,812, Cl. 313-198.000.
Lucas, Bruce T., to United States of America, Navy. Automatic target screening. 4,323,880, Cl. 340-146.3AC.
Lucas Industries Limited: *See—*
Hill, William F., 4,323,944, Cl. 361-152.000.
Lumby, Roland J.; North, Bernard; Taylor, Alfred J.; and Thomas, Roland M., 4,323,323, Cl. 407-119.000.
Woodhouse, Richard G.; and Williams, Malcolm, 4,323,042, Cl. 123-436.000.
Luderer, Albert A.: *See—*
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Ludlow Corporation: *See—*
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Lugosi, Gyorgy; May, Antal S.; Bodnar, Janos; Turcsan, Istvan; Jelinek, Istvan; Somfai, Eva; and Simandi, Laszlo, to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara R.T. Process for O-acylating phenol derivatives and acylating compositions for this purpose. 4,323,469, Cl. 252-182.000.
Lukac, Teodor; Widmer, Erich; and Zell, Reinhard, to Hoffmann-La Roche Inc. Process for producing cyclohexenes. 4,323,711, Cl. 568-347.000.
Lukaszczyk, Alfons: *See—*
Pissiotas, Georg; Durr, Dieter; Rohr, Otto; and Lukaszczyk, Alfons, 4,323,388, Cl. 71-88.000.
Lumby, Roland J.; North, Bernard; Taylor, Alfred J.; and Thomas, Roland M., to Lucas Industries Limited. Tool tip for a machine tool. 4,323,323, Cl. 407-119.000.
Lund, John A.: *See—*
den Toonder, Pieter; Doles, Glenn P.; Lund, John A.; Merrell, Richard G.; and Stubbs, Graham S., 4,323,922, Cl. 358-117.000.
Lunn, John G., to Geo. A. Hormel & Company. Hind leg skinner. 4,322,873, Cl. 17-21.000.
Lunsford, Delbert R.: *See—*
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Lutz, Alfons: *See—*
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Lutz, Charles W.: *See—*
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Lutz, Horst, to Daimler-Benz Aktiengesellschaft. Straightener for motor vehicles. 4,323,228, Cl. 269-296.000.
Lutz, Rainer M. Sun visor with auxiliary visors. 4,323,275, Cl. 296-97.000.
Luzynski, Anthony J. Security device for motor vehicles and other d.c. electrical systems. 4,323,878, Cl. 340-63.000.
Lynn, Norman: *See—*
Florence, Noel S.; and Lynn, Norman, 4,323,954, Cl. 362-267.000.
Maag Gear-Wheel & Machine Co. Ltd.: *See—*
Guenter, Erwin, 4,322,889, Cl. 33-179.50R.
Macaulay, John G., to Toppy's Salons Limited. Mounting devices. 4,323,212, Cl. 248-51.000.
Mackay, Donald A. M.: *See—*
Vink, Walter; Spooner, Leonard; and Mackay, Donald A. M., 4,323,588, Cl. 426-564.000.
Mackey, William H.; and Smith, Lee R. Trophy support column. 4,323,630, Cl. 428-542.000.
MacKinnon, John W. M.: *See—*
Clitherow, John W.; Price, Barry J.; Bradshaw, John; Martin-Smith, Michael; MacKinnon, John W. M.; Judd, Duncan B.; and Carey, Linda, 4,323,566, Cl. 424-248.510.
Madden, Thomas H.; and Reash, Clair W., to Union Carbide Corporation. Getter construction for reducing the arc discharge current in color TV tubes. 4,323,818, Cl. 313-481.000.
Maegawa, Yuzo: *See—*
Takahashi, Masatoshi; Kotera, Norio; Uegaki, Masatoshi; Miyaoka, Takashi; and Maegawa, Yuzo, 4,323,431, Cl. 203-72.000.
Maerfeld, Charles; and Gautier, Herve, to Thomson-CSF. Two dimensional acousto-electrical device for storing and processing information. 4,323,985, Cl. 365-157.000.
Maeroff, Bruce J., to Ford Motor Company. Filler pipe seal with fill control skirt. 4,323,166, Cl. 220-86.00R.
Magder, Jules, to Noxso Corporation. Process and sorbent system for removing nitrogen and other oxides from gas streams. 4,323,544, Cl. 423-239.000.
Magdo, Ingrid E.: *See—*
Abbas, Shakir A.; and Magdo, Ingrid E., 4,322,883, Cl. 29-578.000.
Magi, Hugo, to Bronardi Inc. Apparatus for aerating liquids. 4,323,090, Cl. 141-70.000.
Magnetics International, Inc.: *See—*
Chlad, Kenneth J., 4,323,329, Cl. 414-737.000.
Mahato, Basanta K.; and Laird, Edwin C., to Globe-Union Inc. Battery paste for lead-acid storage batteries. 4,323,470, Cl. 252-182.100.
Maier, Edward E.: *See—*
Glassman, Donald; and Maier, Edward E., 4,323,430, Cl. 203-7.000.
Maier, Peter. Eccentric plate grinder. 4,322,921, Cl. 5-170.0MT.
Makabe, Hachiro: *See—*
Watanabe, Kazuo; Makabe, Hachiro; Orii, Akira; Hisatake, Michio; and Yamamoto, Kazuji, 4,323,833, Cl. 318-376.000.
Malaviva, Shashi D., to International Business Machines Corporation. Electronic storage array having DC stable conductivity modulated storage cells. 4,323,986, Cl. 365-174.000.
Malcik, Frank J.: *See—*
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Mallory, William R.: *See—*
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Malloy, Thomas P.; and Engel, Duaan J., to UOP Inc. Alkylation of hydroxy-substituted aromatic compounds. 4,323,714, Cl. 568-766.000.
Malloy, Thomas P.: *See—*
Engel, Duaan J.; and Malloy, Thomas P., 4,323,715, Cl. 568-766.000.
Malthouse, Martin D.; and Groeger, Heinz K. Labelling equipment. 4,323,416, Cl. 156-521.000.
Maltzman, Edward; and Erikson, Herman E. Novel teaching method and apparatus. 4,323,349, Cl. 434-184.000.
Mandai, Harufumi; and Nishimura, Kunitaro, to Murata Manufacturing Co., Ltd. Semiconductor ceramic composition for boundary layer capacitors. 4,323,617, Cl. 428-148.000.
Manduley, Flavio M.: *See—*
Holtz, Earl B.; Lay, Roger F.; Manduley, Flavio M.; and Moody, Howard J., 4,323,987, Cl. 365-229.000.
Manfra, Michael J.: *See—*
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Manicardi, Emidio: *See—*
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Mannschreck, William A.: *See—*
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Manser, Josef, to Gebrueder Buehler A.G. Process for the production of pasta products packed ready for sale in serving portions in packages. 4,323,585, Cl. 426-394.000.
Marcolongo, Samuel. Tool for trimming willow trees. 4,322,886, Cl. 30-312.000.
Marconi Company Limited, The: *See—*
Bridges, Clive A.; and O'Donnell, Patrick J., 4,323,776, Cl. 250-332.000.
Marconi Instruments Limited: *See—*
Arnold, Victor F.; and Dixon, Roger C., 4,323,943, Cl. 361-114.000.
Marconi, Joseph. Printed circuit card retainer and rack assembly. 4,323,161, Cl. 211-41.000.
Margotte, Dieter: *See—*
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Mark Controls Corporation: *See*—
Nordeen, Howard C., 4,323,112, Cl. 165-27.000.
Mark, Edward H. Light with 360° rotatable cover. 4,323,955, Cl. 362-278.000.
Markova, Marie: *See*—
Fajt, Ladvik; Didek, Stanislav; Kasparek, Jaromir; Storek, Jaroslav; Andres, Jiri; Borovcova, Zelmira; Markova, Marie; Reymanova, Marketa; and Stepanek, Miroslav, 4,322,942, Cl. 57-411.000.
Markowski, Henry J.: *See*—
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Marley Tile AG: *See*—
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Marmorat, Andre; and Robert, Arnold-Michel, to Framatome. Device for feeding, with elongate lining material, an installation for lining a tubular member. 4,323,750, Cl. 219-76.100.
Marola, America E.: *See*—
Stella, Leo; and Marola, America E., 4,323,287, Cl. 308-187.100.
Marshall, David W., to Kennecott Corporation. Method for achieving particle-to-particle contact in an antifouling coating. 4,323,599, Cl. 427-181.000.
Martin-Smith, Michael: *See*—
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Martini, Thomas: *See*—
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Martinsen, Nick: *See*—
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Maruyama, Eiichi: *See*—
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Marvel, John T.: *See*—
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Marvin Glass & Associates: *See*—
Hanson, Steven P.; Morrison, Howard J.; and Montague, Douglas P., 4,323,243, Cl. 273-153.00S.
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Maschinen- und Armaturen- J & W Muller, fabrik GmbH: *See*—
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Maschinenfabrik Fr. Niepmann & Co.: *See*—
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Masclet, Jean; and Veaux, Jacques, to Messier-Hispano-Bugatti. Operating and bracing jack having an internal locking mechanism. 4,323,001, Cl. 91-25.000.
Masegi, Koichi: *See*—
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Masnari, Nino A.; Rensel, Walter B.; Robinson, Merrill G.; Solomon, David E.; Wise, Kensall D.; and Wuttke, Gilbert H., to United States of America, Energy. Process for manufacture of inertial confinement fusion targets and resulting product. 4,323,420, Cl. 156-628.000.
Massachusetts Institute of Technology: *See*—
Hammond, Ogden H., 4,323,368, Cl. 48-202.000.
Massie, Lewis E.: *See*—
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Masuda, Yoshinori: *See*—
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Matsui, Kazumasa: *See*—
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Matsui, Masakuni: *See*—
Tsugekawa, Takanori; Banba, Tosio; and Matsui, Masakuni, 4,323,039, Cl. 123-275.000.
Matsui, Motomu: *See*—
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Matsumoto, Yoshihisa: *See*—
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Matsushita Electric Industrial Co., Ltd.: *See*—
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Kunieda, Toshiaki; Odagiri, Masaru; Fujita, Takashi; and Shinohara, Koichi, 4,323,629, Cl. 428-457.000.
Nichimoto, Susumu; Shinoda, Isao; Nakamura, Shigeo; and Tsumura, Haruhide, 4,323,148, Cl. 194-100.00A.
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Mazanek, Jan; Gipp, Roland; Zollner, Robert; Seifert, Peter; Wagner, Kuuno; and Blahak, Johannes, to Bayer Aktiengesellschaft. Dispersions of high melting polyesters in polyhydroxyl compounds, a process for their preparation and their use in the production of polyurethanes. 4,323,657, Cl. 521-116.000.
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McCrory, Roy E. Animated wildfowl decoy. 4,322,908, Cl. 43-3.000.
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McDonald, Charles J. Device for gathering fruit. 4,322,939, Cl. 56-328.00R.
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McGaughey, Donald C., to State Wide Aluminum of Indiana, Inc. Slideable closure construction. 4,322,914, Cl. 49-370.000.
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Garner, Henry C.; and McGee, Lawrence, 4,323,717, Cl. 373-101.000.
McGregor, Harold R. Bag filling and handling apparatus. 4,322,932, Cl. 53-505.000.
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Wiebusch, Wendy A., 4,323,081, Cl. 128-785.000.
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Cole, James A., 4,323,888, Cl. 340-365.00A.
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Melhart, Albert H. Ankle stress machine. 4,323,080, Cl. 128-774.000.
Menson, Robert C.: *See*—
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Mercier, George E.; Pickett, John H.; and Holtzman, Barry L., to Westinghouse Electric Corp. Capacitor structures with improved electrical stress capability. 4,323,948, Cl. 361-315.000.
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den Toonder, Pieter; Doles, Glenn P.; Lund, John A.; Merrell, Richard G.; and Stubbs, Graham S., 4,323,922, Cl. 358-117.000.
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Merrick, Llewellyn S., to Oros Corporation. Portable telephone line test set. 4,323,738, Cl. 179-175.10R.
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Meunier, Georges, to Isover Saint-Gobain. Preheater for compacted vitrifiable material. 4,323,384, Cl. 65-335.000.
Meus, Roger R., to Ordibel Sprl. Machines for assembling sheets of laminar material such as paper. 4,323,229, Cl. 270-58.000.
Meyer, Burton C.: *See*—
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Meyer-Kahrweg, Helmut, to Steag Aktiengesellschaft. Fluidized bed firing unit. 4,323,037, Cl. 122-4.00D.
Meyer, Leonard S., to Victor United, Inc. Method and apparatus for simultaneously molding a plurality of parts. 4,323,415, Cl. 156-433.000.
Meyer, Nicolas; and Foulon, Raymond, to Societe Chimique des Charbonnages SA. Boric anhydride solutions and their use as hardeners of resols. 4,323,667, Cl. 528-138.000.
Meyn, Pieter. Apparatus for breaking the neck of a fowl. 4,322,872, Cl. 17-12.000.
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Mifune, Hiroyuki; Hirano, Shigeo; and Akimura, Yoshitaka, to Fuji Photo Film Co., Ltd. Silver halide photographic light-sensitive materials. 4,323,643, Cl. 430-441.000.
Mikame, Yoshio, to TDK Electronics Co., Ltd. Test system for detecting a permanent defect and a temporary defect in magnetic recording tape. 4,323,844, Cl. 324-212.000.
Mikkelsen, Erling H.: *See*—
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Miles, Wilbur N.: *See*—
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Mills, Ross N.: *See*—
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Milner, David J., to Imperial Chemical Industries Limited. Process for the preparation of alkyl furans. 4,323,509, Cl. 260-346.110.
Minks, Werner, to ITT Industries, Inc. Armature mount for an electromagnetic relay. 4,323,869, Cl. 335-274.000.
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Beretta, Paolo, 4,323,633, Cl. 430-17.000.
Gebeke, Charles D., 4,323,207, Cl. 242-198.000.
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Mischenko, Alexandr P.; Gryaznov, Vladimir M.; Gakh, Igor G.; Parbuzina, Iraida L.; Savitsky, Evgeny M.; Polyakova, Viktoria P.; and Roshan, Natalia R. Method for preparing 2,4-diaminolphenol or 2,4-diamonophenol dihydrochloride. 4,323,708, Cl. 564-418.000.
Mitani, Ikusaburo. Innoxious interferon-inducing substance, inducing agent and process for producing same. 4,323,496, Cl. 260-112.00R.
Mitchell, Hal D., to A-T-O Inc. Shoulder pad. 4,322,859, Cl. 2-2.000.
Mitsubishi Chemical Industries Limited: *See*—
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Mori, Hazime; Kohyama, Katsuhisa; Nakamura, Katsuhiko; and Takamatsu, Shinichi, 4,323,519, Cl. 528-499.000.
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Miyagishima, Tosh; and Motoda, Calvin, to Hydril Company. Front packer seal for ram blowout preventer. 4,323,256, Cl. 277-126.000.
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Miyazawa, Takeshi; and Ono, Naotoshi, to Honda Giken Kogyo Kabushiki Kaisha. Snow blowing machine. 4,322,896, Cl. 37-43.00E.
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Haag, Werner O.; and Whitehurst, Darrell D., 4,323,698, Cl. 560-233.000.

Mochida, Haruo, to Nissan Motor Company, Limited. Locking means for a trunk in an automobile. 4,322,959, Cl. 70-241.000.
Mody, Dinesh I., to Instrumentation Laboratory Inc. Analysis system. 4,323,537, Cl. 422-63.000.
Mohawk Data Sciences Corp.: *See*—
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Moltner, Hermann; and Siebenborn, Wolfgang, to Kocks Technik GmbH & Co. Adjustment means for stretch reduction rolling mills. 4,323,971, Cl. 364-469.000.
Monarch Marking Systems, Inc.: *See*—
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Monji, Nobuo; and Castro, Albert, to University of Miami. Steric hindrance enzyme immunoassay. 4,323,647, Cl. 435-7.000.
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 D'Amico, John J., 4,323,677, Cl. 544-135.000.
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 Fritzsche, Alfred K.; Holladay, Harry P.; and Woodcock, Maurice L., 4,323,454, Cl. 210-321.100.
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Moody, Howard J.: *See*—
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Moore, Dana: *See*—
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Morduchowitz, Abraham, to Texaco Inc. Secondary recovery process. 4,323,463, Cl. 252-8.55D.
Morello, Sergio. Manufacturing process for covering panels, and panels obtained with this process. 4,323,406, Cl. 156-91.000.
Morgenroth, Henri. Constant depression carburetor. 4,323,521, Cl. 261-50.00A.
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Mori, Hazime; Kohyama, Katsuhisa; Nakamura, Katsuhiko; and Takamatsu, Shinichi, to Mitsubishi Chemical Industries, Ltd. Method of washing organic solvent solution of polycarbonate. 4,323,519, Cl. 528-499.000.
Mori, Hazime; Kohyama, Katsuhisa; and Nakamura, Katsuhiko, to Mitsubishi Chemical Industries, Ltd. Process for producing a halogen-containing polycarbonate resin. 4,323,663, Cl. 525-470.000.
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Morikama, Osamu: *See*—
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Morishita Pharmaceutical Co., Ltd.: *See*—
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Morishita, Teru; Sugiyama, Matsuyoshi; and Suzuki, Toshikazu, to Toyota Jidosha Kogyo Kabushiki Kaisha. Rotary type electrostatic spray painting device. 4,323,197, Cl. 239-703.000.
Morita, Masayuki; Nakano, Tasuku; and Kubota, Kazuhisa, to Kabushiki Kaisha Tokai Rika Denki Seisakusho. Turn direction detector for use in automobile. 4,323,877, Cl. 340-56.000.
Moritz, Bertil; and Tonnesen, Ole, to ASEA Aktiebolag. Transformer or reactor having a winding formed from sheet material. 4,323,870, Cl. 336-206.000.
Morris, Robert B.; and Clemmons, Quentin T., to American Standard Inc. Hydro-pneumatic brake actuator arranged to maintain a constant brake shoe clearance. 4,323,144, Cl. 188-196.00A.
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Morrison-Knudsen Forest Products Company, Inc.: *See*—
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Morrison, Robert W., Jr.; Mallory, William R.; and Styles, Virgil L., to Burroughs Wellcome Co. Pyrimido(4,5-c)pyridazines. 4,323,679, Cl. 544-256.000.
Mortensen, Harold R., to Facet Enterprises, Inc. Engine starter with an overrunning clutch device. 4,322,985, Cl. 74-6.000.
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Motoda, Calvin: *See*—
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Mucenieks, Paul R., to FMC Corporation. Treatment of brine. 4,323,437, Cl. 204-98.000.
Muck, Karl-Friedrich; Sextro, Gunter; and Burg, Karlheinz, to Hoechst Aktiengesellschaft. Process for the simultaneous preparation of trioxan and cyclic formals. 4,323,502, Cl. 260-340.000.
Muderlak, Kenneth J., to KCS Industries, Inc. Indicia display device. 4,322,904, Cl. 40-495.000.
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Muhr, Richard; and Schulte, Karl-Heinz, to Muhr und Bender. Shear having U-shaped clips connecting drive and work plates. 4,322,994, Cl. 83-616.000.
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Mukoyama, Yoshiyuki; and Chikazumi, Nobutoshi, to Hitachi Chemical Company, Ltd. Process for producing granular polymer having uniform fine particle size. 4,323,664, Cl. 526-88.000.
Muller, Karl-Heinz; and Forg, Wolfgang, to Linde Aktiengesellschaft. Rectification of gaseous mixtures. 4,323,380, Cl. 62-28.000.
Muller, Stefan; Thun, Gerhard; and Glauner, Wolfgang, to Kernforschungszentrum Karlsruhe GmbH. Flowmeter. 4,322,982, Cl. 73-861.220.
Muller, Thomas, to Robert Bosch GmbH. Strain relief device for an electrical supply line. 4,323,725, Cl. 174-65.00R.
Muller, Walter: *See*—
 Neeff, Rutger; Rolf, Meinhard; and Muller, Walter, 4,323,670, Cl. 542-415.000.
 Neeff, Rutger; Rolf, Meinhard; and Muller, Walter, 4,323,671, Cl. 542-415.000.
Murakami, Shinichi: *See*—
 Uno, Koichi; and Murakami, Shinichi, 4,323,405, Cl. 156-64.000.
Muraki, Toshio: *See*—
 Chiba, Kazumasa; Egawa, Keiichi; and Muraki, Toshio, 4,323,639, Cl. 430-281.000.
Muramoto, Ei-ichi; and Matsui, Motomu, to Kabushiki Kaisha Komatsu Seisakusho. Track adjusting and recoil apparatus for use with crawler vehicles. 4,323,283, Cl. 305-10.000.
Murata Manufacturing Co., Ltd.: *See*—
 Inoue, Jiro, 4,323,866, Cl. 333-188.000.
 Mandai, Harufumi; and Nishimura, Kunitaro, 4,323,617, Cl. 428-148.000.
 Tanaka, Yasuhiro; and Kakehi, Sasuga, 4,323,865, Cl. 333-187.000.
Murch, Charles K.; and Hunter, Charles R., to TRW Inc. Thermal thruster with superheater. 4,322,946, Cl. 60-203.100.
Murrmann, Helmuth; Rathbone, Ronald; and Schwabe, Ulrich, to Siemens Aktiengesellschaft. Integrated semiconductor circuit arrangement. 4,323,913, Cl. 357-51.000.
Myers, Robert F., to Pfizer Inc. 6-(2-Aryl-2-(1,1-diozopenicillanoyloxymethoxycarbonyl)acetamido penicillanic acids. 4,323,499, Cl. 260-239.100.
Nacci, George R., to Du Pont de Nemours, E. I., and Company. Printing process using lithographic plates made from toned amplitude modulated magnetic images. 4,323,929, Cl. 358-301.000.
Nagahara, Shusaku: *See*—
 Koike, Norio; Tsukada, Toshihisa; Ando, Haruhisa; Yamamoto, Hideaki; Hirai, Tadaaki; Kubo, Masaharu; Maruyama, Eiichi; Baji, Toru; Takasaki, Yukio; and Nagahara, Shusaku, 4,323,912, Cl. 357-31.000.
Nagahori, Teiji; and Ohshima, Masanori. Hot dipping lead base coating material. 4,323,393, Cl. 75-166.00C.

Nagai, Shigeki: *See*—
 Nakagami, Kazuto; Yokoi, Shinji; Nishimura, Kenji; Nagai, Shigeki; Honda, Takeo; Oda, Kiroku; Fujii, Katsutoshi; Kobayashi, Ryuji; and Kojima, Mikio, 4,323,680, Cl. 544-293.000.
Nagano, Masashi, to Shimano Industrial Company Limited. Connecting mechanism for two members of a bicycle derailleur. 4,323,357, Cl. 474-82.000.
Nagasawa, Toshio: *See*—
 Nishimura, Hiroshi; Monma, Tetsuo; Yoshida, Minoru; Kirimoto, Kazunari; Hayamizu, Yoshio; and Nagasawa, Toshio, 4,323,607, Cl. 219-213.000.
Nagase, Junji: *See*—
 Saito, Retsuo; and Nagase, Junji, 4,323,048, Cl. 124-78.000.
Nagata, Wataru: *See*—
 Narisada, Masayuki; and Nagata, Wataru, 4,323,567, Cl. 424-248.510.
Nagoshi, Eiichi: *See*—
 Okada, Mitsuo; Nagoshi, Eiichi; and Matsumoto, Yoshihisa, 4,323,326, Cl. 411-412.000.
Naito, Keiichi: *See*—
 Watanabe, Masanao; Naito, Keiichi; Odajima, Tooru; and Fujiwara, Yoshio, 4,323,659, Cl. 525-108.000.
Nakabo, Satoru: *See*—
 Ishihara, Hideo; Suzuki, Shizuo; and Nakabo, Satoru, 4,323,984, Cl. 365-10.000.
Nakagami, Kazuto; Yokoi, Shinji; Nishimura, Kenji; Nagai, Shigeki; Honda, Takeo; Oda, Kiroku; Fujii, Katsutoshi; Kobayashi, Ryuji; and Kojima, Mikio, to Sankyo Company Limited; and Ube Industries, Ltd. 4-Aminoquinazoline compounds useful as agricultural fungicides. 4,323,680, Cl. 544-293.000.
Nakagawa, Junichi: *See*—
 Ohtani, Yoshitaka; and Nakagawa, Junichi, 4,323,432, Cl. 201-31.000.
Nakagawa, Noboru; Oonishi, Toshiyuki; Tsutsumi, Masato; and Kawamoto, Akira, to Tokyo Shibaura Denki Kabushiki Kaisha. Refrigerating apparatus. 4,322,952, Cl. 62-198.000.
Nakajima, Maki: *See*—
 Yamazaki, Kazuhide; Ogawa, Shigetoshi; Suma, Atsushi; and Nakajima, Maki, 4,323,014, Cl. 104-13.000.
Nakamura, Katsuhiko: *See*—
 Mori, Hazime; Kohyama, Katsuhisa; Nakamura, Katsuhiko; and Takamatsu, Shinichi, 4,323,519, Cl. 528-499.000.
 Mori, Hazime; Kohyama, Katsuhisa; and Nakamura, Katsuhiko, 4,323,663, Cl. 525-470.000.
Nakamura, Kimio; Fujisawa, Kimio; and Ochiai, Kokichi, to Nissan Motor Company, Limited. Power supply circuit for automotive vehicles. 4,323,837, Cl. 322-7.000.
Nakamura, Masaaki: *See*—
 Ohkuma, Takaaki; Ninomiya, Hiroshi; Nakamura, Masaaki; and Idzu, Genichi, 4,323,577, Cl. 424-298.000.
Nakamura, Norimitsu, to Tokyo Shibaura Denki Kabushiki Kaisha. Central processing unit with improved ALU circuit control. 4,323,981, Cl. 364-749.000.
Nakamura, Shigeo: *See*—
 Nichimoto, Susumu; Shinoda, Isao; Nakamura, Shigeo; and Tsumura, Haruhide, 4,323,148, Cl. 194-100.00A.
Nakamura, Taku; Ogawa, Masasi; and Ishigaki, Kunio, to Fuji Photo Film Co., Ltd. Photographic material containing polymers with active ester groups. 4,323,644, Cl. 430-518.000.
Nakanishi, Teruyuki; and Hitomi, Kiyoshi, to Kawasaki Steel Corporation. Method of producing H-beams. 4,322,962, Cl. 72-234.000.
Nakano, Tasuku: *See*—
 Morita, Masayuki; Nakano, Tasuku; and Kubota, Kazuhisa, 4,323,877, Cl. 340-56.000.
Nakao, Makoto: *See*—
 Itoi, Eiji; Nakayama, Takashi; Nakao, Makoto; and Matsumura, Yukio, 4,323,436, Cl. 204-98.000.
Nakaoka, Kazuhide; Araki, Kenzi; Iwase, Kozi; Kubotera, Haruo; Kurihara, Takao; and Tanaka, Nobuo, to Nippon Kokan Kabushiki Kaisha. Continuous annealing method for cold reduced steel strip. 4,323,403, Cl. 148-134.000.
Nakaoka, Manabu: *See*—
 Saita, Shigeaki; and Nakaoka, Manabu, 4,323,225, Cl. 269-43.000.
Nakayama, Takashi: *See*—
 Itoi, Eiji; Nakayama, Takashi; Nakao, Makoto; and Matsumura, Yukio, 4,323,436, Cl. 204-98.000.
Nambu, Hirohiko: *See*—
 Hashimoto, Isao; and Nambu, Hirohiko, 4,323,505, Cl. 260-345.200.
Nancarrow, James H.: *See*—
 Byrne, Joe L.; Kobayashi, Robert J.; and Nancarrow, James H., 4,322,949, Cl. 60-606.000.
Narisada, Masayuki; and Nagata, Wataru. Arylmalonamido-1-oxadethiacephalosporins. 4,323,567, Cl. 424-248.510.
Narumi China Corporation: *See*—
 Uno, Koichi; and Murakami, Shinichi, 4,323,405, Cl. 156-64.000.
Nash Engineering Company, The: *See*—
 Haavik, Harold K., 4,323,334, Cl. 417-68.000.
National Can Corporation: *See*—
 Bass, Kenneth B.; and Agusto, Robert G., 4,323,583, Cl. 426-250.000.
 Bass, Kenneth B.; and Agusto, Robert G., 4,323,587, Cl. 426-240.000.
National Research Development Corporation: *See*—
 McAuliffe, Charles A.; Levason, William; and McCullough, Francis P., 4,323,543, Cl. 423-219.000.
National Research Institute for Metals: *See*—
 Tachikawa, Kyoji; and Sekine, Hisashi, 4,323,402, Cl. 148-133.000.
National Semiconductor Corporation: *See*—
 Buurma, Gerald B., 4,323,887, Cl. 340-347.0AD.
National Service Industries, Inc.: *See*—
 Hutchison, Mark A., 4,323,953, Cl. 362-226.000.
NCR Corporation: *See*—
 Duley, Raymond S., 4,323,886, Cl. 340-347.0AD.
 Italiano, Victor J., 4,323,907, Cl. 346-140.00R.
 Reitberger, Peter H.; and Weber, Helmut, 4,323,905, Cl. 346-75.000.
Neckamm, Harald: *See*—
 Beitler, Franz; and Neckamm, Harald, 4,323,936, Cl. 360-85.000.
Neeff, Rutger; Rolf, Meinhard; and Muller, Walter, to Bayer Aktiengesellschaft. Anthraquinone-azomethine compounds, processes for their preparation and processes for pigmenting organic macromolecular substances. 4,323,670, Cl. 542-415.000.
Neeff, Rutger; Rolf, Meinhard; and Muller, Walter, to Bayer Aktiengesellschaft. Anthraquinone derivatives, processes for their preparation, processes for pigmenting organic macromolecular substances, and pigmented organic macromolecular material. 4,323,671, Cl. 542-415.000.
Negi, Virendra S.: *See*—
 Peters, Arthur; Negi, Virendra S.; Cushing, David E.; Brown, Richard P.; and Joyce, Thomas F., 4,323,967, Cl. 364-200.000.
Negishi, Akio, to Akebono Brake Industry Co., Ltd. Automatic gap adjusting device for disc brake incorporating mechanical brake mechanism. 4,323,143, Cl. 188-71.900.
Nehrbas, George M., Jr. Golf practice putting aid. 4,323,246, Cl. 273-186.00A.
Nelms, George E., to Medtronic, Inc. Pacemaker programming apparatus utilizing a computer system with simplified data input. 4,323,074, Cl. 128-419.0PG.
Nelson, Eric L., to Nelson Research & Development Co. Topical trienes containing pharmaceutical compositions and methods of use. 4,323,558, Cl. 424-164.000.
Nelson Research & Development Co.: *See*—
 Nelson, Eric L., 4,323,558, Cl. 424-164.000.
Nelson, Robert G.: *See*—
 Goode, James W.; Penner, Wayne A.; Ray, Charles D.; and Nelson, Robert G., 4,323,990, Cl. 367-21.000.
Nemoto, Kazuyuki: *See*—
 Terada, Katumi; and Nemoto, Kazuyuki, 4,323,828, Cl. 318-45.000.
Neufeld, Henry L., to Brunswick Corporation. Selective anti-reverse mechanism. 4,323,203, Cl. 242-84.20A.
Neumann, Robert G., to Specialty Papers Company, The. Packaging method using an adhesive coated web. 4,322,929, Cl. 53-451.000.
Nevstruev, Vladimir I.: *See*—
 Batalin, Oleg E.; Dykman, Arkady S.; Osadchenko, Alexandr I.; Balkhanova, Galina F.; Belgorodsky, Izrail M.; Nevstruev, Vladimir I.; Radionov, Valery A.; Tulchinsky, Eduard A.; Belyaev, Valentin M.; Smolin, Jury I.; Breiman, Mark I.; Orlyansky, Vitaly V.; Zhirnov, Nikolai Y.; Galibin, Nikolai V.; Troitsky, Andrian P.; and Kovalenko, Vladimir V., 4,323,479, Cl. 252-431.000.
New York University: *See*—
 Abele, Manlio; Pasalaqua, Anthony M.; and Chase, Norman E., 4,322,974, Cl. 73-602.000.
Newbold, Don; and Sherwin, Owen W., to Valmont Industries, Inc. Spinner water drive system and control. 4,323,194, Cl. 239-177.000.
Newman, Ira J. Television projector apparatus. 4,323,926, Cl. 358-237.000.
NGK Spark Plug Co., Ltd.: *See*—
 Takami, Akio; Matsuura, Toshitaka; and Saito, Tsutomu, 4,322,968, Cl. 73-27.00R.
Nibby, Chester M., Jr.: *See*—
 Johnson, Robert B.; Nibby, Chester M., Jr.; and Moore, Dana, 4,323,965, Cl. 364-200.000.
Nichimoto, Susumu; Shinoda, Isao; Nakamura, Shigeo; and Tsumura, Haruhide, to Matsushita Electric Industrial Co., Ltd. Coin selector for vending machine. 4,323,148, Cl. 194-100.00A.
Nielsen, Leif: *See*—
 Huelle, Zbigniew R.; and Nielsen, Leif, 4,323,220, Cl. 251-11.000.
Nielsen, Ole S. M. Piston for ejecting a viscous or plastic mass. 4,323,177, Cl. 222-386.000.
Niepmann, Otto, to Maschinenfabrik Fr. Niepmann & Co. Method of manufacturing packs of cigarettes and pack produced by such method. 4,322,931, Cl. 53-449.000.
Nierenberg, Morton J., to RCA Corporation. Method of making a machine-readable marking in a workpiece. 4,323,755, Cl. 219-121.0LJ.
Nikolaus Sorg GmbH & Co. KG: *See*—
 Sims, George R., 4,323,383, Cl. 65-135.000.
Ninomiya, Hiroshi: *See*—
 Ohkuma, Takaaki; Ninomiya, Hiroshi; Nakamura, Masaaki; and Idzu, Genichi, 4,323,577, Cl. 424-298.000.
Ninomiya, Kunihiro: *See*—
 Kikumoto, Kyoji; Ninomiya, Kunihiro; Fukami, Harukazu; and Hara, Hiroto, 4,323,568, Cl. 424-250.000.
Nippe, Burkhard: *See*—
 Kober, Heinrich; Nippe, Burkhard; and Seidel, Bernhard, 4,323,621, Cl. 428-216.000.
Nippon Electric Co., Ltd.: *See*—
 Kurokawa, Teruhisa, 4,323,853, Cl. 330-43.000.
 Mori, Toshihiro, 4,323,881, Cl. 340-825.480.

Nippon Gohsei Kagaku Kogyo Kabushiki Kaisha: *See*—
 Hasegawa, Masayasu; Nishikawa, Hideo; and Yoshida, Kayoko, 4,323,565, Cl. 424-246.000.
Nippon Kayaku Kabushiki Kaisha: *See*—
 Ohkuma, Takaaki; Ninomiya, Hiroshi; Nakamura, Masaaki; and Idzu, Genichi, 4,323,577, Cl. 424-298.000.
Nippon Kokan Kabushiki Kaisha: *See*—
 Fukuda, Shuzo; and Ohkubo, Yutaka, 4,323,604, Cl. 427-433.000.
 Nakaoka, Kazuhide; Araki, Kenzi; Iwase, Kozi; Kubotera, Haruo; Kurihara, Takao; and Tanaka, Nobuo, 4,323,403, Cl. 148-134.000.
Nippon Kokuyu Tetsudo: *See*—
 Yamazaki, Kazuhide; Ogawa, Shigetoshi; Suma, Atsushi; and Nakajima, Maki, 4,323,014, Cl. 104-13.000.
Nippon Seiko Kabushiki Kaisha: *See*—
 Suzuki, Toshio, 4,323,289, Cl. 308-202.000.
Nippon Soken, Inc.: *See*—
 Tsuge, Noboru; Kuwakado, Satosi; and Shimogawa, Toshiaki, 4,323,205, Cl. 242-107.40A.
Nippon Telegraph and Telephone Public Corp.: *See*—
 Ogawa, Kazuo; Suzuki, Eiji; Kurita, Osamu; and Horikawa, Izumi, 4,323,864, Cl. 333-165.000.
Nippon Zeon Co., Ltd.: *See*—
 Joh, Yasushi, 4,323,627, Cl. 428-398.000.
Nishihara, Motohisa: *See*—
 Suzuki, Seikou; Nishihara, Motohisa; Kawakami, Kanji; Sato, Hideo; Kobori, Shigeyuki; Hachino, Hiroaki; and Takahashi, Minoru, 4,322,980, Cl. 73-727.000.
Nishikawa, Hideo: *See*—
 Hasegawa, Masayasu; Nishikawa, Hideo; and Yoshida, Kayoko, 4,323,565, Cl. 424-246.000.
Nishimura, Hiroshi; Monma, Tetsuo; Yoshida, Minoru; Kirimoto, Kazunari; Hayamizu, Yoshio; and Nagasawa, Toshio, to UBE Industries, Ltd.; and Furukawa Electric Co., Ltd., The. Heat shrinkable covers. 4,323,607, Cl. 219-213.000.
Nishimura, Kenji: *See*—
 Nakagami, Kazuto; Yokoi, Shinji; Nishimura, Kenji; Nagai, Shigeki; Honda, Takeo; Oda, Kiroku; Fujii, Katsutoshi; Kobayashi, Ryuji; and Kojima, Mikio, 4,323,680, Cl. 544-293.000.
Nishimura, Kunitaro: *See*—
 Mandai, Harufumi; and Nishimura, Kunitaro, 4,323,617, Cl. [illegible]
Nishina, Haruo: *See*—
 Honda, Tsuneo; Nishina, Haruo; and Uehara, Shuichi, 4,323,391, Cl. 75-14.000.
Nissan Motor Company, Limited: *See*—
 Hira, Kazumi; and Tasho, Masao, 4,323,276, Cl. 296-214.000.
 Iijima, Tetsuya, 4,323,111, Cl. 165-25.000.
 Mochida, Haruo, 4,322,959, Cl. 70-241.000.
 Nakamura, Kimio; Fujisawa, Kimio; and Ochiai, Kokichi, 4,323,837, Cl. 322-7.000.
 Okino, Seiki; Yanai, Toshiharu; and Tanaka, Katsuto, 4,323,598, Cl. [illegible]
Nitta Belting Co., Ltd.: *See*—
 Shinagawa, Takehisa; and Inoue, Tsunehiko, 4,323,374, Cl. [illegible]
Noad, Julian P.; Springthorpe, Anthony J.; and Look, Christopher M., to Northern Telecom Limited. Chanelled substrate double heterostructure lasers. 4,323,859, Cl. 372-46.000.
Noll, Hans, to Maschinen- und Armaturen- J & W Muller, fabrik GmbH. Apparatus for forming a closed cut surface in a wall of a workpiece. 4,323,223, Cl. 266-54.000.
Nolte, Robert K.; Rath, Robert E.; and Jarvis, Michael F., to Metal-wash Machinery Corp. Pan wash energy. 4,323,091, Cl. 134-60.000.
Nordeen, Howard C., to Mark Controls Corporation. No energy band temperature control. 4,323,112, Cl. 165-27.000.
Norlin Industries, Inc.: *See*—
 Wangard, William; and Starkey, David, 4,322,996, Cl. 84-1.240.
Norsk Hydro a.s.: *See*—
 Heggebo, Trygve; and Conradsen, Arne, 4,323,386, Cl. 71-35.000.
North American Philips Controls Corp.: *See*—
 Harper, George S., 4,323,868, Cl. 335-38.000.
North, Bernard: *See*—
 Lumby, Roland J.; North, Bernard; Taylor, Alfred J.; and Thomas, Roland M., 4,323,323, Cl. 407-119.000.
North Carolina State University: *See*—
 Haddock, William H., 4,323,019, Cl. 111-2.000.
Northern Telecom Limited: *See*—
 Brown, Anthony K. D., 4,323,730, Cl. 179-1.00P.
 Noad, Julian P.; Springthorpe, Anthony J.; and Look, Christopher M., 4,323,859, Cl. 372-46.000.
Northrop Corporation: *See*—
 Schmidt, Robert A.; and Stevens, Ewell E., 4,322,975, Cl. [illegible]
Norval, Stephen V., to Imperial Chemical Industries Limited. Oxidation of substituted aromatic compounds to aromatic carboxylic acids. 4,323,699, Cl. 562-416.000.
Nounen, Michiyasu; and Iwasaki, Yukio, to Mitsubishi Denki Kabushiki Kaisha. Fuse. 4,323,873, Cl. 337-186.000.
Nowell, John R., to Honeywell Information Systems Inc. Circuit for controlling the switching frequency of SCR regulators. 4,323,958, Cl. 363-28.000.
Nowicki, Andrzej N.; and Smith, David H., to Samuel Pegg & Son, Limited. Apparatus for drying of tubular fabrics. 4,322,957, Cl. 68-13.00R.
Nowotny, Alois H., to Temple University of the Commonwealth System of Higher Education. Process of enhancing immmunogenic response in mammals by the administration of synthetic glycolipid adjuvants. 4,323,561, Cl. 424-180.000.
Noxso Corporation: *See*—
 Magder, Jules, 4,323,544, Cl. 423-239.000.
Nuc Med Inc.: *See*—
 Crockford, David R.; and Rhodes, Buck A., 4,323,546, Cl. 424-1.000.
Numata, M.: *See*—
 McIntosh, James K.; and Numata, M., 4,323,047, Cl. 124-1.000.
Nyagu, Ivan F.: *See*—
 Sereda, Alexandr I.; Nyagu, Ivan F.; Smirnov, Igor N.; Russu, Grigory I.; and Yasinovsky, Izrail L., 4,323,004, Cl. 99-275.000.
Oak Industries Inc.: *See*—
 den Toonder, Pieter; Doles, Glenn P.; Lund, John A.; Merrell, Richard G.; and Stubbs, Graham S., 4,323,922, Cl. 358-117.000.
Oba, Masayuki; Kawamata, Motoo; Tsuboi, Hikotada; and Koga, Nobuhito, to Mitsui Toatsu Chemicals, Inc. Thermosetting resin compositions comprising bismaleimides and alkenylaniline derivatives. 4,323,662, Cl. 525-281.000.
Obayashi, Hidehito: *See*—
 Matsuyama, Iwao; Susa, Kenzo; Suganuma, Tsuneo; Satoh, Shin; Katsuyama, Toshio; and Obayashi, Hidehito, 4,323,381, Cl. 65-31.000.
Oberg, Robert E.; Stewart, Clarence E.; and Geelan, Thomas C., to Broyhill Company, The. Impregnator system. 4,323,313, Cl. 366-142.000.
Occidental Research Corporation: *See*—
 Crosby, Alan C.; and Campen, David C., 4,323,365, Cl. 23-313.00R.
Ochiai, Kokichi: *See*—
 Nakamura, Kimio; Fujisawa, Kimio; and Ochiai, Kokichi, 4,323,837, Cl. 322-7.000.
O'Connell, Robert M., to United States of America, Air Force. Surface acoustic wave substrate having orthogonal temperature compensated propagation directions and device applications. 4,323,809, Cl. 310-313.00A.
O'Connor, James G.: *See*—
 Sommers, Edward G., Jr.; and O'Connor, James G., 4,323,342, Cl. 431-66.000.
Oda, Kiroku: *See*—
 Nakagami, Kazuto; Yokoi, Shinji; Nishimura, Kenji; Nagai, Shigeki; Honda, Takeo; Oda, Kiroku; Fujii, Katsutoshi; Kobayashi, Ryuji; and Kojima, Mikio, 4,323,680, Cl. 544-293.000.
Odagiri, Masaru: *See*—
 Kunieda, Toshiaki; Odagiri, Masaru; Fujita, Takashi; and Shinohara, Koichi, 4,323,629, Cl. 428-457.000.
Odajima, Tooru: *See*—
 Watanabe, Masanao; Naito, Keiichi; Odajima, Tooru; and Fujiwara, Yoshio, 4,323,659, Cl. 525-108.000.
Odenwalder Kunststoffwerke GmbH: *See*—
 Liebrich, Wolfgang; and Schneider, Dieter, 4,323,320, Cl. 404-10.000.
O'Donnell, Patrick J.: *See*—
 Bridges, Clive A.; and O'Donnell, Patrick J., 4,323,776, Cl. [illegible]
O'Farrell, Patrick H., to University of California, The Regents of the. Method and apparatus for dynamic equilibrium electrophoresis. 4,323,439, Cl. 204-180.00G.
Office National d'Etudes et de Recherches: *See*—
 Bloch, Bertrand; M[illegible], Chantal C.; and Charrier, Denis, 4,323,695, Cl. 560-145.000.
Ogawa, Kazuo; Suzuki, Eiji; Kurita, Osamu; and Horikawa, Izumi, to Fujitsu Limited; and Nippon Telegraph and Telephone Public Corp. Binary transversal filter. 4,323,864, Cl. 333-165.000.
Ogawa, Koichi: *See*—
 Tanaka, Yoshinobu; Ogawa, Koichi; and Hioka, Minoru, 4,323,455, Cl. 210-321.200.
Ogawa, Masasi: *See*—
 Nakamura, Taku; Ogawa, Masasi; and Ishigaki, Kunio, 4,323,644, Cl. 430-518.000.
Ogawa, Shigetoshi: *See*—
 Yamazaki, Kazuhide; Ogawa, Shigetoshi; Suma, Atsushi; and Nakajima, Maki, 4,323,014, Cl. 104-13.000.
Ohashi, Hiroyuki: *See*—
 Takami, Toru; Takezawa, Misako; Ohashi, Hiroyuki; and Takeda, Shigeru, 4,323,563, Cl. 424-199.000.
Ohki, Masahiko: *See*—
 Seki, Kunio; and Ohki, Masahiko, 4,323,576, Cl. 424-273.00P.
Ohkubo, Yutaka: *See*—
 Fukuda, Shuzo; and Ohkubo, Yutaka, 4,323,604, Cl. 427-433.000.
Ohkuma, Takaaki; Ninomiya, Hiroshi; Nakamura, Masaaki; and Idzu, Genichi, to Nippon Kayaku Kabushiki Kaisha. Aqueous solution of nitroglycerin. 4,323,577, Cl. 424-298.000.
Ohnishi, Masahiro; and Kimura, Tsutomu, to Fuji Photo Film Co., Ltd. Device for correcting pitch of scanning lines in a light beam recording system. 4,323,906, Cl. 346-76.00L.
Ohshima, Masanori: *See*—
 Nagahori, Teiji; and Ohshima, Masanori, 4,323,393, Cl. 75-166.00C.
Ohtani, Masami: *See*—
 Chiyoda, Tsuneyuki; and Ohtani, Masami, 4,323,191, Cl. 236-44.00A.
Ohtani, Yoshitaka; and Nakagawa, Junichi, to Mitsui Petrochemical Industries, Ltd. Process for isolating and recovering meta- and paracresols from crude cresol-containing compositions composed of cresol components, unreacted cymene components and high-boiling by-products. 4,323,432, Cl. 203-85.000.

Oi, Tetsu: *See*—
 Kobayashi, Toshio; and Oi, Tetsu, 4,323,418, Cl. 156-617.0SP.
Oil Control S.r.l.: *See*—
 Acerbi, Leo, 4,323,095, Cl. 137-87.000.
Oishi, Yasushi, to Fuji Photo Film Co., Ltd. Direct reversal photographic color material. 4,323,635, Cl. 430-217.000.
Oka, Yoshitake; Ishihara, Tetsuo; Suzuki, Masane; and Kanaya, Motonori, to Daicel Chemical Industries, Ltd. Method for cutting specific layer of synthetic resin laminated film. 4,323,757, Cl. 219-121.0LN.
Okada, Mitsuo; Nagoshi, Eiichi; and Matsumoto, Yoshihisa. Self-drilling screw. 4,323,326, Cl. 411-412.000.
Okajima, Mutsuo; and Hisada, Hideo, to Shinto Paint Co., Ltd. Rotary-type melt applicator. 4,323,195, Cl. 239-215.000.
Okamura, Eiji, to Fujitsu Limited. System for controlling the speed of a magnetic tape transport motor. 4,323,832, Cl. 318-341.000.
Okino, Seiki; Yanai, Toshiharu; and Tanaka, Katsuto, to Nissan Motor Co., Ltd. Method of coating glass surface with heat-reflecting metal oxide film. 4,323,598, Cl. 427-160.000.
Okushima, Hiromi; Fujimori, Shinichiro; Furuya, Rikizo; and Hayakawa, Shuzo, to Mitsubishi Chemical Industries, Limited. Method for preparing 7α-acylthio-4-en-3-oxosteroids. 4,323,500, Cl. 260-239.570.
Okuyama, Kiyotaka; and Hosaka, Akihiko, to TDK Electronics Co., Ltd. Magnetic recording medium. 4,323,628, Cl. 428-425.900.
Old King Coal, Ltd.: *See*—
 Auerbach, Les M.; and Ricker, William F., 4,323,051, Cl. 126-77.000.
Olear, John, to Dorr-Oliver Incorporated. Corner sweep mechanism for square settling tank. 4,323,456, Cl. 210-529.000.
Olin Corporation: *See*—
 Rowe, John P., 4,322,907, Cl. 42-88.000.
Olson, Daniel R., to General Electric Company. Process for producing an ultraviolet radiation stabilized polymeric article. 4,323,597, Cl. 427-160.000.
Olson, John B.: *See*—
 Hickman, John S.; Olson, John B.; and Jeanson, Richard L., 4,323,290, Cl. 312-100.000.
Olympus Optical Co., Ltd.: *See*—
 Ishii, Fumiaki, 4,323,304, Cl. 354-62.000.
 Kimura, Tadashi, 4,323,302, Cl. 350-426.000.
 Terada, Katumi; and Nemoto, Kazuyuki, 4,323,828, Cl. 318-45.000.
O'Neal, Larry. Mounting for inflatable dock seal. 4,322,923, Cl. 52-2.000.
Ono, Naotoshi: *See*—
 Miyazawa, Takeshi; and Ono, Naotoshi, 4,322,896, Cl. 37-43.00E.
Oonishi, Toshiyuki: *See*—
 Nakagawa, Noboru; Oonishi, Toshiyuki; Tsutsumi, Masato; and Kawamoto, Akira, 4,322,952, Cl. 62-198.000.
Opitz, Wolfgang; Etscherberg, Eugen; Dell, Hans-Dieter; and Jacobi, Haireddin, to Troponwerke GmbH & Co. KG. Methoxy and methylsulfinylthiolesters. 4,323,517, Cl. 260-455.00R.
Oppenlaender, Knut: *See*—
 Vogel, Hans-Henning; Strickler, Rainer; Oppenlaender, Knut; and Baur, Richard, 4,323,689, Cl. 548-336.000.
Ordibel Sprl: *See*—
 Meus, Roger R., 4,323,229, Cl. 270-58.000.
Orgeret, Lucien, to Societe Anonyme dite: Delle-Alsthom. Set of bars for a high-tension unit. 4,323,720, Cl. 174-21.0JS.
Orii, Akira: *See*—
 Watanabe, Kazuo; Makabe, Hachiro; Orii, Akira; Hisatake, Michio; and Yamamoto, Kazuji, 4,323,833, Cl. 318-376.000.
Orlyansky, Vitaly V.: *See*—
 Batalin, Oleg E.; Dykman, Arkady S.; Osadchenko, Alexandr I.; Balkhanova, Galina F.; Belgorodsky, Izrail M.; Nevstruev, Vladimir I.; Radionov, Valery A.; Tulchinsky, Eduard A.; Belyaev, Valentin M.; Smolin, Jury I.; Breiman, Mark I.; Orlyansky, Vitaly V.; Zhirnov, Nikolai Y.; Galibin, Nikolai V.; Troitsky, Andrian P.; and Kovalenko, Vladimir V., 4,323,479, Cl. 252-432.000.
Oros Corporation: *See*—
 Merrick, Llewellyn S., 4,323,738, Cl. 179-175.10R.
O'Rourke, J. Cam; Pilkington, G. Roger; and Bercha, Frank G., to Dome Petroleum Limited. Warm air canopy system for providing ice-free zone. 4,323,322, Cl. 405-217.000.
Osada, Hiroshi, to Kai Cutlery Center Co., Ltd. Knife apparatus. 4,322,885, Cl. 30-162.000.
Osadchenko, Alexandr I.: *See*—
 Batalin, Oleg E.; Dykman, Arkady S.; Osadchenko, Alexandr I.; Balkhanova, Galina F.; Belgorodsky, Izrail M.; Nevstruev, Vladimir I.; Radionov, Valery A.; Tulchinsky, Eduard A.; Belyaev, Valentin M.; Smolin, Jury I.; Breiman, Mark I.; Orlyansky, Vitaly V.; Zhirnov, Nikolai Y.; Galibin, Nikolai V.; Troitsky, Andrian P.; and Kovalenko, Vladimir V., 4,323,479, Cl. 252-432.000.
Otis Elevator Company: *See*—
 Bittar, Joseph, 4,323,142, Cl. 187-29.00R.
Otis Engineering Corporation: *See*—
 Remillard, Gerard J.; Cruz, Frank, Sr.; Devoss, Daniel W., Jr.; and Miller, Truman A., 4,322,992, Cl. 82-34.00R.
Ott, Henry W.; and Tilson, Bernard A., to Bell Telephone Laboratories, Inc. Range extender with variable gain for coin telephone loops. 4,323,733, Cl. 179-6.30R.
Ours, Carroll W.; and Lee, Cheuk M., to Abbott Laboratories. Hydroxyaminomethyl derivatives of benzoyl di-substituted α-phenoxyalkanoyl esters. 4,323,691, Cl. 560-36.000.
Outboard Marine Corporation: *See*—
 Blanchard, Clarence E., 4,323,354, Cl. 440-75.000.
 Efflandt, James F., 4,322,938, Cl. 56-320.200.
 Poehlman, Arthur G., 4,322,935, Cl. 56-11.300.
 Stephenson, Donald K., 4,323,356, Cl. 440-86.000.
Outokumpu Oy: *See*—
 Saarinen, Heimo U. A.; and Seilo, Matti, 4,323,541, Cl. 423-37.000.
Overman, Joseph D.: *See*—
 Hall, Laurence W.; and Overman, Joseph D., 4,323,645, Cl. [illegible]
Owens-Illinois, Inc.: *See*—
 Uhlig, Albert R., 4,323,340, Cl. 425-325.000.
 Uhlig, Albert R., 4,323,411, Cl. 156-245.000.
Oxford Air Systems, Inc.: *See*—
 Fritz, Frederick F., 4,323,373, Cl. 55-96.000.
Oy Wartsila Ab: *See*—
 Ritvanen, Tapio, 4,323,371, Cl. 55-19.000.
[illegible] Kohasztasi Uzemek: *See*—
 Furjes, Emil; and Kecskes, Istvan, 4,323,108, Cl. 164-488.000.
P C U K Produits Chimiques Ugine Kuhlmann: *See*—
 Cognion, Jean-Marie; and Kervennal, Jacques, 4,323,515, Cl. 260-453.00P.
P. Campen Maskinfabrik A/S: *See*—
 Hansen, Niels H. V.; Mikkelsen, Erling H.; and Vissing, Soren, 4,323,474, Cl. 252-307.000.
Pagani, Mario: *See*—
 Bocca, Alberto; and Pagani, Mario, 4,322,864, Cl. 12-24.500.
Paielli, Michael F. Trailer load supporting assembly. 4,323,264, Cl. 280-405.00A.
Palmer, Keith W.: *See*—
 Ball, William J.; Palmer, Keith W.; and Stewart, David G., 4,323,475, Cl. 252-373.000.
Panduit Corp.: *See*—
 Turek, James A., 4,323,227, Cl. 269-254.00R.
Panzarino, Joseph N.: *See*—
 Borrelli, Nicholas F.; Luderer, Albert A.; and Panzarino, Joseph N., 4,323,056, Cl. 128-1.300.
Parbuzina, Iraida L.: *See*—
 Mischenko, Alexandr P.; Gryaznov, Vladimir M.; Gakh, Igor G.; Parbuzina, Iraida L.; Savitsky, Evgeny M.; Polyakova, Viktoria P.; and Roshan, Natalia R., 4,323,708, Cl. 564-418.000.
Parisius, Wolf J.: *See*—
 Sun, Anthony M.; and Parisius, Wolf J., 4,323,457, Cl. 210-645.000.
Parker, Thomas G., to Roberts Consolidated Industries, Inc. Water repellent and preservative for wood products. 4,323,602, Cl. [illegible]
Parrack, Alvin L.; and Lunsford, Delbert R., to Texaco Inc. Method for reducing multiple events in a seismic record. 4,323,876, Cl. [illegible]
Parran, John J., Jr., to Procter & Gamble Company, The. Mouthwash compositions. 4,323,551, Cl. 424-54.000.
Pasco, Ian K., to Combined Optical Industries Ltd. Laminar light guide. 4,323,951, Cl. 362-27.000.
Passalaqua, Anthony M.: *See*—
 Abele, Manlio; Passalaqua, Anthony M.; and Chase, Norman E., 4,322,974, Cl. 73-602.000.
Patel, Raman: *See*—
 Coran, Aubert Y.; and Patel, Raman, 4,323,625, Cl. 428-361.000.
Paton, Boris E.; Lebedev, Vladimir K.; Kuchuk-Yatsenko, Sergei I.; Sakharnov, Vasily A.; and Galyan, Boris A. Pipe resistance butt welding apparatus. 4,323,752, Cl. 219-101.000.
Paulis, George J.; and DeCarlo, Joseph D., to United Technologies Corporation. Crashworthy aircraft fuel storage system. 4,323,094, Cl. [illegible]
Pav-Saver Mfg. Co.: *See*—
 Dale, Charles H., 4,323,321, Cl. 404-105.000.
Pavljuchenko, Valery N.: *See*—
 Shirinian, Vram T.; Mnatsakanov, Suren S.; Pavljuchenko, Valery N.; Rozenberg, Mark E.; Gromov, Valery V.; and Ivanchev, Sergei S., 4,323,666, Cl. 526-329.000.
Pavone, Robert J., to Gulf & Western Corporation. Transfer apparatus for natural tobacco leaves. 4,323,149, Cl. 198-471.000.
Paz, Alberto B.: *See*—
 Cezar, Robert M.; and Paz, Alberto B., 4,323,915, Cl. 358-4.000.
Pecheux, Jean-Claude R. Splint. 4,323,060, Cl. 128-84.00R.
Peek, Henry L., to Siemens-Allis, Inc. Means for operating blast valve in two-pressure circuit breaker. 4,323,743, Cl. 200-148.00F.
Pellenc, Roger, to Etablissements Pellenc & Motte. Coaxial coupling system. 4,323,269, Cl. 285-133.00R.
Pelletier, Robert A. Method and apparatus for beneficiating coal. 4,323,449, Cl. 209-17.000.
Penner, Wayne A.: *See*—
 Goode, James W.; Penner, Wayne A.; Ray, Charles D.; and Nelson, Robert G., 4,323,990, Cl. 367-21.000.
Peraldo, Mario: *See*—
 Silvestrini, Vittorio; Peraldo, Mario; and Monza, Enrico, 4,323,619, Cl. [illegible]
Pere, Gerard, to Creusot-Loire. Electrolyzer having a horizontal tubular enclosure. 4,323,443, Cl. 204-253.000.
Pere, Gerard: *See*—
 Lantin, Patrice; and Pere, Gerard, 4,323,442, Cl. 204-237.000.
Perkin-Elmer Corporation, The: *See*—
 Rising, Robert P., 4,323,230, Cl. 271-12.000.
Peter, Cornelius, to Robert Bosch GmbH. Method and apparatus for controlling start-up of airflow measuring systems in automotive vehicles. 4,322,970, Cl. 73-118.000.

Peters, Arthur; Negi, Virendra S.; Cushing, David E.; Brown, Richard P.; and Joyce, Thomas F., to Honeywell Information Systems Inc. Local bus interface for controlling information transfers between units in a central subsystem. 4,323,967, Cl. 364-200.000.
Peters, Thomas E.; and Bateman, John M., to Morrison-Knudsen Forest Products Company, Inc. Apparatus for orientation and deposition of discrete lignocellulosic materials. 4,323,338, Cl. 425-174.80E.
Peterson, Steven C.; Stevens, Leonard W.; and Tanrikut, Ibrahim S., to United Technologies Corporation. Fuel nozzle guide heat shield for a gas turbine engine. 4,322,945, Cl. 60-39.320.
Petrolite Corporation: *See—*
  Quinlan, Patrick M., 4,323,459, Cl. 210-700.000.
  Quinlan, Patrick M., 4,323,460, Cl. 210-700.000.
  Quinlan, Patrick M., 4,323,461, Cl. 210-700.000.
Pettigrew, Robert D., to Beckwith Electric Co., Inc. RMS Controlled load tap changing transformer. 4,323,838, Cl. 323-256.000.
Pfizer Inc.: *See—*
  Brennan, Thomas M.; Brannegan, Daniel P.; Weeks, Paul D.; and Kuhla, Donald E., 4,323,506, Cl. 260-345.80R.
  Myers, Robert F., 4,323,499, Cl. 260-239.100.
Pflugmacher, Ingo: *See—*
  Buxbaum, Gunter; Pflugmacher, Ingo; Hund, Franz; Hahnkamm, Volker; and Woditsch, Peter, 4,323,596, Cl. 427-127.000.
Philippi, John: *See—*
  Apter, Robert; Philippi, John; Potichko, Nicholas; and Szablewski, Fred. C., 4,323,333, Cl. 417-63.000.
Phillips, John H.: *See—*
  Dawson, Peter; and Phillips, John H., 4,323,850, Cl. 324-439.000.
Phillips Petroleum Company: *See—*
  Buck, Ollie G., 4,323,606, Cl. 428-35.000.
  Swanson, Billy L., 4,323,123, Cl. 166-302.000.
Pickens, Donald: *See—*
  Bonfield, John H.; Belsky, Stephen E.; and Pickens, Donald, 4,323,706, Cl. 564-253.000.
Pickett, John H.: *See—*
  Mercier, George E.; Pickett, John H.; and Holtzman, Barry L., 4,323,948, Cl. 361-315.000.
Pierce, Laurance. Method and means for emergency shearing and sealing of well casing. 4,323,117, Cl. 166-55.000.
Pietryka, Joseph, to Fives-Cail Babcock. Continuous casting installation. 4,323,107, Cl. 164-416.000.
Pike, John E.: *See—*
  Johnson, Roy A.; Lincoln, Frank H.; and Pike, John E., 4,323,672, Cl. 542-421.000.
  Johnson, Roy A.; Lincoln, Frank H.; and Pike, John E., 4,323,673, Cl. [illegible]
  Johnson, Roy A.; Lincoln, Frank H.; and Pike, John E., 4,323,674, Cl. [illegible]
Pilkington, G. Roger: *See—*
  O'Rourke, J. Cam; Pilkington, G. Roger; and Bercha, Frank G., 4,323,322, Cl. 405-217.000.
Pilot Mannenhitsu Kabushi Kaisha: *See—*
  Yoshizawa, Naomi; and Terashima, Akira, 4,323,999, Cl. 309-19.000.
Piltch, Abraham. Squirrel-proof bird feeder. 4,323,035, Cl. 119-51.00R.
Pinamonti, Franco: *See—*
  Dal Moro, Anacleto; Pinamonti, Franco; and Capizzi, Amedeo, 4,323,556, Cl. 424-84.000.
Pioneer Container Corp.: *See—*
  Grueneberg, Bevan E., 4,323,156, Cl. 206-333.000.
Pioneer Electronic Corporation: *See—*
  Kuribayashi, Hiroshi; and Ikeda, Atsuo, 4,323,997, Cl. 369-33.000.
  Shimada, Kunihiko; and Tsuchiya, Yukio, 4,323,737, Cl. 179-115.50R.
Pipe Shields, Inc.: *See—*
  McClellan, William F., 4,323,088, Cl. 138-106.000.
Pissiotas, Georg; Durr, Dieter; Rohr, Otto; and Lukaszczyk, Alfons, to Ciba-Geigy Corporation. Cyanoalkyl-phenylureas having selective herbicidal activity. 4,323,388, Cl. 71-88.000.
Pistorius, Johannes A.: *See—*
  Damen, Johannes P. M.; and Pistorius, Johannes A., 4,323,618, Cl. [illegible]
Pitney Bowes Inc.: *See—*
  Holtz, Earl B.; Lay, Roger F.; Manduley, Flavio M.; and Moody, Howard J., 4,323,987, Cl. 365-229.000.
Pittet, Andre: *See—*
  Xuan, Mai T.; Jufer, Marcel; and Pittet, Andre, 4,323,834, Cl. [illegible]
Plessey Handel und Investments AG: *See—*
  Stewart, William J.; Robinson, John A.; and Carpenter, Richard, 4,323,300, Cl. 350-96.210.
Plewan, Otto: *See—*
  Kraus, Helmut; Weinlich, Jurgen; and Plewan, Otto, 4,323,661, Cl. 313-239.000.
Plum, Douglas B., to E & E Kaye Limited. Inflatable core for use in forming a thermal break in a metal frame for a door or window. 4,323,218, Cl. 249-65.000.
Plympton Patents Limited: *See—*
  Jackson, Harold E., 4,323,192, Cl. 236-46.00R.
Poehlman, Arthur G., to Outboard Marine Corporation. Lawn mower including a safety clutch and brake. 4,322,935, Cl. 56-11.300.
Poll, Martin, to D. Swarovski & Co. Decorative material and a process for producing the same. 4,323,611, Cl. 428-67.000.
Pollock, Elisabeth M.: *See—*
  Lentz, David J.; and Pollock, Elisabeth M., 4,323,358, Cl. 8-94.110.
Polyakova, Viktoria P.: *See—*
  Mischenko, Alexandr P.; Gryaznov, Vladimir M.; Gakh, Igor G.; Parbuzina, Iraida L.; Savitsky, Evgeny M.; Polyakova, Viktoria P.; and Roshan, Natalia R., 4,323,708, Cl. 564-418.000.
Polymet Corporation: *See—*
  Hunt, James G., 4,323,186, Cl. 228-173.00E.
Pomfret, Colin T., to List, Hans. Noise-insulating enclosure seal. 4,323,253, Cl. 277-12.000.
Popeck, Charles A.: *See—*
  Kamp, Eugene L.; Popeck, Charles A.; and Bruning, Armin M., 4,323,871, Cl. 337-7.000.
Porenski, Harry S., Jr.: *See—*
  Jenkins, Carl B., Jr.; Porenski, Harry S., Jr.; and Turner, Paul N., 4,323,084, Cl. 131-319.000.
Portescap: *See—*
  Caby, Jean-Claude; and Girardin, Jean-Claude, 4,323,805, Cl. 310-237.000.
Porteus, James O.: *See—*
  Seitel, Steven C.; Porteus, James O.; and Faith, William N., 4,322,967, Cl. 73-15.600.
Portz, Willi: *See—*
  Braun, Albert; Portz, Willi; and Strauss, Georg, 4,323,392, Cl. 75-58.000.
Potekhin, Konstantin F.: *See—*
  Danko, Vladimir G.; Ljuty, Boris I.; Chigirinsky, Alexandr A.; Kildishev, Vasily S.; Kuzmin, Viktor V.; Danilevich, Yanush B.; Chubraeva, Lidia I.; Potekhin, Konstantin F.; Maslennikov, Konstantin N.; and Ivanov, Valery K., 4,323,803, Cl. 310-59.000.
Potichko, Nicholas: *See—*
  Apter, Robert; Philippi, John; Potichko, Nicholas; and Szablewski, Fred. C., 4,323,333, Cl. 417-63.000.
Pouzoullic, Gerard: *See—*
  Boudault, Robert; and Pouzoullic, Gerard, 4,323,862, Cl. 332-9.00R.
PPG Industries, Inc.: *See—*
  Carlin, William W., 4,323,435, Cl. 204-98.000.
  Criss, Russell C.; and Stofka, Edward J., 4,323,726, Cl. 174-68.500.
  Gintert, Dean W.; and Waksmunski, Raymond A., 4,323,385, Cl. 65-351.000.
  Welch, Cletus N.; and Snodgrass, John O., 4,323,595, Cl. 427-123.000.
Price, Barry J.: *See—*
  Clitherow, John W.; Price, Barry J.; Bradshaw, John; Martin-Smith, Michael; MacKinnon, John W. M.; Judd, Duncan B.; and Carey, Linda, 4,323,566, Cl. 424-248.510.
Priest, Wayne A., to SOR, Inc. High pressure differential switch device. 4,323,742, Cl. 200-82.00C.
Procter & Gamble Company, The: *See—*
  Ahr, Nicholas A.; and Smith, Douglas J., 4,323,069, Cl. 128-287.000.
  Aziz, Mohammed I., 4,323,068, Cl. 128-287.000.
  Bolich, Raymond E., Jr.; Shaya, Steven A.; and Steuri, Christian, 4,323,683, Cl. 546-6.000.
  Compton, Donald B.; Lewis, William P.; and Trinh, Toan, 4,323,193, Cl. 239-44.000.
  Cowgill, Ronald H., 4,323,160, Cl. 209-632.000.
  DesMarais, Thomas A., 4,323,534, Cl. 264-176.00R.
  Parran, John J., Jr., 4,323,551, Cl. 424-54.000.
Pronovost, Normand. Rotary weeding machine. 4,323,125, Cl. 172-59.000.
Proske, Joachim, to Rollei-Werke Franke & Heidecke GmbH & Co. Reflector for varying illumination distribution. 4,323,952, Cl. 362-17.000.
Puritan-Bennett Corporation: *See—*
  Hoenig, Richard J.; and Klinikowski, James J., 4,323,064, Cl. 128-204.210.
Pustka, Marvin J., to Esquire, Inc. Lens closure for light fixture and method for attachment. 4,323,956, Cl. 362-374.000.
Queck, Robert: *See—*
  Buhring, Otto; Dreessen, Gerardus J. W.; Groeneveld, Jacob W. H.; Queck, Robert; Thome, Heinrich; and Willemsen, Gerrit J., 4,323,718, Cl. 373-73.000.
Quinlan, Patrick M., to Petrolite Corporation. Process of inhibiting scale formation in aqueous systems using quaternary ammonium salts of α-1,4-thiazine alkanephosphonic acids. 4,323,459, Cl. 210-700.000.
Quinlan, Patrick M., to Petrolite Corporation. Process of inhibiting scale formation in aqueous systems using α-1,4-thiazine alkanephosphonic acids. 4,323,460, Cl. 210-700.000.
Quinlan, Patrick M., to Petrolite Corporation. Process of inhibiting scale formation in aqueous systems using di-quaternary ammonium salts of α-1,4-thiazine alkanephosphonic acids. 4,323,461, Cl. 210-700.000.
R. A. Industries: *See—*
  Apter, Robert; Philippi, John; Potichko, Nicholas; and Szablewski, Fred. C., 4,323,333, Cl. 417-63.000.
R. J. Reynolds Tobacco Company: *See—*
  Long, Margaret E.; and Lee, Chin K., 4,323,651, Cl. 435-207.000.
  Serge, Richard F., 4,323,772, Cl. 235-463.000.
Radaelli, Dario; De Angelis, Giancarlo; and Catastini, Alberto, to Alfa Romeo S.p.A. Electronic device for taking the speed of a rotating member. 4,323,976, Cl. 364-565.000.
Radionov, Valery A.: *See—*
  Batalin, Oleg E.; Dykman, Arkady S.; Osadchenko, Alexandr I.; Balkhanova, Galina F.; Belgorodsky, Izrail M.; Nevstruev, Vladimir I.; Radionov, Valery A.; Tulchinsky, Eduard A.; Belyaev, Valentin M.; Smolin, Jury I.; Breiman, Mark I.; Orlyansky,

  Vitaly V.; Zhirnov, Nikolai Y.; Galibin, Nikolai V.; Troitsky, Andrian P.; and Kovalenko, Vladimir V., 4,323,479, Cl. 252-432.000.
Radwill, Robert P., to AMSTED Industries Incorporated. Railway car truck fatigue detector. 4,322,981, Cl. 73-810.000.
Ragan, Marshall P.; and Sytsma, Peter H., to FMC Corporation. Rail-mounted vehicle jack. 4,323,141, Cl. 187-8.470.
Rakow, Marvin S.: *See—*
  Chervenak, Michael C.; Johanson, Edwin S.; and Rakow, Marvin S., 4,323,446, Cl. 208-8.00R.
Rambert, Andre; Bousquet, Gilles; and Rigal, Francois. Articulated splint for a knee joint. 4,323,059, Cl. 128-80.00C.
Ramesohl, Hubert: *See—*
  Herchenbach, Horst; Ramesohl, Hubert; and Brachthauser, Kunibert, 4,323,397, Cl. 106-100.000.
Ramlow, Bryan L.; and Steele, Richard R., to Atmospheric Energy Systems. Heat collection system. 4,322,953, Cl. 62-217.000.
Ransom F. Shoup & Co., Inc.: *See—*
  Shoup, Ransom F., II, 4,323,765, Cl. 235-55.00A.
Rasmussen, Jerome L., to Tecumseh Products Company. Internally vented float bowl primer arrangement. 4,323,522, Cl. 261-72.00R.
Rath, Robert E.: *See—*
  Nolte, Robert K.; Rath, Robert E.; and Jarvis, Michael F., 4,323,091, Cl. 134-60.000.
Rathbone, Ronald: *See—*
  Murrmann, Helmuth; Rathbone, Ronald; and Schwabe, Ulrich, 4,323,913, Cl. 357-51.000.
Rattner, Manfred: *See—*
  Baumann, Heinz; Kuehnel, Werner; and Rattner, Manfred, 4,323,781, Cl. 250-422.000.
Ray, Asit K.; and Reisman, Arnold, to International Business Machines Corporation. Plasma oxidation. 4,323,589, Cl. 427-38.000.
Ray, Charles D.: *See—*
  Goode, James W.; Penner, Wayne A.; Ray, Charles D.; and Nelson, Robert G., 4,323,990, Cl. 367-21.000.
Raymond Engineering Inc.: *See—*
  Bickford, John H., 4,322,965, Cl. 73-1.00C.
RCA Corporation: *See—*
  Bendell, Sidney L., 4,323,918, Cl. 358-50.000.
  Benner, Timothy E.; and Month, Alfred, 4,323,814, Cl. 313-390.000.
  Chang, Kern K. N., 4,323,816, Cl. 313-433.000.
  Dion, Donald F., 4,323,789, Cl. 307-81.000.
  Dischert, Robert A.; and Reitmeier, Glenn A., 4,323,916, Cl. 358-13.000.
  Fukazawa, Kazuo; and Yamada, Akira, 4,323,998, Cl. 369-43.000.
  Nierenberg, Morton J., 4,323,755, Cl. 219-121.0LJ.
  Russell, John P., 4,323,815, Cl. 313-422.000.
  Sokoloski, Joseph C.; and Ipri, Alfred C., 4,323,910, Cl. 357-23.000.
  Vieland, Leon J.; and Cannuli, Vincent M., 4,323,813, Cl. 313-250.000.
  Wu, Chin T., 4,323,963, Cl. 364-200.000.
Reash, Clair W.: *See—*
  Madden, Thomas H.; and Reash, Clair W., 4,323,818, Cl. 313-481.000.
Reba B.V.: *See—*
  Bos, Wouter A., 4,322,898, Cl. 37-64.000.
Recortec, Inc.: *See—*
  Chang, David T. L., 4,323,930, Cl. 360-10.000.
Redman, Paul G.: *See—*
  Lasker, George; and Redman, Paul G., 4,322,984, Cl. 74-51.000.
Redmond, Stephen L.: *See—*
  Fowler, Steven E.; Hennings, George N.; Hibbs, Joseph E.; Redmond, Stephen L.; and Swenson, Richard M., 4,322,998, Cl. 89-1.50D.
Reeck, David L.: *See—*
  Iftikar, Syed H.; and Reeck, David L., 4,323,939, Cl. 360-106.000.
Reed, Robert D.; and Schwartz, Robert E., to John Zink Company. Burner assembly for smokeless combustion of low calorific value gases. 4,323,343, Cl. 431-202.000.
Reed Rock Bit Company: *See—*
  Childers, John S.; and Mayo, Terry H., 4,323,284, Cl. 308-8.200.
Regenstein, Joseph, Jr., to Arvey Corporation. Closable pouch. 4,323,189, Cl. 229-62.000.
Regie Nationale des Usines Renault: *See—*
  Coste, Jean C., 4,323,895, Cl. 340-782.000.
Reisman, Arnold: *See—*
  Ray, Asit K.; and Reisman, Arnold, 4,323,589, Cl. 427-38.000.
Reitberger, Peter H.; and Weber, Helmut, to NCR Corporation. Ink droplet sensing means. 4,323,905, Cl. 346-75.000.
Reitmeier, Glenn A.: *See—*
  Dischert, Robert A.; and Reitmeier, Glenn A., 4,323,916, Cl. 358-13.000.
Rellick, Joseph R., to Du Pont de Nemours, E. I., and Company. Mixed oxide bonded copper conductor compositions. 4,323,483, Cl. 252-512.000.
Remillard, Gerard J.; Cruz, Frank, Sr.; Devoss, Daniel W., Jr.; and Miller, Truman A., to Otis Engineering Corporation. Chip washing system. 4,322,992, Cl. 82-34.00R.
Rempfler, Hermann: *See—*
  Bosshard, Hans; Rempfler, Hermann; and Zweifel, Hans, 4,323,701, Cl. 562-462.000.
Reneau, Daniel L., to Zenith Radio Corporation. AGC-Clamped video amplifier. 4,323,923, Cl. 358-171.000.
Reneau, Daniel L.: *See—*
  Engel, Christopher M.; and Reneau, Daniel L., 4,323,917, Cl. 358-28.000.
Rengstl, Johann; and Lutz, Alfons, to Webasto-Werk W. Baier GmbH & Co. Vehicle roof with a cutout to accept a cover and method for its manufacture. 4,323,277, Cl. 296-216.000.
Rensel, Walter B.: *See—*
  Masnari, Nino A.; Rensel, Walter B.; Robinson, Merrill G.; Solomon, David E.; Wise, Kensall D.; and Wuttke, Gilbert H., 4,323,420, Cl. 156-628.000.
Reymanova, Marketa: *See—*
  Fajt, Ludvik; Didek, Stanislav; Kasparek, Jaromir; Storek, Jaroslav; Andres, Jiri; Borovcova, Zelmira; Markova, Marie; Reymanova, Marketa; and Stepanek, Miroslav, 4,322,942, Cl. 57-411.000.
Rhodes, Buck A.: *See—*
  Crockford, David R.; and Rhodes, Buck A., 4,323,546, Cl. 424-1.000.
Rhodes, Smith A., to Communications Satellite Corporation. Synchronizer for MSK burst communications. 4,324,001, Cl. 375-90.000.
Rhodes, William H.: *See—*
  Sellers, David J.; Rhodes, William H.; and Vasilos, Thomas, 4,323,545, Cl. 423-625.000.
Ribka, Joachim: *See—*
  Brachten, Gert; Engelhardt, Friedrich; Helling, Heinz; and Ribka, Joachim, 4,323,363, Cl. 8-532.000.
Rice, Lawrence F. Power service mounting system. 4,323,836, Cl. 320-2.000.
Richard, Francoise: *See—*
  Bouillon, Claude; Vayssie, Charles; and Richard, Francoise, 4,323,549, Cl. 424-45.000.
Richards, Thomas J.: *See—*
  Belke, William H.; Hafele, Joseph C.; Landen, Ernest W.; and Richards, Thomas J., 4,323,401, Cl. 148-39.000.
Richmond, Kenneth D., to Dayco Corporation. Apparatus for making multiple rib belts. 4,322,916, Cl. 51-78.000.
Ricker, William F.: *See—*
  Auerbach, Les M.; and Ricker, William F., 4,323,051, Cl. 126-77.000.
Ricoh Co., Ltd.: *See—*
  Sekigawa, Keiji, 4,323,974, Cl. 364-515.000.
Riedel, Dieter, to Drabert Sohne Minden (Ger. Body Corp.). Endless pressure belts for use in continuous pressing and decatizing devices. 4,323,407, Cl. 156-91.000.
Rigal, Francois: *See—*
  Rambert, Andre; Bousquet, Gilles; and Rigal, Francois, 4,323,059, Cl. 128-80.00C.
Riihimaki, Esko; and Savikurki, Seppo, to Hospital Physics Oy. Absorption resolution testing device. 4,323,782, Cl. 250-252.000.
Rinnai Kabushiki Kaisha: *See—*
  Takase, Tadayoshi; and Kanaya, Yoshihiro, 4,323,747, Cl. 219-10.35C.
Rising, Robert P., to Perkin-Elmer Corporation, The. Machine for separating bills and coupons. 4,323,230, Cl. 271-12.000.
Riso Kagaku Corporation: *See—*
  Hasegawa, Takanori; Shimada, Takanobu; Sato, Takao; Kera, Masakazu; Yoshida, Shuntaro; and Shimoyama, Shinichi, 4,323,775, Cl. 250-317.100.
Ritvanen, Tapio, to Oy Wartsila Ab. Method and arrangement for treating gaseous combustion products. 4,323,371, Cl. 55-19.000.
Rizkalla, Nabil, to Halcon SD Group, Inc., The. Process for preparing ethylidene diacetate. 4,323,697, Cl. 560-232.000.
Robert, Arnold-Michel: *See—*
  Marmorat, Andre; and Robert, Arnold-Michel, 4,323,750, Cl. 219-76.100.
Robert Bosch GmbH: *See—*
  Muller, Thomas, 4,323,725, Cl. 174-65.00R.
  Peter, Cornelius, 4,322,970, Cl. 73-118.000.
  Wossner, Gunter; and Maurer, Helmut, 4,322,947, Cl. 60-285.000.
Robert, Edward W.: *See—*
  Simpson, John B.; and Robert, Edward W., 4,323,071, Cl. 128-343.000.
Roberts, Calvin W. Wide field specular scanning device. 4,323,299, Cl. 350-91.000.
Roberts Consolidated Industries, Inc.: *See—*
  Parker, Thomas G., 4,323,602, Cl. 427-298.000.
Roberts, Michael A.; and Copperthwaite, Martin, to USS Engineers and Consultants, Inc. Method for making a refractory article. 4,323,529, Cl. 264-69.000.
Roberts, Thomas E.: *See—*
  Harper, Bruce M.; Billett, Ronald J.; Roberts, Thomas E.; and Viitanen, Veikko K., 4,323,336, Cl. 425-126.00S.
Robertshaw Controls Company: *See—*
  Gneiding, Donald R., 4,323,086, Cl. 137-495.000.
  Willson, James R.; Conway, William H.; and Smith, William N., 4,323,764, Cl. 219-497.000.
Robinson, Darrell, to Ekstrom Industries, Inc. Meter socket cover assembly. 4,323,294, Cl. 339-19.000.
Robinson, John A.: *See—*
  Stewart, William J.; Robinson, John A.; and Carpenter, Richard, 4,323,300, Cl. 350-96.210.
Robinson, Merrill G.: *See—*
  Masnari, Nino A.; Rensel, Walter B.; Robinson, Merrill G.; Solomon, David E.; Wise, Kensall D.; and Wuttke, Gilbert H., 4,323,420, Cl. 156-628.000.
Roche, William J.; and Bessone, Carlo S., to GTE Products Corporation. Low voltage fluorescent operating circuit. 4,323,824, Cl. 315-209.000.

Rock, Erich; and Brunner, Josef, to Julius Blum Gesellschaft m.b.H. Suspension fitting for cabinets. 4,323,213, Cl. 248-222.100.
Rockwell International Corporation: *See—*
  Boros, Lawrence A., 4,323,753, Cl. 219-107.000.
  Boros, Lawrence A., 4,323,754, Cl. 219-107.000.
  De Wames, Roger E.; Hall, William F.; Ho, William W.; and Lim, Teong C., 4,323,901, Cl. 343-754.000.
  Gerstley, James G., 4,323,858, Cl. 372-107.000.
  Haraszti, Tegze P., 4,323,846, Cl. 323-311.000.
  Sinor, Jerry E., 4,323,538, Cl. 422-207.000.
  Weber, Robert J., 4,323,863, Cl. 333-109.000.
Roehm, Dan C.: *See—*
  Siegel, Norman H.; and Roehm, Dan C., 4,323,582, Cl. 424-325.000.
Rogers Corporation: *See—*
  Balash, Frederick A., 4,323,740, Cl. 200-5.00A.
Rogers, Ronald J.: *See—*
  Keches, Leonidas A.; Goggin, Sharon R.; Isaac, Edward J.; and Rogers, Ronald J., 4,323,247, Cl. 273-235.00R.
Rohm, Fritz. Hair dyeing apparatus. 4,323,085, Cl. 132-113.000.
Rohm and Haas Company: *See—*
  Tanger, Charles M., 4,323,692, Cl. 560-65.000.
Rohner, Joachim; and Zumfeld, Heinz, to W. Schlafhorst & Co. Device for joining an upper thread to a lower thread. 4,322,943, Cl. [illegible]
Rohr, Otto: *See—*
  Pissiotas, Georg; Durr, Dieter; Rohr, Otto; and Lukaszczyk, Alfons, 4,323,388, Cl. 71-88.000.
Roitenberg, Yakov I.: *See—*
  Veselovsky, Roman A.; Kuzin, Anatoly N.; Mudrov, Oleg A.; and Roitenberg, Yakov I., 4,323,491, Cl. 524-144.000.
Rolf, Meinhard: *See—*
  Neeff, Rutger; Rolf, Meinhard; and Muller, Walter, 4,323,670, Cl. [illegible]
  Neeff, Rutger; Rolf, Meinhard; and Muller, Walter, 4,323,671, Cl. [illegible]
Rollei-Werke Franke & Heidecke GmbH & Co.: *See—*
  Proske, Joachim, 4,323,952, Cl. 362-17.000.
Rollins, Dallas W.: *See—*
  Dugge, Richard H.; and Rollins, Dallas W., 4,323,096, Cl. [illegible]
Rosch, Gunter: *See—*
  Eckes, Helmut; Erckel, Rudiger; Martini, Thomas; and Rosch, Gunter, 4,323,675, Cl. 542-463.000.
Rose, Donald K.: *See—*
  Lee, David M.; Rose, Donald K.; and Clover, Richmond B., 4,323,983, Cl. 365-8.000.
Rosenbluth, Robert F.; and Bonchek, Lawrence I., to Shiley, Incorporated. Cannula for a vein distention system. 4,323,072, Cl. [illegible]
Rosenfeld, Peter E. Electronic maze game. 4,323,242, Cl. 273-153.00R.
Rosenquest, Arthur P. Dust collector with quick release filter support system for use in dust collectors. 4,323,376, Cl. 55-304.000.
Rosevear, Alan, to United Kingdom Atomic Energy Authority. Immobilization of biologically active substances in a porous support. 4,323,650, Cl. 435-174.000.
Roshan, Natalia R.: *See—*
  Mischenko, Alexandr P.; Gryaznov, Vladimir M.; Gakh, Igor G.; Parbuzina, Iraida L.; Savitsky, Evgeny M.; Polyakova, Viktoria P.; and Roshan, Natalia R., 4,323,708, Cl. 564-418.000.
Rossmann, Axel: *See—*
  Hoffmuller, Wilhelm; Rossmann, Axel; and Schreiber, Franz, 4,323,394, Cl. 75-208.00R.
Rosso, Paul D.; and Moss, Michael Y., to Minnesota Mining & Manufacturing Company. Pressure-sensitive adhesive containing iodine. 4,323,557, Cl. 424-28.000.
Rothschild, Alexander M.: *See—*
  Whiteside, Arliss E.; Freedman, Morris D.; Tasar, Omur; and Rothschild, Alexander M., 4,323,966, Cl. 364-200.000.
Rottmaier, Ludwig: *See—*
  Merten, Rudolf; and Rottmaier, Ludwig, 4,323,687, Cl. [illegible]
Rowe, John P., to Olin Corporation. Self-closing propellant charge package. 4,322,907, Cl. 42-88.000.
Rozenberg, Mark E.: *See—*
  Shirinian, Vram T.; Mnatsakanov, Suren S.; Pavljuchenko, Valery N.; Rozenberg, Mark E.; Gromov, Valery V.; and Ivanchev, Sergei S., 4,323,666, Cl. 526-329.000.
RTE Corporation: *See—*
  Link, Edwin A., 4,323,874, Cl. 337-244.000.
Rubbright, Harry A.; and Springer, Donald A., to Anchor Hocking Corporation. Food preparation process. 4,323,110, Cl. 165-2.000.
Rubco Products, Inc.: *See—*
  Hilbush, Edward O., III, 4,323,526, Cl. 264-36.000.
Rudolph, Andrew W.: *See—*
  McComb, Walter D.; and Rudolph, Andrew W., 4,323,785, Cl. [illegible]
Rush, Charles R., to Brunswick Corporation. Camouflage incising geometry. 4,323,605, Cl. 428-17.000.
Russell, Burdsall & Ward Corporation: *See—*
  Hess, George M.; and Zils, James A., 4,323,015, Cl. 105-199.0CB.
Russell, John P., to RCA Corporation. Unitary beam guide/electron gun assembly for flat panel display devices. 4,323,815, Cl. 313-422.000.
Russu, Grigory I.: *See—*
  Sereda, Alexandr I.; Nyagu, Ivan F.; Smirnov, Igor N.; Russu, Grigory I.; and Yasinovsky, Izrail L., 4,323,004, Cl. 99-275.000.

Saarinen, Heimo U. A.; and Seilo, Matti, to Outokumpu Oy. Selective two stage leaching of nickel from nickel-copper matte. 4,323,541, Cl. 423-37.000.
Sado, Ryoichi, to Shin-Etsu Polymer Co., Ltd. Method for generating electric signals and a push-button switch means therefor. 4,322,983, Cl. 73-862.680.
Sagitta Officina Meccanica S.p.A.: *See—*
  Bocca, Alberto; and Pagani, Mario, 4,322,864, Cl. 12-24.500.
Saigusa, Tetsuji: *See—*
  Kadono, Mamoru; and Saigusa, Tetsuji, 4,323,089, Cl. 138-109.000.
Saita, Shigeaki; and Nakaoka, Manabu, to Hitachi, Ltd. Circular fluorescent lamp manufacturing apparatus. 4,323,225, Cl. 269-43.000.
Saito, Retsuo; and Nagase, Junji, to Kabushiki Kaisha Tokiwa Seisakusho. Ball shooting machine for volleyball practice. 4,323,048, Cl. 124-78.000.
Saito, Seiji: *See—*
  Fujii, Motoharu; Koumura, Noboru; Ayata, Naoki; Saito, Seiji; and Sato, Yasushi, 4,323,919, Cl. 358-75.000.
Saito, Tsutomu: *See—*
  Takami, Akio; Matsuura, Toshitaka; and Saito, Tsutomu, 4,322,968, Cl. 73-27.00R.
Sakaida, Tsutomu: *See—*
  Uejima, Hiroyuki; Hirai, Masahide; and Sakaida, Tsutomu, 4,323,458, Cl. 210-688.000.
Sakata, Kenji; Yamada, Toshiaki; Uchiyama, Kenji; and Hasegawa, Yugo, to Mitsui Toatsu Chemicals, Inc. Process for metallic coat finishing. 4,323,600, Cl. 427-202.000.
Sakharnov, Vasily A.: *See—*
  Paton, Boris E.; Lebedev, Vladimir K.; Kuchuk-Yatsenko, Sergei I.; Sakharnov, Vasily A.; and Galyan, Boris A., 4,323,752, Cl. 219-101.000.
Salam, Hassan P. A., to Unisplay S.A. Matrix display devices. 4,323,889, Cl. 340-373.000.
Saldien, Karel F., to Central Soya Company, Inc. Method of preparing animal feeds. 4,323,584, Cl. 426-285.000.
Salerno, Michael. Automatic watering apparatus. 4,323,036, Cl. 119-81.000.
Sallmann, Alfred: *See—*
  Habicht, Ernst; Ferrini, Pier G.; and Sallmann, Alfred, 4,323,688, Cl. 548-330.000.
Samanta, Shyam K.; Subramanian, Krishnamoorthy; and Ezis, Andre, to Ford Motor Company. Method of using SI3N3.Y2O3.SIO2 ceramic system for machine cast iron. 4,323,325, Cl. 409-131.000.
Sams, Marvin W., to Electro-Cap, Inc. Electrode cap. 4,323,076, Cl. [illegible]
Samuel Pegg & Son, Limited: *See—*
  Nowicki, Andrzej N.; and Smith, David H., 4,322,957, Cl. 68-11.00R.
Samuelson, Harold. Frame for skate board. 4,323,261, Cl. 280-87.04A.
Sandler, Louis M.; Spofford, Walter R.; and Scott, Charles E., to Emhart Industries, Inc. Oscillator circuit for controlling the power level of a microwave oven. 4,323,861, Cl. 331-111.000.
Sandoz Ltd.: *See—*
  Benguerel, Francois, 4,323,498, Cl. 260-187.000.
Sanford, Leon M., deceased: *See—*
  Tick, Paul A.; and Sanford, Leon M., deceased, 4,323,654, Cl. 501-47.000.
Sanford, Michele R., administratrix: *See—*
  Tick, Paul A.; and Sanford, Leon M., deceased, 4,323,654, Cl. 501-47.000.
Sankyo Company Limited: *See—*
  Nakagami, Kazuto; Yokoi, Shinji; Nishimura, Kenji; Nagai, Shigeki; Honda, Takeo; Oda, Kiroku; Fujii, Katsutoshi; Kobayashi, Ryuji; and Kojima, Mikio, 4,323,680, Cl. 544-293.000.
  Tanzawa, Kazuhiko; Iwado, Seigo; Tsujita, Yoshio; Kuroda, Masao; and Furuya, Kouhei, 4,323,648, Cl. 435-125.000.
Santoro, Giovanni. Tape recorders of the cassette type. 4,323,937, Cl. 360-96.600.
Sanville, W. Woodward: *See—*
  Bambara, Joseph E.; and Sanville, W. Woodward, 4,323,211, Cl. 246-149.00A.
Sarracino, Marcello, to Industrie Pirelli S.p.A. Wire stranding machine with multiple bobbins alternately loaded and used for stranding. 4,322,941, Cl. 57-16.000.
Sartain, John R., to Taco Bell. Manually-operable ratchet type dispenser for comestibles. 4,323,176, Cl. 222-326.000.
Sasaki, Isao; and Kushi, Kenji. Process for producing a shaped article having a mat surface. 4,323,592, Cl. 427-54.100.
Satake Engineering Co., Ltd.: *See—*
  Satake, Toshihiko, 4,323,006, Cl. 99-519.000.
Satake, Toshihiko, to Satake Engineering Co., Ltd. Whitening apparatus for super-glossy white rice. 4,323,006, Cl. 99-519.000.
Sato, Hideo: *See—*
  Suzuki, Seikou; Nishihara, Motohisa; Kawakami, Kanji; Sato, Hideo; Kobori, Shigeyuki; Hachino, Hiroaki; and Takahashi, Minoru, 4,322,980, Cl. 73-727.000.
Sato, Tadashi; Hara, Toyoji; and Tomita, Tadashi, to Clarion Co., Ltd. Automatic power supply apparatus. 4,323,787, Cl. 307-38.000.
Sato, Takao: *See—*
  Hasegawa, Takanori; Shimada, Takanobu; Sato, Takao; Kera, Masakazu; Yoshida, Shuntaro; and Shimoyama, Shinichi, 4,323,775, Cl. 250-317.100.
Sato Technical Research Laboratory Ltd.: *See—*
  Ueda, Setsuo; Yasuda, Takashi; Yamada, Tokuyoshi; and Kobayashi, Shigeki, 4,323,523, Cl. 264-8.000.

Sato, Yasushi: *See—*
  Fujii, Motoharu; Koumura, Noboru; Ayata, Naoki; Saito, Seiji; and Sato, Yasushi, 4,323,919, Cl. 358-75.000.
Satoh, Shin: *See—*
  Matsuyama, Iwao; Susa, Kenzo; Suganuma, Tsuneo; Satoh, Shin; Katsuyama, Toshio; and Obayashi, Hidehito, 4,323,381, Cl. 65-32.000.
Satoh, Toshihiko, to Canon Kabushiki Kaisha. Device for inserting data into photographs. 4,323,305, Cl. 354-106.000.
Sauder, Myrl D., to Sauder Woodworking Company. Laminated article. 4,323,615, Cl. 428-121.000.
Sauder Woodworking Company: *See—*
  Sauder, Myrl D., 4,323,615, Cl. 428-121.000.
Sauer, Hans, to Matsushita Electric Works, Ltd.; and Sauer, Hans. Polarized electromagnetic relay. 4,323,945, Cl. 361-160.000.
Savage, Jack W., to General Motors Corporation. Motor vehicle priority control system for operating leveling and washing systems from a single source of compressed air. 4,323,266, Cl. 280-707.000.
Saviano, Francesco: *See—*
  Lagana', Vincenzo; Saviano, Francesco; and Ferrantino, Stanislad, 4,323,252, Cl. 277-12.000.
Savikurki, Seppo: *See—*
  Riihimaki, Esko; and Savikurki, Seppo, 4,323,782, Cl. 250-252.000.
Savitsky, Evgeny M.: *See—*
  Mischenko, Alexandr P.; Gryaznov, Vladimir M.; Gakh, Igor G.; Parbuzina, Iraida L.; Savitsky, Evgeny M.; Polyakova, Viktoria P.; and Roshan, Natalia R., 4,323,708, Cl. 564-418.000.
Sawada, Susumu; Fukuda, Takashi; Tsuchiya, Katsuhiro; and Ito, Kazuo, to Japan Steel Works Ltd., The. Method for providing single piece with plural different mechanical characteristics. 4,323,404, Cl. [illegible]
Scala, Thomas L., Jr., to Finetex, Inc. Benzoic acid ester. 4,323,693, Cl. 560-103.000.
Scala, Thomas L., Jr., to Finetex, Inc. Benzoic acid esters. 4,323,694, Cl. 560-103.000.
Scarzello, John F.: *See—*
  Krall, Albert D.; McCorkle, John W.; Scarzello, John F.; and Syeles, Albert M., 4,323,900, Cl. 343-700.0MS.
Schachle, Charles; Schachle, Patrick J.; Schachle, Edward C.; and Schachle, John R. Windmill tower. 4,323,331, Cl. 416-9.000.
Schachle, Edward C.: *See—*
  Schachle, Charles; Schachle, Patrick J.; Schachle, Edward C.; and Schachle, John R., 4,323,331, Cl. 416-9.000.
Schachle, John R.: *See—*
  Schachle, Charles; Schachle, Patrick J.; Schachle, Edward C.; and Schachle, John R., 4,323,331, Cl. 416-9.000.
Schachle, Patrick J.: *See—*
  Schachle, Charles; Schachle, Patrick J.; Schachle, Edward C.; and Schachle, John R., 4,323,331, Cl. 416-9.000.
Schaeffer, Howard J., to Burroughs Wellcome Co. Adenine derivatives. 4,323,573, Cl. 424-253.000.
Schaer, Glenn R.; Touyama, Tasuku; Yamamoto, Teruaki; Honda, Keisuke; and Wada, Tatsuo, to Koito Seisakusho Co. Ltd. Apparatus for electroplating strip material without current leakage. 4,323,441, Cl. 204-224.00R.
Schallenberger, John M.; Kmonk, Stanley; and Ferlan, Stephen J., to Westinghouse Electric Corp. Reconstitutable fuel assembly for a nuclear reactor. 4,323,428, Cl. 376-353.000.
Schering Corporation: *See—*
  Breslow, Ronald C. D.; and Wilcox, Craig S., 4,323,512, Cl. 260-397.470.
Scherm, Arthur, to Merz & Co. Vaginal suppository for contraception, having a predetermined lactalbumin content. 4,323,548, Cl. 424-44.000.
Schermerhorn, William H. Trim tab for power boat. 4,323,027, Cl. 114-285.000.
Scherz, Michael. Method of and apparatus for examining substances and mixtures of substances. 4,323,364, Cl. 23-230.00R.
Schilling, Bernd, to Consortium fur elektrochemische Ind. GmbH. Process for the manufacture of diazinon. 4,323,678, Cl. 544-243.000.
Schmelzer Corporation: *See—*
  Spitzke, Arthur, 4,322,901, Cl. 38-102.600.
Schmid, Helmut: *See—*
  Eimers, Erich; Margotte, Dieter; Schmid, Helmut; and Dhein, Rolf, 4,323,501, Cl. 260-333.000.
Schmidt, Holger: *See—*
  Sukopp, Wolfgang; Schmidt, Holger; and Schwanz, Wilfried, 4,323,278, Cl. 297-481.000.
Schmidt, Peter; and Muhlberger, Emil, to International Standard Electric Corporation. Device for inserting a shadow mask into the faceplate of a color-picture tube. 4,322,876, Cl. 29-25.190.
Schmidt, Robert A.; and Stevens, Ewell E., to Northrop Corporation. Ultrasonic scanner. 4,322,975, Cl. 73-633.000.
Schmitz-Josten, Robert; Borgardt, Manfred; Schulz, Hans-Hermann; and Walkowiak, Michael, to Bayer Aktiengesellschaft. Dental compositions. 4,323,348, Cl. 433-228.000.
Schmitz-Josten, Robert; Dietrich, Manfred; and Bomer, Bruno, to Bayer Aktiengesellschaft. (Meth)acrylic acid esters of tricyclic decanediols containing ether groups. 4,323,696, Cl. 560-220.000.
Schmolka, Irving R., to BASF Wyandotte Corporation. High foaming dentifrice compositions. 4,323,552, Cl. 424-54.000.
Schneider, Daniel F., III: *See—*
  Montle, John F.; Markowski, Henry J.; Lodewyck, Paul D.; and Schneider, Daniel F., III, 4,323,690, Cl. 556-470.000.

Schneider, Dieter: *See—*
  Liebrich, Wolfgang; and Schneider, Dieter, 4,323,320, Cl. 404-10.000.
Schnepel, Rudolph R.: *See—*
  Logue, Gerald W.; and Schnepel, Rudolph R., 4,323,196, Cl. [illegible]
Schnitzius, Klaus: *See—*
  Freitag, Herbert; and Schnitzius, Klaus, 4,323,224, Cl. 267-64.120.
Schrader, Glenn L., Jr.: *See—*
  Stiles, Alvin B.; and Schrader, Glenn L., Jr., 4,323,482, Cl. [illegible]
Schreiber, Franz: *See—*
  Hoffmuller, Wilhelm; Rossmann, Axel; and Schreiber, Franz, 4,323,394, Cl. 75-208.00R.
Schrunk, Thomas R. Decorative glass chipping method. 4,323,423, Cl. 156-645.000.
Schuchard, Earl A.: *See—*
  Will, Albert S.; Schuchard, Earl A.; Buckley, John P.; Cioccio, Armand; Hetzler, John C.; Wolf, Sylvan; Jefferson, Donald E.; McQuitty, Jim B.; and Urick, Robert A., 4,323,988, Cl. 367-4.000.
Schulte, Karl-Heinz: *See—*
  Muhr, Richard; and Schulte, Karl-Heinz, 4,322,994, Cl. 83-616.000.
Schulz, Hans-Hermann: *See—*
  Schmitz-Josten, Robert; Borgardt, Manfred; Schulz, Hans-Hermann; and Walkowiak, Michael, 4,323,348, Cl. 433-228.000.
Schutten, Herman P.; Jaskolski, Stanley V.; Spellman, Gordon B.; Lade, Robert W.; and Schutten, Michael J., to Eaton Corporation. Thyristor having widened region of temperature sensitivity with respect to breakover voltage. 4,323,793, Cl. 307-252.00R.
Schutten, Michael J.: *See—*
  Schutten, Herman P.; Jaskolski, Stanley V.; Spellman, Gordon B.; Lade, Robert W.; and Schutten, Michael J., 4,323,793, Cl. 307-252.00R.
Schwabe, Ulrich: *See—*
  Murrmann, Helmuth; Rathbone, Ronald; and Schwabe, Ulrich, 4,323,913, Cl. 357-51.000.
Schwanz, Wilfried: *See—*
  Sukopp, Wolfgang; Schmidt, Holger; and Schwanz, Wilfried, 4,323,278, Cl. 297-481.000.
Schwartz, Allen K.: *See—*
  Sheridan, John J.; Schwartz, Allen K.; and Anderson, Willis H., 4,323,744, Cl. 200-153.0LB.
Schwartz, Robert E.: *See—*
  Reed, Robert D.; and Schwartz, Robert E., 4,323,343, Cl. [illegible]
Schwarz, Gunter. Physical training apparatus for holding a person's feet when performing sit-ups. 4,323,235, Cl. 272-93.000.
Schwerko, Albert P.: *See—*
  Herrington, Daniel R.; and Schwerko, Albert P., 4,323,508, Cl. [illegible]
Sconyers, Larry E. Uniform barbeque cooking of large meat sections. 4,323,005, Cl. 99-400.000.
Scott, Charles E.: *See—*
  Sandler, Louis M.; Spofford, Walter R.; and Scott, Charles E., 4,323,861, Cl. 331-111.000.
Scott & Fetzer Company, The: *See—*
  Lee, Maw H., 4,323,835, Cl. 318-729.000.
Scott, Kenneth E., to Kenscot Industries Limited. Method of making staircases and staircase made thereby. 4,322,927, Cl. 52-188.000.
Scott, Michael H.: *See—*
  Edson, Donald A.; Johnson, Keith I.; and Scott, Michael H., 4,323,759, Cl. 219-137.0PS.
Scott, Robert S.: *See—*
  Hartman, Adrian R.; Scott, Robert S.; and Shackle, Peter W., 4,323,942, Cl. 361-56.000.
Secunda, David J.; and Motz, Lloyd. Liquid-solids separation process. 4,323,424, Cl. 159-48.00R.
Seeley, Douglas A., to American Hoechst Corporation. Light beam scanning apparatus. 4,323,307, Cl. 355-51.000.
Seidel, Bernhard: *See—*
  Kober, Heinrich; Nippe, Burkhard; and Seidel, Bernhard, 4,323,621, Cl. 428-216.000.
Seifert, Peter: *See—*
  Mazanek, Jan; Gipp, Roland; Zollner, Robert; Seifert, Peter; Wagner, Kuuno; and Blahak, Johannes, 4,323,657, Cl. 521-116.000.
Seilo, Matti: *See—*
  Saarinen, Heimo U. A.; and Seilo, Matti, 4,323,541, Cl. 423-37.000.
Seitel, Steven C.; Porteus, James O.; and Faith, William N., to United States of America, Navy. Method and apparatus for measuring optical coupling coefficients. 4,322,967, Cl. 73-15.600.
Seki, Kunio; and Ohki, Masahiko, to Morishita Pharmaceutical Co., Ltd. Derivatives of pyrazole for use in therapy. 4,323,576, Cl. 424-[illegible]
Sekigawa, Keiji, to Ricoh Co., Ltd. Method of restoring a picture through estimation. 4,323,974, Cl. 364-515.000.
Sekine, Hisashi: *See—*
  Tachikawa, Kyoji; and Sekine, Hisashi, 4,323,402, Cl. 148-133.000.
Sell, Robert C.; Sheler, John R.; and Juhasz, John M., to Bendix Corporation, The. Pressure measuring system. 4,322,977, Cl. 73-701.000.
Sellers, David J.; Rhodes, William H.; and Vasilos, Thomas, to Avco Corporation. Dense alumina with a primary recrystallized polycrystalline structure and crystal orientation. 4,323,545, Cl. 423-625.000.
Sencore, Inc.: *See—*
  Winter, Robert A., 4,323,972, Cl. 364-482.000.

Sendai, Michiyuki: *See*—
Tsushima, Susumu; Sendai, Michiyuki; and Shiraishi, Mitsuru, 4,323,676, Cl. 544-22.000.
Seraphin Pumpell & Sohne KG: *See*—
Wolflingseder, Hermann; and Wolflingseder, Werner, 4,322,926, Cl. 52-172.000.
Sereda, Alexandr I.; Nyagu, Ivan F.; Smirnov, Igor N.; Russu, Grigory I.; and Yasinovsky, Izrail L. Installation for preparing multicomponent liquid mixes in production of strong alcoholic liquors. 4,323,004, Cl. 99-275.000.
Serge, Richard F., to R. J. Reynolds Tobacco Company. Bar code reader system. 4,323,772, Cl. 235-463.000.
Servo Corporation of America: *See*—
Bambara, Joseph E.; and Sanville, W. Woodward, 4,323,211, Cl. 246-169.00A.
Sesterhenn, Lothar; and Tomic, Milorad, to Bayer Aktiengesellschaft. Anode for alkali metal chloride electrolysis. 4,323,438, Cl. 204-128.000.
Sethofer, Nicholas L., to Timex Corporation. Liquid crystal composition. 4,323,471, Cl. 252-299.610.
Sethofer, Nicholas L., to Timex Corporation. Liquid crystal admixture. 4,323,472, Cl. 252-299.610.
Sethofer, Nicholas L., to Timex Corporation. Cyclohexyl cyclohexyl dioxane liquid crystalline compounds and admixture containing same. 4,323,473, Cl. 252-299.610.
Sethofer, Nicholas L., to Timex Corporation. Cyclohexyl cyclohexyl dioxane liquid crystalline compounds and admixture containing same. 4,323,504, Cl. 260-340.700.
Severson, Larry A., to Branick Mfg., Inc. Self-sealing curing rim for tubeless earthmover tire. 4,323,414, Cl. 156-414.000.
Sextro, Gunter: *See*—
Muck, Karl-Friedrich; Sextro, Gunter; and Burg, Karlheinz, 4,323,502, Cl. 260-340.000.
Seymour, Shaun A., to Sperry Corporation. Stone trapdoor trip mechanism. 4,322,933, Cl. 56-10.200.
Sfredda, Albert P. Flexible coupling. 4,322,955, Cl. 64-16.000.
Shackle, Peter W.: *See*—
Hartman, Adrian R.; Scott, Robert S.; and Shackle, Peter W., 4,323,942, Cl. 361-56.000.
Shannon, Joseph W., to American Beverage Control. Beverage dispenser pumping system to maintain live pressure after shut off. 4,323,173, Cl. 222-136.000.
Sharp Kabushiki Kaisha: *See*—
Koizumi, Satoru; Shimamura, Takashi; and Uchiyama, Sadao, 4,323,935, Cl. 360-73.000.
Yoshida, Kunio, 4,323,767, Cl. 235-92.0SH.
Shasta Industries, Inc.: *See*—
Gould, Henry D., 4,322,860, Cl. 4-490.000.
Shaw, Herbert J.; and Chodorow, Marvin, to United States of America, Air Force. Fiber optic rotation sensing interferometer. 4,323,310, Cl. 356-350.000.
Shaya, Steven A.: *See*—
Bolich, Raymond E., Jr.; Shaya, Steven A.; and Steuri, Christian, 4,323,683, Cl. 546-6.000.
Shearin, Robert W., to Facet Enterprises, Inc. Air filter panel. 4,323,379, Cl. 55-511.000.
Shedd, Walter M.; and LaPierre, Donald C., to United States of America, Air Force. Wide range multiple time mark generator. 4,323,851, Cl. 328-72.000.
Sheehan, John C.: *See*—
Sheehan, Laurence M.; and Sheehan, John C., 4,322,954, Cl. 62-371.000.
Sheehan, Laurence M.; and Sheehan, John C. Portable cooler for medicine. 4,322,954, Cl. 62-371.000.
Sheler, John R.: *See*—
Sell, Robert C.; Sheler, John R.; and Juhasz, John M., 4,322,977, Cl. 73-701.000.
Shell Oil Company: *See*—
Huckabee, Kermit D.; Adair, James C; and Worrell, Gene T., 4,323,989, Cl. 367-17.000.
Sheridan, John J.; Schwartz, Allen K.; and Anderson, Willis H., to General Motors Corporation. Switch for controlling a plurality of lighting circuits. 4,323,744, Cl. 200-153.0LB.
Sherwin, Owen W.: *See*—
Newbold, Don; and Sherwin, Owen W., 4,323,194, Cl. 239-177.000.
Shibata, Hiroshi: *See*—
Enomoto, Tatsuya; and Shibata, Hiroshi, 4,322,881, Cl. 29-571.000.
Shibata, Toshihiro: *See*—
Kubota, Naohiro; and Shibata, Toshihiro, 4,323,684, Cl. 546-19.000.
Shibuya Kogyo Company, Ltd.: *See*—
Hasegawa, Yasuyuki, 4,323,317, Cl. 400-118.000.
Shiley, Incorporated: *See*—
Rosenbluth, Robert F.; and Bonchek, Lawrence I., 4,323,072, Cl. 128-348.000.
Shimada, Kunihiko; and Tsuchiya, Yukio, to Pioneer Electronic Corporation. Driver unit for planar diaphragm type loudspeaker. 4,323,737, Cl. 179-115.50R.
Shimada, Takanobu: *See*—
Hasegawa, Takanori; Shimada, Takanobu; Sato, Takao; Kera, Masakazu; Yoshida, Shuntaro; and Shimoyama, Shinichi, 4,323,775, Cl. 250-317.100.
Shimamura, Takashi: *See*—
Koizumi, Satoru; Shimamura, Takashi; and Uchiyama, Sadao, 4,323,935, Cl. 360-73.000.
Shimano Industrial Company, Limited: *See*—
Fukui, Seiji, 4,323,146, Cl. 192-6.00A.
Nagano, Masashi, 4,323,357, Cl. 474-82.000.
Shimogawa, Toshiaki: *See*—
Tsuge, Noboru; Kuwakado, Satoši; and Shimogawa, Toshiaki, 4,323,205, Cl. 242-107.40A.
Shimoyama, Shinichi: *See*—
Hasegawa, Takanori; Shimada, Takanobu; Sato, Takao; Kera, Masakazu; Yoshida, Shuntaro; and Shimoyama, Shinichi, 4,323,775, Cl. 250-317.100.
Shin-Etsu Chemical Company Limited: *See*—
Takago, Toshio; Arai, Masatoshi; and Futatsumori, Koji, 4,323,488, Cl. 528-32.000.
Shin-Etsu Polymer Co., Ltd.: *See*—
Sado, Ryoichi, 4,322,983, Cl. 73-862.680.
Shinagawa, Takehisa; and Inoue, Tsunehiko, to Nitta Belting Co., Ltd. Air filter assembly. 4,323,374, Cl. 55-132.000.
Shine, William P. Unitary insertable self-anchoring poke-thru wiring device. 4,323,724, Cl. 174-48.000.
Shinoda, Isao: *See*—
Nichimoto, Susumu; Shinoda, Isao; Nakamura, Shigeo; and Tsumura, Haruhide, 4,323,148, Cl. 194-100.00A.
Shinohara, Koichi: *See*—
Kunieda, Toshiaki; Odagiri, Masaru; Fujita, Takashi; and Shinohara, Koichi, 4,323,629, Cl. 428-457.000.
Shinto Paint Co., Ltd.: *See*—
Okajima, Mutsuo; and Hisada, Hideo, 4,323,195, Cl. 239-215.000.
Shipley, Randall S.: *See*—
Lowery, Kirby, Jr.; Birkelbach, Donald F.; and Shipley, Randall S., 4,323,665, Cl. 526-122.000.
Shiraishi, Mitsuru: *See*—
Tsushima, Susumu; Sendai, Michiyuki; and Shiraishi, Mitsuru, 4,323,676, Cl. 544-22.000.
Shirinian, Vram T.; Mnatsakanov, Suren S.; Pavljuchenko, Valery N.; Rozenberg, Mark E.; Gromov, Valery V.; and Ivanchev, Sergei S. Copolymers of vinyl acetate, ethylene and peroxy alkyl acrylate. 4,323,666, Cl. 526-329.000.
Shoup, Ransom F., II, to Ransom F. Shoup & Co., Inc. Vertical reversible lifter piece. 4,323,765, Cl. 235-55.00A.
Shugart Technology: *See*—
Iftikar, Syed H.; and Reeck, David L., 4,323,939, Cl. 360-106.000.
Siebenborn, Wolfgang: *See*—
Moltner, Hermann; and Siebenborn, Wolfgang, 4,323,971, Cl. 364-469.000.
Siegel, Norman H.; and Roehm, Dan C. Method of treating animals and humans for internal and external parasites. 4,323,582, Cl. 424-325.000.
Sielaff GmbH & Co.: *See*—
Kolbl, Richard; and Mehlan, Bernd, 4,323,147, Cl. 194-48.000.
Siemens Aktiengesellschaft: *See*—
Baumann, Heinz; Kuehnel, Werner; and Rattner, Manfred, 4,323,781, Cl. 250-422.000.
Bergman, Ola; Hagen, Rolf; Harenberg, Juergen; and Steiner, Herbert, 4,323,728, Cl. 178-3.000.
Bradler, Peter, 4,323,831, Cl. 318-245.000.
Brunner, Heinrich; and Fischer, Karin, 4,323,970, Cl. 364-436.000.
Conrad, Bernhard, 4,323,784, Cl. 250-445.00T.
Distler, Walter; and Kintopp, Erich, 4,323,783, Cl. 250-445.00T.
Eichrodt, Dieter; and Elsen, Friedhelm, 4,323,982, Cl. 364-786.000.
Fromm, Ingrid, 4,322,978, Cl. 73-705.000.
Fromm, Ingrid, 4,322,979, Cl. 73-705.000.
Leistner, Werner, 4,323,802, Cl. 310-59.000.
Murrmann, Helmuth; Rathbone, Ronald; and Schwabe, Ulrich, 4,323,913, Cl. 357-51.000.
Westermayer, Joerg, 4,323,729, Cl. 178-22.010.
Siemens-Allis, Inc.: *See*—
Peek, Henry L., 4,323,743, Cl. 200-148.00F.
Siemens Gammasonics, Inc.: *See*—
Arseneau, Roger E., 4,323,977, Cl. 364-571.000.
Siemens Medical Laboratories, Inc.: *See*—
Tombaugh, Dennis; Martinsen, Nick; Symmons, Edgar B.; and Heinz, Lothar, 4,323,780, Cl. 250-419.000.
Sigma Chemical Corporation: *See*—
Swan, Philip G., 4,323,124, Cl. 166-303.000.
Silken, Howard. Router guide. 4,323,100, Cl. 144-134.00D.
Silvestrini, Vittorio; Peraldo, Mario; and Monza, Enrico, to Montedison S.p.A. Covering element screening off the solar radiation for the applications in the refrigeration by radiation. 4,323,619, Cl. 428-212.000.
Simandi, Laszlo: *See*—
Lugosi, Gyorgy; May, Antal S.; Bodnar, Janos; Turcsan, Istvan; Jelinek, Istvan; Somfai, Eva; and Simandi, Laszlo, 4,323,469, Cl. 252-182.000.
Simmering-Graz-Pauker Aktiengesellschaft fur Maschinen-, Kessel-und Waggonbau: *See*—
Entzmann, Karl, 4,323,448, Cl. 208-85.000.
Simon, Andrew. Performing maintenance operations on heat exchanger tube bundles. 4,323,398, Cl. 134-18.000.
Simpson, John B.; and Robert, Edward W., to Advanced Catheter Systems, Inc. Vascular guiding catheter assembly and vascular dilating catheter assembly and a combination thereof and methods of making the same. 4,323,071, Cl. 128-343.000.
Sims, George R., to Nikolaus Sorg GmbH & Co. KG. Method and apparatus for uniformly heating a glass stream within the feeder of a glass melting furnace. 4,323,383, Cl. 65-135.000.
Singer Company, The: *See*—
Beckerman, Howard L.; and Dob, Allan M., 4,323,023, Cl. 112-158.00F.

Jones, Gary D.; Laidig, Manfred R.; and Weisz, William, 4,323,024, Cl. 112-237.000.
Singh, Prithipal: *See*—
Leung, Danton K.; and Singh, Prithipal, 4,323,507, Cl. 260-345.90R.
Sinor, Jerry E., to Rockwell International Corporation. Hydrogenation apparatus. 4,323,538, Cl. 422-207.000.
Sira Institute Limited: *See*—
West, Robert N.; West, Patricia A.; Barker, Andrew J.; and Hall, Rosemary J., 4,323,311, Cl. 356-431.000.
Sisson, Edwin D.; Stoutenburg, Donn V.; and Thomas, Glen H., to IRD Mechanalysis, Inc. Mechanical vibration analyzer. 4,322,976, Cl. 73-659.000.
Sjostrom, Svend O.: *See*—
Fauerskov, Svend E.; and Sjostrom, Svend O., 4,323,903, Cl. 346-32.000.
Skarvada, Thomas, to Crane Co. Apparatus for generating a reference signal in a brake control system. 4,323,969, Cl. 364-426.000.
Skoda, Jiri: *See*—
Vosyka, Josef; and Skoda, Jiri, 4,323,033, Cl. 119-14.040.
Slack, Otto G. Template alignment device. 4,323,327, Cl. 414-28.000.
Slobodzian, Gregory E.: *See*—
Fiedler, Wayne; and Slobodzian, Gregory E., 4,323,896, Cl. 340-800.000.
Sloop, Conrad B. Camera shoulder case. 4,323,180, Cl. 224-202.000.
Smirnov, Igor N.: *See*—
Sereda, Alexandr I.; Nyagu, Ivan F.; Smirnov, Igor N.; Russu, Grigory I.; and Yasinovsky, Izrail L., 4,323,004, Cl. 99-275.000.
Smith, David H.: *See*—
Nowicki, Andrzej N.; and Smith, David H., 4,322,957, Cl. 68-11.00R.
Smith, Douglas J.: *See*—
Ahr, Nicholas A.; and Smith, Douglas J., 4,323,069, Cl. 128-287.000.
Smith, Edward M., to Borg-Warner Corporation. D-C Power supply for providing non-interruptible d-c voltage. 4,323,788, Cl. 307-66.000.
Smith, Harvey E., Sr.; and Weis, Siegfried K., to C. L. Frost & Son, Inc. Bearing unit with improved inner race. 4,323,288, Cl. 308-196.000.
Smith, Lee R.: *See*—
Mackey, William H.; and Smith, Lee R., 4,323,630, Cl. 428-542.000.
Smith, Lowell S., to General Electric Company. Acoustic intensity monitor. 4,323,077, Cl. 128-660.000.
Smith, Ronald E.: *See*—
DeRouen, Joseph R.; and Smith, Ronald E., 4,323,293, Cl. 339-17.0CR.
Smith, Stephen H., to Hybricon, Inc. Coulometer. 4,323,849, Cl. 324-428.000.
Smith, William N.: *See*—
Willson, James R.; Conway, William H.; and Smith, William N., 4,323,764, Cl. 219-497.000.
Smolin, Jury I.: *See*—
Batalin, Oleg E.; Dykman, Arkady S.; Osadchenko, Alexandr I.; Balkhanova, Galina F.; Belgorodsky, Izrail M.; Nevstruev, Vladimir I.; Radionov, Valery A.; Tulchinsky, Eduard A.; Belyaev, Valentin M.; Smolin, Jury I.; Breiman, Mark I.; Orlyansky, Vitaly V.; Zhirnov, Nikolai Y.; Galibin, Nikolai V.; Troitsky, Andrian P.; and Kovalenko, Vladimir V., 4,323,479, Cl. 252-432.000.
Snamprogetti S.p.A.: *See*—
Lagana', Vincenzo; Saviano, Francesco; and Ferrantino, Stanislad, 4,323,252, Cl. 277-12.000.
Snodgrass, John O.: *See*—
Welch, Cletus N.; and Snodgrass, John O., 4,323,595, Cl. 427-123.000.
Snow, David H., to Sparton Corporation. Seam detection and control system. 4,323,786, Cl. 250-559.000.
Snowden, Paul, to Imperial Chemical Industries Limited. Production of fibres. 4,323,524, Cl. 264-8.000.
Snyder, Dennis. Laminate material. 4,323,613, Cl. 428-111.000.
Sobel, Johannes: *See*—
Bergthaller, Peter; Himmelmann, Wolfgang; and Sobel, Johannes, 4,323,646, Cl. 430-622.000.
Societa' Italiana Resine S.I.R. S.p.A.: *See*—
Canavesi, Roberto; Ligorati, Ferdinando; and Aglietti, Giancarlo, 4,323,716, Cl. 570-243.000.
Societe Anonyme dite: Delle-Alsthom: *See*—
Orgeret, Lucien, 4,323,720, Cl. 174-21.0JS.
Societe Chimique des Charbonnages SA: *See*—
Meyer, Nicolas; and Foulon, Raymond, 4,323,667, Cl. 528-138.000.
Societe d'Assistance Technique pour Produits Nestle S.A.: *See*—
Dieffenbacher, Albrecht, 4,323,514, Cl. 260-412.300.
Societe d'Etude de Systems Avances et d'Amenagements: *See*—
Dieulot, Gerard; Juan, Mathias; and Fardeau, Michel, 4,323,770, Cl. 235-375.000.
Societe d'Etudes Scientifiques et Industrielles de L'ile-de-France: *See*—
Thominet, Michel; Bulteau, Gerard; Acher, Jacques; and Collignon, Claude, 4,323,503, Cl. 260-340.300.
Societe Nationale Industrielle Aerospatiale: *See*—
Durandeau, Michel; Voisin, Norbert; and Verdier, Jean P., 4,323,884, Cl. 340-347.0DA.
Societe Suisse pour l'Industrie Horlogere Management Services S.A.: *See*—
Xuan, Mai T.; Jufer, Marcel; and Pittet, Andre, 4,323,834, Cl. 318-696.000.
Soderberg, Richard; Winter, Steven; and Burst, Hermann, to Dr. Ing. h.c.F. Porsche Aktiengesellschaft. Rear for a passenger car. 4,323,274, Cl. 296-1.00S.
Soderblom, Olof; and Karlsen, Lasse K., to Swedair AB. Indicator apparatus for determining the miss distance of a projectile in relation to a fixed or moving target. 4,323,993, Cl. 367-127.000.
Sogn, Leland T. Quartz wafering machine. 4,323,049, Cl. 125-13.00R.
Sokoloski, Joseph C.; and Ipri, Alfred C., to RCA Corporation. MNOS Memory transistor. 4,323,910, Cl. 357-23.000.
Solomon, David E.: *See*—
Masnari, Nino A.; Rensel, Walter B.; Robinson, Merrill G.; Solomon, David E.; Wise, Kensall D.; and Wuttke, Gilbert H., 4,323,420, Cl. 156-628.000.
Somfai, Eva: *See*—
Lugosi, Gyorgy; May, Antal S.; Bodnar, Janos; Turcsan, Istvan; Jelinek, Istvan; Somfai, Eva; and Simandi, Laszlo, 4,323,469, Cl. 252-182.000.
Sommers, Edward G., Jr.; and O'Connor, James G., to General Electric Company. Burner ignition and control system. 4,323,342, Cl. 431-66.000.
Sony Corporation: *See*—
Watanabe, Masanao; Naito, Keiichi; Odajima, Tooru; and Fujiwara, Yoshio, 4,323,659, Cl. 525-108.000.
SOR, Inc.: *See*—
Priest, Wayne A., 4,323,742, Cl. 200-82.00C.
Sorteberg, Johannes. Self-aligning scaling load cell. 4,323,769, Cl. 135-200.0WT.
Southern Foundry Supply Company: *See*—
Kruesi, Paul R.; and Frahm, Veryl H., Jr., 4,323,390, Cl. 75-0.50A.
Sowards, Lorin F. Doorbell for pets. 4,323,883, Cl. 340-328.000.
Space Odyssey Ltd.: *See*—
Goldsmith, Bruce W., 4,323,351, Cl. 434-274.000.
Sparks, Gregory W.: *See*—
Loveland, William A.; Dukes, James S.; and Sparks, Gregory W., 4,323,251, Cl. 273-407.000.
Sparton Corporation: *See*—
Snow, David H., 4,323,786, Cl. 250-559.000.
Spasoff, John. Belt-mounted fishing tackle carrier. 4,323,181, Cl. 224-251.000.
Specialty Papers Company, The: *See*—
Neumann, Robert G., 4,322,929, Cl. 53-451.000.
Spector, Donald. Collapsible rear/front projection screen assembly. 4,323,301, Cl. 350-117.000.
Spector, George: *See*—
Warren, William; and Spector, George, 4,323,352, Cl. 440-27.000.
Spellman, Gordon B.: *See*—
Schutten, Herman P.; Jaskolski, Stanley V.; Spellman, Gordon B.; Lade, Robert W.; and Schutten, Michael J., 4,323,793, Cl. 307-252.00R.
Speranza, George P.; and Zimmerman, Robert L., to Texaco Inc. Polyisocyanurates from diols modified with epoxy resins. 4,323,658, Cl. 521-174.000.
Sperry Corporation: *See*—
Barnes, Richard M.; Vachula, George M.; and Bennett, Clarence L., Jr., 4,323,898, Cl. 343-5.0SA.
Barnes, Richard M.; and Vachula, George M., 4,323,899, Cl. 343-55.00A.
Clark, Charles A., Jr.; and Easter, Finis C., 4,323,957, Cl. 363-21.000.
Eibner, Jules A., 4,323,932, Cl. 360-45.000.
Jacoby, George V., 4,323,931, Cl. 360-40.000.
Seymour, Shaun A., 4,322,933, Cl. 56-10.200.
Spilker, James J., Jr., to Lockheed Missiles & Space Company, Inc. Delay-modulated random energy intelligence communication system. 4,324,002, Cl. 455-27.000.
Spin Physics, Inc.: *See*—
Giraud, Andre, 4,323,934, Cl. 360-61.000.
Spires, Dewayne A.: *See*—
Carriere, Joseph F.; Gaunt, Wilmer B., Jr.; Landry, Joseph E.; and Spires, Dewayne A., 4,323,885, Cl. 340-347.0CC.
Spirig, Ernst. Solder removing device. 4,323,631, Cl. 428-605.000.
Spitzke, Arthur, to Schmelzer Corporation. Needlework frame. 4,322,901, Cl. 38-102.600.
Spofford, Walter R.: *See*—
Sandler, Louis M.; Spofford, Walter R.; and Scott, Charles E., 4,323,861, Cl. 331-111.000.
Spooner, Leonard: *See*—
Vink, Walter; Spooner, Leonard; and Mackay, Donald A. M., 4,323,588, Cl. 426-564.000.
Spooner, Robert J.: *See*—
Chalker, Oliver H., Jr.; and Spooner, Robert J., 4,323,771, Cl. 235-377.000.
Sprague Electric Company: *See*—
Bernard, Walter J., 4,323,950, Cl. 361-433.000.
Springer, Donald A.: *See*—
Rubbright, Harry A.; and Springer, Donald A., 4,323,110, Cl. 165-2.000.
Springthorpe, Anthony J.: *See*—
Noad, Julian P.; Springthorpe, Anthony J.; and Look, Christopher M., 4,323,859, Cl. 372-46.000.
Spurgat, Jimmy C.: *See*—
Fitzpatrick, Cecil C.; and Spurgat, Jimmy C., 4,322,963, Cl. 72-387.000.
Sraitr, Stanislav; and Srejberova, Hana, to Elitex, koncern textilniho strojirenstvi. Method of and apparatus for break spinning yarn. 4,322,944, Cl. 57-328.000.

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Sraitr, Stanislav; and Srejberova, Hana, 4,322,944, Cl. 57-328.000.
Stabilus GmbH: *See—*
Freitag, Herbert; and Schnitzius, Klaus, 4,323,224, Cl. 267-64.120.
Stackpole Corporation, The: *See—*
Zelt, Edward J., 4,323,804, Cl. 310-72.000.
Stafford, Donald C.; and Allo, Vincent F., to Chicago Bridge & Iron Company. Shell and tube heat exchanger with polymeric tube sheets. 4,323,115, Cl. 165-79.000.
Staker, William C., Jr.: *See—*
Hussey, James L.; Miller, Michael B.; and Staker, William C., Jr., 4,323,902, Cl. 343-903.000.
Standard Oil Company: *See—*
Grasselli, Robert K.; Miller, Arthur F.; and Hardman, Harley F., 4,323,703, Cl. 562-546.000.
Hardman, Harley F.; Callahan, James L.; and Grasselli, Robert K., 4,323,520, Cl. 260-465.900.
Herrington, Daniel R.; and Schwerko, Albert P., 4,323,508, Cl. 260-346.110.
Standard Oil Company (Indiana): *See—*
Ginsburgh, Irwin; and Hall, Robert D., 4,323,120, Cl. 166-251.000.
Ginsburgh, Irwin; and Hall, Robert D., 4,323,121, Cl. 166-251.000.
Kaduk, James A., 4,323,481, Cl. 252-455.00Z.
Keske, Robert G.; and Stephens, James R., 4,323,493, Cl. 524-411.000.
Stanek, Jaroslav: *See—*
Baschang, Gerhard; Tarcsay, Lajos; Hartmann, Albert; and Stanek, Jaroslav, 4,323,560, Cl. 424-177.000.
Stapel, Cornelis: *See—*
Vennix, Johannus A.; and Stapel, Cornelis, 4,323,817, Cl. 313-440.000.
Stark, Virgil. Solar energy system. 4,323,052, Cl. 126-440.000.
Starkey, David: *See—*
Wangard, William; and Starkey, David, 4,322,996, Cl. 84-1.240.
State Wide Aluminum of Indiana, Inc.: *See—*
McGaughey, Donald C., 4,322,914, Cl. 49-370.000.
Staudinger, Gernot, to Voest-Alpine AG. Apparatus for the gasification of coal. 4,323,366, Cl. 48-73.000.
Steag Aktiengesellschaft: *See—*
Meyer-Kahrweg, Helmut, 4,323,037, Cl. 122-4.00D.
Steele, Richard R.: *See—*
Ramlow, Bryan L.; and Steele, Richard R., 4,322,953, Cl. 62-217.000.
Steigerwald, Robert L., to General Electric Company. High efficiency rectifier with multiple outputs. 4,323,962, Cl. 363-127.000.
Steinback, Clarence I., to Acrometal Products, Inc. Abrasive grinding machine. 4,322,918, Cl. 51-138.000.
Steiner, Herbert: *See—*
Bergman, Ola; Hagen, Rolf; Harenberg, Juergen; and Steiner, Herbert, 4,323,728, Cl. 178-3.000.
Steinhilber, Jiri. Multiple-trouser-hanger. 4,323,162, Cl. 211-100.000.
Stella, Leo; and Marola, America E., to Torrington Company, The. Bearing seal. 4,323,287, Cl. 308-187.100.
Stenograph Corporation: *See—*
Fowler, Paul J.; and Zum Bahlen, Ralph E., 4,323,316, Cl. [illegible]
Stenzel, Wolfgang; Fleck, Wolfgang; Cohnen, Erich; and Armah, Ben, to Beiersdorf Aktiengesellschaft. Substituted aminopyrimidines. 4,323,570, Cl. 424-251.000.
Stepanek, Miroslav: *See—*
Fajt, Ludvik; Didek, Stanislav; Kasparek, Jaromir; Storek, Jaroslav; Andres, Jiri; Borovcova, Zelmira; Markova, Marie; Reymanova, Marketa; and Stepanek, Miroslav, 4,322,942, Cl. 57-411.000.
Stephens, James R.: *See—*
Keske, Robert G.; and Stephens, James R., 4,323,493, Cl. [illegible]
Stephenson, Donald K., to Outboard Marine Corporation. Marine transmission control with vibration isolation system. 4,323,356, Cl. [illegible]
Steuri, Christian: *See—*
Bolich, Raymond E., Jr.; Shaya, Steven A.; and Steuri, Christian, 4,323,683, Cl. 546-6.000.
Stevens, Ewell E.: *See—*
Schmidt, Robert A.; and Stevens, Ewell E., 4,322,975, Cl. 73-633.000.
Stevens, Leonard W.: *See—*
Peterson, Steven C.; Stevens, Leonard W.; and Tanrikut, Ibrahim S., 4,322,945, Cl. 60-39.320.
Stewart, Charles G.; Stewart, Nellie R.; Hicks, Floyd E.; and Hicks, Maxine. Bowling game. 4,323,240, Cl. 273-85.00R.
Stewart, Clarence E.: *See—*
Oberg, Robert E.; Stewart, Clarence E.; and Geelan, Thomas C., 4,323,313, Cl. 366-142.000.
Stewart, David G.: *See—*
Ball, William J.; Palmer, Keith W.; and Stewart, David G., 4,323,475, Cl. 252-373.000.
Stewart, Nellie R.: *See—*
Stewart, Charles G.; Stewart, Nellie R.; Hicks, Floyd E.; and Hicks, Maxine, 4,323,240, Cl. 273-85.00R.
Stewart-Warner Corporation: *See—*
Fiedler, Wayne; and Slobodzian, Gregory E., 4,323,896, Cl. [illegible]
Stewart, William J.; Robinson, John A.; and Carpenter, Richard, to Plessey Handel und Investments AG. Optical fibre connectors. 4,323,300, Cl. 350-96.210.
Stiftelsen Institutet for Mikrovagsteknik vid Tekniska Hogskolan i Stockholm: *See—*
Berggren, Benny, 4,323,745, Cl. 219-10.55A.
Stikeleather, Larry F.; and Totten, David S., to Allis-Chalmers Corporation. Ridge mulch tillage method and apparatus. 4,323,126, Cl. 172-147.000.
Stiles, Alvin B.; and Schrader, Glenn L., Jr., to University of Delaware. Catalyst and method of preparation. 4,323,482, Cl. 252-462.000.
Stirbis, James S.: *See—*
McMillin, Danny L.; and Stirbis, James S., 4,323,601, Cl. 427-287.000.
Stocklin, Gerhard: *See—*
Knust, Ernst J.; Kupfernagel, Christiane; and Stocklin, Gerhard, 4,323,547, Cl. 424-1.000.
Stofka, Edward J.: *See—*
Criss, Russell C.; and Stofka, Edward J., 4,323,726, Cl. 174-68.500.
Stone, John: *See—*
Belsterling, Charles A.; and Stone, John, 4,323,830, Cl. 318-158.000.
Storek, Jaroslav: *See—*
Fajt, Ludvik; Didek, Stanislav; Kasparek, Jaromir; Storek, Jaroslav; Andres, Jiri; Borovcova, Zelmira; Markova, Marie; Reymanova, Marketa; and Stepanek, Miroslav, 4,322,942, Cl. 57-411.000.
Stoutenburg, Donn V.: *See—*
Sisson, Edwin D.; Stoutenburg, Donn V.; and Thomas, Glen H., 4,322,976, Cl. 73-659.000.
Strata Bit Corporation: *See—*
Dennis, Mahlon, 4,323,130, Cl. 175-329.000.
Strauss, Georg: *See—*
Braun, Albert; Portz, Willi; and Strauss, Georg, 4,323,392, Cl. 75-58.000.
Strickland, James C. Step-up circuit for driving full-range-element electrostatic loudspeakers. 4,323,736, Cl. 179-111.00R.
Strickler, Rainer: *See—*
Vogel, Hans-Henning; Strickler, Rainer; Oppenlaender, Knut; and Baur, Richard, 4,323,689, Cl. 548-336.000.
Strickman, Melvyn B.: *See—*
Strickman, Robert L.; and Strickman, Melvyn B., 4,323,656, Cl. 521-109.000.
Strickman, Robert L.; and Strickman, Melvyn B. Polyurethane sponges manufactured with additive dispersed therein. 4,323,656, Cl. 521-109.000.
Strobel, Heinrich, to F ieseke & Hoepfner GmbH. Controlling the thickness of moving webs of material. 4,322,971, Cl. 73-159.000.
Stubbs, Graham S.: *See—*
den Toonder, Pieter; Doles, Glenn P.; Lund, John A.; Merrell, Richard G.; and Stubbs, Graham S., 4,323,922, Cl. 358-117.000.
Stumpf, Gunter O. Arrangement in a cutting apparatus for engaging and retaining a web-like material, particularly superposed material webs. 4,322,993, Cl. 83-422.000.
Styles, Virgil L.: *See—*
Morrison, Robert W., Jr.; Mallory, William R.; and Styles, Virgil L., 4,323,679, Cl. 544-256.000.
Suarez, Tulio; and Jones, C. David, to Eli Lilly and Company. Antifertility compounds. 4,323,707, Cl. 564-324.000.
Subramanian, Krishnamoorthy: *See—*
Samanta, Shyam K.; Subramanian, Krishnamoorthy; and Ezis, Andre, 4,323,325, Cl. 409-131.000.
Suchy, Adalbert W. Folding chair and cart. 4,323,260, Cl. 280-47.250.
Suganuma, Tsuneo: *See—*
Matsuyama, Iwao; Susa, Kenzo; Suganuma, Tsuneo; Satoh, Shin; Katsuyama, Toshio; and Obayashi, Hidehito, 4,323,381, Cl. 65-32.000.
Sugiura, Shigekata, to Alps Electric Co., Ltd. Lock structure for integrating a cabinet cover and a bottom plate. 4,323,807, Cl. 312-284.000.
Sugiyama, Matsuyoshi: *See—*
Morishita, Teru; Sugiyama, Matsuyoshi; and Suzuki, Toshikazu, 4,323,197, Cl. 239-703.000.
Sukopp, Wolfgang; Schmidt, Holger; and Schwanz, Wilfried, to Volkswagenwerk Aktiengesellschaft. Seat for vehicles, in particular two-door passenger automobiles. 4,323,278, Cl. 297-481.000.
Suma, Atsushi: *See—*
Yamazaki, Kazuhide; Ogawa, Shigetoshi; Suma, Atsushi; and Nakajima, Maki, 4,323,014, Cl. 104-13.000.
Sumitomo Chemical Company Limited: *See—*
Takahashi, Masatoshi; Kotera, Norio; Uegaki, Masatoshi; Miyaoka, Takashi; and Maegawa, Yuzo, 4,323,431, Cl. 203-72.000.
Sun, Anthony M.; and Parisius, Wolf J., to Connaught Laboratories Limited. Artificial endocrine pancreas. 4,323,457, Cl. 210-645.000.
Sundar, Parameshwaran S., to Westinghouse Electric Corp. Reduction of iron precipitation in uranium extraction process. 4,323,540, Cl. 423-10.000.
Super Products Corporation: *See—*
Wurster, James C., 4,322,868, Cl. 15-302.000.
Susa, Kenzo: *See—*
Matsuyama, Iwao; Susa, Kenzo; Suganuma, Tsuneo; Satoh, Shin; Katsuyama, Toshio; and Obayashi, Hidehito, 4,323,381, Cl. 65-32.000.
Sutherland, Ben E. Locking system for a train car coupler. 4,323,164, Cl. 213-145.000.
Sutherland, Joseph E.: *See—*
Dunning, Stephen C.; and Sutherland, Joseph E., 4,323,790, Cl. 370-102.000.
Suzuki, Eiji: *See—*
Ogawa, Kazuo; Suzuki, Eiji; Kurita, Osamu; and Horikawa, Izumi, 4,323,864, Cl. 333-165.000.

Suzuki, Hideaki; and Yamashita, Gentaro, to Teijin Limited. Albumin-fixed resin, production thereof, and therapeutical use thereof. 4,323,486, Cl. 525-54.100.
Suzuki, Masane: *See—*
Oka, Yoshitake; Ishihara, Tetsuo; Suzuki, Masane; and Kanaya, Motonori, 4,323,757, Cl. 219-121.0LN.
Suzuki, Sadahide: *See—*
Tominaga, Nobuyoshi; Kurai, Nobuyoshi; Ueno, Hajime; and Suzuki, Sadahide, 4,323,135, Cl. 180-228.000.
Suzuki, Seikou; Nishihara, Motohisa; Kawakami, Kanji; Sato, Hideo; Kobori, Shigeyuki; Hachino, Hiroaki; and Takahashi, Minoru, to Hitachi, Ltd. Semiconductor pressure sensor having plural pressure sensitive diaphragms and method. 4,322,980, Cl. 73-727.000.
Suzuki, Shizuo: *See—*
Ishihara, Hideo; Suzuki, Shizuo; and Nakabo, Satoru, 4,323,984, Cl. 365-10.000.
Suzuki, Toshikazu: *See—*
Morishita, Teru; Sugiyama, Matsuyoshi; and Suzuki, Toshikazu, 4,323,197, Cl. 239-703.000.
Suzuki, Toshio, to Nippon Seiko Kabushiki Kaisha. Roller bearing having a forcible lubrication function. 4,323,289, Cl. 308-202.000.
Suzuki, Yukitomo; and Honda, Masakazu. Method for controlling position of a plurality of machining shafts each including a machine tool fitted thereto. 4,323,098, Cl. 144-2.00R.
Swan, Philip G., to Sigma Chemical Corporation. Method of inhibiting gravel pack and formation sandstone dissolution during steam injection. 4,323,124, Cl. 166-303.000.
Swanson, Billy L., to Phillips Petroleum Company. Gelled compositions and well treating. 4,323,123, Cl. 166-302.000.
Swedair AB: *See—*
Soderblom, Olof; and Karlsen, Lasse E., 4,323,993, Cl. 367-127.000.
Swenson, Donald A.: *See—*
Brau, Charles A.; Swenson, Donald A.; and Boyd, Thomas J., Jr., 4,323,857, Cl. 372-2.000.
Swenson, Richard M.: *See—*
Fowler, Steven E.; Hennings, George N.; Hibbs, Joseph E.; Redmond, Stephen L.; and Swenson, Richard M., 4,322,998, Cl. 89-1.50D.
Swin, Richard E., Sr.; and Atalla, Anwar A., to Tec-Air, Inc. Vaneless diffuser. 4,323,330, Cl. 415-207.000.
Sword, Alexander F. Line ender. 4,323,273, Cl. 294-78.00R.
Syeles, Albert M.: *See—*
Krall, Albert D.; McCorkle, John W.; Scarzello, John F.; and Syeles, Albert M., 4,323,900, Cl. 343-700.0MS.
Symmons, Edgar B.: *See—*
Tombaugh, Dennis; Martinsen, Nick; Symmons, Edgar B.; and Heinz, Lothar, 4,323,780, Cl. 250-419.000.
Syntex (U.S.A.) Inc.: *See—*
Fried, John H.; Kertesz, Denis J.; and Marx, Michael, 4,323,564, Cl. 424-241.000.
Fu, Cherng-Chyi, 4,323,467, Cl. 252-106.000.
Sytsma, Peter H.: *See—*
Ragan, Marshall P.; and Sytsma, Peter H., 4,323,141, Cl. 187-8.470.
Syva Company: *See—*
Leung, Danton K.; and Singh, Prithipal, 4,323,507, Cl. 260-345.90R.
Szablewski, Fred. C.: *See—*
Apter, Robert; Philippi, John; Potichko, Nicholas; and Szablewski, Fred. C., 4,323,333, Cl. 417-63.000.
Szabo, William. Body exercising weight apparatus. 4,323,236, Cl. 272-117.000.
Tachikawa, Kyoji; and Sekine, Hisashi, to National Research Institute for Metals. Method for producing superconducting Nb_3Sn wires. 4,323,402, Cl. 148-133.000.
Tachikawa Spring Co., Ltd.: *See—*
Urai, Muneharu, 4,323,410, Cl. 156-228.000.
Taco Bell: *See—*
Sartain, John R., 4,323,176, Cl. 222-326.000.
Takada, Juichiro. Belt clamps for vehicle passenger restraint belts. 4,323,204, Cl. 242-107.200.
Takada, Juichiro. Passive vehicle seat belt system. 4,323,267, Cl. 280-803.000.
Takago, Toshio; Arai, Masatoshi; and Futatsumori, Koji, to Shin-Etsu Chemical Company Limited. Method for the preparation of silicone-modified polyoxyalkylene polyethers and room temperature-curable compositions therewith. 4,323,488, Cl. 528-32.000.
Takahashi, Hiroshi: *See—*
Motosugi, Katsuhiko; Takahashi, Hiroshi; Toyoda, Shuhei; and Tanahashi, Toshio, 4,323,038, Cl. 123-188.00M.
Takahashi, Masatoshi; Kotera, Norio; Uegaki, Masatoshi; Miyaoka, Takashi; and Maegawa, Yuzo, to Sumitomo Chemical Company Limited. Purification of compounds having high melting point. 4,323,431, Cl. 203-72.000.
Takahashi, Minoru: *See—*
Suzuki, Seikou; Nishihara, Motohisa; Kawakami, Kanji; Sato, Hideo; Kobori, Shigeyuki; Hachino, Hiroaki; and Takahashi, Minoru, 4,322,980, Cl. 73-727.000.
Takamatsu, Shinichi: *See—*
Mori, Hazime; Kohyama, Katsuhisa; Nakamura, Katsuhiko; and Takamatsu, Shinichi, 4,323,519, Cl. 528-499.000.
Takami, Akio; Matsuura, Toshitaka; and Saito, Tsutomu, to NGK Spark Plug Co., Ltd. Temperature compensated plug-in type oxygen detector for exhaust gas. 4,322,968, Cl. 73-27.00R.
Takami, Toru; Takezawa, Misako; Ohashi, Hiroyuki; and Takeda, Shigeru, to Ajinomoto Co., Inc. Fat emulsion for intravenous injection. 4,323,563, Cl. 424-199.000.
Takasaki, Yukio: *See—*
Koike, Norio; Tsukada, Toshihisa; Ando, Haruhisa; Yamamoto, Hideaki; Hirai, Tadaaki; Kubo, Masaharu; Maruyama, Eiichi; Baji, Toru; Takasaki, Yukio; and Nagahara, Shusaku, 4,323,912, Cl. 357-31.000.
Takasawa, Yoshio: *See—*
Yoshimoto, Takeo; Inoue, Takayuki; Michiyama, Hideo; Harayama, Takeo; Morikama, Osamu; Hojo, Yoshikata; Baba, Takao; Toyama, Teruhiko; Ura, Masaaki; and Takasawa, Yoshio, 4,323,389, Cl. 71-124.000.
Takase, Tadayoshi; and Kanaya, Yoshihiro, to Rinnai Kabushiki Kaisha. Safety apparatus for microwave cooking devices. 4,323,747, Cl. 219-10.55C.
Takeda Chemical Industries, Ltd.: *See—*
Tsushima, Susumu; Sendai, Michiyuki; and Shiraishi, Mitsuru, 4,323,676, Cl. 544-22.000.
Takeda, Shigeru: *See—*
Takami, Toru; Takezawa, Misako; Ohashi, Hiroyuki; and Takeda, Shigeru, 4,323,563, Cl. 424-199.000.
Takezawa, Misako: *See—*
Takami, Toru; Takezawa, Misako; Ohashi, Hiroyuki; and Takeda, Shigeru, 4,323,563, Cl. 424-199.000.
Talke, Frank E.: *See—*
Lee, Francis C.; Mills, Ross N.; and Talke, Frank E., 4,323,908, Cl. 346-140.00R.
Tanahashi, Toshio: *See—*
Motosugi, Katsuhiko; Takahashi, Hiroshi; Toyoda, Shuhei; and Tanahashi, Toshio, 4,323,038, Cl. 123-188.00M.
Tanaka, Katsuto: *See—*
Okino, Seiki; Yanai, Toshiharu; and Tanaka, Katsuto, 4,323,598, Cl. 427-160.000.
Tanaka, Nobuo: *See—*
Nakaoka, Kazuhide; Araki, Kenzi; Iwase, Kozi; Kubotera, Haruo; Kurihara, Takao; and Tanaka, Nobuo, 4,323,403, Cl. 148-134.000.
Tanaka, Shinichi: *See—*
Hattori, Masumi; Ishida, Toru; and Tanaka, Shinichi, 4,323,484, Cl. 252-521.000.
Tanaka, Yasuhiro; and Kakehi, Sasuga, to Murata Manufacturing Co., Ltd. Ladder-type piezoelectric filter. 4,323,865, Cl. 333-187.000.
Tanaka, Yoshinobu; Ogawa, Koichi; and Hioka, Minoru, to Kuraray Co., Ltd. Compact type fluid treatment apparatus. 4,323,455, Cl. 210-321.200.
Tanger, Charles M., to Rohm and Haas Company. Process for preparing phenoxybenzoic acids. 4,323,692, Cl. 560-65.000.
Taniguchi, Tomio, to Toyota Jidosha Kogyo Kabushiki Kaisha. Structure for mounting a striker on a vehicle body. 4,323,271, Cl. 292-341.180.
Tannetics, Inc.: *See—*
Whorton, Robert B., III; Crosby, Samuel C., Jr.; Iannelli, Frank M.; Denmark, James; and Jeans, Edward L., 4,323,171, Cl. 222-82.000.
Tanrikut, Ibrahim S.: *See—*
Peterson, Steven C.; Stevens, Leonard W.; and Tanrikut, Ibrahim S., 4,322,945, Cl. 60-39.320.
Tanzawa, Kazuhiko; Iwado, Seigo; Tsujita, Yoshio; Kuroda, Masao; and Furuya, Kouhei, to Sankyo Company Limited. Preparation of Monacolin K. 4,323,648, Cl. 435-125.000.
Tarcsay, Lajos: *See—*
Baschang, Gerhard; Tarcsay, Lajos; Hartmann, Albert; and Stanek, Jaroslav, 4,323,560, Cl. 424-177.000.
Tasar, Omur: *See—*
Whiteside, Arliss E.; Freedman, Morris D.; Tasar, Omur; and Rothschild, Alexander M., 4,323,966, Cl. 364-200.000.
Tasho, Masao: *See—*
Hira, Kazumi; and Tasho, Masao, 4,323,276, Cl. 296-214.000.
Tavel, Donald L. Music synthesizer. 4,322,995, Cl. 84-1.190.
Taylor, Alfred J.: *See—*
Lumby, Roland J.; North, Bernard; Taylor, Alfred J.; and Thomas, Roland M., 4,323,323, Cl. 407-119.000.
Taylor, Allen L., to Minnesota Mining and Manufacturing Company. Method of making piezoelectric polymeric acoustic transducer. 4,322,877, Cl. 29-25.350.
Taylor, Forrest C.: *See—*
Domes, E. A.; Taylor, Forrest C.; Vacval, Duaan M.; and Venere, Lawrence A., 4,323,279, Cl. 298-23.0DF.
TDK Electronics Co., Ltd.: *See—*
Mikame, Yoshio, 4,323,844, Cl. 324-212.000.
Okuyama, Kiyotaka; and Hosaka, Akihiko, 4,323,628, Cl. 428-421.900.
Umeki, Shinji, 4,323,464, Cl. 252-62.590.
Tea, Frank C. Vertical baling machine for waste material. 4,323,008, Cl. 100-214.000.
Tec-Air, Inc.: *See—*
Swin, Richard E., Sr.; and Atalla, Anwar A., 4,323,330, Cl. 415-207.000.
Tecumseh Products Company: *See—*
Rasmussen, Jerome L., 4,323,522, Cl. 261-72.00R.
Teich, Rudor M., to Foxmar Industries Inc. Emergency lighting system. 4,323,820, Cl. 315-86.000.
Teijin Limited: *See—*
Suzuki, Hideaki; and Yamashita, Gentaro, 4,323,486, Cl. 525-54.100.
Teledyne Hanau, a division of Teledyne, Inc.: *See—*
Beu, Richard A., 4,323,346, Cl. 433-58.000.
Televault, Inc.: *See—*
Flax, Louis; and Brzezinski, Vincent, 4,323,739, Cl. 179-189.00D.

Temes, Clifford L., to United States of America, Navy. Fragment-tolerant transmission line. 4,323,867, Cl. 333-239.000.
Temple University of the Commonwealth System of Higher Education: See—
  Nowotny, Alois H., 4,323,561, Cl. 424-180.000.
Ten-Tec, Inc.: See—
  Jones, Lee J., 4,323,960, Cl. 363-48.000.
Tenneco Chemicals, Inc.: See—
  Dowthwaite, Edwin; and Hiskens, Ian R., 4,323,425, Cl. 162-168.000.
Tentarelli, Joseph A.; Wahlers, Richard L.; and Woods, John G., to TRW, Inc. Method of making temperature sensitive device and device made thereby. 4,323,875, Cl. 338-25.000.
Terada, Katumi; and Nemoto, Kazuyuki, to Olympus Optical Co. Ltd. Apparatus for use with a motor drive. 4,323,828, Cl. 318-45.000.
Terashima, Akira: See—
  Yoshizawa, Naomi; and Terashima, Akira, 4,323,999, Cl. 369-17.000.
Ternstrom, Ingela M.; and Boman, Lars E., to Molnlycke AB. Disposable diaper. 4,323,070, Cl. 128-287.000.
Terpening, George L., to Acro Matic, Inc. Exercising method. 4,323,232, Cl. 272-68.000.
Texaco Inc.: See—
  Morduchowitz, Abraham, 4,323,463, Cl. 252-8.55D.
  Parrack, Alvin L.; and Lunsford, Delbert R., 4,323,876, Cl. 307-40.000.
  Speranza, George P.; and Zimmerman, Robert L., 4,323,658, Cl. 521-174.000.
Texas Instruments Incorporated: See—
  Lam, Hon W., 4,323,417, Cl. 156-613.000.
  Wiggins, Richard H.; and Henderson, Alva E., 4,323,732, Cl. 179-1.00M.
Theilen, Gordon H., to University of California, The Regents of the. Method of protecting cattle and sheep against bovine leukemia virus and vaccines for use therein. 4,323,555, Cl. 424-88.000.
Theurer, Josef, to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H. Mobile track working machine. 4,323,013, Cl. 104-7.000.
Thibault, Louis R.: See—
  Adams, Arthur C.; Alexander, Frank B.; Jr.; Levinstein, Hyman J.; and Thibault, Louis R., 4,323,638, Cl. 430-275.000.
Thillet, Georges: See—
  Denoor, Gaston; and Thillet, Georges, 4,323,200, Cl. 242-7.210.
Thomas, Glen H.: See—
  Sisson, Edwin D.; Stoutenburg, Donn V.; and Thomas, Glen H., 4,322,976, Cl. 73-659.000.
Thomas, Roland M.: See—
  Lumby, Roland J.; North, Bernard; Taylor, Alfred J.; and Thomas, Roland M., 4,323,323, Cl. 407-119.000.
Thome, Heinrich: See—
  Buhring, Otto; Dreessen, Gerardus J. W.; Groeneveld, Jacob W. H.; Queck, Robert; Thome, Heinrich; and Willemsen, Gerrit J., 4,323,718, Cl. 373-73.000.
Thominet, Michel; Bulteau, Gerard; Acher, Jacques; and Collignon, Claude, to Societe d'Etudes Scientifiques et Industrielles de L'ile-de-France. Substituted 2,3-alkylene di (oxy) benzamides and derivatives. 4,323,503, Cl. 260-340.300.
Thompson, Elmer R., to Datho Mfg. Inc. Apparatus for overcoming sewing machine needle bind. 4,323,020, Cl. 112-61.000.
Thompson, Herbert E., to Xerox Corporation. Rolling pivot for magnetic head. 4,323,938, Cl. 360-105.000.
Thompson, Roger A. Counter-rotating vortices generator for an aircraft wing. 4,323,209, Cl. 244-199.000.
Thomson-CSF: See—
  Berger, Jean L.; and Coutures, Jean L., 4,323,791, Cl. 307-221.00D.
  Maerfeld, Charles; and Gautier, Herve, 4,323,985, Cl. 365-157.000.
  Valdmann, Henri, 4,323,909, Cl. 357-13.000.
Thun, Gerhard: See—
  Muller, Stefan; Thun, Gerhard; and Glauner, Wolfgang, 4,322,982, Cl. 73-861.220.
Tick, Paul A.; and Sanford, Leon M., deceased (by Sanford, Michele R., administratrix), to Corning Glass Works. Moldable glass compositions. 4,323,654, Cl. 501-47.000.
Tiegs, Sue M.: See—
  Turner, Lloyd J.; Willey, Melvin G.; Tiegs, Sue M.; and Van Cleve, John E., Jr., 4,323,198, Cl. 241-5.000.
Tilson, Bernard A.: See—
  Ott, Henry W.; and Tilson, Bernard A., 4,323,733, Cl. 179-6.30R.
Timex Corporation: See—
  Sethofer, Nicholas L., 4,323,471, Cl. 252-299.610.
  Sethofer, Nicholas L., 4,323,472, Cl. 252-299.610.
  Sethofer, Nicholas L., 4,323,473, Cl. 252-299.610.
  Sethofer, Nicholas L., 4,323,504, Cl. 260-340.700.
Tobin, Leo W., Jr. Depth sounder repeater structure and method. 4,323,992, Cl. 367-108.000.
Toho Aen Kabushiki Kaisha: See—
  Honda, Tsuneo; Nishina, Haruo; and Uehara, Shuichi, 4,323,391, Cl. 75-14.000.
Tohyama, Shigeo: See—
  Akitomo, Nobuo; and Tohyama, Shigeo, 4,323,309, Cl. 336-319.000.
Tohyama, Yoshikuni: See—
  Kitajima, Tadayuki; and Tohyama, Yoshikuni, 4,323,308, Cl. 315-57.000.
Tokyo Eizai Laboratory Co., Ltd.: See—
  Usukura, Koji, 4,323,061, Cl. 128-90.000.
Tokyo Shibaura Denki Kabushiki Kaisha: See—
  Akashi, Kazuo, 4,323,891, Cl. 340-709.000.
  Ikeda, Yoshio, 4,323,170, Cl. 222-70.000.
  Nakagawa, Noboru; Oonishi, Toshiyuki; Tsutsumi, Masato; and Kawamoto, Akira, 4,322,952, Cl. 62-198.000.
  Nakamura, Norimitsu, 4,323,981, Cl. 364-749.000.
Tombaugh, Dennis; Martinsen, Nick; Symmons, Edgar B.; and Heinz, Lothar, to Siemens Medical Laboratories, Inc. Target assembly for a linear accelerator. 4,323,780, Cl. 250-419.000.
Tomic, Milorad: See—
  Sesterhenn, Lothar; and Tomic, Milorad, 4,323,438, Cl. 204-128.000.
Tominaga, Nobuyoshi; Kurai, Nobuyoshi; Ueno, Hajime; and Suzuki, Sadahide, to Yamaha Hatsudoki Kabushiki Kaisha. Structure for supporting a motorcycle engine. 4,323,135, Cl. 180-228.000.
Tomita, Tadashi: See—
  Sato, Tadashi; Hara, Toyoji; and Tomita, Tadashi, 4,323,787, Cl. 307-38.000.
Tone, Masatsugu: See—
  Bando, Niro; Miyata, Junji; Tone, Masatsugu; and Watanabe, Haruo, 4,323,137, Cl. 180-305.000.
Tonnesen, Ole: See—
  Moritz, Bertil; and Tonnesen, Ole, 4,323,870, Cl. 336-206.000.
Topfl, Rosemarie, to Ciba-Geigy Corporation. Mixtures of components, comprising epoxide/polyalkylene-polyaminoamide reaction products and acrylic-based and/or styrene-based polymers, their preparation and their use as paper sizes and textile treatment agents. 4,323,490, Cl. 523-409.000.
Toppy's Salons Limited: See—
  Macaulay, John G., 4,323,212, Cl. 248-51.000.
Toray Industries, Inc.: See—
  Chiba, Kazumasa; Egawa, Keiichi; and Muraki, Toshio, 4,323,639, Cl. 430-281.000.
Torrington Company, The: See—
  Stella, Leo; and Marola, America E., 4,323,287, Cl. 308-187.100.
Totten, David S.: See—
  Stikeleather, Larry F.; and Totten, David S., 4,323,126, Cl. 172-147.000.
Touyama, Tasuku: See—
  Schaer, Glenn R.; Touyama, Tasuku; Yamamoto, Teruaki; Honda, Keisuke; and Wada, Tatsuo, 4,323,441, Cl. 204-224.00R.
Townsend Engineering Company: See—
  Townsend, Ray T.; and Ladd, Floyd R., 4,322,871, Cl. 17-1.00F.
Townsend, Ray T.; and Ladd, Floyd R., to Townsend Engineering Company. Link cutter. 4,322,871, Cl. 17-1.00F.
Toyama, Teruhiko: See—
  Yoshimoto, Takeo; Inoue, Takayuki; Michiyama, Hideo; Harayama, Takeo; Morikama, Osamu; Hojo, Yoshikata; Baba, Takao; Toyama, Teruhiko; Ura, Masaaki; and Takasawa, Yoshio, 4,323,389, Cl. 71-124.000.
Toyoda, Shuhei: See—
  Motosugi, Katsuhiko; Takahashi, Hiroshi; Toyoda, Shuhei; and Tanahashi, Toshio, 4,323,038, Cl. 123-188.00M.
Toyota Jidosha Kogyo Kabushiki Kaisha: See—
  Akatsuka, Takao, 4,323,440, Cl. 204-195.00S.
  Kondo, Katsumi; Huwa, Yoshio; and Miyazaki, Syouzi, 4,323,257, Cl. 277-224.000.
  Morishita, Teru; Sugiyama, Matsuyoshi; and Suzuki, Toshikazu, 4,323,197, Cl. 239-703.000.
  Motosugi, Katsuhiko; Takahashi, Hiroshi; Toyoda, Shuhei; and Tanahashi, Toshio, 4,323,038, Cl. 123-188.00M.
  Taniguchi, Tomio, 4,323,271, Cl. 292-341.180.
Traux, Robert L. Apparatus for reducing electrostatic charge storage and EMI on dielectric surfaces. 4,323,946, Cl. 361-218.000.
Trempe, Michel. Apparatus for making truck bodies, unitized shells and panels. 4,323,413, Cl. 156-382.000.
Trinh, Toan: See—
  Compton, Donald B.; Lewis, William P.; and Trinh, Toan, 4,323,193, Cl. 239-44.000.
Triple Dee Electronics Inc.: See—
  Karbowski, James P., 4,323,847, Cl. 324-327.000.
Troitsky, Andrian P.: See—
  Batalin, Oleg E.; Dykman, Arkady S.; Osadchenko, Alexandr I.; Balkhanova, Galina F.; Belgorodsky, Izrail M.; Nevstruev, Vladimir I.; Radionov, Valery A.; Tulchinsky, Eduard A.; Belyaev, Valentin M.; Smolin, Jury I.; Breiman, Mark I.; Orlyansky, Vitaly V.; Zhirnov, Nikolai Y.; Galibin, Nikolai V.; Troitsky, Andrian P.; and Kovalenko, Vladimir V., 4,323,479, Cl. 252-432.000.
Troponwerke GmbH & Co. KG: See—
  Opitz, Wolfgang; Etscherberg, Eugen; Dell, Hans-Dieter; and Jacobi, Haireddin, 4,323,517, Cl. 260-455.00R.
Troyer, LeRoy S. Underground air tempering system. 4,323,113, Cl. 165-45.000.
TRW Inc.: See—
  Murch, Charles K.; and Hunter, Charles R., 4,322,946, Cl. 60-203.100.
  Tentarelli, Joseph A.; Wahlers, Richard L.; and Woods, John G., 4,323,875, Cl. 338-25.000.
Tsai, Shirley C.; and McIlvried, Howard G., III, to Gulf Research & Development Company. Coal Liquefaction process employing octahydrophenanthrene-enriched solvent. 4,323,447, Cl. 208-8.0LE.
Tsuboi, Hikotada: See—
  Oba, Masayuki; Kawamata, Motoo; Tsuboi, Hikotada; and Koga, Nobuhito, 4,323,662, Cl. 525-281.000.

Tsuchiya, Katsuhiro: See—
  Sawada, Susumu; Fukuda, Takashi; Tsuchiya, Katsuhiro; and Ito, Kazuo, 4,323,404, Cl. 148-148.000.
Tsuchiya, Yukio: See—
  Shimada, Kunihiko; and Tsuchiya, Yukio, 4,323,737, Cl. 179-115.50R.
Tsuge, Noboru; Kuwakado, Satosi; and Shimogawa, Toshiaki, to Nippon Soken, Inc. Safety seat-belt retractor. 4,323,205, Cl. 242-107.40A.
Tsugekawa, Takanori; Banba, Tosio; and Matsui, Masakuni, to Yanmar Diesel Engine Co., Ltd. Antechamber system diesel engine. 4,323,039, Cl. 123-275.000.
Tsujita, Yoshio: See—
  Tanzawa, Kazuhiko; Iwado, Seigo; Tsujita, Yoshio; Kuroda, Masao; and Furuya, Kouhei, 4,323,648, Cl. 435-125.000.
Tsukada, Toshihisa: See—
  Koike, Norio; Tsukada, Toshihisa; Ando, Haruhisa; Yamamoto, Hideaki; Hirai, Tadaaki; Kubo, Masaharu; Maruyama, Eiichi; Baji, Toru; Takasaki, Yukio; and Nagahara, Shusaku, 4,323,912, Cl. 357-31.000.
Tsumura, Haruhide: See—
  Nichimoto, Susumu; Shinoda, Isao; Nakamura, Shigeo; and Tsumura, Haruhide, 4,323,148, Cl. 194-100.00A.
Tsunashima, Eiichi, to Matsushita Electric Industrial Co., Ltd. Method of printing a spot pattern in a printed circuit board. 4,323,593, Cl. 427-97.000.
Tsushima, Susumu; Sendai, Michiyuki; and Shiraishi, Mitsuru, to Takeda Chemical Industries, Ltd. Process for preparing cephalosporins. 4,323,676, Cl. 544-22.000.
Tsutsumi, Masato: See—
  Nakagawa, Noboru; Oonishi, Toshiyuki; Tsutsumi, Masato; and Kawamoto, Akira, 4,322,952, Cl. 62-198.000.
Tulchinsky, Eduard A.: See—
  Batalin, Oleg E.; Dykman, Arkady S.; Osadchenko, Alexandr I.; Balkhanova, Galina F.; Belgorodsky, Izrail M.; Nevstruev, Vladimir I.; Radionov, Valery A.; Tulchinsky, Eduard A.; Belyaev, Valentin M.; Smolin, Jury I.; Breiman, Mark I.; Orlyansky, Vitaly V.; Zhirnov, Nikolai Y.; Galibin, Nikolai V.; Troitsky, Andrian P.; and Kovalenko, Vladimir V., 4,323,479, Cl. 252-432.000.
Turcsan, Istvan: See—
  Lugosi, Gyorgy; May, Antal S.; Bodnar, Janos; Turcsan, Istvan; Jelinek, Istvan; Somfai, Eva; and Simandi, Laszlo, 4,323,469, Cl. 252-182.000.
Turek, James A., to Panduit Corp. Connector fixture. 4,323,227, Cl. 269-254.00R.
Turner, Lloyd J.; Willey, Melvin G.; Tiegs, Sue M.; and Van Cleve, John E., Jr., to United States of America, Energy. Method for fracturing silicon-carbide coatings on nuclear-fuel particles. 4,323,198, Cl. 241-5.000.
Turner, Paul N.: See—
  Jenkins, Carl B., Jr.; Porenski, Harry S., Jr.; and Turner, Paul N., 4,323,084, Cl. 131-319.000.
Ube Industries, Ltd.: See—
  Nakagami, Kazuto; Yokoi, Shinji; Nishimura, Kenji; Nagai, Shigeki; Honda, Takeo; Oda, Kiroku; Fujii, Katsutoshi; Kobayashi, Ryuji; and Kojima, Mikio, 4,323,680, Cl. 544-293.000.
  Nishimura, Hiroshi; Monma, Tetsuo; Yoshida, Minoru; Kirimoto, Kazunari; Hayamizu, Yoshio; and Nagasawa, Toshio, 4,323,607, Cl. 219-213.000.
Uchida, Shinya, to Laurel Bank Machine Co., Ltd. Apparatus for counting sheets and discriminating different kinds thereof. 4,323,768, Cl. 235-92.05B.
Uchiyama, Haruo: See—
  Kawamura, Naoto; Masegi, Koichi; Hakamada, Isao; Uchiyama, Haruo; Kitamura, Takashi; and Ishii, Masaaki, 4,323,297, Cl. 350-6.800.
Uchiyama, Kenji: See—
  Sakata, Kenji; Yamada, Toshiaki; Uchiyama, Kenji; and Hasegawa, Yugo, 4,323,600, Cl. 427-202.000.
Uchiyama, Sadao: See—
  Koizumi, Satoru; Shimamura, Takashi; and Uchiyama, Sadao, 4,323,935, Cl. 360-73.000.
Ueda Giken Co., Ltd.: See—
  Ueda, Minoru, 4,322,917, Cl. 51-123.00R.
Ueda, Minoru, to Ueda Giken Co., Ltd. Double-head automatic grinding machine. 4,322,917, Cl. 51-123.00R.
Ueda, Setsuo; Yasuda, Takashi; Yamada, Tokuyoshi; and Kobayashi, Shigeki, to Sato Technical Research Laboratory Ltd.; and Itoh Metal Abrasive Co., Ltd. Process and apparatus for producing spherical particles and fibers with a specially fixed size from melts. 4,323,523, Cl. 264-8.000.
Uegaki, Masatoshi: See—
  Takahashi, Masatoshi; Kotera, Norio; Uegaki, Masatoshi; Miyaoka, Takashi; and Maegawa, Yuzo, 4,323,431, Cl. 203-72.000.
Uehara, Shuichi: See—
  Honda, Tsuneo; Nishina, Haruo; and Uehara, Shuichi, 4,323,391, Cl. 75-14.000.
Uejima, Hiroyuki; Hirai, Masahide; and Sakaida, Tsutomu, to Unitika Ltd. Process for removing heavy-metal ions from aqueous solution. 4,323,458, Cl. 210-688.000.
Ueno, Hajime: See—
  Tominaga, Nobuyoshi; Kurai, Nobuyoshi; Ueno, Hajime; and Suzuki, Sadahide, 4,323,135, Cl. 180-228.000.
Uhlig, Albert R., to Owens-Illinois, Inc. Apparatus for making plastic articles. 4,323,340, Cl. 425-325.000.
Uhlig, Albert R., to Owens-Illinois, Inc. Method for applying prefabricated parts to blow molded articles. 4,323,411, Cl. 156-245.000.
Umeki, Shinji, to TDK Electronics Co., Ltd. Process for producing hydrated iron oxide having silicon and phosphorus component. 4,323,464, Cl. 252-62.590.
Union Carbide Corporation: See—
  Ashworth, Robert W.; and Fu, Wallace Y., 4,323,516, Cl. 260-453.300.
  Dombek, Bernard D., 4,323,513, Cl. 260-410.600.
  Madden, Thomas H.; and Reash, Clair W., 4,323,818, Cl. 313-481.000.
  McCullough, Robert W.; and Hewett, Thomas A., 4,323,053, Cl. 126-441.000.
Union Metal Manufacturing Company: See—
  Garchinsky, John S., 4,323,028, Cl. 116-285.000.
Unisearch Limited: See—
  Green, Martin A., 4,323,719, Cl. 136-249.000.
Unisplay S.A.: See—
  Salam, Hassan P. A., 4,323,889, Cl. 340-373.000.
United Kingdom Atomic Energy Authority: See—
  Rosevear, Alan, 4,323,650, Cl. 435-174.000.
United States of America
  Air Force: See—
    Leiby, Clare C., Jr.; and Ezekiel, Shaoul, 4,323,860, Cl. 372-32.000.
    O'Connell, Robert M., 4,323,809, Cl. 310-313.00A.
    Shaw, Herbert J.; and Chodorow, Marvin, 4,323,310, Cl. 356-350.000.
    Shedd, Walter M.; and LaPierre, Donald C., 4,323,851, Cl. 328-72.000.
    Watkins, Grant H., 4,323,798, Cl. 307-491.000.
  Army: See—
    Gerlach, Horst W. A., 4,323,855, Cl. 331-56.000.
    Golabek, Robert S., 4,322,966, Cl. 73-7.000.
    Holmes, Allen B.; Gehman, Stacy E.; and Funke, Maurice F., 4,323,991, Cl. 367-83.000.
    McGarrity, James M.; and Boesch, Harold E., Jr., 4,323,842, Cl. 324-158.00R.
  Energy: See—
    Brau, Charles A.; Swenson, Donald A.; and Boyd, Thomas J., Jr., 4,323,857, Cl. 372-2.000.
    Lampe, Robert F., 4,322,880, Cl. 29-452.000.
    Masnari, Nino Ato Rensel, Walter B.; Robinson, Merrill G.; Solomon, David E.; Wise, Kensall D.; and Wuttke, Gilbert H., 4,323,420, Cl. 156-628.000.
    Turner, Lloyd J.; Willey, Melvin G.; Tiegs, Sue M.; and Van Cleve, John E., Jr., 4,323,198, Cl. 241-5.000.
    Winkelman, Paul F., 4,323,722, Cl. 174-43.000.
  Navy: See—
    Bond, Clarence D., 4,323,641, Cl. 430-370.000.
    Creighton, Robert A.; and Engel, Stephen M., 4,323,897, Cl. 343-18.00E.
    Dennis, Dwight L.; and Mannschreck, William A., 4,323,000, Cl. 89-35.00A.
    Fisher, Seth G.; and Kowalyshyn, Stephen, 4,323,025, Cl. 114-25.000.
    Fowler, Steven E.; Hennings, George N.; Hibbs, Joseph E.; Redmond, Stephen L.; and Swenson, Richard M., 4,322,998, Cl. 89-1.50D.
    Gilligan, William H., 4,323,518, Cl. 260-455.00B.
    Krall, Albert D.; McCorkle, John W.; Scarzello, John F.; and Syeles, Albert M., 4,323,900, Cl. 343-700.0MS.
    Lucas, Bruce T., 4,323,880, Cl. 340-146.3AC.
    Seitel, Steven C.; Porteus, James O.; and Faith, William N., 4,322,967, Cl. 73-15.600.
    Temes, Clifford L., 4,323,867, Cl. 333-239.000.
    Will, Albert S.; Schuchard, Earl A.; Buckley, John P.; Cioccio, Armand; Hetzler, John C.; Wolf, Sylvan; Jefferson, Donald E.; McQuitty, Jim B.; and Urick, Robert A., 4,323,988, Cl. 367-4.000.
U.S. Philips Corporation: See—
  Baudry, Hugues; Morhaim, Claude; and Bricout, Dominique, 4,323,652, Cl. 501-17.000.
  Beitler, Franz; and Neckamm, Harald, 4,323,936, Cl. 360-85.000.
  Boudault, Robert; and Pouzoullic, Gerard, 4,323,862, Cl. 332-[illegible]
  Chiecchi, Cesare, 4,322,884, Cl. 29-602.00R.
  Damen, Johannes P. M.; and Pistorius, Johannes A., 4,323,618, Cl. 428-212.000.
  de Waard, Peter J., 4,323,856, Cl. 372-46.000.
  Hoefert, Reimar, 4,323,978, Cl. 364-702.000.
  Kinghorn, John R., 4,323,892, Cl. 340-724.000.
  Vennix, Johannus A.; and Stapel, Cornelis, 4,323,817, Cl. 313-440.000.
United States Steel Corporation: See—
  Glassman, Donald; and Maier, Edward E., 4,323,430, Cl. 203-7.000.
United Technologies Corporation: See—
  Brown, Clyde O.; Breinan, Edward M.; and Kear, Bernard H., 4,323,756, Cl. 219-121.0LF.
  Fradenburgh, Evan A., 4,323,332, Cl. 416-134.00A.
  Paulis, George J.; and DeCarlo, Joseph D., 4,323,094, Cl. 137-[illegible]
  Peterson, Steven C.; Stevens, Leonard W.; and Tanrikut, Ibrahim S., 4,322,945, Cl. 60-39.320.

Unitika Ltd.: *See—*
Uejima, Hiroyuki; Hirai, Masahide; and Sakaida, Tsutomu, 4,323,458, Cl. 210-688.000.
University of California, The Regents of the: *See—*
Demetrescu, Mihai C., 4,323,079, Cl. 128-731.000.
O'Farrell, Patrick H., 4,323,439, Cl. 204-180.00G.
Theilen, Gordon H., 4,323,555, Cl. 424-88.000.
University of Delaware: *See—*
Stiles, Alvin B.; and Schrader, Glenn L., Jr., 4,323,482, Cl. 252-462.000.
University of Iowa Research Foundation: *See—*
Walker, D. David, 4,323,852, Cl. 330-9.000.
University of Liverpool: *See—*
Bornat, Alan, 4,323,525, Cl. 264-24.000.
University of Miami: *See—*
Monji, Nobuo; and Castro, Albert, 4,323,647, Cl. 435-7.000.
University Patents Inc: *See—*
Crockford, David R.; and Rhodes, Buck A., 4,323,546, Cl. 424-1.000.
Uno, Koichi; and Murakami, Shinichi, to Narumi China Corporation. Casing having a layer for protecting a semiconductor memory to be sealed therein against alpha particles and a method of manufacturing same. 4,323,405, Cl. 156-64.000.
UOP Inc.: *See—*
Engel, Dusan J., 4,323,713, Cl. 568-766.000.
Engel, Dusan J.; and Malloy, Thomas P., 4,323,715, Cl. 568-766.000.
Imai, Tamotsu, 4,323,712, Cl. 568-697.000.
Joy, George C., III, 4,323,542, Cl. 423-213.500.
Kwong, Gary W. Y., 4,323,709, Cl. 564-476.000.
Malloy, Thomas P.; and Engel, Dusan J., 4,323,714, Cl. 568-766.000.
Upjohn Company, The: *See—*
Johnson, Roy A.; Lincoln, Frank H.; and Pike, John E., 4,323,672, Cl. 542-421.000.
Johnson, Roy A.; Lincoln, Frank H.; and Pike, John E., 4,323,673, Cl. 542-426.000.
Johnson, Roy A.; Lincoln, Frank H.; and Pike, John E., 4,323,674, Cl. 542-426.000.
Ura, Masaaki: *See—*
Yoshimoto, Takeo; Inoue, Takayuki; Michiyama, Hideo; Harayama, Takeo; Morikama, Osamu; Hojo, Yoshikata; Baba, Takao; Toyama, Teruhiko; Ura, Masaaki; and Takasawa, Yoshio, 4,323,389, Cl. 71-124.000.
Urai, Muneharu, to Tachikawa Spring Co.; Ltd. Method of manufacturing seat cushions. 4,323,410, Cl. 156-228.000.
Urick, Robert A.: *See—*
Will, Albert S.; Schuchard, Earl A.; Buckley, John P.; Cioccio, Armand; Hetzler, John C.; Wolf, Sylvan; Jefferson, Donald E.; McQuitty, Jim B.; and Urick, Robert A., 4,323,988, Cl. 367-4.000.
USM Corporation: *See—*
Giebel, Gerhard, 4,322,863, Cl. 12-12.500.
USS Engineers and Consultants, Inc.: *See—*
Roberts, Michael A.; and Copperthwaite, Martin, 4,323,529, Cl. 264-69.000.
Usukura, Koji, to Tokyo Eizai Laboratory Co., Ltd. Stiff supporting bandage. 4,323,061, Cl. 128-90.000.
Utility Products, a division of Reliable Electric Co.: *See—*
Hickman, John S.; Olson, John B.; and Jeanson, Richard L., 4,323,290, Cl. 312-100.000.
Vachula, George M.: *See—*
Barnes, Richard M.; Vachula, George M.; and Bennett, Clarence L., Jr., 4,323,898, Cl. 343-5.0SA.
Barnes, Richard M.; and Vachula, George M., 4,323,899, Cl. 343-55.00A.
Vacval, Dusan M.: *See—*
Domes, E. A.; Taylor, Forrest C.; Vacval, Dusan M.; and Venere, Lawrence A., 4,323,279, Cl. 298-23.0DF.
Valcour Imprinted Papers, Inc.: *See—*
Collins, Frederick H., 4,323,528, Cl. 264-53.000.
Valdmann, Henri, to Thomson-CSF. Planar avalanche diode with a breakdown voltage between 4 and 8 volts. 4,323,909, Cl. 357-13.000.
Valmont Industries, Inc.: *See—*
Newbold, Don; and Sherwin, Owen W., 4,323,194, Cl. 239-177.000.
Valyi, Emery I. Apparatus for forming hollow plastic objects. 4,323,341, Cl. 425-526.000.
Van Cleve, John E., Jr.: *See—*
Turner, Lloyd J.; Willey, Melvin G.; Tiegs, Sue M.; and Van Cleve, John E., Jr., 4,323,198, Cl. 241-5.000.
van der Lely, Ary: *See—*
van der Lely, Cornelis; and van der Lely, Ary, 4,323,136, Cl. 180-271.000.
van der Lely, Cornelis; and van der Lely, Ary, to C. van der Lely N.V. Movement stopping safety device for agricultural machine. 4,323,136, Cl. 180-271.000.
van Dongeren, Jan P.: *See—*
de Kok, Johan; and van Dongeren, Jan P., 4,323,339, Cl. 425-199.000.
van Issum, Ernst J., to Monsanto Company. Carpets having pile of crimped and non-crimped nylon filaments. 4,323,612, Cl. 428-89.000.
Varma, Ravi K.; and Chao, Sam T., to E. R. Squibb & Sons, Inc. Steroid derivatives and their use in radioimmunoassays. 4,323,511, Cl. 260-397.450.
Vascor, Inc.: *See—*
Lentz, David J.; and Pollock, Elisabeth M., 4,323,358, Cl. 8-94.110.
Vasilos, Thomas: *See—*
Sellers, David J.; Rhodes, William H.; and Vasilos, Thomas, 4,323,545, Cl. 423-625.000.
Vayssie, Charles: *See—*
Bouillon, Claude; Vayssie, Charles; and Richard, Francoise, 4,323,549, Cl. 424-45.000.
Veaux, Jacques: *See—*
Masclet, Jean; and Veaux, Jacques, 4,323,001, Cl. 91-25.000.
Venere, Lawrence A.: *See—*
Domes, E. A.; Taylor, Forrest C.; Vacval, Dusan M.; and Venere, Lawrence A., 4,323,279, Cl. 298-23.0DF.
Vennix, Johannus A.; and Stapel, Cornelis, to U.S. Philips Corporation. Color display tube. 4,323,817, Cl. 313-440.000.
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Durandeau, Michel; Voisin, Norbert; and Verdier, Jean P., 4,323,884, Cl. 340-347.0DA.
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Vohr, John H., to General Electric Co. Thrust bearing cooling apparatus. 4,323,286, Cl. 308-160.000.
Voigt, John E. Article crushing device. 4,323,009, Cl. 100-240.000.
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Voss, Gunther; and Gruber, Peter, to Boehringer Ingelheim GmbH. Method of lubricating compression tools of molding machines. 4,323,530, Cl. 264-109.000.
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Walsh, Michael D., III. Vehicle hoisting tow trailer. 4,323,328, Cl. 414-563.000.
Wangard, William; and Starkey, David, to Norlin Industries, Inc. Alternating repeat keying signal generator. 4,322,996, Cl. 84-1.240.
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Watanabe, Masanao; Naito, Keiichi; Odajima, Tooru; and Fujiwara, Yoshio, to Sony Corporation. Non-flammable adhesive compositions. 4,323,659, Cl. 525-108.000.
Watkins, Grant H., to United States of America, Air Force. Fast operating switchable operational amplifier driven circuits. 4,323,798, Cl. 307-491.000.
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Weick, Heinz H., to Herkules AG. Bottle closure. 4,323,165, Cl. 215-320.000.
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Wheaton, Frank H., III; and Houghton, Curtis C., to Wheaton Industries. Bottle neck finish inspection apparatus. 4,323,158, Cl. 209-524.000.
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Whitney, Douglas A., to Ford Motor Company. Multiple stage fluid pressure governor having two break points. 4,323,093, Cl. 137-56.000.
Whitney, Sherwood W. Self clearing raking attachment for mower. 4,322,936, Cl. 56-16.100.
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Wiggins, Richard H.; and Henderson, Alva E., to Texas Instruments Incorporated. Speech synthesis system with alternative coded or uncoded parameter formats. 4,323,732, Cl. 179-1.0SM.
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Williams, Patrick Y. Folding frameworks and wheel-chairs. 4,323,133, Cl. 180-65.00R.
Willson, James R.; Conway, William H.; and Smith, William N., to Robertshaw Controls Company. Control system and control device for controlling a heating unit and method of making and operating the same. 4,323,764, Cl. 219-497.000.
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Wilson, Lee E., to E-Systems, Inc. Rotary pipe joint. 4,323,268, Cl. 285-41.000.
Wilson, Robert M., to Jump for Joy Ltd. Jumping board. 4,323,231, Cl. 272-65.000.
Winkelman, Paul F., to United States of America, Energy. Overhead electric power transmission line jumpering system for bundles of five or more subconductors. 4,323,722, Cl. 174-43.000.
Winter, Robert A., to Sencore, Inc. Ohm meter with automatic lead resistance compensation. 4,323,972, Cl. 364-482.000.
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Wood, Thomas J. Apparatus for dispensing mastic material. 4,323,174, Cl. 222-146.00H.
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Woodhouse, Richard G.; and Williams, Malcolm, to Lucas Industries Limited. Fuel control system for an internal combustion engine. 4,323.042, Cl. 123-436.000.
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Wossner, Gunter; and Maurer, Helmut, to Robert Bosch GmbH. Control apparatus for a fuel supply system for mixture-compressing, externally ignited internal combustion engines. 4,322,947, Cl. 60-285.000.
Wu, Chin T., to RCA Corporation. Hardware interpretive mode microprocessor. 4,323,963, Cl. 364-200.000.
Wunner, Roland, to LIBA Maschinenfabrik GmbH. Warp knitting machine arrangement. 4,322,956, Cl. 66-203.000.
Wurster, James C., to Super Products Corporation. Sewer and catch basin cleaner. 4,322,868, Cl. 15-302.000.
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Wykes, John S.; and Adsley, Ian, to Coal Industry (Patents) Limited. Radiation detectors supported by resilient optical coupler. 4,323,778, Cl. 250-367.000.
Wyner, Elliot F.; and Lowry, Elvery D., to GTE Service Corporation. Electric discharge lamp. 4,323,812, Cl. 313-198.000.
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Xuan, Mai T.; Jufer, Marcel; and Pittet, Andre, to Societe Suisse pour l'Industrie Horlogere Management Services S.A. Movement detector for a stepping motor. 4,323,834, Cl. 318-696.000.
Yakematsu, Yoshiyuki, to Fuji Koeki Corporation. Electric flash device. 4,323,822, Cl. 315-241.00P.
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Yoshizawa, Naomi; and Terashima, Akira, to Pilot Mannenhitsu Kabushi Kaisha. Automatic transmission or recording or transmission and reception control system. 4,323,999, Cl. 369-19.000.
Young, James W., to Dresser Industries, Inc. Spring adjustment system for drill string tool. 4,323,128, Cl. 175-57.000.
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Young, Richard N.; and Williams, James A., to Dana Corporation. Apparatus for controlling a two-speed shift motor. 4,323,827, Cl. 318-1.000.
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Ypsilantis, John; and Ypsilantis, Anna. Multi-segment alphanumeric display for Greek and English characters. 4,323,893, Cl. 340-756.000.
Yuasa Battery Company Limited: *See*—
Iwabuchi, Suminobu; and Matsui, Kazumasa, 4,323,620, Cl. 428-215.000.
Yvard, Marcel; Decuyper, Jean-Claude; and Beduchaud, Michel, to Compagnie Industrielle des Telecommunications Cit-Alcatel. Bar for printing an image. 4,323,927, Cl. 358-296.000.
Zabel, Bernd G., to Corvinus & Roth GmbH. Apparatus and process for detecting free chlorine. 4,323,092, Cl. 137-5.000.
Zadorozhny, Jury G.: *See*—
Alekhin, Stanislav A.; Kuznetsov, Eduard B.; Bakhir, Vitold M.; Klimenko, Vladimir I.; and Zadorozhny, Jury G., 4,323,445, Cl. 204-301.00R.
Zampini, Anthony, to Monsanto Company. Tube sheets for permeators. 4,323,453, Cl. 210-321.100.
Zed Instruments Limited: *See*—
Zollman, Peter M.; and Doyle, Keith G., 4,323,928, Cl. 358-299.000.

Zeilstra, Jacobus J.; de Klein, Willem J.; and Bik, Joannes D., to Akzona Incorporated. Novel branched-chain monoalcohols and derivatives thereof, lubricant compositions for polymers and wax compositions in which these novel products are incorporated. 4,323,495, Cl. 524-156.000.
Zell, Reinhard: *See*—
Lukac, Teodor; Widmer, Erich; and Zell, Reinhard, 4,323,711, Cl. 568-347.000.
Zelt, Edward J., to Stackpole Corporation, The. Permanent magnet field motor with radio frequency interference suppressing capacitor. 4,323,804, Cl. 310-72.000.
Zenith Radio Corporation: *See*—
Engel, Christopher M.; and Reneau, Daniel L., 4,323,917, Cl. 358-28.000.
Flasza, Michael D., 4,323,924, Cl. 358-188.000.
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Zhirnov, Nikolai Y.: *See*—
Batalin, Oleg E.; Dykman, Arkady S.; Osadchenko, Alexandr I.; Balkhanova, Galina F.; Belgorodsky, Izrail M.; Nevstruev, Vladimir I.; Radionov, Valery A.; Tulchinsky, Eduard A.; Belyaev, Valentin M.; Smolin, Jury I.; Breiman, Mark I.; Orlyansky, Vitaly V.; Zhirnov, Nikolai Y.; Galibin, Nikolai V.; Troitsky, Andrian P.; and Kovalenko, Vladimir V., 4,323,479, Cl. 252-432.000.
Zils, James A.: *See*—
Hess, George M.; and Zils, James A., 4,323,015, Cl. 105-199.0CB.
Zimmerman, Charles J., to Carrier Corporation. Flow control apparatus. 4,323,116, Cl. 165-97.000.
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Speranza, George P.; and Zimmerman, Robert L., 4,323,658, Cl. 521-174.000.
Zimmermann, Wolfgang; and Harreus, Albrecht, to Hoechst Aktiengesellschaft. Plasticizer containing polyvinyl alcohol granules. 4,323,492, Cl. 524-388.000.
Zingale, Salvatore L. Board game employing chance-taking means. 4,323,248, Cl. 273-236.000.
Zirn, Rudolf F.; and Karlsen, Erich. Insulating container for cooking food. 4,323,167, Cl. 220-408.000.
Zoecon Corporation: *See*—
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Zollman, Peter M.; and Doyle, Keith G., to Zed Instruments Limited. Copying process for producing a seamless copy from an unjointed original. 4,323,928, Cl. 358-299.000.
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LIST OF REISSUE PATENTEES

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PATENTS WERE ISSUED ON THE 6TH DAY OF APRIL, 1982

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Automotive Products Limited: *See*—
Jenkins, Stanley F. N.; Fairclough, Roy; Howard, Brian A.; and Miley, Frederick, Re. 30,896, Cl. 244-104.0FP.
Butera, Anthony W. Filter paper dispenser. Re. 30,895, Cl. 225-42.000.
Cantrell, Cyrus D.; Carbone, Robert J.; and Cooper, Ralph, to United States of America, Energy. Infrared laser system. Re. 30,898, Cl. 307-426.000.
Carbone, Robert J.: *See*—
Cantrell, Cyrus D.; Carbone, Robert J.; and Cooper, Ralph, Re. 30,898, Cl. 307-426.000.
Cooper, Ralph: *See*—
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Fairclough, Roy: *See*—
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Hikosaka, Takashi: *See*—
Yamamoto, Shunji; Imaizumi, Koji; and Hikosaka, Takashi, Re. 30,897, Cl. 355-3.00R.
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Jenkins, Stanley F. N.; Fairclough, Roy; Howard, Brian A.; and Miley, Frederick, Re. 30,896, Cl. 244-104.0FP.
Imaizumi, Koji: *See*—
Yamamoto, Shunji; Imaizumi, Koji; and Hikosaka, Takashi, Re. 30,897, Cl. 355-3.00R.
Jenkins, Stanley F. N.; Fairclough, Roy; Howard, Brian A.; and Miley, Frederick, to Automotive Products Limited. Aircraft undercarriage suspension. Re. 30,896, Cl. 244-104.0FP.
Johns-Manville Corporation: *See*—
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Miley, Frederick: *See*—
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Minolta Camera Kabushiki Kaisha: *See*—
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Puchosic, John E., to Johns-Manville Corporation. Method of vacuum packaging compressible materials and apparatus. Re. 30,893, Cl. 53-436.000.
Schuman, Mark. Oscillating piston apparatus. Re. 30,894, Cl. 60-520.000.
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Yamamoto, Shunji; Imaizumi, Koji; and Hikosaka, Takashi, to Minolta Camera Kabushiki Kaisha. Electrophotographic copying apparatus with gas evacuating means. Re. 30,897, Cl. 355-3.00R.

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Abbott Laboratories: *See*—
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Acero, Steve A.; and Rougeau, Edward L. Ventilating hood for an electroplating tank. 263,737, 4-6-82, Cl. D23-151.000.
Adkinson, Joseph E. Etagere or the like. 263,666, 4-6-82, Cl. D6-[illegible]
AGFA-Gevaert Aktiengesellschaft: *See*—
Schlagheck, Norbert; Schultes, Herbert; and Rubner, Karlheinz, 263,717, Cl. D16-1.000.
Aktieselskabet Brodrene Hartmann: *See*—
Schroder, Jorgen, 263,680, Cl. D9-341.000.
Albert, Thomas W., to American Hospital Supply Corp. Dental hand-piece wrench. 263,742, 4-6-82, Cl. D24-12.000.
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Albert, Thomas W., 263,742, Cl. D24-12.000.
Anderson, Gerald R. Rotating modular album holder and supporting base therefor. 263,665, 4-6-82, Cl. D6-185.000.
Andersson, Viktor. Playing spinning disc indicator. 263,726, 4-6-82, Cl. D21-[illegible]
Ando, Shoichi. Transmitter. 263,709, 4-6-82, Cl. D14-95.000.
Apex Foot Products Corp.: *See*—
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Arendt, Gernot, to Semperit Aktiengesellschaft. Tire. 263,694, 4-6-82, Cl. D12-143.000.
Asano, Masakatsu, to General Corporation, The. Display apparatus or similar article. 263,710, 4-6-82, Cl. D14-106.000.
Baer, William F. Vibratory tumbler. 263,713, 4-6-82, Cl. D15-124.000.
Bash, Charles M., to Prince Manufacturing. Tennis racket. 263,729, 4-6-82, Cl. D21-212.000.
Bean Station Furniture Company, The: *See*—
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Bechtel, Daniel L. Rifle telescope mount. 263,732, 4-6-82, Cl. D22-7.000.
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Booth, Mark A. Table top golf game board. 263,725, 4-6-82, Cl. D21-27.000.
Bore, Bjarne J. Animal feeder. 263,763, 4-6-82, Cl. D30-15.000.
Borichevsky, Donald J., to Telescope Folding Furniture Co., Inc., The. Sling chair. 263,654, 4-6-82, Cl. D6-41.000.
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Chan, Ying H., to Starry Electric Manufactory Ltd. Food mixer power unit. 263,671, 4-6-82, Cl. D7-158.000.
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Claman, Mike T., to Lewittes Furniture Enterprises, Inc. Loveseat. 263,655, 4-6-82, Cl. D6-57.000.
Clark, Charles A. Paint brush extension clamp. 263,677, 4-6-82, Cl. D8-396.000.
Cohen, Arthur B.: *See*—
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Cohen, Francine H.; and Cohen, Arthur B. Mattress enclosure. 263,659, 4-6-82, Cl. D6-83.000.
Colley, Shirley M. Overshoe. 263,642, 4-6-82, Cl. D2-271.000.
Collins, Scott J., to Georgia-Pacific Corporation. Napkin dispenser. 263,669, 4-6-82, Cl. D7-72.000.
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Dallaire, Raymond. Window component extrusion. 263,751, 4-6-82, Cl. D25-74.000.
Dallaire, Raymond. Window component extrusion. 263,752, 4-6-82, Cl. D25-74.000.
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Dallaire, Raymond. Window component extrusion. 263,755, 4-6-82, Cl. D25-74.000.
Dallaire, Raymond. Window component extrusion. 263,756, 4-6-82, Cl. D25-74.000.
Dallaire, Raymond. Window component extrusion. 263,757, 4-6-82, Cl. D25-74.000.
Dallaire, Raymond. Window component extrusion. 263,758, 4-6-82, Cl. D25-74.000.
Dallaire, Raymond. Window component extrusion. 263,759, 4-6-82, Cl. D25-74.000.
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Dean, Dennis N., to Modesett, Norman L. Fuel injection nozzle. 263,711, 4-6-82, Cl. D15-5.000.
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Franzblau, Abraham. Lamp base. 263,762, 4-6-82, Cl. D26-93.000.
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Fukushima, Hisao; and Hirooka, Junji, 263,704, Cl. D14-53.000.
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12 :	4,322,936
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	4,323,673

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

	4,323,674		4,323,206		4,323,155	39 :	4,322,899		4,323,196	48 :	Re.30,898
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28 :	4,322,963		4,323,739		4,323,640		4,323,412		4,323,561		4,323,245
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	4,323,686		4,323,992		4,323,968		4,323,703		4,323,830	54 :	4,323,513
	4,323,690	35 :	4,323,857		4,323,986		4,323,751		4,323,875	55 :	4,322,868
	4,323,809	[illegible] :	[illegible]	37 :	4,323,019		4,323,753		4,323,878		4,322,904
	4,323,821		4,322,865		4,323,083		4,323,754		4,323,932		4,322,935
	4,323,871		4,322,883		4,323,099		4,323,785	45 :	4,322,920		4,322,953
31 :	4,323,194		4,322,888		4,323,188		4,323,818		4,323,139		4,323,117
	4,323,313		4,322,893		4,323,231		4,323,835		4,323,171		4,323,126
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	4,323,011		4,323,027		4,323,573		4,323,203	47 :	4,322,908		4,323,356
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	4,323,091		4,323,105		4,323,790						
	4,323,158		4,323,109	38 :	4,323,414	41 :	4,323,154		[illegible]		4,323,874

DESIGN PATENTS

01 :	263,764		263,692		263,672		263,744		263,685		263,690
04 :	263,648		263,711		263,735	25 :	263,684		263,722	41 :	263,697
	263,649		263,713	12 :	263,747		263,719		263,723	42 :	263,734
	263,650		263,721		263,762	26 :	263,749		263,729	44 :	263,686
06 :	263,644		263,727	17 :	263,678	27 :	263,668	36 :	263,655	48 :	263,675
	263,646		263,737		263,715		263,724		263,688		263,728
	263,647		263,739		263,742	28 :	263,652		263,716		263,732
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	263,677		263,748	19 :	263,664		263,685	39 :	263,653	50 :	263,654
	263,679		263,761	24 :	263,666	31 :	263,725		263,693	55 :	263,669
	263,681	08 :	263,691		263,689	34 :	263,656		263,699		263,746
	263,682	09 :	263,645		263,700		263,659	40 :	263,665		

PLANT PATENTS

48 :	4,836	51 :	4,835								

DEFENSIVE PUBLICATIONS APPLICATIONS

[Notice of Dec. 16, 1969, 869 O.G. 687]

06 :	T101,701	47 :	T101,702								

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OFFICIAL GAZETTE of the UNITED STATES PATENT and TRADEMARK OFFICE

April 13, 1982 — Volume 1017 — Number 2

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT member countries and the most recent PCT rule changes see the notices appearing in the Official Gazette at 1001 O.G. 14 on Dec. 9, 1980 and at 1012 O.G. 20 on Nov. 17, 1981.

Note that the international fees have been increased as of Jan. 1, 1982. The current schedule of fees is as follows:

Transmittal fee	$ 35.00
Search fee	300.00
International Fees	
Basic Fee (first 30 pages)	270.00
Basic Supplemental Fee (for each sheet over 30)	6.00
Designation Fees	65.00

GERALD J. MOSSINGHOFF,
Commissioner of Patents and Trademarks.

Jan. 19, 1982.

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

3,871,367, Re. S.N. 332,166, Filed Dec. 18, 1981, Cl. 128/78, PELVIC BRACE, Marion E. Miller, Owner of Record: *Inventor*, Attorney or Agent: Vern L. Oldham, et al., Ex. Gp.: 335

4,044,193, Re. S.N. 335,201, Filed Dec. 28, 1981, Cl. 429/40, FINELY PARTICULATED COLLOIDAL PLATINUM COMPOUND AND SOL FOR PRODUCING THE SAME AND METHOD OF PREPARATION OF FUEL CELL ELECTRODES AND THE LIKE EMPLOYING THE SAME, Henry G. Petrow, et al., Owner of Record: *Prototech Co., Newton Highlands, Mass.*, Attorney or Agent: Nelson H. Shapiro, et al., Ex. Gp.: 111

4,226,300, Re. S.N. 315,221, Filed Oct. 26, 1981, Cl. 182/2, SELF PROPELLED AND EXTENSIBLE BOOM LIFT, Rallie P. Rallis, et al., Owner of Record: *Mark Industries, Carson, Calif.*, Attorney or Agent: Robert R. Thornton, et al., Ex. Gp.: 354

4,240,895, Re. S.N. 309,358, Filed Oct. 7, 1981, Cl. 204/290, RANEY ALLOY COATED CATHODE FOR CHLOR-ALKAI CELLS, Thomas J. Gray, Owner of Record: *Olin Corp., New Haven, Conn.*, Attorney or Agent: Arthur E. Oaks, Ex. Gp.: 116

4,277,528, Re. S.N. 344,403, Filed Feb. 1, 1982, Cl. 128/192, CERAMIC SUBSTRATE, Takao Doi, et al., Owner of Record: *Inventors*, Attorney or Agent: W. Robert Spensley, et al., Ex. Gp.: 164

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b).

3,854,045, Reexam. No. 90/000,174, Requested: Mar. 12, 1982, Cl. 250/341, MEASURING THE DUST CONCENTRATION IN AIR, Hans Breuer, et al., Owner of Record: *Bergwerksverband GmbH, Essen, Germany*, Attorney or Agent: None, Ex. Gp.: 252, Requester: Horst Schumacher, Essen, Germany

4,021,990, Reexam. No. 90/000,173, Requested: Mar. 11, 1982, Cl. 52/714, VENEER ANCHOR AND DRY WALL CONSTRUCTION SYSTEM AND METHOD, Bernard J. Schwalberg, Owner of Record: *Hohmann Enterprises, Inc., Birmingham, Ala.*, Attorney or Agent: Philip D. Amins, Ex. Gp.: 350, Requester: Dur-O-Wal, Inc., Northbrook, Ill.

Patent Cooperation Treaty Update

Reminder Regarding Fee Increase Effective Jan. 1, 1982

The international fee amounts were increased by the PCT Assembly effective Jan. 1, 1982. These amounts are:

International Basic Fee (for the first 30 sheets of an international application)	$270.00
Basic Supplemental Fee (for each sheet over 30)	6.00
International Designation Fee (for each State for which a national patent is sought, or for each group of States for which the same regional patent is sought	65.00

The Search fee and Transmittal fee remain at $300 and $35, respectively.

Accession by Sri Lanka and Listing of PCT Member States

On Nov. 26, 1981 Sri Lanka deposited its instrument of accession to the Patent Cooperation Treaty (PCT) with the World Intellectual Property Organization. Therefore, according to PCT Article 63 (2), Sri Lanka may be designated in international applications filed on and after Feb. 26, 1982.

List of PCT Member States

State	Ratification or Accession	Date of Ratification or Accession	Date From Which State May Be Designated
(1) Central African Republic*	Accession	15 September 1971	01 June 1978
(2) Senegal*	Ratification	08 March 1972	01 June 1978
(3) Madagascar	Ratification	27 March 1972	01 June 1978
(4) Malawi	Accession	16 May 1972	01 June 1978
(5) Cameroon*	Accession	15 March 1973	01 June 1978
(6) Chad*	Accession	12 February 1974	01 June 1978
(7) Togo*	Ratification	28 January 1975	01 June 1978
(8) Gabon*	Accession	06 March 1975	01 June 1978
(9) United States of America	Ratification	26 November 1975	01 June 1978
(10) Germany, Fed. Rep. of**	Ratification	19 July 1976	01 June 1978
(11) Congo*	Accession	08 August 1977	01 June 1978
(12) Switzerland**	Ratification	14 September 1977	01 June 1978
(13) United Kingdom**	Ratification	24 October 1977	01 June 1978
(14) France**	Ratification	25 November 1977	01 June 1978
(15) Soviet Union	Ratification	29 December 1977	01 June 1978
(16) Brazil	Ratification	09 January 1978	01 June 1978
(17) Luxembourg**	Ratification	31 January 1978	01 June 1978
(18) Sweden**	Ratification	17 February 1978	01 June 1978
(19) Japan	Ratification	01 July 1978	01 October 1978
(20) Denmark	Ratification	01 September 1978	01 December 1978
(21) Austria**	Ratification	23 January 1979	23 April 1979
(22) Monaco	Ratification	22 March 1979	22 June 1979
(23) Netherlands**	Ratification	10 April 1979	10 July 1979
(24) Romania	Accession	23 April 1979	23 July 1979
(25) Norway	Ratification	01 October 1979	01 January 1980
(26) Liechtenstein**	Accession	19 December 1979	19 March 1980
(27) Australia	Accession	31 December 1979	31 March 1980
(28) Hungary	Ratification	27 March 1980	27 June 1980
(29) Democratic People's Republic of Korea (N. Korea)	Accession	08 April 1980	08 July 1980
(30) Finland	Ratification	01 July 1980	01 October 1980
(31) Belgium**	Ratification	14 September 1981	14 December 1981
(32) Sri Lanka	Accession	26 November 1981	26 February 1982

*Members of African Intellectual Property Organization (OAPI) regional patent system. Only regional patent protection is available for OAPI Member States. A designation of any State is an indication that all OAPI States have been designated. Note: only one designation fee is due regardless of the number of OAPI member states designated.

**Members of European Patent Convention (EPC) regional patent system. Either national patents or European patents for member States are available through PCT, except for France and Belgium, for which only European patents are available if PCT is used. If regional protection is desired for one or more States, the indication "regional patent" must follow the designation of the State or States. Note: only one designation fee is due if the regional patent protection is sought for several States.

GERALD J. MOSSINGHOFF,
Commissioner of Patents and Trademarks.

Mar. 12, 1982.

Foreign Patent Data and Services

The United States Patent and Trademark Office (PTO) has entered into a one-year exchange agreement with Derwent, Ltd. for 1982 whereby, in exchange for special compilations of patent documents, the PTO obtains an English-language abstract for each "basic" disclosure of invention contained in newly issuing foreign patent documents shortly after publication. Also, to facilitate association of each abstract with the appropriate patent document and to expedite subsequent processing of the disclosures to the classified search file, the PTO obtains, along with the abstracts, a magnetic tape record of the bibliographic data which relates to substantially all patent documents issuing worldwide. The agreement also provides for receipt by the PTO of certain other distinct services and materials.

The PTO would welcome proposals from other interested suppliers to provide the same or equivalent materials and services. Proposals received by July 1, 1982, will be evaluated and considered by the Office for implementation beginning Jan. 1, 1983.

Additional information, including copies of the PTO-Derwent agreement, may be obtained from:

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GERALD J. MOSSINGHOFF,
Commissioner of Patents and Trademarks.

Mar. 15, 1982.

Registration to Practice

The following list contains the names of persons applying for registration to practice before the United States Patent and Trademark Office. Information tending to affect the eligibility of said applicants on moral, ethical or other grounds, should be furnished the

Commissioner of Patents and Trademarks on or before Apr. 30, 1982.

Cacciapaglia, Frank Jr., 3154 Patrick Henry Dr., Falls Church, Va. 22044

Fisher, Dean T., 6924 Perivale Park Rd., Toledo, Ohio 43617

Fox, Samuel L., 3509 Patterson St., N.W., Washington, D.C. 20015

Granger, Theodore A., 2910 Dogwood Dr., Henderson, N.C. 27536

Green, Bruce M., Barrigar & Oyen, 130 Slater St., Ottawa, Canada KIP 6E2

Halper, Robert, 3118 Calverton Blvd., Beltsville, Md. 20705

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Hopkins, John E., Barrigar & Oyen, 130 Slater St., Ottawa, Canada KIP 6E2

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Michell, Robert W., 7932 Maryknoll Ave., Bethesda, Md. 20817

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Phillips, Roger F., 620A Commercial Ave., Ridgecrest, Calif. 93555

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Savit, Lester J., 2600 S. 16th St., Unit 720, Arlington, Va. 22204

Slater, Robert W., 3906 Cherry Valley Rd., Woodstock, Ill. 60098

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Taylor, Hosea E., Jr., 1749 N. Portal Dr., N.W., Washington, D.C. 20012

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Zorzoli, Franco, Bugnion S.p.A., Via Carlo Parini 81, Milano, Italy 21059

Mar. 16, 1982.

DONALD J. QUIGG,
Chairman, Committee on Enrollment.

PATENT NOTICES

Certificates of Correction for the Week of Apr. 13, 1982

D. 261,534,	4,276,611	4,296,017	4,308,058
3,610,803	4,278,527	4,296,073	4,308,414
3,739,930	4,279,279	4,296,613	4,308,604
4,097,261	4,279,539	4,297,198	4,308,740
4,184,048	4,280,719	4,297,467	4,308,815
4,207,546	4,281,073	4,297,983	4,308,905
4,221,154	4,282,302	4,298,461	4,308,985
4,244,290	4,283,139	4,298,629	4,309,276
4,244,557	4,284,263	4,298,693	4,309,281
4,244,658	4,284,502	4,299,212	4,309,313
4,245,851	4,284,729	4,299,213	4,309,601
4,246,497	4,284,864	4,299,404	4,309,833
4,251,398	4,285,317	4,299,749	4,309,874
4,252,820	4,286,110	4,299,837	4,310,434
4,252,941	4,288,421	4,299,977	4,310,723
4,253,417	4,289,278	4,300,011	4,311,273
4,253,867	4,289,446	4,300,073	4,312,138
4,256,747	4,289,642	4,300,377	4,312,792
4,258,590	4,289,775	4,300,405	4,312,845
4,259,350	4,289,866	4,300,500	4,312,894
4,260,414	4,289,893	4,301,396	4,313,074
4,265,039	4,289,956	4,302,500	4,313,552
4,265,345	4,290,209	4,303,115	4,313,660
4,265,793	4,290,750	4,303,417	4,314,250
4,268,620	4,291,333	4,304,259	4,314,284
4,269,651	4,292,104	4,304,620	4,314,445
4,270,959	4,292,604	4,304,900	4,314,876
4,270,985	4,292,807	4,304,961	4,315,177
4,271,921	4,293,595	4,304,997	4,315,319
4,272,454	4,294,573	4,305,905	4,315,404
4,275,043	4,295,289	4,306,962	
4,275,245	4,295,855	4,307,290	
4,275,792	4,295,930	4,307,354	

Disclaimers

4,061,770.—*Alfred F. Marks,* Mentor, Ohio. FLOWABLE, AQUEOUS PESTICIDE COMPOSITIONS OF IMPROVED ACTIVITY. Patent dated Dec. 6, 1977. Disclaimer filed Feb. 18, 1982, by the assignee, *Diamond Shamrock Corp.*

Hereby enters this disclaimer to claims 1-7, inclusive of said patent.

4,244,906.—*Karl-Heinz Heinemann; Georg Michalczyk; Neukirchen-Vluyn* and *Gerd Ripkens,* Kamp-Lintfort, Germany. PROCESS FOR MAKING PHENOL-ALDEHYDE RESINS. Patent dated Jan. 13, 1981. Disclaimer filed Feb. 8, 1982, by the assignee, *Deutsche Texaco Aktiengesellschaft.*

Hereby enters this disclaimer to claims 1 to 14, inclusive of said patent.

4,301,155.—*Larry L. Larson,* Concord, Calif. INSECTICIDAL SYNERGISTIC MIXTURES OF O,O-DIETHYL-O-(3,5,6-TRICHLORO-2-PYRIDINYL)-PHOSPHOROTHIOATE AND 2,2,3,3-TETRAMETHYLCYCLOPROPANECARBOXYLIC ACID: CYANO(3-PHENOXYPHENYL)METHYL ESTER. Patent dated Nov. 17, 1981. Disclaimer filed Jan. 28, 1982, by the assignee, *The Dow Chemical Co.*

Hereby enters this disclaimer to claims 1-5 and 7 of said patent.

Dedication

Des. 254,357.—*Gregory M. Fehn,* Maumee, Ohio. BOTTLE. Patent dated Mar. 4, 1980. Dedication filed Dec. 1, 1981, by the assignee, *Owens-Illinois, Inc.*

Hereby dedicates to the Public the entire term of said patent.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Birmingham Public Library	(205) 254-2555
Arizona	Tempe: Science Library, Arizona State University	(602) 965-7607
California	Los Angeles Public Library	(213) 626-7555 Ext. 273
	Sacramento: California State Library	(916) 322-4572
	Sunnyvale: Patent Information Clearinghouse*	(408) 738-5580
Colorado	Denver Public Library	(303) 573-5152 Ext. 222
Delaware	Newark: University of Delaware	(302) 738-2238
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4519
Illinois	Chicago Public Library	(312) 269-2814
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6552
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214, 215
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7814
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 930-0850
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1321**
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 226
South Carolina	Charleston: Medical University of South Carolina	(803) 792-2372
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 528-2957
Texas	Dallas Public Library	(214) 748-9071
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

*Collection organized by subject matter.

**Call only between the hours of 10:00 a.m. and 5:00 p.m.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF March 6, 1982

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal-lurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	6-23-80
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	1-04-80
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthdontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	3-04-81
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	3-02-81
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufac-ture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	12-08-80
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—S. W. ENGLE, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	6-18-80
SPECIAL LAWS ADMINISTRATION, GROUP 220—KENNETH L. CAGE, Director Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Op-tics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy, Rocket Fuels; Special, Fuel, Explosive and Thermic Composi-tions; Thermal and Photoelectric Batteries.	7-09-80
INFORMATION TRANSMISSION, STORAGE, AND RETRIEVAL, GROUP 230—EARL LEVY, Director Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	4-17-80
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240—G. M. FORLENZA, Director Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling; Shaft; Impellers; Rotary Fluid Motors.	2-26-79
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	11-26-79
DESIGN, GROUP 290—KENNETH L. CAGE, Director Industrial Arts; Household, Personal and Fine Arts.	5-05-80
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprin-kling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	6-30-80
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—M. M. NEWMAN, Director Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	7-14-80
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. AEGERTER, Director Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Infor-mation Dissemination.	5-06-80
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Gener-ation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	12-11-79
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—A. L. SMITH, Director Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Miscel-laneous Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	6-02-80

Expiration of patents: The patents within the range of numbers indicated below expire during March 1982, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents .... Numbers 3,171,131 to 3,176,313, inclusive

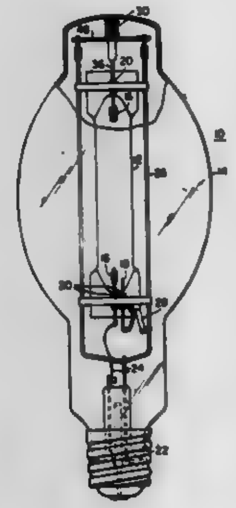
Plant Patents .... Numbers 2,486 to 2,489 inclusive

REEXAMINATIONS

APRIL 13, 1982

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination

B1 4,032,816 (3rd)
SAFETY SWITCH WHICH RENDERS HID LAMP INOPERATIVE ON ACCIDENTAL BREAKAGE OF OUTER ENVELOPE
Ferdinand Rokosz, Pompton Plains, N.J., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Reexamination Request No. 90/000,029, Jul. 16, 1981.
Reexamination Certificate for Patent No. 4,032,816, issued Jun. 28, 1977, Ser. No. 649,775, Jul. 16, 1976.
Continuation-in-part of Ser. No. 609,138, Aug. 29, 1975, abandoned.
U.S. Cl. 315/73 Int. Cl.^{3} H01J 7/44



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

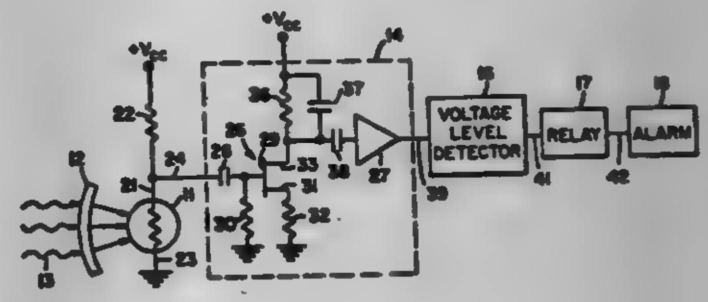
The patentability of claims 1-7 is confirmed.

1. In combination with a high-intensity discharge lamp comprising an elongated radiation-transmitting arc tube which is enclosed by and supported within a light-transmitting protective envelope which is opaque to short wavelength ultraviolet radiations, said arc tube enclosing a discharge-sustaining filling and having electrodes operatively positioned therein proximate the ends thereof, electrical lead-in means sealed through said arc tube and connected to said electrodes, electrical adaptor means affixed to the outer surface of said protective envelope to facilitate electrical connection of said lamp to a source of electrical power, and electrical conductor means electrically connecting said electrical adaptor means to said electrical lead-in means, the improvement which comprises:

a. a make-and-break switch means included in series circuit arrangement with said electrical conductor means, said switch means including an electrical contact member having an open position in which said switch means is electrically nonconductive and said electrical contact member also having a closed position in which said switch means is electrically conductive, a spring urging said electrical contact member to the open position, and said electrical contact member being movable to the closed position against the resilient force of said spring;

b. positioning means within said protective envelope for maintaining said switch means in predetermined position within said protective envelope, and a mechanical contact member of said positioned switch means pressing against the inner surface of said protective envelope to maintain said electrical contact member in said closed electrically conductive position against the resilient force of said spring; whereby breakage of said protective envelope will permit said electrical contact member to move to said open electrically nonconductive position under the resilient force of said spring to render said lamp inoperative.

B1 3,703,718 (4th)
INFRARED INTRUSION DETECTOR SYSTEM
Herbert L. Berman, Los Altos Hills, Calif., assignor to Hoermann Corporation U.S.A., Mountain View, Calif.
Reexamination Request No. 90/000,021, Jul. 9, 1981.
Reexamination Certificate for Patent No. 3,703,718, issued Nov. 21, 1972, Ser. No. 104,667, Jan. 7, 1971.
Continuation-in-part of Ser. No. 9,315, Feb. 6, 1970, abandoned.
U.S. Cl. 340/567 Int. Cl.^{3} H01J 39/00



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 1-6, 10, and 11 is confirmed.

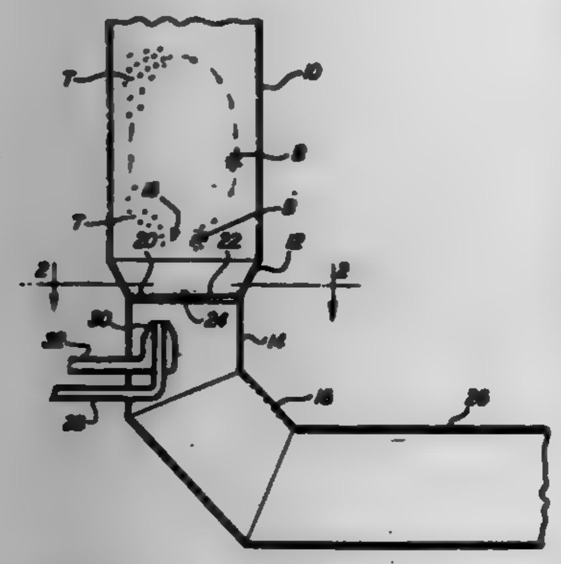
Claims 7-9, having been finally determined to be unpatentable, are cancelled.

New claims 12 and 13 are added and determined to be patentable.

1. In an infrared intrusion detector system, an infrared sensing element adapted for producing an electrical signal corresponding to the level of the infrared radiation impinging on said element, a plurality of spaced apart reflective surfaces facing the same general direction disposed in proximity to said sensing element for gathering infrared radiation from a plurality of discrete spaced apart fields of view and focusing said radiation on said sensing element, and signal conditioning means connected for receiving the electrical signal from said sensing element, said signal conditioning means having a frequency response corresponding to the walking speed of a human being and being adapted for producing an alarm signal in response to the movement of an intruder across a boundary of one of said discrete fields of view.

B1 3,253,944 (5th)
PARTICLE COATING PROCESS

Dale E. Wurster, Madison, Wis., assignor to Wisconsin Alumni Research Foundation, Madison, Wis.
Reexamination Request No. 90/000,004, Jul. 1, 1981.
Reexamination Certificate for Patent No. 3,253,944, issued May 31, 1966, Ser. No. 337,481, Jan. 13, 1964.
Continuation-in-part of Ser. No. 861,063, Dec. 21, 1959, abandoned.
U.S. Cl. 427/213 Int. Cl.³ B05D 3/00



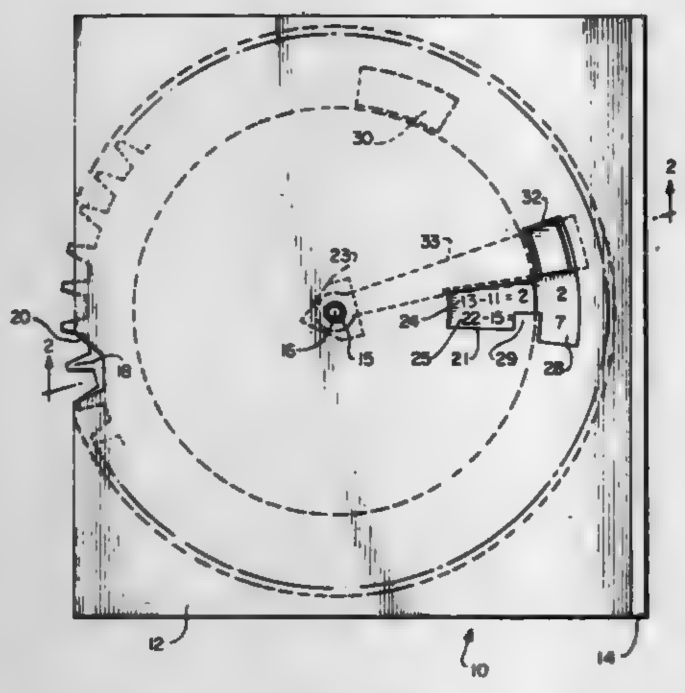
AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of the claim is confirmed.

The process of coating particles with coating material in a vertically disposed coating tower, which comprises forming an air suspended bed of particles in which all particles are suspended in an upwardly flowing air stream entering the bottom of said tower, said air stream entering the bottom of said tower being substantially coextensive with the cross-sectional area of said suspended bed in said tower, imparting controlled cyclic movement to the particles with a portion of the suspended bed flowing upwardly and the other portion of the suspended bed flowing downwardly without randomness of particle motion characteristic of fluidized beds, by directing the upwardly flowing air stream into the bottom of said tower in a high velocity upwardly flowing air stream in one part of said tower in which the particles are suspended and move upwardly concurrent to the upwardly flowing high velocity air stream substantially out of contact with each other in the portion of the suspended bed subjected to said high velocity air stream and pass to the top of the downwardly flowing portion of said bed, and a low velocity upwardly flowing air stream in the other portion of said tower in which the particles move downwardly and settle through the upwardly flowing low velocity air stream in substantially weightless contact with each other and in substantially undisturbed relation in the portion of the suspended bed subjected to said low velocity air stream and pass to the bottom of the upwardly flowing portion of said bed, and directing all of said coating material into the high velocity air stream to provide for the coating of only the particles moving upwardly in said high velocity air stream.

B1 3,751,826 (6th)
DEVICE FOR THE APPLICATION OF PRINTED LEARNING PROGRAMS

Heinz Kunert, Belvenerestr. 15, Cologne, Fed. Rep. of Germany.
Reexamination Request No. 90/000,013, Jul. 1, 1981.
Reexamination Certificate for Patent No. 3,751,826, issued Aug. 14, 1973, Ser. No. 177,793, Sep. 3, 1971.
Claims priority, application Fed. Rep. of Germany, Sep. 28, 1970, 2047599.
U.S. Cl. 434/349 Int. Cl.² G09B 3/02



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 1-9 is confirmed.

1. Device for the application of printed learning programs, consisting of a bottom plate, a cover plate, a rotating disk arranged between them which reveals a manually graspable circumferential toothing or the like for the rotation of the rotating disk around a central pivot, a learning program sheet arranged on the rotating disk for rotation therewith and on which are printed program problems and their solutions in sector-shaped fields, a writing surface, a sector-shaped window in the cover plate, through which simultaneously at least two successive program problems and the solution of one of the programs will be visible and through which the user can record his program solution on said writing surface, which surface is on the rotating disk, the said writing surface capable of being written on repeatedly and can be erased, a pivotal erasing device positioned between the cover plate and the bottom plate for the automatic erasing of the writing tablet in case of a rotation by 360° and also for erasing a limited angular extent of said writing surface.

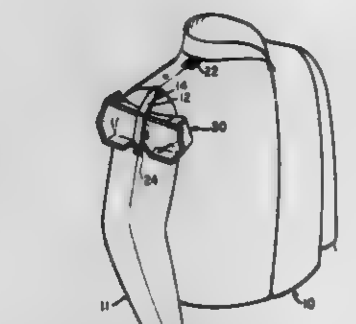
REISSUES

APRIL 13, 1982

Matter enclosed in heavy brackets ⟦ ⟧ appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 30,899
ACCESSORY HOLDER FOR USE ON ARTICLE OF CLOTHING

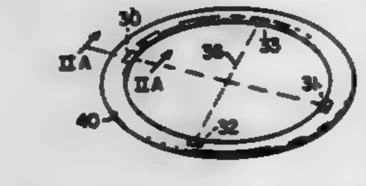
Robert A. Kallman, 2030 Haring St., Brooklyn, N.Y. 11229
Original No. 4,055,873, dated Nov. 1, 1977, Ser. No. 742,617, Nov. 17, 1976. Continuation-in-part of Ser. No. 690,262, May 26, 1976, Pat. No. 4,051,554. Application for reissue Sep. 26, 1978, Ser. No. 946,097
Int. Cl.³ A44B *21/00*; A41D *1/00*
U.S. Cl. 24—3 C 17 Claims



1. An accessory holder for an article of clothing comprising a flap member for covering a part of the clothing article, means for fixedly securing one end of said flap member at a first point on said article, a first elongated piece of fabric fastening material with fastening means thereon secured to the clothing article in at least a part of the area to be covered by the free part of the flap, a second piece of fabric fastening material with fastening means thereon on the underside of the flap having a first part secured to the underside of the flap and a second part hanging free, fastening means of both parts of said second piece of fabric fastening material facing the clothing article and engaging the fastening means on the first piece of fabric fastening material when the flap is laid down on the clothing article with the accessory being held located between the underside of the flap and second part of the second piece of fabric fastening material.

Re. 30,900
FLUID CURRENT METER

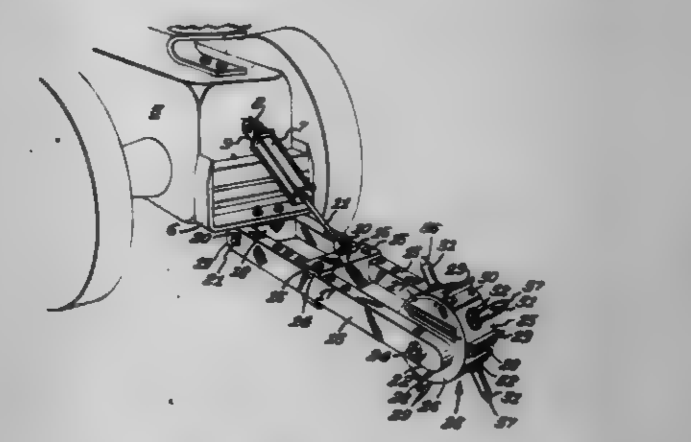
Hsing-Hua Shih, Bowie, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.
Original No. 3,978,726, dated Sep. 7, 1976, Ser. No. 574,832, May 5, 1975. Application for reissue May 29, 1979, Ser. No. 43,408
Int. Cl.³ G01D *1/00*
U.S. Cl. 73—189 9 Claims



5. Fluid flow measuring apparatus comprising:
A. a plurality of pairs of acoustic transducers;
B. a support ring *having a plurality of recesses and* supporting said transducers *within respective ones of said recesses*,
C. an electronics section coupled to and in signal communication with said transducers for obtaining current velocity measurements;
D. said transducers being supported by said ring such that the transducers of each said pair are acoustically coupled to one another along an acoustic path;
E. each said acoustic path being within the central portion of said ring.

Re. 30,901
SOIL SAMPLING DEVICE

Phillip E. Boxrud, Madelia, Minn., assignor to Outboard Marine Corporation, Waukegan, Ill.
Original No. 3,264,877, dated Aug. 9, 1966, Ser. No. 390,139, Aug. 17, 1964. Application for reissue Jul. 31, 1980, Ser. No. 174,217
Int. Cl.³ G01N *1/08*
U.S. Cl. 73—864.31 8 Claims



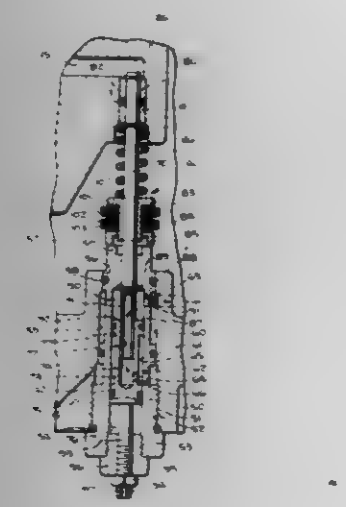
7. In combination with a vehicle adapted to travel over the ground, a soil probing device for taking intermittently spaced samples of soil from a given land area and comprising, a supporting frame connected to said vehicle for up and down movement relative thereto, said frame having a mounting portion, power means for controllably raising and lowering said frame, a soil probing assembly ⟦attached to⟧ *rotatively mounted on* said mounting portion and positioned for engagement with the ground when said frame is lowered, said assembly having ⟦at least one projecting tubular probe element⟧ *a plurality of tubular probe elements projecting from the periphery of said rotatable assembly in circumferentially spaced relation* for removing a core each time ⟦it⟧ *a probe element* is projected into the soil, said assembly comprising also a closed sample-receiving compartment, the interior of which is in communication with the inner end of said tubular *elements* probe ⟦element⟧, and access means through which a multiplicity of sample cores may be removed.

Re. 30,902
PRESSURE AND TEMPERATURE COMPENSATING HYDRAULIC VALVE

William A. P. Lawrence, Simi Valley, Calif., and Robert J. Whelchel, Dunwoodie, Ga., assignors to Elevator Equipment Co., Los Angeles, Calif.
Original No. 4,194,534, dated Mar. 25, 1980, Ser. No. 896,971, Apr. 17, 1978. Application for reissue Dec. 24, 1980, Ser. No. [illegible]
Int. Cl.³ F16K *11/10*
U.S. Cl. 137—625.39 11 Claims

1. A compensating valve device mountable in a housing for modification of the flow of hydraulic fluid in a hydraulic circuit wherein a hydraulic fluid supply to the housing has a pressure in excess of ambient pressure, said valve device comprising a valve body having mounting means for positioning the valve device on said housing a valve chamber in said body,

a valve stem reciprocatably mounted in said body, said stem having a piston at one end responsive to pressure of said hydraulic fluid, means forming a cavity in said stem adjacent the other end having an opening thereto, a valve seat member in said chamber, said valve seat member having a passage in communication with the cavity of said stem through said opening, a divider in said chamber forming respective inflow and outflow chamber sections, and port means serving as a valve element for engagement with said valve seat member and in communication between said passage and said outflow chamber section, said port means having a progressively variable capacity adjustment in response to movement of said piston due to changes in pressure of said hydraulic fluid supply



whereby to vary fluid flow between said inflow and outflow chamber sections.

7. A compensating valve device as in claim 1 wherein there is a temperature responsive member acting between said stem and said valve body, said temperature responsive member being responsive to the temperature of hydraulic fluid which passes through said valve chamber, said temperature responsive member having [a retracting] *an expanding* reaction at relatively lower fluid temperatures, and [an expanding] *retracting* reaction at relatively higher fluid temperatures tending to [resist] *assist* depression of the piston whereby to [enhance] *reduce* flow of said hydraulic fluid through said chamber sections when subjected to said relatively higher fluid temperatures.

Re. 30,903

COMPUTER CONTROLLED TELEPHONE ANSWERING SYSTEM

Ronald P. Vicari, Elmwood Park, N.J., and Barry Yampol, Oyster Bay, N.Y., assignors to Graphic Scanning, Inc., Englewood, N.J.

Original No. 3,987,252, dated Oct. 19, 1976, Ser. No. 591,233, Jun. 27, 1975. Continuation-in-part of Ser. No. 392,634, Aug. 29, 1973, abandoned. Application for reissue Oct. 17, 1978, Ser. No. 952,067

Int. Cl.³ H04M *3/50;* H04Q *3/54, 3/60*

U.S. Cl. 179—27 FH 15 Claims

13. A computer controlled telephone answering system serving the subscribers of a telephone company central office comprising:

(a) a central site for answering the telephones of subscribers of a telephone company central office;

(b) a plurality of subscriber telephone lines;

(c) a concentrator located at said central site and responsive to said subscriber telephone lines;

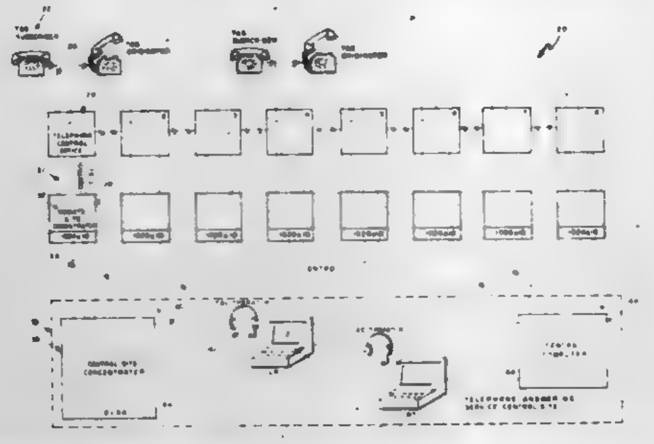
(d) a plurality of operator positions at said central site each including telephone receiving and transmitting means for answering calls;

(e) visual display means at each of said operator positions for displaying alphanumeric data pertaining to an individual subscriber;

(f) digital computer means at said central site coupled to the visual display means of each of said operator positions;

(g) line scanning means for scanning each of said subscriber telephone lines to determine whether a line should be answered;

(h) coupling control means for controlling the coupling of a a signal of a line to be answered via said central site concentrator to an operator position, said coupling control means being included in said digital computer means; and



(i) data storage means included in said digital computer means for storing and recalling data relative to subscriber telephone lines;

(j) whereby said digital computer means selects and transmits to the visual display means of said operator position alphanumeric digital data from said data storage means which is relative to a called subscriber line to permit the operator to answer the called line.

Re. 30,904

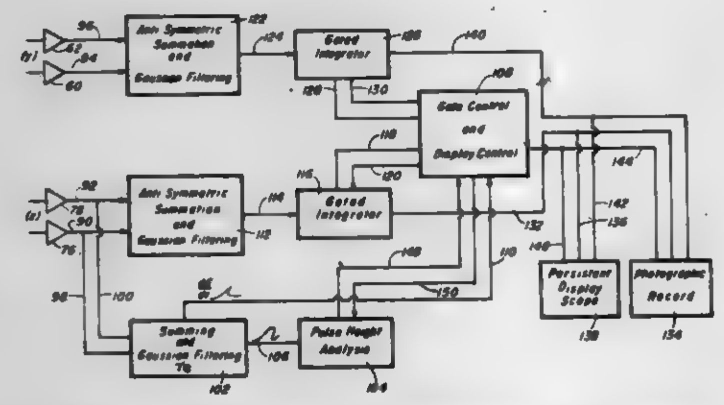
CONTROL SYSTEM FOR GAMMA CAMERA

Don W. Miller, Westerville, and Mark S. Gerber, Columbus, both of Ohio, assignors to The Ohio State University, Columbus, Ohio

Original No. 4,055,766, dated Oct. 25, 1977, Ser. No. 680,754, Apr. 27, 1976. Application for reissue Oct. 15, 1979, Ser. No. 85,070

Int. Cl.³ G01T *1/22*

U.S. Cl. 250—370 41 Claims



1. In a system for imaging the distribution of a radiation emitting isotope within a region of interest, said system including solid state strip array type detector means having strip regions which are operatively associated with impedance networks, said networks being arranged to receive radiation-induced charges in spatial disposition corresponding with the interaction location of said radiation upon said strips, said charge receipt being time variant in correspondence with said position of interaction to exhibit a collection time constant, τ_D, the improvement comprising:

amplifier means coupled with said impedance network means and having output signals corresponding with said charge receipt;

first summing means responsive to said amplifier means output signals for deriving a spatial signal corresponding to the spatial orientation of a said interaction location;

second summing means responsive to said amplifier means output signals for deriving an energy signal of value corresponding with the spatial signal;

evaluating means responsive to said second summing means energy signal for evaluating the peak value of said energy signal over a time, t_c, and having a select output when said energy signal peak value lies within predetermined limits;

means for intergrating said spatial signal over a time, t_s, to derive an integrated spatial signal, said time, t_c, being greater than said time t_s;

readout means responsive, when actuated, to receive said integrated spatial signal and derive perceptible information corresponding thereto; and

control means for regulating an operational cycle of said system including the actuation of said readout means only upon the occurrence of said evaluating means select output.

PLANT PATENTS

GRANTED APRIL 13, 1982

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,837

NORWAY MAPLE—POND CULTIVAR

Rodney P. Bailey, St. Paul, Minn., assignor to Bailey Nurseries, Inc., St. Paul, Minn.

Filed Feb. 22, 1980, Ser. No. 123,774

Int. Cl.³ A01H *5/12*

U.S. Cl. Plt.—51 **1 Claim**

1. A new and distinct variety of *Acer platanoides*, substantially as illustrated and described, characterized by its general similarity to the common *Acer platanoides*, but being distinct therefrom by (1) a marked propensity to branch at an early age, (2) an increased vigor which is manifest by an increased height and trunk diameter during the first year following budding, (3) the formation of darker green leaves having a tinge of redness which commonly are slightly cupped in configuration, and (4) the exhibition of less pronounced lenticels.

4,838

ODONTIODA ORCHID PLANT

Maurice Lecoufle, and Michel Vacherot, both of Boissy St. Leger, France, assignors to Les Petite Fils et Fils de Vacherot & Lecoufle, Boissy St. Leger, France

Filed May 21, 1980, Ser. No. 151,945

Int. Cl.³ A01H *5/00*

U.S. Cl. Plt.—68 **1 Claim**

1. A new Odontioda orchid plant substantially as herein shown and described, distinguished in particular by its distinctive shape and the red-brown oranged coloring of the sepals, petals and labellum, and by the fringed white margins and tip ends of the petals and labellum.

PATENTS

GRANTED APR. 13, 1982

ERRATA

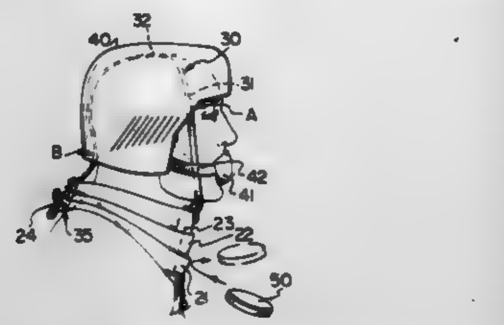
For CLASS	See PATENT NO.
172–049	4,324,123
355–065	4,324,474
356–352	4,324,475
376–175	4,324,614
376–267	4,324,615
376–203	4,324,616
376–405	4,324,617
376–434	4,324,618
376–290	4,324,619
430–063	4,324,622
521–044	4,324,705
523–149	4,324,706
524–173	4,324,707
524–599	4,324,708
523–210	4,324,709
524–076	4,324,710
523–172	4,324,711
524–767	4,324,712
523–457	4,324,713
524–113	4,324,714
523–400	4,324,715
524–761	4,324,716
524–244	4,324,717
524–108	4,324,718
261–112	4,324,749
428–472	4,324,803
429–209	4,324,828
521–054	4,324,835
426–422	4,324,840
373–039	4,324,942
373–072	4,324,943
373–105	4,324,944
372–094	4,325,033
372–050	4,325,034
370–091	4,325,147

PATENTS

GRANTED APRIL 13, 1982

GENERAL AND MECHANICAL

4,324,003
THROAT GUARD
Tony Johnston, 96 Devonshire Ave., London, Ontario, Canada (N6C 2H8)
Filed Apr. 24, 1980, Ser. No. 143,510
Claims priority, application Canada, Apr. 25, 1979, 326292
Int. Cl.³ A41D *13/00*
U.S. Cl. 2—2 **5 Claims**

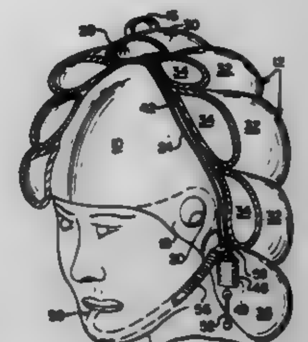


1. A throat guard comprising:
(a) a discrete, continuously positionable throat covering of U-shaped bands of semirigid flat material adapted to overlapping co-act and to nest, and to dispose when nested an area of protected expanse over the throat region smaller than when unnested tough each band is continuously juxtapositioned;
(b) means for securing the bands about the neck of a person so that the bands extend over the throat region between chin and chest;
(c) means for maintaining one band in contiguous juxtaposition against the chest of the wearer; and,
(d) means for urging another one of said bands into close proximity of the chin, whereby head articulation causes the discrete bands to overlappingly co-act and to offer a continuously protective area of sheet material covering the throat region.

4,324,004
METHOD FOR MAKING FUSED COLLARS AND PRODUCT RESULTING THEREFROM
Juan A. Smith, Bowling Green, Ky.; Catherine L. Adams, and Wayne M. Adams, both of Brundidge, Ala., assignors to Union Underwear Company, Bowling Green, Ky.
Continuation of Ser. No. 930,419, Aug. 2, 1978, abandoned. This application Jul. 9, 1980, Ser. No. 167,103
Int. Cl.³ A41B *3/00;* B32B *7/08*
U.S. Cl. 2—131 **12 Claims**

7. A collar for use in garments, which is substantially immune to surface imperfections resulting from washing and other normal treatment, said collar comprising upper and lower facing strips of predetermined shape aligned in opposed relationship and a lining of said predetermined shape made of a fabric exhibiting different shrinkage than the fabric of said facing strips and aligned between said facing strips, said lining having one surface thereof secured to said lower facing strip; said collar including one edge adapted to be mounted to the garment, said edge having at least one notch therein for use as an aid in aligning said collar with respect to said garment.

4,324,005
PROTECTIVE HEADGEAR
Betty A. Willis, Maple Valley, Wash., assignor to Charles S. Willis, Maple Valley, Wash., a part interest
Filed Jan. 18, 1980, Ser. No. 113,349
Int. Cl.³ A42B *3/02*
U.S. Cl. 2—413 **1 Claim**

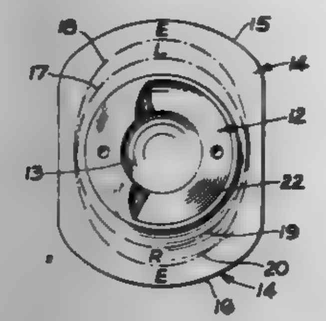


1. A protective headpiece comprising:
a skullcap means made of a thin collapsible sheet of resilient material and shaped to surround and conform to a human head and to cover all portions of the head except the facial region so that when the headpiece is worn the skullcap means receives and clings to the wearer's head and entirely supports the headpiece in place until it is pulled off by the wearer,
a shell means made of collapsible cushioning material secured to the exterior surface of the skull cap means to provide protection from impacts to the head, said shell means comprising a plurality of inflatable flap members secured to the skullcap means, said flap members being shaped and positioned to provide gas filled cushions around a wearer's head, said cushions being shaped to form a pillow located to cover the crown of the wearer's head, toroidal tubes located to extend horizontally around the head at the forehead level, and at least one curved tube located to extend horizontally around the back of the neck, the headpiece being collapsible and foldable to occupy a minimal volume during storage;
a gas delivery tube connected with the interior of each flap member;
a self-contained source of pressurized gas connected to said tube;
means to release gas from the source to inflate the flap members; and
a blow tube mechanism, including a one-way valve, connected to the gas delivery tube to provide backup means for inflating the flap members.

4,324,006
BLANK FOR ACETABULAR PROSTHESIS
John Charnley, Knutsford, England, assignor to Charnley Surgical Inventions Limited, England
Filed May 11, 1978, Ser. No. 904,752
Claims priority, application United Kingdom, May 30, 1977, [illegible]/77
Int. Cl.³ A61F *1/03*
U.S. Cl. 3—1.912 **3 Claims**

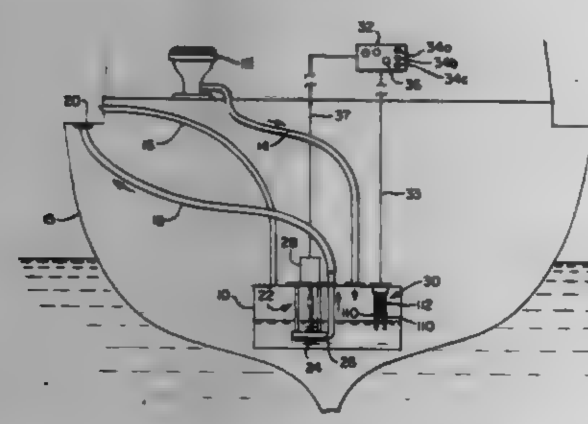
1. A blank for use in the formation of an acetabular prosthesis and comprising: a body having a blind part-spherical socket,

an annular rim surrounding the socket entrance and having a flange extending outwardly of and rearwardly from the rim



periphery, the flange being marked with cutting lines for the trimming of same to a non-uniform width.

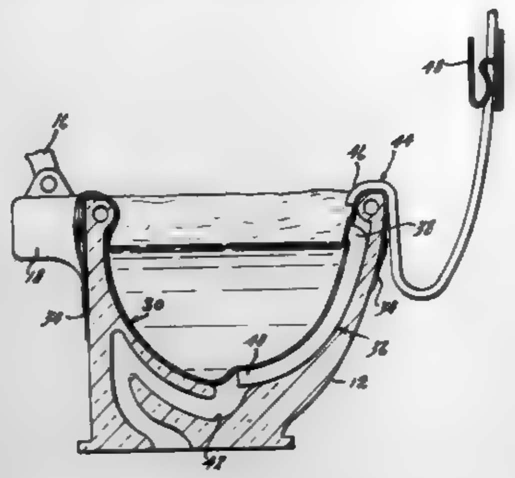
4,324,007
SANITATION SYSTEM PARTICULARLY FOR MARINE CRAFT
Nathan Morris, Kentmorr, Stevensville, Md. 21666
Filed Nov. 15, 1979, Ser. No. 94,724
Int. Cl.³ E03D *1/00, 9/10*
U.S. Cl. 4—321 30 Claims



1. An active sanitation system for vehicles having a holding tank for waste material comprising a motor adapted to be mounted on the holding tank, an elongated shaft adapted to extend into the holding tank, a coupling for coupling a first end of the shaft to the motor, a pump connected to the elongated shaft adjacent to a second end for discharging waste material from the holding tank, and cutter blade means attached to the second end of the shaft adjacent to an intake port of the pump for liquefying waste material in the holding tank, the cutter blade means being pitched to direct the liquefied waste material to the intake port of the pump to assist the pump in discharging the waste material from the holding tank and being free of confining structure so that the cutter blade means has unobstructed access to the waste material.

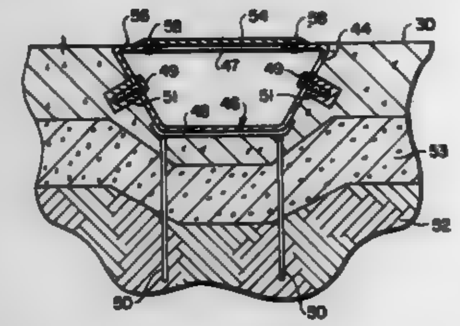
4,324,008
DISPOSABLE SITZ BATH
John W. Carr, 1158 Grove St., Maitland, Fla. 32751
Filed Jul. 17, 1980, Ser. No. 169,617
Int. Cl.³ A47K *3/22, 4/00, 3/20*
U.S. Cl. 4—445 2 Claims

1. A disposable sitz bath for use in conjunction with a conventional toilet comprising a flexible membrane adapted to be disposed internally of the toilet bowl, so as to be engageable with and supported by the interior surface thereof, said membrane having a peripheral edge adapted to extend above and overlie the rim portion of said toilet bowl, means for securing the peripheral edge of said membrane to an exterior surface of said toilet, and a semi-rigid non-collapsible water control tube sealably secured about an aperture in the upper portion of said membrane so as to communicate with the interior surface thereof, said tube being adapted to extend between the aperture in said membrane between said membrane and said bowl downwardly to a point adjacent to and in fluid flow communicating relationship to the discharge outlet of said toilet bowl,



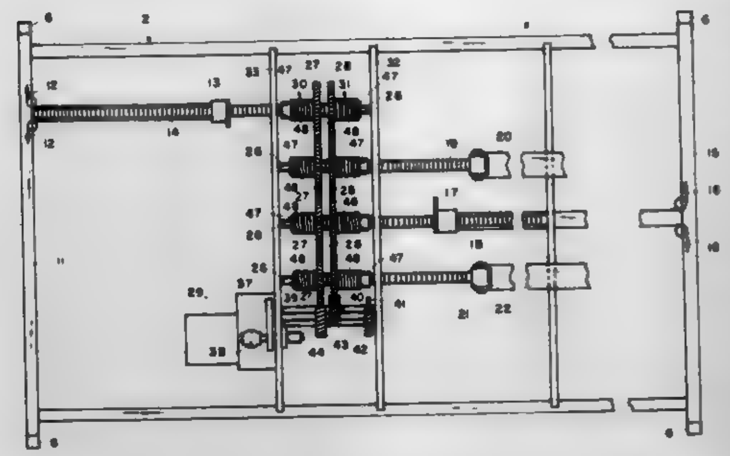
the rigidity of said water control tube being sufficient to prevent collapse thereof due to static pressure of water interiorly of said membrane in said toilet bowl.

4,324,009
SWIMMING POOL AND WATER SUPPLY SYSTEM
Roger L. Hornsby, Box H, Coolville, Ohio 45723
Filed May 1, 1980, Ser. No. 145,608
Int. Cl.³ E04H *3/18*
U.S. Cl. 4—492 2 Claims



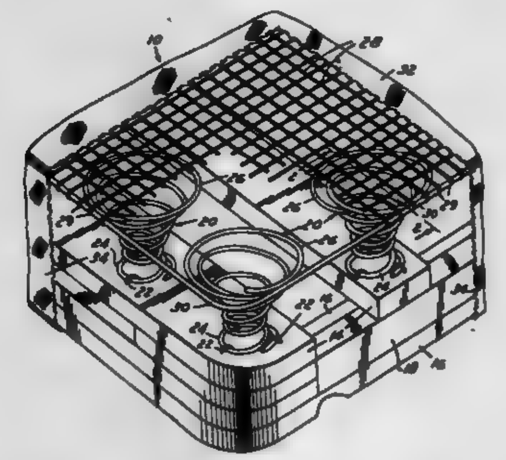
1. A swimming pool comprising, in combination, side walls and a bottom wall defining an enclosed pool area, said bottom wall including a longitudinally extending recessed portion formed along approximately the centerline of said bottom wall; an inlet water conduit means removably disposed in said recessed portion of said bottom wall and having an exposed upper surface provided with a plurality of longitudinally spaced outlet openings for communicating water to said pool area in a predetermined pattern; said inlet conduit means including a plurality of support means spaced from one another along the length of said conduit means, said support means including an upwardly facing stirrup portion disposed to receive a portion of said inlet conduit means and a pair of downwardly extending leg portions extending through said bottom wall of said pool portion and into the ground beneath said bottom wall to dispose said conduit means at a predetermined level within said bottom wall of said pool portion; and means for removably securing said conduit means to said support means and to the bottom wall of said pool portion and an outlet gutter channel formed along the upper portion of said side walls for receiving and transferring water above a predetermined level in said pool to a filter and pumping station disposed outside said pool area; and means communicating said inlet conduit means to said filter and pumping station to form a closed loop water circulation system for said pool.

4,324,010
DRIVE UNIT FOR ADJUSTABLE BEDS
Don M. Houlberg, Port Washington; Larry D. Anderson, Wisconsin Rapids, and Frank M. Damico, Hull, all of Wis., assignors to Joerns Furniture Company, Stevens Point, Wis.
Filed May 6, 1980, Ser. No. 147,217
Int. Cl.³ A61G *7/00;* F16H *5/00*
U.S. Cl. 5—68 22 Claims



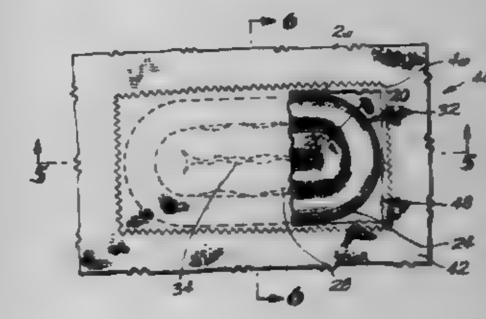
14. In an adjustable bed, the improvement comprising:
a frame having independently vertically adjustable supports at head and foot ends of said frame for raising and lowering the same; first means for extending and retracting said head support;
second means for extending and retracting said foot support independently of said head support extending and retracting means, whereby said bed can be adjusted to a Trendelenburg position from any bed position; and means for simultaneously moving said head and foot supports in either the same or opposite directions;
said first and second means comprising a rotary drive motor; first and second drive shafts operably connected with said head support and said foot support respectively; a drive wheel rotatably mounted on each of said drive shafts; means for operably connecting each drive wheel with said motor and rotating the same; and a clutch operably associated with each drive wheel and connecting the same with the associated drive shaft for selectively and independently manipulating said head and foot frame supports.

4,324,011
FURNITURE SPRING ASSEMBLY
Paul Cavaler, 22698 Essex Way, Southfield, Mich. 48075
Division of Ser. No. 48,641, Jun. 14, 1979, Pat. No. 4,244,069, which is a continuation-in-part of Ser. No. 922,991, Jul. 10, 1978, abandoned, which is a division of Ser. No. 790,286, Apr. 25, 1977, Pat. No. 4,120,059. This application Oct. 6, 1980, Ser. No. 194,610
Int. Cl.³ A47C *23/04, 23/14, 23/32*
U.S. Cl. 5—248 3 Claims



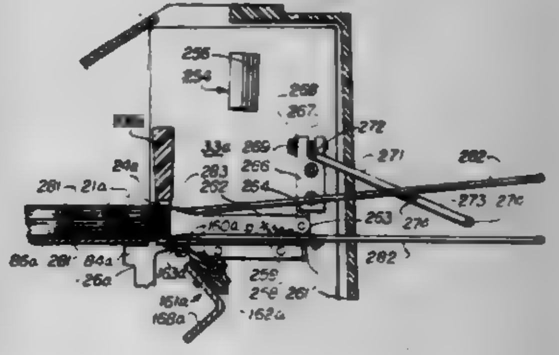
1. A mattress box spring comprising a frame, a plurality of coil springs attached to said frame such that an end coil of each said spring lies in a substantially common plane, said coils being unattached to each other in said common plane, a metal wire mesh overlying said end coils in said substantially common plane and being unattached to said springs, said mesh including border means around the periphery thereof, a cover disposed over said mesh and having a periphery draped in tension over said border means and attached to said frame, and means providing a layer of resilient elastomeric material between said mesh and each said spring such that said cover in tension cooperates with said means providing said layer to frictionally couple said springs to said mesh, and also to deaden contact noise between said mesh and said springs.

4,324,012
CUSHIONING DEVICES
Sheridan S. Cannaday, 16640 122nd SE., Renton, Wash. 98055
Filed Jun. 16, 1980, Ser. No. 159,830
Int. Cl.³ A47C *27/12;* B68G *5/00*
U.S. Cl. 5—432 32 Claims



1. A light weight, air cooled, moisture resistant cushion, comprising:
opposite facings of open mesh net fabric defining a pad receiving and restraining pocket between them; and
a pad within said pocket which is constructed from a knitted plastic fabric, rolled onto itself to form at least one roll of said fabric, wherein said opposite facings contact diametrically opposite surface portions of the roll so that any loads imposed normally to a facing of the cushion will tend to flatten the roll in a transverse direction, and wherein the strands of said knitted fabric are relatively stiff and when loaded will bend, and recover like springs when unloaded.

4,324,013
PUNCHING AND BINDING MACHINE
George Wu, San Jose, Calif., assignor to Velo-Bind, Inc., Sunnyvale, Calif.
Filed May 15, 1980, Ser. No. 150,066
Int. Cl.³ B42C *11/06;* B26D *5/08;* B32B *1/00*
U.S. Cl. 412—16 6 Claims

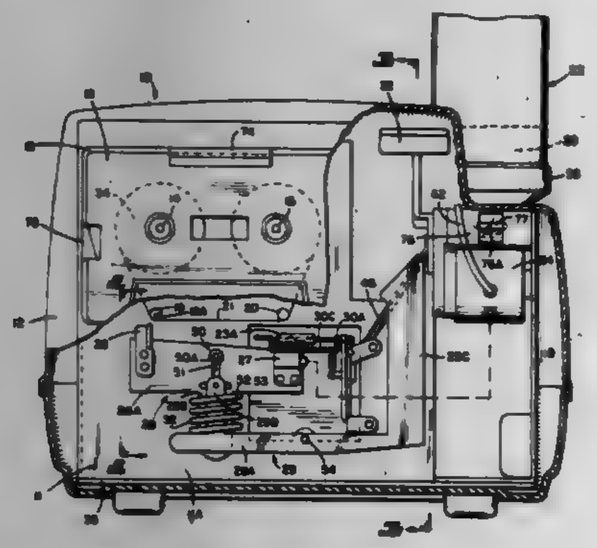


1. An apparatus for binding apertured sheets together using a first strip, a plurality of thermoplastic studs projecting from and spaced longitudinally along said first strip and a second strip formed with holes spaced longitudinally of said second

strip at intervals complementary to said studs, said apparatus being of the type having a frame having a pair of spaced sides and a platen formed to receive said second strip and to support said sheets with their apertures aligned with said holes with said first strip above said sheets with said studs extending through said apertures and said holes and protruding below said second strip, a backstop mounted on said frame at the rear and perpendicular to said platen, resilient means biasing said backstop substantially horizontally towards said platen, whereby second strips of different widths may be positioned on said platen, said backstop flexing rearward to accommodate wider second strips and which further comprises guide means on said frame guiding movement of said backstop whereby said backstop is at all times perpendicular to said platen, said backstop is removable from said frame,

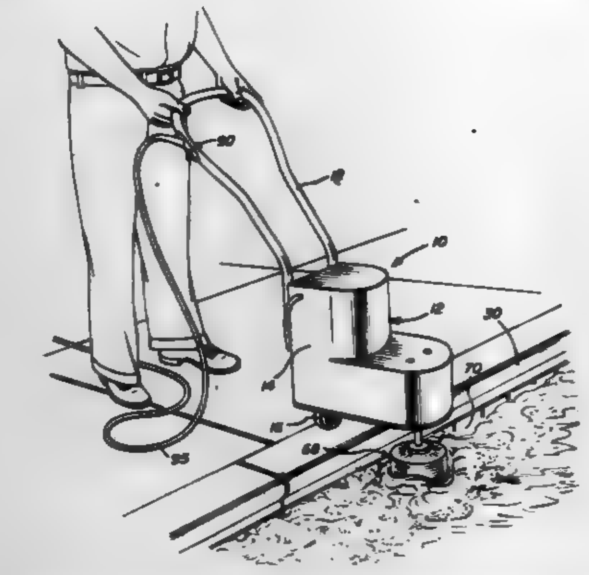
the improvement which comprises a rear platen on said frame behind said first-mentioned platen to support a first wrap-around cover and a rack on said frame to support a second wrap-around cover at a higher elevation than said first wrap-around cover.

4,324,014
CASSETTE CLEANER
William H. Stutz, Jr., Burbank, and Joseph Sandor, Reseda, both of Calif., assignors to Innovative Computer Products, Tarzana, Calif.
Continuation of Ser. No. 962,066, Nov. 20, 1978, abandoned. This application Mar. 28, 1980, Ser. No. 134,780
Int. Cl.³ B08B *11/02*
U.S. Cl. 15—4 **18 Claims**



1. An apparatus using a cleaning pad for cleaning magnetic tape carried in a tape cassette, comprising:
a main frame having means for supporting a cassette;
A cleaning head movably mounted with respect to said main frame to enable a cleaning pad to engage the tape in the cassette;
a drive system, coupled to the cassette when the cassette is in a fixed relationship with the frame, for moving tape in the cassette past said cleaning head;
a source of cleaning fluid;
a cleaning blade mounted on said cleaning head for scraping engagement with the tape; and
cleaning pad metering means for supplying cleaning fluid from said source to a cleaning pad during cleaning of said tape, said cleaning pad metering means including a cleaning fluid dispensing valve, said valve supplying a predetermined amount of said cleaning fluid to said cleaning pad via said metering means each time that said cleaning head is forced into cleaning engagement with the tape.

4,324,015
SWIMMING POOL TILE CLEANING DEVICE
Earl C. Head, 9461 Goodman Rd., Olive Branch, Miss. 38654
Filed Apr. 22, 1980, Ser. No. 142,769
Int. Cl.³ E04H *3/20*
U.S. Cl. 15—49 C **6 Claims**



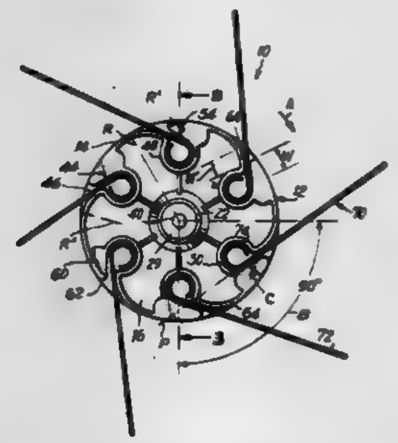
1. A device for cleaning the surface of a swimming pool wall comprising:
a housing;
a handle extending rearwardly from said housing;
wheels mounted transversely and in tandem relation on the rear and bottom portion of said housing;
a brush mounted on a brush shaft extending generally vertically downwardly from a forward portion of said housing;
motor means having a downwardly extending shaft and mounted in said housing directly above said wheels for rotating said brush;
drive means extending between said motor shaft and said brush shaft and including a first pulley mounted on said motor shaft and a second pulley mounted on said brush shaft;
a belt extending around said first and second pulley;
at least one mounting collar included with the brush slidably attached to said brush shaft; and
a set screw included on said mounting shaft extending radially therein for slidably mounting said collar on said shaft;
said housing being formed in two portions, one portion being a vertically extending section substantially mounted directly above the wheels containing said motor, the other portion being a forward section mounted offset from the wheels and containing said brush shaft and the motor shaft therein.

4,324,016
SELF-WRINGING MOP
Eugene O. Herbig, Belleville, Ill., assignor to Royal Maid, Inc., Hazlehurst, Miss.
Filed Aug. 22, 1980, Ser. No. 181,385
Int. Cl.³ A47L *13/146*
U.S. Cl. 15—119 A **4 Claims**

1. A self-wringing mop comprising:
(a) a mop head member having a mop handle attached to one end of said head member and a carrier plate attached to the other end thereof, said head having two depending, spaced-apart side walls, each of said side walls having an elongated slot formed therein substantially parallel to said head portion;

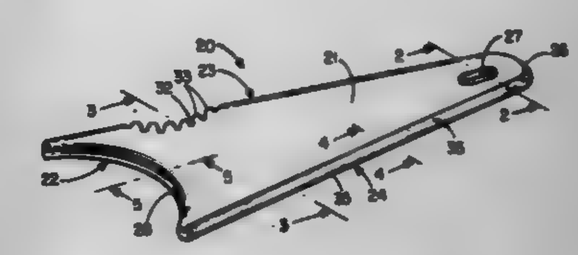
(b) an elongated cleaning element attached to said carrier plate,
(c) a squeeze plate having a forward cleaning element contacting portion positioned between said side walls and slidably mounted in said slot between ends thereof and a rearward portion,
(d) a hand contactable element slidably engaging said mop handle,
(e) first link member pivotably connected at one end to said rearward portion of said squeeze plate, and
(f) second link member pivotably connected to said other end of said first link member and to said hand contactable element, said pivotal connection at said one end and said other end of said first link member being such that sliding movement of said hand contactable element will cause said squeeze plate, upon reaching said end of said slot, to pivot toward said cleaning element and continued sliding movement of said hand contactable element will cause said first link member to continue to pivot relative to said squeeze plate and said second link member to effect a substantial increase in the mechanical advantage and thus the squeezing force transmitted by said squeeze plate to said cleaning element.

4,324,017
ROTARY DEVICE FOR TREATING WORK SURFACES
John S. Viehe, 692 Talamini Rd., Bridgewater, N.J. 08807
Filed Sep. 16, 1980, Ser. No. 187,714
Int. Cl.³ A46D *9/02*
U.S. Cl. 15—198 **14 Claims**



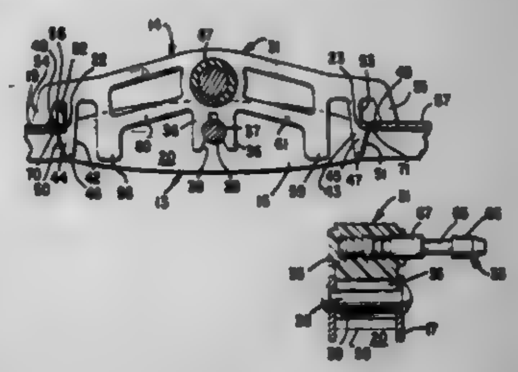
1. A rotary device for treating a work surface, comprising a generally cylindrical hub body having a central axis and adapted for rotation in one direction about said axis, said hub body comprising:
an integral closed end wall and an open opposite end, said closed end wall having a central opening;
an axial passage terminating at said central opening to receive an axial bolt for rotating said hub body; and
a generally cylindrical, serpentine wall integral with said end wall and adapted to receive and support springy fingers in chordal positions with respect to said hub body, with said fingers extending outwardly in a direction opposite to said one direction of rotation, said serpentine wall having:
outer circumferentially spaced cylindrically curved first wall sections,
outer curved second wall sections merging smoothly with said first wall sections to provide bearing surfaces for said springy fingers when applied to said work surface while said hub body is rotated in said one direction,
inner flat third wall sections merging smoothly with said second wall sections defining guides for said springy fingers, and
curved fourth wall sections merging smoothly with said third wall sections and defining inner cylindrical sleeves substantially tangential to said third wall sections for retaining in said sleeves knuckles at inner ends of said fingers.

4,324,018
PAINT EQUIPMENT CLEANING TOOL
Sven O. Olsson, 7951 Chicago Ave. South, Minneapolis, Minn. 55420
Filed Apr. 17, 1980, Ser. No. 141,065
Int. Cl.³ B44D *3/00*
U.S. Cl. 15—236 R **17 Claims**



1. A paint applicator cleaning tool comprising: a flat base having a first side with a first arcuate notch having uninterrupted edges and curved to substantially conform to the outer perimeter of a portion of a standard paint roller; said base having a second side with a second arcuate notch having edges with a plurality of teeth and curved to substantially conform to the outer perimeter of a portion of a standard paint roller; said base having a third side having a tapered surface forming an elongate linear edge; an elongate linear bead located on said linear edge.

4,324,019
WINDSHIELD WIPER CONNECTING PIN ADAPTOR
Michael G. Mohnach, and William H. Harbison, both of Valparaiso, Ind., assignors to The Anderson Company of Indiana, Gary, Ind.
PCT No. PCT/US80/00573, § 371 Date May 13, 1980, § 102(e) Date May 13, 1980, PCT Pub. No. WO81/03308, PCT Pub. Date Nov. 26, 1981
PCT Filed May 13, 1980, Ser. No. 230,970
Int. Cl.³ B60S *1/40*
U.S. Cl. 15—250.32 **8 Claims**



1. In a wiper blade assembly (10) with a yoke (13) having a pair of spaced lateral walls (16,17) defining an opening (20) therebetween having a shoulder (22,23) at each end and a cross rivet (28) extending between the lateral walls (16,17) within the opening (20) and providing a center mounted pin connection for a wiper arm (11), a connecting pin adaptor (14) for converting the cross pin connection to a side mounted pin connection comprising a body (30) having a top portion (31) and a mounting portion (32), and a connecting pin (33) having an axis extending laterally outward from said top portion (31), said connecting pin being adapted for connection to a wiper arm (11), said mounting portion (32) having a transverse slot (37) in the midportion adapted to receive the cross rivet (28) therein and a pair of deflectable claws (42,43) depending from opposite ends of said top portion (31), each deflectable claw having a portion (44,45) facing in a direction transverse to the axis of the

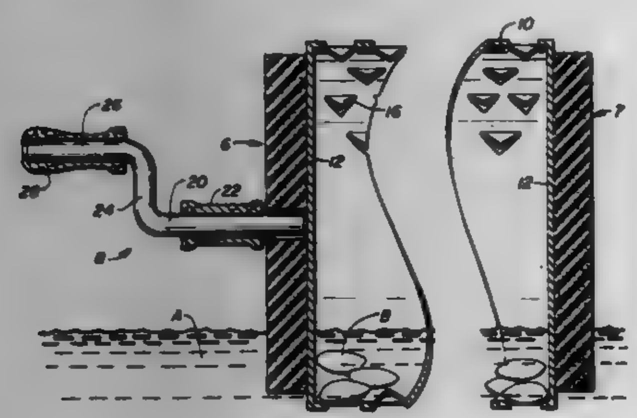
pin and adapted to engage one of said shoulders (22,23), whereby the mounting portion (32) of the connecting adaptor (14) is inserted into the opening (20) over the cross rivet (28) with the claws (42,43) being deflected longitudinally inward until the claw portions (44,45) deflect outwardly to engage the shoulders (22,23) to hold the adaptor (14) in position with the connecting pin (33) extending laterally from the yoke (13) above one lateral wall thereof.

4,324,020
MUSSEL WASHER

Richard L. Garwin, 16 Ridgecrest East, Scarsdale, N.Y. 10583, and Harold L. Friedman, 90 Old Field Rd., Setauket, N.Y. 11733

Filed May 22, 1980, Ser. No. 152,233
Int. Cl.³ A22C *29/04*

U.S. Cl. 17—51 18 Claims



15. A method for cleaning shellfish, particularly bivalve mollusks such as mussels, comprising the steps of:
- providing a rotatable container, said container having an interrupted interior surface for causing objects placed therein to be drawn partially up the side of said container when said container is rotated;
- depositing said shellfish within said container;
- supporting said container relative to a body of water by floating said container with sufficient buoyancy so that said container, which has a plurality of holes for fluid communication with said water, is only partly submerged within said water;
- rotating said container with means providing said buoyancy about an axis;
- tumbling said shellfish within said container by the interaction of said interrupted interior surface with said shellfish thereby causing said shellfish to be cleaned by mutual abrasion; and
- removing said cleaned shellfish from said container.

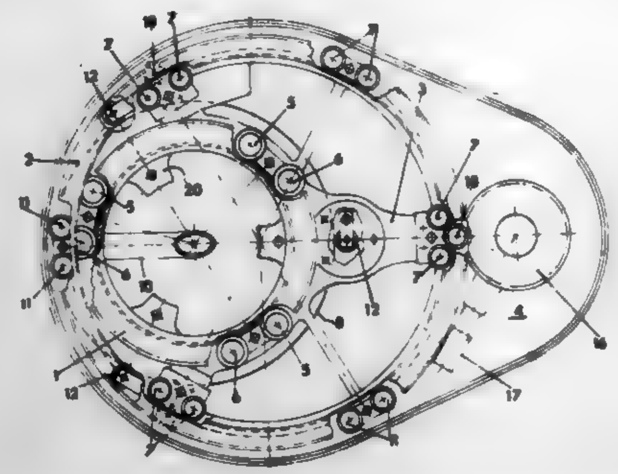
4,324,021
DEVICE FOR DISPOSING A CARD ROVING IN A FIXED BOX

Angelo Carrera, Via Del Chioso, Trezzo Sull'Adda, Italy

Continuation-in-part of Ser. No. 869,162, Jan. 13, 1978, abandoned. This application Feb. 19, 1980, Ser. No. 122,746
Claims priority, application Italy, Jan. 13, 1977, 19251 A/77
Int. Cl.³ B65H *54/80*

U.S. Cl. 19—159 R 11 Claims

1. A device for disposing in a fixed box a roving originated from the exit cylinders of cards comprising as components a planet gear, eccentrically mounted in respect to the fixed box, a first and a second sun gears coaxial with the fixed box, the planet gear being provided with a tube in which the roving is fed to at the tube upper end and discharged, at the tube lower end, according to epicycloidic curves, the rotation of the first sun gear causing the planet gear to revolve about its axis, the rotation of the second sun gear causing the planet gear to revolve about the fixed box axis, characterized by that the planet gear and sun gears show cylindrical vertical surfaces



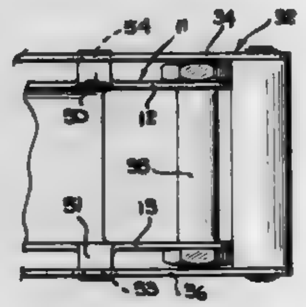
which constitute the tracks for the axial and radial rolling bearings.

4,324,022
RATCHET BUCKLE HAVING REINFORCEMENT STRENGTHENING MEANS

Ernest Prete, Jr., Woodland Hills, Calif., assignor to Ancra Corporation, El Segundo, Calif.

Filed Jun. 16, 1980, Ser. No. 159,958
Int. Cl.³ B25B *25/00;* B65D *67/02*

U.S. Cl. 24—68 CD 5 Claims



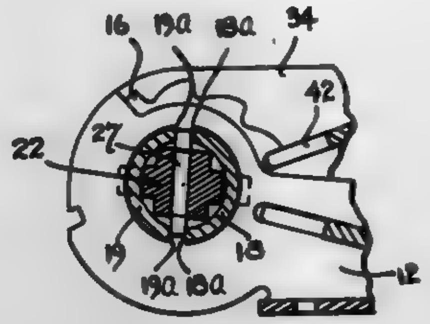
1. In a ratchet buckle for use in tightening and tensioning strap including a frame member with a pair of oppositely positioned arms, a reel member rotatably supported between said arms, a pair of ratchet wheels fixedly attached to said reel member in spaced apart relationship and a latching plate slidably mounted between said arms for latching said ratchet wheels when they are not being rotatably driven; and a lever member having a pair of oppositely positioned arms rotatably mounted on the reel member and a ratchet drive plate slidably mounted between the lever member arms which engages and drives said ratchet wheel when the lever member is actuated, the improvement being means for providing reinforcement of the frame member by the handle member when the handle member is in a predetermined finally closed position relative to the frame member comprising
- tabs extending from each of the arms of one of said members towards the nearest arm of the other of said members, and
- notches formed in the arms of each of the other of said members, each said notches being positioned opposite an associated one of said tabs in mating engagement therewith when said handle member is in said finally closed position.

4,324,023
RATCHET BUCKLE HAVING REINFORCING SPREADER BAR INSERT

Ernest Prete, Jr., Woodland Hills, Calif., assignor to Ancra Corporation, El Segundo, Calif.

Filed Jun. 18, 1980, Ser. No. 160,636
Int. Cl.³ B25B *25/00;* B65D *67/02*

U.S. Cl. 24—68 CD 5 Claims



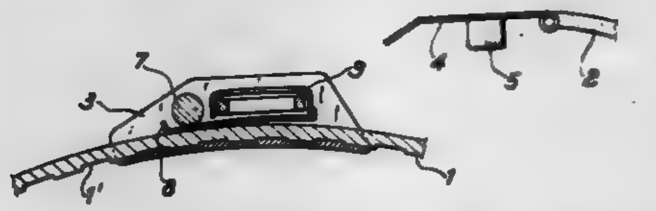
1. In a ratchet buckle for tightening and tensioning a strap, said buckle including a frame member having a pair of oppositely positioned arms, a reel member and a pair of ratchet wheels rotatably mounted between said arms; a lever member having a pair of oppositely positioned arms rotatably mounted on said reel member and a ratchet drive plate which engages the ratchet wheels such that when the lever member is actuated, the reel member is rotatably driven; the improvement wherein said reel member comprises a pair of oppositely positioned inwardly curving plates with their opposite edges spaced apart from each other and reinforcement means for reinforcing said plates comprising
- a spreader bar member having an elongated longitudinal slot formed therethrough, a pair of end wall portions running substantially normal to the longitudinal axis of the slot, and a pair of wing portions extending outwardly from the opposite ends of each of said end wall portions in directions substantially normal to the longitudinal axis of said slot,
- said spreader bar member being fitted between the oppositely positioned curving plates with the wing portions extending into the spaces between the opposite edges of the plates, the slot in said spreader bar member being aligned with the spaces between the edges of said plates, thereby permitting the strap to be reeved therethrough.

4,324,024
ADJUSTING AND LOCKING DEVICE FOR WATCH BRACELETS

Fernando Fontana, Via Piave, 96-Sesto Calende (Varese), Italy

Filed Sep. 28, 1979, Ser. No. 80,779
Claims priority, application Italy, Oct. 2, 1978, 22931/78 [U]
Int. Cl.³ A44B *11/12, 11/26*

U.S. Cl. 24—170 1 Claim



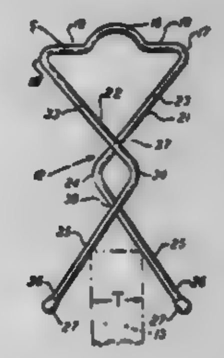
1. An adjusting and locking device for a watch bracelet comprising an adjusting and locking slide, said slide being connected to an end of one half of the bracelet and comprising a bottom, two opposite sides said device further comprising, a plate pivotally connected to an end of a second half of the bracelet, a rotatable eccentric shaft arranged transversely to the slide to control anchoring pressure of said slide to the bracelet half portion, a blade arranged between the eccentric shaft and the bracelet surface to increase contact pressure surfaces, a tooth, said tooth projecting from the inner surface of the plate, a bridge element, said bridge element arranged transverse the opposite edges of the slide, and provided with a cutout and a detent elastically arranged transverse to the opposite sides of the slide, below the bridge element, having an end extending outside the slide and being provided with a cutout corresponding to the cutout of the bridge element and wherein the tooth of the plate is received and retained.

4,324,025
CLAMP

Edward W. Apel, 998 Lehigh St., Altadena, Calif. 91001

Filed Feb. 19, 1980, Ser. No. 122,150
Int. Cl.³ B42F *1/02;* A44B *21/00*

U.S. Cl. 24—261 R 4 Claims



1. A wire clamp comprising a head, a hanging segment on the head, L-shaped limbs extending from the head at each side thereof, said limbs having upper straight shanks crossing one another, and lower straight shanks crossing one another, said crossings being in substantially the plane of the head, a pressure elbow defined at the juncture of the upper and lower shank of each limb, and a pressure foot on each lower shank, each of said lower shanks being substantially straight throughout its entire length from elbow to pressure foot, and said lower shanks further diverging one from the other away from said elbows.

4,324,026
CREMATION URN WITH READILY ACCESSIBLE MEMORABILIA COMPARTMENT

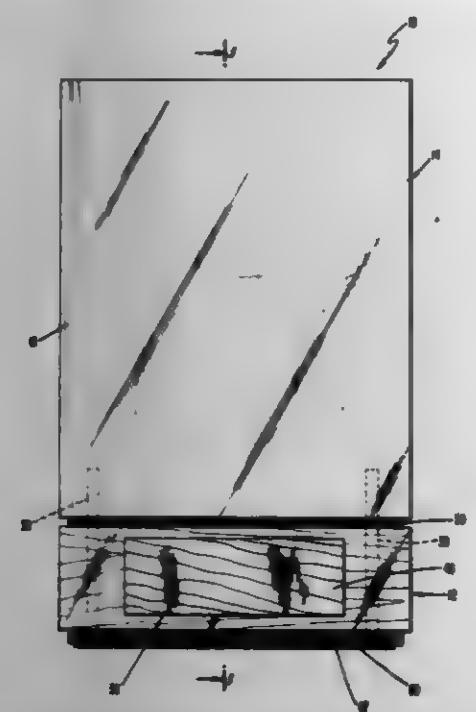
William K. Craft, Cincinnati, Ohio, assignor to Batesville Casket Company, Inc., Batesville, Ind.

Filed Feb. 6, 1981, Ser. No. 232,200
Int. Cl.³ A61G *17/00*

U.S. Cl. 27—1 14 Claims

1. A cremation urn comprising a decorative housing forming therein a first internal chamber for receiving the cremated remains of a deceased, and means for closing said first chamber and concealing it from view, said housing forming therein a

second internal chamber separate from said first chamber and sized to receive objects of memorabilia, and manually openable



means for closing said second chamber and concealing it from view.

4,324,027

MACHINE INCLUDING A CLAMPING DEVICE FOR LOCATING A WORKPIECE IN A GIVEN PROCESSING POSITION

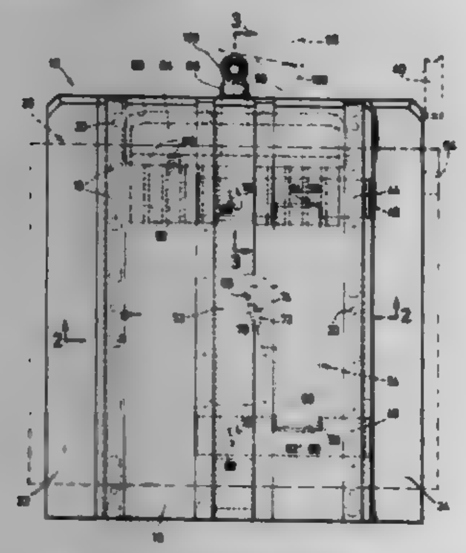
Friedrich Burkhardt, Brunnenweilerstr. 13, 7332 Eislingen/Fils, and Hans Staiger, Oechslinstr. 32, 7320 Göppingen, both of Fed. Rep. of Germany

Filed Jul. 9, 1979, Ser. No. 55,942

Claims priority, application Fed. Rep. of Germany, Jun. 29, 1978, 2828559

Int. Cl.³ B23Q *41/02*

U.S. Cl. 29—33 P 14 Claims



1. In a machine including clamping device for locating and holding a workpiece at a processing station and locating and releasing a workpiece at a changeover station, said changeover station including a stationary stop abutment, comprising:

holding means mounted on a bed of a machine table means moving said holding means along Y axes into and out of working relationship with the processing station and the changeover station; said holding means having rectilinear guide means thereon including spaced, parallel guide surfaces;

a support means for supporting a workpiece, said workpiece support means being slidable on said guide surfaces of said holding means along its rectilinear length parallel to a longitudinal axis; said workpiece support means including: guide surface means adapted to be movable along the longitudinal axis of said rectilinear guide means, said workpiece support means having a complementary recess defined in part by two lateral sides; and

clamping located in and means adapted to be movable transversely to said rectilinear guide means of said holding means, said clamping means being located solely within said recess when said work support is in overlying position with respect to said clamping means, operating means for said clamping means including a rod extending from one side of said holding means to be engageable with said stop abutment when said holding means is at the changeover station for releasing said workpiece support means to permit sliding movement of said workpiece support along said parallel guide surfaces of said holding means onto the changeover station, said clamping means having at least one mating surface cooperating with at least one of said lateral sides on said workpiece support means.

4,324,028

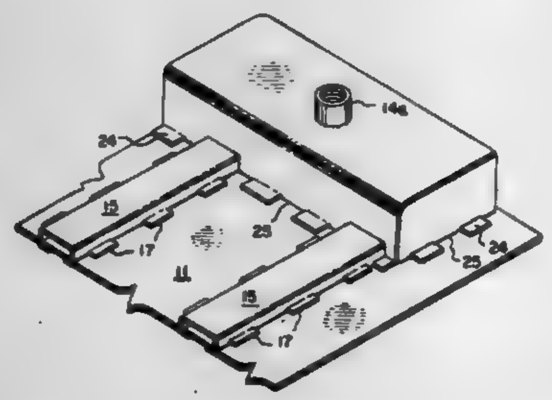
METHOD OF FABRICATING A SOLAR ABSORBER PANEL

Ashjorn M. Severson, Minneapolis, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Continuation of Ser. No. 836,803, Sep. 26, 1977, abandoned. This application Dec. 8, 1978, Ser. No. 967,767

Int. Cl.³ B23P *15/26*; B23K *31/00*

U.S. Cl. 29—157.3 C 4 Claims



1. A method of fabricating a solar flat plate absorber panel having an absorber plate which itself forms part of a duct system for conveying heat from the absorber plate to a heat utilization system comprising the steps of:

providing a plurality of spaced slits in said absorber plate in a predetermined pattern;

providing a plurality of preformed elongated substantially single-thickness, recessed members the walls of which are formed with relatively large integral tab portions including straight tabs extending in a first direction and bent tabs extending in a direction at an angle to said first direction;

assembling said preformed recessed members to one side of said solar absorber plate such that said straight tabs are inserted through said slits and said bent tabs abut the surface of said absorber plate to form therewith manifolds and connecting ducts in a predetermined pattern wherein said absorber plate itself forms one wall of the ducts;

folding said straight tabs flatly against said absorber plate to interlock said recessed members to said absorber plate and to present a substantially flat surface for receiving solar energy; and

sealing junctures of the duct system formed by said recessed members and said absorber plate and between said recessed members to render said duct system fluid-tight.

4,324,029

APPARATUS FOR RETRACTING FLATS FROM THE CAST IRON FLAT BARS OF CARDING MACHINES

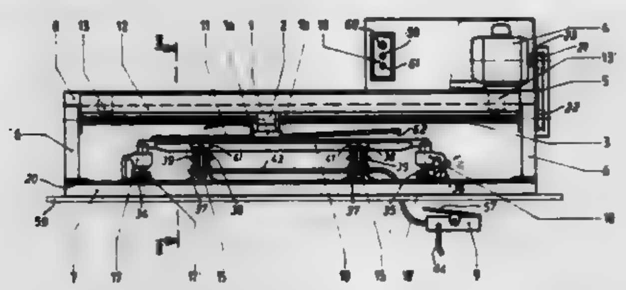
Stephan Geisser, Oberriet, Switzerland, assignor to Graf & Cie. A.-G., Rapperswil, Switzerland

Filed Dec. 11, 1979, Ser. No. 102,448

Claims priority, application Switzerland, Aug. 14, 1979, 7436/79

Int. Cl.³ B23P *19/04*

U.S. Cl. 29—239 8 Claims



1. An apparatus for retracting flats from the elongated flat bars of a carding machine, said apparatus comprising:

a support means for supporting an elongated flat bar so that its longitudinal axis is supported in a predetermined, fixed position, the flat bar having a flat mounted thereon for removal therefrom;

guide means connected to said support means and having a guideway substantially parallel to and spaced from the longitudinal axis of the supported flat bar;

a retracting wedge mounted on said guide means for bidirectional movement in said guideway substantially parallel to the longitudinal axis of the supported flat bar;

said retracting wedge having a flat bottom surface and first and second separating edges on opposite longitudinal ends thereof, each of said separating edges defined by the intersection at an acute angle of a wedge surface and said bottom surface;

said guide means supporting said retracting wedge so that said opposite ends thereof are aligned along the longitudinal axis of the supported flat bar with said separating edges positioned along a line intermediate the flat to be removed and its associated flat bar; and

drive means coupled to said retraction wedge to cause said retraction wedge to move longitudinally in a first direction or a second direction along said guideway to cause said first or second separating edge to enter between the flat to be separated and its flat bar to thereby separate and remove the flat from the flat bar.

4,324,030

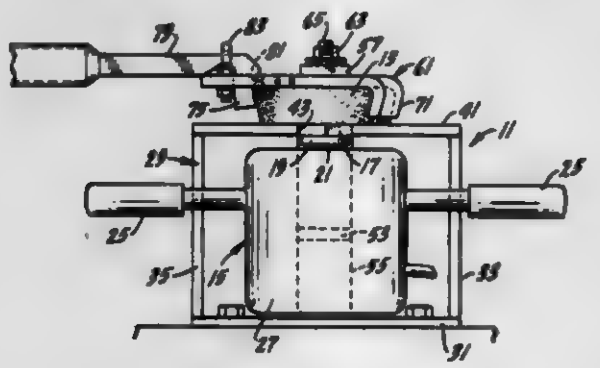
APPARATUS FOR REMOVING A GRINDING WHEEL

Juan A. Diaz, 764 Spring St., Aurora, Ill. 60505

Filed Apr. 17, 1980, Ser. No. 141,113

Int. Cl.³ B23P *19/04*

U.S. Cl. 29—240 4 Claims



1. An apparatus for use in removing and replacing a grinding wheel of a portable industrial grinder of the type having an output shaft, a grinding wheel support sleeve on the output shaft, a non-circular collar formed on the sleeve, and laterally extending handles, said apparatus including:

an upstanding housing having a top wall with a slot therein, which slot is open at one end and is dimensioned to receive and engage the non-circular collar of the shaft support sleeve of the portable grinder with the grinding wheel being supported on the top wall,

said housing having an opening in at least one side thereof to permit the portable grinder to be positioned in the housing below the slotted top wall thereof,

a grinding wheel clamp adapted to engage the grinding wheel when it is supported on the top wall of said housing, with the grinding wheel clamp having two fixed fingers which engage the periphery of the grinding wheel at circumferentially spaced locations thereon and a movable finger circumferentially spaced relative to the two fixed fingers, which movable finger can be moved in and out of clamping engagement with the grinding wheel,

said movable finger being formed as part of an arm which can be used as a handle to rotate the heel clamp and thereby unloosen the grinding wheel from the shaft of the portable grinder, and

a support arm which extends over the top wall of the housing and is pivotally mounted relative to the housing for rotation about a vertical axis, said grinding wheel clamp being pivotally connected to said support arm and slidable along the length of a portion of the support arm.

4,324,031

BATTEN SEAMING MACHINE

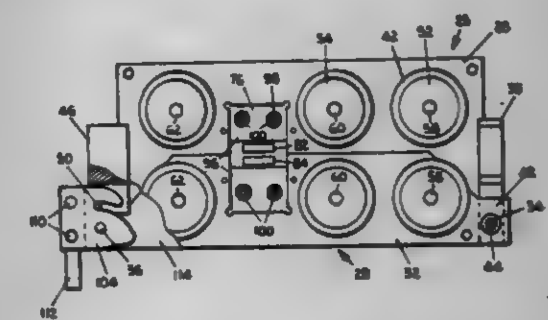
Eric H. Isenhoff, Angola, Ind., assignor to Roof Systems, Inc., Grand Rapids, Mich.

PCT No. PCT/US79/00628, § 371 Date Jun. 30, 1980, § 102(e) Date Jun. 30, 1980

PCT Filed Aug. 15, 1979, Ser. No. 164,072

Int. Cl.³ B23P *11/00*

U.S. Cl. 29—243.58 19 Claims



1. A seaming machine for securing a batten having inwardly extending side flanges to an upstanding roof rib having horizontally-extending webs, said machine comprising:

a housing including first and second sections pivotable between an opened and closed position about a vertical axis;

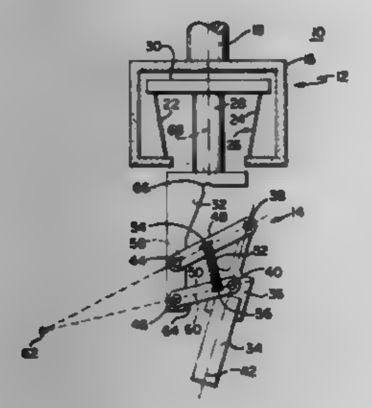
releasable locking means for securing said first and second sections in the closed position whereby said machine is adapted to ride on an upstanding roof rib;

at least one pair of horizontally-disposed rollers each including a driving portion adapted to engage a side surface of the upstanding roof rib and a forming surface adapted to engage a flange on a batten for bending said flange upwardly against a horizontally-extending web on said roof rib, one of each of said pair of rollers being mounted in said first and second sections of said housing to thereby engage the opposite side surfaces of said roof rib when the housing is in a closed position to drive said machine along the rib; and

spring-biased vertically-arranged rollers adapted to crimp the flange on the batten against the horizontally-extending web on the upstanding roof rib, said vertically-arranged rollers including at least one upper roller for engaging a top surface of said batten and a pair of lower rollers for

engaging said flanges extending from opposite sides of the upstanding roof rib.

4,324,032
OPERATOR MEMBER ERECTION SYSTEM AND METHOD
Richard E. Gustavson, Wellesley Hills; Craig C. Selvage, Lexington, and Daniel E. Whitney, Arlington, all of Mass., assignors to The Charles Stark Draper Laboratory, Inc., Cambridge, Mass.
Filed May 5, 1980, Ser. No. 146,344
Int. Cl.³ B23Q *17/00;* **G01B** *3/22;* **B25B** *27/14;* **B25J** *3/00*
U.S. Cl. 29—407 **28 Claims**

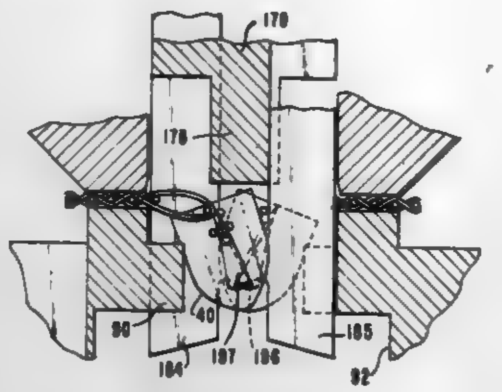


1. An insertion system including an operator member erection system comprising:
an operator member having a longitudinal axis;
support means for defining a remote center of compliance laterally spaced from said longitudinal axis of said operator member and including a support member and means for interconnecting said operator member with said support member for enabling said operator member to move about a remote center to vary the orientation of the operator member longitudinal axis relative to said support member as said operator member moves between an extended and a retracted position.

27. A method of engaging an operator member, carried by a support member, with a part comprising:
moving the operator member toward the part with the longitudinal axis of the operator member non-parallel to that of the part;
engaging the operator member with the part;
moving the support member toward the part causing the operator member to rotate about a remote center laterally spaced from the longitudinal axis of the support member to erect the operator member with its longitudinal axis generally aligned with that of the part; and
restricting further rotation of the operator member and fixing it in the erected position engaged with the part.

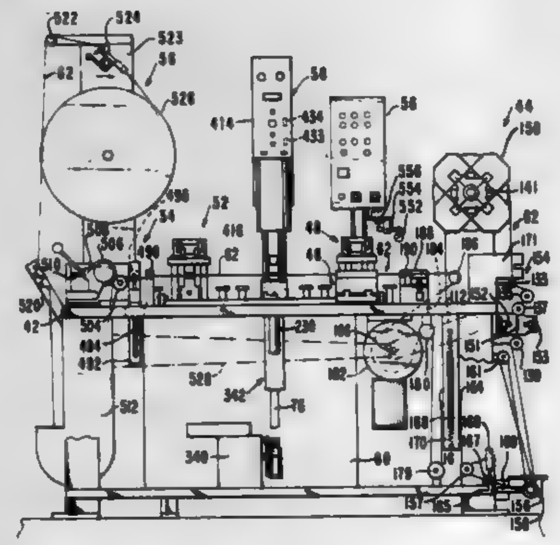
4,324,033
GAPPING SLIDE FASTENER ELEMENTS ON MEMBERS WOVEN IN TAPE EDGES
Norman W. MacFee, Conneaut Lake, Pa., assignor to Talon, Inc., Meadville, Pa.
Filed Aug. 4, 1980, Ser. No. 175,097
Int. Cl.³ B23P *19/04*
U.S. Cl. 29—408 **6 Claims**

1. A method of gapping a slide fastener stringer which includes a woven tape, a plurality of spaced fastening elements, and longitudinal connecting and supporting means joined with and extending between the fastening elements, the tape having pluralities of loops of weft thread segments passing around the connecting and supporting means, the method comprising the steps of
cutting the connecting and supporting means on opposite sides of each fastening element of a group of fastening elements to be removed, and
removing the group of fastening elements and severed ends of the connecting and supporting means from between the loops of weft thread segments,
said removing including pivoting the group of fastening



elements and severed ends of the connecting and supporting means about an axis extending parallel to the tape and spaced from the tape and the connecting and supporting means.

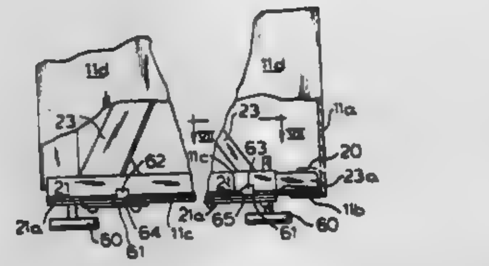
4,324,034
METHOD AND APPARATUS FOR GAPPING AND REINFORCING SLIDE FASTENER STRINGERS
Grant E. Berry, Cochranton; Wayne A. Becker, Meadville; Karl E. Bahr, Meadville; George J. Scagnelli, Meadville; Frank J. Molnar, Meadville; Ronald K. McDonald, Jamestown, and Harry F. Manning, Meadville, all of Pa., assignors to Talon, Inc., Meadville, Pa.
Filed Dec. 27, 1979, Ser. No. 108,251
Int. Cl.³ B21D *53/52*
U.S. Cl. 29—410 **14 Claims**



1. A method of gapping and reinforcing a selected section of a slide fastener stringer comprising the steps of
aligning the selected section relative to a holder;
gripping, by means of the holder, the slide fastener stringer on opposite ends of the selected section leaving the selected section exposed;
producing relative movement between the holder and a fastener element gapping mechanism to align the selected section with the gapping mechanism;
operating the gapping mechanism after the first producing movement step to remove head portions of slide fastener elements in the selected section;
producing relative movement between the holder and a reinforcing tape segment applying mechanism to align the selected section with the reinforcing tape segment applying mechanism; and
operating the reinforcement tape segment applying mechanism after the second producing movement step to secure

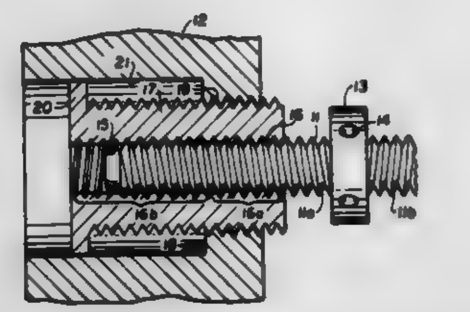
a segment of reinforcing tape on the selected section of slide fastener stringer.

4,324,035
METHOD OF ATTACHING A REMOVABLE CABINET FOR FRONT-SERVICEABLE APPLIANCES
Robert B. Sherer, St. Joseph Township, Berrien County, and Robert M. Weir, St. Joseph, both of Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.
Division of Ser. No. 72,441, Sep. 4, 1979, Pat. No. 4,254,640. This application Aug. 20, 1980, Ser. No. 179,761
Int. Cl.³ B23P *19/00*
U.S. Cl. 29—434 **3 Claims**



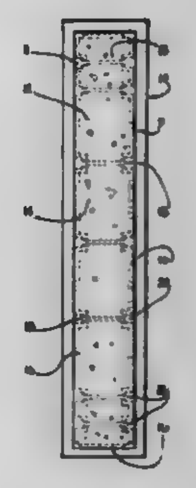
1. A method of attaching a cabinet wrapper having two vertical sides each having a bottom flange with apertures therein, a vertical front having a bottom flange, and a top, to a domestic appliance having a cabinet base frame with upwardly extending tabs carried thereon and having a front member and having a rear cabinet panel attached to said base frame and a control housing, said method comprising the steps of:
engaging said bottom flange on said vertical front beneath said front member;
rocking said cabinet wrapper toward said rear panel;
aligning and engaging said tabs on said base frame and said apertures in said cabinet wrapper side flanges;
securing said cabinet wrapper to said rear panel and to said base from; and
installing said control housing on said cabinet wrapper top.

4,324,036
"METHOD OF MAKING ORTHODONTIC SCREW-TYPE DEVICE"
Frank Reilly, Freeport, N.Y., assignor to Quanta Chemical Ltd., Brooklyn, N.Y.
Division of Ser. No. 45,304, Jun. 4, 1979, Pat. No. 4,231,736. This application May 21, 1980, Ser. No. 151,798
Int. Cl.³ B23P *11/00;* **F16B** *39/00*
U.S. Cl. 29—437 **4 Claims**



1. A method of making an orthodontic screw-type biassing device comprising:
internally threading a threaded bore in a first member with first and second threaded portions adjacent each other in the axial direction of said threaded bore, said first and second threaded portions having thread roots which lie substantially on a common line;
forming the crests of the threads of said first and second threaded portions such that the thread depth of the threads of said second portion is less than the thread depth of the threads of said first threaded portion;
forming an externally threaded screw-type member and threadably engaging said member in said internally threaded bore of said first member; and
deforming the threads at an end portion of said screw member such that said deformed threads substantially freely, threadably pass through said second portion of said threaded bore and bind and are substantially non-rotatable relative to said first threaded portion of said threaded bore.

4,324,037
STRUCTURAL UNITS AND ARRAYS THEREFROM
Clyde C. Grady, II, 3700 Garth Rd., Apt. 2101, Baytown, Tex. 77521
Filed Aug. 29, 1977, Ser. No. 828,312
Int. Cl.³ B23P *21/00*
U.S. Cl. 29—469 **9 Claims**



1. A method of constructing an array comprising the steps of:
a. providing a plurality of composite structural units, each of said structural units comprising
(i) an inner structural core of cast material;
(ii) a plurality of load-distributing plates integrally attached during casting to said core, each of said plates being substantially hard to resist fracture, and having internal strength sufficient to substantially dissipate point stresses there being provided a plurality of holes through said core and said attached plates, each of said plates providing a mating face for contacting the face of an adjacent attached unit;
(iii) tension means extending through said holes for holding two of said units tightly together in face-to-face relationship forming a structural array;
b. placing a first and a second of said structural units together in a desired array;
c. applying a tensile connector to the first and second units, perfecting a connection;
d. applying a second tensile connector to the second unit;
e. placing a third structure unit in face-to-face relationship with the second structural unit; and
f. perfecting a connection between the second and third structural unit using the second tensile connector.

4,324,038

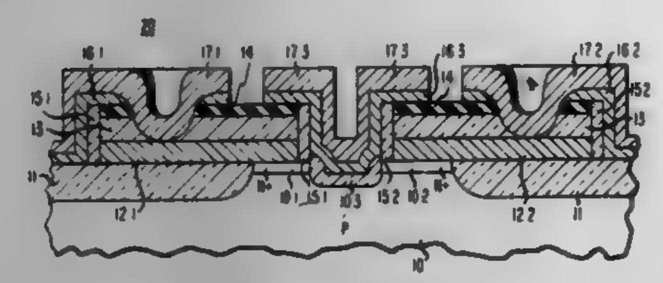
METHOD OF FABRICATING MOS FIELD EFFECT TRANSISTORS

Chuan C. Chang, Berkeley Heights; James A. Cooper, Jr., Warren; Dawon Kahng, Bridgewater Township, Somerset County, and Shyam P. Murarka, New Providence, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 24, 1980, Ser. No. 209,755

Int. Cl.³ H01L *21/28*

U.S. Cl. 29—571 20 Claims



1. A method of fabricating a semiconductor device (20) having a pair of spaced-apart source and drain contact electrodes (12.1, 12.2) contacting spaced-apart surface areas of source and drain regions (10.1, 10.2), respectively, located at a top surface of a semiconductor body (10) and having a gate oxide layer (10.3) grown on a first portion of the said top surface located between said apart areas characterized by the step of forming a sidewall insulating layer (15.1, 15.2) on an exposed mutually opposing sidewall edge surface of each of the contact electrodes (12.1, 12.2), followed by the step of thermally growing the gate oxide layer (10.3).

4,324,039

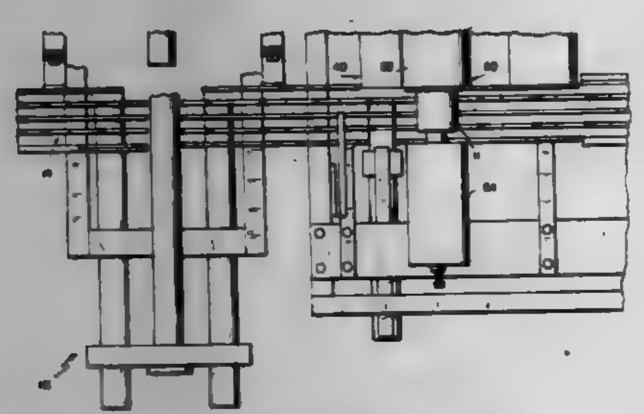
APPARATUS AND METHOD OF DELIVERING DEPOLARIZATION MIX INTO A DRY CELL CAN

Leonard Schub, Stamford, Conn., assignor to Wonder Corporation of America, Inc., South Norwalk, Conn.

Filed Apr. 22, 1980, Ser. No. 142,666

Int. Cl.³ H01M *2/36*; B23P *19/04*; B65B *1/24*

U.S. Cl. 29—623.1 10 Claims



1. A battery assembly apparatus comprising:

(a) means at a first station along an assembly line for delivering depolarizing mix to a dry cell can,

(b) means at a second station downstream from said first station and along said assembly line for inserting a carbon rod into said dry cell can containing depolarizing mix, and

(c) mix washer insertion means at a third station downstream from said second station and along said assembly line for reconsolidating said depolarizing mix during the insertion of a mix washer after said carbon rod has been inserted according to paragraph (b), said mix washer contacting and producing uniform reconsolidation of the mix to the proper density by said mix washer insertion, said mix washer insertion means including compression means for exerting a bias against and for supporting the bottom of the can, while allowing the can to move, as the mix washer is inserted into the can and pushes against the mix.

7. The method of delivering depolarizing mix into a dry cell can comprising the steps of:

(a) delivering a depolarizing mix into a dry cell can;

(b) inserting a carbon rod into the dry cell can containing depolarizing mix; and

(c) inserting a mix washer into the depolarizing mix filled dry cell can and against the depolarizing mix, while exerting a bias against and supporting the bottom of said can while also allowing said can to move as said mix washer is inserted into said can, so that said mix washer contacts, pushes against and uniformly reconsolidates said depolarizing mix to the proper density.

4,324,040

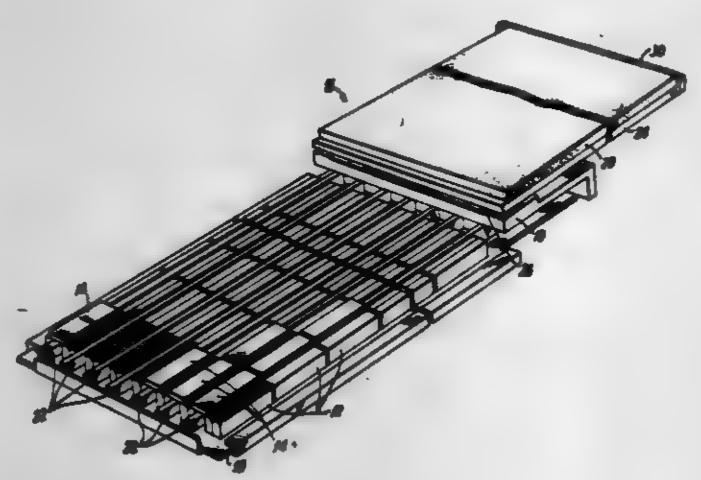
TOOL FOR REMOVING INTEGRATED CIRCUITS FROM A BURN-IN BOARD

John D. Gottlieb, Smithtown, N.Y., assignor to Standard Microsystems Corporation, Hauppauge, N.Y.

Filed Jul. 24, 1980, Ser. No. 172,018

Int. Cl.³ B23P *19/04*

U.S. Cl. 29—829 7 Claims



1. A tool for use in removing integrated circuit packages from a burn-in board or the like in which a plurality of sockets are mounted in a plurality of spaced parallel rows for receiving the leads of integrated circuit packages, said tool comprising an end bracket, a plurality of enlongated prongs attached to and extending from said end bracket, said prongs being spaced by an amount corresponding to the distance between adjacent rows of sockets on the burn-in board, a cover pivotally mounted to said end bracket, and means for releasably securing said cover to the free ends of said prongs when said prongs are placed along the spaces between the sockets and the underlying integrated circuit packages mounted in the sockets.

4,324,041

RAZOR BLADE ASSEMBLY

Robert A. Trotta, Winthrop, Mass., assignor to The Gillette Company, Boston, Mass.

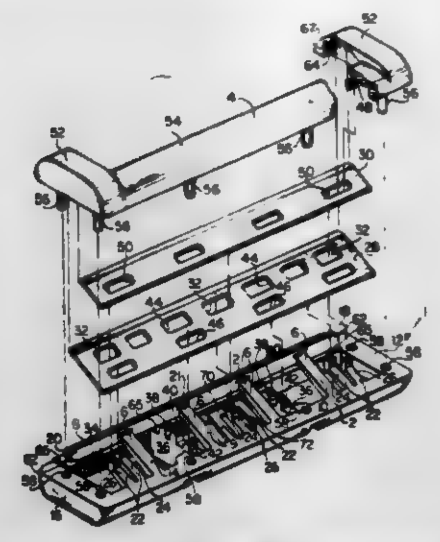
Filed Aug. 7, 1980, Ser. No. 176,138

Int. Cl.³ B26B *21/22*

U.S. Cl. 30—47 24 Claims

1. A razor blade assembly comprising a cap portion and a base portion, first arm means extending from said base portion and joining a guard portion extending generally parallel to said base portion, second arm means extending from said base portion toward said guard portion, and blade means disposed

on said second arm means, said first and second arm means being leaf spring means permitting movement of said guard



portion and said blade means relative to said base portion and said cap portion during a shaving operation.

4,324,042

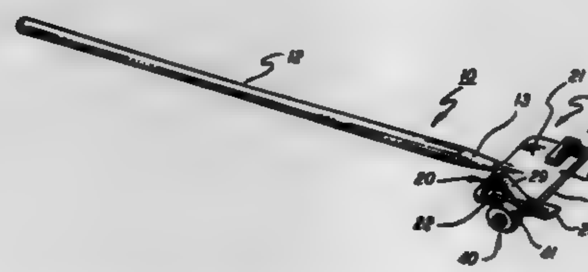
SHINGLE STRIPPER

Stanley H. Lipka, and David J. Lipka, both of 133 Cross St., Yorkville, N.Y. 13495

Filed Sep. 22, 1980, Ser. No. 189,084

Int. Cl.³ B26B *3/00*

U.S. Cl. 30—170 8 Claims



1. Apparatus for stripping the tabs from the underbody of a shingle that has been nailed to a subsurface including

a blade having a top surface and a bottom surface that are cojoined to form a thin forward edge which is able to pass easily under the tabs of a shingle,

a ripping bar mounted upon the top surface of the blade along one edge thereof, said ripping bar having a ramp section that slopes upwardly from the forward edge of the blade toward the rear edge thereof,

a tab guide having a support flange secured to the top surface of the blade adjacent to the other side edge thereof and a raised finger canterlevered from the flange which extends over the top surface of the blade from the flange toward the ripping bar whereby the tab of a shingle passing over the top surface of the blade is caused to pass under the finger, and

a hold down member secured to the blade and extending outwardly from said one side edge thereof adjacent to the ripping bar, said hold down member further having a working surface that extends downwardly below the bottom surface of the blade to ride over the underbody of the shingle as the ripping bar passes under the tabs whereby the tabs are separated from the underbody of the shingle.

4,324,043

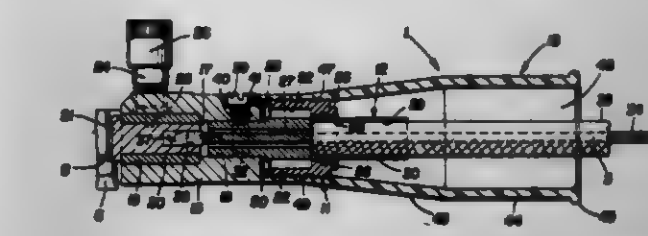
HANDPIECE FOR MEAT-TRIMMING KNIFE

Timothy J. McCullough, Box 295, Lake Rd., Vermilion, Ohio 44089

Filed Oct. 8, 1980, Ser. No. 195,096

Int. Cl.³ A22C *17/00*

U.S. Cl. 30—276 15 Claims



1. An improved handpiece for a meat-trimming knife of the type having an annular blade holder mounted on the handpiece with an annular cutting blade rotatably mounted on said holder, in which gear means is mounted on the handpiece and drivingly engages the cutting blade, in which flexible cable means extends into the handpiece and is operatively engaged with the gear means to drive said gear means and cutting blade, and in which ferrule means mounts the flexible cable means within the handpiece; wherein the improvement includes hollow handle means; a blade holder attachment portion on which the blade holder is adapted to be mounted; coupler means removably mounting the handle means on the blade holder attachment portion, said coupler means being formed with a bore; bearing means provided in the bore of the coupler means for rotatably supporting the ferrule means in said coupler means bore; and sealing means mounted in the bore of the coupler means for sealing engagement with the ferrule means to prevent passage of contaminants along the ferrule means.

4,324,044

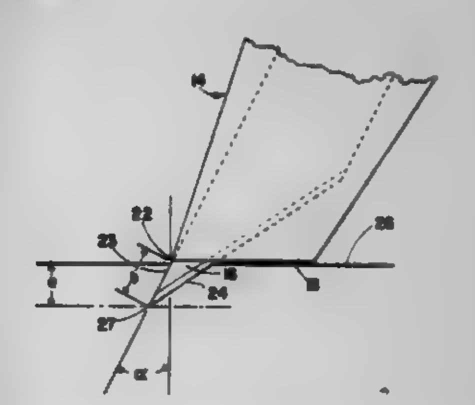
SURGICAL KNIFE FOR PRECISE DEPTH OF CUT CONTROL

Lee Shahinian, Jr., 1232 Lisa La., Los Altos, Calif. 94022

Filed Aug. 4, 1980, Ser. No. 174,754

Int. Cl.³ B26B *29/02*

U.S. Cl. 30—294 4 Claims



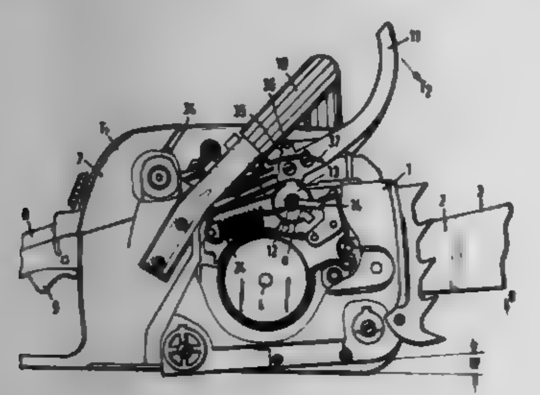
1. A surgical knife for making incisions of a controlled depth in a selected tissue surface comprising:

handle means for controlling the movements of the knife having a tapered end, said tapered end being selectively truncated obliquely to the major axis of the handle means to form a substantially flat guard surface with a rectilinear edge and with a normal vector to said guard surface forming an angle α to the major axis of the handle means; and

a planar blade having a dull edge and a sharpened edge, said blade being affixable substantially perpendicularly to the guard surface to extend outward therefrom with the dull blade edge normally intersecting said rectilinear edge of the guard surface with an obtuse included angle defined by the dull blade edge and the guard surface, the dull blade edge aligned to be substantially parallel to the major axis of the handle means, and the intersection of the dull

and sharpened edges of the blade forming an acute included angle and defining the point of maximum extent from the guard surface with the sharpened blade edge intersecting the guard surface in an acute included angle defined by the sharpened blade edge and the forward portion of that surface with respect to the guard edge, and the portions of said rectilinear edge extending laterally from at least one side of the blade to form a guard edge for limiting the depth of the incision as the knife is pivoted about the guard edge as the knife is drawn toward the user with the guard edge being maintained against the surface to be cut.

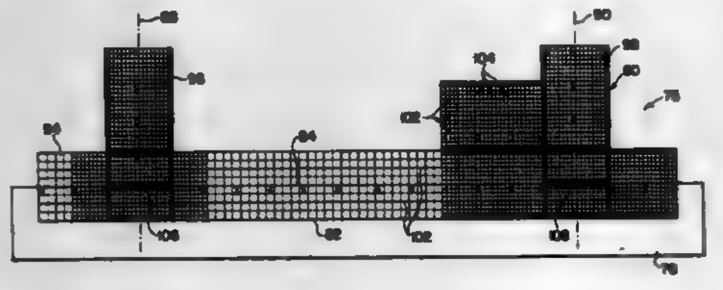
4,324,045
MOTOR CHAIN SAW WITH DYNAMIC SAFETY BRAKING DEVICE
Klaus Höppner, Marbach, and Günter Wolf, Murrhardt, both of Fed. Rep. of Germany, assignors to Firma Andreas Stihl, Waiblingen, Fed. Rep. of Germany
Filed May 29, 1980, Ser. No. 154,534
Claims priority, application Fed. Rep. of Germany, Jun. 2, 1979, 2922574
Int. Cl.³ B27B *17/02*
U.S. Cl. 30—381 9 Claims



1. A portable motor chain saw, comprising in combination:
a motor housing including a handle housing portion;
a safety braking device, associated with said motor housing, for protecting against recoil movements;
a handle mounted to said handle housing portion of said motor housing;
a hand guard associated with said braking device for actuating same, said hand guard acting as an inertia mass and being arranged between said handle and the saw chain, said hand guard being pivotally journalled about an axis extending substantially parallel to the drive axis of said saw;
damping elements mounted relative to said motor housing both to damp unavoidable vibrations and for supporting said handle relative thereto for attaining an inertia magnitude by utilization of recoil;
an arresting device rigidly connected to said handle and engaging said hand guard in such a way that it is releasable under the influence of a relative movement due to the inertia magnitude of said motor housing with respect to said handle, caused by a recoil, consequently releasing said hand guard for pivotal movement only upon exceeding a predetermined value of recoil.

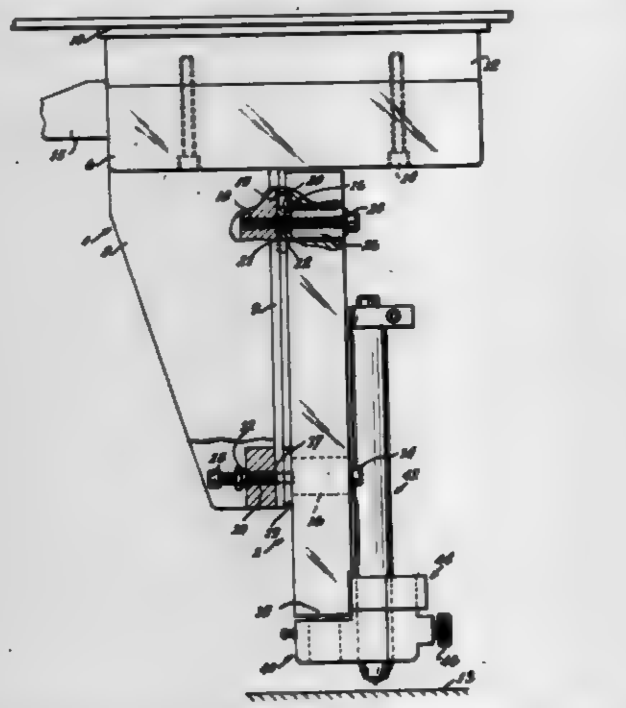
4,324,046
PATTERN GRADING DEVICE
Donald A. Weinberg, 2201 Acacia Park, Lyndhurst, Ohio 44124
Filed Mar. 3, 1980, Ser. No. 126,652
Int. Cl.³ A41H *3/00*
U.S. Cl. 33—17 A 1 Claim

1. A grading device for grading a master pattern having a predefined outline, comprising: an elongated base member for resting flatwise on a flat work surface and having at least one longitudinal side edge, an elongated scale member secured flatwise to the top surface of said base member in longitudinally parallel overlying relation thereto, said scale member having a longitudinal major axis parallel to and coinciding with the said longitudinal side edge of said base member, said elongated scale member further including at least a pair of lateral arm portions projecting laterally outward relative thereto and to the said one longitudinal side edge of said base member and extending in parallel relation to each other, said lateral arm portions being spaced an appreciable distance apart along the length of said scale member and having respective minor parallel axes perpendicular to said major axis, said scale member being provided with indicia lines disposed orthogonally on the said lateral arm portions thereof and on at least the portions of



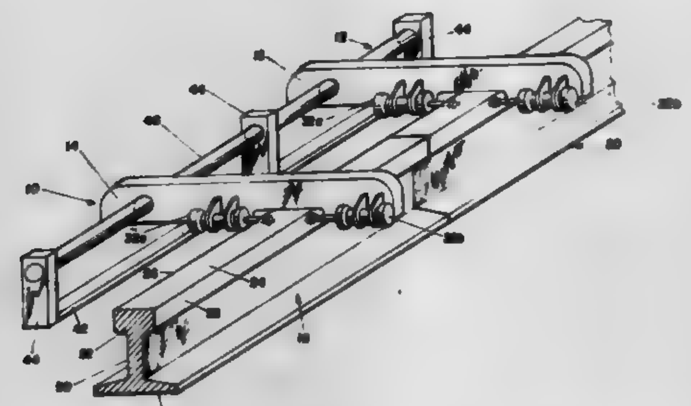
said scale member between the said lateral arm portions, said indicia lines respectively extending parallel and perpendicular to the said major axis of said scale member, said grading device further including a guide frame for attachment to a master pattern and resting on the said scale portion of said grading device for sliding adjustment movement relative thereto, said guide frame comprising an elongated base portion having a longitudinal straight side edge and three parallel pattern-holding arms projecting laterally outward from the other longitudinal side edge of said base portion, two of said arms being spaced an appreciable distance apart along the length of said base portion and the third one of said arms being in relatively close spaced relation to one of said two arms.

4,324,047
UNIVERSAL HIGH SPEED HOLDER
Jacques L. Roch, Half Moon Bay, Calif., assignor to Xynetics, Inc., Santa Clara, Calif.
Continuation of Ser. No. 931,409, Aug. 7, 1978, abandoned, which is a continuation of Ser. No. 707,893, Jul. 22, 1976, abandoned. This application May 16, 1980, Ser. No. 150,553
Int. Cl.³ B43L *13/00*
U.S. Cl. 33—18 R 35 Claims



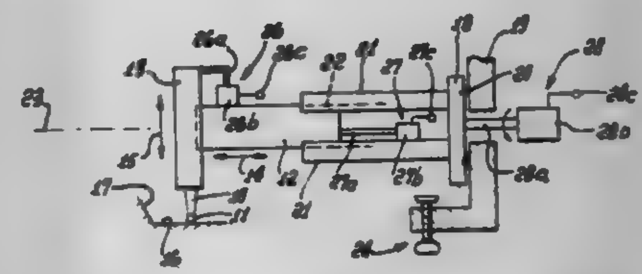
1. An apparatus for making drawings on a working surface in accordance with the production of individual signals comprising:
a platen,
a forcer disposed relative to said platen for movement relative to the platen,
retaining means adjustably connected to said forcer,
a plurality of separately actuatable means movable relative to said retaining means in accordance with the actuation of the actuatable means,
a pluralilty of tools each associated with an individual one of the actuatable means for movement with the actuatable means in accordance with the actuation of the actuatable means and each movable independently of the actuatable means,
said retaining means holding the plurality of separately actuatable means and the plurality of tools for movement of the associated tool into or out of operative relationship with the working surface in accordance with the actuation of the actuatable means,
a plurality of means each adjustable to control the positioning of an individual one of said actuatable means relative to the working surface in accordance with such adjustments to control the degree of contact of said tools with the working surface,
means to position each of said tools independently of the positioning of the associated actuatable means,
means operatively associated with the actuatable means in the plurality and responsive to the production of the individual signals for individually actuating the actuatable means in accordance with the production of such signals to move the actuatable means and bring the associated tools into operative relationship with the working surface, and
means operatively associated with individual tools in the plurality for providing for each such tool a floating relationship between such tool and the working surface independently of the positioning of the associated actuatable means and independently of the operation of the actuating means in actuating the associated actuatable means.

4,324,048
LOCATOR FOR RAIL ALIGNING DEVICE
Ralph S. Frost, Olympia Fields, Ill., assignor to Chemetron Railway Products, Inc., Chicago, Ill.
Filed Jan. 16, 1980, Ser. No. 112,587
Int. Cl.³ B25B *1/10;* B23P *19/00*
U.S. Cl. 33—180 R 3 Claims



1. In a rail alignment machine of the type having rail locators for correctly positioning normally horizontal rail sections in horizontal and vertical planes respectively to effect end-to-end alignment of the sections, an improved horizontal locator including:
a generally horizontal support bar;
a spaced apart pair of rail contact elements pivotally mounted on said bar for swinging movement about the longitudinal axis thereof;
at least one of said elements also being shiftably supported on the bar for reciprocation along the longitudinal axis thereof;
each of said contact elements comprising:
an elongate arm extending generally perpendicularly of said bar, and having a pivoted end attached to the bar and a free end remote therefrom;
a fixed reference surface formed in said arm adjacent said free end, said reference surface being adapted to engage the running surface of a rail head from above;
a pair of opposed, reciprocable, counteracting side-contact members mounted on said arm for co-operatively clamping said rail head on opposite sides thereof;
said side-contact members being offset from the plane of said reference surface a predetermined distance such that the sides of said rail are contacted by said member only at points remote from said running surface when the latter is contacted by said reference surface.

4,324,049
GAGING SYSTEM AND METHOD
Thomas L. Blose, Houston, Tex., assignor to Hydril Company, Los Angeles, Calif.
Filed Nov. 5, 1979, Ser. No. 91,270
Int. Cl.³ G01B *7/28*
U.S. Cl. 33—199 B 43 Claims



1. In a work gaging system, said work being in the form of a pipe defining work surfaces as a thread extending about an axis, the combination comprising
(a) first means having a gaging tip engageable with said work surfaces,
(b) means supporting said first means, for longitudinal, lateral and rotatable displacements of said tip, and
(c) means to sense said longitudinal, lateral, and rotatable displacements of said tip for readout purposes,
(d) said gaging tip sized to be freely received between successive threads to be bodily displaced axially from a position of engagement with a thread flank facing in one axial direction and into another position of engagement with a thread flank facing on the opposite axial direction,
(e) said (b) means including a first slide movable in a first direction generally parallel to said axis, and a second slide movable in a second direction extending generally radially relative to said first direction, one of said slides carried by the other and movable relative thereto, and a rotor carrying said other slide for bodily rotating it about an axis generally parallel to said first direction, whereby both slides are rotated by the rotor,
(f) and a support for said rotor.

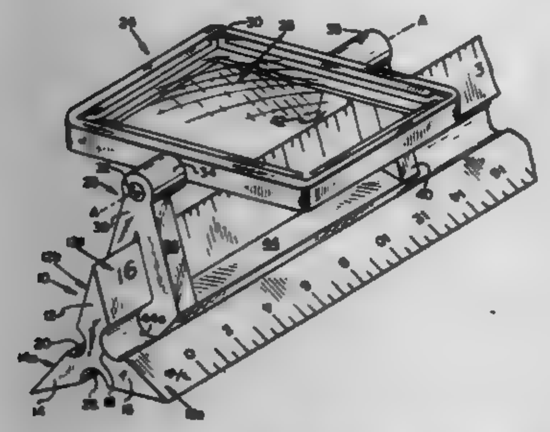
4,324,050
SCALE MAGNIFIER
John R. Weir, 4816 NE. 49th Ave., Vancouver, Wash. 98661
Filed Feb. 11, 1980, Ser. No. 120,705
Int. Cl.³ G02B *27/02*
U.S. Cl. 33—488 1 Claim

1. A magnifier for facilitating visual perception of scale markings on an engineer's scale having three apexes comprising:
a mount including legs which detachably engage the scale

with portions extending above a first one of the apexes and joining to form a sleeve means;

a magnifying element connected to said mount so that it spans across the first apex, said magnifying element being dimensioned to extend laterally above the viewable scale markings adjacent the other two apexes; and

pivot means interconnecting said mount and said magnifying element by being rotatably accepted in said sleeve



means, said pivot means being disposed above the first apex, when said mount engages the scale and defining a pivot axis which extends generally parallel to the longitudinal axis of the scale and above the first apex so that said magnifying element may be tilted via said sleeve means and pivot means in a selected one of two directions about the pivot axis and above the first apex to enable magnification of a selected one of the viewable scale markings adjacent the other two apexes.

4,324,051

PROCESS AND APPARATUS FOR RECOVERING HEAT FROM FINELY TO COARSELY DIVIDED MATERIAL HAVING HIGH TEMPERATURE

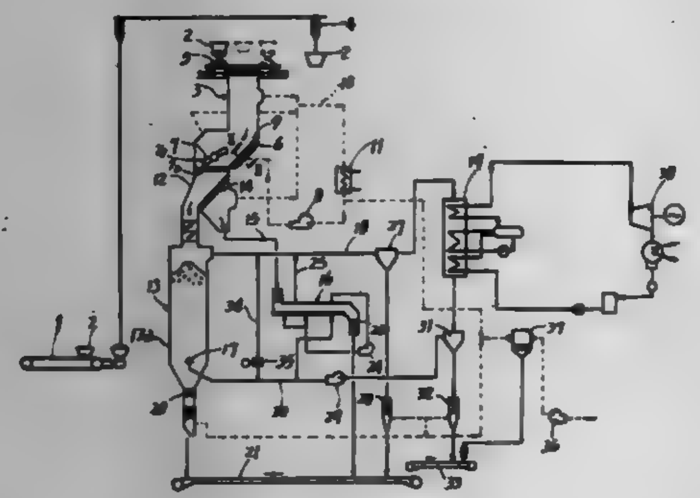
Katsuhiko Sasaki; Masaru Sakaba, both of Nara, and Kingo Hayashi, Takatsuki, all of Japan, assignors to Hitachi Shipbuilding & Engineering Co., Ltd., Osaka, Japan

Filed Jun. 27, 1980, Ser. No. 163,844

Claims priority, application Japan, Jul. 7, 1979, 54-86147

Int. Cl.³ F26B *5/00*

U.S. Cl. 34—20 10 Claims



1. A process for recovering heat from a finely to coarsely divided material having a high temperature comprising the steps of separating the material into a portion of lumps and a portion of particles, forcibly applying a stream of cooling gas to substantially the entirety of one separated portion of material and forcibly applying a separate stream of cooling gas to substantially the entirety of the other separated portion of material in a manner such that neither stream of cooling gas has been preheated by the other when applied to the respective portion of material, and recovering heat from both streams of cooling gas.

4,324,052

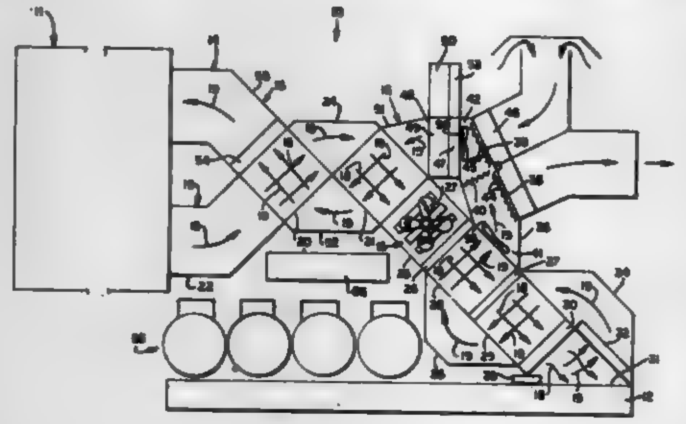
SOLVENT AND HEAT RECOVERY SYSTEM FOR DRYING OVEN

John L. Bosher, 2469 Emory La., NE., Marietta, Ga. 30067

Filed Sep. 5, 1980, Ser. No. 184,286

Int. Cl.³ F26B *3/04*

U.S. Cl. 34—27 8 Claims



1. A process for recovering solvent and heat from hot solvent saturated air in drying ovens comprising the steps of:

moving the hot air with solvent vapors entrained therein from the drying oven through a plurality of cooling stages of a substantially closed air cycle including in sequence through a first pair of cross-flow heat exchangers, then progressively along a downwardly inclined path from the first pair of cross-flow heat exchangers through an air coil heat exchanger, through a water coil heat exchanger, through a second pair of cross-flow heat exchangers and about a refrigerant fluid evaporator to a demister,

collecting the condensed solvent from the air at the evaporator and the demister at the end of the downwardly inclined path,

moving the cool dry air through a plurality of heat transfer stages including in sequence from the demister back through the second pair of cross-flow heat exchangers, through the first pair of cross-flow heat exchangers, then about a refrigerant fluid condenser to the oven chamber.

4,324,053

ANTI-POLLUTION ROTARY-SWEEP GRAIN DRIER

Rodney W. Carpenter, Milford, Ind., assignor to Clayton & Lambert Manufacturing Co., Buckner, Ky.

Continuation of Ser. No. 894,181, Apr. 6, 1978, Pat. No. 4,241,517. This application Aug. 20, 1980, Ser. No. 179,745

Int. Cl.³ F26B *19/00*

U.S. Cl. 34—236 5 Claims

1. A grain drying apparatus comprising:

A. a grain drying bin having a perforated floor through which hot air is blown upwardly for drying purposes;

B. a rotary sweep mounted in the bin for sweep movement over the floor, said sweep having distributing means on its lag side for distributing wet grain over the floor and radially-extending retrieving means on its lead side for removing dried grain from the floor;

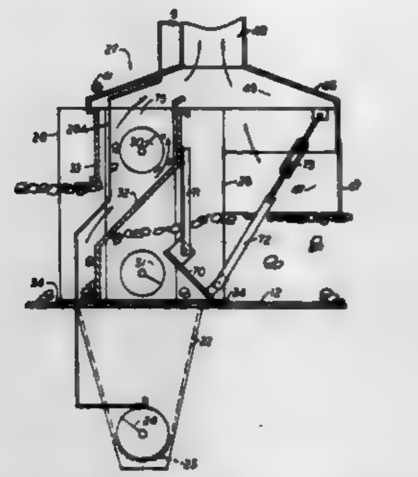
C. means for feeding wet grain to said distributing means;

D. means for receiving dried grain from said retrieving means and conveying said dried grain outside of the bin;

E. a partition wall connected to a central portion of said rotary sweep and extending radially outward therefrom for movement over said floor with the movement of said rotary sweep, said wall extending between said distributing and retrieving means to separate the lag side from the lead side of said sweep; and

F. means for building up the thickness of the dry grain on the

lead side of the retrieving means including a rigid plate at least partially suspended from an upper portion of said wall and disposed in front and on the lead side of said retrieving means, said plate radially extending parallel to said retrieving means between said central portion and a



sidewall of said bin, said plate being inclined with respect to a vertical plane through said bin such that its upper edge is relatively closer to said retrieving means than its lower edge, said lower edge being spaced above said floor to form a horizontally extending gap therebetween.

4,324,054

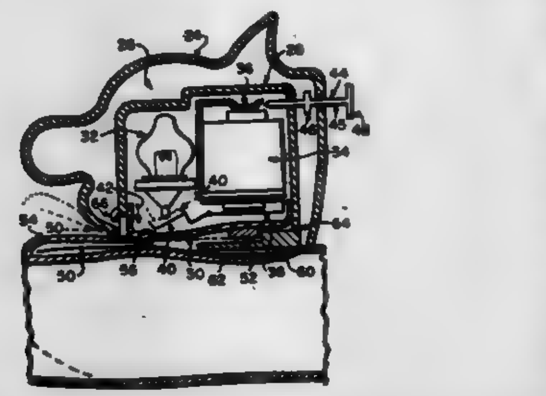
NIGHT LIGHT SLIPPER

William Rovinsky, Old Bethpage, N.Y., assignor to Step-Lite Footwear Inc., New York, N.Y.

Filed Jun. 25, 1980, Ser. No. 162,813

Int. Cl.³ A43B *23/00, 7/02, 3/28;* G02B *5/12*

U.S. Cl. 36—137 12 Claims



1. In a child's slipper having illumination means associated therewith for lighting a path to be traversed by said child's slipper as the child wearer thereof travels along a walking surface step-by-step, said child's slipper having a front portion, a rear portion and a bottom sole portion, said bottom sole portion being bendable so as to flex with each step taken by said child wearer, said front portion forming a pocket for the front portion of the foot of said child wearer with said flexible bottom sole portion, said illumination means comprising a housing disposable on said front portion, a light source, a battery source for powering said light source upon completion of an electric conduction path therebetween and a switch means for selectively connecting said battery source to said light source in said electrical conduction path, said light source, battery source and switch means being disposable in said housing; the improvement comprising a resilient pusher member mountable in said front portion for direct flexing movement in conjunction with said flexing of said bottom sole portion during each step by said child wearer, said pusher member being disposed adjacent said switch means for actuating said switch means during each flexure of said pusher member so as to close said switch means during each step by said child wearer, and a light transmissive three dimensional hollow recognizable character rendition, said illumination means being disposable in said recognizable character rendition for illuminating said recognizable character rendition each time said light source is illuminated, said recognizable character rendition comprising a child's night light capable of being periodically illuminated with each step by said child, whereby said night light accompanies said child wearer during said path traversal.

4,324,055

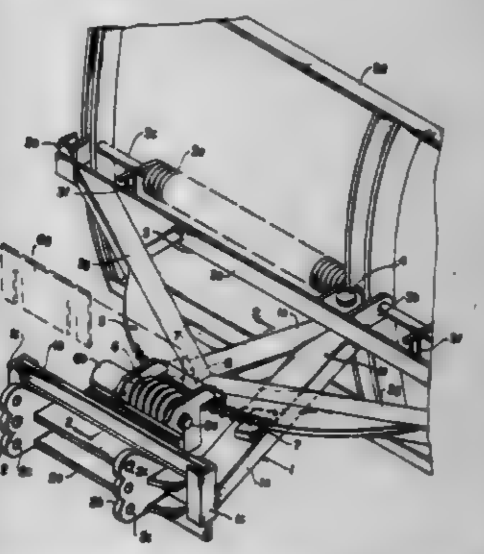
MOLDBOARD SUPPORT ASSEMBLY

John H. Hippensteel, Newville, Pa., and Rupert J. Brady, Bethesda, Md., assignors to Richard P. Valk, Carlisle, Pa.

Filed Jul. 21, 1980, Ser. No. 170,793

Int. Cl.³ E01H *5/04*

U.S. Cl. 37—42 VL 12 Claims



9. In a moldboard support assembly of the type having a drive frame assembly including a pair of convergent frame members, a blade and moldboard support frame pivotally connected to the convergent ends of the drive frame assembly for pivotal movement about a vertical axis, the blade and moldboard support frame including a pair of convergent frame members having their divergent ends connected to the moldboard, the pivotal movement of the blade and moldboard support frame being effected by a gear segment on the blade and moldboard support frame beingdriven by a motor-driven worm gear mounted on the drive frame assembly, the improvement comprising the gear segment connected to the convergent end portions of the convergent frame members of the moldboard support frame, a pair of wear pads mounted on the upper surface of said convergent frame members of said drive frame assembly and engaging the lower surface of the convergent frame members of said moldboard support frame, a bracket on the drive frame support assembly in which the worm gear is rotatably mounted, another wear pad connected to said bracket and engaging the upper surface of the gear segment to thereby maintain the drive frame assembly and moldboard support frame in alignment to insure proper intermeshing of the worm gear and gear segment, whereby the bracket provides the dual function of supporting the worm gear and said another wear pad which engages the upper surface of the gear segment.

4,324,056

WIPING DEVICE FOR A DITCH DIGGING MACHINE

Gerhard Sommerfeld, Verbindungsweg 1, 2905 Edewecht/Friedrichsfehn, Fed. Rep. of Germany

Filed Jun. 25, 1980, Ser. No. 162,971

Claims priority, application Fed. Rep. of Germany, Jun. 25, 1979, 7918437[U]

Int. Cl.³ E02F *3/08*

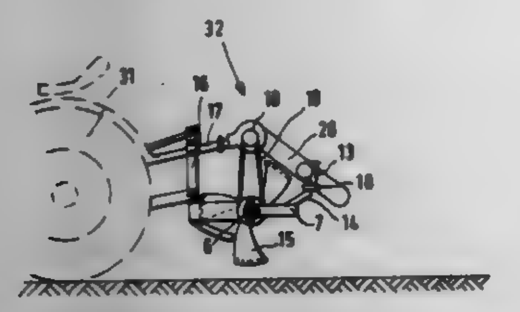
U.S. Cl. 37—94 4 Claims

1. A device for removing stones or the like, for use in associ-

ation with a ditch digging machine having at least one digging blade mounted on a generally horizontally-disposed rotatable shaft, comprising:

a wiper endpiece;

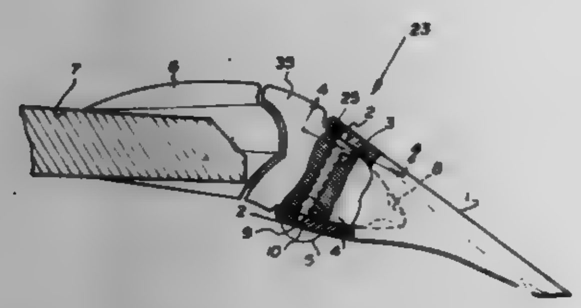
bearing means for mounting said wiper endpiece on said shaft, such that it is spaced a relatively short distance



away from said blade in a substantially parallel manner thereto, comprising two opposing half-shells which engage and together encircle said shaft and which are provided on their interior surfaces with continuously adjustable friction linings; and

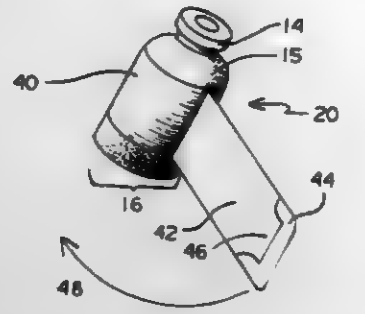
a spring-loaded rocker arm disposed to engage and releasably retain said endpiece in a normal operating position.

4,324,057
PIN TYPE TOOTH RETENTION SYSTEM
Kenneth M. White, 2432 Paliswood Rd. S.W., Calgary, Alberta, Canada (T2V 3P8)
Filed Jun. 11, 1979, Ser. No. 47,292
Claims priority, application Canada, Jun. 21, 1978, 305934
Int. Cl.³ E02F *9/28*
U.S. Cl. 37—142 A **11 Claims**



1. An excavator tooth assembly comprising a replaceable tooth having a cutting end and a hollow mounting end, and an adapter having a nose piece which is triangular in longitudinal cross-section mated with the mounting end of said tooth, the mounting end of said tooth being provided with two opposed holes to act in conjunction with a hole extending through the adapter, a resilient insert having a longitudinal hole therethrough to define a first outer surface eccentric to said longitudinal hole, said eccentric outer surface providing a thicker portion which includes compression relief means, orienting means positioning said insert in said hole in said adapter with said thicker portion extending toward the cutting end of the tooth, said orienting means comprising a second outer surface eccentric relative to said first outer surface and said longitudinal hole to provide a protuberance which is fitted into an opening in said nose piece, and a retaining pin extending across the triangle of said nose piece, through said longitudinal hole in said insert, and into the two opposed holes in the mounting end of said tooth to bias said tooth rearwardly along said nose piece.

4,324,058
METHOD OF LABELING UNDERSIZED CONTAINERS
Steven P. Sherwick, Minnetonka; David G. Leapley, St. Louis Park, both of Minn., and James P. Vonderhorst, Parkton, Md., assignors to Accraply, Inc., Minnetonka, Minn.
Filed Feb. 27, 1980, Ser. No. 125,208
Int. Cl.³ G09F *3/00*
U.S. Cl. 40—310 **2 Claims**



1. A method to label a container with more information than the outer circumference of the container may permit, comprising:

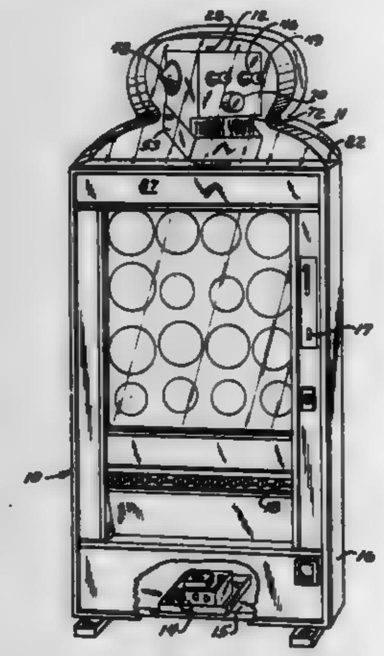
(a) attaching a label to the outer circumference of the container, said label having a length, an outer circumference contact portion substantially centered on said label length and being substantially equal to the outer circumference of the container, two overlap portions flanking said outer circumference contact portion and a release portion and a releasable adhesive portion, each flanking one said overlap portion, said contact portion being attached to the outer circumference of the container, all said portions having an exposed surface and an adhesive surface;

(b) attaching said adhesive surfaces of said overlap portions to each other and said adhesive surface of said release portion to a segment of said adhesive surface of said releasable adhesive portion;

(c) wrapping said attached overlap portions around the outer circumference of the container; and

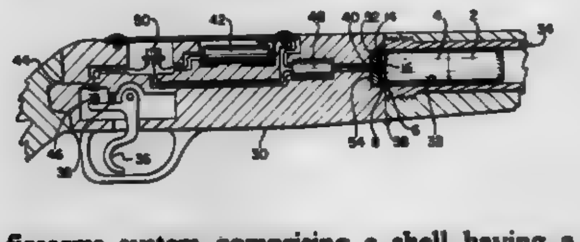
(d) releasably attaching the remainder of said adhesive surface of said releasable adhesive portion to said exposed surface of said outer circumference contact portion.

4,324,059
ATTRACTION AND ENTERTAINMENT DEVICE FOR A VENDING MACHINE
Harold D. Baum, 4615 N. Clifton Ave., Chicago, Ill. 60640
Filed Jun. 27, 1980, Ser. No. 163,783
Int. Cl.³ G09F *19/08*
U.S. Cl. 40—416 **12 Claims**



1. An animated device simulating the head of a figure having movable eye, ear and jaw elements operable upon actuation of a vending machine, said device comprising, in combination: an upright support secured on said vending machine; a housing in the shape of a head secured for pivotal movement in a horizontal plane on said support; a motor having a rotatable drive shaft secured in and to said housing; drive means mounted in said housing operably connecting said eye, ear and jaw elements to said motor drive shaft for movement therewith, said drive means consisting of a gear secured to said motor drive shaft, a second gear intermeshed therewith, a second drive shaft axially aligned and connected for rotation with said second gear, a bell crank on said second drive shaft, and connections from said second drive shaft and bell crank for moving said eye, ear and jaw elements; linkage mechanism on said support and said motor drive shaft gear cooperating for reciprocally pivoting said housing on said support in a horizontal plane responsive to rotation of said motor drive shaft; and electric means for delivering current to said motor.

4,324,060
FIREARM SYSTEM
George L. Lawrence, 517 W. 160th St., New York, N.Y. 10032
Filed Mar. 17, 1980, Ser. No. 131,271
Int. Cl.³ F41C *19/12*; F42B *5/08*
U.S. Cl. 42—84 **7 Claims**



1. A firearms system comprising a shell having a metal jacket, a rear wall portion of said jacket having a hole centrally thereof, an insulator mounted in said hole, and an electrically conductive contact disposed axially of said insulator and said shell and spaced from said jacket in said hole, a first end of said shell contact being exposed at said rear wall and a second end of said shell contact extending inwardly of said shell and in contact with a reservoir of power; a firearm comprising a housing having a chamber for receiving said shell, a barrel portion extending outwardly therefrom, a trigger mounted on said housing and adapted to be moved by an operator, an electrical circuit mounted in said housing and including a first contact disposed in said chamber, insulator means disposed in said chamber, said insulator means comprising a disc having a concave face portion, said first contact being retained by said insulator disc and being exposed in said face portion, said face portion being adapted to receive said shell insulator and said shell contact for engagement of said first contact and said shell contact, a power source disposed in said housing and in said circuit, second contact means disposed in said circuit and located proximate said trigger, and third contact means disposed in said circuit and movable by said trigger into engagement with said second contact means to close said circuit, whereby to initiate an arc between said shell contact and said metal jacket to ignite said powder.

4,324,061
CASTING NET HOLDING DEVICE
Jesse W. Stepp, Rte. 5, Box 1023, Brunswick, Ga. 31520
Filed Jun. 27, 1980, Ser. No. 163,562
Int. Cl.³ A01K *75/00*
U.S. Cl. 43—4.5 **4 Claims**

4. A method of using a casting net holding device when casting with a casting net having a net portion, a hand line and a weight line, said holding device comprises: a plate, means located on said plate for temporarily supporting a portion of the casting net during casting operations, and means for carrying the plate on the caster's body; the method comprising the steps of:

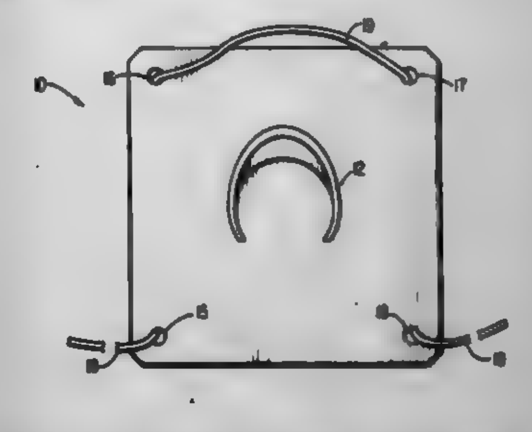
mounting said net holding device on the body of the caster;

coiling a portion of the hand line of said net;

holding said coiled portion of said hand line in one hand;

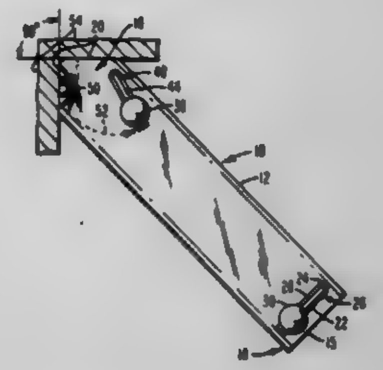
draping a portion of the weight line of said net over said net supporting means;

supporting a portion of said net in the other hand; and



casting said net by swinging it in such a manner that said net spreads out upon the water, the spreading of said net causing said weight line to free itself from said net supporting means without any active intervention on the part of the caster.

4,324,062
HUMANE INSECT TRAP FOR THE LIVE CAPTURE OF SPIDERS AND THE LIKE
Fred A. Schneider, 841 Mohican Way, Redwood City, Calif. 95062
Filed Feb. 19, 1980, Ser. No. 122,033
Int. Cl.³ A01M *1/10*
U.S. Cl. 43—110 **18 Claims**



1. A hand-held trap apparatus for capturing insects alive from given surfaces to allow their subsequent disposal, comprising;

tubular housing means terminating at its ends in preselected flat and pointed geometry configurations for fitting against flat and corner surfaces respectively to totally enclose the insect within the end;

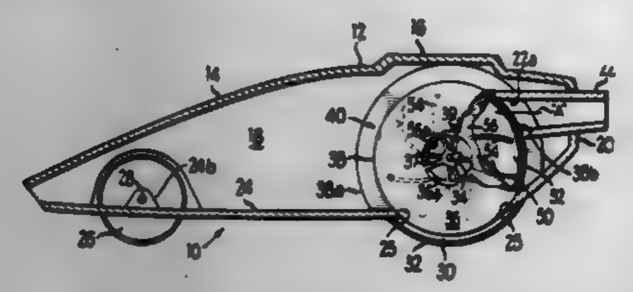
mechanically actuated trap door means including a trap door having integral closure and open actuating means formed of mechanical element means coupled to the trap door, and disposed within the flat and pointed ends to close and open respectively the end of the housing means in response to the mechanical application of respective closing and opening forces; and

means for maintaining the trap door means in the opened or closed positions;

wherein the captured insect is safely contained within the trap apparatus for subsequent disposal.

4,324,063
TOY MOTOR VEHICLE

Donald A. Rosenwinkel, Tinely Park, and Harry Disko, South Barrington, both of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.
Filed Oct. 1, 1980, Ser. No. 192,867
Int. Cl.³ A63H *17/00, 29/16*
U.S. Cl. 46—44 9 Claims



1. A toy motor vehicle having wheel means fore and aft for supporting a body for rolling movement on a playing surface;

said aft wheel means including a wheel mounted for rotation on an axis transverse of said body and having a plurality of generally radial air vanes extending laterally outwardly on opposite sides for causing said wheel to rotate in response to a stream of air applied thereto;

a mouthpiece on an aft end portion of said body having a nozzle outlet in communication with said vanes on opposite sides of said wheel for directing a stream of air against said vanes for rotating said wheel when a person blows into said mouthpiece; and

a wheel housing formed in said body enclosing said wheel on opposite sides of said vanes and having an inlet in communication with said outlet end of said mouthpiece above said axis causing said wheel to rotate in a forward direction, said mouthpiece including an inlet end portion projecting rearwardly outwardly of said aft end of said body, and having opposite sides aligned with opposite sides of said wheel housing, said wheel housing including an outlet opening on an underside of said body.

4,324,064
TOY AIRCRAFT

Pierre A. Bettencourt, and Charles H. Cleveland, both of Bend, Oreg., assignors to North Pacific Products, Inc., Bend, Oreg.
Filed Nov. 13, 1980, Ser. No. 206,364
Int. Cl.³ A63H *27/14*
U.S. Cl. 46—81 10 Claims

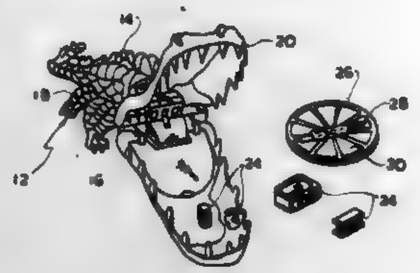
1. A toy aircraft having a fuselage comprising a pair of body halves hingedly connected together for movement from a launching position to a post launching flight position,

each body half carrying an airfoil panel,

and a launching hook on one body half which projects therefrom in the opposite direction from that of said airfoil panels and in an exposed position, when the halves are swung to the launching position.

4,324,065
BALANCE OPERATED GAME

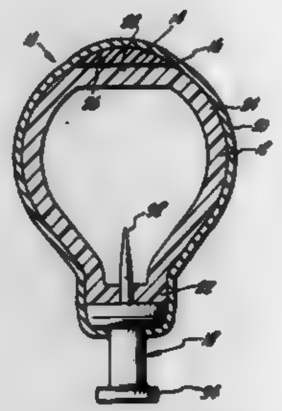
Julius Cooper, New Hyde Park, N.Y., assignor to Ideal Toy Corporation, Hollis, N.Y.
Filed Dec. 15, 1980, Ser. No. 216,589
Int. Cl.³ A63H *3/20;* A63F *9/00;* A63H *13/02*
U.S. Cl. 46—120 11 Claims



9. A game device comprising a body in the shape of a simulated animal, simulated upper and lower jaws pivotally mounted on said body for movement between respectively relatively opened and closed positions; a pair of simulated legs having feet and being pivotally mounted in said body for pivotal movement between a first retracted position wherein the feet are adjacent the body and a second extended position wherein the feet may engage a support surface on which the body is placed to hold said jaws above said support surface; spring means for biasing said legs to said retracted position; latch means responsive to pivotally movement of said legs from said retracted to said extended position for pivoting said upper jaw from its closed to its open position and holding it in said open position while latching said legs in said extended position; means normally biasing said lower jaw to its closed position; a plurality of game pieces adapted to be placed in said lower jaw to move said lower jaw towards its open position against the bias of said biasing means; said lower jaw being operatively engaged with said latching means for releasing the latching means when the lower jaw reaches its opened position whereby said legs are returned to their retracted position by said spring means to propel said body forward while said jaws return to their closed positions in a simulated snapping action.

4,324,066
ARTIFICIAL EYE HAVING DOUBLE CONVEX MAGNIFYING LENS

Lori J. Smith, 915 N. Wetherly Dr., West Hollywood, Calif. 90069, and James J. Alser, 5460 White Oak, Encino, Calif. 91316
Filed Apr. 4, 1980, Ser. No. 137,527
Int. Cl.³ A63H *3/42*
U.S. Cl. 46—165 8 Claims



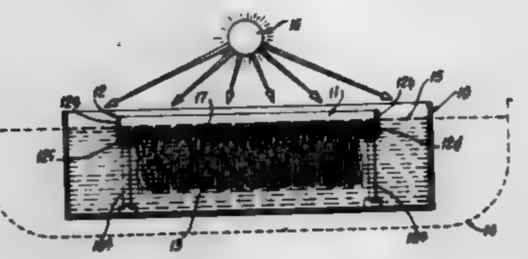
1. An artificial eye comprising:
(a) a bulbous base having a neck portion and a diametrically opposed crown, the base being comprised of a rigid, substantially unbreakable, opaque, polymeric material;

(b) mounting means extending from the neck portion of the base diametrically opposite the crown;
(c) a double convex, substantially unbreakable, polymeric, magnifying lens mounted on the crown of the base;
(d) an image of the pupil and iris of an eye between the crown and the lens, the image of the pupil and iris being visible through the lens; and
(e) an exterior film of a substantially transparent, substantially unbreakable, polymeric material encasing the lens and the base, the film being at least about 3 mils thick, the lens and the film being comprised of the same polymeric material.

6. A method for forming an artificial eye comprising the steps of:
(a) forming a solid, polymeric, rigid, substantially unbreakable, opaque, bulbous base having a neck portion and a diametrically opposed crown by curing a polymeric resin in a mold;
(b) placing means for mounting the eye into the base in the neck portion diametrically opposite the crown while the polymeric resin is partially cured;
(c) placing an image of the pupil and iris of an eye on the crown;
(d) placing a rigid, substantially transparent, substantially unbreakable, magnifying, double convex lens on the base over the image; and
(e) securing the placed lens to the base by encasing the base and the lens in a film comprised of a substantially transparent polymeric material, the film and the lens being formed of the same polymeric material, the film being at least about 3 mils thick.

4,324,067
ALGAL CELL HARVESTING

John O. Kessler, Tucson, Ariz., assignor to The University of Arizona Foundation, Tucson, Ariz.
Filed Feb. 4, 1980, Ser. No. 118,585
Int. Cl.³ A01G *7/00*
U.S. Cl. 47—1.4 26 Claims



1. A system for producing accelerated migration of unicellular motile algal cells from a liquid containing reservoir in which said cells are disposed for multiplication by cell division, comprising a cell harvest zone located adjacent the top surface of the liquid in said reservoir, and a mass of discrete elements connecting said harvest zone with the liquid in said reservoir to provide a migration path which enables cells in said liquid to migrate by self-locomotion from the liquid in said reservoir through said mass to said harvest zone.

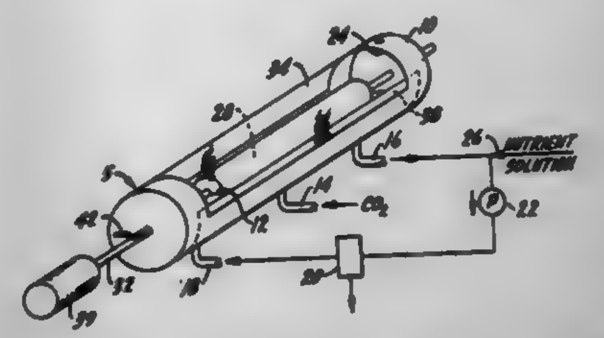
4,324,068
PRODUCTION OF ALGAE

Myron L. Anthony, Grand Junction, Colo., assignor to Sax Zzyzx, Ltd., Clifton, Colo.
Filed Mar. 3, 1980, Ser. No. 126,844
Int. Cl.³ A01G *33/00*
U.S. Cl. 47—1.4 9 Claims

1. Apparatus for growing and harvesting algae comprising:

a container for holding a body of water containing an inoculum of algae in suspension and having both a window to admit light for photosynthesis into a space adjacent the body of water and a dark area for dark photosynthesis reaction;

means to introduce carbon dioxide into the body of water to make a solution thereof in the presence of life-supporting chemicals for algae growth and reproduction; a fine mesh



carrier inside the container and supported for cyclically presenting solution fractions containing algae in suspension to the window for photosynthesis and returning the fractions to the body of water;

and means to remove the heavier algae from the body of water.

4,324,069
PLANT GROWING SYSTEM UTILIZING PNEUMATIC PRESSURE

Rodger H. Flagg, 1415 Lynn Ave., Fort Wayne, Ind. 46805
Filed May 27, 1980, Ser. No. 153,041
Int. Cl.³ A01G *31/02*
U.S. Cl. 47—62 16 Claims

1. An apparatus for periodically supplying liquid to the root system of plants utilizing pneumatic pressure which comprises:

an elongated container for containing a liquid plant nutrient at a first liquid level;

an elongated planar plant support having longitudinal side edges and upper and lower surfaces positioned and supported in said container above said first level;

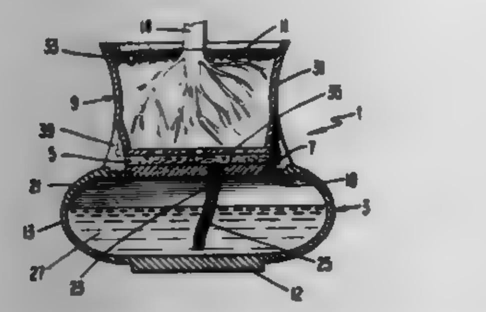
first means for providing an elongated pneumatic chamber beneath said support and having a lower surface defined by this liquid surface at said first level;

second means for supplying pneumatic pressure within said chamber;

third means for providing a fluid passage from beneath said first level to above said support along substantially the entire length of said support whereby upon application of pneumatic pressure by said second means within said chamber said liquid will be forced downward by said pressure, lowering the liquid level beneath said first level in said chamber, forcing said liquid through said passage to raise the liquid level in said passage to further comprising a above said support;

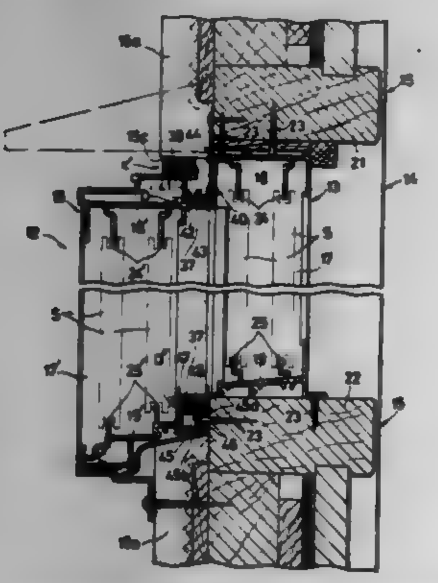
said passage having a longitudinal opening at substantially the level of said support for substantially the entire length of said support.

4,324,070
SELF-WATERING PLANTER
Carolyn L. Swisher, 1100 6th St., SW., Apartment #415, Washington, D.C. 20024
Filed Apr. 24, 1980, Ser. No. 143,493
Int. Cl.³ A01G *27/00*
U.S. Cl. 47—81 7 Claims



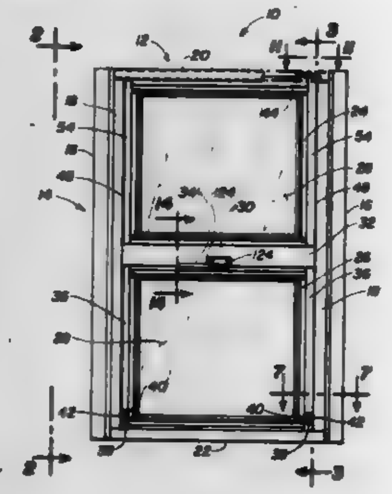
1. A self-watering planter for plants or the like, comprising:
a water reservoir including at least one sealable opening for receiving water therein;
a lid member on said water reservoir;
a wick and absorbent mat disposed atop said lid member of said reservoir, said wick communicating water contained in said reservoir to said absorbent mat; and
a plant container disposed atop said absorbent mat, said plant container including at least one opening formed in a base portion thereof for communicating moisture from said absorbent mat to growing media contained in said plant container,
recess means on said plant container for receiving and enclosing the periphery of said lid member of said reservoir and said absorbent mat when said plant container is seated atop said water reservoir to prevent evaporation of moisture from said absorbent mat and said reservoir directly to the atmosphere.

4,324,071
DUAL WINDOW ASSEMBLY
Kinji Ishida, Toyama, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan
Filed Aug. 30, 1979, Ser. No. 71,114
Claims priority, application Japan, Sep. 12, 1978, 53-124990; Oct. 13, 1978, 53-140375
Int. Cl.³ E06B *7/00*
U.S. Cl. 49—63 11 Claims



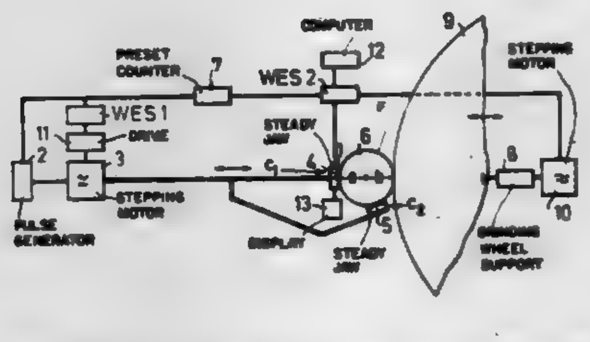
1. A dual window assembly for covering an opening in a building wall having an exterior siding, said dual window assembly comprising in combination:
(a) an interior window unit having a first rectangular unitized metal frame receivable within the opening, and a first pair of sashes mounted within said first frame, said first frame being apertured at its outer periphery for enabling fastening means to project therethrough into the wall, said frame further having a first mounting means composed of vertical flange portions integral with the sides of said first frame at its outer portion for being disposed at the interior side of the exterior siding;
(b) an exterior window unit having a second rectangular unitized metal frame only partially receivable into the wall opening from the exterior, and a second pair of sashes mounted within said second frame, said second frame having a second mounting means composed of first and second flange portions integral with the sides of said second frame at its inner portion and disposed outwardly of said vertical flange portions;
(c) a separate connector plate interconnecting said second frame with said first frame, said connector plate including a pair of first and second sections integral with each other and respectively secured to said first and second mounting means; and
(d) engaging means on said second section of said connector plate extending around an edge of said vertical flange portions of said first mounting means.

4,324,072
INSULATED MULTIPLE COMPONENT SINGLE PLANE BUILDING STRUCTURE PORTAL CLOSURE
Maurice E. Sterner, Jr., Spring Grove, Pa., assignor to Product Design & Development, Inc., York, Pa.
Filed Mar. 31, 1980, Ser. No. 136,060
Int. Cl.³ E05D *15/20*
U.S. Cl. 49—129 12 Claims



1. An insulated multiple component single plane building structure portal closure having a thermal differential building structure interior-to-exterior transversely intermediate conductive and convective barrier structure with a plurality of glazing frames therein provided respectively with a glazing frame hardware assembly each therefor to mechanically enable a manually articulated transverse off-set parallel displacement of one of a glazing frame thereof of said plurality of glazing frames from a closed single plane closure secured disposition within said plurality of glazing frames thereof in turn within a portal encasement frame structure of said portal closure to a respectively parallelly planar slidably open displacement disposition in addition to all of said glazing frames thereof being pivotally tiltable and removable from said portal encasement frame structure, said insulated multiple component single plane building structure portal closure comprising in combination:
a. a transversely parallel set of laterally spaced glazing frame slide jambs integral to said portal encasement frame structure said slide jambs being structurally interconnected one to the other transversely building structure interior-to-exterior intermediate thereof by a thermally non-conductive connecting member and adapted respectively by means of said glazing frame hardware assembly to articularly receive therein said plurality of glazing frames;
b. a longitudinally spaced set of jamb connecting members joining said transversely parallel set of laterally spaced glazing frame slide jambs at the respective longitudinal ends thereof apart laterally equidistant said jamb connecting members in turn respectively structurally embodying transversely building structure interior-to-exterior intermediate thereof another of said thermally non-conductive connecting member;
c. a lower glazing frame sash assembly provided with a lower glazing frame hardware assembly comprised in combination of a laterally spaced set of elongated channel member components integral to said lower glazing frame sash respectively disposed the lower proximity outwardly either lateral vertical side thereof and projecting building structure interior therefrom to respectively receivably engage cooperatively within a channel opening thereof a slide jamb engaged vertically displaceable channel engagement pivot lug such that said lower glazing frame hardware assembly cooperatively enables transversely displaceable movement parallelly of said lower glazing frame sash from a building structure exterior slide jamb of said portal encasement frame structure to a building structure interior slide jamb thereof;
d. a pivotal lever lock assembled to a laterally disposed apron member of said lower glazing frame sash and adapted by means thereof to lockably secure said lower glazing frame sash to another of said plurality of said glazing frames disposed contiguously next vertically upward thereof when articularly configured in said closed single plane closure secured disposition wherein all of said plurality of said glazing frames are longitudinally disposed within said portal encasement frame structure respectively in an interlocked abuttable head-to-foot contiguously aligned interface junction therebetween; and
e. a closure secured dead air juncture space sealably enclosed the periphery thereabout with an alternating plurality of thermally insulative gasket strips spatially disposed in interposed communication vertically intermediate between said lower glazing frame sash and said another of said plurality of said glazing frames contiguously next vertically upward thereof to thereby substantially prevent thermal differential energy transfer therebetween when the same are configured in the closed single plane closure secured disposition.

4,324,073
PROCESS FOR AUTOMATIC FEED OF STEADY JAWS
Heinz Belthle, Aichwald, Fed. Rep. of Germany, assignor to Fortuna-Werke Maschinenfabrik GmbH, Stuttgart, Fed. Rep. of Germany
Filed Dec. 10, 1979, Ser. No. 101,680
Claims priority, application Fed. Rep. of Germany, Dec. 27, 1978, 2856339
Int. Cl.³ B24B *1/00*
U.S. Cl. 51—281 R 3 Claims



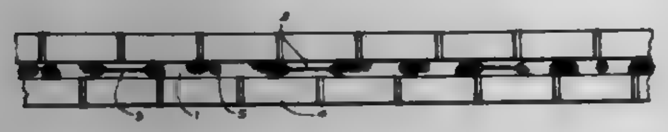
1. A method for the continuous automatic feeding of steady jaws for holding a workpiece, such as a shaft in its axis during machining of the outer face of the workpiece, comprising the steps of
advancing at maximum speed two steady jaws and a grinding wheel, with the grinding wheel diametrally opposite to an upper one of the steady jaws, at a beginning of the machining, transversely to the axis of the workpiece to be machined, toward a pre-programmed distance relative to the workpiece,
reducing the speed of advance, and stopping the advancing of the steady jaws at the predetermined distance from the workpiece,
feeding the steady jaws from this predetermined distance with respect to the grinding wheel, as the grinding wheel stands still, further by a distance corresponding to prestressing on the workpiece,
stopping said steady jaws again to define a rest position,
driving from this rest position both of the steady jaws and the grinding wheel for the machining of the workpiece with a predetermined synchronous feed speed diametrally with respect to each other with an upper one of the steady jaws toward the grinding wheel, toward the workpiece, until a finished machining size is achieved on the workpiece, and
stopping the steady jaws and the grinding wheel and bringing them back to their initial position.

4,324,074
BUILDING STRUCTURE AND METHOD OF MAKING SAME
David B. South, Rte. 3, Box 152, and Barry South, Rte. 3, Box 150, both of Idaho Falls, Id. 83401
Division of Ser. No. 775,097, Mar. 7, 1977, abandoned. This application May 21, 1979, Ser. No. 40,917
Int. Cl.³ E04B *1/34*
U.S. Cl. 52—2 4 Claims

1. A building structure comprising a foundation defining a predetermined base configuration for the building, a liquid and gas impermeable inflatable form secured at its lower periphery to said foundation and extending upwardly from said foundation to define an internal chamber, a first layer of insulating foam material secured to the inner surface of said form so as to substantially cover said inner surface of said form, a plurality of hanger members secured to the inner surface of said foam layer, each of said hanger members including a generally planar base portion having an adhesive surface secured against the inner surface of said first foam layer and having a generally cylindrical hanger rod of predetermined length affixed to and projecting from said base portion generally centrally thereto so as to extend upwardly from said base portion in a direction interiorly of said chamber, said base portions each having substantially greater surface area than the transverse cross-sectional area of the corresponding hanger rod, a second layer of insulation foam material of a predetermined depth applied against the inner surface of said first layer so as to embed said base portions of said hangers within said foam material, said hanger rods being of sufficient length to extend outwardly from said second layer of insulation material, a reinforcing mesh secured to and supported by the outwardly extending

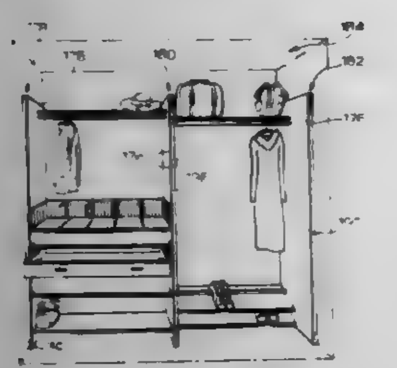
portions of said hanger members in spaced relation to said second foam layer, and a layer of cured cementitious material secured to the inner surface of said second foam layer and having said reinforcing mesh embedded therein.

4,324,075
SELF SUPPORTING DAMP-PROOF COURSE
Dirk J. Van Dommelen, and Christopher J. Greenup, both of 3B Park Rd., Alexandria, N.S.W. 2015, Australia
Filed Sep. 11, 1979, Ser. No. 74,439
Int. Cl.³ E04B *2/00*
U.S. Cl. 52—2 **9 Claims**



1. A method of inserting a damp-proof course into an existing wall of a building which comprises cutting a slot transversally through the wall along the proposed line of the DPC, inserting an elongate sealable bag or envelope of suitable dimensions into said slot, filling the bag or envelope under pressure with a quick setting waterproof material and allowing said waterproof material to set solid and to support that portion of the wall above the set waterproof material.

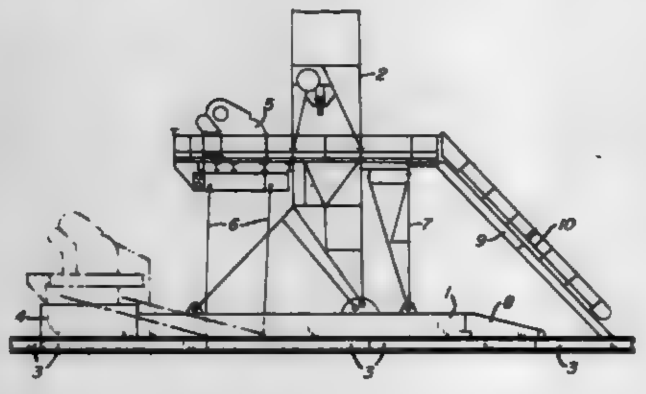
4,324,076
WALL UNITS
Reuben Houickman, Ste. 4B, 66 Collier St., Toronto, Ontario, Canada (M4W 1L9)
Continuation-in-part of Ser. No. 903,322, May 5, 1978, Pat. No. 4,186,666. This application Jun. 6, 1979, Ser. No. 46,145
The portion of the term of this patent subsequent to Feb. 5, 1997, has been disclaimed.
Int. Cl.³ A47B *41/04;* E04F *19/00*
U.S. Cl. 52—27 **2 Claims**



1. A closet structure installed in a building having an alcove defined by first and second side walls and a back wall of said building, said walls being disposed generally vertically with said side walls in generally parallel positions, and said back wall extending between said side walls generally normal thereto,

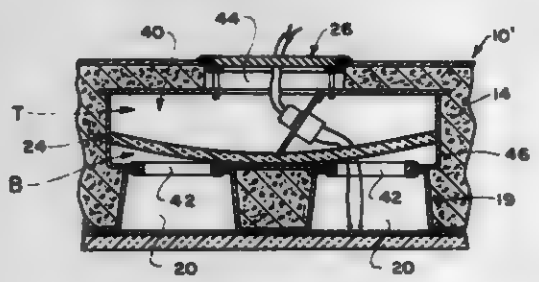
wherein the improvement comprises a wall unit disposed on each of said first and second side walls, said back wall remaining exposed between the wall units, and each wall unit comprising: a relatively rigid, self-supporting panel having an inner surface and a generally flat outer surface said panel being formed with an array of openings which cover substantially the whole of said outer surface, said openings being arranged in a plurality of vertical rows spaced equally across the surface with the openings in each row equally spaced from one another and in horizontal alignment with corresponding openings in adjacent rows, said openings extending through said panel to the inner surface thereof; and means coupling each said panel to the relevant one of said side walls with the outer surface of the panel generally vertical and the inner surface spaced from the wall; and wherein a plurality of article supporting elements are engaged in said openings and are adapted to support articles of clothing and the like.

4,324,077
METHOD OF MOVING A DRILLING RIG LONG AND SHORT DISTANCES
Joseph R. Woolslayer, Tulsa, Okla., assignor to Lee C. Moore Corporation, Tulsa, Okla.
Filed Oct. 26, 1979, Ser. No. 88,555
Int. Cl.³ E21B *7/02;* E04B *1/34;* E04N *1/12*
U.S. Cl. 52—143 **7 Claims**



5. Well drilling apparatus comprising a drilling rig provided with a base, skid frames supporting the base at a drilling site and detachably connected to its bottom, wheels at the opposite ends of the base, means detachably connecting the wheels to the base, power means connecting said base and wheel-connecting means for raising the base and frames relative to said wheels to lift the rig and permit it to be moved over the ground and then lowered to the ground at a new drilling location, means for connecting additional skid frames at the ends of the base to the frames beneath the base to form a line of frames, and means for skidding the rig along said line of frames after said base has been disconnected from said underlying frames.

4,324,078
FIRE-RESISTANT FLOOR STRUCTURE
Charles R. Gray, Coraopolis, Pa., assignor to H. H. Robertson Company, Pittsburgh, Pa.
Filed Mar. 19, 1980, Ser. No. 131,829
Int. Cl.³ H02G *3/08;* E04F *17/08*
U.S. Cl. 52—221 **10 Claims**



1. Apparatus for fireproofing an underfloor access chamber comprising:

a metal cellular unit providing spaced-apart raceways for distributing electrical wiring;

a covering layer of concrete having an upper surface;

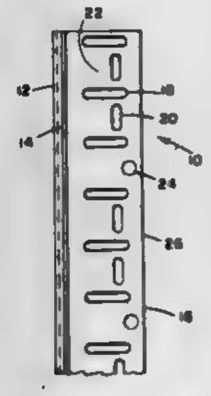
insert means forming an access chamber between said concrete and said cellular unit, said chamber having a bottom portion extending between adjacent raceways with inlet openings each communicating with one of said adjacent raceways, and having a top portion with an outlet opening providing access to said chamber from said upper surface;

an unobtrusive resilient strip of fire-resistant material covering all of said bottom portion and obstructing said inlet openings; and

slit means in said resilient strip for passing wiring between each raceway and said chamber without significantly deteriorating the obstruction of said inlet openings;

whereby under fire conditions, said resilient strip shields said top portion from convection currents of hot gases which would normally pass through said inlet openings and from high temperature radiation emitted by hot surfaces of said bottom portion.

4,324,079
CORNERBEAD AND CORNER CLIP
Robert J. Pearson, Tonawanda, N.Y., assignor to National Gypsum Company, Dallas, Tex.
Filed Aug. 15, 1979, Ser. No. 66,625
Int. Cl.³ E04B *1/00*
U.S. Cl. 52—255 **3 Claims**



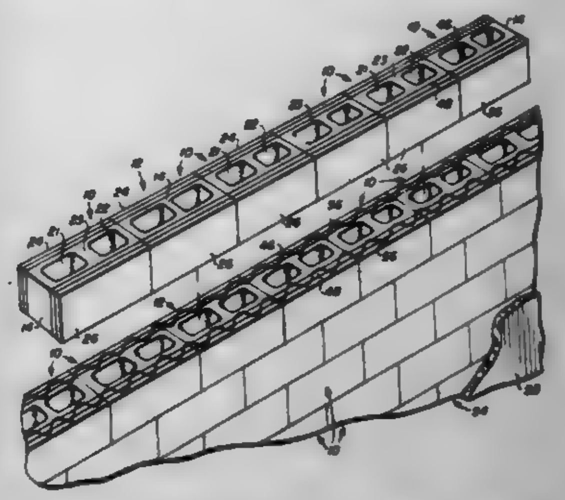
1. A cornerbead comprising an elongate straight formed sheet of metal adapted to be easily cut into a plurality of sheet metal clips, said cornerbead consisting essentially of a bead section and two opposed flat flanges disposed at about an 80° angle therebetween, at least one of said flanges having a plurality of substantially uniformly repetitive openings, said openings including a plurality of elongate slots adapted for simplifying the making of preplanned cuts for converting portions of said cornerbead into short corner clips, said slots including a repetitive pattern of laterally extending slots, said laterally extending slots being spaced outward from said bead section and inward from the outer edge of said flange, said outer edge being uninterrupted throughout the length of said corner bead, wherein said elongate slots also include a repetitive pattern of longitudinally extending slots disposed between at least some of said laterally extending slots.

4,324,080
THERMALLY INSULATIVE CEMENTITIOUS BLOCK MODULES AND METHOD OF MAKING SAME
Wayne L. Mullins, 5001 E. Cactus, Scottsdale, Ariz. 85254
Filed Dec. 17, 1979, Ser. No. 104,313
Int. Cl.³ E04D *2/00*
U.S. Cl. 52—309.12 **16 Claims**

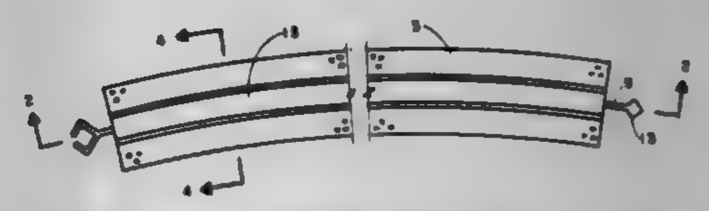
1. A thermally insulative cementitious block module comprising:

(a) a plurality of cementitious blocks arranged in an aligned desired modular array so that each of said blocks is in abutting engagement with at least another one of said blocks, each of said blocks defining at least one passage which extends the full length and height thereof, said passages of said plurality of blocks being in alignment with each other; and

(b) a polyurethane foam panel cast and cured in situ within said aligned passages of said plurality of blocks to provide said modular array with a one piece uninterrupted coextensive thermally insulative barrier which fusingly bonds said plurality of blocks into said modular array.



4,324,081
WALL CONSTRUCTION
George Chicha, S. 2225 Inland Empire Way, Spokane, Wash. 99204
Filed Oct. 29, 1979, Ser. No. 89,018
Int. Cl.³ E04B *1/41, 1/54, 1/60*
U.S. Cl. 52—432 **10 Claims**

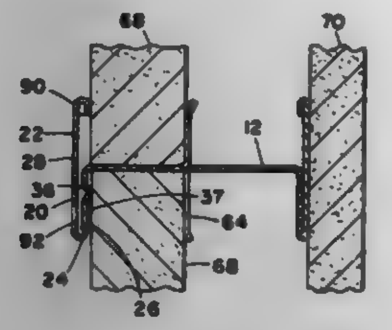


1. A wall comprising a plurality of concrete slabs, joined together in successive courses, each of said slabs comprising a plurality of vertically spaced horizontally extending reinforcing members and a vertically extending connecting member at each end of each of said slabs, said connecting members being welded to said reinforcing members and extending the entire distance from top to bottom of each of said slabs, said connecting members having interlocking portions positioned completely outside the concrete of said slabs, extending the full length of said connecting members and being straight and uniform in cross section throughout their length, the connecting members of adjacent slabs in the same course being interlocked, the connecting members of slabs in successive courses being aligned and in direct contact with each other and welded together, whereby said connecting members and said reinforcing members form a complete skeleton for said wall, the spaces between said slabs and said interlocking members being filled with non-shrink grout.

4,324,082
METAL STUD
Edward J. Rutkowski, Kenmore; Carl R. Mapes, Clarence; Steven D. Wing, Getzville, and Jack A. Dawdy, Kenmore, all of N.Y., assignors to National Gypsum Company, Dallas, Tex.
Filed Nov. 8, 1979, Ser. No. 92,587
Int. Cl.³ E04C *3/07*
U.S. Cl. 52—481 **10 Claims**

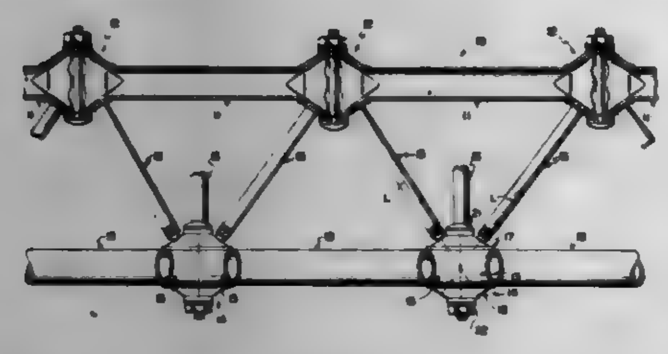
1. A fire-resistant metal stud for supporting a vertical wall comprising an elongate formed sheet metal body having an elongate first side and, opposite thereto, an elongate second side, elongate means central thereof adjoining said first side and said second side, means on said second side for affixing wallboard thereto, a pair of flanges on said first side adapted to have the edges of a pair of wallboards affixed against the inner

side thereof, whereby said flanges would be disposed on the surface of a wall formed by said wallboards, said pair of flanges including at least one flange which is formed from an inner layer sheet of metal extending from the inner edge of the flange to the outer edge of the flange whereat the metal is reversely folded and extends back to said inner edge forming an outer layer, said inner layer having means for retarding the increase



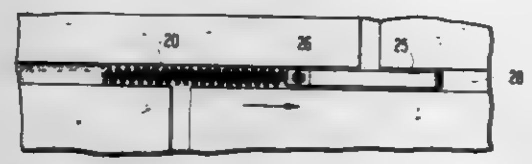
in temperature of said inner layer and the wallboard surface adjacent thereto when said wall is subjected to a fire on the wall second side, said means for retarding comprising structure which directs cooler gases to the interface of said inner layer and said wallboard, said stud further comprising an internal gap formed between said flange inner layer and outer layer, whereby air within said internal gap that becomes heated will tend to move vertically upward, within said gap.

4,324,083
SPACE FRAME
Alfred L. Johnson, Jr., Manhattan Beach, Calif., assignor to LaJet Energy Company, Abilene, Tex.
Filed May 29, 1980, Ser. No. 154,141
Int. Cl.³ E04H *12/00;* E04B *5/14*
U.S. Cl. 52—650 **13 Claims**



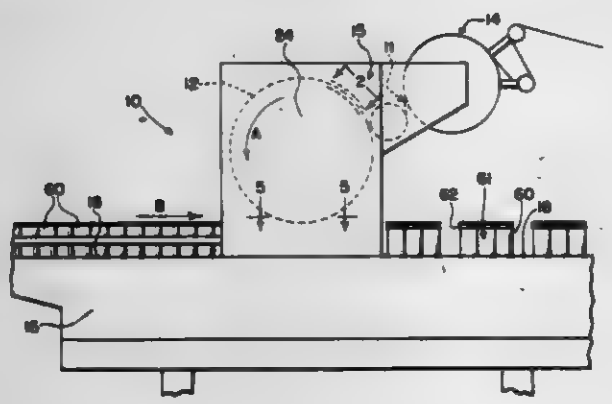
1. A space frame comprising:
a first set of beams;
a first set of joints interconnecting said first set of beams in a rigid lattice;
a second set of beams;
a second set of joints interconnecting said second set of beams in a rigid lattice; and
a plurality of tubular struts interconnecting said first and second sets of joints to form a two layered rigid structure;
each of said joints comprising first and second caps receiving a plurality of beams therebetween, one of said caps having a plurality of apertures therein,
each of said tubular struts having first and second substantially cylindrical, non-threaded shafts coupled at opposite ends and extending along the longitudinal axis of each of said tubular struts,
the first shaft coupled to each strut being received in an aperture in a cap in said first set of joints,
the second shaft coupled to each strut being received in an aperture in a cap in said second set of joints,
each of said shafts having fastening means, coupled thereto and engaging a beam for maintaining the shaft in the associated aperture,
each of said caps having a tapering, annular wall, the inner surface of which engages the ends of the beams received therebetween,
each of said apertures for receiving said shafts being located in said tapering, annular wall.

4,324,084
METHOD OF APPLYING CEMENTITIOUS MATERIAL TO A MORTAR JOINT
Roy A. Walter, 1701 W. Spring St., Lima, Ohio 45805
Filed Jan. 25, 1980, Ser. No. 115,330
Int. Cl.³ E04B *1/00*
U.S. Cl. 52—744 **1 Claim**



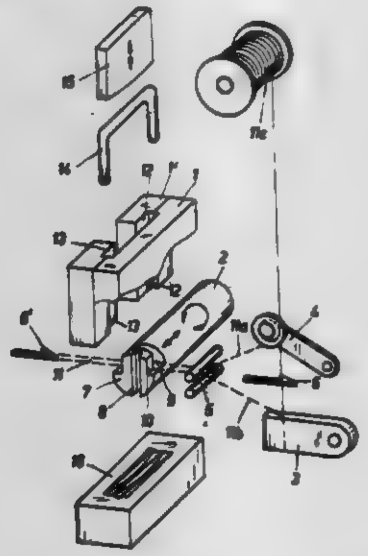
1. A method of applying a liquid cementitious coating material to a mortar joint between two bricks, said method comprising the steps of:
loading a liquid cementitious coating material onto an elongated tubular brush of the type having an elongated axial rod along whose length are fixed brush bristles which extend radially outwardly at equal distrances through at least part of an arc from the longitudinal axis of the rod to form at least part of a cylindrical brush surface to contact a mortar joint;
placing the loaded brush in the mortar joint so that the brush surface is in contact with the mortar joint and so that the longitudinal dimension of the brush is aligned with the longitudinal dimension of the mortar joint; and
drawing the brush in a straight line along the longitudinal dimension of the mortar joint so that the coating material is evenly deposited in the joint in the form of a strip of constant width.

4,324,085
CARRIER ASSEMBLY APPARATUS
Robert C. Olsen, Streamwood, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.
Filed Apr. 14, 1980, Ser. No. 140,068
Int. Cl.³ B65B *27/04, 21/00*
U.S. Cl. 53—48 **4 Claims**



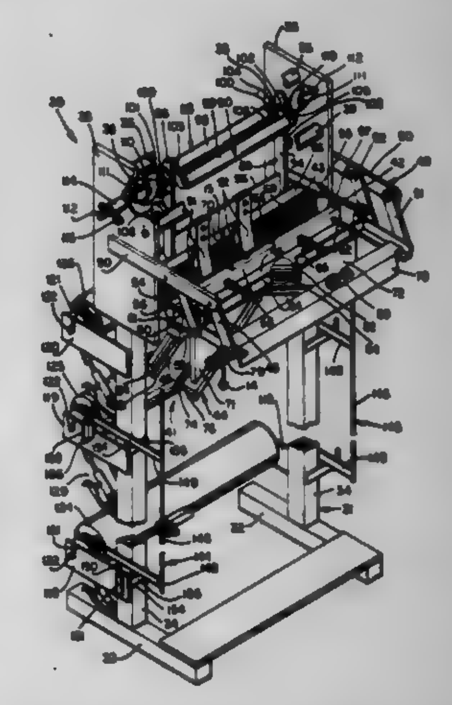
1. In an apparatus for assembling a plurality of containers into packages by utilizing carrier stock of resilient plastic material comprising a longitudinally extending series of transversely arranged ranks of container encircling bands which are adapted to be transversely stretched for application to successive ranks of a plurality of rows of said containers, a rotating drum assembly for receiving the carrier stock, laterally stretching and applying said carrier stock to said containers, the drum assembly comprising a pair of spider wheels mounted in parallel spaced apart relationship for rotation about a horizontal axis above the plurality of rows of containers, a plurality of jaw stations mounted in parallel, side-by-side relationship circumferentially about the drum assembly, each jaw station including a pair of opposing carrier stretching and band forming jaws, the improvement comprising each jaw including laterally inner and outer sections, each inner section including a pair of spaced upstanding finger means for association with the inner periphery of each laterally outermost band in the series of container encircling bands to stretch the stock laterally, and each outer section including a ramp means extending upwardly and outwardly from the base of the finger means, the ramp means located directly adjacent and laterally opposing the space between the fingers, the topmost regions of the inner and outer sections being spaced a predetermined, limited distance so as to twist the outermost band as it becomes associated with each jaw between said inner and outer sections, the apparatus further including carrier stock guide means located above one segment of the periphery of the rotating drum adjacent and substantially immediately following the portion of the drum which initially receives the carrier stock, the guide means including a pair of laterally spaced bars of limited thickness, the bars arranged so as to be aligned with the pair of opposing carrier stretching and band forming jaws with each bar located so its thickness dimension is totally confined within the predetermined limited distance defined by the topmost regions of the inner and outer sections, the guide means further arranged to vary in spacing between the lower edge of the bar and the jaws with an entering region being spaced slightly upwardly from the topmost regions of the jaws to an exiting region wherein the lower edge of the bar is spaced downwardly from the topmost regions and within the recess formed between the inner and outer sections so that the outermost band is twisted generally 90° from its original condition.

4,324,086
WRAPPER CLOSED WITH A U-SHAPED CLIP AND PROCESS AND APPARATUS FOR ATTACHING A HANGER LOOP TO THE WRAPPER SECTION
Herbert Niedecker, am Ellerhang 6, 6240 Konigstein 2, Fed. Rep. of Germany
Division of Ser. No. 13,649, Feb. 21, 1979, Pat. No. 4,255,833, which is a division of Ser. No. 866,969, Jan. 4, 1978, Pat. No. 4,165,593. This application Jun. 13, 1980, Ser. No. 159,410
Claims priority, application Fed. Rep. of Germany, Jan. 8, 1977, 2700641
Int. Cl.³ B65B *61/14*
U.S. Cl. 53—134 **4 Claims**



1. An apparatus for attaching a thread hanger loop to a gathered mouth of a tubular wrapper and for closing the mouth with a U-shaped clip, comprising a punch, a clip guide having opposite grooves for guiding the clip legs, a die for receiving each clip and for cooperating with the punch to close the clip around the gathered mouth end of the wrapper, a thread-withdrawing device disposed beside the clip feed path, a thread snubber and a looping hook and means to move said hook to form a loop in the thread so that both side portions of the loop extend into the path of the clip in the clip guide, a winding head which is axially displaceable into the feed path for the clip and provided with means for engaging both sides of a thread after being snubbed and looped, and means for rotating the winding head so as to form an eyelet in the thread independent of the loop, means to advance the punch and the clip causing one of the clip legs to enter the eyelet and the clip thereafter closing around said mouth of the tubular wrapper.

4,324,087
GARMENT BAGGING SYSTEM
William O. Mitchell, and Gordon H. Ellington, both of Vidalia, Ga., assignors to Oxford Industries, Inc., Atlanta, Ga.
Filed Mar. 28, 1980, Ser. No. 135,104
Int. Cl.³ B65B *25/20*
U.S. Cl. 53—241 **11 Claims**



1. Apparatus for forming a bag about a garment or the like comprising a support frame, a pair of spaced apart, parallel horizontal support rods supported at their ends by said support frame, a garment support assembly comprising a bag opening frame, a pair of spaced apart, parallel support rollers rotatably supported at their ends by said bag opening frame, said support rollers together being of an effective combined width less than the space between said support rods, means for biasing said support rollers apart whereby the support rollers can support themselves and said garment support assembly on said support rods with the bag opening frame suspended down between said support rods and the garment support assembly can be pulled downwardly away from the support rods by forcing the support rollers toward each other, a garment support rod connected at one of its ends to said bag opening frame and normally extending downwardly from said bag opening frame when said bag opening frame is supported between said support rods, and bag material cutting and sealing means positioned below said bag opening frame at the level of said garment support rod, said bag material cutting and sealing means including means for cutting through the bag material and sealing the bag material from positions adjacent and extending away from opposite sides of said support rod, whereby a garment or the like is hung from the lower end of said garment support rod, tubular bag material is fed from a supply along its length downwardly between said support rods and about said garment support assembly and about the garment hung on the garment support rod, and the bag material cutting and sealing means seals the bag material together above the lower end portion of the garment rod and cuts across the bag material above the seal of the bag material.

4,324,088
REFUSE STORAGE APPARATUS WITH SEALER FOR SEALING PLIABLE BAG TOP

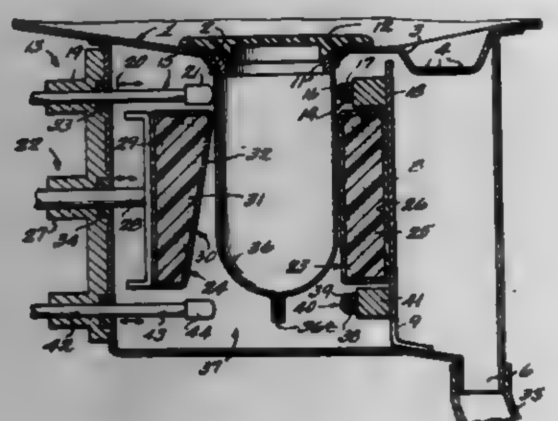
Kiyoshi Yamashita, Aichi, and Shoji Takagi, Toyoake, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Dec. 5, 1979, Ser. No. 100,379

Claims priority, application Japan, Dec. 22, 1978, 53-162992; Dec. 22, 1978, 53-81473[U]; Jan. 11, 1979, 54-2291[U]; Jan. 18, 1979, 54-5730[U]

Int. Cl.[3] **B65B** *3/00, 61/24*

U.S. Cl. 53—527 **1 Claim**



1. Refuse storage apparatus comprising:

a sink having an opening and an indented portion adjacent said opening having a plurality of drain holes therein;

a frame mounted to said sink beneath said opening and said indented portion to form a recess with a first section under said opening for receiving a pliable bag having a top and bottom with an opening at the top thereof and a drain hole at the bottom thereof, the top of said bag being supported by the edge of said opening so that refuse passing through said opening is received within said bag, and a second section under said indented portion having an opening adapted for connection to a drain hose so that liquid passing through said drain holes passes through said opening in said second section, said frame having a plate between said two sections with a perforation in the bottom thereof and the bottom of said frame being inclined so that liquid flows through said perforation to said opening in said second section;

first electric heater means mounted on said frame adjacent an upper portion of said bag and first movable pressing means for pressing said upper portion into contact with said first heater means for sealing said upper portion of said bag;

a trapezoidal-shaped flexible block mounted on said frame adjacent said bag for movement toward and away from said bag and for compacting refuse in said bag when movably advanced against said bag and pushing said refuse toward said bottom portion; and

second electric heating means mounted on said frame adjacent said bottom portion of said bag and second movable pressing means for pressing said lower portion into contact with said second heater means for sealing said drain hole.

4,324,089
HORSE CONTROL LEADER

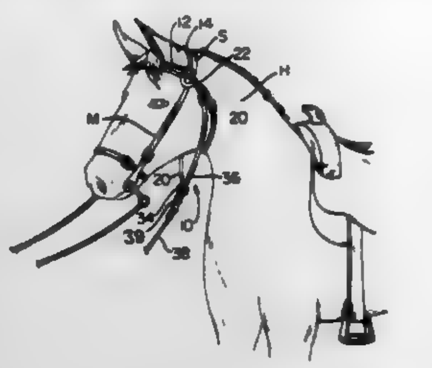
Lena M. Hart; Ronald J. Hart, and Guy D. Hart, All of 7712 Saulsbury St., Arvada, Colo. 80003

Filed Dec. 26, 1979, Ser. No. 106,557

Int. Cl.[3] **B68B** *1/02*

U.S. Cl. 54—24 **7 Claims**

1. A horse control leader for horses adapted for applying uniform pressure to a portion of a horse's head immediately behind its ears, comprising a rigging including a browband having a pair of opposed ends dimensioned to be positioned on the horse with said opposed ends each being immediately beneath the ears of the horse on opposite sides of the horse's head, a crown member having opposite ends respectively connected to said opposed ends of the browband and adapted to extend over the top of the horse's head immediately behind the horse's ears, and an elongated flexible leader having opposite ends connected to said opposed ends of the browband, said leader member sized to form a free-hanging loop having a lower portion in spaced-apart relation to the throat of the horse whereby force applied downwardly on said loop directly causes uniform tension in said crown member to apply said uniform pressure, said crown member having a substantially non-deformable cross-section and flexible along its length.



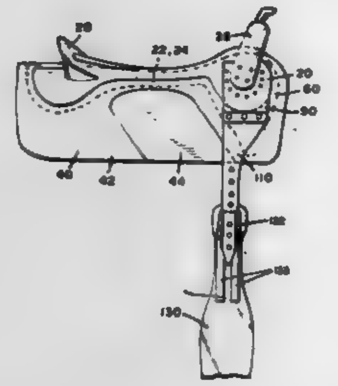
4,324,090
SADDLE

Richard J. Nix, P.O. Box 316, Quakertown, N.J. 08868

Filed Nov. 26, 1979, Ser. No. 97,332

Int. Cl.[3] **B68C** *1/02*

U.S. Cl. 54—44 **7 Claims**



1. A horse saddle providing close contact between horse and rider comprising:

a tree having a fork located toward the front of the horse; a cantle located toward the rear of the horse; two narrow side bars of oval cross-section having a major axis of about from 4.2 cm to 5.8 cm length and a minor axis of from about 0.5 cm to 0.8 cm length through the area of the leg line and starting with such cross-section about at most 8 cm from the back side of the fork and reaching with such cross-section to at most about 4 cm away from the cantle, said bars connecting the fork with the cantle;

padding areas corresponding to the two side bars of the tree and located below the tree and having relatively narrow sections following the side bars and ending in front and rear lobes, said front lobes extending in an outward direction about vertical to the longitudinal direction of the tree bars at about the fork and said rear lobes extending in a rearward direction about parallel to the direction of the side bars at about below the cantle; and

a skirt attached to the bottom of the tree, the skirt being cut out in an area bordered by part of the circumference of the skirt and by three sides with a first side located at about 1 cm to 5 cm away from the outside vertical projection of the side bars and extending about parallel to the side bars from about the middle of the fork and running to about the end of the narrow section of the side bar, a second section beginning at the end of the first side near the middle of the fork and running outwardly in a direction between about vertical to the first side and to forming an angle of about 30° with the front direction of the side bars, a third side beginning at the other end of the first side at the rear end of the side bar and running outwardly in a direction between about vertical to the first side and a direction forming an angle of about 45° with the front direction of the side bars, said three sides forming together part of the circumference of a trapezoidal to oval area.

4,324,091
VEHICULAR FORAGE HARVESTER

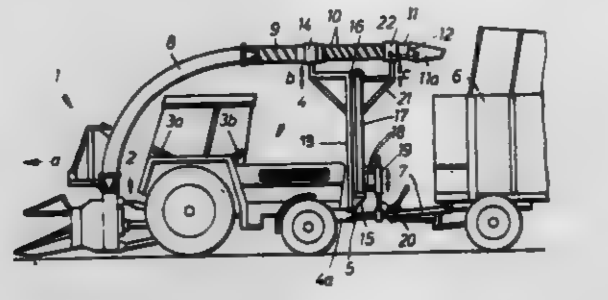
Eberhard Wistuba, Rettenbach; Xaver Lenzer, Kleinkötz, and Herbert Mändle, Kleinanhausen, all of Fed. Rep. of Germany, assignors to Karl Mengele & Söhne Maschinenfabrik and Eisengiesserei GmbH & Co., Günzburg, Fed. Rep. of Germany

Filed Dec. 18, 1978, Ser. No. 970,238

Claims priority, application Fed. Rep. of Germany, Dec. 19, 1977, 2756539

Int. Cl.[3] **A01D** *43/06, 87/10*

U.S. Cl. 56—16.6 **7 Claims**



1. An agricultural vehicular assembly comprising: a forage harvester including means for cutting an agricultural crop; vehicle means having said forage harvester operably mounted therewith; wagon means for receiving said crop from said forage harvester; hitching means pivotally connecting said wagon means with said vehicle means in driving relationship therewith; chute means delivering said crop from said harvester, said chute means including a discharge end for depositing said crop into said wagon means; a flexible chute section connected as part of said chute means; and swivel means having said flexible chute section mounted thereon to effect bending of said flexible chute section in response to pivotal motion between said vehicle means and said wagon means to maintain said discharge end of said chute means directed into said wagon means when said wagon means and said vehicle means turn relative to each other; said flexible chute section including a first and a second end, with said first end being fixed relative to said vehicle means and with said second end being fixed relative to said wagon means, said swivel means and said hitching means being operably associated to effect bending of said flexible chute section simultaneously with relative pivotal motion between said wagon means and said vehicle means.

4,324,092
CUTTERBAR WEAR STRIP

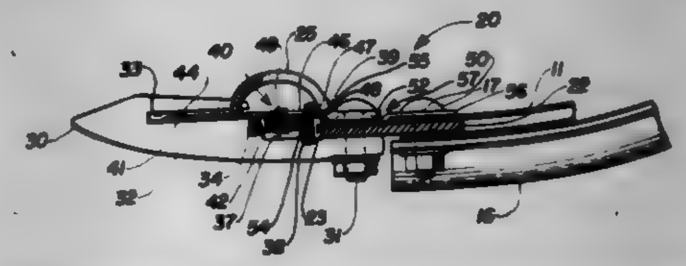
Lawrence M. Halls, New Holland, and Irwin D. McIlwain, Lancaster, both of Pa., assignors to Sperry Corporation, New Holland, Pa.

Filed Nov. 3, 1980, Ser. No. 203,173

Int. Cl.[3] **A01D** *55/02*

U.S. Cl. 56—298 **12 Claims**

1. In a reciprocating cutterbar assembly forwardly disposed on a mobile crop harvesting machine for the severing of crop material from the ground to initiate the crop harvesting process, said cutterbar being mounted to a harvesting machine frame member, said cutterbar assembly having an elongated support bar affixed to said frame member and disposed transverse to the forward direction of travel of said crop harvesting machine, said support bar having a forward edge spaced forwardly from said frame member; a plurality of knife guards detachably affixed to said support bar and projecting forwardly therefrom, each said knife guard having a ledger surface, a transversely extending vertical support ridge rearwardly of said ledger surface and a transverse trough positioned between said ledger surface and said support ridge, said support ridge having an upper surface in substantially the same plane as said ledger surface; an elongated knife back operatively positioned within said transverse trough for reciprocatory motion therewithin generally parallel to said support bar; and a plurality of generally triangularly shaped knife elements affixed to said knife back, each said knife element having a rearward portion projecting rearwardly of said knife back and a forward portion having forwardly converging cutting edges extending forwardly of said knife back, said knife element being supported on said ledger surfaces and said upper surfaces



of said support ridges such that said knife elements shearingly cooperate with said ledger surfaces to sever standing crop material, the improvement comprising:

a wear strip detachably affixed to said support bar and forwardly projecting therefrom, said wear strip terminating above said support ridge on each said knife guard so as to hold said rearward portion of said knife elements downwardly against said upper surface of said support ridges during reciprocation of said knife back and said knife elements affixed thereto, said wear strip including a first generally planar portion, a second elevated portion integrally joined with said first planar portion and extending upwardly and forwardly therefrom and a third portion rearward of, and elevated above, said first portion, said third portion sloping forwardly downwardly and being integrally joined with said first portion, said first portion forming a depression between said second portion and said third portion to catch severed crop material and prevent same from passing forwardly over the cutterbar assembly.

4,324,093
DEVICE FOR DISPLACING CROP LYING ON THE GROUND

Ary van der Lely, Maasland, and Cornelis J. G. Bom, Rozenburg, both of Netherlands, assignors to C. van der Lely N.V., Maasland, Netherlands

Filed Mar. 26, 1980, Ser. No. 134,174

Claims priority, application Netherlands, Mar. 30, 1979, 7902483

Int. Cl.[3] **A01D** *77/06*

U.S. Cl. 56—377 **29 Claims**

1. A device for displacing crop lying on the ground comprising a frame and a plurality of rotatable rake wheels supported on the frame by crank means that allows upward and downward movements of the wheels, said wheels being positioned to rotate and contact the ground, at least one of said wheels comprising bearing means that surrounds an enlarged center hole and said bearing means being interconnected to the frame by said crank means, said frame including a portion that ex-

tends through the hole with substantial clearance to interconnect with the remainder of said frame, said portion being dis-

placeable within said hole relative to said one wheel during operation, whereby the latter can follow uneven ground.

4,324,094

SEMIAUTOMATIC DEVICE FOR DOFFING SPOOLS FROM A SPINDLE BENCH

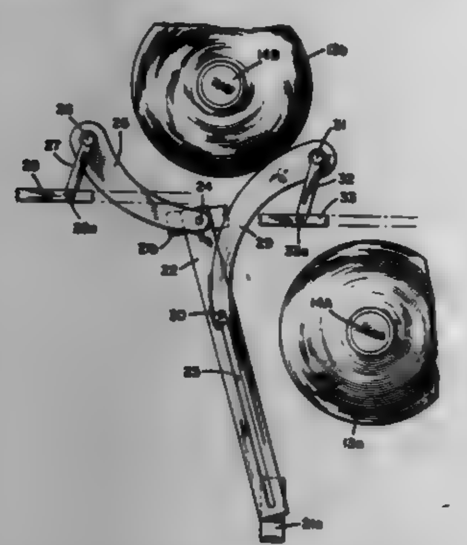
Aurelio Cicerone, Ronco Scrivia, Italy, assignor to Officine Savio S.p.A., Pordenone, Italy

Filed Jul. 9, 1980, Ser. No. 166,990

Claims priority, application Italy, Jul. 19, 1979, 68499 A/79

Int. Cl.³ D01H *9/04*

U.S. Cl. 57—267 **4 Claims**



1. Device for the semiautomatic doffing of at least one row of spools on cops provided with mushroom-shaped upper ends on a spindle bench in spinning with immovable closed or open flyers, comprising a horizontal bench upper plate; a plurality of vertical pins rotatingly traversing said plate; an arm having a free end fixed to each of said pins; said arms performing alternate angular movements in the horizontal plane with predetermined amplitude; an immovable and open grip positioned on the free end of each of said arms capable of penetrating into a volume of revolution of a corresponding flyer at the arrest of said spindle and coactable with the corresponding mushroom-shaped upper end of the cop following its rise to a predetermined height; a lever fixed to each pin; a rod pivotally connected to said levers to supply an alternating angular movement to said levers; and means to lower the cops until there is a complete withdrawal of the spindles from the cops, and the aforesaid arms are rotatable in an opposite direction with respect to the previous rotation into the flyer's volume of revolution so as to take the spools out of the relative flyers, and to conveniently accessibly position them ready for being removed.

4,324,095

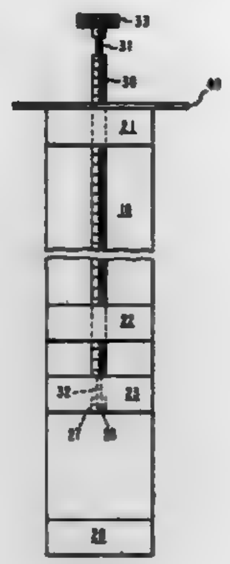
PROCESS FOR PREPARING SLUB YARNS

Arthur Lalay, Wilmington, Del., and Charles E. Lynch, Camden, S.C., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 11, 1978, Ser. No. 868,488

Int. Cl.³ D02G *3/00, 3/34*

U.S. Cl. 57—327 **11 Claims**



1. Process for producing a slub yarn wherein 10–50% by weight bicomponent acrylic fibers having a hydrophilic component and a less hydrophilic component and having a density of about 1.0 to 1.17 g/cm³ and an equilibrium crimp reversibility of at least about 20% and cut to a length of 0.25 to 1 inch are blended with staple fibers in an amount of 50–90% by weight during or before carding and processed by conventional procedures into a slub containing spun yarn.

4,324,096

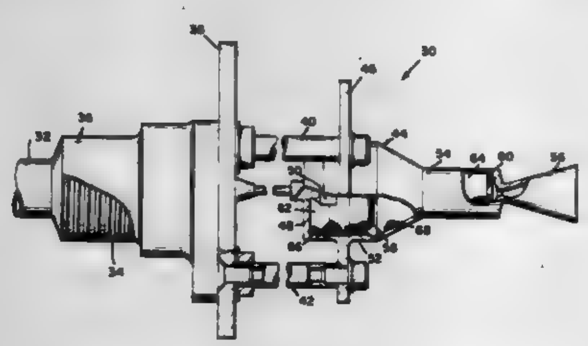
HYDRAZINE THRUSTER

M. Edmund Ellion, Arcadia, Calif., assignor to Hughes Aircraft Company

Filed Apr. 23, 1979, Ser. No. 32,074

Int. Cl.³ F02K *1/40, 7/02*

U.S. Cl. 60—200 R **10 Claims**



1. A hydrazine thruster for pulse mode operation comprising:

thrust chamber means for containing a hydrazine dissociation catalyst and having a centerline;

hydrazine injector means for injecting liquid hydrazine into said thrust chamber means substantially only along said centerline and directly into said catalyst in a plurality of successive pulses, said injector means and said thrust chamber means for containing a hydrazine dissociation catalyst being arranged so that during repetitive pulsing insufficient residual hydrazine is stored in the catalyst bed so that hydrazine bed temperature does not decrease from the temperature at the initiation of one pulse to the temperature at the initiation of the next pulse;

means for supplying pulses of liquid hydrazine to said hydrazine injector means; and

an outlet from said thrust chamber from which hot gases exit said thrust chamber to produce thrust, there being sufficient hydrazine injected into said thrust chamber means by said hydrazine injector means so that for each pulse the impulse bit, which is the summation of the product of thrust times time, is at least 0.0045 pound seconds.

4,324,097

NON-RETURN VALVE

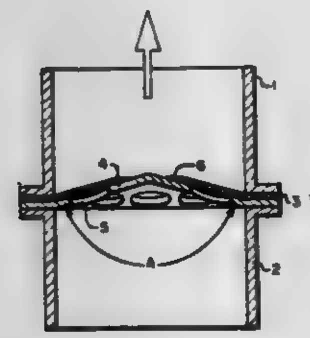
Wilhelm Schmitt, Heppenheim, and Toyotake Taniguchi, Weinheim, both of Fed. Rep. of Germany, assignors to Firma Carl Freudenberg, Weinheim, Fed. Rep. of Germany

Continuation of Ser. No. 6,325, Jan. 24, 1979, abandoned. This application Dec. 3, 1980, Ser. No. 212,391

Claims priority, application Fed. Rep. of Germany, Jan. 28, 1978, 2803778

Int. Cl.³ F16K *15/14*

U.S. Cl. 60—293 **6 Claims**



1. In a combustion and exhaust system of an internal combustion engine, an exhaust manifold for combustion gases and means for supplying fresh air to the exhaust manifold so as to detoxify the exhaust gases, the improvement which comprises including in the exhaust manifold a one way non-return valve comprising a cylindrical duct, a cone in said duct having an apex angle of about 140° to 160° with its apex pointing in the direction of flow and provided with a plurality of apertures, and a membrane lying on the downstream surface of the cone and effectively clamped to the duct at the outer membrane circumference, the membrane comprising a disk of elastomeric material having a central circular aperture and which engages the hollow cone under an inherent elastic bias to completely seal the cone apertures in the closed state, the apertures of the cone having a total area which is about 1.5 to 3 times as large as the area of the aperture in the membrane.

4,324,098

HYDRAULIC CIRCUIT FOR A HYDRAULICALLY DRIVEN VEHICLE

Taketo Aruga; Koichi Morita, both of Isehara; Kenzo Hosshi, and Yasuo Kojima, both of Yokohama, all of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Feb. 19, 1980, Ser. No. 122,273

Claims priority, application Japan, Nov. 18, 1977, 52-137870

Int. Cl.³ B62D *11/04;* **F16H** *39/46*

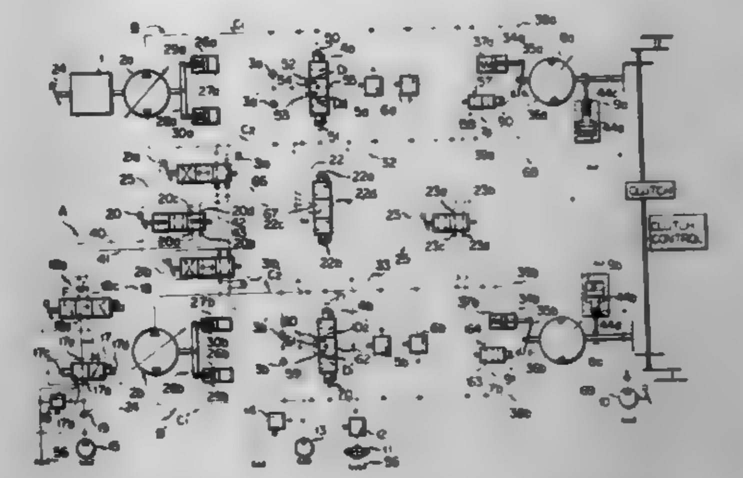
U.S. Cl. 60—420 **2 Claims**

1. In a hydraulic circuit for a hydraulically driven vehicle including a pair of variable displacement hydraulic pumps, each driven by a common engine, a pair of variable displacement hydraulic motors, each connected with said respective variable displacement pumps in a closed loop circuit and driven thereby, means for controlling the displacement of volume of said variable displacement pumps and means for controlling the displacement of said variable displacement motors, the improvement comprising:

a fixed displacement charge pump driven by said engine;

a passage means leading to tank via a relief valve means; and

a pair of pilot-operated shuttle valve means, each connected in parallel with said respective closed loop circuits and each operated by fluid pressure therein, each said shuttle valve means having a neutral position and two offset positions formed therein wherein, in each of said offset positions of said shuttle valve means a lower pressure side of a respective closed loop circuit is in open communica-



tion with said passage means and in the neutral positions of said shuttle valve means, both sides of each closed loop are connected together and both said closed loop circuits are connected with each other through said passage means and said shuttle valve means and with said charge pump, thereby equalizing the hydraulic fluid pressure in both said closed loop circuits.

4,324,099

PROCESS FOR GENERATING MOVEMENT AND ENERGY ON THE BASIS OF THE FLOTATION OF BODIES

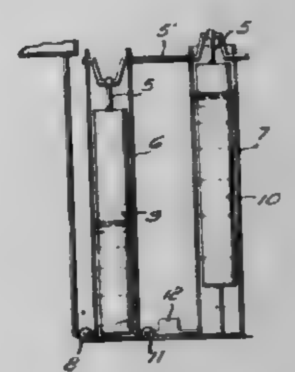
Enrique P. Palomer, Idumea 10-12, Barcelona, Spain

Filed Aug. 23, 1978, Ser. No. 935,927

Claims priority, application Spain, Aug. 25, 1977, 461.890

Int. Cl.³ F03B *13/12*

U.S. Cl. 60—497 **2 Claims**



1. A process for generating movement and energy by flotation of bodies on a liquid inside receptacles, comprising the steps of:

causing said liquid to flow into a first receptacle to raise the level of said liquid inside said first receptacle, whereby a first body is raised by flotation;

sensing the level attained by said liquid in said first receptacle;

terminating the flow of liquid into said first receptacle when a predetermined liquid level is attained;

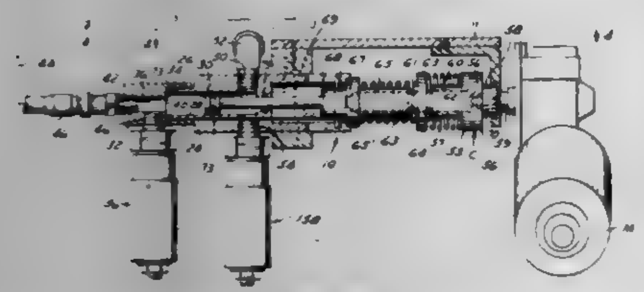
draining said liquid from said first receptacle, whereby said first body descends by gravity as the level of said liquid is lowered;

applying an external load to said first body, the raising of said first body under flotation as said liquid is caused to flow into said first receptacle and the descent of said first body under gravity as said liquid is drained from said first

receptacle alternately providing a linear reciprocating motion to said load;

causing a portion of said liquid to flow into a second receptacle containing a second flotation body as said liquid is drained from said first receptacle, whereby said second flotation body is raised through a distance until the level of said liquid is equal in said first and second receptacles; and

pumping at least part of the liquid which remains in said first receptacle, after a portion has drained into said second receptacle, from said first receptacle to said second receptacle.



4,324,100

HYDRAULICALLY CONTROLLED MIRROR

John I. House, 27201 Wellington Dr., Franklin, Mich. 48025

Filed Dec. 19, 1979, Ser. No. 105,421

Int. Cl.³ F15B *7/00*

U.S. Cl. 60—545 **2 Claims**

1. Remote control actuating mechanism for adjusting the position of an outside vehicle rearview mirror or the like, comprising a master control device and a slave device, said control device having a hydraulic control cylinder and a control piston reciprocable therein, said slave device having a hydraulic slave cylinder and a slave piston reciprocable therein, a first closed hydraulic circuit including a conduit filled with hydraulic fluid communicating at its ends with said cylinders at one side of the pistons therein, a second closed hydraulic circuit including a conduit filled with hydraulic fluid communicating at its ends with said cylinders at the opposite side of the pistons therein, a reversible electric motor for reciprocating said control piston, a motor output shaft, a second shaft aligned with said motor output shaft, a slip clutch assembly between said motor and said control piston comprising a pair of clutch discs, one of said clutch discs being secured to said motor output shaft, the other of said clutch discs being non-rotatably, axially slidably mounted on said second shaft, a nut connected to said control piston and threaded on said second shaft to effect reciprocation of said control piston by the operation of said motor, an abutment secured on said second shaft, spring means between said abutment and said other of said clutch discs to press it against said one of said clutch discs in clutching engagement, and second spring means bearing against said abutment in opposition to said first-mentioned spring means to prevent said abutment and second shaft from backing away from said clutch assembly and reducing the pressure of said first-mentioned spring means when said motor is operated to move said control piston toward said clutch assembly.

4,324,101

HYDRAULIC MASTER CYLINDERS FOR VEHICLE BRAKING SYSTEMS

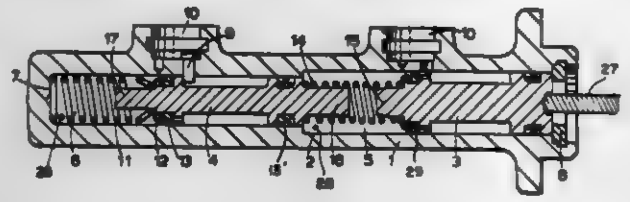
Glyn P. R. Farr, Warwickshire, England, assignor to Girling Limited, Birmingham, England

Filed Jun. 28, 1976, Ser. No. 700,134

Claims priority, application United Kingdom, Jun. 27, 1975, 27205/75; Aug. 2, 1975, 32398/75

Int. Cl.³ B60T *11/20*

U.S. Cl. 60—562 **11 Claims**



1. A vehicle hydraulic tandem master cylinder comprising a housing provided with a wall defining a bore which is closed at its forward end, primary and secondary pistons in said bore with said secondary piston in front of said primary piston, said primary and secondary pistons being freely movable apart relative to each other for their maximum range of separation permitted by the dimensions of said bore, said primary piston having a front and a rear, said secondary piston having a front and a rear, an actuating rod engaging with said rear of said primary piston, first seal means sealing said primary piston to said wall, and second seal means sealing said secondary piston to said wall, said rear of said secondary piston together with said wall and said front of said primary piston bounding a primary pressure space sealed by said first and second seal means, said front of said secondary piston together with said wall bounding a secondary pressure space sealed by said second seal means, first and second outlet means passing through said wall and communicating permanently with said first and second pressure spaces respectively for connecting said pressure spaces to first and second braking circuits respectively, said front and said rear of said secondary piston having substantially equal pressure effective areas, and the ratio of the pressure effective area of said front of said secondary piston to the pressure effective area of said front of said primary piston lying in the range 0.2 to 0.8.

4,324,102

PROCESS AND SYSTEM FOR RECOVERY OF ENERGY FROM GEOTHERMAL BRINES AND OTHER HOT WATER SOURCES

Samuel G. Woinsky, Irvine, Calif., assignor to Occidental Petroleum Corporation

Continuation of Ser. No. 589,068, Jun. 23, 1975, abandoned. This application Sep. 19, 1979, Ser. No. 76,677

Int. Cl.³ F03G *7/00*

U.S. Cl. 60—641.3 **28 Claims**

1. Process for recovery of energy from hot water-containing fluids including geothermal brines and other hot water sources, which comprises

(A) introducing a hot water-containing fluid in a heat transfer zone in direct contact heat exchange relation with a working fluid in liquid form, to heat and convert said working fluid to a heated dense phase fluid containing water and uncondensible gas, and produce a cooled water-containing fluid containing working fluid, said heat transfer zone being maintained at or above the critical pressure of said working fluid, and said hot water-containing fluid being at a temperature at or above the critical temperature of said working fluid,

(B) withdrawing said heated dense phase working fluid containing water vapor and uncondensible gas from said heat transfer zone,

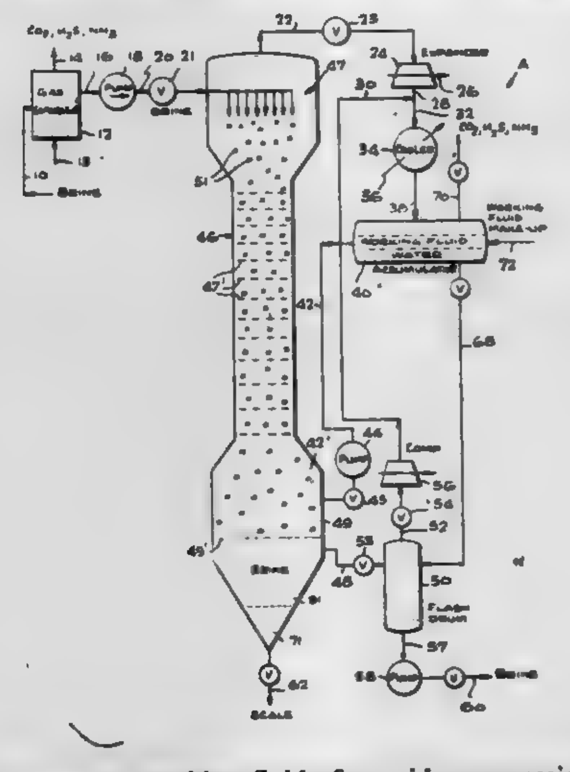
(C) introducing and expanding said heated dense phase working fluid containing water vapor and uncondensible gas, in an expander to produce work, and expanded working fluid containing water vapor and uncondensible gas,

(D) discharging said expanded working fluid containing water vapor and uncondensible gas from said expander,

(E) withdrawing said cooled water-containing fluid from said heat transfer zone,

(F) flashing said cooled water-containing fluid containing working fluid to flash off said working fluid,

(G) compressing said working fluid after said flashing,



(H) mixing said working fluid after said compression with the expanded working fluid discharged from said expander to form a mixture,

(I) cooling and condensing said mixture to produce a condensed working fluid containing condensed water vapor and uncondensible gas,

(J) separating said condensed working fluid from said condensed water vapor and uncondensible gas, and

(K) returning after said separation said condensed working fluid under pressure to said heat transfer zone for reheating therein.

4,324,103

METHOD AND APPARATUS FOR REGULATING A STEAM TURBINE

Heinz Block, Nussbaumen, Switzerland, assignor to BBC Brown, Boveri & Company Limited, Baden, Switzerland

Filed Jan. 22, 1979, Ser. No. 5,290

Claims priority, application Switzerland, Jan. 31, 1978, 1014/78; Feb. 17, 1978, 1759/78

The portion of the term of this patent subsequent to Jan. 22, 1997, has been disclaimed.

Int. Cl.³ F01K *13/02*

U.S. Cl. 60—663 **8 Claims**

1. A method of regulating a steam turbine, comprising the steps of:

arranging at least one resuperheater between a high pressure section and a low pressure section;

comparing a reference value and an actual value of the rotational speed of the steam turbine at said resuperheater;

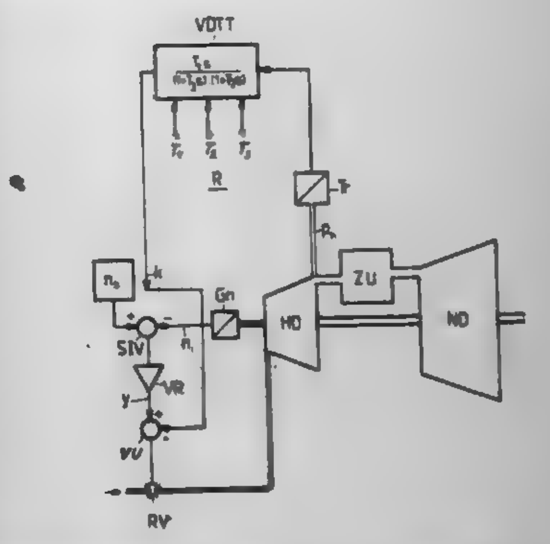
deriving a difference from the comparing of the reference value and the actual value;

providing an adjustment signal from said differences;

delivering the adjustment signal to a regulation valve arrangement of a regulation circuit;

measuring only one vapor pressure between an inlet valve of the high pressure section and an inlet of the resuperheater;

deriving from the measured vapor pressure a delayed feedback signal which at least approximately decreases to zero during steady state operation; and



coupling the feedback signal into the regulation circuit in opposition to the adjustment signal.

4,324,104

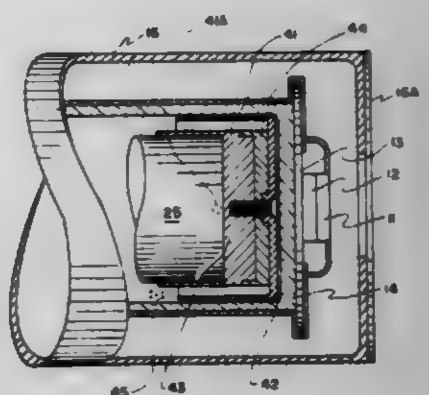
NONCONTACT THERMAL INTERFACE

Stuart B. Horn, Fairfax; Lundy H. McMillion, Fredericksburg; Howard L. Dunmire, Stafford; Geoffrey S. Sawyer, Annandale, and William C. Gerkin, Vienna, all of Va., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 3, 1980, Ser. No. 137,073

Int. Cl.³ F25B *45/00*

U.S. Cl. 62—77 **1 Claim**



1. A method of increasing the heat exchange coupling efficiency between the cold finger of a mechanical cooler and a dewar spaced apart a distance in the order of the amplitude of a vibration component of said cold finger, comprising the steps of:

spacing said dewar and cold finger far enough apart to prevent physical contact and whereby mechanically induced vibrations from the cooler will not induce contact between the two surfaces;

introducing a material selected from a group consisting of acetone, ethyl alcohol, methyl-alcohol, carbon tetrachloride, carbon dioxide and the inert gases between said dewar and cold finger whereby sublimation of the selected material occurs at the heat transfer point temperature to enhance the heat transfer between the two surfaces.

4,324,105

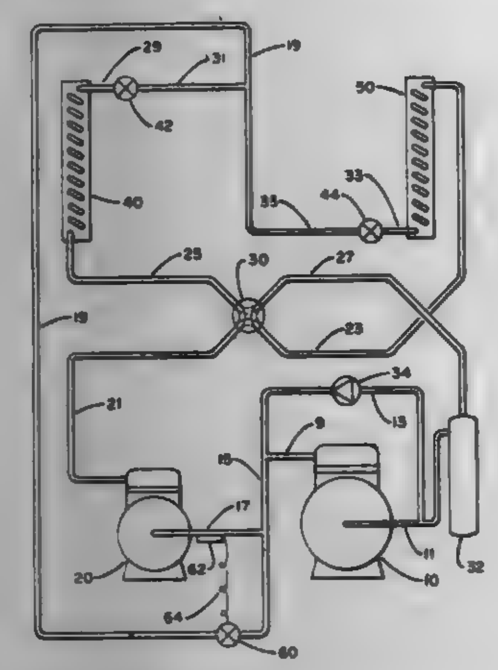
SERIES COMPRESSOR REFRIGERATION CIRCUIT WITH LIQUID QUENCH AND COMPRESSOR BY-PASS

Peter L. Cann, Canastota, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Division of Ser. No. 88,259, Oct. 25, 1979, Pat. No. 4,268,291. This application Nov. 26, 1980, Ser. No. 210,420

Int. Cl.^{3} F25B *41/00*

U.S. Cl. 62—196 A 2 Claims



1. A reversible refrigeration circuit having a low stage compressor, a high stage compressor, an interconnecting line joining the low stage compressor discharge line to the high stage compressor suction line, and first and second heat exchangers which comprises:

a quench conduit connecting the heat exchanger acting as a condenser to the interconnecting line for supplying liquid refrigerant directly to the interconnecting line; and

a control device for regulating the volume of flow of refrigerant through the quench conduit, as a function of the temperature of the refrigerant flowing into the high stage compressor suction line, said control device also acting to create a pressure drop so that liquid refrigerant flashes to a gas cooling the gaseous refrigerant entering the high stage compressor suction line.

4,324,106

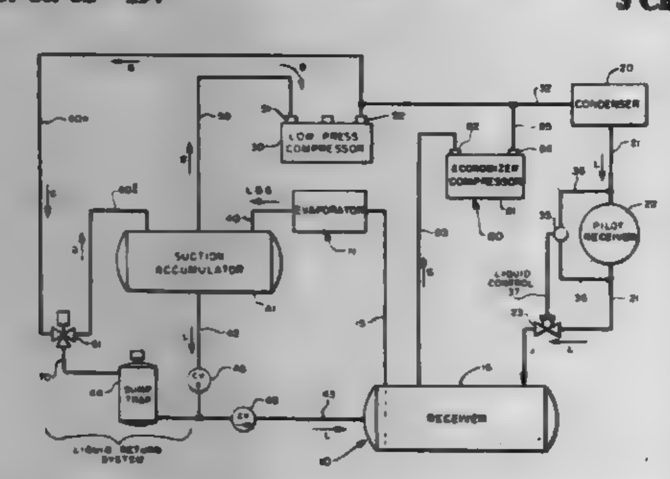
REFRIGERATION SYSTEM

Robert R. Ross, Wheaton, and Daniel R. Bansch, St. Charles, both of Ill., assignors to H. A. Phillips & Co.

Filed Oct. 3, 1980, Ser. No. 193,748

Int. Cl.^{3} F25B *41/00*

U.S. Cl. 62—197 3 Claims



1. In a recirculating refrigeration system which includes a first compressor for compressing vaporized refrigerant received from an evaporator through a suction accumulator, a condenser for receiving compressed refrigerant vapor from said first compressor, a receiver for receiving condensed refrigerant from said condenser and supplying it to said evaporator, and means for returning unevaporated refrigerant to the receiver means from the evaporator, the improvement comprising:

(a) a second compressor;

(b) means connecting said receiver to said second compressor through which flash gas in said receiver is transmitted to said second compressor;

(c) said second compressor being effective to compress said flash gas;

(d) a condenser which receives pressurized flash gas from said second compressor and condenses it; and

(e) means for returning condensed flash gas refrigerant to said receiver.

4,324,107

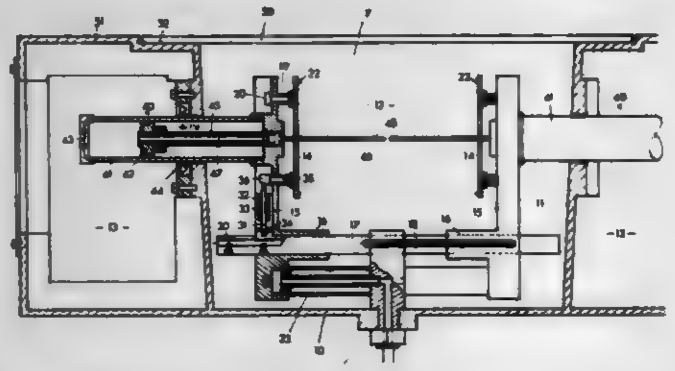
METHOD OF AND APPARATUS FOR COOLING BLOCKS OF HOT POROUS MATERIAL

William J. C. Pipe, and John B. Gray, both of Stadholme St., Morrinsville, New Zealand

Filed Mar. 27, 1979, Ser. No. 24,191

Int. Cl.^{3} F25B *19/00*

U.S. Cl. 62—268 11 Claims



1. Means to induce a flow of air from the interior to the exterior of a block of porous material; comprising a chamber adapted to house said block; means connected to said chamber for causing said chamber to be maintained during an operative cycle at an air pressure less than ambient air pressure; means to locate and to grip the block within said chamber; an injector needle assembly including an injector needle adapted to penetrate the said block after it has been located by the said gripping means; and means to move the injector needle into said block to allow air to flow through the said needles into and through the said porous block.

4,324,108

APPARATUS FOR FREEZING CONFECTION MATERIAL

Ronald J. Billett, Sunnyvale, and Veikko K. Viitanen, San Jose, both of Calif., assignors to FMC Corporation, Chicago, Ill.

Filed May 5, 1980, Ser. No. 146,932

Int. Cl.^{3} A23G *5/02*

U.S. Cl. 62—345 5 Claims

1. Apparatus for freezing confection material comprising:

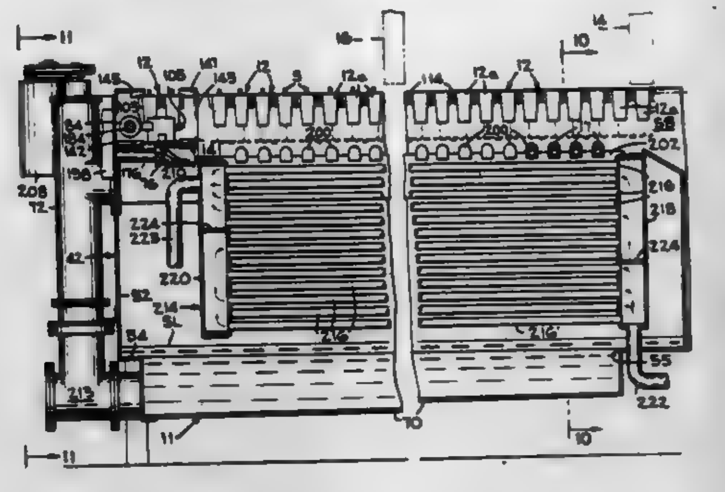
mold means including a plurality of upwardly open mold cups having sidewalls depending from the open upper ends thereof and terminating in closed bottoms,

means for filling said mold cups with a predetermined quantity of freezable confection,

means for conveying said mold means along a substantially horizontal path of travel through a freezing station,

said freezing station having upwardly directed nozzle means disposed beneath said path of travel for spraying refrigerated liquid toward said mold cups for impingement thereagainst adjacent the said upper ends thereof, the refrigerated liquid thereafter flowing downwardly along the exterior surfaces of said mold cup sidewalls and bottoms to drain therefrom, thereby to freeze the confection received in said cups,

said freezing station further having an exposed tubular heat exchanger means disposed beneath said nozzle means and



said mold means for again refrigerating the liquid as the draining liquid flows downwardly thereover into a sump, and,

means for recirculating the re-refrigerated liquid from the sump to said nozzle means.

4,324,109

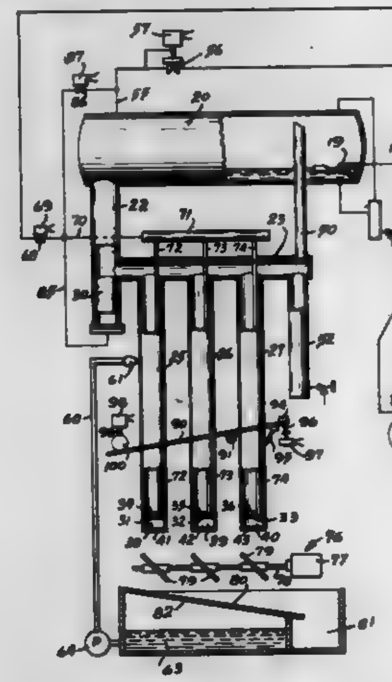
ICE-MAKING APPARATUS WITH HOT GAS DEFROST

Milton W. Garland, Waynesboro, Pa., assignor to Frick Company, Waynesboro, Pa.

Filed Mar. 10, 1981, Ser. No. 242,219

Int. Cl.^{3} F25C *5/10*

U.S. Cl. 62—353 6 Claims



1. Apparatus for producing ice comprising vertical tube means, means for applying water to the exterior of said tube means, a header communicating with said tube means, an accumulator-separator for refrigerant, a first conduit from the lower portion of the accumulator-separator to the header for supplying liquid refrigerant thereto, a second conduit from the upper portion of the accumulator-separator connected to the header for withdrawing gaseous refrigerant, said conduits being connected to spaced portions of the header whereby liquid and gaseous refrigerant flow through the header in the same direction during ice-making, said tube means having a false bottom at its lower portion which constitutes a wall of an enclosed space, valve means in said false bottom, means urging said false bottom valve means into closed position, the weight of liquid refrigerant in said tube means tending to close said valve means, and means for supplying relatively high temperature and pressure gaseous refrigerant to the space beneath the false bottom for opening said valve means to permit gaseous refrigerant to flow upwardly into said tube means and to cause release of ice from the outer surface thereof.

4,324,110

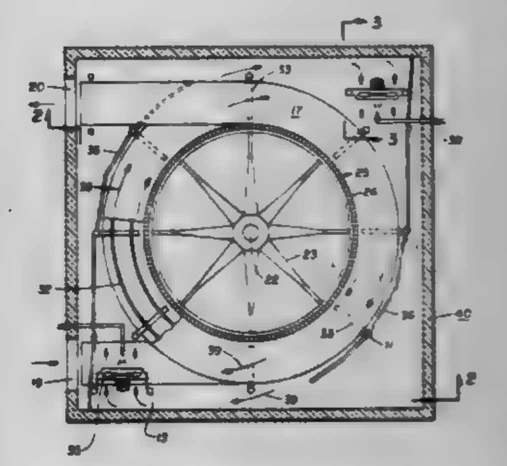
SPIRAL-TYPE HEAT EXCHANGER

Norris G. Lovette, Jr., Breinigsville, and David R. Ruprecht, Laurys Station, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Oct. 22, 1980, Ser. No. 199,130

Int. Cl.^{3} F25D *25/02*

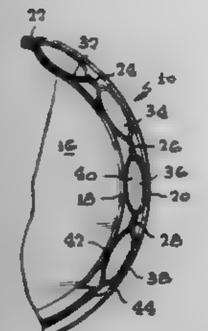
U.S. Cl. 62—381 3 Claims



1. In a heat exchanger comprising an insulating housing having an inlet and an outlet, a horizontally rotating drum positioned in a supporting framework within said housing, conveyor means in the form of a continuous flat belt winding around the circumferential wall of said drum and defining a vertical helical path between said inlet and said outlet for passage of product through said housing, means for changing the temperature of circulating heat exchange fluid within said housing, wherein said drum is rotatively driven by a central drive shaft within said drum; the improvement which comprises a supporting superstructural framework positioned externally over the roof of said insulating housing; bearing means mounted in said superstructure; the drive shaft for said drum extending through the roof of said housing and being journaled in said bearing; mechanical means connected go the shaft extension outside said housing for rotating said shaft; said supporting framework within said housing has mounted therein at at least two diagonally opposed positions thereof a bank of axial flow fans blowing inwardly along said helical path of travel of said conveyor belt, each such bank comprising at least two fans; said means for changing the temperature of said circulating heat exchange fluid comprises a fluid discharge nozzle positioned adjacent each fan for discharging liquid refrigerant into the fan blast in a direction counter to that of the blast to effect rapid vaporization of said refrigerant; scroll means provided at each bank of fans to confine the path of heat exchange fluid movement propelled by said fans, said scroll means extending continuously from a position adjacent the periphery of the helix formed by said belt around the rotating drum and extending at least part of the way along the outer periphery of said belt, thereby causing said heat exchange fluid to flow along the path of said belt for a substantial part of its flow distance from the discharge side of one bank of fans to the intake of a second bank of fans where the negative pressure of said second bank exits.

4,324,111
FREEZING GEL CONTAINMENT STRUCTURE AND METHOD

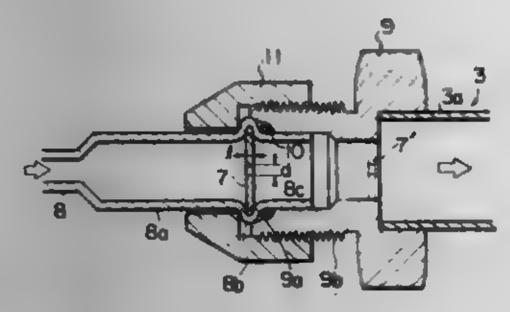
William A. Edwards, Los Angeles, Calif., assignor to Jerry B. Gallant, Tarzana, Calif.
Filed Jun. 19, 1980, Ser. No. 160,858
Int. Cl.³ F25D *3/08*
U.S. Cl. 62—457 14 Claims



1. A freezing gel containment structure comprising:
first and second sheets of flexible thermoplastic synthetic polymer composition material, said sheets lying in a substantially face-to-face relationship, said sheets being sealed together adjacent their adges and being sealed together at intermediate parallel upright seal lines to form a plurality of adjacent upright tubes, said tubes having freezing gel therein, said tubes being sufficiently narrow in a direction transverse to the upright direction with respect to their height in the upright direction and being sufficiently filled with freezing gel that each of said tubes is self-supporting when standing in the upright direction, said sheets with said tubes and said freezing gel filling forming a panel which will stand in the upright direction and which is flexible along said intermediate seal lines so that it is bendable around an upright axis.

4,324,112
REFRIGERATION SYSTEM

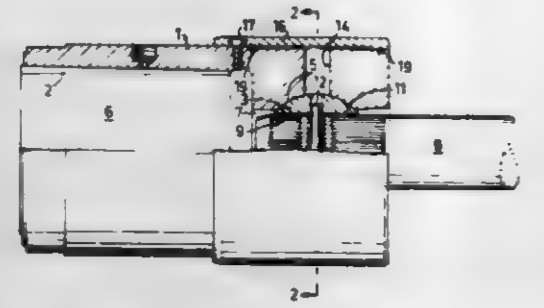
Kenichi Fujiwara, Kariya; Hikaru Sugi, Nagoya, and Mineo Nishikawa, Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan
Filed May 7, 1980, Ser. No. 147,501
Claims priority, application Japan, May 10, 1979, 54/57526; Jun. 29, 1979, 54/83357; Aug. 22, 1979, 54/106835; Jan. 25, 1980, 55/7558
Int. Cl.³ F25B *41/06*
U.S. Cl. 62—511 7 Claims



1. A refrigeration system comprising:
a refrigerant circuit which includes a condenser, an evaporator and a pressure reducing device interconnected between said condenser and said evaporator, said pressure reducing device including a flow restricting and resisting means and a flow resisting means disposed at the upstream side of said flow restricting and resisting means and adapted to impart a resistance to the refrigerant flowing therethrough, said flow restricting and resistance means comprising circular orifice means having an l/d ratio in the range of from about 0.8 to about 3.0, where l equals the length of the region of minimum diameter of said orifice means and d equals said minimum diameter.

4,324,113
SLIDING BLOCK COUPLING

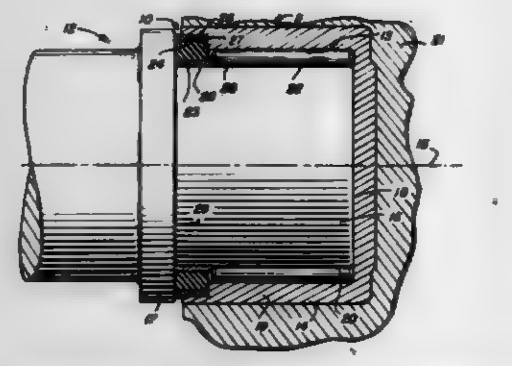
Lars F. Leksen, Smedjebacken, Sweden, assignor to Morgardshammar Aktiebolag, Smedjebacken, Sweden
Continuation of Ser. No. 811,978, Jun. 30, 1977, abandoned. This application Dec. 21, 1978, Ser. No. 971,883
Claims priority, application Sweden, Jul. 6, 1976, 7607714
Int. Cl.³ F16D *3/16*
U.S. Cl. 64—7 3 Claims



1. A sliding block coupling for interconnecting an input driving member and an output driven member in torque transmitting relationship, comprising a rotatable coupling head having a cylindrical recess perpendicular to the axis of rotation of the head, elongated means extending lengthwise of said recess, one of said members being coupled against rotation relative to said means, the other of said members being coupled against rotation relative to said head, said elongated means having flats on opposite sides of each of its ends, the surfaces of said ends between the two said flats at each end of said elongated means converging endwise outwardly to permit oscillatory movement of said means about an axis perpendicular to the axis of said cylindrical recess, sliding blocks disposed in said recess on opposite sides of said rotation axis and on opposite sides of each of said ends, said blocks having flat surfaces that slide on said flats, said blocks and said cylindrical recess having interengaging sliding surfaces that limit movement of said blocks relative to said means to directions perpendicular to said rotation axis, annular seals that seal between said means and said walls of said recess, said seals being disposed on opposite sides of said rotation axis, between said sliding surfaces and said rotation axis, and means closing both ends of said cylindrical recess.

4,324,114
MOVEABLE JOINT SEAL

Donald F. Durham, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.
Continuation of Ser. No. 38,986, Feb. 26, 1979, abandoned. This application Oct. 15, 1980, Ser. No. 197,079
Int. Cl.³ F16D *3/26*
U.S. Cl. 64—17 A 17 Claims

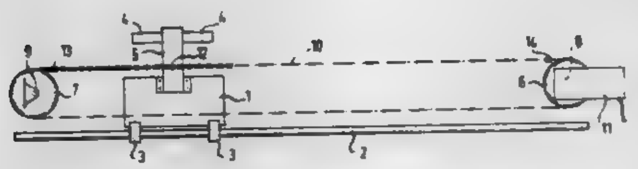


1. In a universal joint (11) having a journal trunnion (12) defining an axial of rotation (15) and being mounted for rota-

tion about said axis by an axially outer annular bearing (13) in a bearing cap retainer (14), the bearing being retained against axially outward displacement by said retainer, an improved seal (10) for movably sealing the journal trunnion to the bearing retainer for maintaining bearing lubricant therein and prevent entry of foreign matter thereinto, said seal comprising:
an elastic seal ring (23);
first (24) and second (25) right circularly cylindrical annular sleeves bonded to diametrically opposite portions of the seal ring, the diameters of said sleeves being preselected to place said seal ring under compressive preload; and
means on said journal trunnion and bearing retainer defining first and second pairs of confronting annular surfaces (20,26 and 29,27), said sleeves seating respectively against the annular surfaces (20,26) of said first pair and said seal ring sealingly engaging the annular surfaces (17,27) of said second pair, said bearing being retained against axially inward displacement by one of said sleeves.

4,324,115
FLATBED KNITTING MACHINE WITH PULSE GENERATOR FOR ELECTRONIC CONTROL

Erich Krausé, Bopfingen, Fed. Rep. of Germany, assignor to Universal Maschinenfabrik Dr. Rudolf Schieber GmbH & Co. KG, Westhausen, Fed. Rep. of Germany
Filed May 14, 1980, Ser. No. 149,879
Claims priority, application Fed. Rep. of Germany, May 14, 1979, 2919369
Int. Cl.³ D04B *7/00, 15/66*
U.S. Cl. 66—75.2 3 Claims

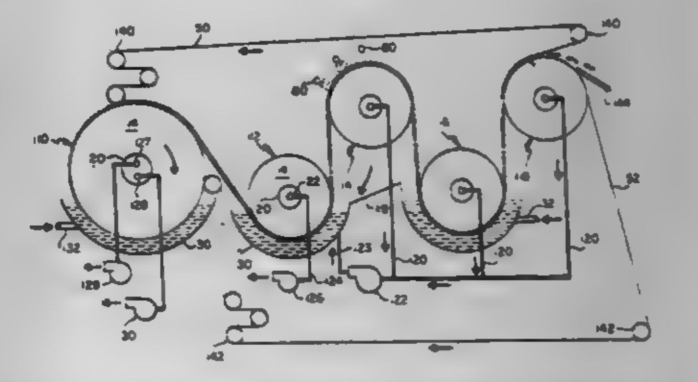


1. In a high capacity, automatic, flatbed knitting machine comprising a cam carriage movable back and forth over a needle bed, a pulse generator which comprises a pulse-initiating disc and two cycle signallers at the circumference of the disc and which produces pulses corresponding to the needle cycle for the electronic control of the machine, the improvement comprising: an endless chain stretched on the machine frame in the direction of travel of the carriage between two sprocket wheels, and pick-up means connecting the carriage being driven by a separate drive chain to the endless chain in such a way that the pick-up means moves on a linear taut portion of the endless chain at least within the utilisable working region of the pulse generator, the pulse-initiating disc being connected directly and fixedly to one of the sprocket wheels and thereby driven in synchronism with the movement of the carriage over the needle bed by a positive linked contact between the carriage and the endless chain, said pulse-initiating disc having a peripheral pulse-initiating pitch corresponding in whole number multiples with the pitch of needles mounted on the bed, and said endless chain driving exclusively the pulse-initiating disc.

4,324,116
TWIN BELT VACUUM WASHER

Steven S. Davis, Bountiful, Utah, assignor to Envirotech Corporation, Menlo Park, Calif.
Division of Ser. No. 934,773, Aug. 18, 1978, abandoned, which is a continuation-in-part of Ser. No. 853,068, Nov. 21, 1977, Pat. No. 4,160,297. This application Apr. 21, 1980, Ser. No. 141,865
Int. Cl.³ D06B *3/02*
U.S. Cl. 68—158 6 Claims

1. A machine for washing paper stock pulp and other vacuum-filterable materials comprising:
a. first and second horizontally-disposed drums each having a sidewall through which liquid can pass, said drums being mounted for rotation about their horizontal axes and disposed in side-by-side relationship;
b. a third horizontally-disposed drum mounted for rotation about its horizontal axis and disposed between said first and second drums, said third drum being mounted higher than said first and second drums;
c. two tanks mounted to encompass at least the lower part of said first and second drums, said tanks being constructed to contain liquid exterior to said drums;
d. first and second endless filter belts trained to pass under said first and second drums and over said third drum in face-to-face relationship with each other to hold a mat of material to be washed;
e. feed means to deposit the vacuum-filterable material between said first and second endless filter belts;
f. a first set of roller means mounted above said drums to



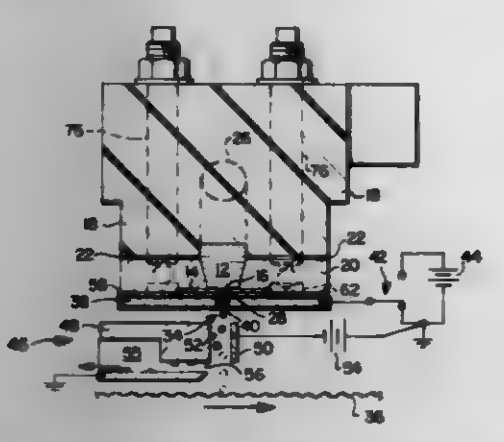
guide said first endless filter belt from said second drum to said first drum, and a second set of roller means mounted below said drums to guide said second endless filter belt from said second drum to said first drum;
g. drive means mounted to drive said first and second endless belts;
h. liquid inlet means to introduce liquid into said tanks associated with said first and second drums; and,
i. vacuum means connected in communication with said first and second drums to provide a pressure differential between the mat of material held between said first and second endless belts and the liquid contents of the associated said tanks thereby to force liquid from the tanks through the material, wherein said liquid inlet means includes means coupled to said vacuum means associated with said second drum to transfer the liquid removed from said second drum into said tank associated with said first drum.

4,324,117
JET DEVICE FOR APPLICATION OF LIQUID DYE TO A FABRIC WEB

Charles J. Schwob, Dayton; Nicholas Kirbabas, Kettering, and Tim Erin, Beavercreek, all of Ohio, assignors to The Mead Corporation, Dayton, Ohio
Filed Jun. 11, 1980, Ser. No. 158,200
Int. Cl.³ D06B *1/02;* B05B *5/08*
U.S. Cl. 68—205 R 13 Claims

11. A jet drop charging device for controllably charging drops formed from a plurality of fluid filaments produced by a jet coating head, said fluid filaments being arranged in a row, comprising
a charging plate of electrically conductive material defining an elongated slot into which said fluid filaments extend, whereby said drops are formed from said fluid filaments within said slot, said charging plate being coated with an electrically non-conductive material on its surface and said slot being free of said non-conductive material,

and means for applying an electrical charge potential to said charging plate, whereby electrical charges are induced in



the tips of said fluid filaments and are carried away by drops formed therefrom.

4,324,118

MACHINE FOR ROUGHING A PERIPHERAL VAMP EDGE OF A SHOE

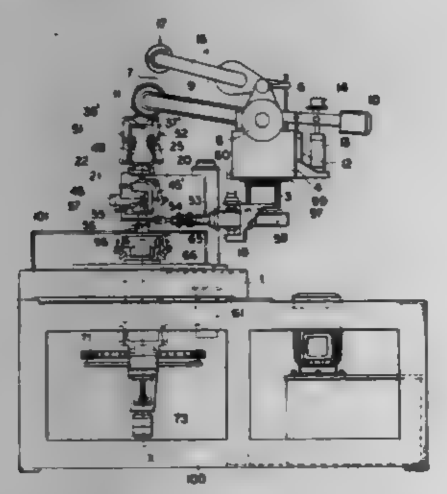
Mario Braggi, Corso Torino, 114 Vigevano (Pavia), Italy

Filed Mar. 16, 1979, Ser. No. 21,203

Claims priority, application Italy, Mar. 17, 1978, 21322 A/78

Int. Cl.³ A43D *37/00*; C14B *1/44*

U.S. Cl. 69—6.5 **14 Claims**



1. A machine for roughening a peripheral edge of a vamp of a shoe mounted in upside-down position on a last, comprising:
a turntable rotatable about a principal vertical axis;
a carriage linearly reciprocable on said turntable;
mounting means on said carriage for removably supporting a pair of vertically spaced templates with profiles respectively conforming to those of a pair of shoes whose vamps are to be peripherally roughened;
a first and a second arm mounted on a baseplate for independently swinging about respective collateral vertical axes;
a feeler on a free extremity of said first arm positionable to contact either of said templates;
a rotary roughening brush carried on said free extremity above said feeler;
a beam hinged to said second arm above the level of said mounting means;
a vertical shaft journaled in said beam at a location remote from said second arm and provided with coupling means for releasably connecting said shaft with said mounting means;
a shoe-supporting unit mounted on said shaft above said beam and provided with clamping means for gripping a shoe to be roughened in upside-down position and in line with the corresponding template at a level within reach of said brush;
drive means for rotating said brush;
first actuating means for moving said first arm into a position of engagement of said feeler with the template corresponding to a shoe gripped by said clamping means;
second actuating means for displacing said brush relatively to said first arm for working contact with the peripheral vamp edge of the shoe gripped by said clamping means;
third actuating means for linearly reciprocating said carriage on said turntable between respective terminal positions in which the heel and the toe of the gripped shoe are substantially centered on said principal axis; and
fourth actuating means operative in each of said terminal positions for rotating said turntable through 180°.

4,324,119

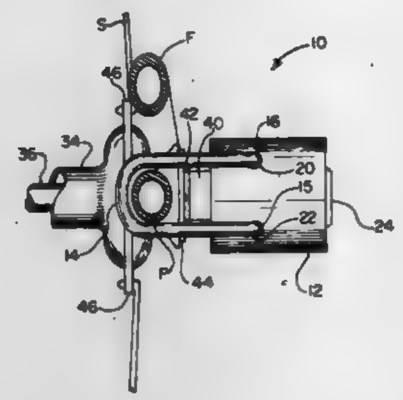
PASSIVE WHEEL LOCK FOR BICYCLES AND THE LIKE

David Mitton, 425 W. Mulberry St., Fort Collins, Colo. 80521

Filed Mar. 17, 1980, Ser. No. 130,694

Int. Cl.³ B62H *5/00*; E05B *67/06, 71/00*; F16B *41/00*

U.S. Cl. 70—233 **3 Claims**



1. Passive bicycle lock apparatus for securing a wheel axle and hub assembly of a bicycle to the bicycle frame, comprising:
a main body member having an internally threaded bore extending therein and adapted for threaded screw mounting on the externally threaded axle bolt of the bicycle;
securing means releasably attachable to said main body member and adapted for passing around and engaging a portion of the bicycle frame adjacent said main body member in such a manner that restrains said body member from rotation on said axle in relation to the frame and thereby securing said main body member in immovable position on the axle bolt; and
lock means for releasably engaging said securing means and locking it in attachment to said main body member.

4,324,120

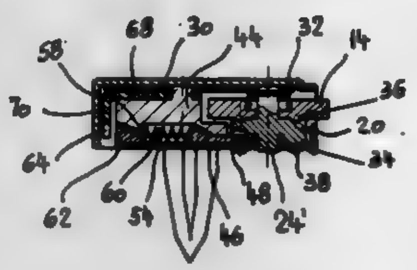
PERMUTATION LOCK, PARTICULARLY FOR HANDBAGS AND SUITCASES

Urs Gisiger, Selzach, Switzerland, assignor to Amiet AG, Selzach, Switzerland

Filed Aug. 29, 1979, Ser. No. 70,842

Int. Cl.³ E05B *37/02*

U.S. Cl. 70—312 **10 Claims**



1. In an arrangement of a permutation lock, particularly for use in connection with handbags and suitcases, including at least two lock stopping devices each having an arresting disc provided with an intake recess cooperating via multipoint arresting devices with a setting disc to adjust the angular position of the latter relative to the intake recess, an actuation slider movable between a closing position and an opening position, and at least one tumbler slider spring-biased into a closing position and cooperating with the actuation slider, a combination comprising at least one arresting slider spring-biased against said arresting disc and including arresting tongues engageable with said intake recesses and a projection formed opposite to said arresting tongues; said actuation slider having openings for receiving said projection when said actuation slider is in its closing position and thus allowing disengagement of said arresting tongues from said intake recesses; and abutments arranged on said actuation slider for stopping said projection when said actuation slider is in its opening position and thus preventing the disengagement of said arresting tongues from said intake recesses and permitting the angular displacement of said setting discs relative to said arresting discs.

4,324,121

KEY RING

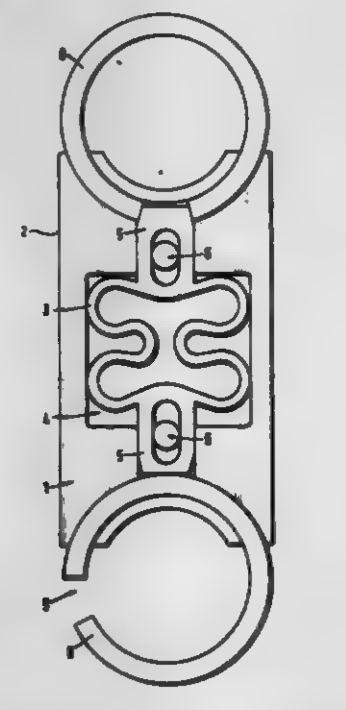
Herbert Richter, Birkenfelder Str. 1-7, Pforzheim-Bue, Fed. Rep. of Germany (7530)

Filed Jan. 28, 1980, Ser. No. 116,273

Claims priority, application Fed. Rep. of Germany, Jan. 30, 1979, 7902447[U]; Feb. 12, 1979, 7903847[U]

Int. Cl.³ A47G *29/10*

U.S. Cl. 70—459 **7 Claims**



1. A key ring comprising: a handle portion having a circular passage extending therethrough at least at one end; a metal ring rotatably disposed in said circular passage, said metal ring having an open segment area; a latch member movably supported in said handle portion; said handle portion having a narrow cavity and spring means having interconnected undulated sections arranged in spaced parallel relationship disposed and contained in said cavity for biasing said latch member toward said metal ring and into said open segment area when said open segment area is in the path of movement of said latch member for locking said ring in position; said latch member being movably supported in said handle portion in a passage which intersects, and extends normal to, said circular passage, and said latch member further having a portion extending at least to the surface of said handle portion at least at one side thereof so as to permit movement of said latch member out of engagement with said metal ring in order to allow rotation of the metal ring for removal and insertion of keys.

4,324,122

METAL STRIP COLD-REDUCTION MILL

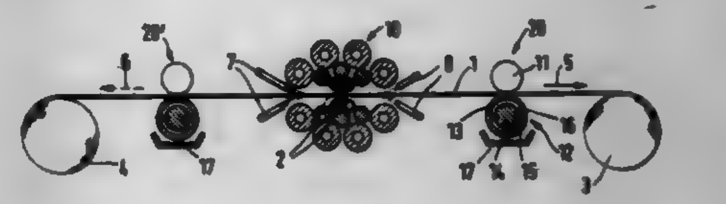
Peter Urban, Meerbusch-Osterrath, Fed. Rep. of Germany, assignor to Eduard Küsters, Krefeld, Fed. Rep. of Germany

Filed Apr. 14, 1980, Ser. No. 139,753

Claims priority, application Fed. Rep. of Germany, May 2, 1979, 2917641

Int. Cl.³ B21B *45/02*

U.S. Cl. 72—41 **7 Claims**



1. A metal strip cold-reduction mill comprising work rolls between which the strip is cold-rolled, means for applying liquid lubricant to the strip and work rolls during cold rolling of the strip, the lubricant remaining on the rolled strip leaving the work rolls, a tension reel on which the rolled strip is coiled with one convolution on top of another, and a set of squeeze rolls between the work rolls and reel and forming a nip through which the rolled strip is passed for removing the lubricant from the strip; wherein the improvement comprises controllable means for adjusting the line pressure of said nip along its length.

4,324,123

SOIL CULTIVATING IMPLEMENTS

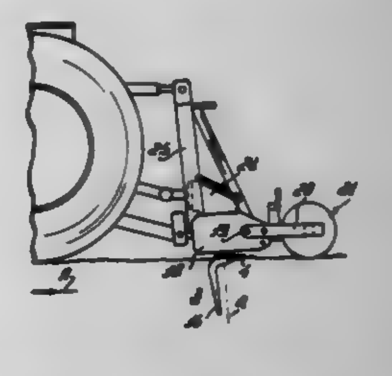
Cornelius Van Der Lely, 7, Brüschenrain, Zug, Switzerland

Filed Oct. 25, 1979, Ser. No. 88,160

Claims priority, application Switzerland, Oct. 27, 1978, 7810716

Int. Cl.³ A01B *33/06*

U.S. Cl. 172—49.5 **8 Claims**



1. A soil cultivating implement comprising a frame and a plurality of soil working members arranged in a transverse row for rotation about an upwardly extending axis, at least one of said soil working members having a substantially vertical shaft that defines its axis of rotation and a single tine supported adjacent the lower end of said shaft, an upper fastening portion of said tine being connected to said shaft by clamping means, said lower shaft end comprising a substantially flat supporting part that mounts a downwardly extending stub shaft, the upper side of said fastening portion being substantially horizontal and flat with downwardly extending cheek sides and having an aperture that receives said downwardly extending stubshaft, said stubshaft extending through said fastening portion and into a protected open space defined by the cheek sides, below said supporting part, said clamping means securing the upper surface of said fastening portion against the lower side of said flat supporting part, and soil working portion having an upwardly extending inner cavity that merges into the lower surface of said fastening portion and defines said protected space between said cheek sides, said cheek sides defining a U-shaped open space with one cheek being located in advance of the other relative to the direction of rotation of the soil

working member, said cavity extending for a substantial distance along the length of the lower soil working portion of said tine.

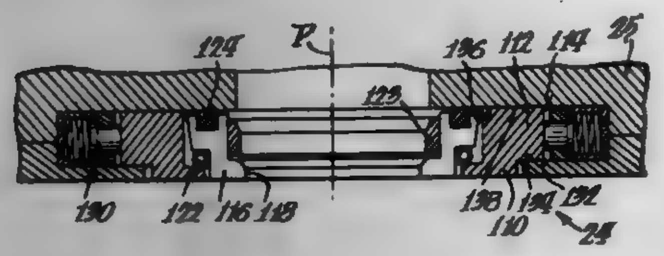
4,324,124
STRIPPER ASSEMBLY FOR BODYMAKER

Edward G. Maeder, Minnetonka, Minn., assignor to National Can Corporation, Chicago, Ill.

Division of Ser. No. 900,272, Apr. 26, 1978, Pat. No. 4,262,512. This application Jun. 16, 1980, Ser. No. 160,067

Int. Cl.³ B21D *45/00*

U.S. Cl. 72—345 4 Claims



1. In an ironing machine having a frame and at least one ironing assembly and a stripper assembly spaced from said ironing assembly with said assemblies having openings defining a path and a punch movable along said path to iron a sidewall of a cup and produce a container, the improvement of said stripper assembly including a stripper support element having a plurality of circumferentially spaced stripping jaws supported thereon and cooperating with each other to define the opening therein, first means normally maintaining said stripping jaws in a first position and accommodating movement from said first position to enlarge said opening to allow said container to pass therethrough, a support between said frame and said stripping jaws, said frame having a flat surface extending perpendicular to said path adjacent said ironing assembly and said support having a cooperating surface engaging said flat surface, and a plurality of opposed circumferentially spaced biasing means between said support and frame normally biasing the center of the opening concentric with said path and being compressible to accommodate radial movement of said support, said stripping jaws and said first means as a unit relative to said path when the center of said punch is eccentric to the center of said opening in said stripper assembly.

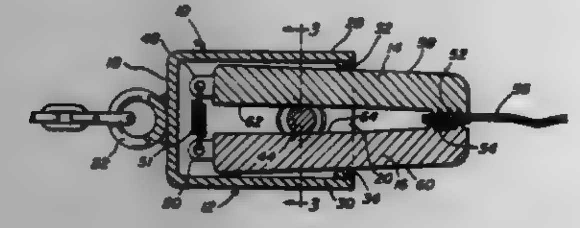
4,324,125
AUTO BODY CLAMP

Davis R. Jarman, and Virgil H. Hinson, both of Box 113, Rte. 3, Brunswick, Ga. 31520

Filed Nov. 9, 1979, Ser. No. 92,921

Int. Cl.³ B21D *1/12;* A44B *21/00*

U.S. Cl. 72—479 11 Claims



1. An auto body gripping clamp including a base component defining a pair of spaced opposing abutment surfaces, a pair of elongated levers laterally facing each other and including first and second pairs of corresponding end portions projecting in opposite directions from opposite sides of a plane transverse to said levers and containing said abutment surfaces, said levers being supported from said base component for longitudinal shifting relative thereto, said first pair of end portions projecting from one side of said plane defining opposing jaw faces for clamping an auto body portion therebetween, means carried by said base component for attaching a pull member thereto for applying a pulling force thereon in a direction opposite to the direction in which said first pair of end portions project, said levers including pairs of remote and adjacent longitudinal surfaces, wedge means shiftably supported from said base component on the other side of said plane between said adjacent surfaces of said levers for selectively wedging said second pair of end portions apart and shifting of said wedge means with said levers longitudinally of said base, said remote surfaces being slightly divergent toward said second end portions when said second end portions are wedged apart by said wedge means, said remote surfaces being slidably engageable with said abutment surfaces to cam said first pair of end portions toward each other upon shifting of said levers and said wedge means relative to said base component longitudinal direction of said levers in which said first end portions thereof project, said base component comprising a tubular housing having a first open end from which said first pair of end portions project, said abutment surfaces being supported from opposite side portions of said tubular housing adjacent said open end thereof, said wedge means comprising a longitudinally tapered elongated wedge extending transversely of said levers and housing and including opposite side longitudinal convergent wedge surfaces shiftable lengthwise and transversely between said adjacent surfaces with said wedge surfaces opposing and engaging said adjacent surfaces and the opposite ends of said wedge projecting through opposite side portions of said housing.

4,324,126
CALIBRATION DEVICES

Volker Riech; Wolfgang Saupe, and Dietrich Sorgenicht, all of Leverkusen, Fed. Rep. of Germany, assignors to Daystrom Limited, Gloucester, England

Filed May 20, 1980, Ser. No. 151,570

Claims priority, application Fed. Rep. of Germany, May 21, 1979, 2920529

Int. Cl.³ G01B *9/00*

U.S. Cl. 73—1 J 8 Claims

1. A calibration device for calibrating apparatus for measuring a dimension of hot luminous material, the device comprising a hollow elongated member made from a translucent, temperature-resistant material having a relatively low coefficient of thermal expansion, said member having an elongated light source disposed along its longitudinal axis but spaced from the internal surface thereof to reduce heat transfer therebetween, whereby in use, the device simulates such luminous material while operating with said member at a substantially lower temperature than that of such luminous material.

4,324,127
SPIROMETER CALIBRATION DEVICE AND ASSOCIATED DISPLACEMENT DETECTION SYSTEM

Peter Gazzara, Reading; John W. Burke, Jr., Melrose, and Rodney Edwards, Jr., Framingham, all of Mass., assignors to Biotrine Corporation, Woburn, Mass.

Filed Nov. 19, 1979, Ser. No. 95,484

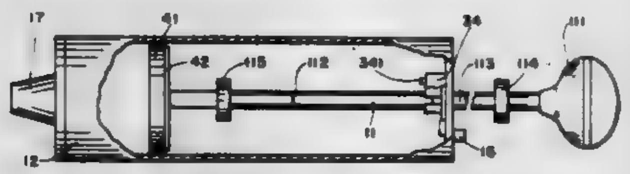
Int. Cl.³ G01F *25/00*

U.S. Cl. 73—3 5 Claims

1. A calibration device comprising:

first means, for displacing a given volume, such first means including (i) a structure and (i) a member movably mounted so as to permit displacement thereof with respect to the structure, displacement of the member with respect to the structure causing displacement of a volume;

second means, for sensing, in the course of displacement by the first means of the given volume, the acts of commencement and termination of the displacement by the first means of a known volume, the known volume being equal to or less than the given volume, such second means including (i) a starting tripper, mounted in fixed relation to one of either the member or the structure, (ii) a stopping tripper mounted in fixed relation to the starting tripper, and (iii) a sensor, responsive to the physical proximity of the starting tripper and to that of the stopping tripper, and



mounted in fixed relation to the other of the member or the structure, and thereby in movable relation to the trippers, so that displacement of the member with respect to the structure causes the trippers to excite the sensor at both the commencement and the termination of displacement by the piston of the known volume, and wherein (a) the sensor includes a Hall-effect device, for responding to proximate magnetic field changes, and (b) the starting and stopping trippers each include fifth means, for causing magnetic field changes in the vicinity of the sensor when the fifth means is proximate thereto; and

third means, for measuring the elapsed time between such commencement and termination.

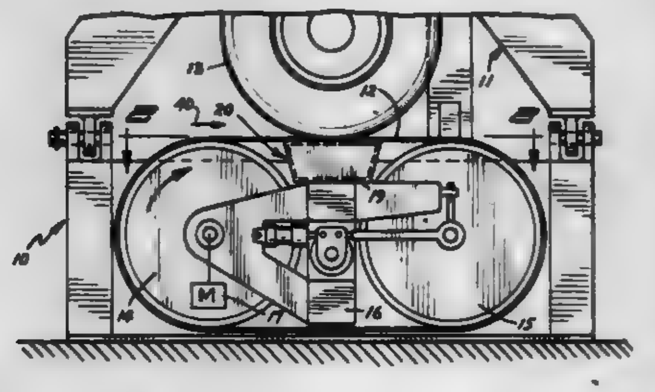
4,324,128
HYDRODYNAMIC SUPPORT BEARING FOR A BELT ON A TIRE TESTING MACHINE

William J. Langer, Eden Prairie, Minn., assignor to MTS Systems Corporation, Eden Prairie, Minn.

Filed Feb. 14, 1980, Ser. No. 121,399

Int. Cl.³ G01M *17/02*

U.S. Cl. 73—8 8 Claims



1. In an endless flexible belt assembly including a belt having a lateral width, and a pair of rollers supporting the belt for movement in a closed path, said rollers being spaced apart to provide a center belt length between the rollers with the belt moving in a first direction in the center length and being loaded in the center length, the improvement comprising a hydrodynamic bearing mounted in position to support the center belt length, said hydrodynamic bearing comprising a block member having a surface that is generally planar and which supports the center belt length on a side thereof opposite the side on which the belt is being loaded, a plurality of generally parallel grooves extending generally perpendicular to the direction of movement of said belt and spaced apart in direction of movement of the belt, said grooves being of length less than the lateral width of said belt and terminating short of the edges of said block member, and means to supply a liquid to each of said grooves at a low pressure in a desired amount sufficient so the pressure necessary to support the belt on a liquid film is generated by the belt creating shear in the liquid between the grooves to provide hydrodynamic pressure between the belt and the block member as a function of belt velocity relative to the block member, liquid viscosity and loading on the belt as the belt is moved.

4,324,129
METHOD AND MEANS FOR DISTINGUISHING GEMSTONES

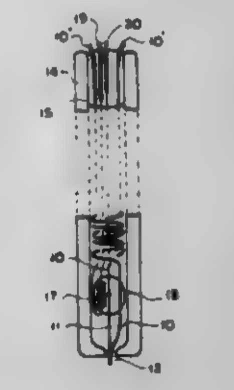
Hiroshi J. Goldsmid, Beecroft, Australia, assignor to Unisearch Limited, Kensington, Australia

Filed Mar. 18, 1980, Ser. No. 131,352

Claims priority, application Australia, Mar. 28, 1979, PD8221

Int. Cl.³ G01N *25/18*

U.S. Cl. 73—15 A 7 Claims



1. A method of identifying a material by determining its thermal conductivity, comprising the steps of applying to a material a thermocouple including two dissimilar metals and having junctions spaced relatively close to each other and forming thermocouple branches, and a high thermal conductivity tip at one of said junctions; continuously supplying heat to the other of said junctions at least up to just prior to making contact between said thermocouple and the material; pressing said tip at said one junction into contact with said material so that heat flows through at least part of one of the thermocouple branches; recording the thermoelectric e.m.f. developed between said junctions; and identifying the material by reference to the maximum thermoelectric e.m.f. or to the rate of change of e.m.f.

4,324,130
METHOD AND APPARATUS FOR MEASURING THE MELTING TEMPERATURE OF GREASY PRODUCTS

Benjamin Driker, 35-04 21 Ave., Astoria, New York, N.Y. 11105

Filed Aug. 25, 1976, Ser. No. 717,541

The portion of the term of this patent subsequent to Apr. 13, 1996, has been disclaimed.

Int. Cl.³ G01N *25/04*

U.S. Cl. 73—17 R 7 Claims

1. A method of measuring the melting temperature of greasy products in a liquid flow thereof comprising:

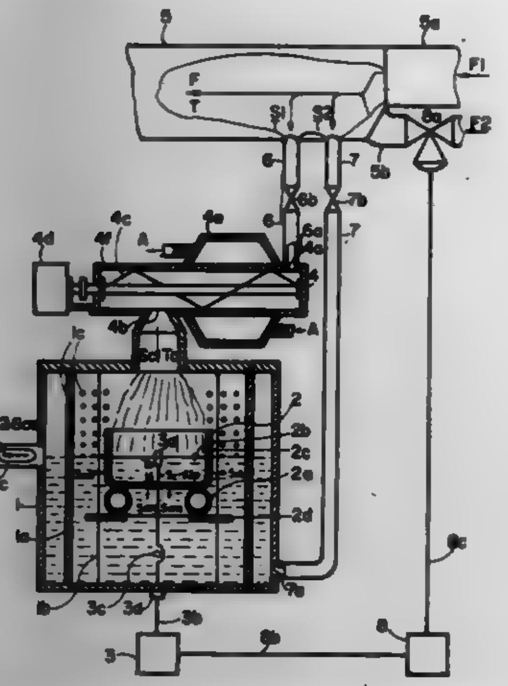
forming a continuous flow of first and second liquid streams from said product;

freezing said first stream to a snow-like state;

feeding said second liquid stream to a container;

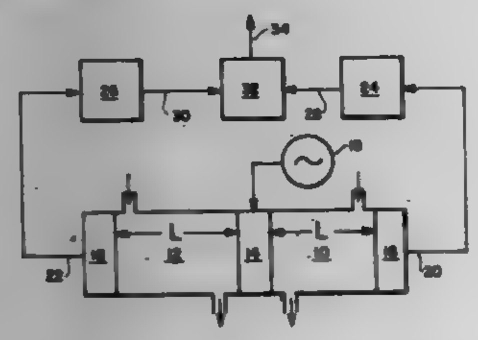
feeding said snow-like material into a vessel having perforated walls, said vessel resiliently supported in the liquid in said container, whereby the liquid in said container passes through the vessel walls to mix with and melt the snow-like material, and the depth of the vessel in said liquid changes in response to changes in mixture weight

which in turn changes with variations of melting temperature; and,



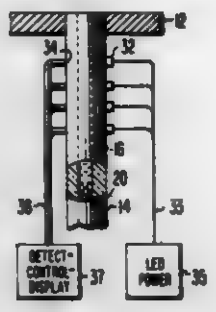
continuously measuring the temperature of material in the vessel.

4,324,131
LIQUID CHROMATOGRAPHY DETECTOR
Allan Rosencwaig, 134 Timberline Ct., Danville, Calif. 94526
Filed Apr. 9, 1980, Ser. No. 138,529
Int. Cl.³ G01N *15/00*
U.S. Cl. 73—61.1 C **17 Claims**



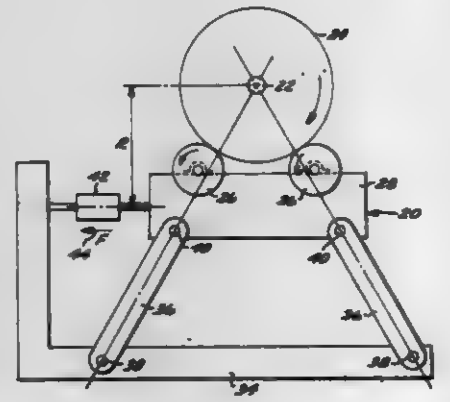
1. A method for measuring the concentration of a solute in a solvent, comprising:
flowing solvent containing the solute through a first chamber and flowing pure solvent through an identical second chamber;
sending acoustic waves of equal amplitude into the two chambers;
detecting the amplitudes of attenuated acoustic signals from each of the two chambers producing detector signals;
measuring a difference signal between the detector signals from the two chambers;
determining the change in acoustic attenuation of the solvent due to the presence of the solute from the measured difference signal; and
determining the concentration of the solute from a predetermined relationship of the change in acoustic attenuation as a function of concentration for the solute.

4,324,132
APPARATUS AND METHOD FOR MEASURING THE RATE OF EVAPORATION OF A LIQUID
Richard Williams, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.
Filed Apr. 14, 1980, Ser. No. 139,738
Int. Cl.³ G01N *33/00*
U.S. Cl. 73—61.3 **16 Claims**



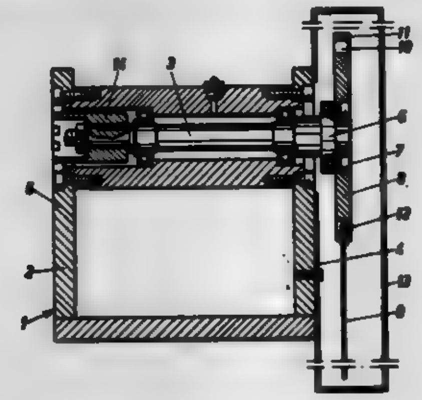
1. A method for measuring the rate of evaporation of a liquid comprising the steps of:
connecting a capillary tube to a sheet of fibrous material;
saturating the sheet with liquid;
providing to said sheet additional liquid sufficient to cause liquid to flow from said liquid-saturated sheet into said capillary tube to establish hydraulic continuity of the liquid in the sheet and in the capillary tube; and
determining the rate of evaporation of the liquid by movement of the liquid drawn through the tube as the liquid evaporates from the sheet.

4,324,133
TORQUE MEASURING DEVICE
David J. Stevenson, Arcadia, Calif., assignor to Clayton Manufacturing Company, El Monte, Calif.
Filed May 16, 1980, Ser. No. 150,625
Int. Cl.³ G01L *3/02*
U.S. Cl. 73—117 **30 Claims**



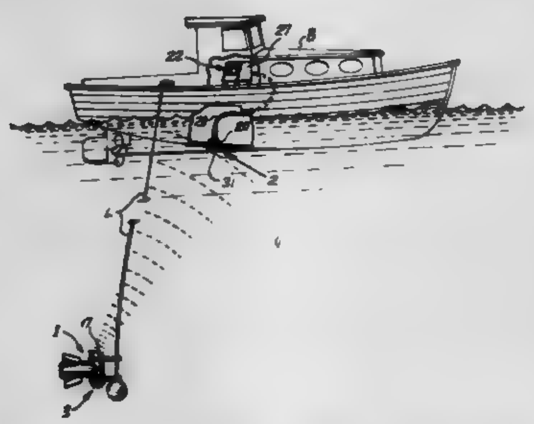
1. In a device for measuring torque the combination which comprises:
a roller rotating about an axis;
a support member relative to which the roller is rotatably mounted in a relationship wherein the roller imparts a force upon the support member;
support means for supporting the support member relative to a fixed object such as the ground, said support means including at least two linkage arms connecting the support means to the fixed object, each linkage are being pivotably mounted to the fixed object at a first point of mounting and being pivotably mounted to the support member at a second point of mounting and disposed in such a manner that a geometrical line drawn between the first and second points of mounting of each linkage arm substantially intersects the axis of rotation of the roller;
power absorbing means operatively connected to the support member for absorbing rotational power of the roller, and
force measuring means mounted between the support member and the fixed object for measuring the force imparted by the roller to the support member, said force having a perdetermined known lever arm relative to the axis of rotation of the roller, said force measuring means functioning in a manner so that the respective lines interconnecting the first and second mounting points of the linkage arms remain substantially stationary regardless of the magnitude of the force being imparted to the support member whereby a torque of the roller may be calculated from the measured force and the known lever arm.

4,324,134
MOTOR TEST STAND
Kurt I. Carlsson, Brastad, Sweden, assignor to Jonsereds Aktiebolag, Partille, Sweden
Filed Jun. 9, 1980, Ser. No. 157,489
Int. Cl.³ G01L *5/00*
U.S. Cl. 73—117.1 **14 Claims**



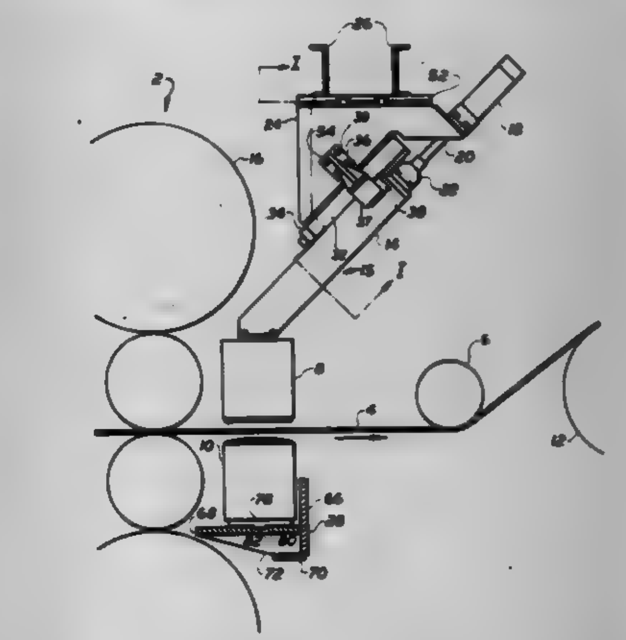
1. A test stand for motors, comprising a stand, an axle rotatably mounted in said stand, coupling means on said axle for coupling said axle for rotation to a motor, a brake rotor mounted for rotation to said axle, and a plurality of flexible brake elements mounted on said rotor at the periphery thereof, said brake elements comprising elongated members.

4,324,135
SPEED INDICATOR FOR FISHING GEAR
Ralph B. Peyton, 18511-67th W., Lynnwood, Wash. 98036
Continuation-in-part of Ser. No. 28,004, Apr. 9, 1979, abandoned. This application Feb. 12, 1980, Ser. No. 120,841
Int. Cl.³ G01C *21/10*
U.S. Cl. 73—187 **33 Claims**



1. The method of measuring the trolling speed of fishing gear being trolled by a fishing boat which comprises positioning a water speed sensor at approximately the trolling depth for detecting the speed of such sensor relative to surrounding water, generating a first electrical signal of such speed detected by the water speed sensor, converting such first electrical signal to a sonic signal of such speed for effecting transmission of such sonic signal through the water, receiving such transmitted sonic signal at the boat, converting such received sonic signal to a second electrical signal of such speed, and actuating a display of such speed at the boat by such second electrical signal.

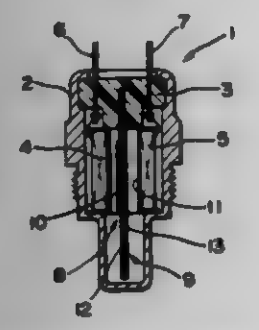
4,324,136
BETA GAUGE MECHANISM
R. Daniel Ashford, Davenport, Iowa, assignor to Aluminum Company of America, Pittsburgh, Pa.
Filed Sep. 5, 1979, Ser. No. 72,621
Int. Cl.³ G01N *21/86, 21/89, 23/16, 23/18*
U.S. Cl. 73—159 **1 Claim**



1. Apparatus for supporting transducer heads in a measuring device used in conjunction with producing a horizontally moving continuous strip material comprising:
(a) a rigid frame means permanently secured with respect to the horizontal strip material;
(b) a lower horizontal support means for supporting a lower transducer head below said horizontal strip material;
(c) a support bracket connected to said rigid frame means;
(d) a slide assembly, having a longitudinal axis, said slide assembly comprising an upper and lower slide block adapted to slide longitudinally in relation to each other with said upper slide block rigidly attached to said support bracket and said slide assembly disposed with its longitudinal axis in a plane that is perpendicular to the horizontal strip material and parallel to the direction of travel of the horizontal strip material;
(e) an upper support member, having a longitudinal axis, and said support member having a lower end adapted for attachment to an upper transducer head and having an upper portion connected to said lower slide block so that said support member can movably slide up and down;
(f) a cover plate having an upper portion attached to a lower end surface of said upper slide block and a lower portion extending downward adjacent to at least a portion of a lower end surface of said lower slide block so as to provide a restraint on the downward sliding motion of said lower slide block when said upper transducer head is in a measuring position;
(g) a hydraulic cylinder and a piston and piston rod assembly contained therein, coaxially aligned with the longitudinal axis of said support member, having the lower end of said piston rod rigidly attached to the upper end of said support member and a portion of said cylinder attached to a portion of said support bracket; and
(h) deceleration means for gradually and uniformly braking downward motion of said lower slide block and thereby preventing said lower slide block from contacting said cover plate with excessive impact when said upper trans-

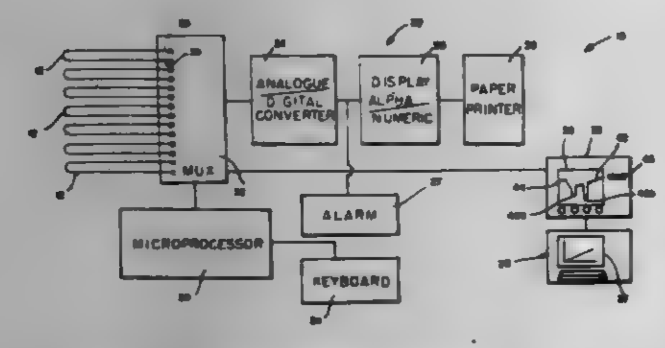
ducer head is lowered from an upper position to the measuring position.

4,324,137
TEMPERATURE SENSOR
Shinichiro Iwasaki, Auburn Heights, Mich., assignor to Aisin Seiki Company, Limited, Kariya, Japan
Filed Aug. 29, 1980, Ser. No. 182,812
Int. Cl.³ G01K *5/62*
U.S. Cl. 73—362 CP 7 Claims



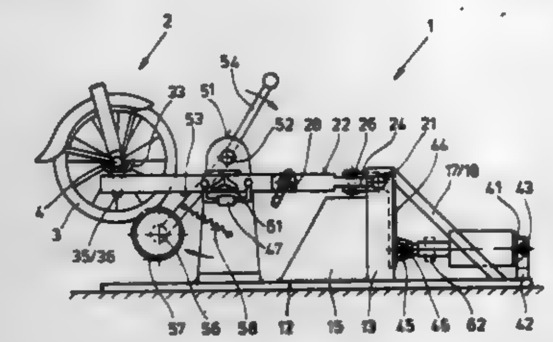
1. A temperature sensor comprising
a casing;
a core, including a bimetallic element and a magnetically soft amorphous member secured to the bimetallic element, disposed in said casing;
an electrical coil disposed about said core;
wherein a change in temperature causes a deflection of said bimetallic element and a change in the permeability of the magnetically soft member which is sensed by said electrical coil.

4,324,138
METHOD OF AND APPARATUS AND SYSTEM FOR DETERMINING TEMPERATURE CONDITIONS
Bayard C. Davis, Lombard, and Donald H. Heyden, Inverness, both of Ill., assignors to Alarma Systems Incorporated, Elgin, Ill.
Filed Mar. 16, 1978, Ser. No. 887,089
Int. Cl.³ G01K *7/02*
U.S. Cl. 73—341 42 Claims



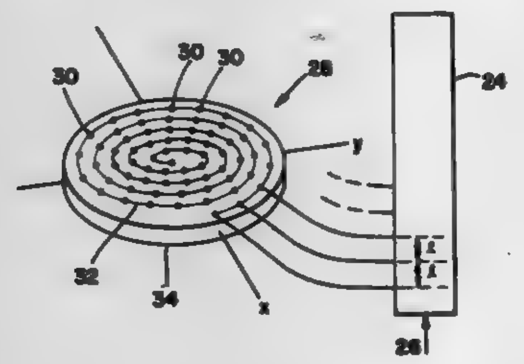
1. A method of determining temperature conditions within an environment through utilization of one or more transducers comprising:
(a) selecting a scanning program form a plurality of scanning options to control transducer scanning;
(b) scanning at least one transducer in accordance with said program to sense signals generated by said transducer;
(c) monitoring said scanned transducer to identify a transducer generating a signal of interest deviating more than a preselected minimum from a pre-established norm; and
(d) converting said signal of interest of said monitored transducer into a signal indicative of a temperature of interest.

4,324,139
BALANCING DEVICE FOR VEHICLE WHEELS ETC.
Karl-Heinz Mühlau, Ludwig-Herr-Strasse 20, D-7880 Bad Säckingen, Fed. Rep. of Germany
Filed May 2, 1980, Ser. No. 146,087
Claims priority, application Fed. Rep. of Germany, May 4, 1979, 2917993
Int. Cl.³ G01M *1/28*
U.S. Cl. 73—457 11 Claims



1. A balancing device for one wheel of a vehicle comprising, a support frame, a pair of support arms pivotally mounted for horizontal and vertical pivoting on said support frame, stress sensing means connected to said support arms for sensing a stress applied thereto, drive means connected to said support frame and adapted to engage a wheel to be balanced for rotating the wheel, raising means connected to the frame and to the pair of support arms for pivoting the pair of support arms vertically, each of the support arms including vehicle engagement ends adapted to engage the vehicle and lift the wheel to be balanced, and adjustable spacer means connected between the pair of support arms for pivoting the arms horizontally to adjust the spacing of their respective vehicle engagement ends.

4,324,140
ELECTRONICALLY SIMULATED ROTATING PRISM FOR ULTRASONIC BEAM SCANNING
Bertram A. Auld, Menlo Park, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Jul. 31, 1980, Ser. No. 174,292
Int. Cl.³ G01N *29/00*
U.S. Cl. 73—602 8 Claims

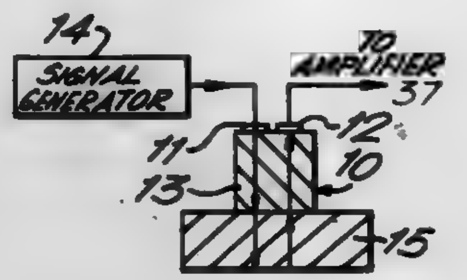


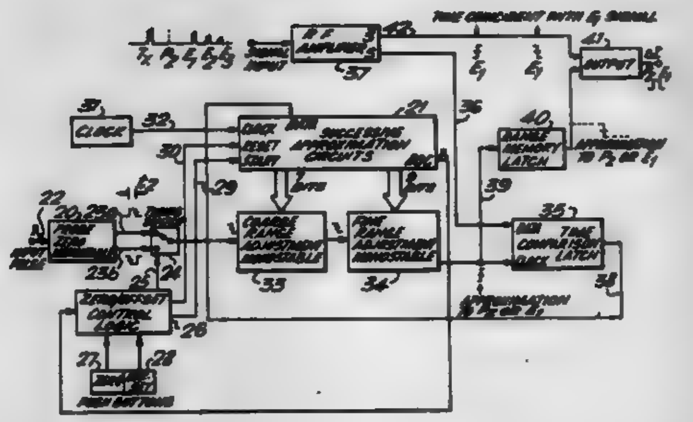
1. Apparatus for electronically deflecting and rotating an ultrasonic scanning beam comprising:
(a) means for generating ultrasonic energy;
(b) means for transmitting electrical energy to said generating means;
(c) means for delaying said electrical energy such that said transmitting means transmits electrical energy of predetermined phase to said generating means; and
(d) an electrical input signal introduced as input to said delaying means, said electrical input signal having the form

$V_{IN}=V_o \exp(i\omega_o t+iA\cos\Omega t)$,

where A is a multiplication factor dependent on the geometry of said apparatus.

4,324,141
ULTRASONIC MEASUREMENT OF THICKNESS
Richard J. Stearn, Milton Keynes, England, assignor to Balteau Sonatest Limited, Buckinghamshire, England
Filed Jan. 8, 1980, Ser. No. 110,557
Claims priority, application United Kingdom, Jan. 8, 1979, 00596/79
Int. Cl.³ G01N *29/00*
U.S. Cl. 73—627 16 Claims

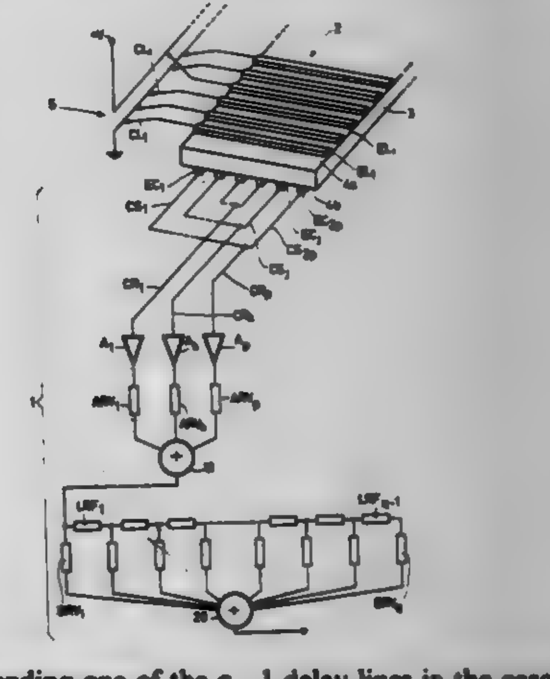




1. A method of measuring the thickness of a test piece using an ultrasonic probe comprising ultrasonic pulse transmitting and receiving means mounted on an acoustic stand-off, the method comprising placing the probe on a block which has a determined pulse transit time, duplicating said transit time as a first time-value signal, detecting the first return echo received by the pulse receiving means from the remote face of the block, setting up a storable second time-value signal representative of the time period from the transmission of a pulse by said pulse transmitting means to the receipt of the first such return echo arising from said pulse by automatically approximating the position in time of the first return echo, and using said first time-value signal and a recalled duplicate of said second time-value signal under the control of manual control means to adjust the probe output values for the acoustic delay time of the stand-off material.

4,324,142
CIRCUIT FOR PROCESSING THE SIGNALS RECEIVED BY A MOSAIC OF ULTRASONIC TRANSDUCERS IN B-MODE ECHOGRAPHY
Michel J. Auphan, Paris, France, and Ludo C. J. Baghuis, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Jun. 30, 1980, Ser. No. 164,662
Claims priority, application France, Jul. 4, 1979, 79 17379
Int. Cl.³ G01N *29/04*
U.S. Cl. 73—626 2 Claims

1. A circuit for processing echo signals which are produced, in reaction to a series of emitted ultrasonic pulses, by a mosaic of ultrasonic transducers, the mosaic being formed by q first electrodes which are disposed as parallel lines on a first principal surface of a plate of electrostrictive material and which can be polarized independently of each other and by *2p* second electrodes which are disposed as parallel lines which extend perpendicular to the first electrodes, comprising:
p amplifiers each amplifier having an input, which is connected to a symmetrical pair of said second electrodes, and an output;
p first variable delay lines each first delay line having an input, which is connected to the output of a corresponding one of the amplifiers, and an output;
a first adder having p inputs, each of which is connected to an output of a corresponding one of the first delay lines, and an output;
a cascade network of q−1 fixed delay lines, the input of a first delay line in the cascade being connected to the output of the first amplifier;
q second variable delay lines, one of said second variable delay lines having an input connected to the output of the first amplifier and each of the remaining second variable delay lines having an input connected to the output of a

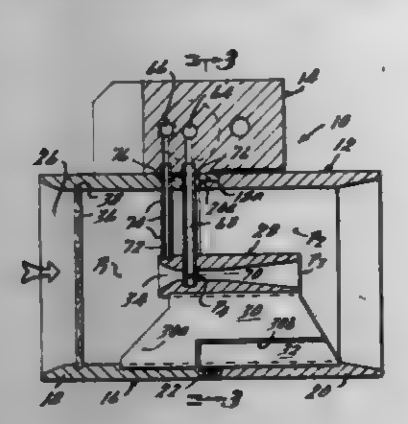


corresponding one of the q−1 delay lines in the cascade network; and
a second adder having q inputs, each connected to the output of a corresponding one of said second delay lines, and an output which supplies processed echo signals;
the delay times of the first variable delay lines being determined so that the amplifiers, first variable delay lines and the first adder form the electrical equivalent of a first cylindrical ultrasonic lens whose axis extends parallel to the second electrodes and the delay times of the second variable delay lines being controlled so that the fixed delay lines, the second variable delay lines and the second adder form the electrical equivalent of a second cylindrical ultrasonic lens having an axis which extends parallel to the first electrodes.

4,324,143
SINGLE PATH ADJUSTABLE FLOWMETER
Jerry A. Olson, Dearborn, Mich., assignor to Eaton Corporation, Cleveland, Ohio
Filed Sep. 15, 1980, Ser. No. 187,294
Int. Cl.³ G01F *1/50, 1/32*
U.S. Cl. 73—861.62 29 Claims

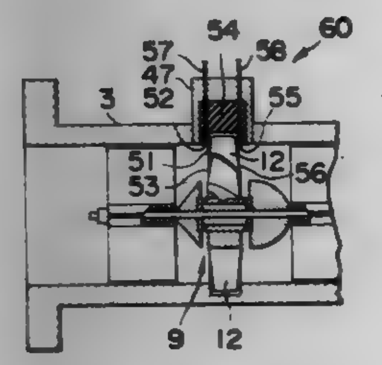
1. In a flowmeter of the type including a first set of swirl vanes for swirling a fluid in a passage to create a low pressure region at the center of said swirl, means for sensing said low pressure, and means for sensing the pressure of said fluid before said swirling, an improvement comprising:

a second set of swirl vanes coacting with said first set to form said swirl and operable for selective repositioning with



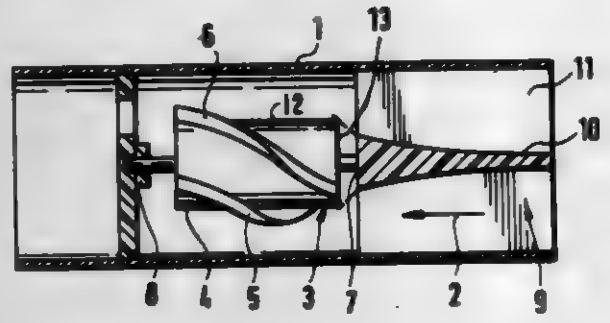
respect to said first set to effect a desired pressure to flow rate operating characteristic for said flowmeter.

4,324,144
TURBINE FLOWMETER
Yasuji Miyata, Yokohama, and Kazuhiko Hirose, Mitaka, both of Japan, assignors to Tokico, Ltd., Kanagawa, Japan
Filed Jan. 3, 1979, Ser. No. 798
Claims priority, application Japan, Jan. 20, 1978, 53-4851
Int. Cl.[3] G01F *1/10*
U.S. Cl. 73—861.77 9 Claims



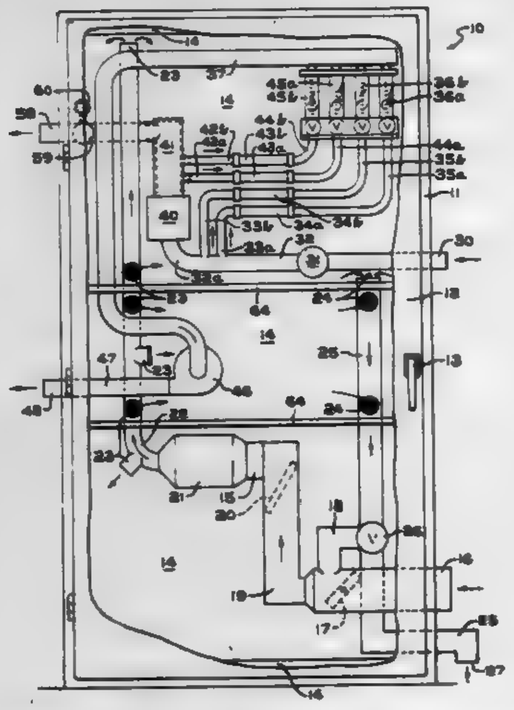
1. A turbine flowmeter comprising
(a) cylindrical casing,
(b) a passage defined by an inner space of the casing for conducting a fluid to be measured,
(c) an impeller rotatably supported within the casing in the passage, said impeller having a rotator with a number of blades fixed on the outer surface of the rotator,
(d) guide members for guiding the fluid in the passage and disposed on the upstream side and downstream side of the impeller, respectively,
(e) an annular recess provided within the casing adjacent to the free end of a blade in the direction of rotation of the impeller, the free end portion of the blade being positioned in the annular recess, and
(f) a pair of electrode plates for detecting the rotation of the impeller as a change of electrostatic capacity, said electrode plates being fixed in the recess of the casing without projecting into the passage and being disposed in opposition to each other at a distance.

4,324,145
FLOWMETER HAVING A ROTARY BODY AND MEANS FOR IMPROVEMENT OF THE STARTING BEHAVIOR OF THE ROTARY BODY
Karl-Heinz Werkmann, Frankfurt am Main, Fed. Rep. of Germany, assignor to VDO Adolf Schindling AG, Frankfurt am Main, Fed. Rep. of Germany
Filed Mar. 19, 1980, Ser. No. 132,478
Claims priority, application Fed. Rep. of Germany, Mar. 26, 1979, 2911826
Int. Cl.[3] G01F *1/10*
U.S. Cl. 73—861.89 6 Claims



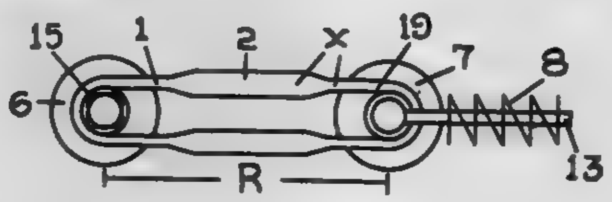
1. A flowmeter, comprising
a housing wall defining a flow channel therein adapted for flow therethrough,
a rotary body having at least one helical spiral on an outer periphery thereof,
means for rotatably supporting said rotary body in said flow channel,
a flow straightening blade disposed in said flow channel upstream of said rotary body, said flow straightening blade having walls oriented substantially in a direction of flow, and
said walls of said straightening blade thicken increasingly in a direction toward and up to said rotary body.

4,324,146
SAMPLING APPARATUS AND PROCESS
John W. Born, Brecksville, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio
Filed Sep. 29, 1980, Ser. No. 192,122
Int. Cl.[3] G01N *31/06*
U.S. Cl. 73—863.12 6 Claims



6. A process for collecting a sample of pollutant from a determinable quantity of ambient atmosphere and for simultaneously collecting a second sample of pollutant from an essentially equal quantity of ambient atmosphere plus a determinable quantity of the same pollutant which comprises:
a. flowing ambient atmosphere during a sampling time period at a known flow rate through a first collector device capable of releasably entrapping therein pollutant contained in said ambient atmosphere,
b. flowing ambient atmosphere during said sampling time period through a permeation chamber and introducing a determinable quantity of said pollutant into said ambient atmosphere flowing through said permeation chamber,
c. flowing a portion of the discharge flow from said permeation chamber during the said sampling time period at a rate essentially equal to the flow rate at which ambient atmosphere is travelling through the aforesaid first collector device through a second collector device capable of releasably entrapping therein said pollutant contained in the said discharge flow from said permeation chamber, and
d. discontinuing the air flows through the said first collector device and second collector device at the end of the sampling time period.

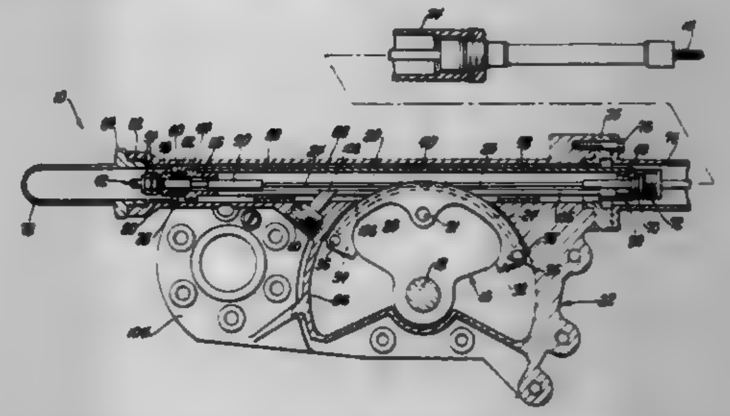
4,324,147
VARIABLE CROSS SECTION V-BELT
Russell C. Crawford, III, 6991 Juana Dr., Millington, Tenn. 38053
Filed Mar. 11, 1980, Ser. No. 129,607
Int. Cl.[3] F16H *19/04*; F16G *5/00*
U.S. Cl. 74—37 3 Claims



1. An endless V-belt comprising first portions and second portions,
each portion having a constant cross sectional area but the cross sectional area of said first portions being less than the cross sectional area of said second portions,
the length of each of said first portions being equal, and the length of each of said second portions being equal,
the sum of the lengths of said first and second portions being substantially equal to the circumference of the belt, and
said first and second portions alternating with each other and being connected together by relatively short transition portions of gradually tapering cross sectional area.

4,324,148
ROTARY/LINEAR MOTION CONVERTER ASSEMBLY (BOWSTRING)
Ants Sildve, Lansdale, Pa., assignor to Teleflex Incorporated, Limerick, Pa.
Filed May 19, 1980, Ser. No. 151,179
Int. Cl.[3] F16H *21/44, 25/18*
U.S. Cl. 74—108 12 Claims

1. A rotary/linear motion converter assembly (10) of the type converting rotational motion to longitudinal motion for longitudinally moving a motion transmitting core element (14), and vice versa, to transmit motion, said assembly comprising; sector means (16) rotatable about a rotational axis, slider means (20) reciprocal along a reciprocation axis which is transverse to said rotational axis, housing means (22) for rotatably supporting said sector means (16) and for reciprocally supporting said slider means (20), tensioning means (24, 26) in tension between and interconnecting said sector means (16) and said slider means (20) to move said slider means (20) along said reciprocal axis in response to rotation of said sector means (16), and vice versa, for preventing lost motion between said sector means (16) and said slider means (20), first (28) and second (30) attachment means spaced along said reciprocation axis from one another, said tensioning means including a first cable (24) attached at a first end to said first attachment means (28) and a second cable (26) attached at a first end to said second attachment means (30) for placing said slider means (20) in compression between said first (28) and second (30) attachment means, said slider means (20) including a tubular member (40) having first and second ends, a guide means including a slot (106) extending longitudinally along said tubular member (40) and a guide member (108) supported by said housing (22) and extending into said slot (106) for preventing rotation of said slide means (20) about said reciprocation axis, said sector means (16) extending into said tubular member (40) through said slot

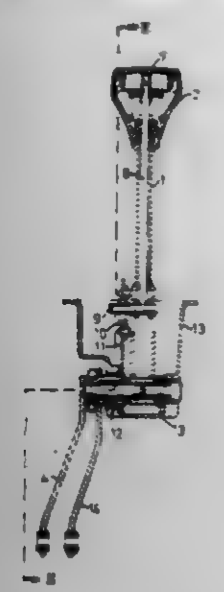


(106), said first attachment means (28) being positioned at said first end of said slider means (20) and said second attachment means (30) being positioned at said second end of said slider means (20), said first attachment means (28) including adjustment means (42) for adjusting the tension in said first (24) and said second (26) cables and a first adapter (44) abutting said first end of said slider means (20) and a first terminal shaft (50) secured to said first end of said first cable (24) and extending through said first adapter (44), said adjustment means (42) including a threaded portion (52) on said terminal shaft (50) and at least one nut (54) threaded on said threaded portion (52) for reacting with said first adapter (44), said terminal shaft (50) including an irregularly shaped portion (56) coacting with said first adapter (44) for preventing rotation of said terminal shaft (50).

4,324,149
GEAR SHIFT NOT REQUIRING ADJUSTMENT
Nils L. Johansson, Askim, and Stig H. A. Weiertz, Kungalv, both of Sweden, assignors to AB Volvo, Gothenberg, Sweden
Filed Sep. 18, 1979, Ser. No. 76,748
Claims priority, application Sweden, Sep. 28, 1978, 7810181
Int. Cl.[3] G05G *5/18, 7/16, 9/18*
U.S. Cl. 74—473 R 2 Claims

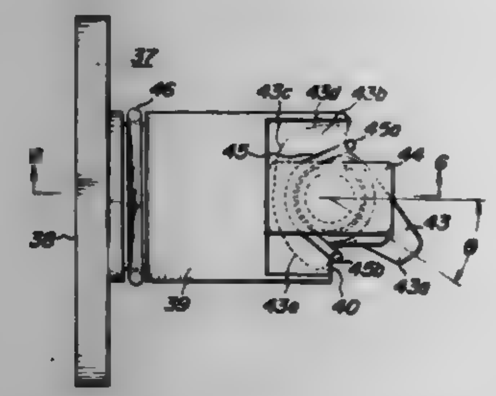
1. In a gear selector mechanism for automatic transmissions with a gear lever connected to a gearbox within a gearbox housing and movable in a selector gating for setting the correct gear position, in which the gear lever is connected to the gearbox via a connecting lever and a control rod, which is connected to a gear selector in the gearbox, and in which the gear lever is fixed to a shaft which is rotatably mounted relative to the car body; the improvement in which the selector gating is journalled around the same axis as the gear lever and

is connected to the gearbox housing via a connecting lever and a reaction rod affixed to the gearbox housing, said connecting



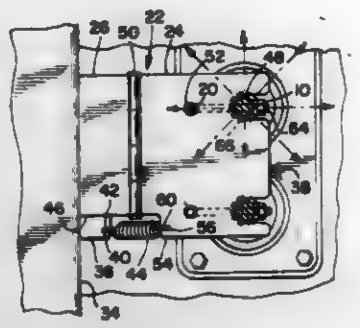
lever of the gear lever being of the same length as the connecting lever of the gating.

4,324,150
MECHANISM FOR PREVENTING MISSELECTION OF REVERSE GEAR
Tamio Kawamoto, Sagamihara, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan
Filed Jan. 23, 1980, Ser. No. 114,603
Claims priority, application Japan, Jan. 30, 1979, 54/9869
Int. Cl.³ F16H *57/06*
U.S. Cl. 74—476 3 Claims



1. A mechanism for preventing a control lever from misselecting reverse gear in a transmission in which a forward running gear shift position is aligned on a same shift control line with a reverse gear shift position of the control lever, an improvement comprising a plug arranged at a mounting portion of the control lever, and a cam pivotally supported by a pin to freely rotate on supporting plates projecting from the top and of said plug and having a coil spring pivoted on said pin so as to urge a projecting portion of the cam against an end portion of the control lever, the cam further provided with a rotation limiting portion at an end remote from the projecting portion, wherein when the control lever is moved from a forward running gear shift position said cam is rotated by the control lever to cause said rotation limiting portion to abut against said plug in order to prevent the control lever from being put into the reverse gear shift position by moving on a linear shift control line.

4,324,151
FOUR QUADRANT CONTROL LEVER RESTRAINT
Douglas W. Rudy, Lombard, Ill., assignor to International Harvester Company, Chicago, Ill.
Filed May 12, 1980, Ser. No. 148,647
Int. Cl.³ G05G *5/06*
U.S. Cl. 74—532 7 Claims



1. In a vehicle having a hydraulic working circuit and a control for adjusting flow through said circuit the improvement comprising:

a control lever operable in a plurality of quadrants, said control lever having a bore provided therethrough transverse to the longitudinal axis of said control lever;

a rod having an upwardly extending end portion, said rod positioned into said bore of said control lever and projecting forwardly from said control lever;

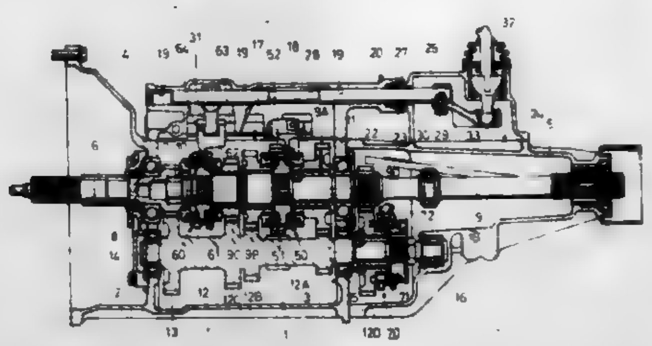
a hinged plate having a mounting plate surface and a stationary leaf extending from said mounting plate surface toward said control lever, said stationary leaf having an edge, a movable leaf connected to said stationary leaf through a hinged pin on said stationary leaf, said movable leaf having an aperture therethrough of a diameter large enough to accommodate said upwardly extending portion of said rod, a cutout at a leading edge of said movable leaf having a width and depth sufficient to accommodate said control lever and an appendage provided with an aperture therethrough;

a projecting tab extending forward from said mounting plate surface toward said control lever, said projecting tab having an aperture outboard of a vertical plane corresponding to said edge of said stationary leaf, said aperture of said projecting tab aligned in the same vertical plane as said aperture in said appendage of said movable leaf;

a spring having a first end connected through said aperture of said projecting tab and a second end connected through said aperture of said appendage of said movable leaf.

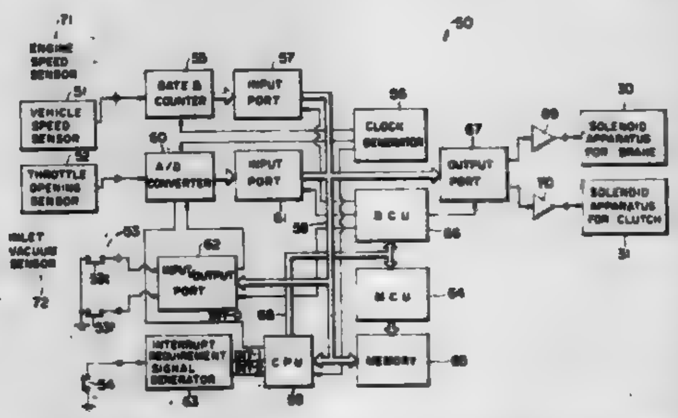
4,324,152
SEALING DEVICE FOR A MANUAL TRANSMISSION FOR AN AUTOMOBILE
Syoiti Oshima, and Shuichiro Ida, both of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan
Filed Jun. 25, 1980, Ser. No. 162,835
Claims priority, application Japan, Mar. 26, 1980, 55-40795[U]
Int. Cl.³ F16H *57/02;* B60K *17/34;* G05G *9/16*
U.S. Cl. 74—606 R 7 Claims

1. In combination with a manual transmission for an automobile having a transmission case, an extension housing, a case cover mounted to said transmission case for covering the upper open portion thereof, a shift lever retainer shiftably and selectively supporting a shift lever and mounted on the upper surface of said extension housing and a shift lever shaft extending along said case cover and said shift lever retainer for transmitting operation of said shift lever to said transmission, a sealing device provided between said case cover and said shift lever retainer, said device comprising cylindrical connecting portions respectively formed in said case cover and said shift lever retainer and penetrated by said shift lever shaft for being connected with each other by insertion with interposition of a



sealing member between the inner periphery of one of said connecting portions and the outer periphery of the other.

4,324,153
METHOD FOR DRIVER-DEPENDENT SHIFT CONTROL OF A VEHICLE SUB-TRANSMISSION WHICH MAXIMIZES FUEL ECONOMY
Hiroshi Sugimoto, Aichi; Jiro Nakano, Okazaki, and Noritaka Yanagihara, Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan
Filed Jul. 24, 1979, Ser. No. 60,129
Claims priority, application Japan, Dec. 4, 1978, 53-150348
Int. Cl.³ B60K *41/06, 41/10*
U.S. Cl. 74—866 8 Claims



1. A shift control method for a sub-transmission of a vehicle which is also equipped with a manual transmission operated by a driver, said method comprising the steps, in order, of:

detecting said driver's shifting of said manual transmission at a certain gearing ratio;

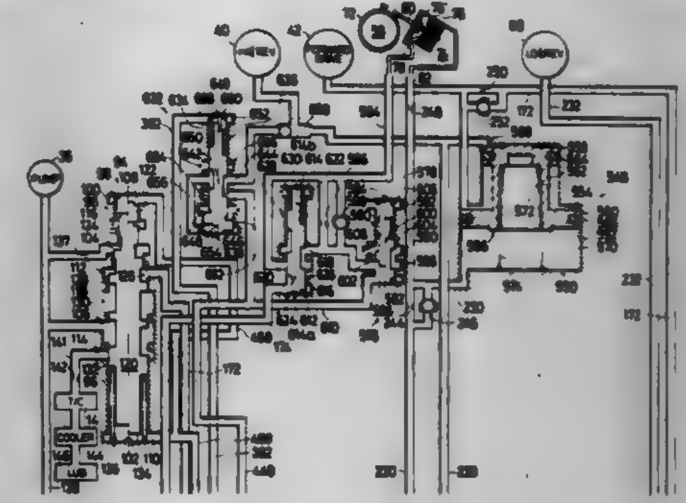
measuring a value of a parameter related to vehicle speed and a value for throttle opening at said driver's shift point of the manual transmission set to said certain gearing ratio;

determining, on the basis of said certain gear ratio and of said measured parameter values, a driver-determined sub-transmission shift line for said gearing ratio of the manual transmission, said shift line indicating the relationship between said parameter related to the vehicle speed and said throttle opening when said sub-transmission is to be shifted;

performing, for a first time period, shift control of the sub-transmission in accordance with said driver-determined sub-transmission shift line, while the manual transmission is set to said gearing ratio;

and performing, for a second time period which directly follows the first time period, shift control of the sub-transmission in accordance with a standard prdetermined shift line, said standard predetermined shift line providing a relationship between vehicle speed and throttle opening along which said sub-transmission is shifted to provide substantially optimum fuel economy, said shift control for a second period being performed while the manual transmission is set to said gearing ratio.

4,324,154
HYDRAULIC CONTROL SYSTEM OF AUTOMATIC POWER TRANSMISSION
Kazuyoshi Iwanaga, Yokohama; Kazuhiko Sugano, Tokyo, and Kunio Ohtsuka, Yokohama, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan
Filed Oct. 2, 1978, Ser. No. 947,423
Claims priority, application Japan, Sep. 29, 1978, 53-120980
Int. Cl.³ B60K *41/06, 41/10*
U.S. Cl. 74—869 18 Claims



1. A hydraulic control system for an automatic power transmission mechanism including a driving member operatively connected to the input shaft of an engine of an automotive vehicle, the engine having a throttle which opens in degrees, a driven member, and frictional units respectively having fluid operated actuating means which are to be selectively made operative and inoperative for producing a plurality of gear ratios between the driving and driven members, comprising:

throttle pressure generating means for producing a throttle pressure which is proportional to the degree of throttle opening over most of the throttle opening range,

modified throttle pressure generating means for producing a modified fluid pressure which increases in proportion to the degree of throttle opening from low to medium degrees of throttle opening and remains constant from medium to high degrees of throttle opening, whereby said modified fluid pressure approximates the characteristics of torque output of the engine,

governor pressure generating means for producing a governor pressure variable with vehicle speed of the automotive vehicle,

modulated throttle pressure generating means for producing a modulated throttle pressure which remains constant from low to medium degrees of throttle opening and increases in proportion to the degree of throttle opening from medium to high degrees of throttle opening,

pressure regulator valve means communicating with said modified pressure generating means for producing a line pressure variable with said modified fluid pressure,

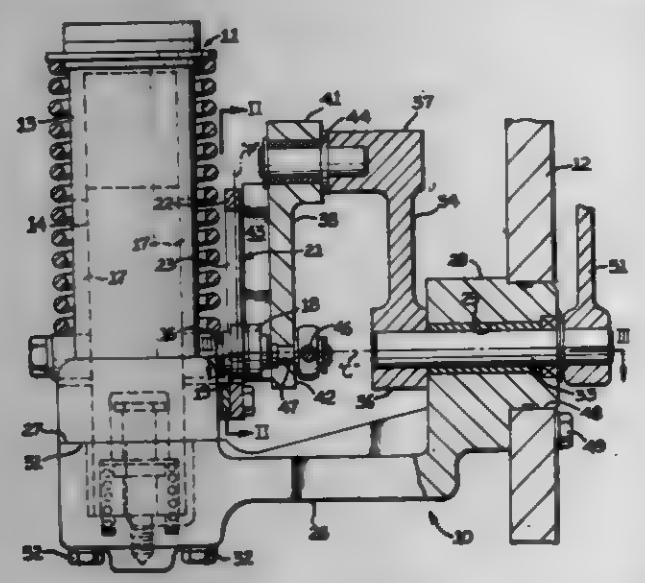
gear position selector valve means provided operatively between said pressure regulator valve means and the respective actuating means of said frictional units and having a plurality of conditions for providing communication between the pressure regulator valve means and the actuating means of selected ones of said frictional units,

gear shift valve means provided operatively between said gear position selector valve means and the actuating means of at least one of said frictional units and responsive to said governor pressure for being operative to provide communication between said gear position selector valve means and the actuating means of said at least one of the frictional units, and

pressure reducing valve means provided operatively between the actuating means of said at least one of the frictional units and said gear position selector valve means and having a condition providing communication therebetween through

said gear shift valve means, the pressure reducing valve means being responsive to said throttle pressure for producing, in the presence of a fluid pressure developed on an opposite side the pressure reducing valve means to the actuating means of said at least one of the frictional units, a fluid pressure which is not higher than said line pressure by a value variable with said throttle pressure.

4,324,155
MOUNTING ASSEMBLY FOR A CONTROL ACTUATOR
Robert D. Dorris, Joliet, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.
Continuation of Ser. No. 814,233, Jul. 8, 1977, abandoned. This application Apr. 21, 1980, Ser. No. 142,566
Int. Cl.³ F16H *35/08*
U.S. Cl. 74—834 **7 Claims**



1. A mounting assembly for mounting a control actuator and its associated control linkage to a wall having an aperture extending therethrough, said control actuator having a control actuator shaft moveable between first and second positions along a linear pathway perpendicular to the axis of the control actuator shaft, said control linkage having an input shaft linked to the control actuator shaft, said mounting assembly comprising:

a mounting bracket having a mounting surface on which the control actuator is mounted, a wall mounting portion for mounting the mounting bracket at the aperture in the wall, and a bore in the wall mounting portion, said input shaft being rotatably positioned within the bore and extending through the aperture, said bore and hence said input shaft having an axis intersecting the linear pathway of the control actuator shaft.

4,324,156
METHOD AND APPARATUS FOR HYDRAULIC CONTROL OF AUTOMATIC TRANSMISSION
Kazuyoshi Iwanaga, Yokohama; Kazuhiko Sugano, Tokyo, and Kunio Ohtsuka, Yokohama, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan
Continuation-in-part of Ser. No. 947,423, Oct. 2, 1978. This application Mar. 21, 1979, Ser. No. 22,538
Claims priority, application Japan, Sep. 29, 1978, 53-120980
Int. Cl.³ B60K *41/06, 41/10*
U.S. Cl. 74—869 **53 Claims**

1. A hydraulic control system for an automatic power transmission mechanism including a driving member operatively connected to the input shaft of an engine of an automotive vehicle, which engine has a throttle which opens in degrees, a driven member, and frictional units each having fluid operated actuating means which are selectively operative and inoperative for producing a plurality of gear ratios between driving and driven members, comprising:

means for generating a throttle fluid pressure which is proportional to the degree of throttle opening over most of the throttle opening range,

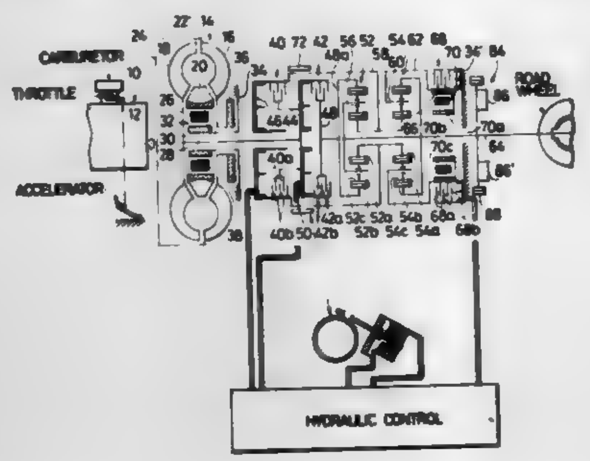
means, communicating with said throttle pressure generating means, for generating a modified fluid pressure which increases in proportion to the degree of throttle opening from low to medium degrees of throttle opening and remains constant from medium to high degrees of throttle opening, whereby said modified fluid pressure approximates the characteristics of torque output of the engine,

means for generating a governor fluid pressure which is approximately variable with vehicle speed of the automotive vehicle,

a pressure regulator valve, communicating with said modified pressure generating means, for producing a line pressure varible with said modified throttle fluid pressure, said line pressure being always greater than said modified throttle pressure,

means, communicating with said throttle pressure generating means and with said pressure regulator valve, for generating a modulated throttle pressure which remains constant from low to medium degrees of throttle opening and increases in proportion to the degree of throttle opening and increases in proportion to the degree of throttle opening from medium to high degrees of throttle opening,

a gear position selector valve provided operatively between said pressure regulator valve and the respective actuating means of said frictional units, said gear position selector valve having a valve member movable between a plurality

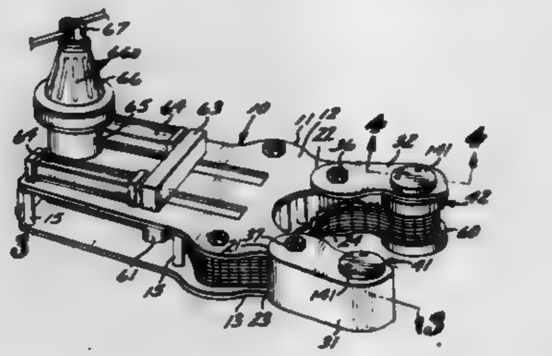


of positions for providing communication between the pressure regulator valve and the actuating means of at least one of the frictional units,

a gear shift valve provided operatively between said gear position selector valve and the actuating means of at least one of the frictional units and connected for communication with said governor pressure and modulated throttle pressure generating means and responsive to said governor pressure and said modulated throttle pressure to provide communication between said gear position selector valve means and the actuating means of the another frictional unit, and

a pressure reducing valve provided operatively between the actuating means of the one frictional unit and said gear position selector valve, said pressure reducing valve having a valve member movable into a position providing communication between the one frictional unit and said gear position selector valve through said gear shift valve, the pressure reducing valve being connected with said throttle pressure generating means and being responsive to said throttle pressure for producing a fluid pressure which is not higher than said line pressure by a value variable with said throttle pressure, said valve member of said pressure reducing valve including a first pressure acting area which is selectively exposed to the same fluid pressure to which another frictional unit is selectively exposed and a second pressure acting area, opposite to said first pressure acting area, which is selectively exposed to said throttle pressure.

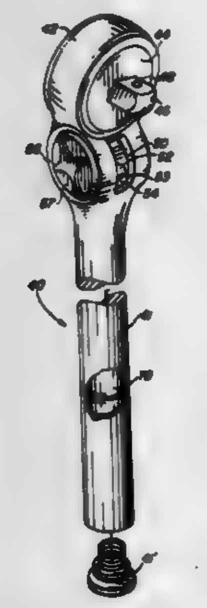
4,324,157
DRILL PIPE CLAMP
Michael D. Soutsos, 5475 Colorado St., Long Beach, Calif. 90814
Filed Jan. 28, 1980, Ser. No. 115,911
Int. Cl.³ B25B *17/00*
U.S. Cl. 81—57.17 **1 Claim**



1. In a clamp assembly for use in manipulating drill pipes including a frame having an upper and lower plate joined together across a plurality of spacers to form a gap therebetween, a pair of pivotal jaws pivotally attached to one end of said frame and disposed for pivotal motion in a plane substantially parallel with said upper and lower plates; a plurality of first sprockets mounted for rotation within said gap, a plurality of second sprockets mounted for rotation at the free ends of said jaws, each said second sprocket including an enlarged ball race assembly at the upper and lower ends thereof and a sheave chain loop disposed around said first and second sprockets and aligned to pass between said ball race assemblies, the improvement comprising:

said ball race assemblies each including opposed fixed and rotary mating circular surfaces each provided with a ball groove for retaining roller balls therebetween, said fixed surfaces being releasably attached to said pivotal jaws and said rotary surfaces being attached to said second sprockets whereby the release of said fixed surfaces allow for withdrawal of said second sprockets from said jaws.

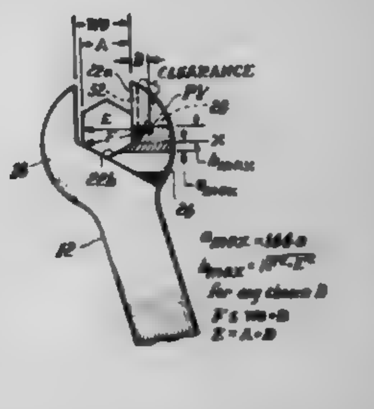
4,324,158
ILLUMINATED WRENCH
Alfred N. Le Roy, 1219 Towpath La., Wilmington, Ill. 60481
Filed Jul. 14, 1980, Ser. No. 168,582
Int. Cl.³ B25B *13/46*
U.S. Cl. 81—60 **4 Claims**



1. A wrench for rotating a socket or the like having a body with an elongated handle and a head at one end, said head receiving a rotatable drive member having a drive projection, a ratchet operably connectable to said rotatable drive for reversible operation thereof, the improvement therein comprising:

(a) said handle defining a battery receiving chamber for receipt of at least one battery cell;
(b) said body defining a bore generally disposed transversely to the axis of said handle;
(c) said body defining an aperture and intersecting said bore;
(d) a socket member rotatably disposed in said bore and adapted to receive a light bulb; and
(e) circuit means operably connecting said socket and said battery chamber whereby said bulb can be selectively energized and said socket member rotated to direct light through said aperture to focus at a predetermined work area.

4,324,159
OPEN END RATCHET WRENCH
Edward J. Wrobbel, 49 Williamsburg Dr., Fairport, N.Y. 14450
Filed Jan. 23, 1980, Ser. No. 161,842
Int. Cl.³ B25B *13/28*
U.S. Cl. 81—111 **27 Claims**

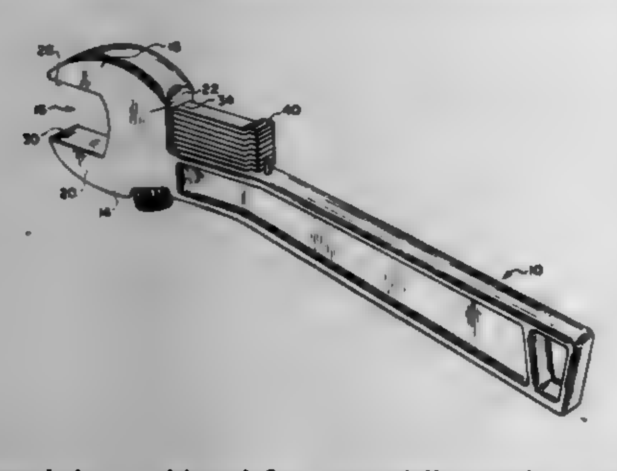


1. A one-way open-end wrench comprising first and second jaws with opposing faces spaced from each other to define an opening which receives an item having adjacent flats to be turned, said first jaw being rotatable about a pivot with respect to said second jaw in opposite directions to close and maintain closed said opening and engage and drive said item when turned one way and to open said opening and turn freely about said item and then close said opening when turned the opposite way, and means locating said pivot for providing the sum of the moments of the forces on said first jaw about said pivot when said wrench is turned said one way is in the direction to rotate the first jaw to close said opening and maintain said opening closed and when said wrench is turned in the opposite way between adjacent ones of said flats, the sum of the moments of the forces on said first jaw is in the direction to open and then close said opening.

4,324,160
ADJUSTABLE WRENCH
G. Jordan Maclay, 847 W. Newport, Chicago, Ill. 60657
Continuation-in-part of Ser. No. 956,871, Nov. 1, 1978, Pat. No. 4,237,756. This application Dec. 8, 1980, Ser. No. 213,870
The portion of the term of this patent subsequent to Dec. 9, 1997, has been disclaimed.
Int. Cl.³ B25B *13/58*
U.S. Cl. 81—185 **22 Claims**

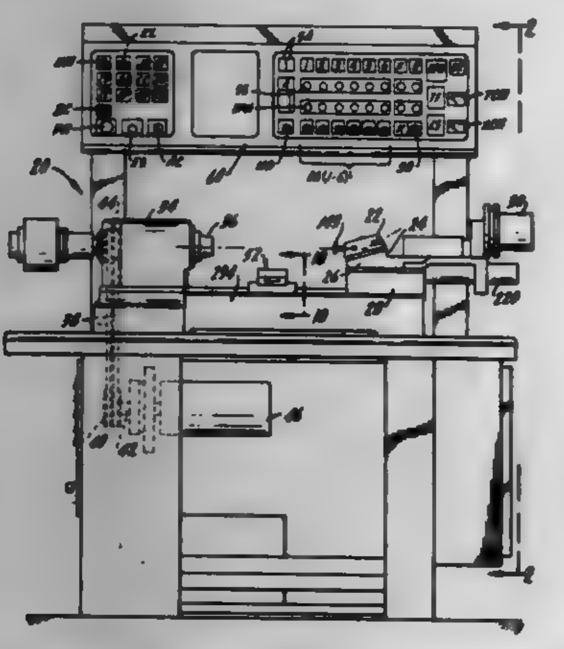
1. In an open-ended wrench of the type including a manually graspable handle and a nut-seizing jaw formation connected to said handle, said jaw formation having a nut-receiving opening therein defined between an upper jaw member, a lower jaw member spaced a fixed distance from the upper jaw member and a jaw back portion extending between the upper and lower jaw members, a slot communicating with said opening and

extending through said jaw back portion, a plurality of substantially equal length shims longitudinally slidable through said slot from a location outside of said opening to a location inside of said opening to provide a variable dimension for said nut-receiving opening, said plurality of shims comprising interlock means for preventing any shim from being located inside of said opening unless there is supportive contact with said jaw; said interlock means comprising projecting means carried by each of said shims and means on each said shim for receiving the projecting means of an underlying shim; and said plurality



of shims being positioned for sequentially varying said nut-receiving opening dimension by longitudinally moving one or more of said shims into said opening with said shims that are moved into said opening being in supportive contact with said jaw, the improvement comprising each said shim having one end thereof formed with an offset end portion including an inclined section extending angularly from the plane of the shim and an end section extending from the inclined section, said offset end portion defining said projecting means on one side thereof and said means for receiving the projecting means of an underlying shim on the other side thereof.

4,324,161
AUTOMATIC TURRET LATHE
Adolph V. Klancnik, Glenview, and Kenneth A. Klancnik, Palatine, both of Ill., assignors to Universal Automatic Corporation, Des Plaines, Ill.
Filed Jul. 25, 1979, Ser. No. 60,790
Int. Cl.³ B23B *3/18, 7/04*
U.S. Cl. 82—2 R **9 Claims**



1. In an automatic turret lathe in which a turret having different faces each for supporting a tool is supported for rotary indexing movement on a reciprocal slide and in which the slide is supported for approach movement toward a workpiece, held by a reversible rotary spindle, and return movement to home position, the lathe including means to index the turret after the slide is in home position, the slide being reciprocated by a variable speed reversible motor adapted to advance the slide at rapid approach speed until the tool engages the workpiece, whereafter the slide is to be advanced at slow feed speed until the depth of cut is attained, and wherein the motor is reversed by a substantial rise in current:

an automatic sequencer unit attached to the slide to move axially therewith in both the tool approach and tool return direction, means to index the sequencer unit to different positions corresponding to the turret positions, said sequencer unit having at the different sequencer index positions a track for retaining variantly positionable metallic indicium settable manually therein to control the end of rapid approach and the commencement of slow feed;

proximity switch oscillator control sensors for sensing said indicium when indexed thereto, respectively to change the speed of said motor from rapid approach to slow feed;

said sequencer unit at each operable index position thereof including means supporting an extendible and retractable stop movable axially therewith and spaced from a fixed stop opposed thereto by a distance equal to the total distance of tool travel so that when the stops engage at the end of the slow feed travel there will be a consequent rise in motor current to reverse the motor

and a safety switch between the stops to be actuated by the first-named stop and causing the motor to stop upon concurrent failure to sense positioning of the first-named indicium.

5. In an automatic turret lathe in which a turret slide is indexable from one position to another and in which the turret slide is normally advanced and retracted rapidly and at feed speeds, relative to a workpiece rotated by a spindle, by a reversible variable speed motor turret indexing means; a sequencer which indexes with the turret, said sequencer being equipped with manually settable indicia:

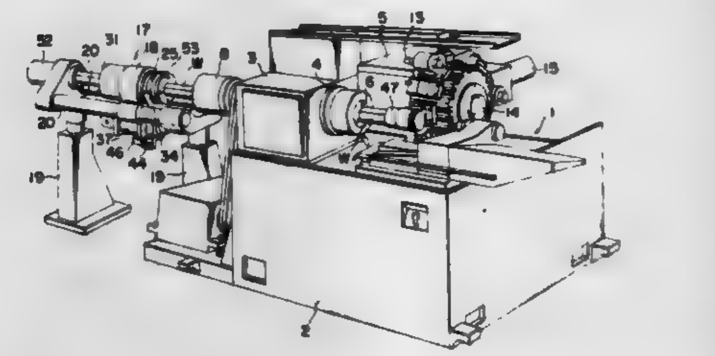
(a) slow feed of the turret slide after the tool is presented to the workpiece regardless of the kind of tool;
(b) slow withdrawal of the turret slide when tapping or boring; and
(c) reverse spindle motion after or before completing a tap depending on whether the tap is right hand or left hand;

proximity switch oscillator control sensors for sensing said indicium when indexed thereto;

said lathe for each tool position having on the turret slide a manually adjustable stop screw indexible with said turret and opposed to a fixed stop to determine the depth of cut when drilling or boring and a switch between the stops to be actuated by the advancing adjustable screw to stop the motor upon failure of the related proximity switch sensor to sense an indicium corresponding to (a) for the corresponding tool position.

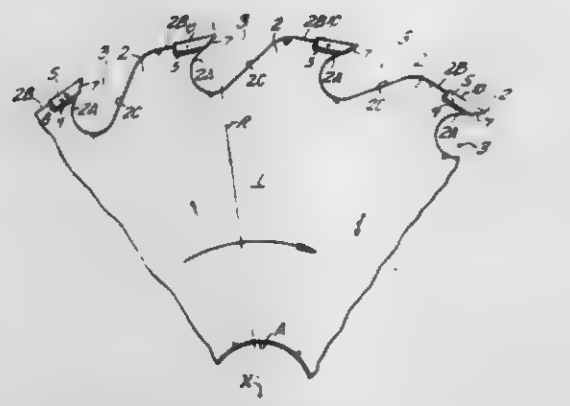
4,324,162
MACHINE TOOL HAVING HOLLOW MAIN SPINDLE AND BAR STOCK FEEDING MECHANISM
Sukehiro Uehara, Ueda, Japan, assignor to Kabushiki Kaisha Miyano Tekkosho, Ueda, Japan
Filed Jun. 9, 1980, Ser. No. 157,753
Claims priority, application Japan, Jun. 22, 1979, 54-78826; Nov. 24, 1979, 54-152283
Int. Cl.³ B23B *13/02, 13/08*
U.S. Cl. 82—2.5 **6 Claims**

1. In a machine tool of the type comprising a hollow main spindle having therein a main chuck for gripping a bar stock and confronting at a front end thereof a machining zone, a bar stock feeding mechanism having a rotatable feed chuck for gripping the bar stock and being disposed to the rear of the main spindle to feed intermittently the forward leading end of the bar stock through the main spindle and the main chuck, which is in a loosened state, from the rear thereof for every cycle of machining, and a tool support structure supported on feed slides and having tools mounted thereon for machining the bar stock, said tool support structure being so disposed that a selected tool mounted thereon can be brought into said machining zone to carry out the machining; the improvement which comprises a bar end support mounted on the tool support structure in a manner permitting the bar end support to rotate freely about the centerline axis of the main spindle, first means for moving said feed slides and the tool support structure, at the start of each intermittent feeding movement of the bar stock feeding mechanism so as to cause said bar end support to abuttingly engage and support the forward leading end of the bar stock in a manner to hold the bar stock coaxially with the main spindle between said rotatable feed chuck of the



bar stock feeding mechanism and the rotatable bar end support, and second means for moving said feed slides along the centerline axis of the main spindle through a distance corresponding to a unit distance of feed of the bar stock by said bar stock feeding mechanism as the mechanism is operated for feeding, thereby to cause the bar end support to continue to support rotatingly the end of the bar stock and bring the stock fully into position for machining in the machining zone, irrespective of the rotation of the main spindle, whereby the cyclic bar feeding and machining operation can be continuously carried out without stopping the main spindle.

4,324,163
CIRCULAR SAW CONSTRUCTION
Donald R. LaVelle, 2425 Whiteaker, Cottage Grove, Oreg. 97424
Filed May 19, 1980, Ser. No. 150,640
Int. Cl.³ B27B *33/12*
U.S. Cl. 83—855 **12 Claims**

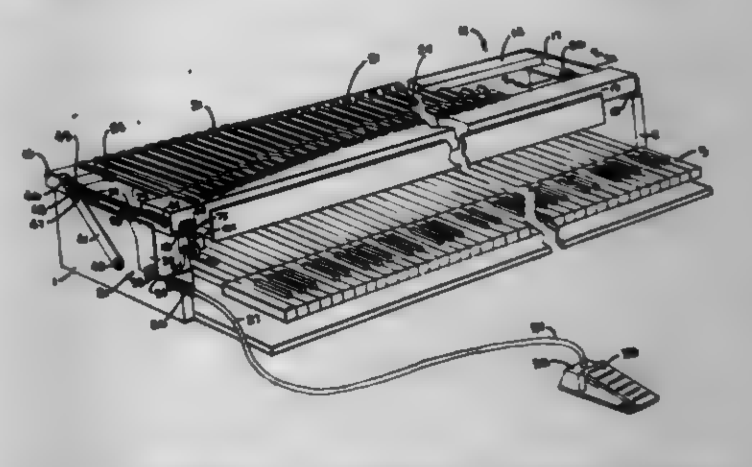


1. A circular saw blade comprising,

a saw blade having shoulder portions spaced about the saw perimeter defining open gullet areas therebetween, and

saw teeth of block shape one each in place on one of said shoulder portions, said teeth each having a major axis substantially normal to an intersecting saw blade radius whereby load forces are imparted along vectors generally orientated lengthwise of each tooth, said teeth each having a beveled front face defining an included angle of between forty and fifty degrees with a tooth intersecting saw blade radius.

4,324,164
TONE CHANGING MEANS FOR PERCUSSION INSTRUMENTS
Charles Monte, 570 Texas St., San Francisco, Calif. 94107, and Barry E. Carter, 2514-32nd Ave., San Francisco, Calif. 94116
Filed Dec. 30, 1977, Ser. No. 865,960
Int. Cl.³ G10F *1/02; G10H 3/00*
U.S. Cl. 84—1.04 **8 Claims**



1. In a piano having a tone generator assembly and percussion means for generating tones on said assembly,

a support for the tone generator assembly,

mounting means for shiftably supporting said tone generator assembly on said support relatively to said percussion means,

and manipulatable means connected to said mounting means for selectively shifting said assembly relatively to said percussion means at will thereby to alter the tone generated by the tone generators in said assembly,

said mounting means including

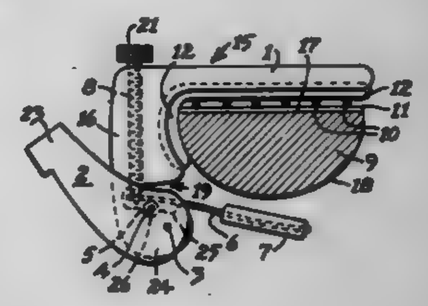
a pivotal connection between one end of said assembly and said support,

the other end of said assembly being shiftable about said pivotal connection

and resiliently yieldable means for urging said assembly into an initial playing position,

said assembly having a treble end and a bass end and said pivotal connection being at the treble end.

4,324,165
CAPO
James W. Wilkerson, Highway 64 East, Savannah, Tenn. 38372
Filed Mar. 6, 1980, Ser. No. 127,868
Int. Cl.³ G10D *3/04*
U.S. Cl. 84—318 **6 Claims**

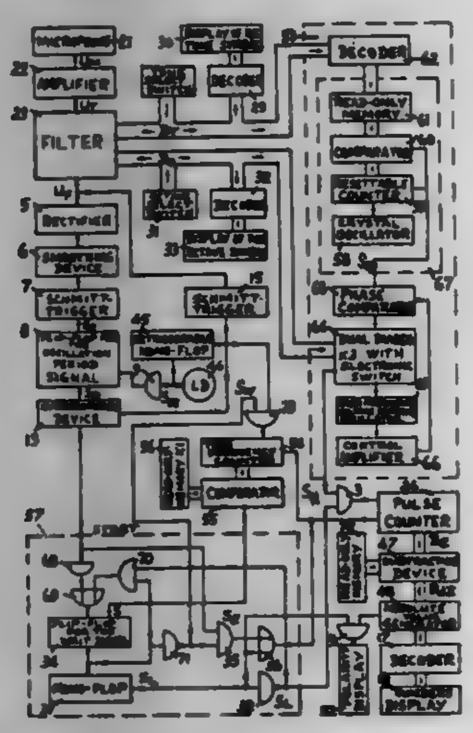


1. A capo for attachment to the neck of a stringed musical instrument, said neck having a longitudinal axis, opposite sides, a fret board and a bottom surface, transverse frets disposed on said fret board and a plurality of strings disposed parallel to said longitudinal axis, comprising:

(a) a frame,
(b) an elongated top pressure bar projecting from said frame and adapted to extend transversely of said longitudinal axis over the fret board of a stringed musical instrument and to engage the strings of the instrument when said

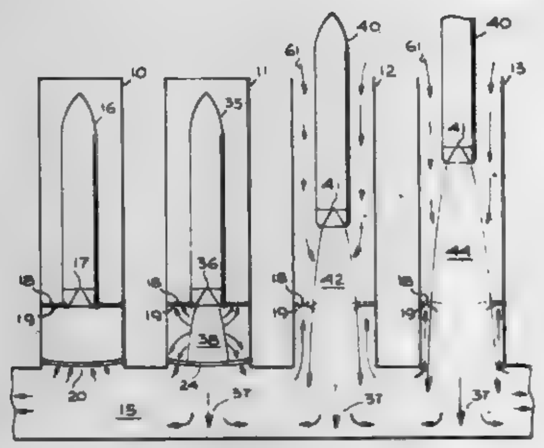
frame is located along one side of said neck in operative position,
(c) an elongated mounting arm having a remote end portion comprising a bottom pressure bar, a proximal end portion, and an elongated, semi-elastic, intermediate portion extending between said bottom pressure bar and said proximal end portion,
(d) means pivotally mounting said proximal end portion on said frame to support said bottom pressure bar transversely beneath the neck in operative position for swinging movement toward and away from the bottom surface of the stringed musical instrument,
(e) a manual lever having a handle portion and an operative end portion,
(f) means journaling said operative end portion on said frame for swinging movement of said lever about a pivotal axis substantially parallel to said longitudinal axis, between a clamping position and a release position,
(g) a transverse bearing member mounted on said lever between said pivotal axis and said handle portion and projecting parallel to said longitudinal axis beneath said mounting arm,
(h) said bearing member being adapted to engage said semi-elastic intermediate portion and to cause said bottom pressure bar to swing toward and engage the bottom surface of the stringed musical instrument when said frame is in operative position and said lever is moving toward said clamping position, and to cause said bottom pressure bar to move away from the bottom surface of the neck when said lever is moving toward said release position.

4,324,166
TUNING DEVICE FOR MUSICAL INSTRUMENTS
Reiner Foerst, Gummersbach, Fed. Rep. of Germany, assignor to Dr.-Ing. Reiner Foerst GmbH, Gummersbach, Fed. Rep. of Germany
Filed Feb. 7, 1980, Ser. No. 119,435
Claims priority, application Fed. Rep. of Germany, Feb. 9, 1979, 2904912
Int. Cl.³ G10G *7/02*
U.S. Cl. 84—454 **1 Claim**



1. A tuning device for musical instruments comprising in combination a high frequency oscillator having a frequency controlled by a tone select switch and an octave select switch and the output S_H of which is supplied to the input of an AND-gate, the output of which is supplied to the display device for the tone pitch and the other input of which is connected to the output of a reference time signal generator which comprises a flip-flop for a wait signal S_W and which is started by the amplitude of the tone via a microphone, an amplifier, a filter, a smoothing device and a Schmitt-trigger, and which is stopped after the counting of a definite number of tone oscillations filtered and converted, said high frequency reference oscillator comprising a low frequency 12-tone generator, which is addressable via a decoder by the tone select switch, a high frequency voltage controlled oscillator for the generation of the output signal S_H, a dual divider, and a phase comparator for the comparison of the output signal of said divider to the output signal S_N of said low frequency 12-tone generator, the output signal of said comparator reacting via a control amplifier on the frequency of said high frequency voltage controlled oscillator and the intermediate successively halved output frequencies of said divider as the high frequency reference signal S_H being supplied to said AND-gate via an electronic switch which is controlled by said octave select switch, and an OR-gate as well as an AND-gate which for the repeated enabling of the numbers-display device function so that the flip-flop for the wait signal is additionally reset via said OR-gate by the output of said AND-gate, the inputs of which being the wait signal S_W and the inverted read signal S_L.

4,324,167
FLEXIBLE AREA LAUNCH TUBE REAR COVER
Edward T. Piesik, Pomona, Calif., assignor to General Dynamics, Pomona Division, Pomona, Calif.
Filed Apr. 14, 1980, Ser. No. 139,629
Int. Cl.³ F41F *3/04*
U.S. Cl. 89—1.8 **17 Claims**

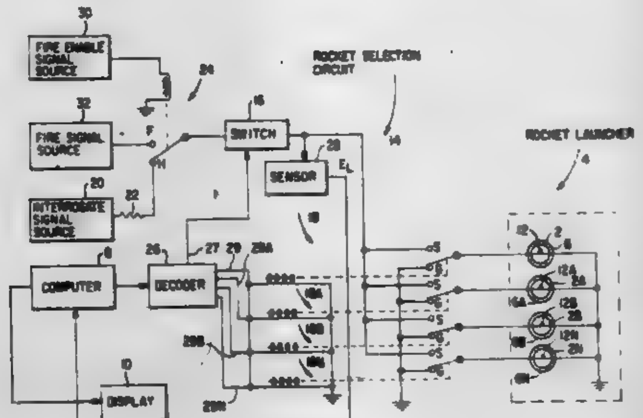


1. An apparatus for sealing a portion of a launch tube for exhaust-propelled vehicles and for allowing free flow of exhaust gases after lift-off comprising:
a launch tube;
duct means adjacent to said launch tube for conducting the exhaust of said vehicle away from said vehicle; and
flexible sealable means extending across at least the open portion of the launch tube in the vicinity of the duct means.

4,324,168
WEAPON FIRING SYSTEM INCLUDING WEAPON INTERROGATION MEANS
Frank M. Sano, Wayne; Robert A. Sliwa, Woodcliff Lake, and Edward J. Golden, Harryston Township, Sussex County, all of N.J., assignors to The Bendix Corporation, Teterboro, N.J.
Filed Sep. 26, 1980, Ser. No. 191,642
Int. Cl.³ F41F *3/04*
U.S. Cl. 89—1.814 **9 Claims**

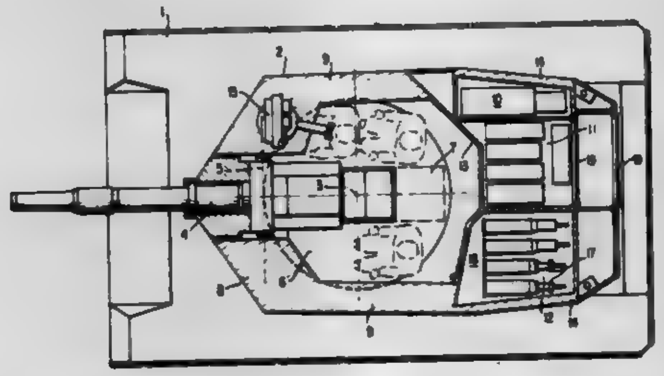
1. A weapon firing system including weapon interrogation means, comprising:
a plurality of weapons each of which has an electrical igniter;
switching means;
a plurality of switching devices connected to corresponding electrical igniters;

means for providing a weapon interrogate signal connected to the switching means and applying said signal thereto;
means for providing connecting signals and for applying said signals to the switching devices for independently connecting said devices to the switching means;
operating means connected to the switching means for rendering said means operative to apply the interrogate signal to an independently connected switching device and therethrough to a corresponding igniter for interrogating the availability of a weapon ready to fire;
a sensor connected to the switching means and connected through the independently connected switching device to the corresponding igniter for sensing the impedance



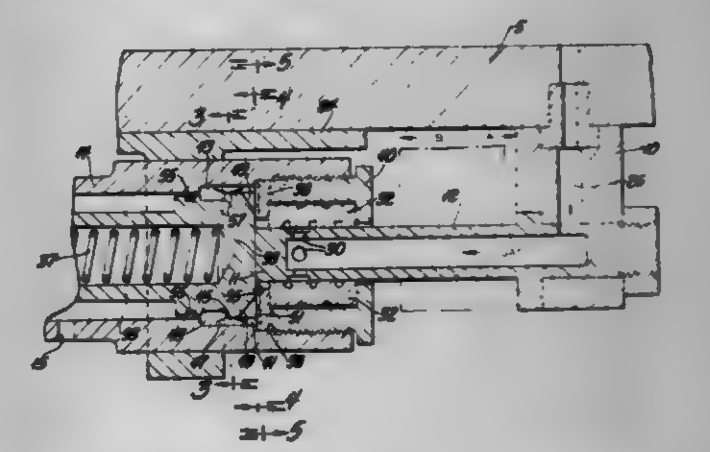
thereof provided in response to the applied interrogate signal, said impedance being indicative of the availability of a weapon ready to fire;
means for providing a weapon firing signal;
means operative for disconnecting the switching means from the weapon interrogate signal means and for connecting said switching means to the weapon firing signal means, whereupon the firing signal is applied to the switching means; and
the operating means rendering the switching means operative to apply the firing signal to an independently connected switching device and therethrough to the igniter for firing a corresponding weapon.

4,324,169
MAIN BATTLETANK TURRET
Gottlieb Rüttgerodt, Kassel, Fed. Rep. of Germany, assignor to Wegmann U. Co. GmbH, Kassel, Fed. Rep. of Germany
Filed Nov. 19, 1976, Ser. No. 744,947
Int. Cl.³ F41H *5/20, 7/08*
U.S. Cl. 89—36 L **2 Claims**



1. A battletank turret having a relatively heavily armored space for the weapons system and for the crew of the battletank and a relatively lightly armored space for the power supply installations of the battletank and for the ammunition for the weapons system,
said relatively lightly armored space being located rearwardly of said relatively heavily armored space and being divided into a plurality of subspaces each individually accessible from the outside of the battletank, one of said subspaces including means to store ammunition for the weapons system in a manner such that the warheads are directed away from said relatively heavily armored space;
means for ventilating said relatively heavily armored space separately from said relatively lightly armored space to reduce degradation of the atmosphere in the relatively heavily armored space as a result of heat and vapors from fuel, lubricants, and the like,
the armor for said relatively heavily armored space containing a void sufficient to house sighting and observation equipment; and,
means for mounting sighting and observation equipment in the void in said armor.

4,324,170
RESIDUE-ACCOMMODATION MEANS FOR A GAS-OPERATED GUN
James J. Healy, Laguna Beach, Calif., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Dec. 31, 1979, Ser. No. 108,446
Int. Cl.³ F41D *5/12*
U.S. Cl. 89—159 **4 Claims**



1. In a recoil-operated gun having a bolt-operating means that includes a gas cylinder, a piston slidably disposed within the cylinder, a gas tube connected with the gun barrel and projecting through an end wall (39) of the cylinder to deliver pressurized combustion gases to an end surface (95) of the piston for moving said piston along the cylinder to operate the bolt, and a sealing means (85) carried by the piston in sliding engagement with the cylinder side wall: the improvement comprising annular pocket means in the cylinder side wall near its juncture with the cylinder end wall; a first set of grooves (49) in the piston end surface, and a second set of grooves (51) in the cylinder end wall; the grooves in each set radiating outwardly from a central portion of the piston-end wall interface, whereby pressurized gases are enabled to flow through the grooves into the annular pocket means; the grooves in the first set communicating with the grooves in the second set when the piston has its end surface engaged with the cylinder end wall; the total area of the grooves being an appreciable percentage of the piston-end wall interface area, to significantly reduce bonding tendencies between the piston end surface and cylinder end wall; the aforementioned annular pocket means having sufficient volumetric capacity to receive and store a significant quantity of residue associated with the combustion gases.

4,324,171

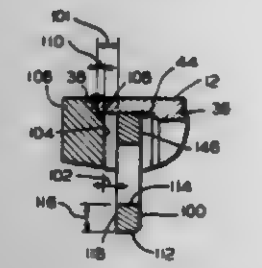
FLUID DEVICE AND METHOD FOR MAKING

Richard P. Gaylord, St. Joseph, Mich., and Wendell E. Miller, Warsaw, Ind., assignors to Clark Equipment Company, Buchanan, Mich.

Division of Ser. No. 916,376, Jun. 16, 1978, Pat. No. 4,187,766. This application Jul. 9, 1979, Ser. No. 55,652

Int. Cl.³ F16J *11/02, 15/18*

U.S. Cl. 92—169 **17 Claims**



1. A tube and end element assembly for a fluid device which tube and end element assembly comprises an end element having an inner end and an outer end;

a cylindrical tube having first and second ends, having a first inside diameter portion that is proximal to said first end, and being joined to said end element by a bonded joint with said first end disposed proximal to said inner end; and

means comprising a stressing member that is separate from said end element, that is substantially circular, that is larger than said first inside diameter portion, and that is inserted into said first inside diameter portion proximal to said first end, for mechanically inducing an elastic diametral tensile strain in said tube proximal to said bonded joint and intermediate of said bonded joint and said second end;

whereby said mechanically-induced elastic diametral tensile strain reduces cyclic diametral straining of said tube proximal to said bonded joint when cyclic fluid pressures are applied inside said tube.

4,324,172

APPARATUS FOR TREATING WINE BY THE CHAMPAGNE METHOD

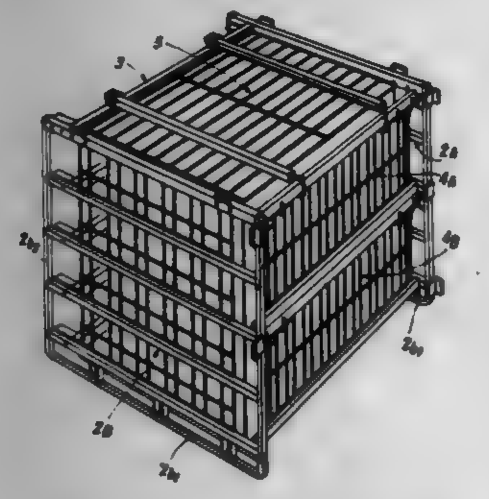
Claude O. E. Cazals, Marne, and Jacques H. C. M. DuCoin, Mareuil-sur-Ay, both of France, assignors to Centre de Diffusion de la Methode Champenoise, Magenta, France

Filed May 14, 1980, Ser. No. 149,672

Claims priority, application France, May 16, 1979, 79 12443; Jul. 12, 1979, 79 18104

Int. Cl.³ C12H *1/22*

U.S. Cl. 99—277.1 **4 Claims**



1. Apparatus permitting wine to be treated in bottles according to the champagne method comprising a rack in the form of a rectangular parallelepiped open on one face which is opposite to a base and provided with support elements for the corks of a layer of bottles which completely fill the rack, in some case with several other layers of bottles superposed and supported one on the other, said rack comprising two series of feet or runners placed along perpendicular walls of the rack and permitting the rack to be placed in a first position where the bottles are horizontal and a second position perpendicular to the first where the bottles are vertical with their necks directed downwardly, and being characterized in that lateral walls of the rack perpendicular to its base are provided towards the interior of the rack with rails disposed perpendicularly to the base of the rack to guide bottles in horizontal position introduced into the rack through an open face thereof and to assure the proper positioning of the bottles placed against said lateral walls, wherein one of said lateral walls is mounted in removable fashion, to enable at least a part of that wall to be moved in order to facilitate the extraction of the bottles in the vertical position, and wherein the removable wall of the rack comprises two separately removable parts which meet in a horizontal plane substantially halfway up the removable wall.

4,324,173

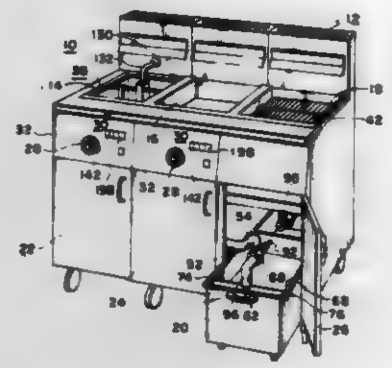
FILTER SYSTEM FOR FRYING APPARATUS

L. Frank Moore, and George M. Price, both of Shreveport, La., assignors to The Frymaster Corporation, Shreveport, La.

Filed Dec. 23, 1976, Ser. No. 753,936

Int. Cl.³ A47J *37/12*

U.S. Cl. 99—330 **7 Claims**



1. In frying apparatus of the type including a fry pot for containing a pool of cooking oil and means for heating the oil to cook a portion of food during a cooking cycle, the combination with the frying apparatus of a filter system operable during a cleaning cycle for removing food particles which cling to the fry pot and for removing food particles suspended in the cooking oil, the filter system comprising:

a drain pan;

a drain conduit for conveying cooking oil and food particles entrained therein from the fry pot to the drain pan haing an inlet port connected in fluid communication with the fry pot and an outlet port for discharging the cooking oil and food particles into the drain pan;

a drain valve operably connected in series fluid circuit relation with the drain conduit for selectively opening the drain conduit during the cleaning cycle and for closing the drain conduit during the cooking cycle;

a filter disposed intermediate of the drain conduit outlet port and the drain pan for separating and collecting food particles entrained in the cooking oil;

a return conduit for conveying filtered cooking oil from the drain pan to the fry pot having an inlet port disposed in fluid communication with the drain pan to receive the cooking oil after it passes through the filter and having an outlet port for discharging the filtered cooking oil into the fry pot;

a pump connected in series fluid circuit relation with the return conduit for drawing the filtered cooking oil from the drain pan and for forcing it through the return conduit at a predetermined discharge pressure; and,

a shower fixture having an inlet port removably connected to the return conduit for receiving filtered cooking oil from the pump, the shower fixture including a tubular member having side sections which are laterally displaced with respect to each other in conformance with the lateral displacement of the interior side surfaces of the fry pot, the tubular side sections being substantially coextensive with the lateral peripheral dimensions of the corresponding fry pot interior side surfaces for permitting nesting engagement of the shower apparatus with the fry pot, the tubular side sections having a plurality of outlet ports for discharging jets of the filtered cooking oil into and along interior side surfaces of the fry pot for dislodging food particles which cling to the sides of the fry pot, the outlet ports being aimed for discharging jets of cooking oil substantially vertically downwardly along the corresponding interior side surfaces of the fry pot wherein the heating means is an electrical resistance heating element for generating heat in response to the flow of electrical current through the resistance portion of the heating element, the heating element having first and second electrical terminal portions, the filter system further including:

a first electrical bus for conducting electrical current;

an on-off switch connected to permit manual control of the application of electrical current from an external power source to the first electrical bus;

a second electrical bus for returning electrical current conducted through the first electrical bus to the external power source;

a power contactor having a pair of normally closed contacts, a pair of normally open contacts, and a solenoid assembly operably connected to open the normally closed contacts and to close the normally open contacts in response to the flow of current through the solenoid;

the normally closed contacts of the power contactor being connected in series electrical relation between the first electrical bus and the first electrical terminal of the resistance heating element;

the second electrical terminal of the resistance heating element being connected to conduct current to the second electrical bus;

a safety switch having a pair of electrical contacts and an actuator operably coupled thereto for opening and closing the contacts, the actuator being responsive to the operating mode of the drain valve to cause the electrical contacts to close when the drain valve is opened and to cause the electrical contacts to open when the drain valve is closed;

the electrical contacts of the safety switch being connected in series electrical relation between the first electrical bus and the solenoid;

the solenoid being connected in series electrical relation between the safety switch and the second electrical bus; and,

the normally open contacts of the power contactor being electrically connected in parallel circuit relation with the electrical contacts of the safety switch.

4,324,174

APPARATUS FOR THE PREPARATION OF SHISH KABOBS

James C. Conradt, 1450 Lawrence Ave., Hamilton, Ohio 45013

Filed Dec. 3, 1980, Ser. No. 212,358

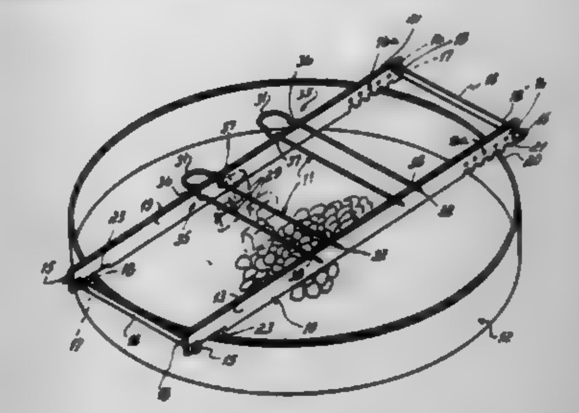
Int. Cl.³ A47J *37/04*

U.S. Cl. 99—421 H **6 Claims**

1. Apparatus for preparing shish kabobs comprising:

a rectangular frame adapted to rest on a grill and having two opposed spaced skewer supports,

a plurality of "U"-shaped skewers presenting two prongs connected by a bight portion resting upon said two skewer supports,



abutment means adjacent the bight portion of said "U"-shaped skewers limiting the extent to which food is slid down said prongs to said bight portion.

4,324,175

APPARATUS FOR RICE POLISHING

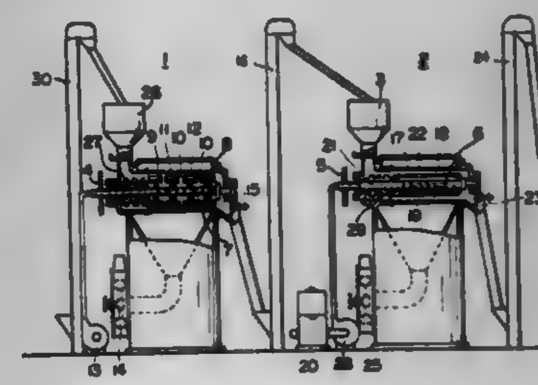
Toshihiko Satake, Higashi Hiroshima, Japan, assignor to Satake Engineering Co. Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 872,077, Jan. 25, 1978, abandoned. This application Nov. 7, 1979, Ser. No. 92,018

Claims priority, application Japan, Apr. 1, 1977, 52/37933

Int. Cl.³ B02B *3/04, 3/12*

U.S. Cl. 99—519 **7 Claims**



1. A rice grain polishing apparatus comprising the combination of:

(A) a grinding-type grain polishing machine including:

(a) inlet means for unpolished rice grains;

(b) feed screw means for advancing the unpolished rice grains,

(c) a plurality of axially spaced apart, grinding-type polishing rolls of the type capable of providing a large number of scars on the surface of the rice grains to thereby partially polish them and to permit the rapid addition of moisture on the surface thereof;

(d) a first tubular, rotatable shaft having a perforated wall commonly supporting and driving said polishing rolls at a first speed, there being further included means for blowing air through the holes in the wall of said first shaft;

(e) a porous wall surrounding said grinding polishing rolls and defining a grinding-type polishing chamber therewith for receiving the air blown through the walls of said first shaft; and

(f) outlet means for the partially polished rice grains; and

(B) a humidifying friction-type rice grain polishing machine including;

(a) inlet means for receiving the partially polished rice from said outlet means in said grinding-type polishing means;

(b) feed screw means for advancing the partially polished rice grains;

(c) at least one hollow friction-type polishing roll having at least one opening through the wall thereof;

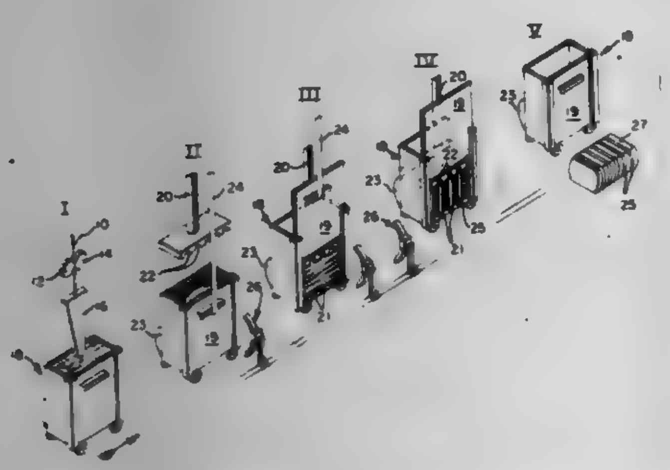
(d) a second tubular shaft independent of said first shaft in said grinding-type polishing machine for supporting and driving said at least one friction type polishing roll at a second speed that is slower than said first speed, said second shaft of said friction-type polishing machine being hollow and the wall thereof being perforated, there being further included means for blowing air through the perforations in the wall of said second shaft in said friction-type polishing machine;

(e) a porous wall surrounding said friction-type polishing roll and defining a friction-type polishing chamber therewith for receiving air blown through the wall of said second tubular shaft in said friction-type grain polishing machine;

(f) means for delivering humid air only into said friction-type polishing chamber whereby the scratched, partially polished rice grains in said friction-type chamber in said friction-type grain polishing machine are impregnated with the humid air and the humid air impregnated rice grains are completely polished to a superluster; and

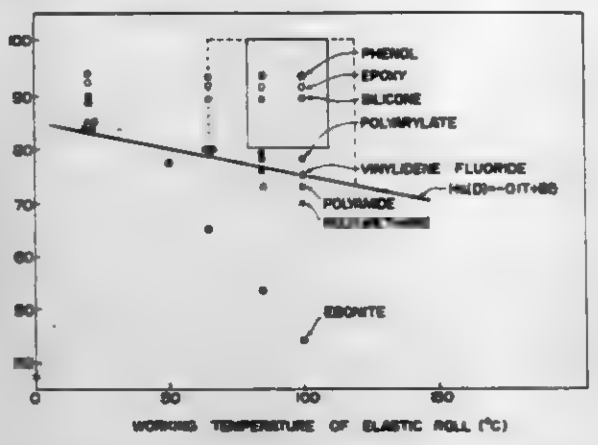
(g) outlet means for the completely polished rice grains.

4,324,176
TOW BALING
Robert M. McCormick, Columbia, S.C., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Filed Feb. 7, 1980, Ser. No. 119,376
Int. Cl.³ B65B *13/06*
U.S. Cl. 100—3 1 Claim



1. A process for preparing a nude-strapped bale of tow comprising: depositing said tow in a portable flat-sided container having an opening at its top to accept the tow, said container having a sliding door in one side to expose the deposited tow, there being aligned strapping guides on the bottom and the side opposite the sliding door of the container; moving said container underneath a ram, said ram having strapping guides in its bottom surface; lowering said ram through the opening in said container to compress and stabilize said tow in one stroke; compressing said tow with said ram by moving said ram downward to a location where the strapping guides on the ram's surface align with the strapping guides on the side of the container; lifting said sliding door to expose said tow; strapping said compressed tow; raising said ram out from said container; ejecting the strapped bale of tow and moving said container to another location out from under the ram.

4,324,177
CALENDER ROLL FOR SUPERCALENDER
Nobuo Tsuji; Masaaki Fujiyama; Hiromi Nakahara; Eiichi Tadokoro; Keiji Tanaka, and Isao Yamamoto, all of Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan
Filed Apr. 7, 1980, Ser. No. 138,076
Claims priority, application Japan, Apr. 9, 1979, 54-42855
Int. Cl.³ B30B *3/04*
U.S. Cl. 100—155 R 8 Claims

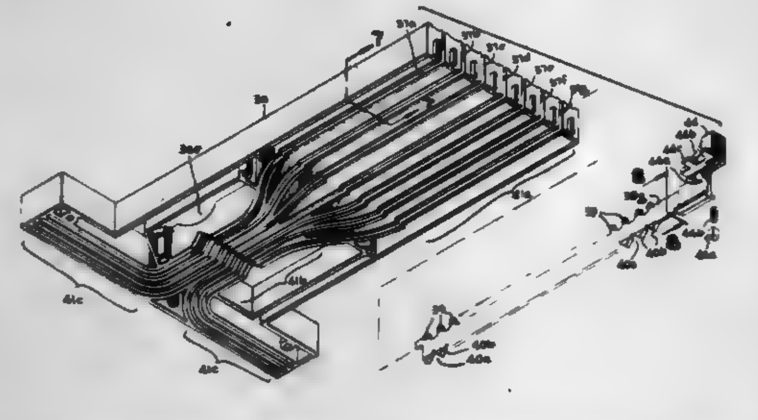


1. In a supercalendar comprising a metal roll and an elastic roll for smoothing the surface of a web by nipping the web between the metal roll and the elastic roll, the improvement which comprises, said elastic roll formed from a material satisfying the conditions of

$$Hs(D) \geqq -0.1\ T+85$$

at a linear pressure between the rolls of 50 to 500 Kg/cm, where Hs(D) is Shore hardness D-scale of the surface of the elastic roll, and T is the working temperature (°C.) of the elastic roll varying within the range of $60 \leqq T \leqq 120$.

4,324,178
IMPRINTING MACHINE WITH WHEEL SETTING RACK MECHANISM
William P. Barbour, Mount Prospect, Ill., assignor to Security Imprinter Corporation, Walkersville, Md.
Filed May 2, 1980, Ser. No. 146,099
Int. Cl.³ B41F *1/08*
U.S. Cl. 101—45 32 Claims



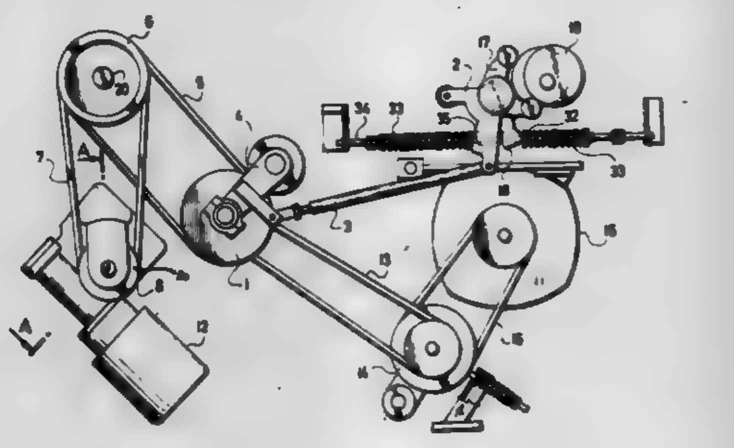
1. A variable data imprinting machine comprising an elongated housing defining a substantially rectangular elongated flat printing bed providing a document supporting surface and having first and second sides, a print wheel pack formed of rotatable, coaxial side-by-side closely adjacent print wheels each having circumferentially spaced raised-number-bearing imprint block formations separated by notches about their peripheries for imparting impressions to a document on the document supporting surface, an imprinting carriage movable through advance and return strokes longitudinally along the

document support surface having a roller platen for transfer of imprinted characters to the document during one of said strokes, an elongated rack case perpendicularly transvering said housing subjacent the wheel pack having a number-bearing rack control panel portion projecting beyond the first housing side, a plurality of elongated flexible slide straps of transversely thin vertically elongated cross-section having opposite ends located near opposite longitudinal ends of the rack case and forming toothed racks slidable longitudinally in said rack case, said racks having teeth along their upper edges engaging the peripheral notches of the respective print wheels to rotatably index the print wheels to selected number-printing positions, the rack case having means forming plural elongated guide slot trackways therein having paired confronting sides spaced to correspond to the width of the straps to receive and guide the toothed racks therein for their longitudinal wheel-indexing movement, said guide slot trackways defining serpentine paths in top plan providing intermediate laterally closely adjacent path segments underlying and vertically aligned with the respective print wheels directed longitudinally of the case and communicating transition segments curving in lateral diverging relation therefrom to join more widely spaced parallel trackway path segments also directed longitudinally of the case and underlying the control panel portion.

4,324,179
METHOD OF PROOF-PRINTING IN GRAVURE PRINTING
Katsusuke Nagano, Mitaka, Japan, assignor to Dai Nippon Insatsu Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 26, 1977, Ser. No. 836,732
Claims priority, application Japan, Sep. 24, 1976, 51/114516
Int. Cl.³ B41N *1/06*
U.S. Cl. 101—170 2 Claims

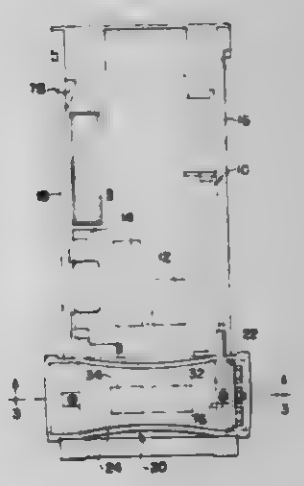
1. A gravure proof-printing method which comprises superposing a contact screen upon the photosensitive layer of a plate blank for offset printing, superposing further thereon a continuous-tone positive for gravure printing, exposing the plate to light from the side of the positive for photoprinting, developing the resulting plate to produce a printing plate, and using this plate to make a proof for gravure proofing and correction.

4,324,180
DRIVE DEVICE
Jaroslav Jiruse, Blansko, and Antonin Svobodova, Adamov, both of Czechoslovakia, assignors to Adamovske Strojirny, Narodni Podnik, Adamov, Czechoslovakia
Filed Sep. 17, 1980, Ser. No. 188,061
Claims priority, application Czechoslovakia, Sep. 22, 1979, 6397-79
Int. Cl.³ B41F *5/00*
U.S. Cl. 101—216 4 Claims



1. A drive device for an offset printing machine which comprises a drive motor, operatively connected to a variable speed belt drive mounted on a swinging support, which is pivotally connected to a first end of an adjustable draw bar, the second end of the draw bar is pivotally connected to a control lever pivotally mounted on the printing machine, the variable speed belt drive is connected by means of a first drive belt to a common pulley which is operatively connected to the printing machine, a second belt which engages with the common pulley is linked to a pulley mounted on a freely rotating shaft of an electromagnetic clutch means whereby when the power to the drive motor is stopped, the electromagnetic clutch means can be activated to affect the rotation of the machine through a drive part.

4,324,181
IMPRINTER WITH PLURAL SELECTIVELY OPERATING PLATEN ROLLERS
John A. Maul, Sr., Lyndhurst, Ohio, assignor to DBS, Inc., Randolph, Mass.
Filed Dec. 26, 1979, Ser. No. 106,851
Int. Cl.³ B41F *3/04*
U.S. Cl. 101—269 8 Claims



1. An imprinter comprising:

a bed;

a platen carriage guidingly associated with the bed for motion along the same;

first and second roller platens mounted on said carriage for rotary motion, each about its axis;

translating means responsive to carriage position for lowering and raising of said platens toward and away from the bed as the carriage is moved along the bed; said translating means including a transition means manually movable from a first position to a second position with respect to said platen carriage for converting the operation of the imprinter from (a) a first mode wherein the first and second roller platens are both lowered towards the bed during movement of the carriage in a first direction along the bed and both raised away from the bed during movement of the carriage in a direction opposite the first direction to (b) a second mode wherein the first roller platen is lowered toward the bed and the second roller platen is raised away from the bed during carriage movement in said first direction and the first roller platen is raised away from the bed and the second roller platen is lowered toward the bed during carriage movement in said opposite direction.

4,324,182

APPARATUS AND METHOD FOR SELECTIVELY ACTIVATING PLURAL ELECTRICAL LOADS AT PREDETERMINED RELATIVE TIMES

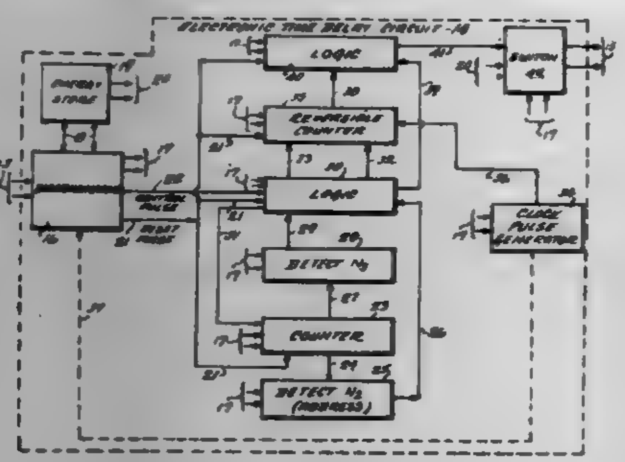
Ian J. Kirby, Warrington; Michael I. Mitchell, Chester, and Andrew Stratton, Farnborough, all of England, assignors to Imperial Chemical Industries Limited, London, England

Filed Jan. 22, 1979, Ser. No. 5,551

Claims priority, application United Kingdom, Feb. 2, 1978, 4087/78

Int. Cl.³ F42C *11/00*

U.S. Cl. 102—217 **64 Claims**



1. Apparatus for selectively activating a plurality of electrical loads at respectively corresponding predetermined relative times, said apparatus comprising:

a central unit for providing reference timing signals, and

a separate electrical timing and load activation device electrically connected with each electrical load and also connected to receive said reference timing signals,

each of said devices including timing means,

means for providing first and second signals from the reference timing signals,

a source of locally generated clock pulses,

a timing counter means for counting the number of said clock pulses occurring between said first and second signals, and

activation means for activating the connected electrical load after a subsequent time delay measured by counting a number of said clock pulses, the number of clock pulses counted bearing a predetermined relationship to the number counted between said first and second signal.

4,324,183

SMOKE PROJECTILE CHARGE

Georg Prahauser, Oberalm, Austria; Robert Schmidlin, Neuenburg, and Wolfgang Trede, Weil-Otlingen, both of Fed. Rep. of Germany, assignors to Buck Chemisch-Technische Werke GmbH & Co., Bad Uberkingen, Fed. Rep. of Germany

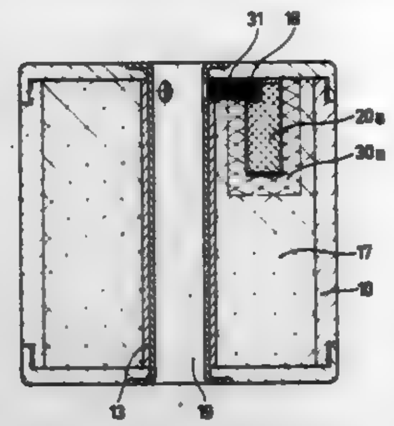
Filed Sep. 21, 1979, Ser. No. 77,744

Claims priority, application Fed. Rep. of Germany, Sep. 26, 1978, 2841815

Int. Cl.³ F42B *13/44*; F42C *19/02*

U.S. Cl. 102—334 **5 Claims**

5. A projectile charge of smoke cups adapted to be stacked one above the other in a small jacket in discharging direction, the smoke cups comprising a closed metal case with a smoke charge comprising hexachloroethane, zinc oxide and metal powder fully filling the case, the smoke cups being adapted to rest one upon another with total surface contact, and the component parts of each cup case consisting of the same material, whereby the supporting components have identical strength, the metal cases consisting of two coaxial tubes which form between themselves an annular chamber for the smoke composition charge, which chamber is covered on both sides by annular lids, and wherein the smoke composition charge is highly compressed with a pressure of at least 1300 kp/cm² [91 PSI] and is thus self-supporting in itself, said charge having a fuse system comprising at least one priming cartridge, this cartridge being embedded in a transmission composition and compressed with the transmission composition at the smoke composition charge pressure to form a block which is inserted in a recess in the compressed smoke composition charge, said



transmission composition comprising the same components as the smoke composition and said priming cartridge being in communication with the interior of the inner tube of the case via a capillary delay tube whereby reliable, uninterrupted smoke production is achieved.

4,324,184

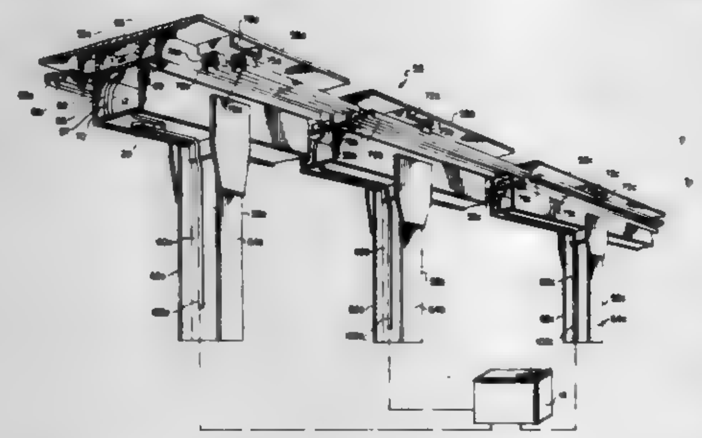
TEMPERATURE CONTROL SYSTEM AND METHOD FOR AN AUTOMATED GUIDEWAY TRANSIT SYSTEM

Donald P. Sullivan, Burnsville, Minn., assignor to Universal Mobility, Inc., Salt Lake City, Utah

Continuation-in-part of Ser. No. 133,194, Mar. 24, 1980, abandoned. This application May 13, 1980, Ser. No. 149,602

Int. Cl.³ G08B *21/00*

U.S. Cl. 104—279 **28 Claims**



15. A temperature control system for preventing the formation of frost or dew on the bus bars of an AGT system, the temperature control system comprising:

(a) a heating element for heating said bus bars;

(b) a first sensor placed in contact with one of said bus bars so as to detect the bus bar temperature;

(c) a second sensor for detecting the dew point temperature of the ambient atmosphere about said AGT system guideway;

(d) a first electronic amplifier circuit coupled to said first sensor, said first amplifier circuit converting the detected bus bar temperature into a first electrical signal that is proportional to the detected bus bar temperature, and thereafter amplifying and transmitting said first signal;

(e) a second electronic amplifier circuit coupled to said second sensor, said second amplifier circuit converting the detected dew point temperature into a second electrical signal proportional to said detected dew point temperature, and thereafter amplifying and transmitting said second signal;

(f) a first electronic comparator circuit coupled to the outputs of said first and second amplifier circuits, said first comparator circuit detecting the magnitude of the difference between the transmitted first and second signals and triggering a first output signal whenever said difference reaches a set level;

(g) a second electronic comparator circuit coupled to said first amplifier circuit, said second comparator circuit comparing said first electrical signal to an internal reference signal and triggering a second output signal whenever said first signal is less than or equal to said internal reference signal;

(h) means, coupled to the outputs of said first and second comparator circuits, for developing a triggering signal in response to said first and second output signals from said comparator circuits; and

(i) an electronic relay device controlled by said means (h) and coupled to said heating element, whereby said heating element will be energized when the relay is triggered by the triggering signal from said means (h).

4,324,185

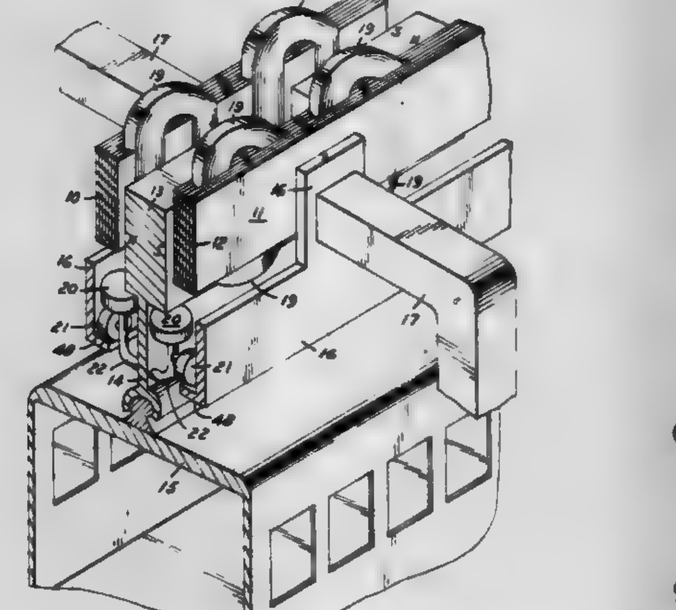
PERMANENT-MAGNET-LEVITATED TRANSPORTATION SYSTEM

Roy D. Vinson, 146 Cottage Dr., Covina, Calif. 91722

Filed Jul. 21, 1980, Ser. No. 170,615

Int. Cl.³ B61B *13/08*

U.S. Cl. 104—283 **7 Claims**



1. A permanent magnet levitation system for use in transportation comprising:

a pair of horizontally spaced rail members composed of ferromagnetic material;

at least two permanent levitation magnets positioned between said rail members in transverse alternating polarity alignment with air gaps between said magnets and both rail members, said levitation magnets and said rail members providing generally horizontal magnetic flux paths through said air gaps;

at least one cargo compartment supported by said magnets; and

means for maintaining said permanent magnets horizontally central between said rail members.

4,324,186

CONVERTIBLE RAIL-HIGHWAY LATERAL TRACK SET OFF APPARATUS

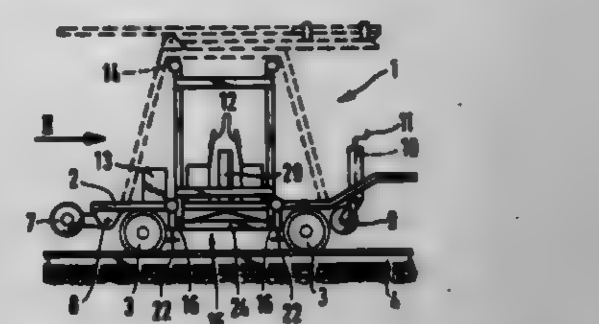
Josef Theurer, Vienna, and Friedrich Oellerer, Linz, both of Austria, assignors to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H., Vienna, Austria

Filed Oct. 15, 1979, Ser. No. 84,649

Claims priority, application Austria, Dec. 11, 1978, 8811/78

Int. Cl.³ B61B *12/00*; B61D *15/00*; B61F *13/00*

U.S. Cl. 105—177 **4 Claims**



1. A railway carriage having two undercarriages for running on a track and comprising a set-off apparatus for moving the carriage transversely off the track, the set-off apparatus including

(a) a carrier body having auxiliary running gears,

(b) a power drive means vertically movably mounting the carrier body on the carriage,

(c) an auxiliary track extending transversely to the track, the auxiliary track having

(1) two rails supporting the auxiliary running gears, each of the auxiliary track rails consisting of at least two rail sections pivotally connected to each other at adjoining ends, one of the rail sections of each auxiliary track rail being pivotal from an operating position flush with the other rail section into a vertical position,

(2) struts interconnecting the two rails,

(3) a hydraulic drive interconnecting the adjoining rail section ends for pivoting the one rail section, and

(4) a support mounted on ends of each of the rails, and

(5) a power actuated means vertically adjusting the support, and

(d) a drive having respective parts interconnecting the carriage and the auxiliary track rails for transversely moving the carriage.

4,324,187

RAIL VEHICLE HAVING A ROLL SUPPORT DEVICE

Claudio Sambo, Winterthur, Switzerland, assignor to Schweizerische Lokomotiv-und Maschinenfabrik, Winterthur, Switzerland

Filed Aug. 29, 1979, Ser. No. 70,742

Claims priority, application Switzerland, Sep. 4, 1978, 9282/78

Int. Cl.³ B61F *5/24*

U.S. Cl. 105—199 A **13 Claims**

1. A rail vehicle comprising

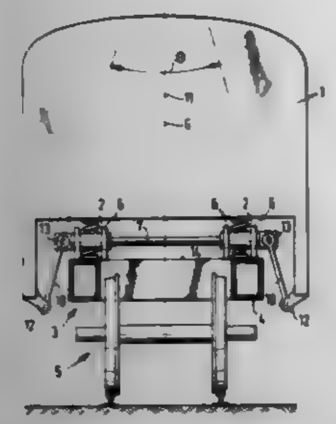
a vehicle body having a center of gravity;

at least one truck for supporting said body on rails, said truck including a truck frame and at least one set of wheels for rolling on rails;

a resilient support means supporting said body on said truck frame with said body being essentially freely movable in a transverse direction relative to said truck frame; and

a roll support means including two connecting elements coupling said vehicle body and said truck frame together without transmitting the weight of said body to said frame, said elements being disposed on opposite sides of a vertical center plane extending longitudinally of said body and on axes disposed in angular relation to said plane to define an included angle of at least 10°, said axes intersect-

ing at a point located above said center of gravity of said body whereby under the action of a centrifugal force on said vehicle body, said connecting elements are subjected



to a relative tilting motion which causes an inclination of said body about said center of gravity opposed to said centrifugal force.

4,324,188

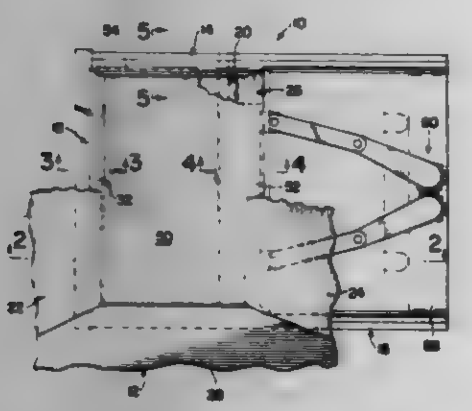
HOPPER DISCHARGE OUTLET AND METHOD

William E. Fritz, Naperville, Ill., assignor to The Youngstown Steel Door Company, Cleveland, Ohio

Filed Mar. 3, 1980, Ser. No. 126,397

Int. Cl.³ B61D *7/06, 7/20, 7/24*

U.S. Cl. 105—282 R **5 Claims**



1. In a discharge outlet assembly for a hopper having downwardly and inwardly inclined side walls and end walls defining a hopper discharge opening, a discharge chute extending below said hopper discharge opening and a gate for opening and closing said hopper discharge opening supported for reciprocable movement by said discharge chute, the improvement comprising:

a pair of integral cold formed members defining side walls of said discharge chute

said cold formed members each having an upper inwardly and downwardly directed flange;

said flanges' top surfaces each engaging an outside surface of one of said downwardly and inwardly inclined side walls of said hopper;

said flanges' bottom surfaces each defining an elongated groove with a remaining portion of its respective integral cold formed member;

said grooves each having a downwardly and inwardly directed surface for movingly and sealingly supporting said gate.

4,324,189

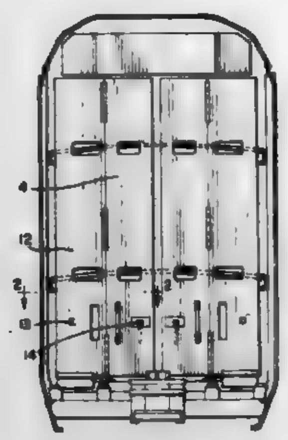
CAR END FOLDABLE DOORS LOCKING DEVICE

David J. Roldness, San Diego, Calif., assignor to Pullman Incorporated, Chicago, Ill.

Filed Mar. 17, 1980, Ser. No. 130,881

Int. Cl.³ B60P *3/08;* **B61D** *17/00;* **E05C** *19/12;* **E05D** *15/26*

U.S. Cl. 105—378 **12 Claims**



1. A door for use in railway cars comprising first and second panels foldably interconnected and being automatically coupleable together by a locking device, said locking device including a housing of hot shape, and having an intermediate flange and two oppositely extending flanges fastening said housing to said first door panel,

a lever projecting inwardly through said housing and having inner an outer portions,

biasing means comprising spring means inside said housing and urging said lever inner portion to locking position,

means for pivoting said lever on said housing, and

a keeper member connected to said second panel and coacting with said lever portion locking said first and second panels in a folded position.

7. In a railway car having a body including side walls and a roof structure,

said body having a loading end, and lower and upper cargo supporting horizontal decks adapted to be loaded with cargo through said loading end, the improvement comprising;

a door arrangement including a pair of door structure ends including first and second vertical door panels,

first hinge means interconnecting said first and second door panels,

second hinge means including a hinge bracket connected to said outer door panels,

said hinge bracket having a hinge end portion spaced a substantial distance from an adjacent side wall and from the loading end of said body,

pivot means connecting said hinge end portion to said upper and lower decks whereby said first and second vertical door panels may be folded together and hingedly moved to a position parallel to an adjacent side wall,

said locking device including a housing of hat shape, and having an intermediate flange and two oppositely extending flanges fastening said housing to said first door panel,

a lever movablely mounted on and projecting inwardly through said housing including a handle portion and a keeper engaging portion,

said first panel having an opening and said keeper engaging portion projection through said opening,

biasing means comprising spring means urging said keeper engaging portion to a locking position, and

a keeper member connected to second panel coacting with said keeper engaging portion locking said first and second panels in a folded position.

4,324,190

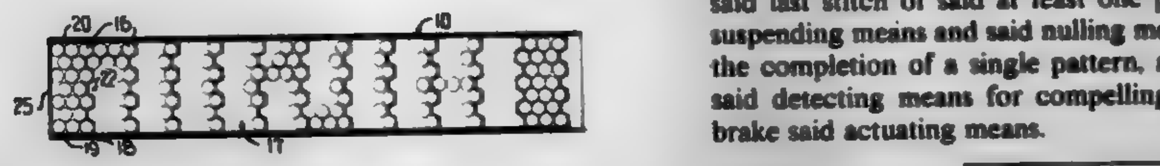
PALLET AND METHOD OF LOADING VEHICLES UTILIZING SAME

Norman S. Hewitt, Chicago, Ill., assignor to The Continental Group, Inc., Stamford, Conn.

Filed Apr. 8, 1980, Ser. No. 138,398

Int. Cl.³ B65D *19/24*

U.S. Cl. 108—51.1 **9 Claims**



1. A pallet particularly adapted for holding plural cylinderical items arranged in adjacent parallel rows with items of adjacent rows being offset in the direction of said row and internested, said pallet having remote sides and ends, said sides extending longitudinally and and continuous in the intended row direction and being parallel, and said ends extending generally transversely of said row direction, at least one of said ends including plural first edge portions disposed in transversely alternating longitudinally offset parallel relation with there being one first edge portion for each intended row, and diagonal second edge portions positioned to bridge adjacent intended rows and joining adjacent ones of said first edge portions.

4,324,191

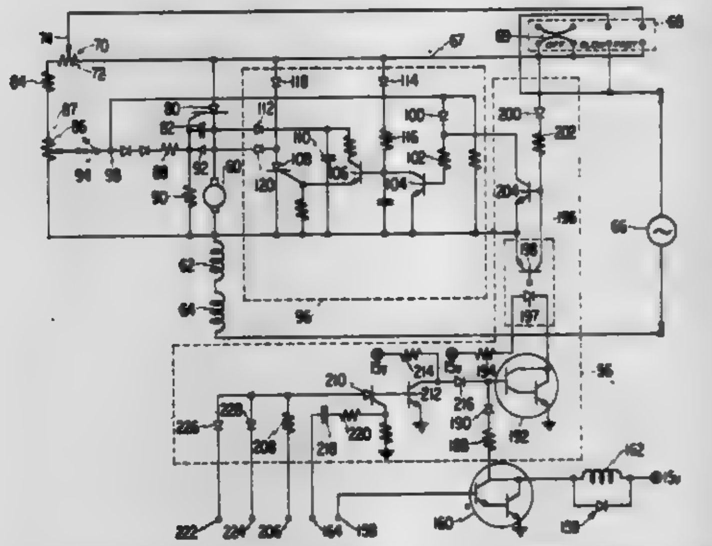
AUXILIARY SEWING MACHINE MOTOR BRAKING

Jack Brown, Union, N.J., assignor to The Singer Company, Stamford, Conn.

Filed Jun. 8, 1981, Ser. No. 271,446

Int. Cl.³ D05B *69/22, 3/02*

U.S. Cl. 112—277 **3 Claims**



1. An auxiliary sewing machine motor braking arrangement for an electronically controlled sewing machine having a frame supporting an endwise reciprocatory and laterally oscillatable needle carrying needle bar, means for selectively suspending endwise reciprocatory motion of said needle bar, a feed system for feeding a work material through said sewing machine at a selected rate in a selected direction, means for selectively nulling feeding of said work material through said sewing machine, means for urging said needle bar to selective lateral positions, means for constraining said feed system to feed work material at a selected rate in a selected direction, means for selectively actuating said needle bar into endwise reciprocatory motion and said feed system into feeding motion, means for electrically braking said actuating means when actuation thereof is not selected, a solid state memory means for retaining digital code words representative of needle stitch position and of feed increment from a previous stitch position of a sequence of stitches for at least one pattern having an identifiable beginning and last stitch, means for selecting implementation of a single pattern terminating in said last stitch, an arm shaft actuated by said actuating means and making one revolution for each endwise reciprocatory movement of said needle bar, an arm shaft position sensing means for timing the release of needle position and feed increment information from said memory to said urging and said constraining means for implementing said stitches to form said pattern, means responsive to selection of said single pattern selecting means and to said last stitch of said at least one pattern for enabling said suspending means and said nulling means, means for detecting the completion of a single pattern, and means responsive to said detecting means for compelling said braking means to brake said actuating means.

4,324,192

DEVICES FOR SETTING A SAIL

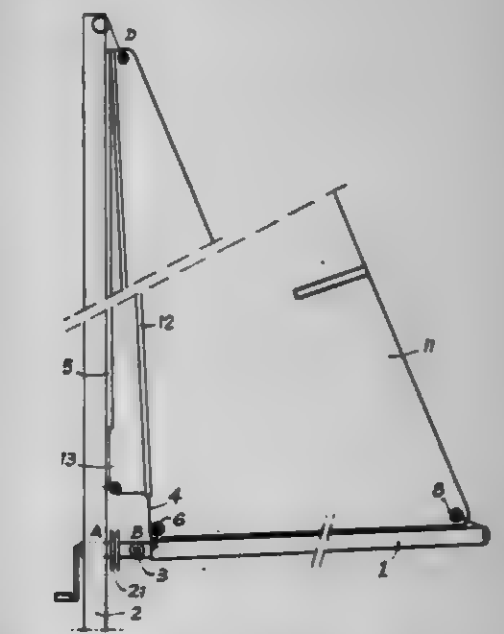
Pierre Ingouf, 131, rue de la Sante, Paris, France (75013)

Filed Nov. 5, 1979, Ser. No. 91,133

Claims priority, application France, Nov. 7, 1978, 78 32049

Int. Cl.³ B63H *9/04*

U.S. Cl. 114—106 **5 Claims**



1. A device for setting, maintaining and rolling up a sail of the type comprising a mast, a boom connected to the mast by a universal joint and associated with a device for driving it in rotation and at least one bolt rope tunnel extending generally along and spaced from the mast to receive a bolt rope borne by the corresponding edge of the sail wherein said bolt rope tunnel extends from the head of the mast toward a point of the boom which is located outside the universal joint with respect to the mast, said bolt rope tunnel being borne by a connecting member mounted on said mast for rotation about a vertical axis and extending over the area between the mast and said bolt rope tunnel.

4,324,193

METHOD FOR SNUBBING OR RESTRAINING A CABLE

Christopher R. Cutler, Houston, Tex., assignor to Exxon Production Research Company, Houston, Tex.

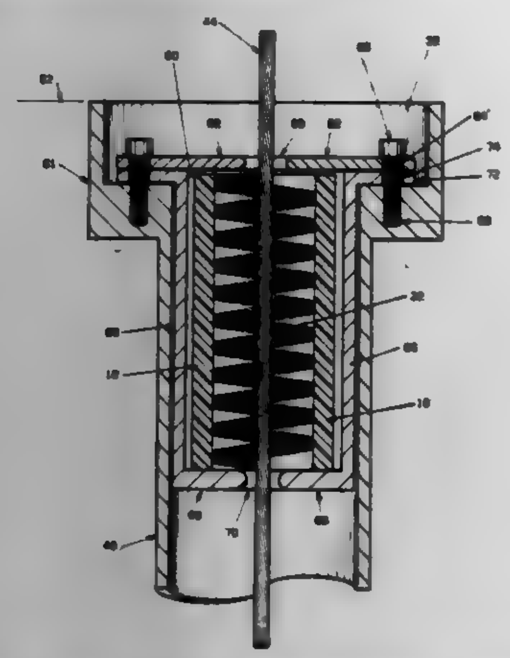
Filed Jun. 20, 1979, Ser. No. 50,406

Int. Cl.³ B63B *21/08*

U.S. Cl. 114—199 **8 Claims**

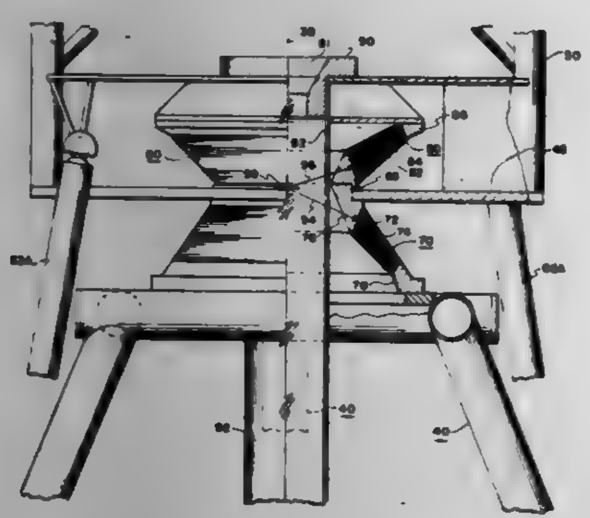
1. In towing a floating vessel by a ship wherein a cable, which is not used to tow the vessel, is in communication with the ship and the floating vessel such that an exposed portion of the cable extends from the ship to the vessel and a second portion of the cable passes through the structure of the vessel, the improved method for maintaining slack in the exposed portion of the cable comprising the steps of

attaching a plurality of flexible elements to a sleeve with the exposed ends of the flexible elements extending from the wall of the sleeve inwardly into an annulus formed by the inner surface of the sleeve in contact with the surface of the second portion of the cable,



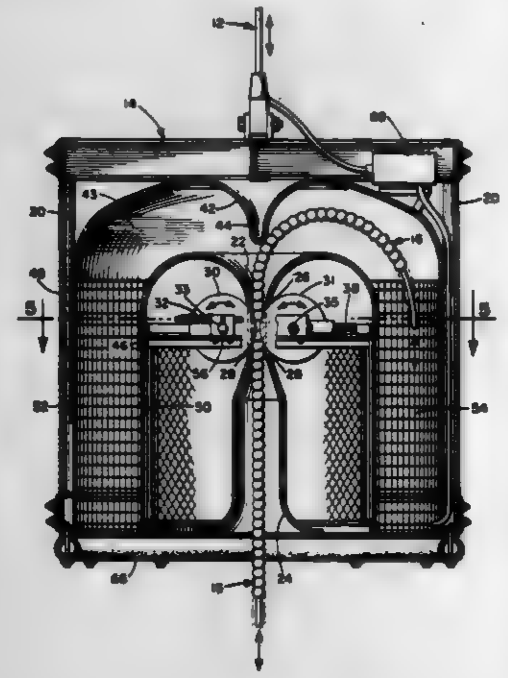
placing the sleeve in an embracing relation about the second portion of the cable such that the second portion of the cable extends through the annulus of the sleeve, and
affixing the sleeve to the vessel.

4,324,194
STABILIZED HOIST RIG FOR DEEP OCEAN MINING VESSEL
Thomas L. Elliston, Fort Worth, Tex., assignor to Hydra-Rig, Inc., Fort Worth, Tex.
Continuation of Ser. No. 748,839, Dec. 10, 1976, Pat. No. 4,200,054. This application May 21, 1979, Ser. No. 40,972
The portion of the term of this patent subsequent to Apr. 29, 1997, has been disclaimed.
Int. Cl.³ B63B *35/44*
U.S. Cl. 114—264 4 Claims



3. In a vessel of the type including a hoist rig for supporting a string of pipe in pendulous suspension, a bearing member disposed intermediate the hoist rig and the vessel for supporting the hoist rig and a pipe string suspended therefrom, the bearing member comprising a first annular section of a substantially spherical laminated body of superposed layers of an elastic material and a relatively inelastic material to permit angular displacement of the hoist rig with respect to the vessel and a second annular section of a substantially spherical laminated body of superposed layers of an elastic material and a relatively inelastic material spaced axially from said first annular section with respect to the longitudinal axis of said string of pipe to permit angular displacement of the hoist rig with respect to the pipe string.

4,324,195
TENDER FOR SUBMARINE CABLE
Frank D. Cunningham, Tequesta; Michael A. Witt, Palm Beach Gardens, both of Fla., and Robert M. Hill, Katy, Tex., assignors to Perry Oceanographics, Inc., Riviera Beach, Fla.
Filed Sep. 22, 1980, Ser. No. 189,657
Int. Cl.³ B63F *8/00*
U.S. Cl. 114—312 12 Claims

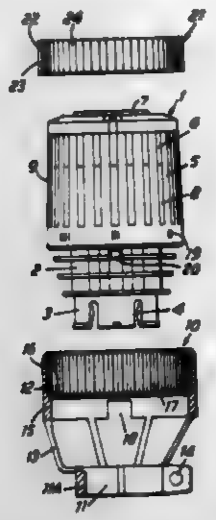


1. A tether tender for paying out and taking in an elongated underwater tether cable comprising a frame member having:
an upwardly facing inner funnel with a generally vertical central guide tube opening and a generally circular periphery outwardly curved therefrom;
a dome member spaced above said inner funnel and having a surface facing downwardly toward said inner funnel with a central projecting portion extending toward said guide tube opening and a generally circular periphery outwardly and downwardly curved therefrom;
an inner wall extending downwardly from said inner funnel periphery and an outer wall extending downwardly from said dome periphery, said inner and outer walls defining an annular storage area therebetween; and
power operated tether driving means associated with said central guide tube for frictionally engaging and axially moving an underwater tether cable passing therethrough.

4,324,196
THERMOSTAT ATTACHMENT FOR A RADIATOR VALVE
Aage Molgaard, Nordborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark
Filed Aug. 14, 1980, Ser. No. 178,101
Claims priority, application Fed. Rep. of Germany, Aug. 14, 1980, 2932884
Int. Cl.³ F16K *27/08*
U.S. Cl. 116—277 9 Claims

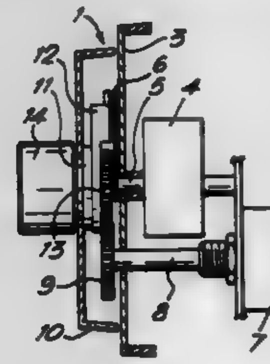
1. A thermostat unit adapted to be attached to a radiator valve having a rotatable adjusting spindle and a surrounding ring shaped housing portion, comprising, a rotary knob unit having a generally cylindrically shaped body portion and a

smaller diameter neck portion for engaging a valve adjusting spindle, and a base unit having a supporting ring portion and a



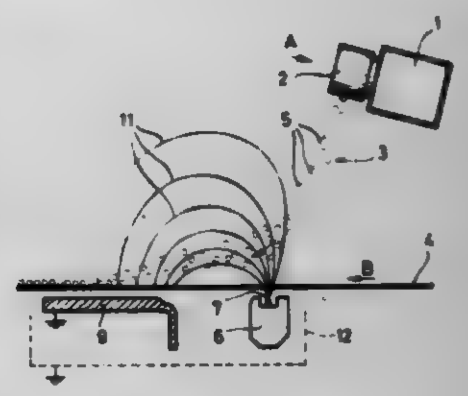
tightening ring portion which surrounds said knob unit neck portion and is attachable to a valve housing.

4,324,197
INSTRUMENT ASSEMBLY
Ronald H. Parfitt, 88 Broadway, Letchworth, Hertfordshire, England
Filed Aug. 11, 1980, Ser. No. 176,730
Int. Cl.³ G01D *13/22*
U.S. Cl. 116—300 7 Claims



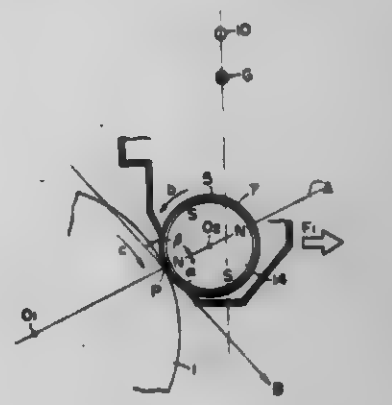
1. A control instrument comprising a housing, a single scale fixedly mounted on a face of said housing, two value indicator elements both positioned in front of said scale and rotatable independently of each other over the scale and about a common axis, one of the indicator elements being an actual value indicator element and the other of the indicator elements being a set-point indicator element, the scale having a series of graduations extending around at least 180° of a circle centered on said common axis, meter means mounted within said housing and operatively connected to the actual value indicator element for moving it to rotational positions around said axis in response to corresponding inputs to said meter means, control signal output means also mounted within said housing, a manually operable rotatable control knob centered on said axis and directly connected to said set-point indicator element for moving it to rotational positions around said axis so that the number of degrees of rotation of said set-point indicator element in response to a given amount of rotation of said control knob is the same regardless of the angular position of said set-point indicator element, and means mechanically connecting said set-point indicator element to said control signal output means to obtain a control signal output corresponding to a given position of said set-point indicator element.

4,324,198
DEVICE FOR THE ELECTROSTATIC APPLICATION OF MATERIAL PARTICLES ENTRAINED IN A STREAM OF GAS TO AN ADVANCING, FLAT SUBSTRATE
Edwin Muz, Reutlingen, Fed. Rep. of Germany, assignor to Weitman and Konrad GmbH & Co. KG, Fed. Rep. of Germany
Filed Aug. 20, 1980, Ser. No. 179,804
Claims priority, application Fed. Rep. of Germany, Sep. 12, 1979, 2936754
Int. Cl.³ B05B *5/02*
U.S. Cl. 118—630 3 Claims



1. Device for the electrostatic application of particles emerging from a source and being entrained in a stream of gas to an advancing, flat substrate in the form of webs or sheets of electrically non-conductive material, the particles being deposited from the source above said advancing substrate, characterized by the following features:
(a) The stream of gas (3) carries electrically neutral material particles (5) with it;
(b) beneath the advancing substrate (4) in the area of the position of impingement of the gas stream on the substrate is located at least one charging electrode (6) for the production of a corona discharge;
(c) at least one counterelectrode (9) is located below said substrate in the direction of advance (B) of the substrate at a distance from the charging electrode (6).

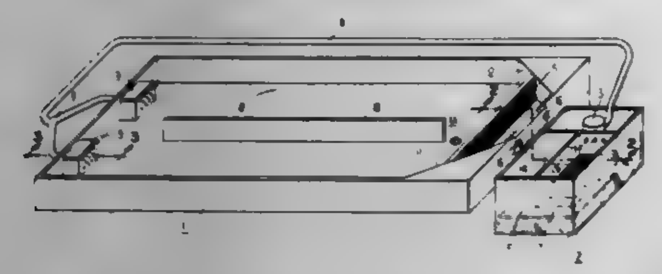
4,324,199
DEVELOPING DEVICE
Teruo Morikawa, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Feb. 15, 1980, Ser. No. 121,658
Claims priority, application Japan, Feb. 20, 1979, 54/19303
Int. Cl.³ G03G *15/09*
U.S. Cl. 118—658 17 Claims



1. A developing device for imparting toner to a latent image on a rotating image bearing member to form a visible image, comprising:
a rotatable developer holding cylinder for holding developer on a portion of the cylindrical surface thereof;
means for maintaining said surface portion in a predeter-

mined spaced relation with said image bearing member, said maintaining means including pressure applying means for resiliently urging said developer holding cylinder toward said image bearing member for maintaining said predetermined space constant;
engaging means on said cylinder for contacting said rotating image bearing member to provide a drive force for transmitting the rotational movement of said image bearing member to said developer holding cylinder;
a developing device box for supporting said developer holding cylinder; and
holding means for freely suspending and holding said developing device box;
wherein the position for said holding means to suspend and hold said developing device box is set within the area of an obtuse angle formed by a line passing from the center of said image bearing member to the center of said developer holding cylinder and a line of action through which said drive force acts at the portion of contact between said image bearing member and said engaging means of said developer holding cylinder.

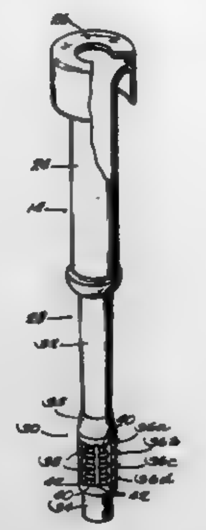
4,324,200
METHOD AND APPARATUS FOR GROWING HYDROZOA
E. Marshall Johnson, Philadelphia, Pa., assignor to Rockhill Enterprises, Philadelphia, Pa.
Filed Feb. 8, 1980, Ser. No. 119,658
Int. Cl.³ A01K *61/00*
U.S. Cl. 119—2 32 Claims



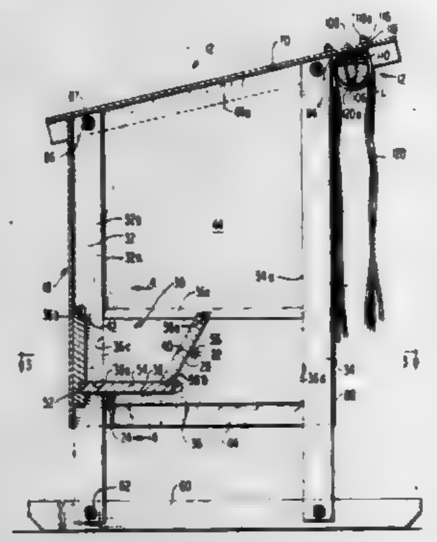
1. Method for growing hydrozoa which produce offspring having a specific gravity substantially equal to unity, comprising the steps of:
providing a liquid medium consisting chiefly of water in which said hydrozoa can live and reproduce by budding;
providing a wide, shallow, substantially elongated flat-bottomed tank having a roughened bottom surface for containing said medium;
establishing an initial population of hydrozoa in said medium;
periodically feeding said hydrozoa;
permitting said offspring to float to the surface of said medium; and
providing a current in said medium from a source at one end of said tank to overflow means at the other for collecting said offspring on a net disposed in said current.

4,324,201
MILKING INFLATION
Leigh R. Larson, Johnson Creek, Wis., assignor to Hi-Life Rubber, Inc., Johnson Creek, Wis.
Filed Nov. 13, 1980, Ser. No. 206,384
Int. Cl.³ A01J *5/04*
U.S. Cl. 119—14.51 8 Claims

1. A milking inflation made from a flexible material and having a tubular body including a shell end portion adapted to be slipped onto a nipple on the claw of the milking machine, said claw end portion having a substantially constant inside diameter and a thickened wall section in the region near the outer end of the claw nipple, said thickened wall section having an outer surface and including a plurality of axially-spaced, circumferentially-extending rows of external recesses extending inwardly from said outer surface, each of said rows including a plurality of said recesses which are circumferentially spaced and are separated by a segment of said thickened wall section, said recesses imparting flexibility to said thickened wall section so that the inner wall thereof can sealingly engage the outer end of the claw nipple to shut off communication between the claw and the inflation.

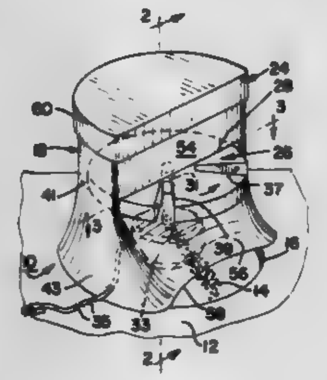


4,324,202
KNOCK DOWN WEATHER AND SALT RESISTANT SALT AND MINERAL FEEDER FOR CATTLE
Jimmy B. Stonestreet, Rte. 2A, Box 127, Boyce, Va. 22620, and John M. Rohrbaugh, 15125 Braddock Rd., Centerville, Va. 22020
Filed Mar. 4, 1981, Ser. No. 240,352
Int. Cl.³ A01K *5/01*
U.S. Cl. 119—51 R 8 Claims



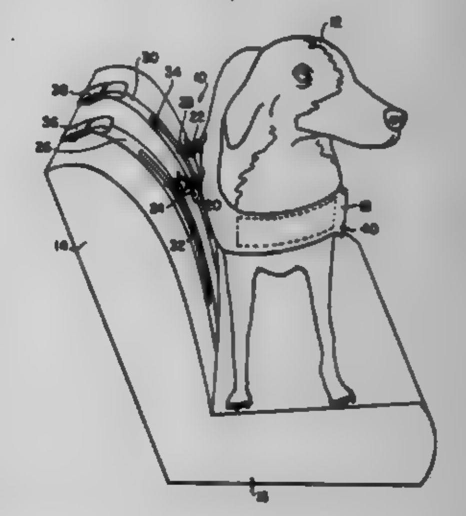
1. A knock down salt and mineral feeder for cattle and the like, said feeder comprising:
two oppositely facing sidewall subassemblies,
a rear wall subassembly,
each sidewall subassembly comprising:
front and rear vertical posts,
an elongated trough sideboard spanning between said posts and mortise and tenon connected thereto at respective ends thereof,
said rear posts bearing a vertical mortise slot on an inside face thereof,
a horizontal mortise slot within the inner face of said trough sideboard and extending forwardly from a rear edge thereof and including a horizontal mortise slot extension portion within said rear post intersecting with said vertical mortise slot,
an inclined mortise slot within said trough sideboard and extending from said horizontal mortise slot at the forward end thereof to the top of said trough sideboard and being inclined upwardly and outwardly towards said front post,
a side panel fixed to the outside of said front and rear posts and said trough sideboard and extending from the top of said posts to the bottom of said trough sideboard,
said rear wall subassembly comprising:
a rear panel corresponding in height to that of said sidewall subassembly side panels,
a trough rearboard fixed to the inside of said rear panel, being coplanar therewith and extending across a portion of said rear panel and terminating in tenons at each end thereof and fitted to said rear post vertical mortise slots,
said rear panel being of a length and positioned such that the ends of said rear panel overlap the ends of said respective side panels,
said trough rearboard including a horizontal mortise slot within the inner face thereof near the bottom of said trough rearboard,
a trough bottom board having a longitudinal edge fitted within said horizontal mortise within said rear board and ends fitted within said horizontal mortise slots within said side boards, and
rods extending through said sidewall assemblies at said trough sideboards, and
nuts threaded to the ends of said rods outside of said side wall subassemblies side panels to lock said sidewall subassemblies to said rear wall subassembly with said trough bottom and front boards within respective mortise slots to form, with said trough sideboards and rearboard, an upwardly open salt and mineral trough at the rear of said feeder and remote from an open front thereof integrated with said sidewall and rear wall assemblies,
said feeder further comprising a roof subassembly, said roof subassembly comprising:
a rectangular roof panel having a lateral width in excess of the width of said rear wall subassembly rear panel,
a pair of sideboards extending along the lateral side edges of said roof panel and being fixed to the bottom of said roof panel, and
means for bolting said sideboards to the upper ends of said posts, with said roof panel overhanging the open front of said feeder, thereby permitting quick and easy on site assembly of said feeder, while permitting shipment of said feeder as stacked components in compact fashion, prior to onsite assembly.

4,324,203
ANIMAL FEEDING APPARATUS
Arthur B. Chiappetti, Chicago, Ill., assignor to Bernard L. Kleinke, Palatine, Ill., a part interest
Filed Feb. 4, 1980, Ser. No. 118,163
Int. Cl.³ A01K *5/02*; G01F *11/00*
U.S. Cl. 119—51.11 3 Claims



1. In an animal feeding apparatus having means defining a storage compartment in a housing for confining animal food items and having a mechanism for dispensing the food items from the storage compartment for feeding purposes, an arrangement comprising:
said means defining a compartment having a wall transverse to the vertical axis thereof, the housing having a front face, said front face having means defining an opening disposed above the wall communicating with the interior of the storage compartment, the mechanism having a rotatably mounted member being disposed partially within the storage compartment and extending outwardly from the interior of said storage compartment through said opening, said member having at least one receptacle therein for receiving food items from the compartment, motive means drivingly connected to said member for rotating it about its axis to push food items carried in said receptacle from within said compartment outwardly through said opening for feeding purposes; said rotatably mounted member being a disc member, the vertical central axis of the disc member about which it rotates being disposed near said opening; said receptacle being an open notch therein for receiving food items falling therein within the compartment;
said member including a second receptacle spaced angularly from the first-mentioned receptacle, the receptacles being wedge-shaped open notches;
said motive means including an output shaft turning at the rate of one revolution per twenty-four hours;
said motive means being an electric motor;
said disc member being generally horizontally disposed and being generally circular in shape, said compartment being generally cylindrical and semi-circular in cross section throughout the axial length thereof; and
said housing having an outwardly flared hollow base portion surrounding said motor, said base portion having a front inwardly smoothly-contoured external dished portion disposed below and depending from said opening in said housing for guiding the stream of food items falling from said receptacles therein.

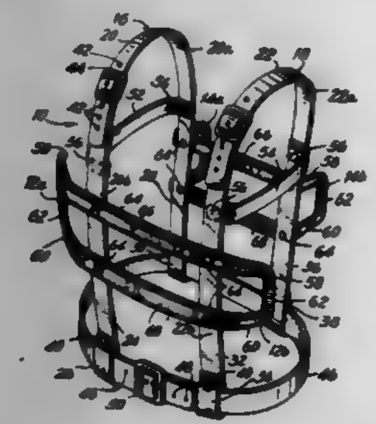
4,324,204
ANIMAL SAFETY RESTRAINT FOR VEHICLES
Michael E. Friedman, 428 Mount Olive Dr., Bradbury, Calif. 91010
Filed Aug. 18, 1980, Ser. No. 178,743
Int. Cl.³ A01K *3/00, 27/00*
U.S. Cl. 119—96 7 Claims



1. A safety restraint for securing an animal to the seat of a vehicle comprising the combination of a pair of elongated elements adapted to be secured to the back of a seat of a vehicle in spaced-apart relation so as to be generally vertically disposed, a harness adapted to receive a substantial portion of the body of an animal and a pair of releasable fasteners coupled to different portions of the harness, each of the fasteners being adapted to be releasably fastened to a different one of the elongated elements, the pair of fasteners being coupled to the harness adjacent the center of the shoulder and the center of the flank of an animal received by the harness to confine the

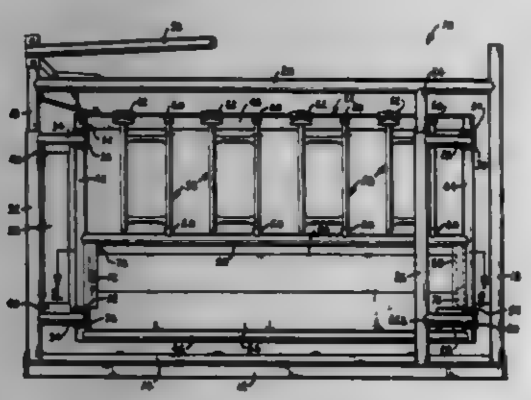
animal to positions in which the shoulder and the flank of the animal remain adjacent the back of a seat to which the pair of elongated elements are secured.

4,324,205
SAFETY HARNESS
Jerome Goldmacher, 12 Sheppard La., Stony Brook, N.Y. 11790
Filed Aug. 12, 1980, Ser. No. 177,290
Int. Cl.[3] A62B *35/00*
U.S. Cl. 119—96 12 Claims



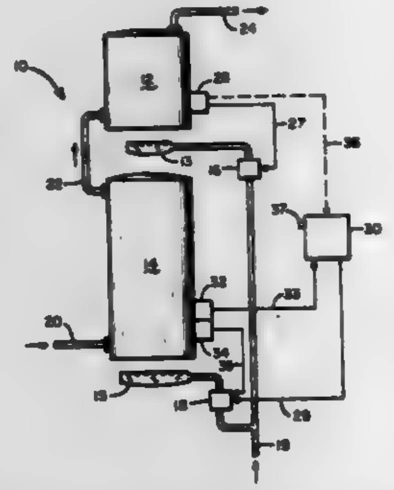
1. A safety harness adapted to be worn by a lead rider such as a motorcyclist or the like and adapted to be gripped by a pillion or tandem rider, said safety harness comprising:
elongated first and second strap members each having a central portion that is adapted to pass over the right and left shoulders, respectively, of the lead rider and front and rear strap portions that terminate at respective end portions proximate the right and left sides of the waist of the lead rider when the harness is being worn; and
a plurality of pairs of hand grip members, each of said hand grip members being integral with said front and rear strap portions at a location that is intermediate said central and said front and rear end portions thereof, respectively, to thereby define front and rear pairs of gripping members, when the harness is worn said front pair of gripping members being located proximate the chest of the lead rider and the rear pair of gripping members being located proximate the back of the lead rider,
whereby with equal facility, the pillion rider may grasp either the front or the rear pairs of gripping members.

4,324,206
PANEL MOUNTING ARRANGEMENT FOR SQUEEZE CHUTES
Laurence B. Pearson, Thedford, Nebr., assignor to Pearson's Inc., Thedford, Nebr.
Filed Jul. 7, 1980, Ser. No. 166,342
Int. Cl.[3] A61D *3/00*
U.S. Cl. 119—99 9 Claims



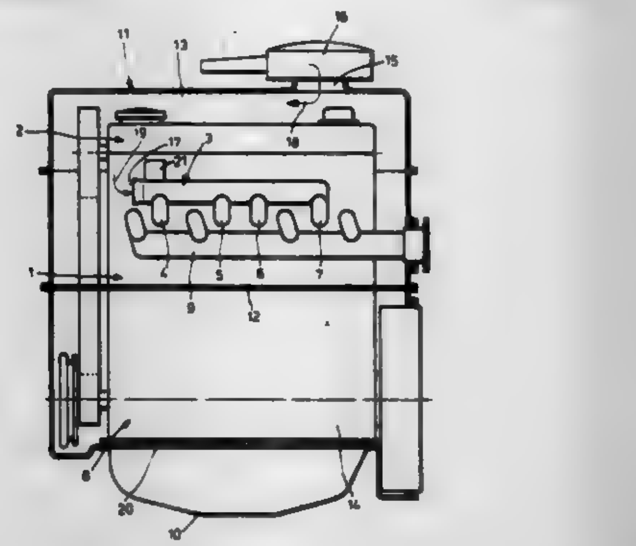
1. In a livestock squeeze chute having a pair of spaced apart sides movable toward and away from one another for squeezing of an animal therebetween and a pair of generally vertical bars on at least one of the sides, the improvement comprising:
a panel having opposite ends and a length dimension less than the distance between the vertical bars;
a first pair of panel retaining elements on one of the bars spaced apart from one another sufficiently to receive one end of said panel therebetween;
a second pair of panel retaining elements on the other of the bars spaced apart from one another sufficiently to receive the other end of said panel therebetween;
said first and second pairs of retaining elements being spaced sufficiently to permit insertion of said one end of the panel into the space presented between said first pair of retaining elements and movement of said other end of the panel past an edge portion of one of the retaining elements in said second pair into alignment with the space presented between said second pair of retaining elements; and
cam means for shifting said panel in a direction longitudinally of the panel to effect entry of said other end of the panel into the space presented between said second pair of retaining elements with said one end of the panel remaining between said first pair of retaining elements, whereby the retaining elements retain said panel on said at least one side of the squeeze chute.

4,324,207
ENERGY EFFICIENT WATER HEATER
John E. Leuthard, 8735 Penn Ave. South, Minneapolis, Minn. 55431
Filed Jul. 25, 1980, Ser. No. 172,088
Int. Cl.[3] F22B *37/42*
U.S. Cl. 122—448 B 10 Claims



1. Apparatus for heating hot water according to predetermined quantity and time allotments, comprising:
(a) a first water tank and heater coupled to a water source;
(b) first and second thermostats for sensing water temperature in said first water tank;
(c) a second water tank and heater coupled to said first water tank, and having a hot water outlet;
(d) third thermostat for sensing water temperature in said second water tank;
(e) first and second means for respectively energizing said first and second heaters;
(f) means for coupling said third thermostat to said second means for energizing, for controlling said second heater in response to said third thermostat; and
(g) a control network having timing means therein, coupled to said first thermostat and to said means for energizing said first heater, whereby said first thermostat controls said first heater during a first time interval and said second thermostat controls said first heater during a second time interval.

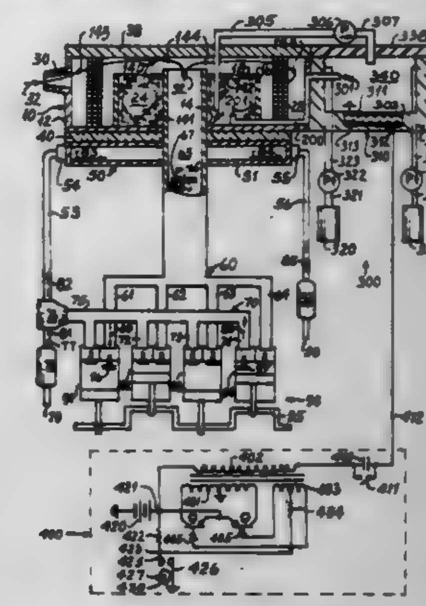
4,324,208
INTERNAL COMBUSTION ENGINE WITH A SOUND INSULATING CASING
Hermann Danckert, and Helmut Leptien, both of Wolfsburg, Fed. Rep. of Germany, assignors to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Fed. Rep. of Germany
Continuation of Ser. No. 952,488, Oct. 18, 1978, abandoned. This application May 21, 1980, Ser. No. 151,880
Claims priority, application Fed. Rep. of Germany, Oct. 29, 1977, 2746896
Int. Cl.[3] F02B *77/02*
U.S. Cl. 123—195 C 7 Claims



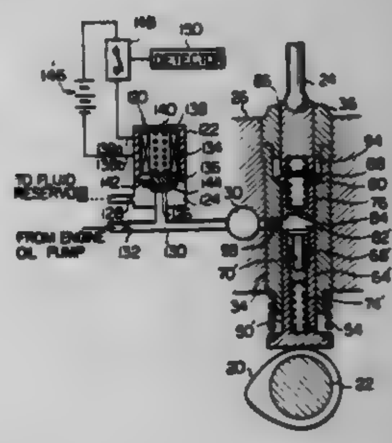
1. In an engine comprising:
(a) an internal combustion engine having,
(1) at least one intake pipe for receiving air for combustion that has passed through an air filter,
(2) at least one fuel metering device, and
(3) at least one exhaust pipe; and
(b) a sound insulating casing with at least one air inlet opening, which encloses a space adjacent to said engine which includes the region of said intake pipe; the improvement wherein said casing is closed to the atmosphere with the exception of the said inlet opening, wherein an air filter is coupled to said inlet opening for filtering air passing through said inlet opening into the interior of said casing, wherein said intake pipe comprises an intake manifold within said casing, said manifold having a single air intake for supplying air to a plurality of cylinders, and wherein said inlet opening and the air intake of said intake manifold are arranged in such a manner that the air which flows between said inlet opening and said air intake passes over and cools parts of said engine which are to be cooled.

4,324,209
FUEL AND WATER HOMOGENIZER AND VAPORIZER AND METHOD THEREFOR
Martin E. Gerry, 13452 Winthrope St., Santa Ana, Calif. 92705
Continuation-in-part of Ser. No. 972,953, Dec. 26, 1978, Pat. No. 4,227,817. This application May 27, 1980, Ser. No. 153,612
Int. Cl.[3] F02M *25/04*; F02B *47/02*
U.S. Cl. 123—25 B 14 Claims

2. A fuel and water homogenizer, and a vaporizer fitted to an engine, said engine developing motive power, comprising the combination of:
homogenizing means for creating a fluid of homogenized liquid fuel and water, said homogenizing means including a vessel fed by said liquid fuel and water, and transducing means, retained by and located within said vessel, for transducing AC electrical energy to vibrations so as to convert said liquid fuel and water into said homogenized fluid;
fuel and water retaining means, coupled to said homogenizing means, for providing said liquid fuel and water to said homogenizing means; and
vaporizing means, coupled to the homogenizing means, for receiving said fluid, said vaporizing means including a compartment having diffusing means therein for vaporizing said fluid, the vaporized fluid combining with an air stream for injection into said engine.



4,324,210
HYDRAULIC VALVE LIFTER AND FLUID PRESSURE CONTROL DEVICE THEREFOR
Syunichi Aoyama, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan
Filed Jul. 9, 1979, Ser. No. 55,757
Claims priority, application Japan, Jul. 19, 1978, 53-88141; Feb. 20, 1979, 54-21493[U]
Int. Cl.[3] F01L *1/14*
U.S. Cl. 123—90.55 29 Claims



2. A valve lift control apparatus for an internal combustion engine, comprising a source of fluid pressure variable with operating conditions of the engine and a hydraulic valve lifter which comprises:
a hollow, axially elongated stationary lifter cylinder structure;
a first plunger axially slideable in the lifter cylinder structure and projecting axially outwardly from one axial end of the lifter cylinder structure;
a second plunger axially slideable in the lifter cylinder structure substantially in line with the first plunger and projecting axially outward from the other axial end of the lifter cylinder structure;
a first piston axially movable between the first and second plungers and forming between the first plunger and the first piston a first fluid chamber continuously variable in volume depending upon the axial positions which the first plunger and the first piston assume relative to each other;
a second piston axially movable between the first piston and the second plunger and forming at least in part between

the first and second pistons a second fluid chamber continuously variable in volume depending upon the axial positions which the first and second pistons assume relative to each other; and

passageway means for providing communication between said source of fluid pressure and said second fluid chamber;

the first piston being formed with a hole which is communicable with said first fluid chamber depending upon the axial positions of the first plunger and the first piston relative to each other and which is in constant communication with said second fluid chamber;

the second plunger and the second piston having formed at least in part therebetween a third fluid chamber continuously variable in volume depending upon the axial positions which the second plunger and the second piston assume relative to each other;

the second piston being formed with an orifice providing constant communication between the second and third fluid chambers therethrough;

said first plunger being operative to obstruct and re-establish communication between said hole in said first piston and said first fluid chamber in such a manner that the valve lift and the valve timing of the valve are determined by the timings at which the communication between said hole in said first piston and said first fluid chamber are to be obstructed and re-established by said first plunger.

4,324,211

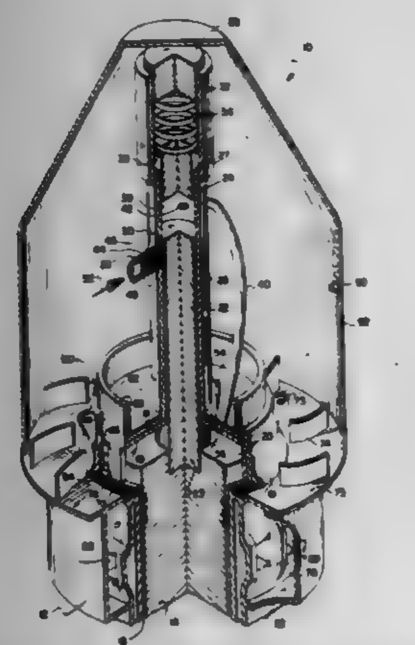
TORCH IGNITION APPARATUS AND METHOD

Grant H. Strong, Richland, Wash., and Kline D. Strong, Salt Lake City, Utah, assignors to Strong Research, Salt Lake City, Utah

Filed Oct. 26, 1979, Ser. No. 88,872

Int. Cl.³ F02B *19/06*

U.S. Cl. 123—143 A **11 Claims**



1. A torch ignition apparatus for an internal combustion engine comprising:

at least one combustion chamber of an internal combustion engine, the combustion chamber comprising a primary combustion chamber and being formed in a cylinder of the internal combustion engine between a piston cooperating in the cylinder and a cylinder head, the piston being operable to compress a first gaseous mixture of fuel and air in the primary combustion chamber;

intake means for introducing the first fuel and air mixture into the combustion chamber, the ratio of fuel to air being lower than necessary to sustain combustion of the first fuel and air mixture in the combustion chamber; and

ignition means for igniting the first fuel and air mixture in the combustion chamber, the ignition means comprising a torch ignition piston extending coaxially from the piston and the ignition means comprises a torch ignition cylinder mounted to the cylinder head and receiving the torch ignition piston, the ignition means further comprising a torch ignition chamber formed in the torch ignition cylinder between the torch ignition piston and a spring-biased torch ignition floating piston, a second fuel and air intake means for introducing a second fuel and air mixture into the torch ignition chamber, and a torch tube extending between the torch ignition chamber and the primary combustion chamber, the torch tube directing the gaseous stream of combustion products from the torch ignition chamber to the combustion chamber, thereby injecting a gaseous stream of combustion products and a supplemental fuel heated above the ignition temperature of the first fuel and air mixture in the combustion chamber into the combustion chamber.

4,324,212

COMPRESSED AIR STARTER

Olof Samuel, Saltsjö-Boo, Sweden, and Heikki Hellemaa, Abo, Finland, assignors to Rederiaktiebolaget Nordstjernan, Stockholm, Sweden and Oy Wartsila AB, Abo, Finland

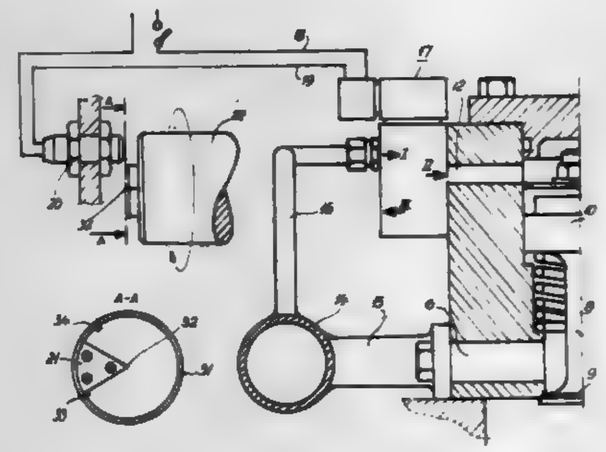
PCT No. PCT/SE79/00086, § 371 Date Dec. 11, 1979, § 102(e) Date Dec. 5, 1979, PCT Pub. No. WO79/00917, PCT Pub. Date Nov. 15, 1979

PCT Filed Apr. 10, 1979, Ser. No. 174,792

Claims priority, application Sweden, Apr. 11, 1978, 7804073

Int. Cl.³ F02N *17/08*

U.S. Cl. 123—179 F **9 Claims**



1. In a compressed air starter for diesel engines wherein a main starting valve is operably arranged in a cylinder head and includes a valve body, which co-operates with a valve seat for opening and closing an inlet for compressed air to the cylinder of the engine, compressed air during the starting operation continuously is supplied to the main starting valve and the valve body has a servo piston, which is controlled by servo air from a supply thereof through a servo supply channel, which servo air acts on the servo piston in correlation with the working phase of the engine, the improvement comprising a magnetic valve operatively connected in the servo supply channel to the main starting valve, said magnetic valve having a valve slide, which in one position connects the supply of servo air with one side of the servo piston to drive the valve body to open the inlet for compressed air to the cylinder, and which valve slide in a second position controls the supply of servo air so that the servo piston drives the valve body to close said inlet, and a transmitter controlled by means in synchronization with the engine crank shaft to emit electrical signals in response to the rotation thereof, said transmitter being operatively connected to said magnetic valve so that said electrical signals control said valve.

4,324,213

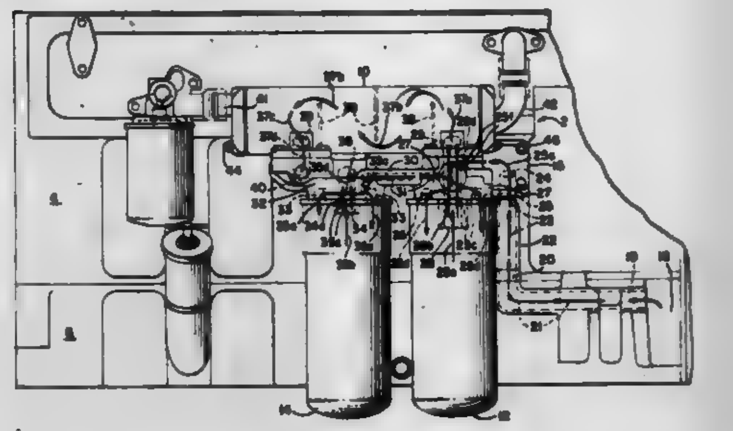
LUBRICATION FLUID FILTERING AND COOLING ASSEMBLY

Edward W. Kasting, Seymour; Richard E. Glasson, and Roy J. Primus, both of Columbus, all of Ind., assignors to Cummins Engine Company, Inc., Columbus, Ind.

Filed Jan. 21, 1980, Ser. No. 113,698

Int. Cl.³ F01M *1/00*

U.S. Cl. 123—196 A **17 Claims**



1. An oil cooler for an internal combustion engine having recirculating oil and coolant circuits, comprising:

(a) an open ended, elongated hollow shell;

(b) a plurality of open ended, elongated coolant flow tubes positioned within said hollow shell generally parallel to the longitudinal axis of said hollow shell;

(c) a pair of tube end support plates mounted adjacent each open end of said hollow shell for supporting said coolant flow tubes in a generally equally spaced apart distribution pattern throughout the interior of said hollow shell, said support plates being connected with one end, respectively, of all said flow tubes in a manner to fluidically seal the interior surface of each said coolant flow tube from its exterior surface except for passage around the radial perimeter of said tube end support plates, each said tube end support plate including an integral circumferential flange which extends axially outwardly beyond the ends of said hollow shell when assembled therewith;

(d) a pair of end caps shaped to be positioned adjacent the open ends of said hollow shell in a manner to form inlet and outlet coolant chambers, respectively, fluidically connected by the interiors of said coolant flow tubes, each said end cap being cup-shaped with the lip thereof being telescopically positioned over one of said integral flanges to contact directly the corresponding ends of said hollow shell and to form a butt joint with the corresponding ends of said hollow shell;

(e) inlet and outlet oil ports positioned in the side wall of said hollow shell for forming an oil flow path within said hollow shell between the exterior surfaces of said coolant flow tubes;

(f) inlet and outlet coolant flow ports positioned in said inlet and outlet coolant chambers, respectively, for forming a coolant flow path through said chambers and the interiors of said coolant flow tubes; and

(g) joining means for permanently bonding the radial perimeters of said support plates with the corresponding ends of said hollow shell to fluidically seal said inlet and outlet coolant chambers along the joined radial perimeters in a manner which prevents nondestructive disassembly of said end caps and said support plates from said hollow shell, wherein the adjacent portions of said hollow shell, said end caps and said support plates are formed of heat weldable material and wherein said joining means includes a circumferential zone of weld material simultaneously joining said butt joints with the corresponding subjacent portions of said corresponding flanges.

4,324,214

COMBUSTION CHAMBER FOR AN INTERNAL COMBUSTION ENGINE

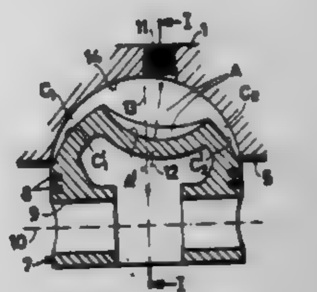
Giampaolo Garcea, Milan, Italy, assignor to Alfa Romeo S.p.A., Milan, Italy

Filed Feb. 26, 1980, Ser. No. 124,944

Claims priority, application Italy, Mar. 8, 1979, 20825 A/79

Int. Cl.³ F02F *3/28*

U.S. Cl. 123—309 **8 Claims**



1. A combustion chamber for a cylinder of a reciprocating internal combustion engine of the type including an engine block defining a cylinder having a piston disposed therein for reciprocating movement, said piston having a pin bore for receiving a piston pin, and an engine head secured to said engine block, said head having formed therein intake and exhaust ducts for said cylinder, the inlet and exhaust valves having heads for selectively closing said intake and exhaust ducts, said combustion chamber lying between a wall provided in said engine head in which are seatable said heads of said inlet and exhaust valves and a crown of said piston, said wall provided in said engine head being essentially in the form of a spherical cup, said combustion chamber being characterized in that said piston crown comprises five wall portions of which:

a first wall portion and a second wall portion are fundamentally convex and form part of a surface in the form of a spherical cap having its center on the piston axis at a point displaced downwards from the center of said spherical cup provided in said head, said first and second wall portions being disposed in proximity to the piston periphery in positions corresponding with the ends of a piston diameter which is parallel to the piston pin bore axis, the surface of one of said first and second wall portions being greater than the surface of the other of said first and second wall portion;

a third wall portion and a fourth wall portion are fundamentally flat and are disposed in proximity to the piston periphery respectively below said inlet valve head and said exhaust valve head, said third and fourth wall portions being joined to said first and second wall portions;

a fifth wall portion fundamentally in the form of a concave cap of a solid of rotation having an axis of symmetry skew to the cylinder axis, said fifth wall portion being disposed in a central part of said piston crown and being joined to said first, second, third and fourth wall portion, the volume of said combustion chamber with the piston at a top dead center position having a greatest thickness in a zone in contact with said fifth wall portion of said piston crown, having an intermediate thickness in zones in contact with said third and fourth wall portions of said piston crown, and having a smallest thickness in zones in contact with said first and second wall portions of said piston crown; and

a sparking device carried by said engine head and having a sparking point in said combustion chamber, said sparking point lying in a plane passing through said piston pin bore axis and said cylinder axis and being offset to one side of said cylinder axis.

4,324,215

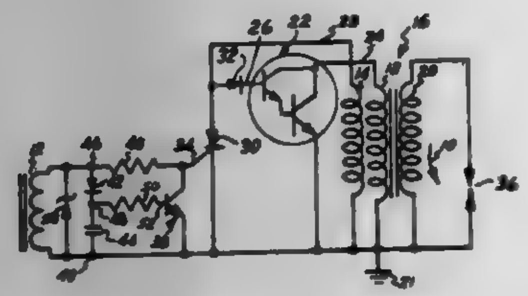
ENGINE SPEED LIMITING CIRCUIT

Norman F. Sieja, Toledo, Ohio, assignor to Eltra Corporation, Toledo, Ohio

Filed Apr. 30, 1980, Ser. No. 145,116

Int. Cl.³ F02P *1/00*; F02A *1/00*

U.S. Cl. 123—335 9 Claims



1. A speed limiting circuit for a magneto ignition system for an engine, including a rotating magnetic field, comprising:

an ignition coil;

a secondary winding of said ignition coil being operably connected to a spark plug;

a primary winding of said ignition coil being magnetically coupled to said secondary winding and having a current therein induced by said magnetic field;

switching means connected to said primary winding for switching said current to cause an ignition pulse at said spark plug;

latching means operatively connected to said switching means for controlling said switching means;

a trigger coil means responsive to said magnetic field and being operably connected to said latching means for providing a trigger signal for energizing said latching means;

shorting means operably connected to said latching means and to said trigger coil means, and responsive to said trigger signal, for shorting said trigger signal for a predetermined interval following a first said trigger signal, to prevent a second said trigger signal within said predetermined interval from being effective to energize said latching means.

4,324,216

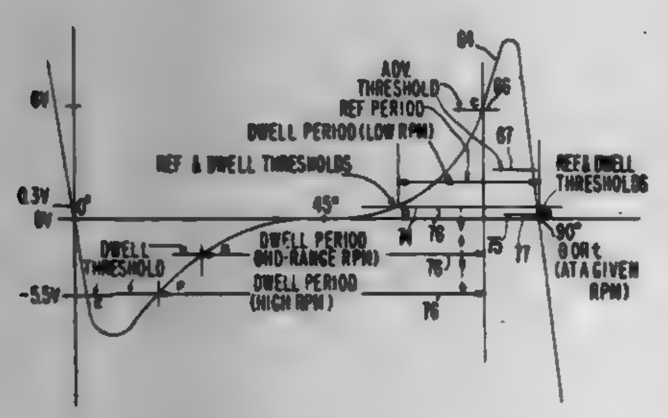
IGNITION CONTROL SYSTEM WITH ELECTRONIC ADVANCE

Nicky M. Johnson, Los Altos, and Lawrence M. Blaser, Mountain View, both of Calif., assignors to Fairchild Camera & Instrument Corp., Mountain View, Calif.

Filed Jan. 9, 1980, Ser. No. 110,736

Int. Cl.³ F02P *5/08, 5/04*

U.S. Cl. 123—415 13 Claims



1. An ignition control system connectable between a sensor responsive to rotation of a rotating element for repetitively supplying an analog timing signal and an ignition coil in which a current pulse repetitively flows, the timing signal consisting of an increasing portion during which its amplitude rises as a function of time from a minimum value substantially continuously to an intermediate value and then from the intermediate value substantially continuously to a maximum value and a subsequent decreasing portion during which its amplitude drops as a function of time immediately from the maximum value substantially continuously to a minimum value, the system having dwell means responsive to the timing signal for generating an initiation signal at a first selected time when a first specified relationship to the timing signal is attained during the increasing portion and for generating a termination signal at a second selected time when a second specified relationship to the timing signal is attained during the decreasing portion and drive means for initiating the pulse in response to the initiation signal and for terminating the pulse in response to the termination signal, characterized by: comparing means for generating an advance signal between the selected times when the timing signal reaches a predetermined threshold amplitude during the increasing portion and for supplying the advance signal to the drive means to cause it to terminate the pulse at a selected advance period of time before the second selected time.

4,324,217

ELECTRONICALLY CONTROLLED IGNITION FOR INTERNAL COMBUSTION ENGINES

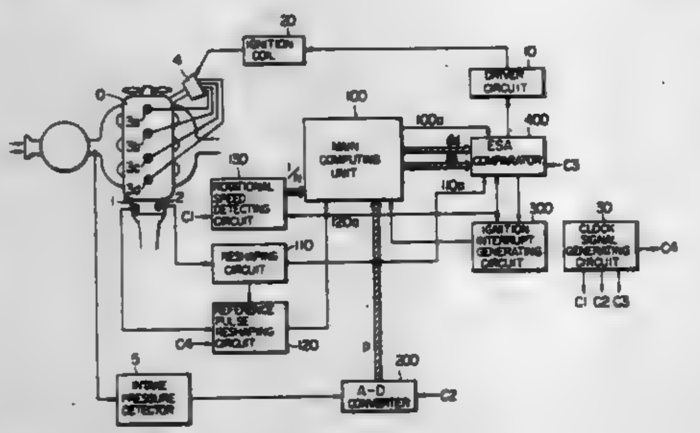
Toshikazu Ina, Okazaki, and Hisasi Kawai, Toyohashi, both of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Nov. 27, 1979, Ser. No. 97,661

Claims priority, application Japan, Dec. 7, 1978, 53-152336

Int. Cl.³ F02P *5/04*

U.S. Cl. 123—417 6 Claims



1. An ignition system for an internal combustion engine having a rotatable output shaft comprising:

an ignition coil energized and de-energized in synchronized relation with a first and second timing signals, respectively, to generate ignition voltages;

a position detector for generating a reference position signal at every arrival of said output shaft at a predetermined reference position;

a periodic pulse generator for generating periodic pulsed signals in each period of time between two successive reference position signals;

a digital computer being programmed to compute a first and second values in synchronized relation with said reference position signal and said first timing signal, respectively, said first value being indicative of the desired ignition coil energization starting timing and computed by using said second value so that an ignition coil energizing period is kept at a desired value, and said second value being indicative of the desired coil de-energizing timing and computed to vary in accordance with operating conditions of said internal combustion engine;

a latch for sequentially latching said computed first value and said computed second value at the respective timings when the computation of the first and second values is completed in said digital computer;

counter means for counting said periodic pulse signals after being reset in synchronized relation with said reference position signal; and

a comparator for sequentially comparing the count output of said counter means with said latched first and second values, said comparator generating said first timing signal to be supplied to said ignition coil and said digital computer when said count output reaches said latched first value and then generating said second timing signal to be supplied to said ignition coil when said count output reaches said latched second value.

6. A method of controlling the generation of an ignition voltage by an ignition coil of an internal combustion engine having an output shaft, said method comprising the steps of:

detecting the arrival of said output shaft of said internal combustion engine at a predetermined rotational position and then generating a reference position signal;

generating a train of periodic signals;

initiating, in response to said reference position signal, the counting by counter means of said periodic signals;

initiating, in response to said reference position signal, the computation by programmed digital computer means of a first delay period between said predetermined position and a desired ignition coil energization starting position to generate a first digital value indicative of said first delay period;

storing said first digital value in storage means of said computer means after the completion of computation of said first delay period;

generating a first signal when the count of said counter means reaches said stored first digital value;

intiating, in response to said first signal, the energization of said ignition coil;

initiating, in response to said first signal, the computation by said programmed digital computer means of a second delay period between said predetermined position and a desired ignition coil de-energizing position to generate a second digital value indicative of said second delay period;

storing said second digital value in said storage means of said computer means in place of said first digital value after the completion of computation of said second delay period;

generating a second signal when the count of said counter means reaches said stored second digital value;

initiating, in response to said second signal, the de-energization of said ignition coil to generate said ignition voltage; and

repeating the sequential operations of the above-described steps.

4,324,218

AIR-FUEL RATIO DETECTING SYSTEM

Tadashi Hattori, Okazaki, and Yoshiki Ueno, Aichui, both of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Continuation of Ser. No. 18,776, Mar. 8, 1979, abandoned. This application Oct. 23, 1980, Ser. No. 199,922

Claims priority, application Japan, May 30, 1978, 53-64710; Jun. 14, 1978, 53-71623

The portion of the term of this patent subsequent to Dec. 9, 1997, has been disclaimed.

Int. Cl.³ F02B *3/08*; F02D *5/00*

U.S. Cl. 123—440 18 Claims

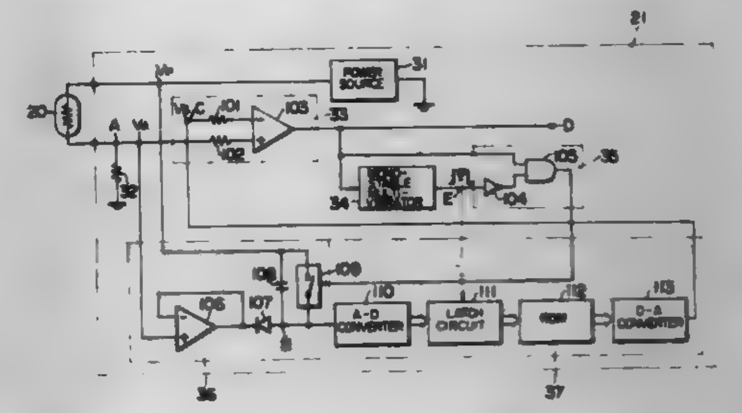
1. An air-fuel ratio detecting system for internal combustion engines comprising:

oxygen detecting means disposed in an exhaust passage of an internal combustion engine for detecting a presence and an absence of oxygen, said oxygen detecting means exhibiting a low resistance and a high resistance in response to said absence and said presence of oxygen respectively;

resistor means connected in series with said oxygen detecting means;

voltage supplying means for supplying a series circuit of said oxygen detecting means and said resistor means with a voltage so that a first and a second voltages are developed at a junction between said oxygen detecting means and said resistor means in response to said low resistance and said high resistance of said oxygen detecting means, respectively;

sampling means for sampling a peak value of at least one of said first and second voltages during a sampling period;



reference establishing means for establishing a reference value related to said sampling peak value of said at least one of said first and second voltages; and

comparing means for comparing said first and second voltages with said reference value.

4,324,219

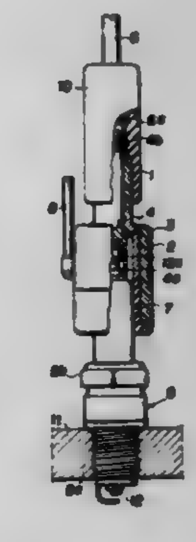
SPARK INTENSIFIER IN GASOLINE ENGINE

Mikio Hayashi, Tokyo, Japan, assignor to Hayashi Seiko Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 12,828, Feb. 16, 1979, abandoned. This application Jul. 14, 1980, Ser. No. 168,528

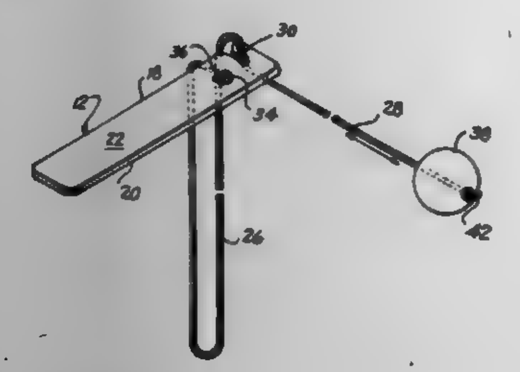
Int. Cl.³ F02P *15/00*

U.S. Cl. 123—620 2 Claims



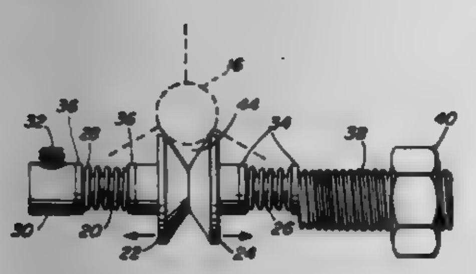
1. A spark intensifier for gasoline engines comprising an insulating cylinder made of a material with excellent heat-resisting and insulating properties and high permittivity, a metallic outer cylinder sheathing said insulating cylinder, a grounding member connected to said outer cylinder, a metallic inner cylinder disposed in said insulating cylinder, and a terminal shaft secured at its central portion to said insulating cylinder and electrically connected to said inner cylinder, said terminal shaft being also electrically connected at its foremost end to a plug cord and at its lower end to a spark plug having a discharge shaft, the said three cylinders comprising a capacitor intermediate the spark plug and the plug cord and in parallel with the discharge shaft of the spark plug, whereby the discharge current of the capacitor is combined with the spark current of the spark plug at the time of sparking, and wherein an insulating end cylinder is surrounded by the lower portion of said insulating cylinder for insertion over the end of the spark plug, the upper end of the insulating end cylinder contacting the metallic inner cylinder and the lower end of the insulating end cylinder contacting said insulating cylinder.

4,324,220
SLINGSHOT-LIKE TETHER TOY
Ronald Joelson, R.R. 1, Chetek, Wis. 54728
Continuation-in-part of Ser. No. 926,739, Jul. 21, 1978, abandoned. This application Mar. 19, 1979, Ser. No. 22,217
Int. Cl.³ F41B *7/00*
U.S. Cl. 124—18 9 Claims



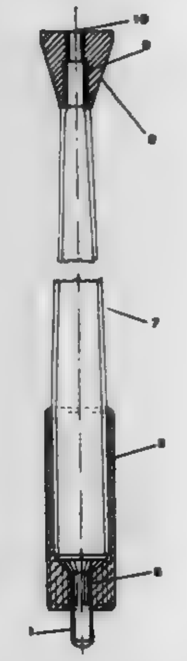
3. A toy which comprises:
a handle;
a projectile means for impacting a target;
a single elastic cord connecting said handle to said projectile means, said elastic cord projecting said projectile means in a path substantially nonparallel to the longitudinal axis of said handle means;
a stop positioning means located on said handle and adapted to engage a stop means;
a stop means positioned along said elastic cord between said handle and said projectile means to catch said elastic cord by engaging said stop positioning means, wherein said handle comprises an elongated handle member having a pair of opposed side surfaces and a pair of edge surfaces connecting said side surfaces, a slot forming said stop positioning means passing through said handle member from one side surface to the other at one end of said handle member and intersecting one edge surface, there being a blind bore in said handle member through one edge, and a hole passing through said handle member intersecting said bore, said elastic cord being connected to said handle member by a passage at one of its ends into the bore which end is knotted and the knot being seated in said hole.

4,324,221
ARROW REST FOR ARCHERY BOW
Paul L. Peck, Box 427, Bryantville, Mass. 02327
Filed Jul. 7, 1980, Ser. No. 166,152
Int. Cl.³ F41B *5/00*
U.S. Cl. 124—24 R 11 Claims



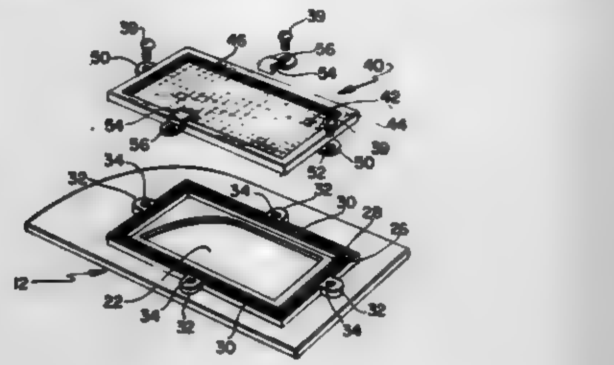
1. An arrow rest for use with an archery bow having a window area, the arrow rest adapted to receive an arrow, and which arrow rest comprises:
(a) a first shaft element adapted to be secured to the archery bow about the window area and to extend generally perpendicularly therefrom;
(b) first and second facing elements slidably mounted for axial, reciprocating movement on the first shaft element, the first and second elements having opposing facing surfaces which define an arrow-receiving notch therebetween, to support an arrow to be propelled by the archery bow;
(c) tension means to bias and urge the first and second facing elements toward each other; and
(d) means to secure the shaft element to the window area of the archery bow, whereby shocks and vibrations occasioned by the vertical and lateral movements of the arrow, during release of the arrow from the bow, will be dampened, as the arrow passes through the arrow-receiving notch of the arrow rest through outward movement of the biased facing elements on the shaft.

4,324,222
VIBRATION DAMPENED FOR ARCHERY BOW
Max Gasser, Neugasse 35, 9442 Berneck, Switzerland
Filed Jul. 24, 1979, Ser. No. 60,133
Claims priority, application Switzerland, Mar. 28, 1979, 2853/79
Int. Cl.³ F41B *5/00*
U.S. Cl. 124—89 7 Claims



1. A stabilizing device for an archery bow comprising:
(a) an elongated conical member;
(b) a sleeve having longitudinal grooves in the exterior surface thereof, said sleeve being pressed onto the proximal end of said elongated member over the outer surface thereof and forming a rigid connection therebetween with said grooves being exposed exteriorly of said elongated member;
(c) screw means, secured to said sleeve and including means for preventing rotation relative to said sleeve, for securing the proximal end of said elongated member to a bow and forming a substantially vibration-free connection therebetween;
(d) a terminal weight member having a self-cutting threaded portion whereby said terminal member is threadably connected to the distal end of said elongated member by relative rotation therebetween forming a substantially vibration-free connection;
(e) said elongated conical member tapering from wide to narrow in the direction of the proximal end to the distal end; and
(f) said sleeve having a sufficient length and said grooves being so presented on the exterior surface thereof to facilitate tight threading of the screw means by hand whereby a vibration-free connection is formed between said elongated member and said bow by manually threading said screw means into a bow.

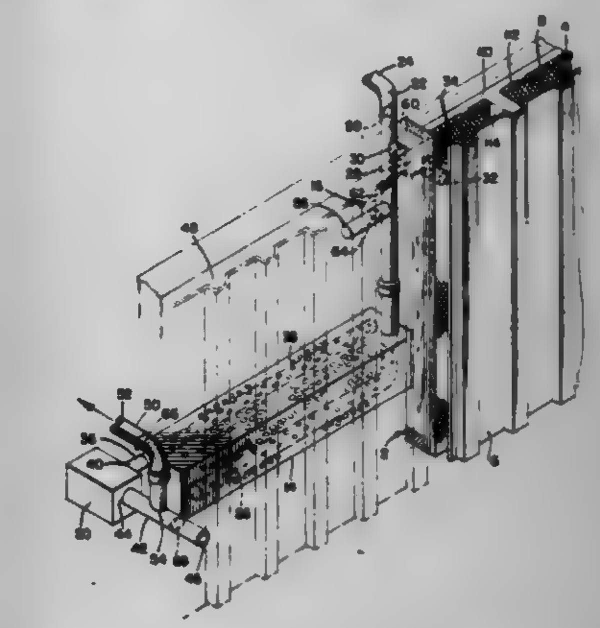
4,324,223
STOVE DOOR CONSTRUCTION
Larry A. Schwartz, Warwick, R.I., assignor to Franklin Industries, Inc., Warwick, R.I.
Filed Dec. 30, 1980, Ser. No. 221,382
Int. Cl.³ F23M *7/00*
U.S. Cl. 126—200 1 Claim



1. A door for wood burning stoves and the like comprising
a. a metallic door having a central opening therein;
b. a raised channeled boss formed on the rear side of said door spaced from said opening and extending substantially therearound;
c. a gasket positioned substantially within said channel and extending substantially around said opening;
d. a plurality of raised mounting posts formed on the rear side of said door adjacent to said boss and spaced around the periphery thereof, each of said posts being raised from the rear surface of said door substantially the same amount as said boss and each having threaded central openings therein;
e. a transparent panel of substantially the same peripheral dimension and configuration as said boss positioned in pressurized engagement with said gasket thereby effecting a cushioned seal between said panel and said boss;
f. a plurality of tabs extending outwardly from the periphery of said panel and positioned therearound to correspond to the positions of at least a portion of said posts around said boss, each of said tabs having central openings therein; and
g. a plurality of bolt means extending through said openings in said tabs and being received in at least a portion of said openings in said posts in threaded engagement therewith to thereby secure said panel to said door.

4,324,224
TEMPERATURE CONTROL SYSTEM
Howard E. Cox, Rte. #2, Box 215c, Hoopeston, Ill. 60942, and Dale L. Rush, P.O. Box 4, Wellington, Ill. 60973
Filed Dec. 10, 1979, Ser. No. 101,568
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—422 3 Claims

1. A temperature control system for a building comprising
a solar collector comprising a heat absorbing panel, a transparent panel spaced from said heat absorbing panel, and an air channel therebetween, said panels extending substantially coextensive with at least a portion of at least one vertical wall of said building;
a heat storage unit;
a plurality of conduits and an air handler for circulating air through said collector and storage unit during a collecting mode at a first predetermined temperature, for exhausting air from said collector and storage unit during a dumping mode at a second predetermined temperature, and for causing air flow through said storage unit into said building during a heating mode at a third predetermined temperature, said plurality of conduits comprising a first conduit one end of which forms a first vent into said building and the other end of which vents into said storage unit, a second conduit one end of which vents into said first conduit and the other end of which vents into one end of said air channel, a third conduit one end of which vents into said storage unit and the other end of which vents into said air handler, a fourth conduit one end of which vents into said air handler and the other end of which vents into the opposite end of said air channel, and a fifth conduit one end of which forms a second vent into said building and the other end of which vents into said fourth conduit, said first conduit including an additional vent into said building between said second conduit and said storage unit; and,
a plurality of dampers including a first damper in said first conduit and positioned between said first vent and said second conduit, a second damper in said second conduit, a third damper in said first conduit and positioned between said second conduit and said storage unit, a fourth damper in said additional vent, a fifth damper in said fifth conduit,



and a sixth damper in said fourth conduit and positioned between said fifth conduit and said air channel, each of said six dampers including a damper motor, said second, third and sixth motors being electrically coupled to a first relay, said first, second, fourth and sixth motors being electrically coupled to a second relay, and said first, third and fifth motors being electrically coupled to a third relay, at least one of said relays being electrically coupled to said air handler in said collecting, heating and dumping modes, and each of said relays being electrically coupled to means for energizing said relays at predetermined temperatures to cause said dampers and said air handler to selectively move to opened and closed positions during said collecting, heating and dumping modes.

4,324,225
SOLAR TRACKING DEVICE
John M. Tribey, 241 Bayswater Rd., Bayswater, Victoria, Australia
Continuation-in-part of Ser. No. 704,674, Jul. 12, 1976, Pat. No. 4,089,323. This application Mar. 3, 1978, Ser. No. 883,313
Claims priority, application Australia, Jul. 11, 1975, PC2334; Apr. 21, 1977, PC9839
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—425 70 Claims

25. Solar conversion apparatus comprising:
concentrating means, including a reflective surface, for concentrating solar energy onto at least one surface,
tracking means for causing the concentrating means to track the sun,
said tracking means including first and second elongate metallic members which are dispose relative to the concentrating means to receive solar energy from said reflective surface to be differentially heated by solar energy when the concentrating means is misaligned with the sun, the differential heating of said metallic members produc-

ing differential thermal linear expansions thereof and drive means for producing tracking movements of said

concentrating means in response to said differential linear expansions of said metallic members.

4,324,226

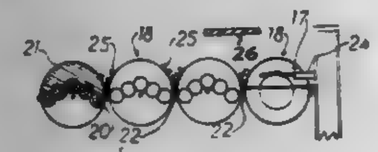
SOLAR ENERGY APPARATUS

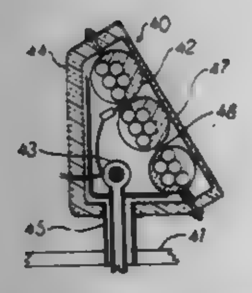
James A. Beck, 3530 St. Johns Ave., Billings, Mont. 59102

Filed May 8, 1980, Ser. No. 147,937

Int. Cl.³ F24J *3/02*

U.S. Cl. 126—429 3 Claims





1. Apparatus for absorbing solar energy including a plurality of energy absorbing members, said energy absorbing members being arranged substantially parallel to and closely adjacent to each other in a row, each energy absorbing member having a generally cylindrical configuration and including a mass of solar energy absorbing material extending substantially to the edges thereof, said energy absorbing material being contained within a plurality of elongated tubes within said energy absorbing members, insulating material disposed on one side of said energy absorbing material, supporting means for said energy absorbing members including frame means providing a unitary assembly, sealing means disposed between adjacent energy absorbing members, said frame means including a housing, said housing including air circulating means associated with said energy absorbing members, means for interconnecting said energy absorbing members, means for moving said interconnected energy absorbing members in a coordinated manner from an energy absorbing position to an energy radiating position; whereby air flows through said housing and around said energy absorbing members.

4,324,227

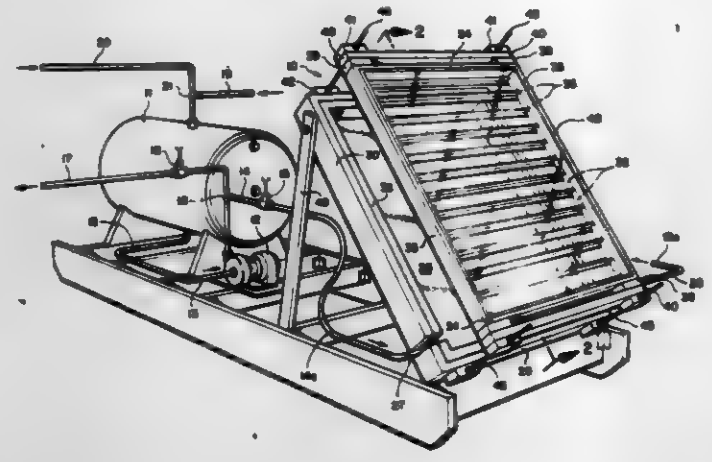
SOLAR HEAT COLLECTING PANEL

John F. Mountain, 1175 Norton, Idaho Falls, Id. 83401

Filed Sep. 6, 1979, Ser. No. 73,094

Int. Cl.³ F24J *3/02*

U.S. Cl. 126—437 3 Claims



1. A solar heat collection and storage system, comprising a solar panel unit for heating circulating fluid, including a heat-absorbing body having an enclosed channel therethrugh for passage of heat exchange fluid, said passage having an inlet end and an outlet end, structure supporting said heat absorbing body, a plurality of lenses for focusing the sun's energy, and structure supporting said lenses in relation to the heat-absorbing body so that sunlight striking said lenses is focused upon said body; means for positioning said panel unit so that sunlight falls upon said lenses; a storage tank for heat-exchange fluid; heat storage means within said storage tank; first conduit means for connecting said storage tank with the inlet for said passageway in the heat absorbing body so that fluid to be heated is directed to the heat absorbing body; second conduit means connecting said first conduit means to external equipment which can utilize heated fluid; third conduit means for connecting said storage tank with the outlet for said passageway to return heated fluid to the storage tank; fourth conduit means connecting the external equipment to either the storage tank or the third conduit means, for returning fluid from the external equipment to the storage tank; pump means in the first conduit for forcing fluid from the tank through the first conduit; first control valve means located in the first conduit between the connection to said second conduit means and the inlet to the passageway; second control valve means located in the second conduit; and control means for opening said first valve when the temperature of the fluid toward the outlet of the passageway is greater than the temperature of the fluid leaving the storage tank, for opening the second valve when fluid is needed by the external equipment, and for causing operation of the pump means whenever one of the valves is open.

4,324,228

SOLAR HEATING APPARATUS

Paul Shippee, 934 Pearl St., Boulder, Colo. 80306

Filed Aug. 11, 1980, Ser. No. 176,785

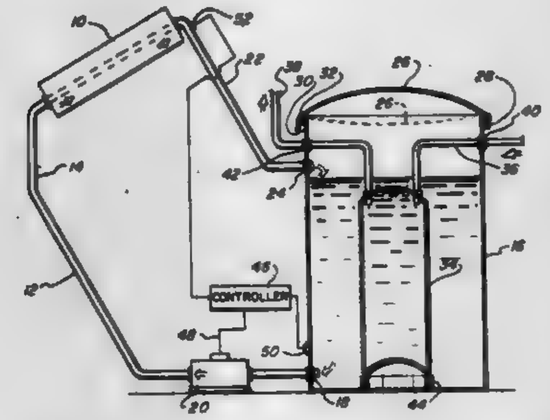
Int. Cl.³ F24J *3/02*

U.S. Cl. 126—437 1 Claim

1. A solar energy heating apparatus including a solar collector for use in raising the temperature of a solar energy working liquid moving through the solar collector, comprising:

a variable volume outer tank in the path of movement of the solar energy working liquid for containing the solar energy working liquid, said outer tank having a top portion, a bottom portion, a body wall and including an expandable lid having an underside, said expandable lid being removably and sealably fastened to said top portion of said outer tank, an air space being defined between the level of the solar energy working liquid in said outer tank and said underside of said lid, said lid being expandable to accommodate increasing pressure within said outer tank resulting from increases in temperature of the solar energy working liquid in said outer tank;

an inner tank heat exchanger completely contained within said outer tank and completely surrounded by the solar energy working liquid but impervious thereto, said inner tank being entirely rigid and having a substantially greater thickness than said outer tank to withstand the input of pressurized fluid to said inner tank, said inner tank having an inlet member for receiving a fluid and an outlet member for discharging the fluid, said inlet member and said outlet member each extending through said body wall of said outer tank, the temperature of the fluid contained in said inner tank depending upon the temperature of the solar energy working liquid;



means connected to said outer tank for conveying the solar energy working liquid from said bottom portion of said outer tank through the solar collector and for conveying the solar energy working liquid from the solar collector to said top portion of said outer tank to provide a circuitous path for the solar energy working liquid, said conveying means including a channel having an outlet end from which the solar energy working liquid exits into said outer tank, the vertical distance from said outlet end to an uppermost vertical portion of said channel being less than the vertical distance from said uppermost vertical portion to the level of the solar energy working liquid housed in said outer tank; and

means connected to said conveying means for driving the solar energy working liquid through said conveying means.

4,324,229

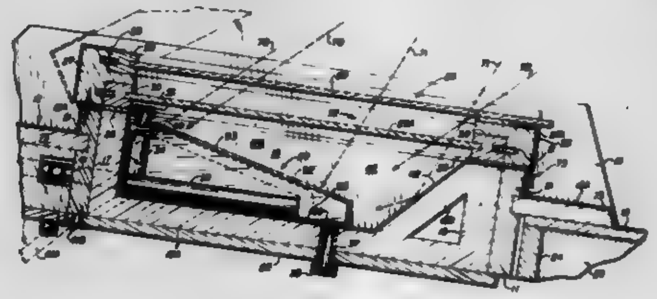
SOLAR COLLECTOR AND HEAT AND COLD GENERATOR

James A. Risser, 8244 E. Buena Terra Way, Scottsdale, Ariz. 85253

Continuation-in-part of Ser. No. 855,213, Nov. 28, 1977, abandoned. This application Nov. 19, 1979, Ser. No. 95,341

Int. Cl.³ F24J *3/02*

U.S. Cl. 126—439 10 Claims



1. A compact solar heat generator, useable in a predetermined range of latitudes, comprising:

(a) a frame having an open top, insulated bottom and side walls defining a chamber, said frame having interior reflective faces for receiving and redirecting solar rays to a location within the chamber;

(b) a closed container having a wall and at least one surface permitting passage of solar rays and at least one heat generating surface at or adjacent said container wall, said one surface being oriented relative to said top and said reflective surface to receive through said one surface both direct and reflected solar rays to transfer energy to the interior of said container, said container being thermally insulated from the generator surroundings and positioned within said chamber at said location and further having fluid inlet and outlet ports for circulating a fluid to be heated through said container;

(c) a transparent cover for said frame secured to said frame, said cover and frame inclined to be approximately normal to the sun's rays when mounted; and

(d) said frame being mountable at a given angular position for receiving solar rays.

4,324,230

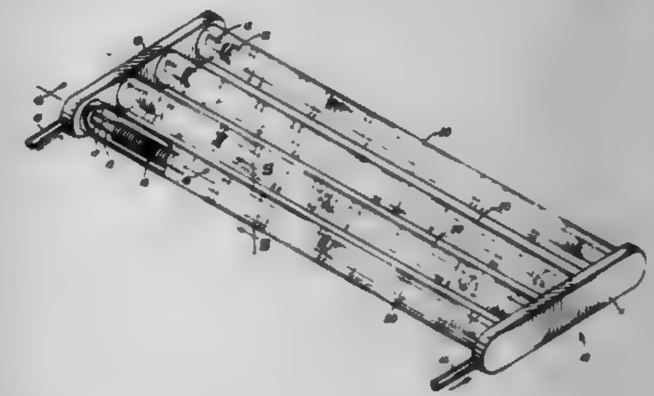
SOLAR COLLECTOR PANEL

Oscar M. Lunsford, Rte. 2, Box 496, Palm Springs Dr., Longwood, Fla. 32750

Filed Jul. 14, 1980, Ser. No. 168,595

Int. Cl.³ F24J *3/02*

U.S. Cl. 126—443 7 Claims



1. A solar collector panel comprising in combination:

a pair of manifolds;

conductive tube means fixedly connected between said pair of manifolds to support said manifolds in space relationship to each other and being filled with a heat storage material;

helically wound tube means having at least one helically wound tube around one fixed tube of said spaced conductive tube means and operatively connected at each end to one of said manifolds to create a passageway from one manifold to the other;

transparent sleeve means having at least one sleeve mounted over said conductive tube having a helically wound tube wrapped therearound to provide a space between said helically wound tube and said sleeve, said sleeve being connected between said pair of manifolds;

reflective means located adjacent said transparent sleeve means to provide a reflective surface over a portion of said transparent sleeve means; and

input and output means, said input means connected to one manifold to feed a liquid thereto and said output means connected to said other manifold to feed a liquid therefrom, whereby a solar collector panel can be made with one or more collector units of different capacities.

4,324,231

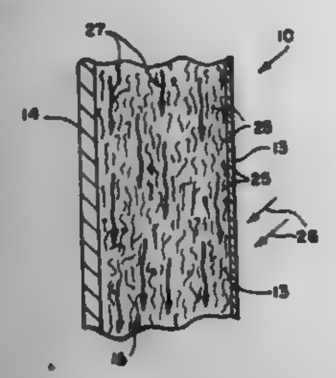
SOLAR COLLECTOR PANELS HAVING COATED FIBROUS FILLING FOR FIRE INHIBITION

Charles P. Reinert, Garvin, Minn., assignor to Solarein, Inc., Buffalo, Minn.

Filed Nov. 28, 1979, Ser. No. 98,062

Int. Cl.^{3} F24J *3/02*

U.S. Cl. 126—449 2 Claims



1. A solar heat collector formed of a low density porous mat of fibers which are adapted to absorb radiant energy when placed into a chamber, and are spaced sufficiently to permit flow of fluid through the mat, and said heat collector including means forming a chamber containing said mat and having a fluid inlet and a fluid outlet wherein said chamber is oriented so that the inlet and the outlet are vertically spaced from each other and which are spaced from each other to permit fluid flow through the spaces in the mat from the inlet to the outlet, and a coating of intumescent paint on substantial surfaces of the fibers along substantial portions of the entire length of the chamber between the inlet and the outlet, said coating being applied in a quantity to be effective to constrict the spaces between the individual fibers upon being subjected to elevated temperatures such as in a fire, and to substantially increase resistance to air flow between the inlet and outlet by blocking the spaces between individual fibers.

4,324,232

SOLAR PANEL, PARTICULARLY FOR FACADES OF BUILDINGS

Gabriella Quiroz, Strada Val Pattonera, 187, 10100 Torino, Italy

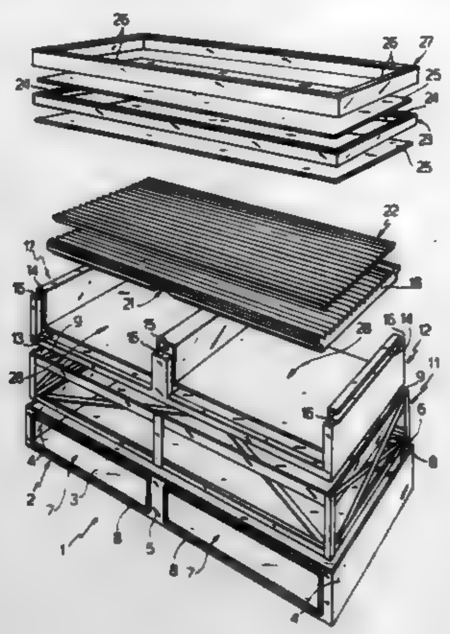
Filed Jul. 28, 1980, Ser. No. 173,187

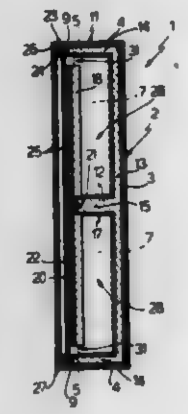
Claims priority, application Italy, Jul. 27, 1979, 68566 A/79

Int. Cl.^{3} F24J *3/02*

U.S. Cl. 126—450 8 Claims

1. A solar panel comprising a substantially parallelepiped housing having a bottom wall and a transparent cover opposite the bottom wall, an absorber slab and an insulated body in the housing confronting one another and lying parallel with the bottom wall of the housing in order to form a first cavity between the transparent cover and the slab, the first cavity having air inlet and outlet openings, the slab and body also forming second and third cavities disposed side by side under the whole of said first cavity, each of said second and third cavities communicating with said first cavity through one of said openings, and the second and third cavities forming channels for the inlet and outlet of air into and from the solar panel, said absorber slab being traversed by the air crossing through said first cavity, wherein said body is substantially E-shaped and has a bottom wall, two sidewalls, and a central rib parallel with the said two sidewalls and separating said second and third cavities and connecting said slab with said body, wherein the slab has a length slightly smaller than the length of said body so as to define said inlet and openings, wherein said housing comprises two opposite sidewalls perpendicular with said rib and having formed thereon two rectangular perforations communicating with the said second and third cavities, wherein each of the said cavities has a rectangular contour, the perforations of one of the said sidewalls of the housing being adapted to be connected by the perforations of one of the said sidewalls of the housing of an adjacent, solar panel so as to connect the said channels to one another, and sealing means





comprising folded rims of the said perforations for connecting adjacent solar panel housings.

4,324,233

FEED ARRANGEMENT FOR AND METHOD OF CONTINUOUSLY FEEDING CIGARS WRAPPERS TO CIGAR WRAPPING STATIONS OF CIGAR WRAPPING MACHINES

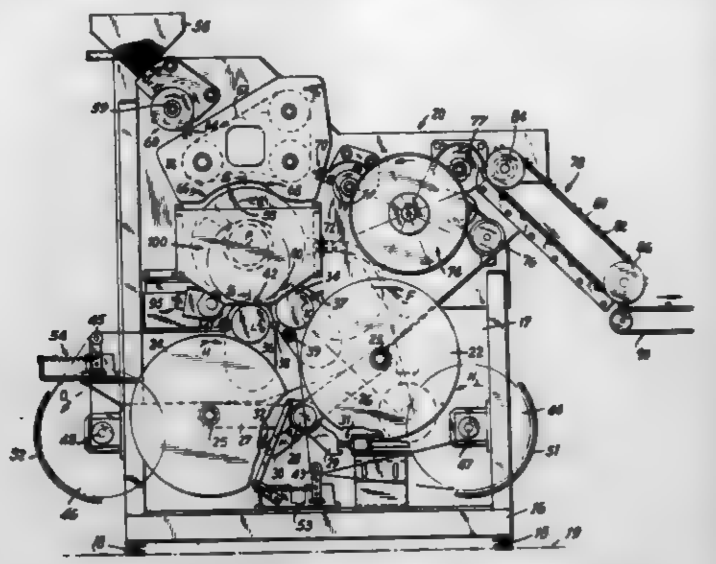
Robert J. Baier, West Chester, and Edward W. Glatfelter, Newtown Square, both of Pa., assignors to Gulf & Western Corporation, New York, N.Y.

Continuation of Ser. No. 973,037, Dec. 26, 1978, abandoned. This application May 12, 1980, Ser. No. 148,924

Int. Cl.^{3} A24C *1/28*

U.S. Cl. 128—58 5 Claims

1. In an apparatus for wrapping elongated cigar wrappers, each having a tuck end and a flag end, around elongated cigar bunches including means for conveying cigar wrappers along a first feed path; means for conveying cigar bunches transversely along a second feed path converging with said first path at a wrapping section where said paths generally match each other; said bunch conveying means including a plurality of independently driven, conveyed nests; means for applying an adhesive onto said tuck ends of said wrappers as they move along said first path toward said wrapping section, the improvement comprising: means for lifting said adhesive carrying tuck ends of said wrappers into engagement with said bunches



in said wrapping section and preparatory to wrapping by rotating said bunches.

4,324,234

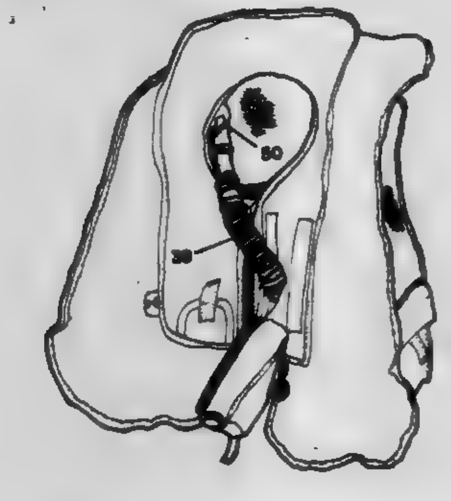
DUAL CHAMBER PERSONAL FLOTATION DEVICE

Samuel G. Maness, 13008 Sturbridge Rd., Woodbridge, Va. 22192

Filed May 21, 1980, Ser. No. 152,002

Int. Cl.^{3} A62B *7/00;* B63C *11/00*

U.S. Cl. 128—202.14 2 Claims



1. A dual chamber personal flotation device comprising: a flexible inflatable air-tight container designed to fit around the neck of the wearer; a flexible elastic air-tight membrane within said container dividing said container into two chambers; means for independently inflating said two chambers; and means for allowing the wearer to breathe the contents of one of said two chamber, said means for allowing the wearer to breathe the contents of one of said two chambers comprising a flexible tube attached at one end to said one chamber and having a combination mouthpiece-shutoff valve at its other end, said combination mouthpiece-shutoff valve comprising a stationary tubular central member, a sliding outer member surrounding said central member and capable of being in either an open or a closed position, a set of flow passages in said sliding outer member, sealing means in said outer member cooperating with said inner member to prevent flow through said flow passages when said outer member is in the closed position, and a mouthpiece on said outer member wherein said valve has means for urging said outer member to said closed position and means for holding said outer member in said open position.

4,324,235

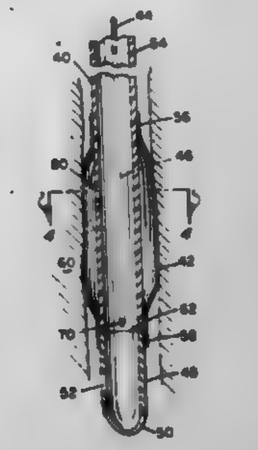
ENDOTRACHEAL TUBE

Anthony V. Beran, 3802 Teakwood, Santa Ana, Calif. 92707

Filed Mar. 24, 1980, Ser. No. 133,014

Int. Cl.^{3} A61M *25/00*

U.S. Cl. 128—207.15 3 Claims



1. An endotracheal tube comprising, in combination:
a tube having a given outside diameter;
a tube end having an outside diameter corresponding substantially to said given outside diameter bonded end-to-end to one end of said tube such that axes of the tube end and the tube are substantially coincident in the region of the bond;
said tube end having been formed by being molded of a material which is non-transparent to X-rays;
said endotracheal tube being formed with an inflatable cuff including upper and lower sleeves each bonded to said endotracheal tube at respectively associated spaced regions along the length thereof; and
said lower sleeve being bonded to said endotracheal tube at the junction of said tube and said tube end such that the lower sleeve is bonded both to the tube and to the tube end.

4,324,236

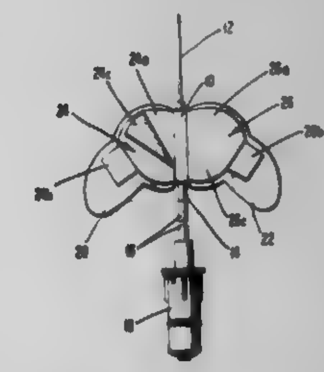
FITTING FOR USE IN PERFORMING A VASCULAR PUNCTURE

Marvin Gordon, East Windsor, and Joseph Lichtenstein, Colonia, both of N.J., assignors to Whitman Medical Corp., Clark, N.J.

Filed Dec. 3, 1979, Ser. No. 99,926

Int. Cl.^{3} D61M *5/00*

U.S. Cl. 128—214 R 11 Claims



1. A fitting for use in forming a vascular puncture comprising an elongate hub having a longitudinal axis, a blood vessel-entering element extending axially from one end of said hub, tubing attachment means at the other end of said hub and means for stabilizing the fitting on a patient's skin upon insertion of said blood vessel-entering element into a blood vessel, said stabilizing means including first and second substantially laminar wings extending laterally from said hub on opposite sides of said axis respectively, a third substantially laminar

wing extending laterally from said hub under one of said first and second wings, each of said first, second and third wings being capable of independent flexing movements about said hub and said third wing having an undersurface with contact adhesive means covering a portion of said surface, wherein said undersurface of said third wing comprises a hub-covering portion, an outer gripping portion and a central portion between said hub-covering portion and said gripping portion and wherein said contact adhesive is provided on said central portion.

4,324,237

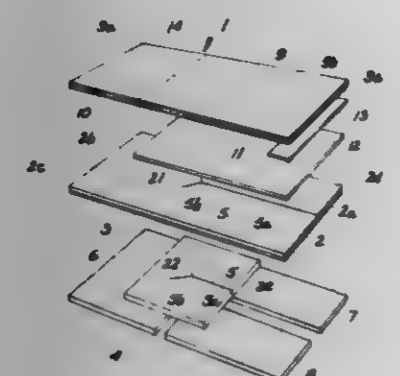
INTRAVENOUS CATHETER AND TUBING SECUREMENT AND DRESSING DEVICE WITH A WINDOW OVER THE PUNCTURE OR WOUND SITE

Philip M. Buttaravoli, Potomac, Md., assignor to E-Med Corporation, Cincinnati, Ohio

Filed Feb. 26, 1980, Ser. No. 124,859

Int. Cl.^{3} A61M *5/00*

U.S. Cl. 128—214 R **31 Claims**



1. A dressing device to cover a desired site on the skin of a patient, said dressing device comprising a base strip having upper and lower surfaces, an adhesive coating on said lower surface of said base strip to attach said base strip to said skin of the patient adjacent said site, access means in said base strip to said site, an elongated cover strip having upper and lower surfaces, a first portion of said cover strip being affixed to said upper surface of said base strip spaced from said access means, a second portion of said cover strip being releasably and resealably affixable to said base strip upper surface by releasable and resealable adhesive applied to one of said lower surface of said cover strip and said upper surface of said base strip, said cover strip being shiftable between a closed position adhered to said upper surface of said base strip and covering said access means in said base strip and an open position exposing said access means, and a gauze pad affixed to the underside of one of said base strip and said cover strip so as to contact said site when said cover strip is in said closed position and to expose said site when said cover strip is in said open position.

4,324,238

EQUIPMENT SETS HAVING A COMBINED AIR BARRIER AND LIQUID SEQUENCING DEVICE FOR THE SEQUENTIAL ADMINISTRATION OF MEDICAL LIQUIDS AT DUAL FLOW RATES

Joseph N. Genese, Waukegan, and Andrew J. Muetterties, Mundelein, both of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Continuation-in-part of Ser. No. 16,461, Feb. 28, 1979, Pat. No. 4,256,104. This application Jun. 9, 1980, Ser. No. 157,922

Claims priority, application Australia, Feb. 5, 1980, 55234/80

Int. Cl.^{3} A61M *5/00*

U.S. Cl. 128—214 G **12 Claims**

1. A set for the sequential administration of medical liquids to a patient, comprising:

a primary tube for the flow of a primary medical liquid therethrough,

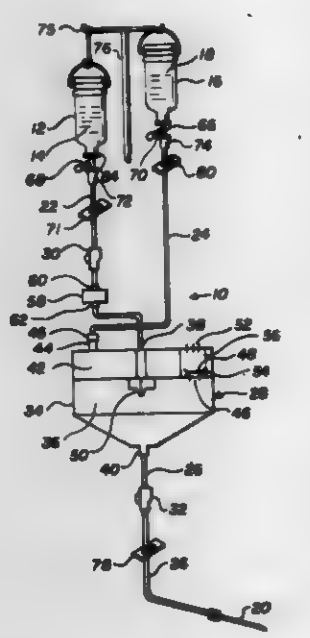
a secondary tube for the flow of a secondary medical liquid therethrough,

a common tube having its distal end in fluid communication with the proximal ends of said primary and secondary tubes and its proximal end open for the flow of liquid therethrough to form a primary liquid flow path comprising said primary tube and said common tube and a secondary liquid flow path comprising said secondary tube and said common tube,

a secondary flow control means in said secondary liquid flow path for adjusting the flow rate of said secondary liquid therethrough,

a primary flow control means on said primary tube for adjusting the flow rate of said primary liquid through said primary flow path to a rate independent of the flow rate of said secondary liquid through said secondary liquid flow path, and

combined air barrier and liquid sequencing means compris-



ing a housing having a first chamber which constitutes a portion of said primary tube and has inlet and oulet ports thereto and a second chamber which constitutes a portion of said secondary tube and has inlet and outlet ports thereto, said housing including;

valve means proximate said outlet port from said second chamber into said first chamber, said valve means being constructed and arranged for permitting the passage of said secondary liquid from said second chamber into said first chamber and for preventing of the passage of air from said second chamber into said first chamber when said secondary liquid is not being dispensed;

check valve means operatively associated with said first chamber for the prevention of primary liquid flow through said primary tube whenever said secondary liquid is being dispensed, and vent means operatively associated

with said second chamber for permitting the passage of air from said combined air barrier and liquid sequencing valve, thereby permitting priming of said system.

4,324,239

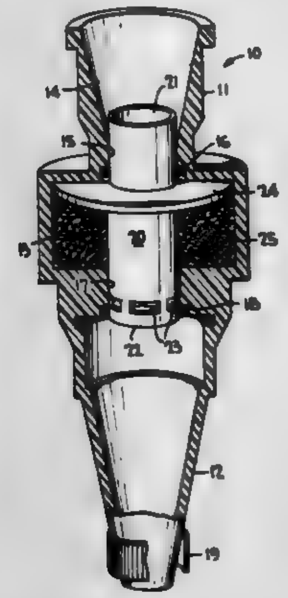
SAFETY VALVE FOR PREVENTING AIR EMBOLISM AND HEMORRHAGE

Marvin Gordon, East Windsor, and Joseph Lichtenstein, Colonia, both of N.J., assignors to Whitman Medical Corp., Clark, N.J.

Filed Jun. 20, 1980, Ser. No. 161,308

Int. Cl.^{3} A61M *5/00;* **F16L** *29/00*

U.S. Cl. 128—214 R **10 Claims**



1. An improvement in safety valves of the type used in catheterization procedures wherein a valve chamber includes a piston which is reciprocable between two positions in said chamber by means of a resilient bias member which urges the piston to a first of said two positions in which the valve is closed and by means of a connection to a fluid conduit which urges said piston to a second of said two positions wherein said valve is open, said improvement comprising:

an internal flow path in said piston including means responsive to said piston being in said second position for freely conducting flow through said piston;

means for blocking flow through said internal flow path when said piston is in said first position;

and wherein said bias member comprises elastomeric flow restrictive means surrounding a portion of said piston in said chamber for at least severely restricting flow through said chamber around said piston.

4,324,240

Patent Not Issued For This Number

4,324,241

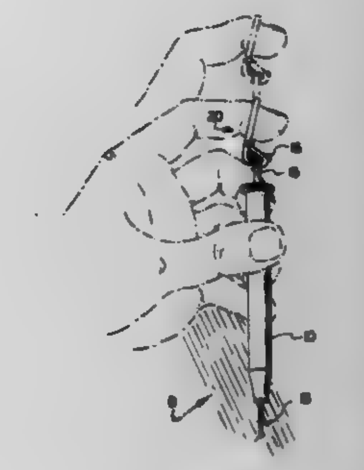
HYPODERMIC SYRINGE OPERABLE WITH DOUBLE-LOOPED RING

William J. Reese, Brunswick, Ohio, assignor to Alfred D. Lobo, Cleveland, Ohio, a part interest

Filed Sep. 9, 1980, Ser. No. 185,600

Int. Cl.^{3} A61M *5/00*

U.S. Cl. 128—218 PA **1 Claim**



1. A hypodermic syringe assembly to be used for withdrawing fluid into its barrel with only one hand, comprising in combination,

a plunger having a stem terminating in a head at one end, the other end being slidably snugly fitted in said barrel,

a double-looped ring member, movable with respect to said plunger and formed from a continuous piece of wire stock to provide

(i) a generally circular index finger loop adapted to have inserted therein the index finger of the hand which holds said barrel, and

(ii) a generally elongate stem loop adapted to slidably accomodate said stem and be lodged against said head,

said index finger loop and said stem loop being manually deformable and generally orthogonal relative to one and another so as to permit withdrawal of said plunger with outward articulation of said index finger exerting a force along an arcuate segment having a radius of at least 5 centimeters.

4,324,242

FEMININE SYRINGE

Marvin G. Cross, Vernon Hills, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Filed Oct. 3, 1980, Ser. No. 193,785

Int. Cl.^{3} A61M *1/00*

U.S. Cl. 128—232 **9 Claims**

1. A combined valve and dispensing pipe affording a two-step release actuation for an expandable syringe unit comprising:

a hollow nozzle defining a head with a hollow spray stem and an inlet portion;

an expandable bag having a neck portion;

a valve member defining a nozzle actuated portion, a nozzle receiving portion and a filling portion having an orifice carried in said valve member;

means to secure said neck portion of said bag to said valve member;

engagement means defined by said inlet portion of said nozzle and said nozzle receiving portion of said valve member, said engagement means includes a flange on said nozzle receiving portion of said valve and capture means for said flange on said inlet portion of said nozzle, said nozzle is retainable in a spaced relationship with respect to said nozzle actuated portion in a first position and to contact and open said nozzle actuated portion in a second position;

whereby said nozzle member can be detached from said valve member and a filling pipe or faucet head can be inserted over said filling orifice to fill said bag with a liquid and subsequently said inlet portion of said nozzle can be operatively positioned in said nozzle receiving portion and said engagement means will position said inlet portion of said nozzle away from said nozzle actuated portion, in a first position and upon movement of said nozzle inlet portion in the direction of said bag, said nozzle inlet portion will open said nozzle actuated portion and provide fluid communication with the liquid in said bag in a second position.

4,324,243

APPARATUS AND PROCESS FOR ASPIRATING AND EVACUATING A SURGICAL SITE

Maxwell A. Helfgott, 5640 Bradley Blvd., Bethesda, Md. 20014, and Gerald N. Helfgott, 5513 Uppingham St., Chevy Chase, Md. 20015

Filed Nov. 28, 1979, Ser. No. 97,983

Int. Cl.^{3} A61M *1/00*

U.S. Cl. 128—276 **10 Claims**

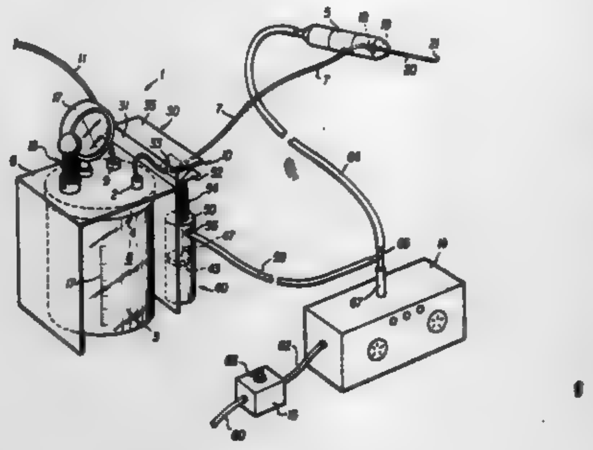
1. A surgical apparatus comprising:

(a) a powered intraocular surgical instrument of the type which is actuated by a series of pneumatic pressure pulses;

(b) a pneumatic control unit for providing a series of pneumatic pressure pulses to actuate said surgical instrument;

(c) a collapsible conduit fluidly connecting said surgical instrument with a source of negative pressure for aspirating said instrument and evacuating material from said instrument;

(d) a pneumatically operated clamping means which is effective when deactuated to cut off the application of negative pressure through said collapsible conduit by clamping a section of said conduit, and to contract the interior volume of said conduit between said clamping means and said instrument to dissipate residual negative pressure existing therebetween, and which is effective when actuated by a pneumatic pressure pulse to unclamp said section of said



conduit and thereby to permit negative pressure to be applied through said conduit; and

(e) a pneumatic connection means fluidly connecting said surgical instrument and said clamping means with the output of said pneumatic control unit for simultaneously providing pneumatic pressure pluses to said surgical instrument and said clamping means, whereby said surgical instrument and said clamping means are simultaneously actuated and simultaneously deactuated, said clamping means thereby functioning to prevent negative pressure from being applied through said collapsible conduit to the surgical instrument in the absence of pneumatic pressure pulses from said control unit for operating the surgical instrument.

4,324,244

TWO-CHAMBER UNDERWATER DRAINAGE APPARATUS WITH ONEWAY OUTFLOW VALVE AND DUAL HANGAR RETAINERS

Leonard D. Kurtz, Woodmere, and Robert E. Bidwell, Long Island, both of N.Y., assignors to Robert J. Kurtz, New York, N.Y. and Alfred Kurtz, Wynnewood, Pa.

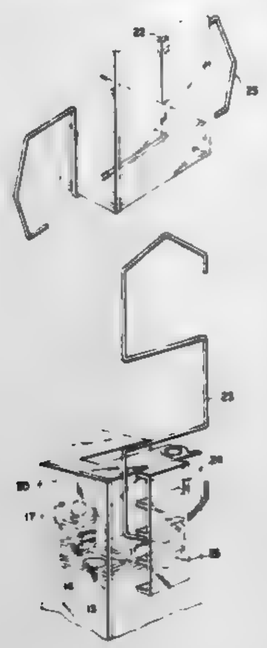
Filed Feb. 11, 1980, Ser. No. 120,295

Int. Cl.^{3} A61M *1/00*

U.S. Cl. 128—276 **6 Claims**

1. A drainage apparatus comprising a housing, a collection chamber formed in said housing for receiving fluids from the body of a patient, an inlet at the upper end of said housing, a partition extending across a portion of the housing to form an underwater seal chamber beneath said inlet, a tubular extension connected to said inlet and projecting downwardly into said underwater seal chamber whereby fluids from the body of a patient are collected in the underwater seal chamber and provide a fluid seal with the lower end of the tubular extension, an outlet to atmosphere disposed in said housing, oneway valve means disposed in said housing between said outlet and the interior of said collection chamber for permitting the outflow of gases from said collection chamber through said outlet and for preventing the reverse flow of such gases, a first hanger retaining means mounted on a side wall of said housing, a second hanger retaining means mounted on an end wall of said housing and hanger means for selectively engaging one of said

hanger retainer means for supporting said drainage apparatus from the floor and for alternatively engaging the other of said



hanger retainer means for supporting the drainage apparatus on the side of the bed.

4,324,245

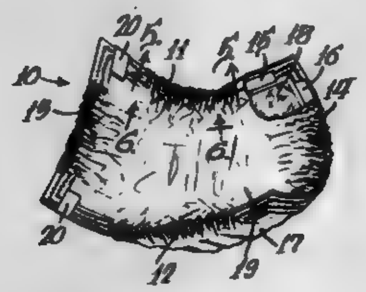
COMFORMABLE DISPOSABLE DIAPERS HAVING ABSORBENT PANEL WITH BULGED SIDE MEMBERS

Frederick K. Mesek, Tinley Park, and Virginia L. Repke, Oak Forest, both of Ill., assignors to Johnson & Johnson, New Brunswick, N.J.

Continuation of Ser. No. 862,309, Dec. 20, 1977, abandoned. This application Dec. 21, 1979, Ser. No. 106,182

Int. Cl.^{3} A41B *13/02*

U.S. Cl. 128—287 **23 Claims**



1. A disposable diaper comprising: a first outer layer in the form of a moisture impervious backing; an absorbent batt positioned in superposed relationship with respect to said backing, said batt being smaller than said backing and spaced inwardly from the sides and ends thereof; a second outer layer in the form of a moisture pervious facing positioned in superposed relationship with respect to said batt, said facing being larger than said batt and having marginal portions thereof secured to said backing; constringent means in each side margin of the diaper for foreshortening the side margins of the diaper; said constringent means cooperating with said outer layers and said batt to bulge the side margins of the batt, in addition to gathering the side margins of the outer layers adjacent thereto, the central portion of said outer layers and said batt being generally smooth and ungathered.

4,324,246

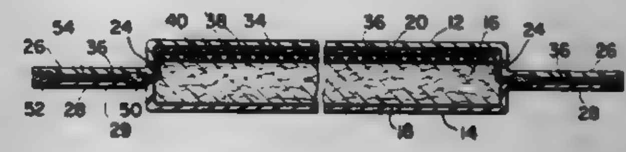
DISPOSABLE ABSORBENT ARTICLE HAVING A STAIN RESISTANT TOPSHEET

William I. Mullane, Wyoming, Ohio, and Douglas J. Smith, Woodbury, Minn., assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed May 12, 1980, Ser. No. 148,657

Int. Cl.^{3} A41B *13/02*

U.S. Cl. 128—287 **8 Claims**



1. A disposable absorbent article comprising:

an absorbent core means for absorbing liquid, said absorbent core means having a first and a second opposed face;

a liquid impermeable backsheet overlaying said first opposed face of said absorbent core means; and

a liquid permeable topsheet overlaying said second opposed face of said absorbent core means, said topsheet being a hydrophobic film having a caliper of less than about 0.030 inches, said topsheet a multiplicity of apertures with less than about 25 percent of said apertures having an equivalent hydraulic diameter less than or equal to about 0.025 inches, said topsheet having a percent open area of at least about 35 percent.

4,324,247

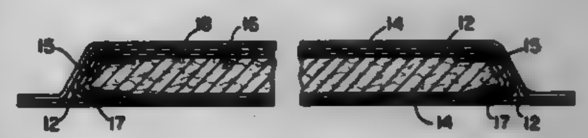
DISPOSABLE ABSORBENT ARTICLE HAVING AN ABSORBENT CORE AND A TOPSHEET

Mohammed I. Aziz, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed May 12, 1980, Ser. No. 148,900

Int. Cl.^{3} A61F *13/16*

U.S. Cl. 128—287 **1 Claim**



1. A disposable diaper comprising:

an absorbent core means for absorbing liquids, said absorbent core means having first and second opposed faces;

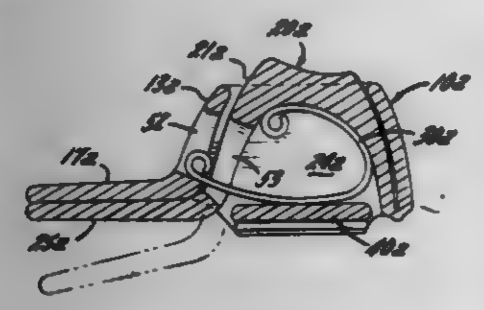
a liquid impervious backsheet, said backsheet being superimposed on said second opposed face of said absorbent core means;

a liquid permeable topsheet, said topsheet being superimposed on said first opposed face of said absorbent core means and said topsheet being affixed to said backsheet, said absorbent core means being encased between said topsheet and said backsheet, said topsheet being a nonwoven material which is generally hydrophobic and having a multiplicity of depressed areas provided substantially throughout the entire surface of said topsheet, said depressed areas comprising between about 10 percent and about 50 percent of the total surface area of said topsheet, as measured in the plane of said depressed areas, said topsheet having a multiplicity of non-depressed areas surrounding said depressed areas, said non-depressed areas contacting the wearer's skin in use, said depressed areas and said non-depressed areas being of substantially uniform density; and

an intermediate layer interposed between said topsheet and said absorbent core means, said intermediate layer having a multiplicity of tapered capillaries, each of said capillaries having a base in the plane of said topsheet and an apex remote from said plane of said topsheet having an angle of

taper of from about 10° to about 60°, having base opening dimensions of from about 0.006 to about 0.250 inches and having apex opening dimensions of from about 0.004 to about 0.100 inches, said apex opening being in intimate contact with said absorbent core means and said base openings being in intimate contact with said depressed areas of said topsheet; said intermediate layer having a crotch portion and first and second end portions; said crotch portion having a multiplicity of said capillaries and said first and second end portions being liquid impermeable.

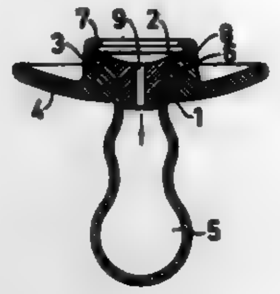
4,324,248
MICROSURGICAL CLIP
Alfred R. Perlin, Highland Park, Ill., assignor to Metatech Corporation, Northbrook, Ill.
Filed May 30, 1980, Ser. No. 154,613
Int. Cl.³ A61B *17/12*
U.S. Cl. 128—325 12 Claims



9. A microsurgical clip for clamping of small blood vessels comprising, in combination, a hollow shell in the form of a box having opposed side walls and opposed front and back walls but with openings extending over the top and bottom respectively, the shell having an integral duck bill extending forwardly at the lower edge of the front wall, the shell having an integral duck bill extending forwardly at the lower edge of the front wall with the duck bill being substantially coextensive with the width of the front wall, a cooperating insert of inverted "U" shape conformingly nested in the shell and defining a central pocket, the insert having a front wall and a back wall respectively flatly adjacent the front and back walls of the shell, the insert having its back wall hinged edge-to-edge with the back wall of the shell, the front wall of the insert terminating in a forwardly extending integral duck bill which lies underneath and cooperates coextensively with the duck bill of the shell, and an expansible spring seated in the pocket having one end coupled to the shell and the other end coupled to the insert for urging the insert relatively upwardly into the shell thereby biasing the duck bills into resilient clamping engagement with one another, the insert having a projection which extends through the opening at the top of the shell so that upon application of pinching pressure to the projection the insert is pressed downwardly with respect to the shell compressing the spring accompanied by relative spreading of the duck bills for temporary unclamping of the duck bills and engagement of a blood vessel therebetween.

4,324,249
DEVICE FOR SECURING A TEAT TO A PACIFIER
Per H. Sundkvist, 60 Lövängsvägen, S-183 30 Täby, and Lars Oborg, 35 Bodalsvägen, S-181 36 Lidingö, both of Sweden
Filed May 19, 1980, Ser. No. 151,438
Int. Cl.³ A61J *17/00, 11/00*
U.S. Cl. 128—360 3 Claims

1. A pacifier comprising: a disc having a central hole therethrough; an annular flange on said disc, said flange being circumferentially spaced from and surrounding said hole, said flange at its outer end having an inwardly directed shoulder and forming with said disc an undercut cavity; a teat having an annular bead defining an open end of the teat, said teat being located in said hole, with said bead residing in said cavity; a generally conical part having a circumferential flange at its larger end, said part being located in said cavity with said circumferential flange having a snap action with said inwardly directed shoulder so that said part is retained in said cavity,

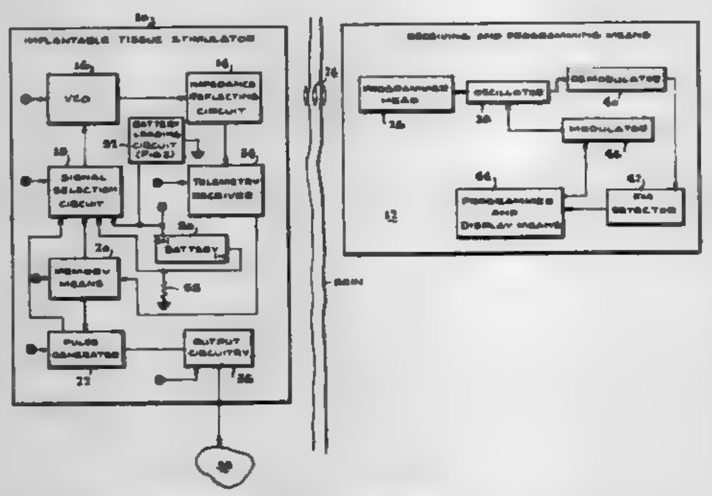


said part being axially movable within said cavity while being retained therein by said shoulder, said bead on said teat lying between the edge of said opening and said generally conical part and being secured within said cavity by said generally conical part.

4,324,250
BODY SLENDERIZING METHOD
Sam M. Braun, and Beatrice Braun, both of 2 rue Recamier, 75007 Paris, France
Filed Dec. 26, 1979, Ser. No. 107,387
Claims priority, application France, Dec. 28, 1978, 78 36737
Int. Cl.³ A61N *7/00*
U.S. Cl. 128—395 14 Claims

1. Method of body slenderizing, which comprises topically applying on all or part of the body of a patient a composition comprising an unpolymerized silanol in intimate mixture with a substance preventing its polymerization, said silanol being in an amount ranging from about 0.05 and 5 weight percent, covering the treated zone with a fluid-tight flexible sheet, applying heat onto the covered zone during a period of time ranging between 15 minutes and 45 minutes, repeating this sequence of operations at each sitting period, in at least 10 sitting periods at the rate of at least 1 sitting period per month and at most one sitting period per day.

4,324,251
BATTERY MONITORING MEANS AND METHOD FOR AN IMPLANTABLE TISSUE STIMULATOR
Brian M. Mann, Northridge, Calif., assignor to Pacesetter Systems, Inc., Sylmar, Calif.
Filed Jun. 10, 1980, Ser. No. 158,122
Int. Cl.³ A61N *1/36*
U.S. Cl. 128—419 PT 20 Claims

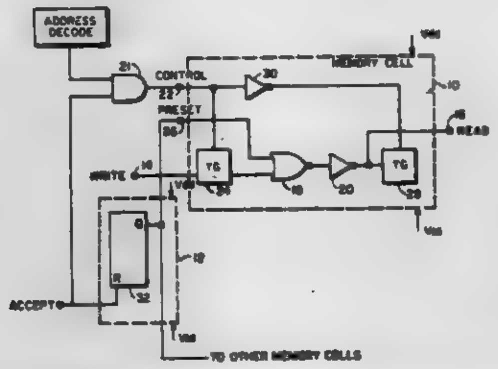


1. In an implantable tissue stimulator powered by a battery having a positive terminal and a negative terminal, a battery monitoring means comprising:

means for drawing a loading current from said battery that results in said battery output voltage having a predetermined relationship with respect to a reference voltage; and

means for generating a battery monitoring signal related to said loading current, said battery monitoring signal being related to the internal impedance of said battery.

4,324,252
MEMORY CONTROL CIRCUITRY FOR IMPLANTABLE MEDICAL DEVICES
Martin A. Rossing, Ramsey, and Ray S. McDonald, St. Paul, both of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.
Filed Aug. 4, 1980, Ser. No. 175,158
Int. Cl.³ A61N *1/36*
U.S. Cl. 128—419 PG 4 Claims



1. Memory control system for use in an implantable medical device of the type having volatile memory cells for the storage of information comprising:

a plurality of volatile memory cells, each having a memory WRITE input, a memory READ input, a CONTROL input and a PRESET input wherein a signal coupled to said PRESET input is used for presetting said memory cells to a known configuration corresponding to a safe operating condition for the device; and

power monitor means for monitoring the power available to said memory cells and for producing a power monitor output signal coupled to said PRESET input when the power available to said memory cells fails to meet specific criteria.

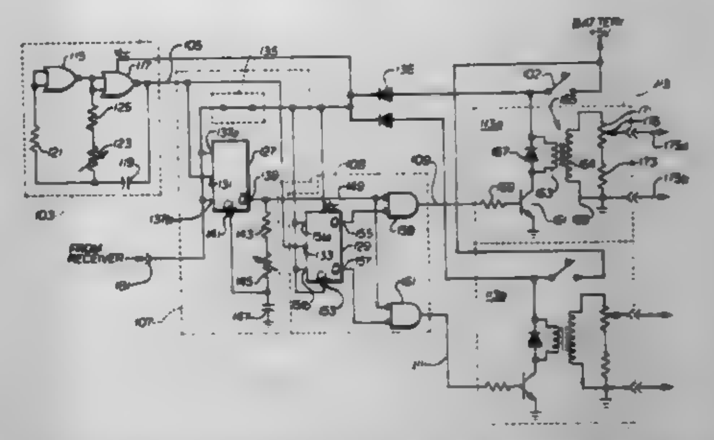
4,324,253
TRANSCUTANEOUS PAIN CONTROL AND/OR MUSCLE STIMULATING APPARATUS
Ronald W. Greene, 3116 S. 133rd St., Seattle, Wash. 98168, and John L. Marshall, 16206-123rd Ave. SE., Renton, Wash. 98055
Continuation of Ser. No. 763,542, Jan. 28, 1977, Pat. No. 4,147,171. This application Mar. 29, 1979, Ser. No. 25,111
Int. Cl.³ A61N *1/32*
U.S. Cl. 128—421 6 Claims

1. An apparatus for treating pain and for stimulation of muscles in the human body by electrical impulses, comprising:

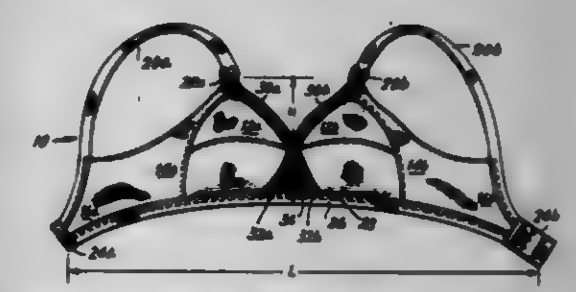
a. means for generating control pulses of selected rate and duration;

b. transformer means having primary and secondary windings for producing, under the control of said control pulses, by transformer action, electrical impluses at the secondary of said transformer means of desired rate, duration, and amplitude for application to the human body, wherein the operating characteristics of the transformer are such that the transformer operates near, but not in, saturation over the range of effective current output of the apparatus;

c. output load means connected in parallel with the secondary winding of said transformer means, wherein said load means includes means for accepting electrode connectors which connect the apparatus to the user, and wherein said load means has a sufficient resistance to draw a current when the apparatus is not loaded by a user, and wherein the resistance of the load means and the secondary winding is sufficiently high that the current output of the apparatus remains substantially constant over the operating range of the apparatus.



4,324,254
BRASSIERE HAVING A BOTTOM STRETCH BAND
Murray Freedman, Floral Park, N.Y.; Arthur E. Vale, 30 E. 71st St., New York, N.Y. 10021, and Peter R. Vale, New York, N.Y., assignors to Arthur E. Vale, New York, N.Y.
Continuation of Ser. No. 783,530, Apr. 1, 1977, abandoned. This application Aug. 7, 1979, Ser. No. 64,620
Int. Cl.³ A41C *3/00*
U.S. Cl. 128—494 4 Claims

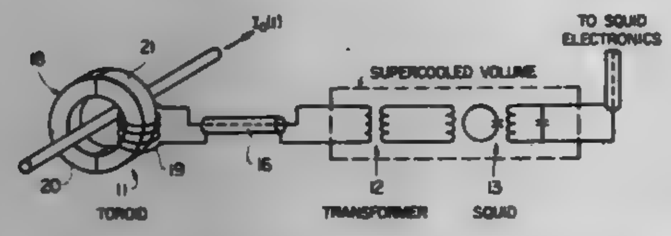


1. A brassiere having a pair of cups, opposed side portions connected to and extending laterally from said cups with the latter being situated between said side portions, and a pair of back portions respectively extending from said side portions and terminating in free ends, a pair of stretchable shoulder straps extending from upper parts of said back portions to upper parts of said cups, and a pair of fastener portions fixed to said free ends of said back portions and forming a releasable fastener means for fastening the brassiere on the wearer at the back of the wearer, said cups as well as said side and back portions all having lower regions distributed along the bottom of the brassiere, the improvement comprising an elongated continuous stretch band fixed to and extending continuously along said lower regions of said cups and side and back portions and terminating in free ends respectively fixed to said fastener portions, said stretch band being in a stretched condition when the brassiere is worn with said fastener portions attached to each other, whereby said stretch band serves to anchor the brassiere to the body of the wearer to oppose undesirable displacement of the brassiere due to lateral or vertical movements of the body, or combinations of such movements, said cups respectively having outer side edge regions connected with said opposed side portions, respectively, and inner side edge regions situated adjacent each other, said inner side edge regions of said cups respectively having upper elongated side sections which converge downwardly toward each other and lower elongated edge sections which diverge downwardly away from each other and terminate in lower ends spaced apart from each other and fixed to said stretch band, the upper edge section of one cup forming a continuation of the lower edge section of the other cup, and the upper edge section of the

other cup forming a continuation of the lower edge section of said one cup, said edge sections at said inner side edge regions of said cups being stretchable along their entire lengths, and said edge sections at said inner side edge regions of said cups crossing each other at the intersection between said downwardly converging and downwardly diverging parts thereof, the intersection spaced apart from said stretch band, said edge sections where they cross each other being at least partly separate from each other and a substantially trinagular body of stretchable sheet material situated between and fixed to the downwardly diverging lower edge sections of said cups to afford independent stretching of each of the continuous edge sections, the upper elongated stretchable edge sections which converge downwardly toward each other respectively having upper ends connected to said stretchable shoulder straps at said upper parts of said cups, so that an upward pull at either shoulder strap will be transmitted diagonally downwardly across the front of the brassiere along a continuous stretchable edge section to the stretch band toward that side of the body which is opposite from the side where the upwardly pulled shoulder strap is located.

4,324,255
METHOD AND APPARATUS FOR MEASURING MAGNETIC FIELDS AND ELECTRICAL CURRENTS IN BIOLOGICAL AND OTHER SYSTEMS

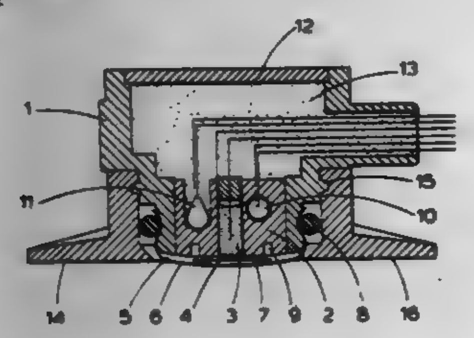
John P. Barach, 541 Hickory Trail Dr., Nashville, Tenn. 37209, and John P. Wikswo, Jr., 1025 Manly La., Brentwood, Tenn. 37027
Filed Mar. 7, 1980, Ser. No. 128,197
Int. Cl.³ A61B *5/04*
U.S. Cl. 128—630 **2 Claims**



1. The method of measuring the electric currents in an nerve, muscle fiber, biological system or organ which comprises the steps of coupling at room temperature a toroidal core to the magnetic fields induced by said currents, sensing the magnetic fields coupled into said toroidal core and generating an output current, and measuring the output current with a superconducting quantum interference device (SQUID).

4,324,256
ELECTRODE DEVICE

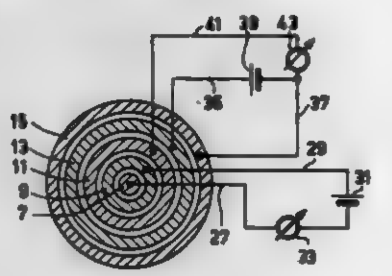
Peter K. R. Vesterager, Maalov, Denmark, assignor to Radiometer A/S, Copenhagen, Denmark
Filed Mar. 15, 1979, Ser. No. 20,870
Claims priority, application Denmark, Mar. 28, 1978, 1361/78
Int. Cl.³ A61B *5/00*
U.S. Cl. 128—635 **7 Claims**



1. A potentiometric electrode device is transcutaneous pCO_2 measurement, said device comprising a capsule suited for application on a skin surface with a CO_2 premeable membrane closing one side of said capsule and serving as a contact face against the skin and a pH-sensitive measuring electrode located within said capsule, said electrode arranged behind the membrane, an electrolyte in contact with the measuring area of the said electrode and positioned between said measuring area and the membrane, a reference electrode communicating with the electrolyte, and a heating device in thermal communication with said measuring electrode for thermostating the measuring electrode and thermally stimulating the blood flow in the skin in the measured area, said heating device being capable of providing a heat level sufficient to produce vasodilation and for compensating for the heat loss to the surroundings, the reference electrode being in direct heat-conductive contact with the heating device, and the reference electrode surrounding the measuring electrode and being in heat-conductive contact with the membrane for thermal stimulation of the local bloodflow, said reference electrode having a predetermined shape capable of producing a thermostating exactitude of greater than 0.2° C. for said heat level.

4,324,257
DEVICE FOR THE TRANSCUTANEOUS MEASUREMENT OF THE PARTIAL OXYGEN PRESSURE IN BLOOD

Scato Albarda, Lübeck, Fed. Rep. of Germany, and Martinus H. Kuijpers, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Continuation of Ser. No. 8,137, Jan. 31, 1979, abandoned. This application Feb. 25, 1980, Ser. No. 124,405
Claims priority, application Netherlands, Feb. 20, 1978, 7801867
Int. Cl.³ A61B *5/00*
U.S. Cl. 128—635 **6 Claims**



1. A device for the transcutaneous measurement of partial oxygen pressure in the blood of humans or animals, comprising:

a measuring head;

a measuring cell contained in a space within said measuring head which includes a first measuring electrode, a first reference electrode, and an electrolyte solution surrounding said first electrodes;

oxygen permeable diaphragm means disposed between said first electrodes and the skin which function to contain the solution within said space; and

a essentially annular shielding cell which surrounds the measuring cell and includes an essentially annular second measuring electrode and an essentially annular second reference electrode; said second electrodes being situated in a space within said measuring head which is similar to the space containing the measuring cell.

4,324,258
ULTRASONIC DOPPLER FLOWMETERS

Werner Huebscher, Buenstrasse 10, 8600 Dübendorf, and Max Anliker, Schlösslistr. 22, 8044 Zuerich, both of Switzerland
Filed Jun. 24, 1980, Ser. No. 162,668
Int. Cl.³ A61B *10/00*
U.S. Cl. 128—663 **10 Claims**

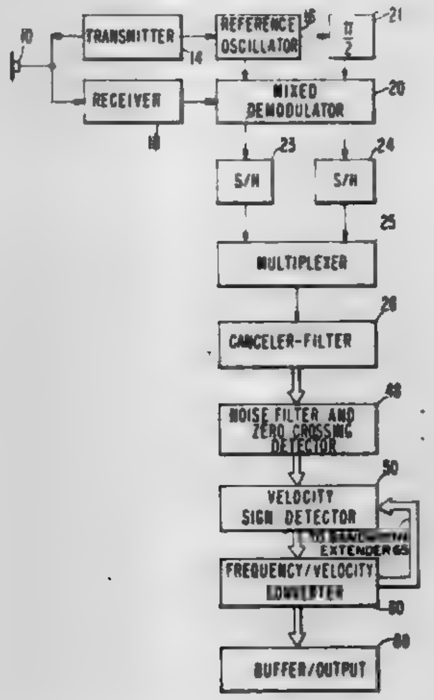
10. An ultrasonic Doppler system for measuring velocity of fluids moving within internal patient structures comprising:

means for transmitting an acoustic beam of addressing pulses of ultrasonic frequency acoustic waves having a regular pulse repetition rate into said patient structure, and receiving the reflected acoustic echo energy from both stationary and moving acoustic scatterers within the path of said beam, and demodulating same into quadrature electrical signals containing both Doppler and stationary echo information;

means for sampling said echo signals into a plurality of equal channels, each corresponding to a portion of the time between said addressing pulses;

means for determining from the digital form of said Doppler echo information, the velocity of said fluids;

filter canceller means receiving signals from said means for sampling, and supplying an output to said velocity determining means, said filter in turn processing each of said channels, said filter employing a recursive loop including a digital memory for comparing the echo signals from each addressing pulse with its intermediate echo signal precedessor, a subtractor to subtract any unchanged non-Doppler components for each channel, and an analog-to-digital converter for rapidly digitizing the remaining changing components of said echo signal, said means including comparator means in parallel with said analog-to-digital converter for identifying the highest active



digital bit between the digital dynamic range of bids in the data path of the incoming echo signals, and the dynamic range of the analog-to-digital converter, said comparator means providing said highest active bit to be added along with the output of said analog-to-digital converter into said memory, so that upon comparison of the output of said memory with the incoming echo signal for each given channel and subtraction therefrom, and subsequent iterations thereof, the number of iterations is decreased;

means included in said velocity determining means for determining from said remaining changing components of said signal in digital form, the zero crossing in one direction to obtain the Doppler frequency for each channel;

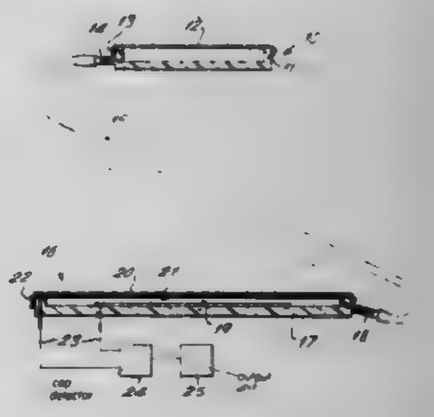
means included in said velocity determining means for determining from said Doppler frequency information, and information as to whether the sign of the Doppler shift is positive or negative, the Doppler frequency for each channel, said means including means accumulating digital counts representative of said zero crossing; and

means for determining the sign of said Doppler shift and supplying said information to said means for determining velocity, including

means for comparing the quadrature components of said quadrature signals to determine the instantaneous sign of said Doppler frequency shift for each channel, and means for comparing said accumulating counts against a predetermined frequency, and upon said counts exceeding the value corresponding to said predetermined frequency, substituting the sign which was determined just prior to exceeding said value, in preference to said instantaneous sign.

4,324,259
BODY FUNCTION DETECTION AND MEDICAL INSTRUMENTS THEREFOR

Basil M. Wright, Rickmansworth, England, assignor to National Research Development Corporation, London, England
Filed Mar. 26, 1980, Ser. No. 133,968
Claims priority, application United Kingdom, May 16, 1977, 20491/77
Int. Cl.³ A61B *5/08*
U.S. Cl. 128—722 **6 Claims**



1. An abdominal spherometer comprising:

a detector capsule means adapted for attachment to the abdominal wall and partly defined by a resilient diaphragm for engagement and complementary movement with said wall, said capsule means being in the general form of a hollowed disc with an overall diameter of 20–40 mm;

compartment means enclosing a variable volume;

flexible valveless tube means connecting the interiors of said capsule means and compartment means in continuous mutual communication and defining with said capsule means a closed pneumatic assembly so that the only means of communication between said compartment means and said capsule means is through said flexible valveless tube means;

said compartment means having a movable wall portion;

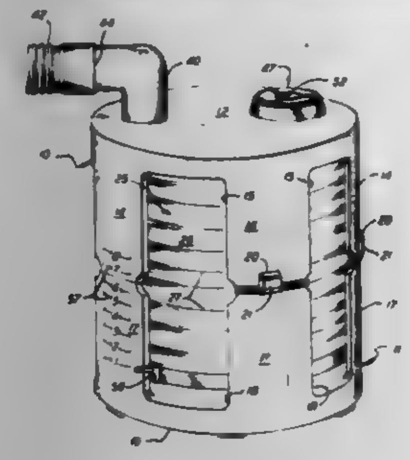
and a transducer means operably connected with said compartment means to respond to volumetric variations of opposite sense in said capsule means due to abdominal expansion and contraction, said transducer means comprising a capacitor including a fixed electrode and a movable electrode, said movable electrode being a flexible, electrically conductive metallized diaphragm forming said movable wall portion of said compartment means.

4,324,260
VOLUMETRIC SPIROMETER

George Puderbaugh, Manlius, N.Y., assignor to Diemolding Corporation, Canastota, N.Y.
Filed Oct. 9, 1979, Ser. No. 83,165
Int. Cl.³ A61B *5/08*
U.S. Cl. 128—728 **11 Claims**

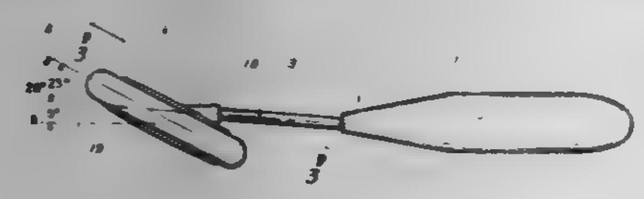
1. A volumetric spirometer comprising a generally cylindrical two-part housing having top and bottom walls, a bellows member positioned in the housing, the bellows member having a bottom closure and being suspended in extended condition from the housing top wall, and port means in the top wall in communication with the interior of the bellows member whereby removing air from the bellows member interior through the port means causes the bellows member to contract, each of the housing parts having a plurality of spaced apart discrete wall sections, the wall sections of the two parts

interfitting with one another to reduce the size of the spirometer for shipping, the wall sections of the housing parts being



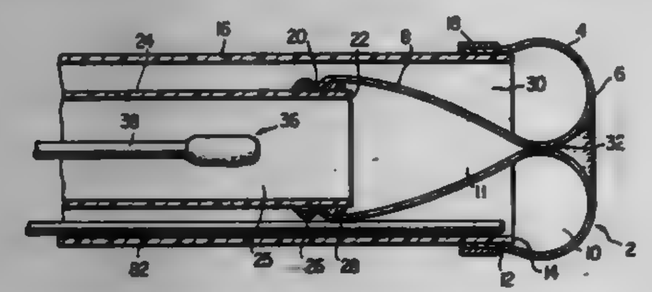
brought into confronting, abutting relation when the spirometer is set up for use.

4,324,261
REFLEX HAMMER
Vernon H. Mark, 333 Leest, Brookline, and Thomas D. Sabin, 28 Collins Rd., Newton, both of Mass.
Continuation of Ser. No. 909,354, May 25, 1978, abandoned. This application Apr. 3, 1980, Ser. No. 136,793
Int. Cl.³ A61B *5/10*
U.S. Cl. 128—740 **16 Claims**



1. A hammer for testing neurological reflexes comprising a head, a flexible shaft and an elongated handle wherein a first and a second end of said flexible shaft is connected to said head and elongated handle, respectively, said head having an elongated striking edge extending and fixed at a first acute angle to said flexible shaft and said handle extending and fixed at a second acute angle to said flexible shaft.

4,324,262
ASPIRATING CULTURE CATHETER AND METHOD OF USE
John E. Hall, Charlottesville, Va., assignor to University of Virginia Alumni Patents Foundation, Charlottesville, Va.
Filed Jan. 2, 1979, Ser. No. 551
Int. Cl.³ A61B *10/00*
U.S. Cl. 128—756 **18 Claims**

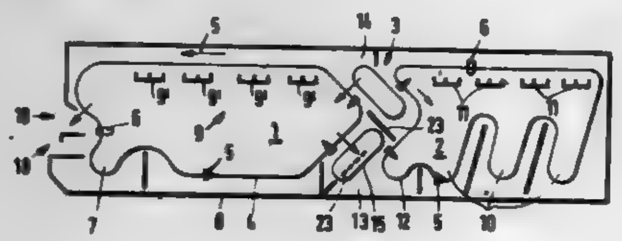


1. A catheter adapted for isolating a portion of a body cavity in a pristine environment, said catheter comprising:
a flexible outer tube having a distal end, said outer tube being adapted for insertion into said body cavity for a substantial portion of said outer tube, whereby said distal end of said outer tube is adjacent said portion of said cavity to be isolated;
an inner tube having a distal end, said inner tube being axially disposed within said outer tube;
means for selectively locking said inner tube relative to said outer tube in at least one position, wherein the distal end of said inner tube is entirely within said outer tube;
a cylindrical reflected membrane having a reflected portion and two ends, one said end of said reflected membrane being connected adjacent said distal end of said inner tube, the other said end of said reflected membrane being connected adjacent said distal end of said outer tube, said reflected membrane defining a pristine chamber, said membrane being shorter in length than said outer tube;
means associated with said membrane for closing said pristine chamber adjacent said reflected portions; and
means associated with the other ends of said tubes for introducing fluid under pressure into said reflected membrane.

4,324,263
HAIR STRAIGHTENING PROCESS AND HAIR CURLING PROCESS AND COMPOSITIONS THEREFOR
Mario de la Guardia, Savannah, Ga., assignor to Carson Products Company, Savannah, Ga.
Filed Feb. 8, 1980, Ser. No. 119,837
Int. Cl.³ A45D *7/00*
U.S. Cl. 132—7 **4 Claims**

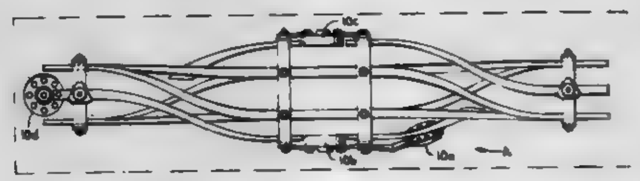
1. A method of treating hair comprising the steps of contacting the hair with an effective amount of a composition comprising the freshly prepared reaction product formed by reacting a first ingredient comprising at least one water-soluble inorganic hydroxide selected from the group consisting of calcium hydroxide, barium hydroxide, strontium hydroxide and mixtures thereof, with a second ingredient comprising at least one water-soluble guanidine salt selected from the group consisting of guanidine phosphate, oxalate, sulfite, fluoride and tartrate, the anion of said guanidine salt forming a substantially water-insoluble salt with the cation of said inorganic hydroxide, and thereafter removing said composition from the hair, said inorganic hydroxide being present in at least a stoichiometric amount relative to said guanidine salt.

4,324,264
BOTTLE CLEANING MACHINE
Roland Krüger; Joachim Ciongwa, both of Dortmund; Günther Smusch, Werne, and Klaus Ehrlinger, Holzwickede, all of Fed. Rep. of Germany, assignors to Holstein und Kappert GmbH, Dortmund, Fed. Rep. of Germany
Filed Apr. 28, 1980, Ser. No. 144,436
Claims priority, application Fed. Rep. of Germany, Apr. 27, 1979, 2917065
Int. Cl.³ B08B *3/02*
U.S. Cl. 134—68 **12 Claims**



1. Machine for cleaning bottles containing several treatment sections for cleaning the bottles of residue and for subjecting the bottles to presoaking, main soaking, and clean rinsing, comprising a machine housing having an inlet for introducing bottles to be cleaned and an outlet for discharging cleaned bottles from said machine housing, circulating chains located within said machine housing for conveying the bottles from the inlet to and through the treatment sections and then to the outlet, and means located on said circulating chains for carrying individual bottles, wherein the improvement comprises that said machine housing comprises a first housing, a second housing and a transfer section intercommunicating said first and second housings for passing bottles therebetween with said first and second housings being completely separate from one another and spaced apart by said transfer section, said circulating chains comprise a first endless chain located within said first housing, a second endless chain located within said second housing, said first and second chains being arranged to circulate continuously and being separate from one another with a portion of each of said first and second chains moving through said transfer section, said means for carrying individual bottles comprising separate carrier compartments mounted on each of said first and second chains, said first and second chains positioned at said transfer section with said carrier compartments on said first and second chains disposed in spaced relation so that bottles supported in said carrier compartments thereon can be transferred in a free-falling manner passing between said first and second chains, and each of said first and second chains having a lower section and an upper section spaced vertically above said lower section.

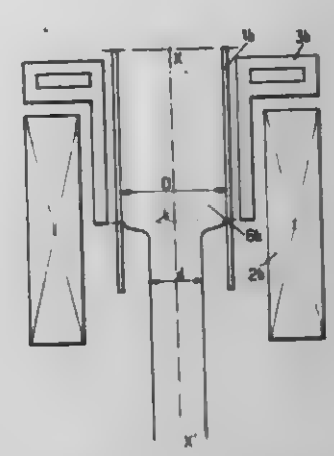
4,324,265
CAN END WASHER AND DRYER
Frederick E. Fauth, Towson, Md., assignor to American Bottlers Equipment Company, Inc., Owings Mills, Md.
Filed Feb. 22, 1980, Ser. No. 123,728
Int. Cl.³ B08B *3/04, 5/04;* B05B *1/28*
U.S. Cl. 134—82 **4 Claims**



1. A device for cleaning can ends on a high speed conveyor line comprising a flat, circular member adapted to be mounted on said conveyor line such that said can ends are at least momentarily juxtaposed with said circular member and closely spaced thereto, said circular member having a plurality of high pressure fluid outlet orifices evenly spaced on the side of said circular member facing said can ends and disposed in an annular array on a circle having a diameter approximately equal to the diameter of the can end, a plurality of exhaust ports extending through said member and open to the atmosphere on the other side of said circular member, said exhaust ports being evenly spaced apart and disposed in an annular array on said circle and alternating with said orifices, a high pressure fluid inlet, and a plurality of high pressure fluid conduits connecting said inlet and said orifices, whereby the high pressure fluid striking the can ends atomizes at least some of any liquid on said can ends and exhausts same through said ports.

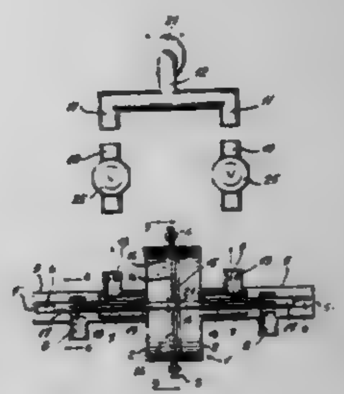
4,324,266
PROCESS AND DEVICE FOR CONFINING LIQUID METALS BY USE OF AN ELECTROMAGNETIC FIELD
Jacques P. Garnier; Marcel A. Garnier, both of Grenoble, and Rene J. Moreau, Voiron, all of France, assignors to Agence Nationale de Valorisation de le Recherche (ANVAR), Neuilly sur Seine, France
Filed May 29, 1980, Ser. No. 154,425
Claims priority, application France, May 31, 1979, 79 14011
Int. Cl.³ B22D *41/08*
U.S. Cl. 137—13 **10 Claims**

1. A method of contracting a stream of molten metal comprising the steps of:
(a) conveying said stream along a path having an upstream portion and a downstream portion, said stream having a predetermined cross-sectional area in said upstream portion; and
(b) reducing said cross-sectional area in a region between said upstream and downstream portions so that said stream has a lesser cross-sectional area in said downstream portion than in said upstream portion, the reducing step including surrounding said region with an electromagnetic field generated by an alternating current having a frequency less than the inverse of the following product:



(magnetic permeability of said stream)×(electrical conductivity of said stream)×(square of the radius of said stream in said downstream portion of said path).

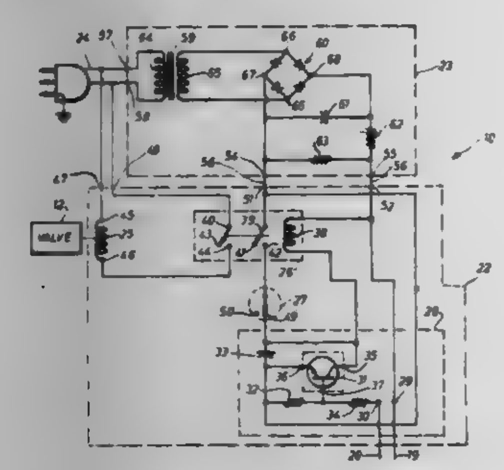
4,324,267
FLUID PRESSURE BALANCING AND MIXING VALVE
Huynh Thien Bach, 5775 Ch. Cote des Neiges, app. 203, Montreal, Prov. of Quebec, Canada (H3S 2S9)
Filed Mar. 27, 1981, Ser. No. 248,341
Int. Cl.³ G05D *11/00*
U.S. Cl. 137—100 **4 Claims**



1. A device for balancing the pressure of two different feeds of fluid comprising: a pressure-balancing housing formed of two hollow and inwardly open halves, means to detachably secure said halves together, each of said halves having, rigidly secured thereto, a longitudinal outwardly extending casing portion, both of the latter being aligned, each said casing portion having a smaller diameter bore closed at the outer end of said casing portion and a larger diameter bore located intermediate and communicating with said smaller diameter portion and said housing, all of said bores being in alignment, each said casing portion further having an inlet opening communicating with said smaller diameter bore and an outlet opening communicating with said larger diameter bore, both said inlet and outlet openings being substantially at right angles to said bores, said housing being provided with a centrally located flexible but non-elastic diaphragm dividing said housing into non-communicative left and right sides; the periphery of said diaphragm being secured between said halves, a rigid longitudinally oriented actuating rod extending through the center of said diaphragm and extending into each larger diameter bore substantially axially thereof and terminating short of the smaller diameter bore, a pair of rigid plates secured to said actuating rod, said diaphragm being sandwiched between said plates, a slide valve consisting of a hollow rigid tube open at both ends and

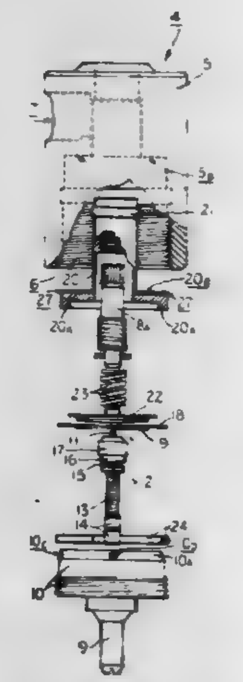
slidably fitted in each said smaller diameter bore and having one end secured to the outer end of said actuating rod respectively, said plates movable between two limit positions in said housing, the marginal portion of said diaphragm extending between said two plates and said housing halves being wide enough to allow free movement of said plates between their two limit positions, each tube having a longitudinal slit in its surface registering with said inlet opening and registering with said larger diameter bore to allow flowing of fluid from said inlet to said outlet opening through said hollow tube, in all positions of said plates, only the static pressure of said fluid being exerted on said plates and diaphragm through said larger diameter bore.

4,324,268
AUTOMATIC FLOOD CONTROL VALVE
Avram A. Jacobson, 100 Sheffield Pl., San Antonio, Tex. 78213
Filed Aug. 24, 1979, Ser. No. 69,264
Int. Cl.³ H01H *35/00;* **G08B** *21/00*
U.S. Cl. 137—312 **9 Claims**



1. A flood control apparatus for sensing a flood and for discontinuing the flow of fluid to an appliance in response to a flood, comprising in combination:
a fluid probe, said probe having a first probe terminal and a second probe terminal, said probe being adapted to respond to the presence of fluid by permitting the flow of electrical current between said first and second probe terminals;
switching means, said switching means having a sensor terminal, a load terminal, and a common terminal, said sensor terminal being connected to said second probe terminal, said switching means being adapted to generate a flood indication signal between said load terminal and said common terminal in response to a switching signal between said sensor terminal and said common terminal;
power supply connection means, said connection means having a first power supply terminal and a second power supply terminal, said first power supply terminal being connected to said common terminal of said switching means, said second power supply terminal being connected to said first probe terminal, said connection means being adapted to permit the connection of a source of electrical current between said first power supply terminal and said second power supply terminal to facilitate electrical energization of the flood control apparatus;
a solenoid valve coil, in combination with a normally open valve adapted to control the flow of fluid to an appliance, said valve coil having a first end connected to a first input terminal, said valve coil having a second end, and said valve coil being adapted to close said valve in response to the flow of electrical current through said valve coil;
a relay, said relay having a first contact switch and a second contact switch, said first and second contact switches having an open position and a closed position, said relay having a closing coil for switching said first and second contact switches between said open and closed positions, said second contact switch being interposed between the second end of said valve coil and a second input terminal, said second contact switch being normally in the open position when no electrical current flows through said closing coil, said first and second input terminals being adapted to permit the connection of an electrical current source, said second contact switch being adapted to permit the flow of electrical current through said valve coil in response to the flow of electrical current through said closing coil, said closing coil having a first end connected to said second power supply terminal and having a second end connected to said load terminal of said switching means, said closing coil being adapted to close said first and second contact switches in response to the flow of electrical current through said closing coil;
said probe, said switching means, and said first resistor being mutually cooperable to produce a flood indication signal between said load terminal and said common terminal of said switching means in response to the flow of electrical current between said first and second probe terminals;
said switching means, said closing coil, said relay, and said valve coil being mutually cooperable to close said valve in response to said flood indication signal, said valve being operable to shut off the fow of fluid to the appliance; and,
circuit means, said circuit means being adapted to keep said normally open valve closed by maintaining the flow of electrical current through said valve coil after said valve is closed in response to said flood indication signal, said circuit means including said first contact switch, said first contact switch being connected between said first power supply terminal and said load terminal of said switching means, said first contact switch being normally in the open position when no electrical current flows through said closing coil, said circuit means, in cooperation with said closing coil, said relay and said valve coil, being adapted to maintain said normally open valve in the closed position, after said closing coil of said relay is energized by said flood indication signal, even if said flood indication signal disappears.

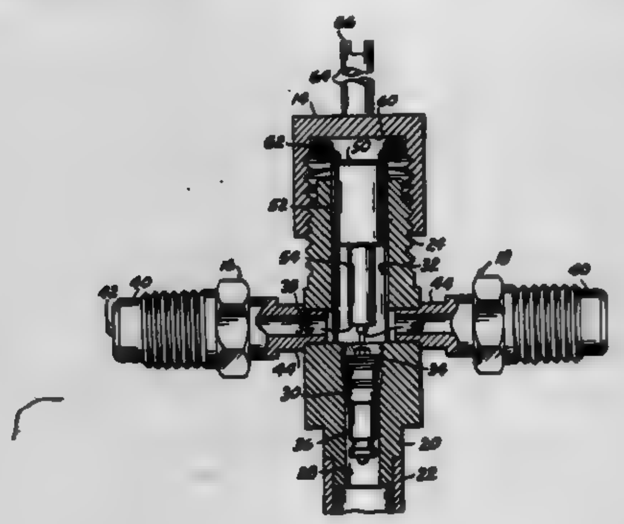
4,324,269
PRESSURE REGULATOR
Frank Baranowski, Jr., 7 Pine St., Lynnfield Center, Mass. 01940
Filed Jul. 15, 1980, Ser. No. 169,156
Int. Cl.³ F16K *43/00*
U.S. Cl. 137—315 **3 Claims**



1. Apparatus for regulating the valving of fluid, comprising a single-part substantially-cylindrical body having an inlet extending axially into one end thereof and an outlet opening

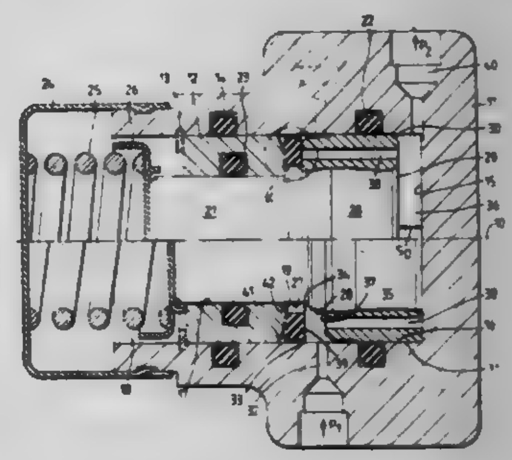
substantially radially through said body at a position axially displaced from the inlet, a cup-shaped insert fitted within said inlet and there sealed peripherally with said body, a spring-activated valve including a seat sealed with said insert at the site of said inlet and a cooperating valve element normally biased toward closure with said seat and having a stem projecting inwardly along the axis of said inlet, a substantially circular and flat diaphragm within said body downstream of said valve and engaging said stem substantially centrally along one side thereof which is exposed to fluid output from said valve, a hollow support fitted coaxially within said body downstream of said insert, said support including a cup-shaped part having its rim sealed fluid-tight with said diaphragm along the periphery thereof on the other side thereof, set spring means within said support for applying force to said other side of said diaphragm axially opposite said stem, said set spring means including a pressure-setting stem extending through said support opposite said diaphragm and further extending outwardly of said body at the downstream end of said body opposite said one end, said hollow support exposing said other side of said diaphragm to atmospheric pressure by way of clearances where said stem extends through said support, said insert being cup-shaped at an inner end and having its rim in engagement with said one side of said diaphragm near the periphery thereof opposite said rim of said hollow support, passageway means formed by spaces between inside surfaces of said body and peripheries of said diaphragm and said support and conducting fluid downstream from said valve around and past the periphery of said diaphragm and part of said support for communication with said outlet, means providing for passage of fluid flow from said valve and to said spaces across the site of said rim of said cup-shaped inner end of said insert, and means sealing the exterior of said support with said body downstream of said passageway means and axially beyond said part of said support to thereby allow said outlet to be in communication with said passageway means while otherwise sealing said passageway means at said downstream end of said body.

4,324,270
REFRIGERANT LINE SERVICE VALVE
John W. Mullins, P.O. Box 20524, Oklahoma City, Okla. 73120
Filed Aug. 7, 1980, Ser. No. 176,217
Int. Cl.³ F16L *41/04*
U.S. Cl. 137—317 **5 Claims**



1. A service valve for a refrigerant line, comprising:
a generally cylindrical axially bored body having external threads at one end portion and having its other end portion secured to and communicating with a refrigerant line, said body having a valve seat in its said other end portion and having a counterbore in its said one end portion terminating outwardly of the valve seat and having a lateral bore intersecting the counterbore adjacent the inner limit of the counterbore;
body bore valve means seated on said valve seat and normally closing the body bore;
mandrel means axially movable in the counterbore for opening said valve means;
cap means engaged with said external threads for moving said mandrel toward said body bore valve means; and,
at least one refrigerant outlet means connected with said body for communication with the counterbore through the lateral bore, and said mandrel and said valve means being perpendicular to the axis of said lateral bore and being adjacent to said outlet means at all times during the opening and closing of said valve means.

4,324,271
PRESSURE REDUCING VALVE
Hans-Henning Lüpertz, Darmstadt, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.
Filed Jul. 11, 1980, Ser. No. 167,613
Claims priority, application Fed. Rep. of Germany, Aug. 8, 1979, 2932142
Int. Cl.³ F16K *17/26*
U.S. Cl. 137—493 **15 Claims**

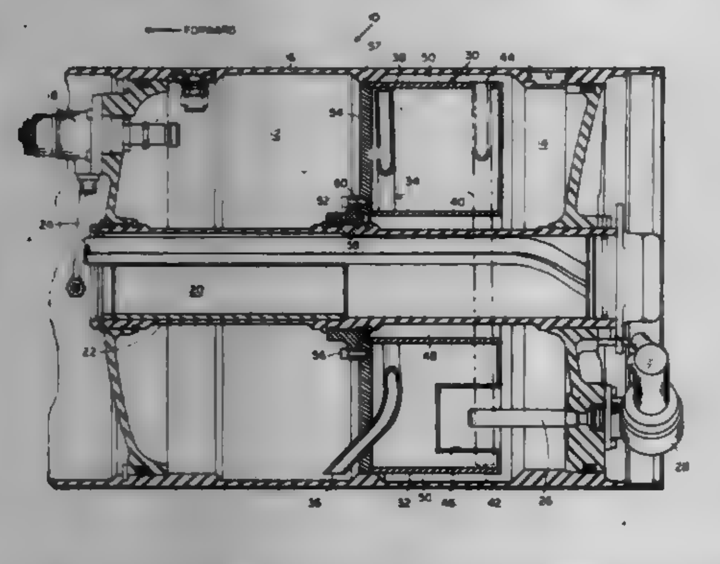


1. A pressure reducing valve comprising:
a housing having a stepped bore therein disposed coaxial of a longitudinal axis;
a stepped piston disposed in said bore coaxial of said axis, said piston including a larger diameter portion having an end surface defining an outlet chamber and smaller diameter portion defining an inlet chamber;
at least one connecting channel between said inlet chamber and said outlet chamber disposed in said larger diameter portion; and
an elastic rubber sealing body disposed in said bore adjacent an inlet orifice of said channel in said inlet chamber to keep said channel open below a given switching pressure and to close said channel when said stepped piston is moved into abutment with said body upon achievement of said given switching pressure, said body being in abutment with a stop formed in the surface of said bore remote from said orifice, said stop being configured to enable an elastic deformation of at least an outer portion of said body when the pressure in said outlet chamber is greater than the pressure in said inlet chamber to open at least a portion of said orifice.

4,324,272
ANTI-SLOSH BAFFLE COMPARTMENT ASSEMBLY
Edward G. Parks, Encinitas, and August J. Troncale, Jr., San Diego, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Oct. 17, 1980, Ser. No. 197,736
Int. Cl.³ F42B *19/00*
U.S. Cl. 137—574 **5 Claims**

1. An anti-slosh fuel compartment assembly for a vehicle wherein the vehicle has an outer cylindrical shell which forms

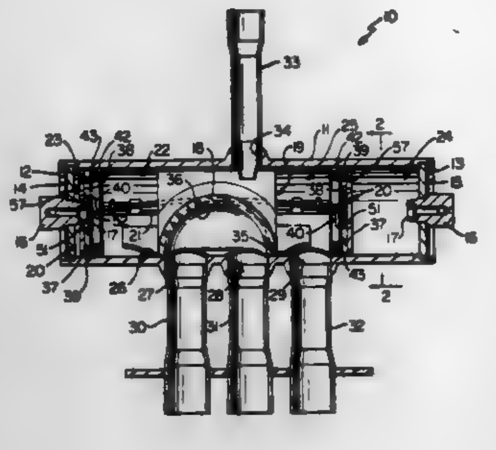
a forward gas pressurized fuel compartment and an aft fuel feeding compartment comprising:
an intermediate compartment mounted between the forward pressurized fuel compartment and the aft fuel feeding compartment within said outer cylindrical shell;
a central tube extending through the forward, intermediate, and aft compartments;
the intermediate compartment being annular about the central tube and spaced therefrom to form an inner annular space therebetween;
the intermediate compartment being spaced from the outer cylindrical shell to form an outer annular space therebetween;
said inner and outer annular spaces being open to and in communication with the aft fuel compartment;
means for sealing the intermediate compartment to the vehicle so that the forward pressurized fuel compartment and

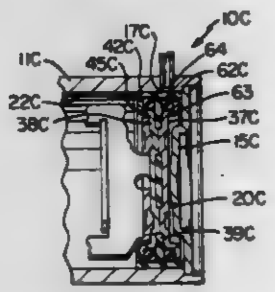


the aft fuel feeding compartment are sealably separated from one another;
an upwardly extending tube mounted in a fore part of the intermediate compartment with a bottom end of the tube opening into a bottom portion of the forward compartment and a top end opening into a top portion of the intermediate compartment; and
another upwardly extending tube mounted in an after part of the intermediate compartment with a bottom end spaced from the bottom of the intermediate compartment and a top end in communication with said aft compartment via said outer annular space so that fuel is communicable from the forward compartment to the aft compartment through the intermediate compartment,
whereby, upon sloshing of fuel in the forward compartment, gas will be trapped in the intermediate compartment to prevent its travel to the aft compartment.

4,324,273
REVERSING VALVE CONSTRUCTION AND PISTON HEAD ASSEMBLY THEREFOR AND METHODS OF MAKING THE SAME
Werner R. Bauer, and Robert A. Van Fossen, both of Richmond, Va., assignors to Robertshaw Controls Company, Richmond, Va.
Division of Ser. No. 958,029, Nov. 6, 1978, Pat. No. 4,245,670. This application Jan. 10, 1980, Ser. No. 110,940
The portion of the term of this patent subsequent to Jan. 20, 1998, has been disclaimed.
Int. Cl.³ F16K *31/122*
U.S. Cl. 137—625.43 4 Claims

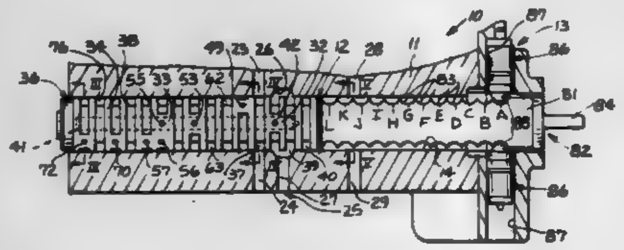
1. In a reversing valve construction having a housing means provided with a movable valve member therein that is interconnected to a piston unit disposed in said housing means and having opposed piston heads that define a main chamber of said housing means therebetween, said housing means having opposed ends respectively cooperating with said piston heads to define a pair of opposed control chambers therebetween, said ends respectively having valve seats leading to said control chambers, each said piston head having a flexible seal member secured between a front disc member and a backing plate of the respective piston head, each said seal member having an integral peripheral skirt that is urged into sliding and sealing engagement with an internal peripheral surface of said housing means by a biasing means of its respective piston head,





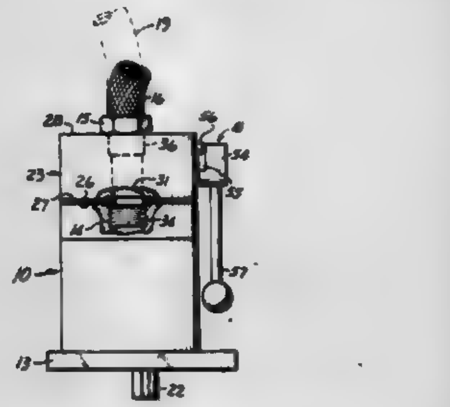
the improvement wherein each biasing means comprises a pair of annular resilient O-ring members carried by the respective piston head and respectively radially engaging and urging said skirt of said respective piston head radially outwardly into said sliding and sealing engagement, each said seal member of the respective piston head being adapted to close said valve seat associated with said respective piston head with moved thereagainst by said piston unit.

4,324,274
SELECTOR VALVE
Kenneth F. Golan, Pekin; Charles N. Goloff, Secor, and James L. Schmitt, Metamora, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
PCT No. PCT/US80/01398, § 371 Date Oct. 17, 1980, § 102(e) Date Oct. 17, 1980
PCT Filed Oct. 17, 1980, Ser. No. 261,110
Int. Cl.³ F15B *13/06*
U.S. Cl. 137—625.68 7 Claims



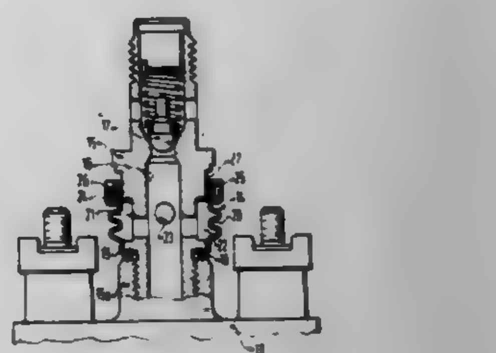
1. A selector valve (10) comprising:
a body (11) having a bore (14), first and second signal ports (18,17), a drain port (23), and an inlet passage (25), said first and second signal ports (18,17) and said drain port (23) opening into the bore (14) and being angularly spaced one from another in a plane transverse to the axis of the bore (14), said inlet passage (25) being in communication with the bore (14) and longitudinally spaced from the signal ports (18,17) and the drain port (23); and
a spool (12) having a manifold (41), first and second lands (32,33), an annular groove (37) positioned between said first and second lands (32,33), said first land (32) having a radial passage (42/43), said second land (33) having a first radial passage (48) and a first arcuate pocket (60) in circumferential alignment and a second radial passage (50) and a second arcuate pocket (62) in circumferential alignment and being longitudinally spaced from the first radial passage (48) and first pocket (60), said first and second radial passages (42/43,48,50) being in communication with said manifold (41), said spool (12) being reciprocatably positioned within the bore (14) and movable longitudinally between a first position (A) at which the first and second signal ports (18,17) are in communication with the drain port through the annular groove (37), a second position (B) at which the radial passage (42/43) of the first land (32) is in communication with the inlet passage (25), the first radial passage (48) of the second land (33) is in communication with the first signal port (18), and the second signal port (17) is in communication with the drain port (23) through the first arcuate pocket (60) in the second land (33), and to a third position (C) at which the first radial passage (48) of the second land (33) is in communication with the inlet passage (25), the second radial passage (50) of the second land (33) is in communication with the second signal port (17) and the first signal port (18) is in communication with the drain port (23) through the second arcuate pocket (62) of the second land (33).

4,324,275
RETROFITTING METHODS AND RETROFITTED HYDRAULIC DRIVES
John D. Ward, 997 E. Athens St., Altadena, Calif. 91001
Filed Jan. 7, 1980, Ser. No. 110,281
Int. Cl.³ F16K *5/04*
U.S. Cl. 137—876 18 Claims



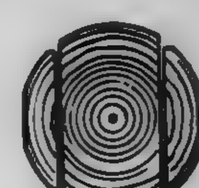
13. A hydraulic drive comprising in combination:
an inlet opening adapted for reception of a first fitting for a hydraulic fluid delivery hose;
an adjacent outlet opening adapted for reception of a second fitting for a hydraulic fluid return hose;
means connected between said inlet and outlet openings and driven by said hydraulic fluid;
a block retrofitted on said drive and having a front portion at said adjacent inlet and outlet openings, and a rear portion opposite said front portion;
a first through-opening leading from said rear portion to said front portion for communication with said inlet opening and being adapted for reception of said first fitting at said rear portion;
a second through-opening leading from said rear portion to said front portion for communication with said outlet opening and being adapted for reception of said second fitting at said rear portion; and
valve means in said retrofitted block manually actuable between an open position providing an interconnection between said through-openings for deactivating said driven means and a closed position blocking said interconnection for reactivation of said driven means.

4,324,276
NOISE DAMPING DEVICE
Ulrich Kemner, Sachsenheim, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany
Filed May 24, 1979, Ser. No. 42,260
Claims priority, application Fed. Rep. of Germany, Jul. 22, 1978, 2832299
Int. Cl.³ F16L *55/04*; F16K *15/00*
U.S. Cl. 138—30 4 Claims



3. A noise damping device for smoothing out and reducing pressure vibrations which occur in automobile fuel feed pumps including a fuel pressure line extending from said fuel feed pump to a carburetor of an automobile engine, which comprises: a pressure connection piece connected to said fuel feed pump; a pressure chamber formed by an elastically resiliently yielding wall portion having upper and lower ends surrounding a portion of said pressure connection piece; a fuel inlet connected with said pressure connection piece; said yielding wall portion comprising an annulus having an undulatory surface with the lower end of said yielding wall portion fixed in place on the outside of said pressure connection piece, a mounting ring secured to the upper end of said yielding wall portion and mounted on the outside of said pressure connection piece; said mounting ring being slidable relative to said pressure connection piece and said pressure connection piece including aperatures which permit full flow into said pressure chamber from said fuel inlet.

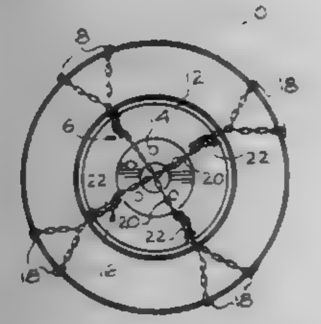
4,324,277
METHOD FOR PROCESSING ROUND LUMBER INTO CUT LUMBER
Otto Kreibaum, 7 Ortsteil Thuste, 3216 Salzhemmendorf, Fed. Rep. of Germany
Filed May 16, 1980, Ser. No. 150,304
Claims priority, application Fed. Rep. of Germany, May 21, 1979, 2920543
Int. Cl.³ B27C *9/04*
U.S. Cl. 144—312 4 Claims



1. A method of producing central heart planks and peripheral slabs from logs cut into cylindrical lumber pieces, each slab of each lumber piece having in a transverse section of the lumber piece, a straight inside edge between the slab and the central heart plank, slab edge profiles inwardly of the circular profile of the round lumber piece at each end of said straight inside edge, and a circular outside surface portion adjacent

each edge profile, the method comprising the steps of conveying each cylindrical lumber piece longitudinally, cutting the edge profiles of at least one slab of the cylindrical lumber piece as it is longitudinally conveyed, guiding each cylindrical lumber piece, as it is being longitudinally conveyed, with the cut edge profiles and, during said guiding step, cutting the slab along its said straight inside edge to separate it from the central heart plank of the cylindrical lumber piece.

4,324,278
EASY-ON TIRE CHAINS
Carl D. Guenther, 7900 Airlane Ave., Los Angeles, Calif. 90045
Filed May 16, 1980, Ser. No. 150,458
Int. Cl.³ B60C *27/00*
U.S. Cl. 152—213 R **9 Claims**



1. A tire assembly adapted for use on wheels mounted to hubs on motor vehicles comprising:

a shaped disc adapted to be secured between a wheel and a hub, said disc projecting radially outwardly from its mounting and defining a plurality of anchoring apertures circumferentially spaced about the outward projection thereof; and

a plurality of elongated chain sections, each chain section comprising

(a) a pair of hook elements at opposite ends thereof for attaching to the disc at generally diametrically opposite anchoring apertures thereon,

(b) two pairs of tread chain segments, the segments of a pair being fastened at one end to a corresponding hook element at points spatially separated from each other, the segments being attached at their other ends to corresponding ends of an intermediate chain, and

(c) an intermediate chain joining the pairs of tire chain segments for extending diametrically across the face of a wheel when the chain section is mounted in operative position in order to permit independent mounting of the chain section and establish traction for the wheel independently of other sections of the assembly.

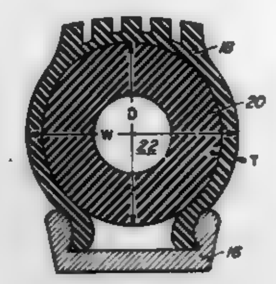
4,324,279
VEHICLE TIRE COMPRISING PNEUMATIC TIRE INSERTS
Richard B. McFarlane, 2400 Myrtle St., Bakersfield, Calif. 93301
Continuation of Ser. No. 3,991, Jan. 16, 1979, Pat. No. 4,275,782, which is a continuation of Ser. No. 776,845, Mar. 24, 1977, abandoned. This application Jan. 26, 1981, Ser. No. 228,110
The portion of the term of this patent subsequent to Jun. 30, 1998, has been disclaimed.
Int. Cl.³ B60C *7/00*
U.S. Cl. 152—314 **40 Claims**

1. In combination:

(a) a wheel rim;

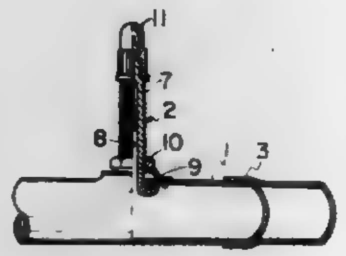
(b) a pneumatic tire casing mounted on said wheel rim; and

(c) a tire insert, said tire insert comprising a resilient annular member having an internal annular bore means dimensioned such that said bore means defines an empty volume from 0.1444 to 0.3136 of the total volume of said member, said insert having a durometer hardness of between 30 to 65 as measured by a type A Shore durometer testor, wherein if L is the total length of the mean circumference of said annular member and C is the total length of the mean circumference of said pneumatic tire casing on said rim, L is larger than C prior to insertion of said insert in said pneumatic tire casing by an amount between 0.005C and 0.013C and wherein if D is the mean diameter of a



cross section of the resilient annular member, W the width and T the wall thickness of the tire casing under normally inflated conditions, then D=W−2T whereby said insert is frictionally retained within said pneumatic tire casing against circumferential sliding movement relative to said tire casing when in use.

4,324,280
INNER AIR-TUBE OF TIRE FOR BICYCLE
Hirokazu Kubota, Nishinomiya, Japan, assignor to Matsushita Electric Industrial Company, Limited, Osaka, Japan
Continuation of Ser. No. 29,713, Apr. 13, 1979, abandoned. This application Dec. 31, 1980, Ser. No. 221,891
Int. Cl.³ B60C *1/00*
U.S. Cl. 152—349 **7 Claims**



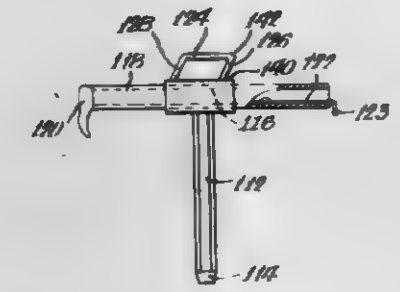
1. An inner air-tube of a bicycle tire, said inner air tube substantially composed of a thermoplastic urethane resin capable of undergoing after-crosslinkage at room temperature and of thereby having improved strength, said resin comprising a bifunctional polyol having a molecular weight of about 1500–2500, a diisocyanate having a molecular weight of about 200–250, and a diol having a molecular weight of about 62–180, the ratio by mole of NCO in the diisocyanate to OH in the combination of the bifunctional polyol and the diol being in the range of 1.05–1.10:1; said bifunctional polyol being a polycaprolactone with a molecular weight of about 1500–2500.

4,324,281
METHOD, COMPOSITION AND PRODUCT EMPLOYING A TETRACARBOXYLIC DIANHYDRIDE TO IMPROVE ADHESION BETWEEN A METAL MEMBER AND A CONTIGUOUS RUBBER SKIM STOCK
Frederick J. Ravagnani, Uniontown, and Steven E. Schonfeld, Akron, both of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio
Filed Apr. 11, 1980, Ser. No. 139,302
Int. Cl.³ B60C *1/00*; B29H *9/02*; C09J *3/00*; C08K *5/09*
U.S. Cl. 152—359 **9 Claims**

1. In a cured rubber skim stock of conventional composition, wherein said cured rubber skim stock of conventional composition does not include an epoxy resin adhesive said stock being bonded to at least one metal member contained within said

stock, the improvement wherein from 0.5 to 15 phr of a tetracarboxylic dianhydride is incorporated into said stock prior to curing.

4,324,282
TIRE CHANGING APPARATUS
Charles G. Leeper, Antioch, Tenn., assignor to Hennessy Industries, Inc., Elk Grove Village, Ill.
Filed Mar. 26, 1980, Ser. No. 134,305
Int. Cl.³ B60C *25/08*
U.S. Cl. 157—1.22 **4 Claims**



1. A tire changer comprising:

a base having a lower extremity to support the base on an underlying surface;

a table top having wheel securing means;

means mounting said tabletop on said base for pivotal movement about a generally horizontal axis between tire changing positions and a generally vertical, wheel loading and unloading position whereat said securing means is in sufficiently close proximity to the underlying surface supporting the base so as to be engageable with and securable to an upright wheel and tire on the underlying surface;

means for selectively pivoting said tabletop between said positions;

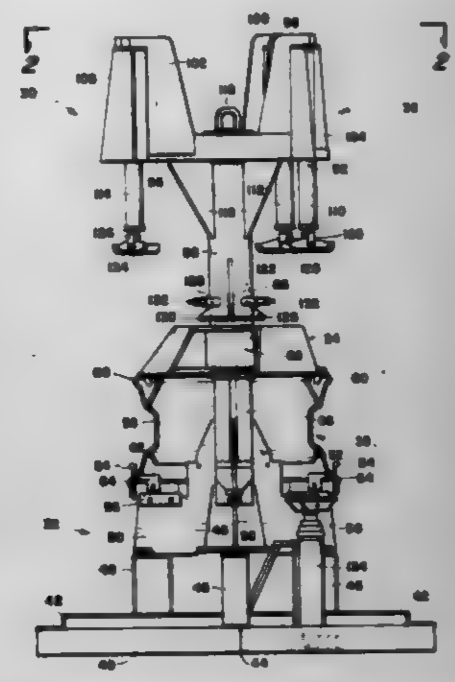
means for driving a tire changing tool relative to said securing means, and thus a wheel secured thereby to said tabletop;

and;

an elongated drivable tool connectible to said driving means for mounting a tire on a wheel including a tool head and a tire bead support surface remote from said tool head, said tire support surface being defined by a handle on said tool.

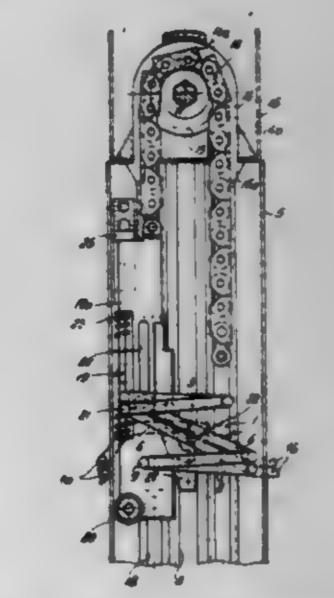
4,324,283
METHOD AND APPARATUS FOR MOUNTING A GIANT TIRE
Floyd E. McCann, and Robert M. Fornell, both of Tulsa, Okla., assignors to Unit Rig & Equipment Co.
Filed May 6, 1980, Ser. No. 147,196
Int. Cl.³ B60C *25/06*
U.S. Cl. 157—1.28 **5 Claims**

1. An improved tire changing apparatus comprising a stand having an upwardly extending ram, means for locking the lower flange of a single-piece dual-flanged rim onto said stand, an oblique mounting cone having the majority of its side surfaces cut away except for three sloped side segments wherein one sloped side segment is of a steeper inclination with respect to the horizontal than the two remaining side segments, said two remaining side segments of lesser inclination being spaced from said one steeply sloped side segment in opposite circumferential directions somewhat less than one third of the circumference of said cone, said cone being positioned atop said rim and having said ram extending through its center, a presshead having a downwardly extending central post and three cylinder arms, said presshead being positioned above said cone and having said ram received within said post, means for locking said ram and said post together, said cylinder arms having upper ends pivotally mounted on the outer ends of a portion of said presshead and extending downwardly therefrom, a horizontally disposed foot being pivotally mounted at its center on the lower end of each cylinder arms wherein each foot is aligned with a respective sloped side segment and being



adapted to rest on the upper sidewall of a pneumatic tire to be mounted on said rim.

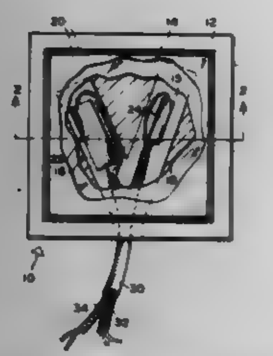
4,324,284
VENETIAN BLIND
Paul Frei, Elgg, Switzerland, assignor to Griesser A. G., Switzerland
Filed Feb. 7, 1980, Ser. No. 119,501
Int. Cl.³ E06B *9/30*
U.S. Cl. 160—172 **9 Claims**



1. A venetian blind, comprising: a plurality of slats; a pin extending from at least one side of each of said slats; a casing having a longitudinally extending slot for receiving said pins to permit longitudinal movement of said slats; collapsible support means interconnecting said plurality of slats for pivoting said slats as said slats are moved to extend and retract said blind, and for defining a full extension of said slats; a driven windup shaft rotatably mounted with respect to said casing; a draw member engaged with said windup shaft and movable in said casing by rotation of said shaft to retract and extend said slats; an upper carriage part connected to one end of said draw member having a stop surface; an end stop on said casing against which said stop surface is abutable to stop movement of said draw member in one direction; a lower carriage part slidably connected to said upper carriage part and connected to a lowermost one of said slat pins; and spring means con-

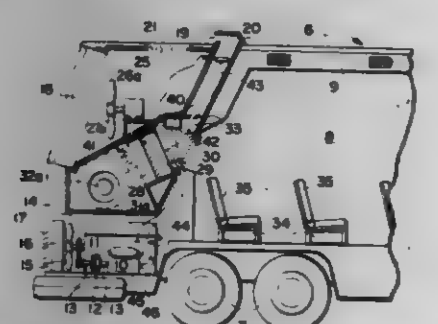
nected between said upper and lower carriage parts to bias said upper and lower carriage parts apart, whereby, additional motion of said draw member beyond the point where said slats are fully extended is taken up by said spring means.

4,324,285
APPARATUS FOR HEATING AND COOLING DEVICES UNDER TEST
G. Douglas Henderson, Orlando, Fla., assignor to Martin Marietta Corporation, Orlando, Fla.
Filed Mar. 12, 1979, Ser. No. 19,684
Int. Cl.³ F25B *13/00*
U.S. Cl. 165—2 **17 Claims**



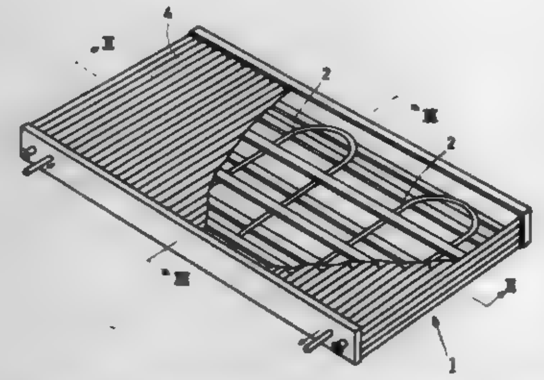
13. The method of performing low temperature electrical tests on microelectronic circuits comprising the steps of:
placing a heat sink in heat transfer contact with the device under test, the heat sink having a heater, and a reservoir containing dry ice;
controlling the heater to achieve a selected equilibrium temperature between the temperature of the dry ice and the ambient temperature;
performing low temperature electrical tests; and
removing the heat sink from the device under tests.

4,324,286
CONTROL FOR VEHICLE TEMPERATURE CONDITIONING SYSTEM
William C. Brett, Wetumpka, Ala., assignor to The Trane Company, La Crosse, Wis.
Filed Mar. 24, 1980, Ser. No. 132,724
Int. Cl.³ F25B *13/00;* **B60H** *3/04*
U.S. Cl. 165—2 **16 Claims**



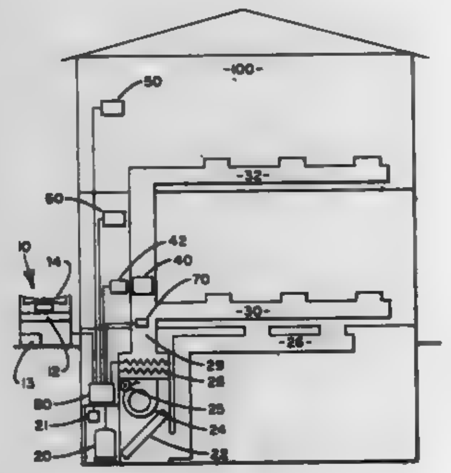
10. A method for controlling a temperature conditioning system including a vapor compression air conditioner and a heater for use in a vehicle, said method comprising the steps of
(a) sensing the temperature of air discharged from the system into the interior of the vehicle, at a point downstream of the heater;
(b) sensing the temperature conditioning demand in the interior of the vehicle; and
(c) activating the heater in a reheat mode to heat air cooled by the air conditioner, said reheat mode being activated in response to the temperature conditioning demand; and further, de-activating the heater to terminate the reheat mode if the discharge air temperature increases above a setpoint value, whereby the temperature conditioning demand in the interior of the vehicle is satisfied without excessive reheat overshoot resulting from the thermal inertia of the heater.

4,324,287
THERMAL STORAGE DEVICE
Johann Schröder, Aachen, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Oct. 12, 1979, Ser. No. 84,044
Claims priority, application Fed. Rep. of Germany, Oct. 28, 1978, 2846988
Int. Cl.³ F28D *21/00*
U.S. Cl. 165—10 **3 Claims**



1. A thermal storage device comprising a container filled with a heat storage medium comprising (1) water or a first eutectic mixture of water and a salt hydrate and (2) 1 to 6% by volume of a second eutectic mixture of water and a salt hydrate, the freezing point of component (2) being below the freezing point of component (1).

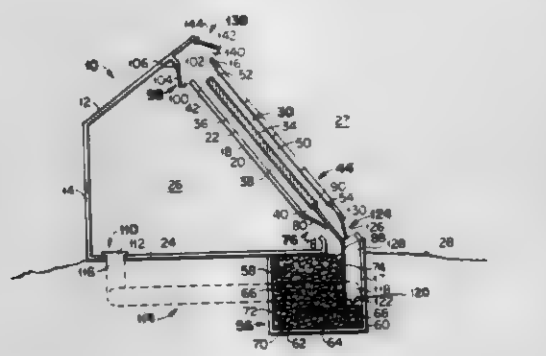
4,324,288
LEVEL SUPPLY AIR TEMPERATURE MULTI-ZONE HEAT PUMP SYSTEM AND METHOD
Phil J. Karns, Baldwinsville, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.
Filed Feb. 11, 1980, Ser. No. 120,588
Int. Cl.³ F24F *3/00*
U.S. Cl. 165—22 **11 Claims**



1. Apparatus for supplying conditioned air to an enclosure which comprises:
a refrigeration circuit having an indoor heat exchanger for transferring heat energy between refrigerant and the air to be conditioned;
circulating means for directing air through the indoor heat exchanger;
means for regulating the volume of air circulated through the indoor heat exchanger by the circulating means;
a return plenum for supplying air to the circulating means;
a supply plenum for receiving conditioned air from the indoor heat exchanger;

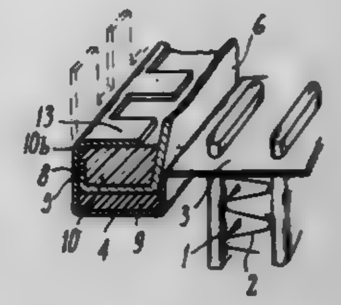
a primary zone plenum connected to receive conditioned air from the supply plenum;
a secondary zone plenum connected to receive conditioned air from the supply plenum;
means for regulating the volume flow from the supply plenum to the secondary zone plenum;
means for ascertaining the temperature of the air discharged from the indoor coil; and
control means for adjusting the means for regulating the volume of air circulated through the indoor heat exchanger and for regulating the volume of air flow from the supply plenum to the secondary zone plenum both in response to the temperature of the air discharged from the indoor heat exchanger.

4,324,289
ENVIRONMENTAL HEATING AND COOLING APPARATUS
Raymond L. Lahti, 7520 Pinen Dr., Knoxville, Tenn. 37902
Continuation-in-part of Ser. No. 923,907, Jul. 12, 1978, abandoned. This application May 1, 1980, Ser. No. 145,713
Int. Cl.³ F25B *29/00*
U.S. Cl. 165—48 S **8 Claims**



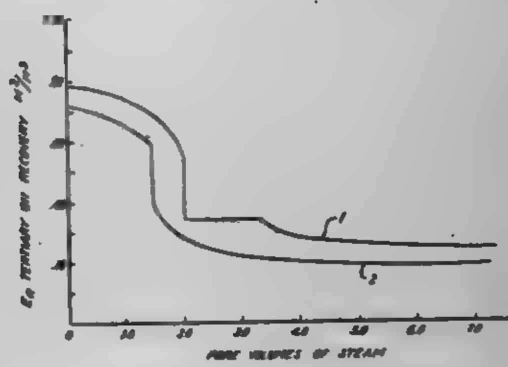
1. An apparatus for controlling building environment by use of circulating air and the ambient environment comprising:
a solar collector with a front side and back side;
a preheating channel for preheating the circulating air which is in heating contact with one of said sides of said solar collector;
a primary heating channel for heating circulating air which is in heating contact with the other of said sides of said collector;
a collection chamber for collecting circulating air from a selection of one of the building environment and the preheating channel and distributing the air to the primary heating channel and selectively to the ambient environment;
a means for selectively introducing air from said collection chamber into the ambient environment;
a means for storing the heat or cold from the circulating air;
a means for introducing the circulating air to said storing means from one of a selection of ambient environment air and air from the primary heating channel;
a means for introducing the circulating air from the storage means to one of a selection of the building environment and said preheating channel;
a means for selectively exhausting the circulating air from the building environment to said collection chamber;
a means for selectively exhausting the circulating air from the building environment to said storage means; and
a means for circulating the air.

4,324,290
HEAT EXCHANGER COMPRISING A CORE OF TUBES ENGAGED INSIDE END PLATES MECHANICALLY CONNECTED WITH HEADER BOXES
Jean-Pierre Moranne, Saint-Leu-La-Foret, France, assignor to Societe Anonyme des Usines Chausson, Asnieres, France
Filed Oct. 27, 1980, Ser. No. 200,986
Claims priority, application France, Nov. 12, 1979, 79 27789
Int. Cl.³ F28F *9/02*
U.S. Cl. 165—173 **12 Claims**



1. A heat exchanger of the type including a core of tubes (1) engaged in tube plates (3) that have a peripheral groove (4) bounded outwardly by a raised edge (5), with a sealing gasket (9) on the bottom of the groove in order to be clamped by under side of an edge of a header box (6) maintained by gripping means (13), characterized in that the header box is thin walled and in that the edge of said header box has a top portion with a small bar (10) interposed between said top portion and said gripping means.

4,324,291
VISCOUS OIL RECOVERY METHOD
Kenny Wong, Houston, and Wilbur L. Hall, Bellaire, both of Tex., assignors to Texaco Inc., White Plains, N.Y.
Filed Apr. 28, 1980, Ser. No. 144,732
Int. Cl.³ E21B *43/24. 47/06*
U.S. Cl. 166—252 **20 Claims**



1. A method for recovering viscous petroleum from a subterranean, viscous petroleum-containing, permeable formation including a tar sand deposit, said formation being penetrated by at least one injection well and by at least one production well, comprising:
(a) injecting into the formation via the injection well, a thermal recovery fluid comprising steam at an injection pressure less than the fracture pressure of the overburden above the viscous petroleum formations, and at a determinable flow rate, while restricting the flow rate of fluids from the production well to a value less than the rate at which fluids are being injected into the injection well, in order to increase the pressure in the formation;
(b) determining the formation pressure in the vicinity of the production well;
(c) continuing injecting said thermal recovery fluid into the injection well and producing fluids from the production well at a restricted value until the formation pressure

adjacent the production well rises to a predetermined value;

(d) thereafter increasing the rate of fluid production from the formation via the producing well to the maximum safe value and simultaneously reducing the injection rate of thermal recovery fluid into the injection well to a value which is less than 50 percent of the original rate at which thermal recovery fluid was injected into the injection well, until the flow rate of fluids from the production well drops to a value below 50 percent of the initial fluid production flow rate;

(e) injecting a noncondensable gas into the formation via the injection well at a pressure less than the overburden fracture pressure while restricting the flow rate of fluids from the production well to a value less than the rate at which gas is being injected into the formation until the pressure in the formation adjacent the production well is from 50 to 90 percent of the predetermined pressure of step (c);

(f) thereafter discontinuing injecting noncondensable gas and injecting a thermal recovery fluid comprising steam into the formation while restricting production from the formation via the production well to a value less than the steam injection rate in order to increase the pressure in the formation adjacent to the production well to a predetermined value;

(g) thereafter increasing the rate of fluid production from the formation via the production well to the maximum safe value and simultaneously reducing the rate of injecting thermal recovery fluid to a value less than 50 percent of the original injection rate at which the thermal recovery fluid was injected and less than the production rate until the flow rate of fluids from the production wells drops to a value below 50 percent of the initial fluid production flow rate of this step.

4,324,292

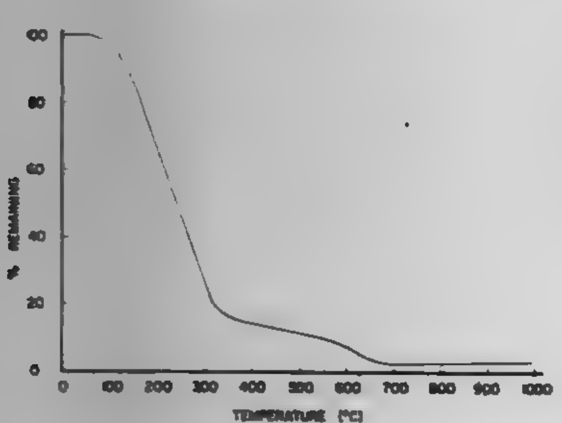
PROCESS FOR RECOVERING PRODUCTS FROM OIL SHALE

Harold R. Jacobs, and Kent S. Udell, both of Salt Lake City, Utah, assignors to University of Utah, Salt Lake City, Utah

Continuation of Ser. No. 13,106, Feb. 21, 1979, abandoned. This application Jul. 18, 1980, Ser. No. 170,202

Int. Cl.³ E21B *43/243*

U.S. Cl. 166—261 18 Claims



1. A process for recovering hydrocarbonaceous products from a body of fragmented oil shale in situ, comprising:

volatilizing hydrocarbonaceous products from the body of fragmented oil shale by forming in situ a combustion front in the oil shale adjacent the lower end of the body of fragmented oil shale, the thermal energy from said combustion front producing a body of hot shale, a first lower molecular weight fraction and a higher molecular weight fraction;

refluxing the higher molecular weight fraction by condensing said higher molecular weight fraction on oil shale above said combustion front forming a condensate and flowing said condensate downwardly into contact with said body of hot shale;

producing a carbonaceous residue on said body of hot shale by cracking said condensate on said body of hot shale while producing a second lower molecular weight fraction and said carbonaceous residue, the second lower molecular weight fraction volatilizing and passing upwardly through said body of fragmented oil shale;

burning said carbonaceous residue, thereby continuously forming said combustion front and advancing said combustion front upwardly through said body of fragmented oil shale; and

sweeping said first and second lower molecular weight fractions from said body of fragmented oil shale by passing a noncombustible gas upwardly through said body of fragmented oil shale so as to sweep away said first and second lower molecular weight fractions while allowing condensation and downward flow of said higher molecular weight fraction in said refluxing step.

4,324,293

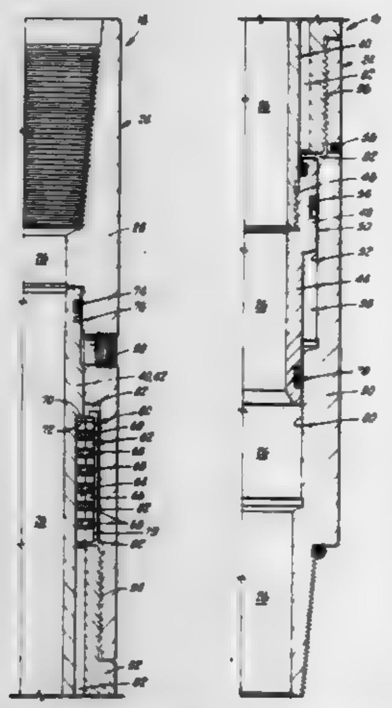
CIRCULATION VALVE

Donald F. Hushbeck, Duncan, Okla., assignor to Halliburton Services, Duncan, Okla.

Filed Apr. 29, 1980, Ser. No. 145,319

Int. Cl.³ E21B *34/10, 43/12;* F16K *17/40*

U.S. Cl. 166—317 5 Claims



1. A circulation valve, comprising:

a cylindrical housing having an open longitudinal passageway therethrough, a circulation port disposed through a wall of said housing, and a power port means disposed through said wall of said housing;

a valve mandrel slidably received in said housing and movable from a closed position closing said circulation port to an open position opening said circulation port, said valve mandrel including an annular piston means received in said housing for moving said valve mandrel from its closed position to its open position, said power port means being a means for communicating said piston with a pressure exterior of said housing;

frangible restraining means between said valve mandrel and said cylindrical housing for restraining movement of said valve mandrel from its closed position to its open position until said pressure exterior of said housing exceeds a predetermined value, and for frangibly releasing said valve mandrel when said pressure exterior of said housing exceeds said predetermined value, said frangible restraining means including a carrying structure arranged for force transmitting engagement with a surface of said valve mandrel; and

wherein said power port is located above said piston means, said carrying structure is located above said power port, and said circulation port is located above said carrying structure.

4,324,294

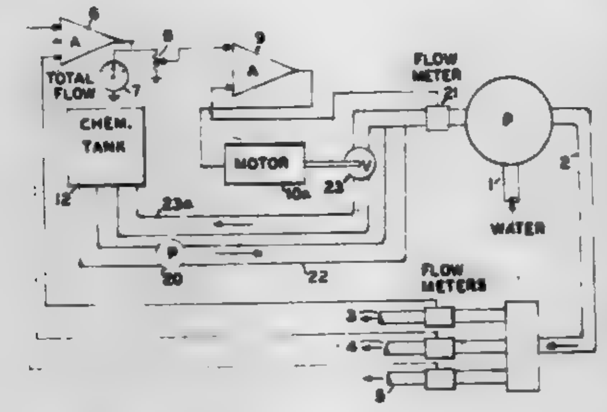
CHEMICAL INJECTION CONTROL SYSTEM FOR FIRE FIGHTING

John McLoughlin, 92 Mobrey La., Smithtown, N.Y. 11787; Neocles Athanasiades, Setauket, and Yehuda Rotblum, Lake Grove, both of N.Y., assignors to John McLoughlin, Smithtown, N.Y.

Continuation-in-part of Ser. No. 10,180, Feb. 7, 1979, Pat. No. 4,246,969. This application Apr. 21, 1980, Ser. No. 141,777

Int. Cl.³ A62C *35/16*

U.S. Cl. 169—13 1 Claim



1. Means to inject chemicals into a fire fighting system of the type having a plurality of water hoses,

a source of water supply,

and a source of chemicals;

means to automatically meter a certain ratio of chemicals into the water supply comprising:

a first line connecting the chemical source to the water supply,

means to measure the total flow,

a manual chemical pump connected to the chemical source in the first line and connected to pump chemicals into the water supply,

a second line connected in parallel with the first line,

a valve connected completely within the second line,

and servo motor means responsive to the total flow to control the valve to pump any excess of chemicals back to the chemical source, means in the first line upstream of the source of water supply to allow a portion of the chemicals to be dispensed while the valve is opened and the excess chemicals are being returned to the chemical source.

4,324,295

AGRICULTURAL IMPLEMENT ATTACHABLE TO A TRACTOR

Ernst Weichel, Bahnhofstr. 1, D 7326 Heiningen, Fed. Rep. of Germany

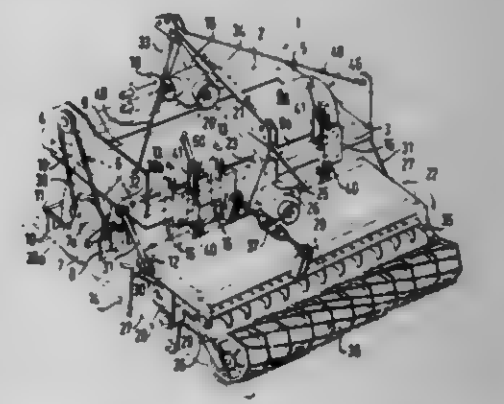
Filed Dec. 8, 1978, Ser. No. 967,873

Claims priority, application Fed. Rep. of Germany, Dec. 14, 1977, 2755676

Int. Cl.³ A01B *49/04*

U.S. Cl. 172—28 13 Claims

1. Agricultural implement arranged to be attached to a tractor for movement in the forward direction over a field and used for loosening tillable soil covered with organic material such as live or dead plants or harvesting residue, said implement comprises a main support frame having a front end support and a rear end support spaced from the front end support in the direction opposite to the forward direction of movement of said implement, and a pair of laterally spaced side supports extending between said front and rear end supports, an axially extending flail-blade cylinder dependently supported on and extending across said frame between said side supports, said flail-blade cylinder including a plurality of flail-blades arranged around the circumference of said cylinder and along the axial direction thereof, means for driving said cylinder, means for covering at least the upper portion of said cylinder, means for loosening soil mounted on and extending downwardly from said main support frame rearwardly of said cylinder, support means located rearwardly of said means for loosening the soil, means for breaking up clods of loosened soil mounted on said support means rearwardly of said means for loosening soil, said flail-blade cylinder arranged to pick up organic material covering the ground, to comminute the material and to throw it in the rearward direction onto the loosened soil over which the implement passes, wherein the improvement comprises that said means for covering said cylinder comprises a covering hood extending around the upper portion of said cylinder between said side supports from the front side of the cylinder toward the rear side thereof with the rear end of said hood arranged for selectively directing in the rearward direction the material acted on by the cylinder, a headstock for



the power lift of the tractor is secured to and extends upwardly from said front end support, distributor gear means mounted on said front end support for driving at least said flail-blade cylinder and including a lateral power take-off shaft and a rear power take-off shaft, a belt drive mounted on said power take-off shaft and said cylinder for driving said cylinder, and said means for breaking up clods of loosened soil is connected to said rear take-off shaft and is driven thereby, said support means located rearwardly of said means for loosening soil comprises an auxiliary support frame supporting said means for breaking up clods of loosened soil, links connecting said auxiliary support frame to said main support frame, adjustable spindles mounted on said main support frame and connected to said auxiliary support frame for pivotally adjusting the position of said auxiliary support frame in the vertical direction, a headstock secured to and extending upwardly from said auxiliary support frame, and an adjustable connecting strut interconnecting said headstock on said main support frame to said headstock on said auxiliary support frame.

4,324,296

MULTI-SECTION AGRICULTURAL IMPLEMENT INCLUDING LATCH ASSEMBLY THEREFOR

Dale C. Schenk, Hamilton, and Anton H. G. Van Hooydonk, St. Catharines, both of Canada, assignors to International Harvester Company, Chicago, Ill.

Filed Jan. 26, 1981, Ser. No. 228,046

Int. Cl.³ A01B *73/00*

U.S. Cl. 172—311 5 Claims

1. A towable multisection agricultural implement and a folding mechanism thereo(comprising:

(a) a horizontally disposed and transversely extending to the direction of travel main section having ground wheels and depending ground working tools;

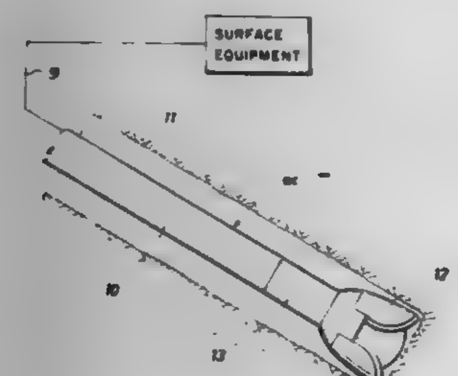
(b) a wing section having ground wheels and depending ground working tools movably connected to each end of said main section and movable between an aligned ground working position and a generally vertical, folded transport position;

(c) a double acting hydraulic cylinder pivotally connected to the main section and to each said wing section to move each said wing section between the ground working and transport position;

(d) latch and support means for maintaining and supporting the wing sections in the transport position, said means comprising: a support mounted on said main section and a telescoping tube having one end pivotally mounted on each said wing section and the other end pivotally mounted on said support, a latch assembly mounted on each said other end of said tube adjacent the support and engageable with said one end of the tube to support same and having a spring biased latch member to latch same in

the transport position, said latch member having a crank arm pivotally mounted thereon and a lever pivotally connected to said crank arm and slidably mounted on said support, a double acting hydraulic latch cylinder having a rod end pivotally connected to said crank arm and lever and said latch cylinder further having a base end pivotally connected to the crank arm and lever of the other opposing latch member, said latch cylinder and said wing cylinders being connected in parallel whereby said latch members are released by said crank arm before the wing cylinders move the wings to the working position and said latch members are reset before said wing cylinders move the wings to the folded and latched position.

4,324,297
STEERING DRILL STRING
Early B. Denison, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.
Filed Jul. 3, 1980, Ser. No. 165,876
Int. Cl.³ E21B *7/04*
U.S. Cl. 175—45 9 Claims



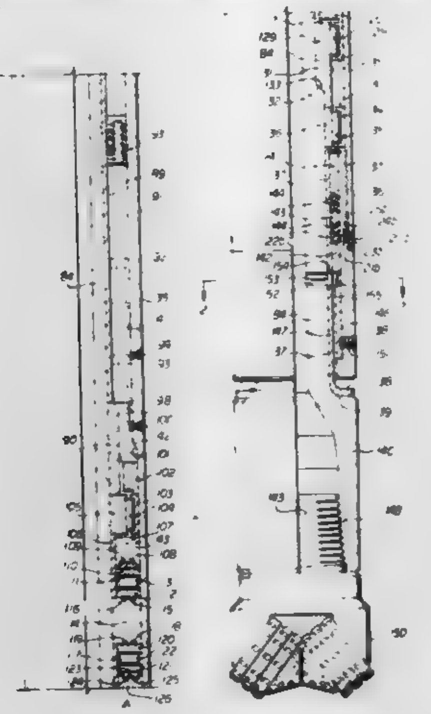
1. A method for steering a rotary drilling apparatus while drilling comprising:
measuring the strain on a cylindrical portion of the drilling apparatus at a known position from and in close proximity to the drill bit, said strain being measured in at least four positions 90° apart along the longitudinal axis of the drilling apparatus;
measuring the inclination and orientation of the drilling apparatus to determine the heading of the borehole and the orientation of the strains;
measuring the weight on the drill bit;
transmitting values related to said measurements to the surface;
at the surface computing the resultant force on the bit including its direction and magnitude;
developing a model of the drilling apparatus and comparing the force on the bit and heading of said borehole with said model to determine the required weight on the bit and rotary speed to achieve the desired heading of said borehole; and
controlling the weight on the bit and rotary speed to obtain the required values to steer the drill string.

4,324,298
METHOD OF USING A REACTIVE IRON OXIDE DRILLING MUD ADDITIVE
Irwin Fox, Ballwin, Mo., assignor to Ironite Products Company, St. Louis, Mo.
Continuation-in-part of Ser. No. 44,026, May 31, 1979, Pat. No. 4,246,244. This application Sep. 8, 1980, Ser. No. 185,155
The portion of the term of this patent subsequent to Feb. 22, 1994, has been disclaimed.
Int. Cl.³ C09K *7/04;* **B01D** *53/34*
U.S. Cl. 175—64 2 Claims

1. A process of scavenging hydrogen sulfide contained in drilling mud comprising the following steps:
A. providing a drilling mud including a water-based suspension of iron oxide particles having a surface area of at least 3.5 m^2/g and a kinetic "K" value in excess of 3000, said particles being comprised substantially
(1) of amorphous Fe_2O_3 and a crystalline Fe_2O_3 phase and substantially free of crystalline Fe_3O_4, and
(2) having impurity levels of any free element in bulk of less than 10% by weight,
in a quantity sufficient to react such hydrogen sulfide as may be encountered,
B. circulating the drilling mud down the interior of the drill pipe, through the drill bit and up the space between the drill pipe and the formation wall to the surface,
C. entraining in the circulating mud such hydrogen sulfide as may be encountered, and
D. reacting the entrained hydrogen sulfide with the said iron oxide particles under the pressure there present to form substantially acid-stable products of reaction.

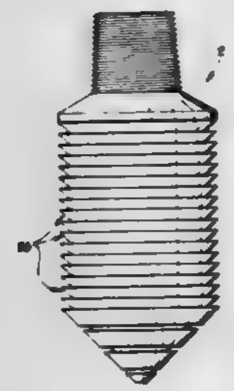
4,324,299
DOWNHOLE DRILLING MOTOR WITH PRESSURE BALANCED BEARING SEALS
Dave D. Nagel, Houston, Tex., assignor to Maurer Engineering, Inc., Houston, Tex.
Filed Jul. 18, 1980, Ser. No. 170,565
Int. Cl.³ E21B *4/02;* **F03B** *13/02*
U.S. Cl. 175—107 15 Claims

1. A downhole well drilling tool adapted for connection at one end to the lower end of a drill string and at the other end to a drill bit to be driven thereby, comprising:
tubular housing means,
rotary tubular shaft means supported in said housing means and extending therefrom for supporting a drill bit,
motor means in said housing means for actuation by flow of drilling fluid therethrough and operable to rotate said shaft means,
said shaft means being operable to conduct drilling fluid from said motor means to discharge through said drill bit,
bearing means in said housing means supporting said rotary shaft means,
a first rotary seal positioned between said shaft means and said housing means below said bearing means,
a second rotary seal positioned between said shaft means and said housing means above said bearing means and positioned in fluid communication with drilling fluid flowing from said motor means,
lubricant fluid filling the space around said bearing means between said seals,
a passageway opening from the interior of said rotary tubular shaft means through the wall thereof to a point adjacent to the lower end of said first rotary seal,
journal bearing means surrounding said shaft means below said shaft means passageway and including a longitudinally extending passageway in a bearing surface opening from the end of said shaft means passageway adjacent to said first rotary seal to the lower end of said housing means and opening to discharge drilling fluid to the bottom hole annulus at bottom hole pressure, and



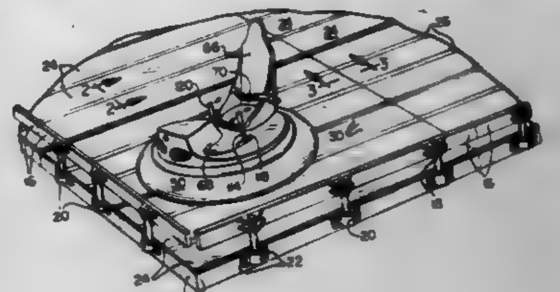
the fluid pressure of drilling fluid applied to said first rotary seal through said shaft means passageway being substantially equal to the drilling fluid pressure applied to said second rotary seal.

4,324,300
ROTARY DRILL BIT
Clifford K. Logan, Jr., P.O. Box 3446, Hickory, N.C. 28601
Filed Jun. 30, 1980, Ser. No. 164,337
Int. Cl.³ E21B *10/26, 10/62, 10/04*
U.S. Cl. 175—379 7 Claims



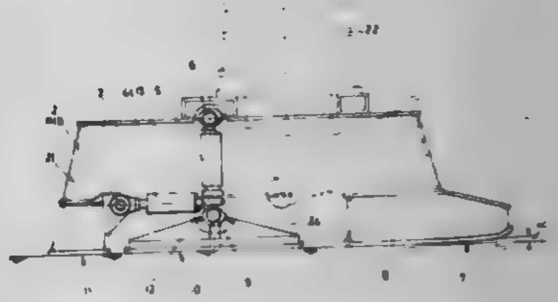
1. A rotary drill bit, comprising:
a support member having a coupling end for attachment to a drill bit drive means; and
a cylindrical cutting member, including:
an inner surface;
an outer surface;
a first end connected to the end of said support member opposite the coupling end thereof;
a second end having a first beveled edge obliquely extending between said inner and outer surfaces; and
a plurality of substantially annular rotary cutting segments having beveled second edges and being disposed axially along said cutting member, each of said annular segments extending circumferentially around said cutting member for providing a plurality of rotary cutting surfaces.

4,324,301
BUMPER CAR AMUSEMENT RIDE
Jon V. Eyerly, 3544 - 12th St. SE., Salem, Oreg. 97302
Filed Feb. 29, 1980, Ser. No. 120,661
Int. Cl.³ B60L *9/00;* **B60M** *1/00*
U.S. Cl. 180—2 R 11 Claims



1. A bumper car amusement ride, comprising:
(a) a floor,
(b) a plurality of electrically conductive, laterally spaced, elongated metal plates overlying the floor, the plates having a multiplicity of openings therethrough,
(c) an electrically non-conductive strip filling the space between each pair of adjacent laterally spaced conductive plates,
(d) an electrically non-conductive adhesive layer coating substantially the entire underside of the plates and strips bonding the latter to the floor, the adhesive extending upward into the openings in the plates,
(e) means for connecting adjacent plates across a source of alternating current,
(f) a bumper car including a frame, a pair of laterally spaced drive wheels mounted on the frame for axial rotation about substantially horizontal axes, and a pair of longitudinally spaced caster wheels mounted on the frame for axial rotation about substantially horizontal axes and for rotation about substantially vertical axes, the drive and caster wheels supporting the frame for movement over the conductive plates and non-conductive strips, and
(g) electrically activated drive means on the frame coupled to the drive wheels and electrically connected slidably to the conductive plates for its source of electric power.

4,324,302
WALKING MACHINES
Yosef K. Rabinovitch, Johannesburg, South Africa, assignor to Edward L. Bateman Limited, Boksburg North, South Africa
Filed Mar. 12, 1980, Ser. No. 129,694
Claims priority, application South Africa, Mar. 13, 1979, 79/1179
Int. Cl.³ B62D *57/02*
U.S. Cl. 180—8 C 8 Claims



1. A method of moving a loaded platform consisting in the steps of:
tilting the platform by jacking the platform along a single jacking axis eccentrically to the centre of gravity of the load and in a direction inclined to the vertical in the direction of such centre of gravity;
exerting forces between the jacking axis and the platform to

cause the jacking direction to become vertical and the platform to drag at one end, levelling the platform in its new position, and in that new position repeating the preceding steps and repeating the steps as often as is required until the platform reaches a desired position.

3. A walking machine comprising:

first and second pillars 8 and 11 adapted to rest on the ground, a platform 21 spanning the pillars and adapted to support a load 22 eccentrically to the middle plane between the pillars and over the first pillar 8,

a single powered extensible and retractable leg 5 pivotally mounted to the platform at the middle plane to move along a first path towards and away from each pillar,

a massive foot 10 pivoted to the extensible leg 5, and first power means 3 to cause the leg 5 to move along the first path.

4,324,303

EQUALIZER BAR SUPPORT ASSEMBLY

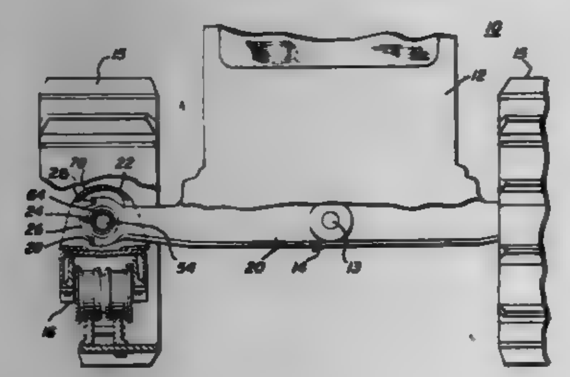
David J. Balzer, East Peoria, Ill., and Orville E. Kessinger, Blue Grass, Iowa, assignors to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US80/00124, § 371 Date Feb. 5, 1980, § 102(e) Date Feb. 5, 1980, PCT Pub. No. WO81/02277, PCT Pub. Date Aug. 20, 1981

PCT Filed Feb. 5, 1980, Ser. No. 136,623

Int. Cl.[3] B62D *55/00*

U.S. Cl. 180—9.5 **10 Claims**



7. In a vehicle having an equalizer bar (14) pivotally mounted on bearing means (24) carried by a track frame (16), an equalizer bar support assembly, comprising:

a flanged bearing support (25) having a cylindrical portion (68) axially projecting from a flanged portion (70), said flanged portion (70) being mounted in said track frame (16);

support means (98,150) secured to said cylindrical portion (68) remote from said flanged portion (70), said support means (98,150) having means (120,162) operatively connected with said track frame (16) for securing said support means (98,150) to said track frame (16); and

means (100,164) operatively associated with said support means (98,150) for limiting removal of said support means (98,150) from said track frame (16).

4,324,304

CRAWLER-TYPE LOWER MACHINERY

Hiroshi Hashimoto; Masaru Kaneko, and Yoshihiro Kuge, all of Akashi, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Japan

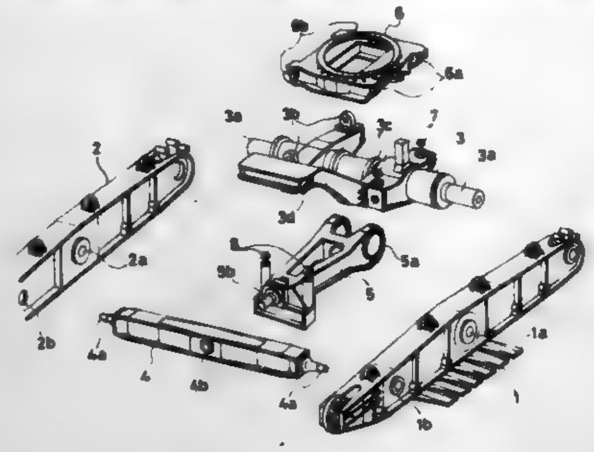
Filed Aug. 29, 1980, Ser. No. 182,778

Claims priority, application Japan, Sep. 5, 1979, 54/122586[U]

Int. Cl.[3] B62D *55/00*

U.S. Cl. 180—9.52 **2 Claims**

1. A crawler-type lower machinery comprising a pair of crawlers, left and right, a main frame and a rocking beam both connecting the two crawlers together, an intermediate frame connecting the main frame with the rocking beam, a table mounted on the main frame, and two groups of lift means arranged at right angles to each other, one group being located between the main frame and the table and the other between the intermediate frame and the main frame, said two crawlers when traveling being able to pitch and sway, independently of



each other, along the ups and downs of the ground, said lift means being operable so that the inclination of the table with respect to the crawler-bearing ground surface can be adjusted in every direction.

4,324,305

STEERING MECHANISM FOR EXCAVATORS AND THE LIKE

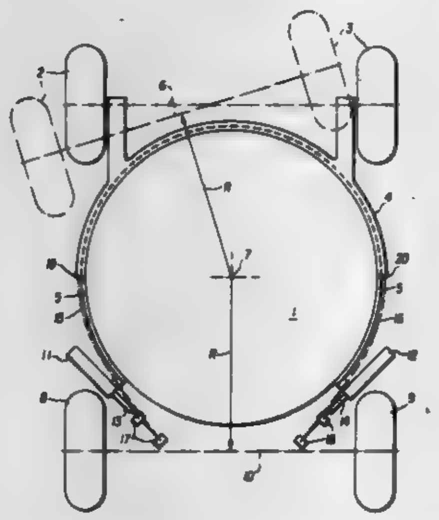
Ingebret Soyland, Solhogda 2, 4340 Bryne, Norway

Filed Aug. 28, 1980, Ser. No. 182,044

Claims priority, application Norway, Sep. 3, 1979, 792836

Int. Cl.[3] B62D *5/06, 53/02*

U.S. Cl. 180—134 **10 Claims**



1. A steering mechanism for an excavator or the like comprising:

(a) a generally circular-shaped rail carried by the excavator;

(b) a steering fork carried by the rail for movement in a generally circular path around the rail;

(c) first wheel means carried by the fork and having a first axis of rotation;

(d) second wheel means carried by the excavator and having a second axis of rotation; and

(e) wherein the center of the circle defined by the rail remains substantially equidistant from corresponding points of the first and second axes of rotation in all positions of the steering fork around the rail.

4,324,306

ENGINE SUPPORTING STRUCTURE FOR MOTORCYCLE

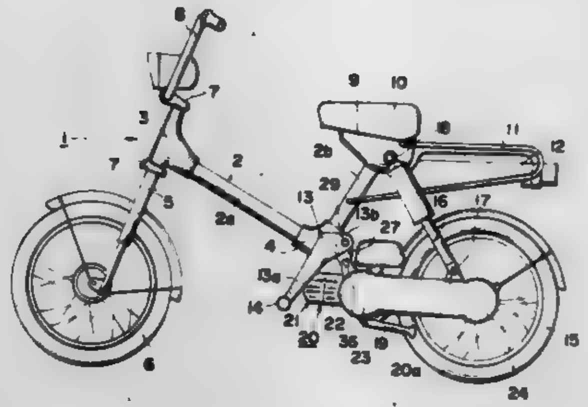
Takeo Ishihara, Asaka; Hidehiko Inoue, Saitama; Yuji Kishizawa, Kawagoe, and Tsutomu Hayashi, Hoya, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

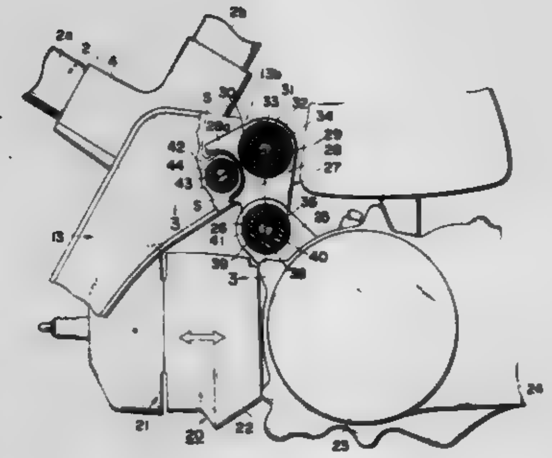
Filed Oct. 17, 1979, Ser. No. 85,403

Claims priority, application Japan, Oct. 17, 1978, 53/127721

Int. Cl.[3] B62K *11/04*

U.S. Cl. 180—228 **14 Claims**





1. In a motorcycle of the type in which a power unit is constructed integrally of an engine, a crankcase and a transmission case and which is swingable with respect to a frame together with a rear wheel, said rear wheel being supported by said power unit at a rear portion thereof and connected to said frame through a shock absorber; an engine supporting structure wherein:

said engine has the main axis of inertia thereof directed substantially in the longitudinal direction of said motorcycle;

at least one link is provided, said link having the lower portion thereof pivotally connected to said engine through a lower pivot and the upper portion thereof pivotally connected to said frame through an upper pivot;

said lower pivot and said upper pivot are arranged on a substantially vertical line so as to permit movement of said power unit, substantially in the direction of said main axis of inertia of said engine;

a stopper is provided on each said link; and

a member is provided on said frame in operative cooperation with each said stopper so as to regulate the pivotal motions of each said link.

4,324,307

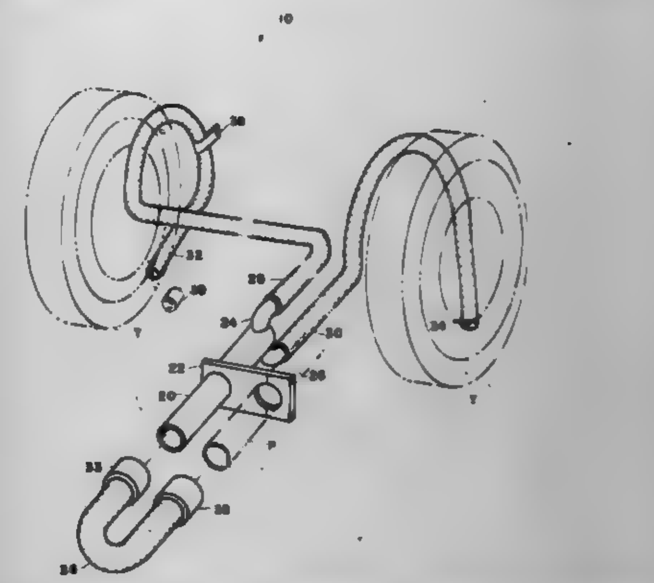
SNOW/ICE MELTER FOR AUTOMOTIVE VEHICLES

Giuseppe Schittino, 2732 Maple Ave., and Vincent Schittino, 2829 Rosalie Ave., both of Baltimore, Md. 21234

Filed Apr. 3, 1980, Ser. No. 136,880

Int. Cl.[3] B60B *39/02*

U.S. Cl. 180—313 **9 Claims**



1. In a system for melting snow and ice by directing hot gas from a rearwardly extending motorvehicle exhaust pipe to the traction surfaces at the drive wheels through a conduit system having a rear part with a rear end, a middle part and a front part with distribution means, the improvement comprising: means for adjustably mounting the middle part of the conduit system to a motor vehicle, means for clamping the rear part of the conduit system adjacent the rear end of said exhaust pipe, means for connecting the rear of said exhaust pipe disconnectably to the rear part of the conduit system for ducting the hot gases therethrough, the distribution means including means for adjustably directing the hot gases from the front part of said conduit system to said traction surfaces, said means for connecting comprising a quick attach/detach tubing having first and second ends; the first end having provision for resilient friction-fit over the rear end of a said exhaust pipe, and the second end having provision for resilient friction-fit over the rear end of said rear part of the conduit system.

4,324,308

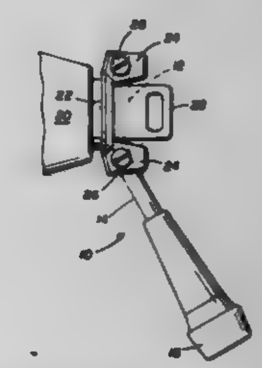
AID FOR STARTING MOTOR VEHICLES

Dorothy Clendenen, 205 Hampton Ct., Longview, Tex. 75601

Filed Nov. 29, 1979, Ser. No. 98,594

Int. Cl.[3] B60K *26/00;* **E05B** *3/00*

U.S. Cl. 180—315 **3 Claims**



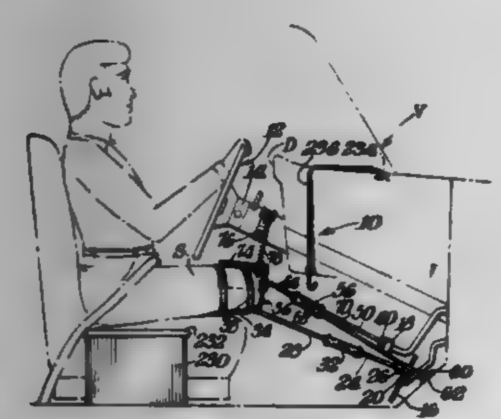
1. An apparatus for facilitating the starting of a motor vehicle having an ignition switch with a rotatable key receiving member, the rotatable key receiving member having a slot for insertion of an ignition key and flanges protruding therefrom on opposed edges of the slot, comprising:

a lever arm with a first end for being grasped and a second end for being mounted to the flanges of the rotatable key

receiving member, said lever arm further comprising a substantially straight portion dimensioned for abutting the flanges of the rotatable key receiving member without preventing insertion and withdrawal of the key into the slot therein and further including an angled portion extending outwardly to said first end; and

means for removably securing said lever arm to each of the flanges of the rotatable key receiving member such that said first end is disposed a prescribed distance from the ignition switch wherein rotation of said lever arm causes rotation of the ignition switch to start the motor vehicle.

4,324,309
CONTROL SYSTEM FOR LEGLESS OPERATION OF MOTOR VEHICLES
Maynard Ginley, 2404 Paper La., Wilmington, Del. 19810
Filed Nov. 28, 1980, Ser. No. 211,334
Int. Cl.³ B60K *26/02*
U.S. Cl. 180—316 **25 Claims**



1. A control system for the leg stump operation by a legless operator of a motor vehicle having a depressable accelerator and a depressable brake on the floor of the vehicle and having a steering wheel extending toward the driver's seat, comprising a rod secured to said accelerator and extending, toward said seat, leg stump-operated gas control means secured to said rod in the general area of said steering wheel for selectively moving said rod up and down in response to the movement of the stump to control the actuation of said accelerator, linkage secured to said brake and extending toward said seat generally alongside said rod, leg stump-operated brake control means secured to said linkage adjacent said stump-operated gas control means for actuating said brake in response to movement of the stump whereby the same stump of the operator may selectively actuate both said accelerator and said brake, and fastening means detachably mounting said leg stump to one of said control means.

4,324,310
SEISMIC APPARATUS
Kenneth R. Wener, and Anthony R. Tinkle, both of Littleton, Colo., assignors to Marathon Oil Company, Findlay, Ohio
Filed Oct. 29, 1979, Ser. No. 89,063
Int. Cl.³ G01V *1/104*
U.S. Cl. 181—116 **5 Claims**

1. A seismic apparatus for high resolution seismic data acquisition, said seismic apparatus being inserted underground, said seismic apparatus comprising,

a cylindrically shaped breech having a formed interior space,

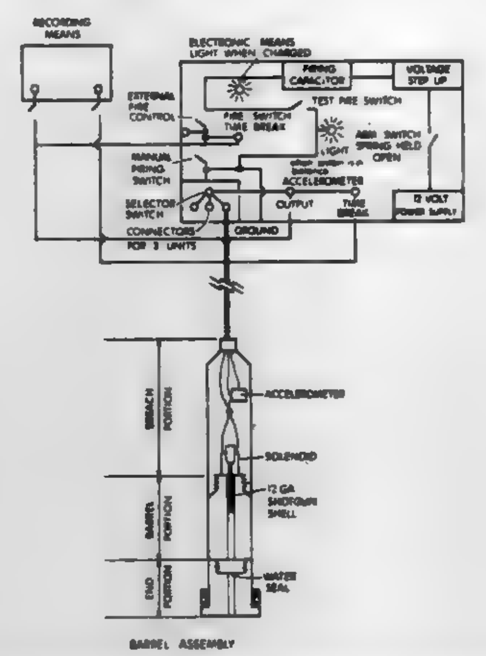
a cylindrically shaped barrel assembly having at least one formed barrel hole extending the longitudinal length of said barrel assembly, said barrel assembly being capable of releasably engaging said breech in fluid tight coupling,

a cylindrically shaped end portion releasably engaging said barrel assembly in fluid tight coupling for extending the longitudinal length of said at least one formed barrel hole,

an explosive seismic source selectively insertable in said at least one barrel hole between said barrel assembly and said breech,

a firing pin assembly located in said formed interior space of said breech operatively abutting said explosive seismic source,

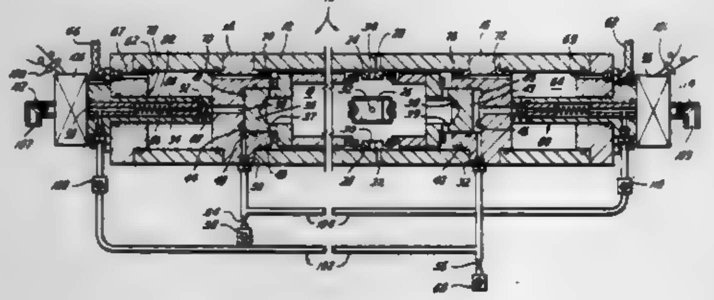
a first seal mounted between said end portion and said barrel assembly across said at least one formed barrel hole for



providing a fluid seal to prevent fluids from entering said at least one formed barrel hole when said seismic apparatus is inserted into said hole, said seal being capable of rupturing when said explosive seismic source is fired, and

a second seal mounted between said seismic source and said firing means for preventing entry of said fluids into said formed interior space of said breech after said first seal is ruptured.

4,324,311
ACTUATOR FOR AN AIR GUN HAVING A RECIPROCATING SHUTTLE VALVE
Richard C. Farris, Dickinson, Tex., assignor to Western Geophysical Co. of America, Houston, Tex.
Filed Aug. 25, 1980, Ser. No. 180,788
Int. Cl.³ G01V *1/38, 1/137*
U.S. Cl. 181—120 **7 Claims**



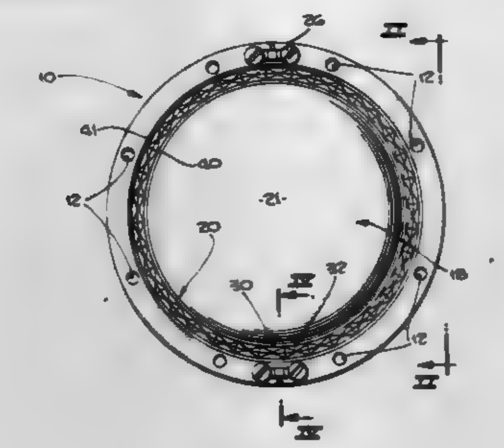
1. In an air gun of the reciprocating shuttle type for underwater signalling, the gun having a firing chamber, a shuttle-actuation control chamber at each of opposite ends of the firing chamber for pneumatically reciprocating a shuttle valve back and forth in the firing chamber in alternate strokes, a solenoid vent valve and an air bleed valve fluidly communicating with each shuttle-actuation control chamber, the improvement comprising:

an air accumulator chamber having a pressurized-air inlet mounted adjacent each said shuttle-actuation control chamber;

a pneumatic poppet valve cooperating with each solenoid vent valve for selectively interconnecting first one and then the other of the air accumulator chambers with the adjacent shuttle valve actuation control chamber; and

an air passageway, including a choke, for interconnecting the firing chamber with each said air accumulator chamber.

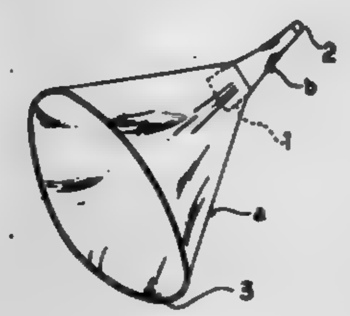
4,324,312
DIAPHRAGM SUSPENSION CONSTRUCTION
Howard M. Durbin, Tarzana, Calif., assignor to James B. Lansing Sound, Inc., Northridge, Calif.
Continuation-in-part of Ser. No. 960,597, Nov. 14, 1978, abandoned. This application Oct. 1, 1979, Ser. No. 80,473
Int. Cl.³ H04R *7/00*
U.S. Cl. 181—171 **12 Claims**



1. A suspension for loudspeakers, microphones or the like extending between an edge of a movable acoustic diaphragm and a fixed supporting member, comprising:

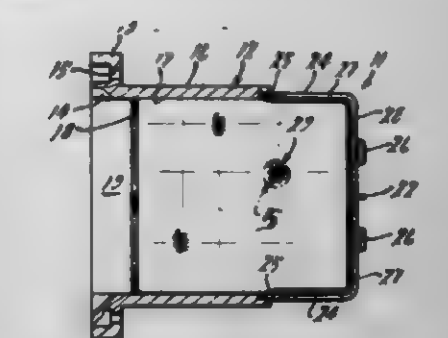
an annulus of thin sheet material, means providing said annular material with increased resistance to acoustic distortion, said means for stiffening said annulus material against flexing in a direction perpendicular to the plane of said annulus, said stiffening means operative to substantially increase the effective frequency at which anti-nodal resonance of the suspension annulus occurs.

4,324,313
EXPONENTIAL HORN FOR USE IN HORN-TYPE LOUDSPEAKERS
Tomiyo Nakagawa, 65 Kasuga Ouji, Ryoutsu-shi, Niigata, Japan
Continuation of Ser. No. 18,715, Mar. 8, 1979, abandoned. This application May 19, 1980, Ser. No. 151,444
Claims priority, application Japan, Aug. 1, 1978, 53-94275
Int. Cl.³ G10K *11/00*
U.S. Cl. 181—192 **2 Claims**



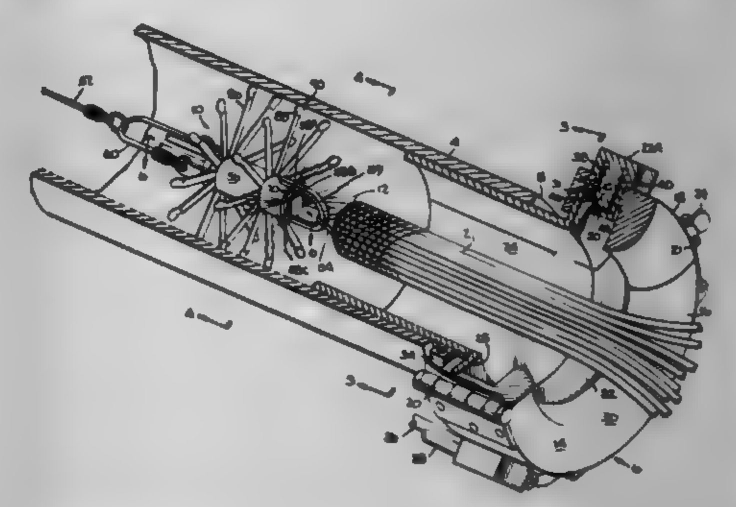
1. An exponential horn for use in a horntype loudspeaker, comprising a duct of gradually increasing vertical cross-section and ending with a mouth substantially in the form of an ellipse, and the cross-section of the horn intersected by a plane which passes through the longitudinal axis of the horn and the semi-major axis of said ellipse defining a substantially V-shape of a large included angle and of substantially straight sides and the cross-section of the horn intersected by a plane which passes through the longitudinal axis of the horn and perpendicular to the semi-major axis of said ellipse is a curved line.

4,324,314
MUFFLER
Earl Beach, Royal Oak, and Calvin Matle, Farmington, both of Mich., assignors to Ross Operating Valve Company, Detroit, Mich.
Filed Sep. 30, 1980, Ser. No. 192,314
Int. Cl.³ F01N *1/24*
U.S. Cl. 181—230 **14 Claims**



1. A muffler assembly for muffling the exhaust of an air valve or the like comprising an outer housing defining an inlet adapted to be positioned in registry with the exhaust outlet of an air valve or the like, said housing defining an internal cavity in communication with said inlet, an exhaust in communication with said cavity, a packing of sound deadening material in it at least a portion of said cavity interposed in the path of flow from said inlet to said exhaust, said packing being comprised of a knitted mesh of fibers, a perforated baffle positioned between said inlet and the inlet end of the packing for attenuating sound and for protecting said packing from air blast damage, and an anti-extrusion screen positioned in engagement with the exhaust side of said packing for preventing discharge of said packing from said outer housing exhaust.

4,324,315
APPARATUS FOR LUBRICATING ELECTRICAL CABLE
Webster T. Charlton, Lowell, Mass., assignor to Stone and Webster Eng. Cor., Boston, Mass.
Division of Ser. No. 39,484, May 15, 1979, Pat. No. 4,296,837. This application Feb. 19, 1981, Ser. No. 235,789
Int. Cl.³ F16N *7/00*
U.S. Cl. 184—15 R **5 Claims**



1. An apparatus for uniformly distributing lubricant over a cable being pulled through a conduit at the entry end of the conduit continuously as the cable moves through the conduit comprised of:

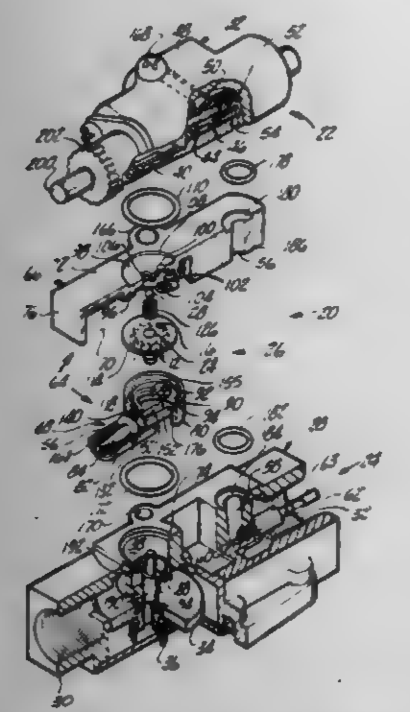
an adjustable flanged sleeve;

means for releasibly securing the adjustable flanged sleeve to the entry end of the conduit with the flange projecting from the conduit;

a ring adapted to be mounted on the flange; and

a plurality of nozzles located equidistantly around the ring facing the cable.

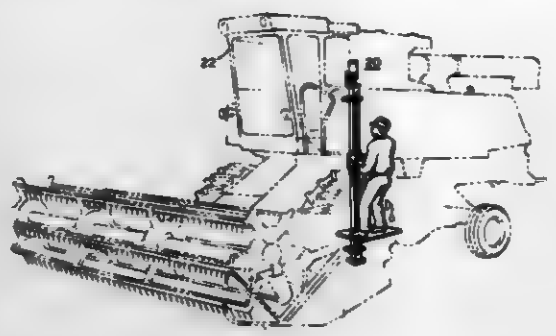
4,324,316
INJECTION LUBRICATOR CONTROLLED BY COUNTING MECHANISM
George E. Thrasher, Jr., Pontiac, and David Lombardi, Sterling Heights, both of Mich., assignors to Master Pneumatic-Detroit, Inc., Sterling Heights, Mich.
Filed Jan. 28, 1980, Ser. No. 115,680
Int. Cl.³ F16N *13/16*
U.S. Cl. 184—29 30 Claims



28. In a lubricator constructed and arranged to be mounted in a primary air line through which air under pressure is furnished to pneumatically operated equipment to be lubricated and having a pump communicating with said primary air line so that pulses of air under pressure in such primary air line are transmitted to said pump for operating said pump to emit a predetermined quantity of lubricant for lubricating such equipment, the improvement comprising: a movable valve member controlling the flow of air under pressure to said pump operating the same and constructed and arranged to open on an incremental movement thereof and to remain closed during a plurality of incremental movement thereof, and a pneumatically actuated operating mechanism communicating with said primary air line and constructed and arranged to incrementally move said valve in response to successive pulses of air in said primary air line such that said pump operates only once for each series of a predetermined number of such successive pulses of air.

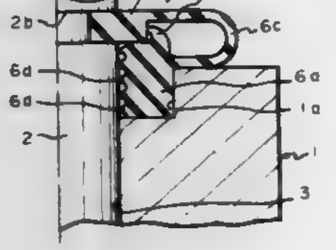
4,324,317
ELEVATOR DEVICE
Dean R. Winkelbleck, Aaronsburg, Pa. 16820
Filed Jan. 28, 1980, Ser. No. 115,713
Int. Cl.³ B66B *11/04*
U.S. Cl. 187—25 7 Claims

1. An elevator device adapted for attachment to a substantially upright surface comprising in combination:
a hollow support member attached to said upright surface;
an electric motor attached to said support member;
a screw rotatably coupled to said electric motor and extending within said support member;
a support nut rotatably engaged with said screw;
an inner slide connected to said support nut and in sliding contact with the interior surface of said hollow support member;
a platform member attached to said inner slide, said platform member comprising in combination:
a platform support member attached to said inner slide;
a platform adjusting member rotatably attached to the middle portion of said platform support member;
a platform rotatably attached to said platform adjustment member, said platform being rotatably hinged to said platform support member;
a hand grip member attached to said inner slide;
a dual button attached to said hand grip member;



an electrical conduit extending from said dual button device to said electric motor and adapted to rotate said electric motor in both a clockwise and counterclockwise direction upon the activation of said dual button.

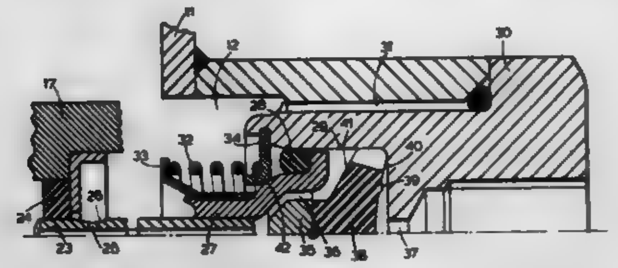
4,324,318
DUST COVER
Yasuo Karasudani, Yokohama, Japan, assignor to Tokico Ltd., Kawasaki, Japan
Filed Mar. 13, 1980, Ser. No. 130,117
Claims priority, application Japan, Mar. 20, 1979, 54-32492
Int. Cl.³ F16D *65/02*
U.S. Cl. 188—73.31 3 Claims



1. A dust cover formed of a tubular flexible material and provided between a shaft and a body member which has a bore fittingly receiving the shaft therein, one end of the dust cover sealingly engaging with the outer circumference of the shaft and with the inner circumference of the body member, the other end of the dust cover sealingly engaging with the outer circumference of a portion of the shaft projecting out of the body member, and an annular lip which is formed on either of said ends of the dust cover and engages with the other of said ends of the dust cover in the radial direction, and a connecting portion connecting said ends of the dust cover for covering the shaft and the body member.

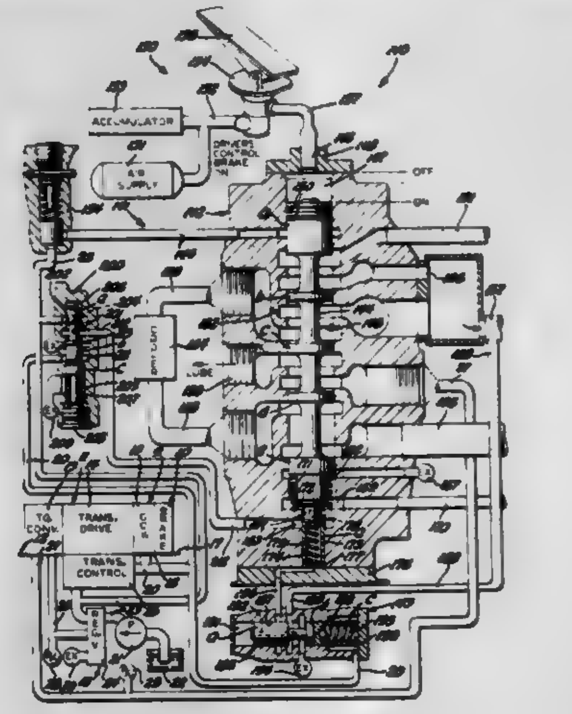
4,324,319
VEHICLE BRAKES WITH AUTOMATIC SLACK ADJUSTERS
Anthony W. Harrison, Birmingham, and Peter W. Brown, West Midlands, both of England, assignors to Lucas Industries Limited, Birmingham, England
Filed Oct. 16, 1979, Ser. No. 85,396
Claims priority, application United Kingdom, Oct. 21, 1978, 41474/78; Jan. 25, 1979, 02616/79
Int. Cl.³ F16D *65/60*
U.S. Cl. 188—79.5 K 20 Claims

1. A brake for a vehicle comprising a rotatable braking member, a friction member for engagement with said rotatable braking member, a fluid pressure operated acutator, comprising a housing and relatively movable parts located in said housing, said actuator being adapted to urge said friction member into engagement with said braking member, an automatic adjuster for automatically maintaining predetermined brake clearances, a supply of pressure fluid for operating said adjuster, and a valve assembly for controlling supply of said pressure fluid to operate said adjuster, said valve assembly being operable to supply said pressure fluid to operate said adjuster when relative movement between the said parts of said actuator exceeds a predetermined value, and said valve assembly comprises a first valve means and a second valve



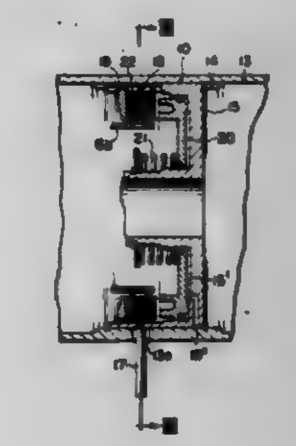
means disposed between said first valve means and said adjuster, said first valve means being normally closed and said second valve means being normally open, and when said actuator is operated and adjustment of said brake clearances is not required, said second valve means is adapted to close in response to fluid pressure generated by said actuator before said first valve means opens, and when adjustment is required, said first valve means opens before said second valve means can close to supply said fluid to operate said adjuster.

4,324,320
POWER LIMITING CONTROL FOR RETARDER WITH FRICTION BRAKE
Stephen F. Sparlin, Indianapolis; Carl A. Lentz, Mooresville, and Clement P. Miller, Indianapolis, all of Ind., assignors to General Motors Corporation, Detroit, Mich.
Filed Jun. 21, 1979, Ser. No. 50,514
Int. Cl.³ F16F *11/00;* B60K *41/20*
U.S. Cl. 188—271 14 Claims



1. In a brake assembly: hydrodynamic means having a bladed stator and a bladed rotor mounted for rotation at varying speeds forming a brake chamber with an inlet delivering inlet pressure to said chamber and an outlet operative during rotation of said rotor with fluid in said brake chamber to pump fluid from said inlet to said outlet and to provide hydrodynamic brake torque increasing with speed and said inlet pressure; the improvement comprising: supply means for providing fluid under pressure having a regulated pressure varying with speed to provide a pressure increasing in proportion to hydrodynamic brake torque as it increases with speed up to a maximum pressure in a low speed range and decreasing in proportion to increasing speed in a high speed range; brake control means connected to said inlet and said supply means and including an exhaust and brake demand signal means providing a brake demand signal operative in brake-off position to connect said inlet to said exhaust, and in the brake-on position to connect said outlet to said inlet and to regulate the fluid pressure supplied to said inlet by selectively connecting said inlet to said exhaust and connecting said supply means to said inlet to regulate the pressure in said inlet and said brake chamber proportional to said brake demand signal from said brake demand signal means at pressure values up to said maximum pressure of said supply means varying with speed to provide hydrodynamic brake torque increasing with speed up to a maximum in said low speed range and to provide up to a decreasing hydrodynamic brake torque with increasing speed in said high speed range to reduce the increase of hydrodynamic brake power with increasing speed in the high speed range.

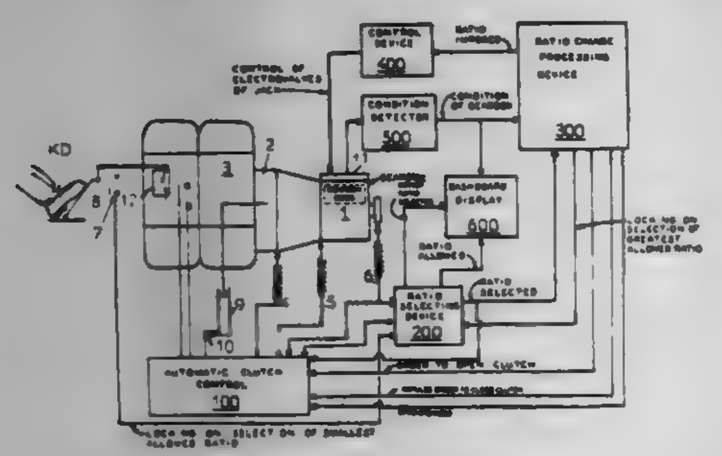
4,324,321
AUTOMATIC TRANSMISSION FOR AUTOMOBILES
Fumihiro Ushijima, and Kagenori Fukumura, both of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan
Filed Feb. 13, 1980, Ser. No. 120,999
Claims priority, application Japan, Mar. 9, 1979, 54-27955
Int. Cl.³ B60K *41/24*
U.S. Cl. 192—13 R 2 Claims



1. An automatic transmission for automobiles, comprising a housing having an opening therethrough, an input shaft, and output shaft, a gear means having a power input element, a first friction engaging means including a first oil servo means and selectively connecting said input shaft with said power input element, a second friction engaging means including a second oil servo means and selectively braking said power input element, the engagement of said first friction engaging means effecting a first speed stage while the engagement of said second friction engaging means effects a second speed stage, said second friction engaging means having first and second mutually engageable friction elements and a spline member which engages said first friction element, a projection fixedly secured to said spline member and extending substantially radially therefrom so as to pass through said opening in said housing, said spline member being mounted to said housing to be rotatable in it with respect to it through a small angle, said second friction element being connected with said power input member, said power input member being driven by said input shaft in a first rotational direction when said first friction engaging means is engaged in engine driving, said power input member being driven by said output shaft in said first rotational direction when said second friction engaging means is engaged in engine braking, said power input member being driven by the reaction to rotation of said output shaft in a second rotational direction opposite to said first rotational direction when said second friction engaging means is engaged in engine driving, a

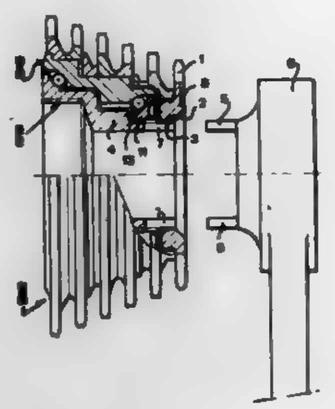
load cell actuated by said projection when said projection is driven in one of said first and second rotational directions so as to generate an electric signal, and an oil pressure circuit means including a source means of oil pressure, a shift valve for changing over supplying of oil pressure from said source means to one of said first and second oil servo means while changing over exhausting of oil pressure from the other of said first and second oil servo means, a pressure modulating valve which has first and second ports and produces a reduced pressure of a predetermined level at said second port from the oil supplied to said first port from said source means, a passage which connects said shift valve and said second oil servo means and which includes a main passage and a bypass passage, said bypass passage including said pressure modulating valve, and a timing valve which changes over said passage between said main passage and said bypass passage in accordance with said electric signal so that said timing valve changes over said passage to said main passage when said projection is driven in said second rotational direction and said timing valve changes over said passage to said bypass passage when said projection is driven in said first rotational direction.

4,324,322
METHOD FOR THE AUTOMATIC CONTROL OF A GEARBOX, IN PARTICULAR ON A MOTOR VEHICLE
Jean-Paul Sibeud, Chaponnay, France
Continuation-in-part of Ser. No. 594,571, Jul. 9, 1975, abandoned. This application Sep. 28, 1978, Ser. No. 946,508
Int. Cl.³ B60K *41/28, 41/04*
U.S. Cl. 192—0.032 22 Claims



1. A method for controlling a gearbox with a plurality of gear ratios provided with dogs, on a vehicle which includes, an engine, a clutch, means for opening and closing said clutch, gearbox control means, gearbox condition detector means, memory means, ratio selection means, means for determining rotational speeds of input and output shafts of said gearbox, engine speed control means, means for determining the speed of said engine, means for determing the acceleration of said vehicle, and means including controls for effecting a sequence of operations, which operations are carried out automatically and including electrical and electronic circuits which operate as loop chains, comprising:
(a) opening the clutch;
(b) putting said gearbox into neutral, by means of said gearbox control means;
(c) selecting the largest gear ratio n' of more than one gear ratios useable at the existing speed of said vehicle;
(d) memorizing by said memory means an electrical binary code representing said selected gear ratio n', and simultaneously memorizing by said memory means data representing the character of a change in gear ratios;
(e) using said gearbox control device to place said gearbox into said selected gear ratio n';
(f) simultaneously closing said clutch;
(g) using said gearbox condition detector to determine whether the gearbox is in said selected gear ratio n', with the dogs of gear ratio n' meshed together;
(h) comparing selected gear ratio n' with the condition of said gearbox as determined by said gearbox condition detector to determine whether said condition is equivalent to said selected gear ratio; and
(i) if said condition is equivalent to said selected gear ratio, cancelling said date memorized in said memory means to prepare for a new cycle.

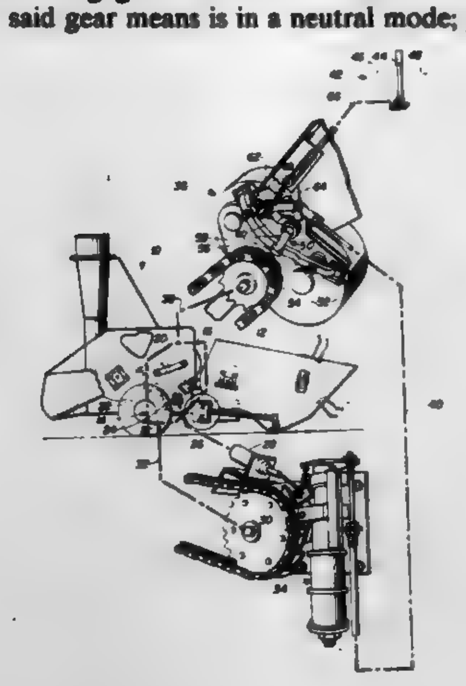
4,324,323
FREEWHEEL DEVICE FOR BICYCLES
Tullio Campagnolo, Corso Padova 168, 36100 Vicenza, Italy
Filed Jun. 21, 1979, Ser. No. 50,778
Claims priority, application Italy, Jun. 23, 1978, 22169 B/78
Int. Cl.³ F16D *41/24*
U.S. Cl. 192—64 1 Claim



1. A freewheel device for bicycles, comprising an inner body, an outer body mounted for rotation on the inner body, a plurality of sprocket wheels of different size mounted on the outer body, a smallest sprocket wheel on the outer end of the inner body, the outer end of the inner body being hollow and cylindrical, the inner diameter of the smallest sprocket wheel being almost equal to the outer diameter of said end of said inner body, and a plurality of axially extending notches in said outer end of said inner body for the reception of a spanner, said notches having an axial extent greater than the axial extent of said smallest sprocket wheel, said notches extending radially entirely through said hollow cylindrical outer end of the inner body, said smallest sprocket wheel radially outwardly closing the radially outer sides of said notches at the outer ends of said inner body, the outer side of said smallest sprocket wheel having a bevel that terminates at the inside diameter of said smallest sprocket wheel at about the outer end of said inner body.

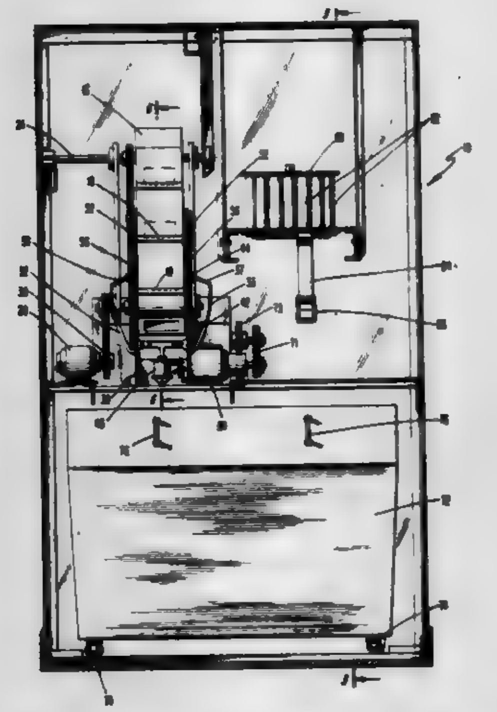
4,324,324
APPARATUS FOR DECLUTCHING A GEAR SELECTOR
Edward H. Priepke, Stevens, and Wayne B. Martenas, New Holland, both of Pa., assignors to Sperry Corporation, New Holland, Pa.
Filed Oct. 1, 1980, Ser. No. 192,786
Int. Cl.³ F16D *43/00;* G05G *17/00;* A01D *69/08*
U.S. Cl. 192—101 7 Claims

1. Apparatus for declutching a gear selector on a vehicle comprising:
means operably connected for moving said gear selector between a forward and a neutral position;
a first link connected to said gear selector means, said first link including a first end having a retainer and a second end having a stop;
a second link having a first end pivotally connected to said first link adjacent said stop and having a slide at a second end, said slide connected to said vehicle;
means connected for moving said first and second links between a first position wherein said stop engages said first end of said second link and said gear selector means is in a forward mode, and a second position wherein said stop is out of engagement with said first end of said second link and said gear means is in a neutral mode; and



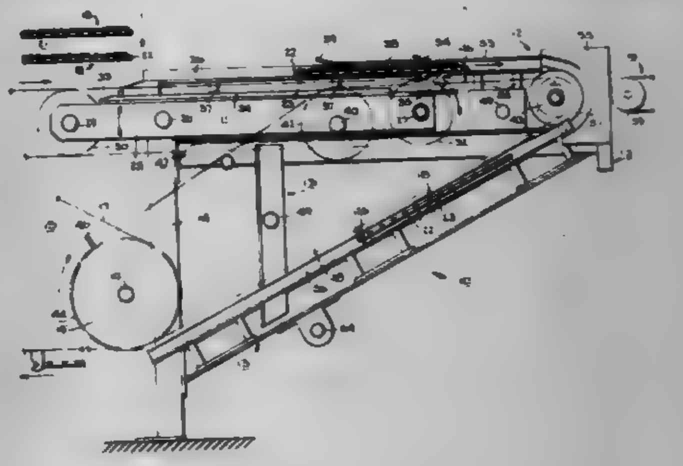
resilient means for maintaining said links in said first position and for urging said links into said second position, said resilient means interconnecting said retainer and said slide.

4,324,325
APPARATUS FOR COLLECTION OF METALLIC CONTAINERS AND METHOD THEREFOR
Bruce H. Dewoolfson, 2200 Columbia Pike #1113, Arlington, Va. 22204
Filed Dec. 21, 1979, Ser. No. 106,104
Int. Cl.³ G07F *7/06*
U.S. Cl. 194—4 C 14 Claims



1. Apparatus for collcting and storing empty aluminum containers and for issuing payment for containers collected, comprising:
preselection means for passing an electric current directly through a crushed or non-crushed conainer offered by a customer for identifying whether said container is substantially aluminum, said preselection means including a container access area configured to accommodate both crushed and non-crushed containers for passage of said electric current;
means for accepting only a container identified by said preselection means as being substantially aluminum, independent of the configuration of said container;
dispensing means responsive to said preselection means for dispensing payment in return for containers having a substantially aluminum composition;
means cooperating with said accepting means for crushing said containers; and
means for storing crushed containers received from said crushing means.

4,324,326
DISCHARGE ASSEMBLY FOR AN OVEN
Rouzas R. Khoylian, Belmont, Mass.; James R. Cowdery, Pelham, N.H., and David B. Park, Wilmington, Mass., assignors to Design + Process Engineering Inc., Billercia, Mass.
Filed Feb. 19, 1980, Ser. No. 122,247
Int. Cl.³ B65G *47/31, 47/84*
U.S. Cl. 198—461 14 Claims

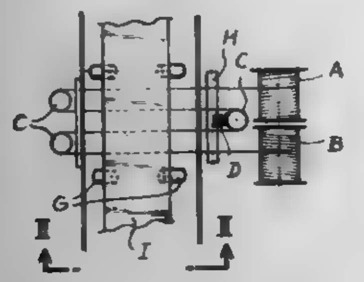


1. In combination
a vertically disposed elevator for conveying a series of flexible carriers in a descending path;
a transfer conveyor having hook means for engaging a forward end of a carrier on said elevator and means for moving said hook means in an endless path having an upper longitudinal run and a lower run;
a discharge conveyor having a bar means for engaging the forward end of a carrier on said transfer conveyor, means for moving said bar means in an endless path having a horizontal run, a downwardly directed run extending from said horizontal run and a return run extending between said downwardly directed run and said horizontal run; said horizontal run being disposed in overlapping relation with said upper run of said transfer conveyor to permit transfer of a carrier on said transfer conveyor to said horizontal run of said discharge conveyor; and
a main conveyor having second hook means for engaging the forward end of a carrier and means for moving said second hook means in an endless path having a section coincident with said endless path of said discharge conveyor between said downwardly directed run and said return run.

4,324,327
METHOD AND APPARATUS FOR CLEANING CONVEYOR BELTS BY MEANS OF A VIBRATING CABLE OR GROUP OF CABLES
Henri Chouteau, Villa Bel Air, Montgobert 02600 Villers-Cotteret, and Gilbert Lagros, 4, rue de Nahan, 54490 Piennes, both of France
Filed Aug. 5, 1980, Ser. No. 175,587
Claims priority, application France, Aug. 10, 1979, 79 20487
Int. Cl.³ B65G *45/00*
U.S. Cl. 198—497 12 Claims

1. A method of cleaning a conveyor belt comprising arranging a cable transversely, relative to the direction of travel of the belt, between two support points independent of the belt and in contact with the underside of the belt when the belt is slack, and raising lateral edge portions of the slack belt with respect to the central portion of the belt by positioning each

support point for the cable slightly above a plane defined by the slack belt in the rest position when the belt is not subjected to any stress from the cable, whereby a tension is produced in the cable, which thus exerts a pressure on the belt over the entire width of the belt, the pressure being a minimum at the longitudinal axis of symmetry of the belt and increasing



towards said edge portions, so as to cause the cable to vibrate during travel of said belt, each point on the cable being driven with an oscillatory movement in the direction of travel of the belt, while at the same time remaining in close contact with that part of the belt which corresponds thereto to effect a cleaning of the belt.

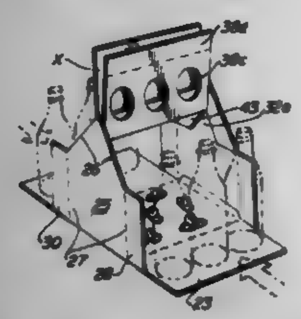
4,324,328
CARRIER FOR A PLURALITY OF ARTICLES

Charles L. Champlin, Rittman, Ohio, assignor to Packaging Corporation of America, Evanston, Ill.

Filed May 12, 1980, Ser. No. 149,021

Int. Cl.³ B65D *75/04*

U.S. Cl. 206—194 8 Claims



1. A carrier formed from a blank of foldable sheet material for manually carrying a plurality of necked articles arranged in a pair of substantially parallel coextensive rows, said carrier comprising a base panel for subtending and supporting the rows of articles, said base panel having opposed first peripheral segments and opposed second peripheral segments; a pair of opposed end panels foldably connected to and extending upwardly from said base panel first peripheral segments, each end panel being positionable adjacent corresponding end articles of the rows of articles subtended and supported by said base panel; an elongated handgripping unit spanning the distance between upper portions of said upright end panels and being provided with elongated panel sections disposed in substantially face-to-face relation and substantially spanning the distance between said end panels, said panel sections defining a plane substantially perpendicular to said base panel and extending between the rows of articles, corresponding elongated upper portions of said panel sections being foldably interconnected and corresponding lower portions of said panel sections extending into the carrier interior and being spaced from said base panel; first means foldably interconnecting corresponding end portions of said panel sections to separate upper peripheral portions of an adjacent end panel; a pair of opposed side panels foldably connected to and extending upwardly from said base panel second peripheral segments; second means foldably interconnecting adjacent portions of said side and end panels and retaining same in upright angular relation, said unit panel sections, and said side, end and base panels coacting to form substantially contiguous open top compartments separated by the plane defined by said substantially face-to-face panel sections, each compartment being adapted to accommodate at least one row of articles; and article-retaining flaps substantially spanning the distance between said end panels, each flap having an inner edge portion foldably connected to the lower portion of a unit panel section, said flaps being initially movable independently of each other and said panel sections to inoperative substantially upright article-loading positions and subsequently movable to operative outwardly extending article-restraining positions wherein said flaps substantially overlie and close respective open top compartments, and an outer-edge portion of each flap being secured to an upper edge portion of a corresponding upright side panel, each flap being provided with relatively spaced third means for supportingly accommodating and retaining in predetermined spaced relation the neck portions of the articles of a row disposed in an adjacent compartment when the flap is in said operative position.

4,324,329
DEVICE FOR MOUNTING AN ELECTRICAL CIRCUIT COMPONENT PART SUCH AS AN ELECTROLYTIC CAPACITOR

Isao Tani, 1-36-8, Kaname-cho, Toshima-ku, Tokyo, Japan

Filed Dec. 20, 1979, Ser. No. 105,527

Claims priority, application Japan, Jan. 19, 1979, 54-5172[U]; Jun. 21, 1979, 54-78540[U]; Jun. 21, 1979, 54-85352[U]; Jun. 29, 1979, 54-89417[U]

Int. Cl.³ B65D *73/02*

U.S. Cl. 206—328 6 Claims

1. A device for mounting an electrical component part, comprising:

a cylindrical main section into which a corresponding cylindrical electrical component part may be inserted; and a base plate sealing one end of the cylindrical main section and acting as a member to be mounted on a mounting base plate, said cylindrical main section and base plate being formed of elastic synthetic resin such that they are integral with each other, in which said cylindrical main section comprises a combination of a plurality of strips which are diagonally arranged in two directions to form meshes and disposed in symmetry with respect to the axis of the cylindrical main section, and wherein those strips diagonally arranged in one direction project within the cylindrical main section to an extent greater than those strips diagonally arranged in the other direction to permit only said strips diagonally arranged in said one direction to contact the outer peripheral surface of said cylindrical electrical component part when said component part is inserted.

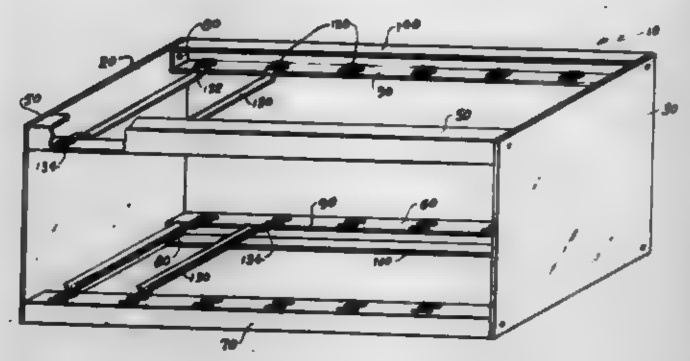
4,324,330
CARD CAGE FOR ELECTRONIC CIRCUIT CARDS

David J. Durney, Holland, Pa., assignor to Burroughs Corporation, Detroit, Mich.

Filed May 7, 1980, Ser. No. 147,510

Int. Cl.³ A47G *19/08*

U.S. Cl. 206—328 2 Claims



1. An electronic circuit card cage including
two end plates,
spaced-apart first and second upper support members adjustably secured between said end plates,
said first and second upper support members each having a horizontal upper connector wall, both said upper connector walls lying in a first common horizontal plane,
first arcuate bridges formed on said upper connector walls of said first and second upper support members and defining therewith spaces into which members can be inserted, said arcuate bridges being spaced apart on the length of said upper connector walls, each arcuate bridge on one upper connector wall being aligned with an arcuate bridge on the other upper connector wall,
spaced-apart first and second lower support members adjustably secured between said end plates,
said first and second lower support members each having a horizontal lower connector wall, both said lower connector walls lying in a second common horizontal plane,
second arcuate bridges formed on said lower connector walls of said first and second lower support members and defining therewith spaces into which members can be inserted, said arcuate bridges being spaced apart on the length of said lower connector walls,
each second arcuate bridge on one lower connector wall being aligned with an arcuate bridge on the other lower connector wall,
said first and second horizontal planes being spaced from each other and defining a space within which electronic circuit cards can be positioned, and
first channel-shaped elongated card-support members coupled between said first and second upper support members, and second channel-shaped elongated card-support members coupled between said first and second lower members, all of said first and second channel-shaped members having end portions which enter the spaces formed by and engage said arcuate bridges whereby each channel-shaped member can be secured in place between aligned arcuate bridges on a first and on a second upper or lower support member,
each first channel-shaped member being disposed vertically above a second channel-shaped member with the first member facing down and the second member facing up so that an electronic circuit card can be inserted between them and supported in their facing channels.

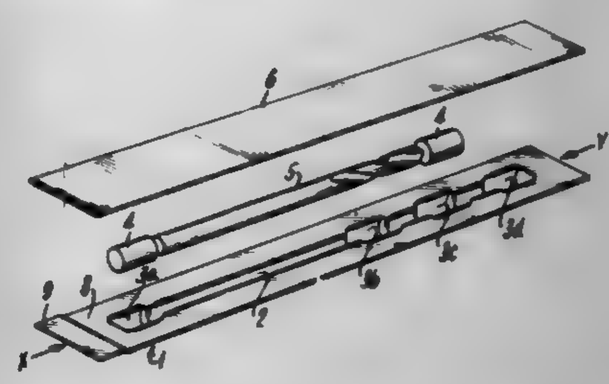
4,324,331
PACKAGING FOR SURGICAL IMPLEMENTS

Michael J. Ignasiak, Warsaw, Ind., assignor to Zimmer, Inc., Warsaw, Ind.

Filed Aug. 8, 1980, Ser. No. 176,368

Int. Cl.³ B65D *85/20, 85/24, 81/04*

U.S. Cl. 206—363 9 Claims



1. A storage container for rigid elongated surgical implements which is suitable for pre-sterilized packaging comprising:

(a) a bottom assembly containing an elongated cavity for receiving an implement wherein said cavity has a first end and a second end;

(b) a plurality of areas at the first end of said cavity spaced apart longitudinally from each other and capable of containing a protective plug, such that the plug will be retained in the area in the bottom assembly upon dispensing of the product from the container;

(c) at least one protective plug for selectively positioning in at least one of said areas in order to selectively accommodate various length implements in the cavity, while restricting the amount of longitudinal movement of the implement in the cavity and protecting the implement from hitting the end of the cavity, each said plug being made of any suitable material soft enough not to damage the surgical implement, yet rigid enough not to generate particulate flakes onto the surgical implement; and

(d) a lid portion capable of being sealed to the bottom assembly to retain the implement until ready for dispensing.

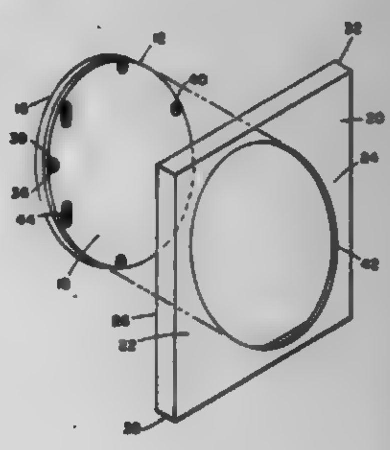
4,324,332
MIRROR PACKAGE

Larry G. Willis, Vincennes, Ind., assignor to Hamilton Glass Products Incorporated, Vincennes, Ind.

Filed Oct. 23, 1980, Ser. No. 199,844

Int. Cl.³ B65D *85/48*

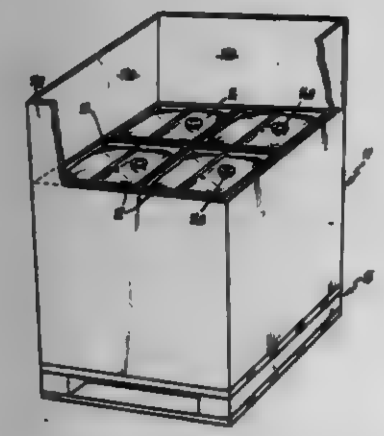
U.S. Cl. 206—454 10 Claims



1. A package comprising a mirror glass or like flat article and a formed blank of semirigid sheet material, said formed blank comprising a central panel rigidly affixed to the back face of said mirror glass, said central panel having a border extending beyond the edge of said mirror glass in all directions, said

formed blank further comprising flange portions folded out of the plane of said central panel and extending in a direction from said plane toward the side of said plane on which said mirror glass is affixed, providing a spacing means to protect the front face of said mirror glass, said central panel being adapted to be readily severed to remove said border and said flanges by means which would assist in such severance including a firm and rigid affixation of said central panel at least throughout the area along the edge of said mirror glass back face.

4,324,333
TRANSPORTATION OF FLUENT MATERIAL
Harold Porter, Tallentyre, England, assignor to Porter Chadburn Limited, Bootle, England
PCT No. PCT/GB79/00096, § 371 Date Feb. 3, 1980, § 102(e) Date Jan. 24, 1980, PCT Pub. No. WO80/00019, PCT Pub. Date Jan. 10, 1980
PCT Filed Jun. 1, 1979, Ser. No. 189,953
Claims priority, application United Kingdom, Jun. 3, 1978, 26317/78
Int. Cl.³ B65D *85/62, 77/06, 19/02, 5/48*
U.S. Cl. 206—526 **11 Claims**

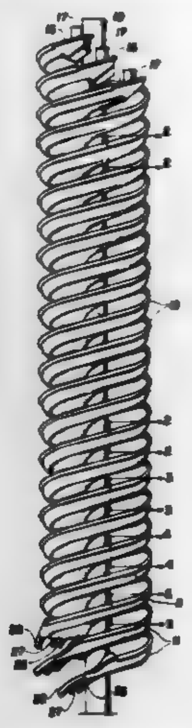


2. A transportable module for the bulk transportation of fluent materials comprising a self-supporting outer cardboard container, a plurality of adjacent mutually supporting cardboard dividers of tubular form within the outer container and defining a plurality of individual and adjacent compartments in the said container, whereby there are walls separating adjacent compartments which are of a multiple thickness substantially equal to like multiple thickness walls existing between a compartment and the exterior of the outer container, and a filled flexible bag having a closable inlet provided therein disposed within each respective compartment and existing as a tight fit therein, each compartment and the bag therein having a dimension in the axial direction of the compartment in excess of the transverse dimension of such compartment.

4,324,334
SPIRAL SEPARATORS
Douglas C. Wright, Terranora, and Sidney N. Roberts, Banora Point, both of Australia, assignors to Inbeed Pty Ltd., Murwillumbah, Australia
Continuation-in-part of Ser. No. 116,629, Jan. 29, 1980, Pat. No. 4,277,330. This application May 21, 1981, Ser. No. 265,799
Int. Cl.³ B03B *5/52*
U.S. Cl. 209—459 **6 Claims**

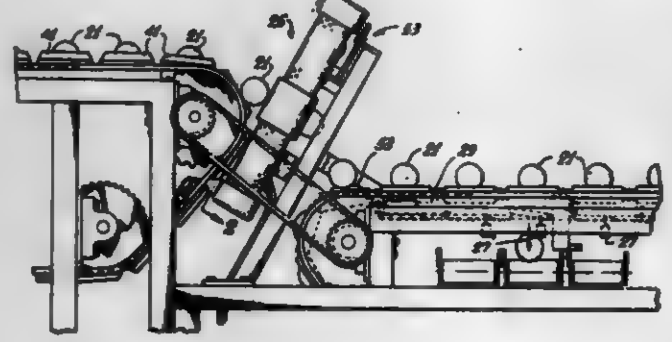
1. A spiral separator supported with its axis substantially vertical which is adapted to receive at an upper end thereof a pulp of water and minerals to be separated, said spiral separator including:

a plurality of helical turns wherein the bottom of each turn in cross section includes a substantially straight or flat portion and an outer portion, said straight portion being inclined at an angle to horizontal and said outer portion being inclined upwardly relative to the straight portion, characterized in that the angle to horizontal of the straight portion of each or adjacent groups of turns progressively decreases from top to bottom throughout at least two turns in the lowermost part of the length of the spiral separator to thereby develop a braking effect on the flow of pulp which comprises heavy particles, light particles and intermediate size particles, whereby the flow of light particles throughout the said substantial part of the spiral separator is gradually shifted



outwardly from the flow of heavy particles and intermediate size particles to facilitate subsequent separation of the light particles from said heavy and intermediate size particles; and dividing means for dividing said light particles from said heavy particles and intermediate particles and means for withdrawing said light particles from said heavy and intermediate size particles separately.

4,324,335
METHOD AND APPARATUS FOR MEASURING THE SURFACE SIZE OF AN ARTICLE
Tim D. Conway, El Cerrito, and Paul F. Paddock, Riverside, both of Calif., assignors to Sunkist Growers, Inc., Sherman Oaks, Calif.
Division of Ser. No. 917,724, Jun. 21, 1978, Pat. No. 4,246,098. This application Feb. 19, 1980, Ser. No. 122,449
Int. Cl.³ B07C *5/342*
U.S. Cl. 209—586 **14 Claims**



1. Apparatus for measuring the size of the surface of an article, said apparatus comprising:

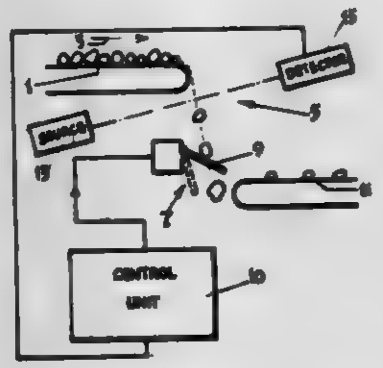
means defining an examining region;

means operable when the article is disposed in said examining region for illuminating the surface of the article;

means for sensing light reflected from the surface and producing a plurality of light intensity measurements, each of said measurements corresponding to the intensity of light reflected from a discrete segmental area on the surface, each of said segmental areas having substantially the same predetermined size, the segmental areas together forming substantially the entire surface of the article; and

means for receiving the plurality of light intensity measurements and counting the number of segmental areas on the surface, thereby producing a measure of the size of the surface.

4,324,336
SEPARATING APPARATUS
Hans A. Sandbank, London, England, assignor to Andrex N.D.T. Products (U.K.) Limited, Wembley, England
Filed Feb. 16, 1977, Ser. No. 769,053
Claims priority, application United Kingdom, Mar. 11, 1976, 9763/76
Int. Cl.³ B07C *5/34*
U.S. Cl. 209—589 **11 Claims**



1. An apparatus for separating objects of a particular kind from a stream of falling objects comprising:

sensing means comprising a radiation sensor and a source of radiation arranged to direct a beam of said radiation onto said sensor, which beam is interrupted by the falling objects, so that objects of said particular kind are detected because they consist of a material that attenuates said radiation differently from the material of the other objects;

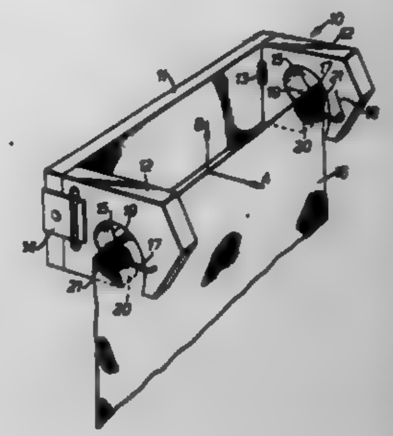
a separating mechanism including at least one movable separating member which is positioned downstream of said sensing means along the path of the falling objects;

and control means for controlling said separating mechanism in response to the output of said sensing means so that after detection of an object by said sensing means said separating member is moved with respect to the path of the falling objects so that objects of said particular kind are directed in a first direction and other objects are directed in another direction;

and including the improvement that the sensing means produces an output representative of a physical dimension of each detected object, and the control means controls said separating mechanism after detection of an object by the sensing means so that said separating member is moved only when the strength of the radiation received by said sensor when that object interrupts said beam of radiation has a predetermined relation with respect to a threshold value, which threshold value depends on the said physical dimension of that object.

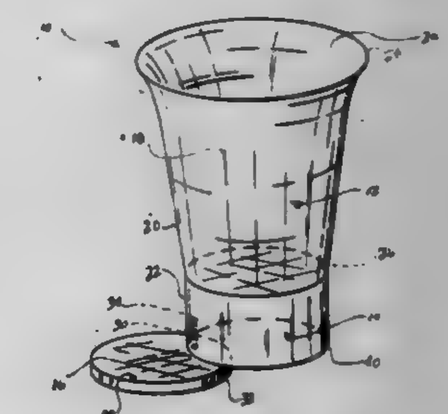
4,324,337
ARTICLE SUPPORT RACK
Raimo K. Hermalahti, 12 Johnston St., Southport, Queensland, 4215, Australia
Filed Mar. 31, 1980, Ser. No. 135,924
Claims priority, application Australia, Sep. 13, 1978, PD5922; Sep. 13, 1979, 50840/79
Int. Cl.³ A47F *5/08*
U.S. Cl. 211—89 **8 Claims**

1. A hanging assembly including a supporting body having a recess therein; latch means pivotally connected to said supporting body at a pair of spaced pivot points at one side of said recess whereby said latch means is pivotable between an operative position at which said latch means engages against the opposite side of said recess to close same, and an inoperative position at which said latch means is spaced from said opposite



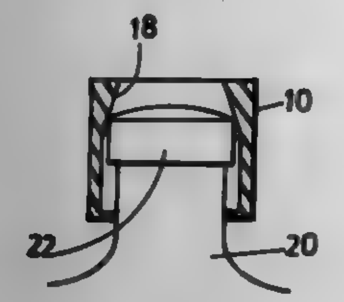
side and characterized in that one said pivot point is eccentrically disposed relative to the other said pivot point whereby said latch means is urged away from said inoperative position to said operative position.

4,324,338
COMPARTMENTED CONTAINER
Robert Beall, Rte. 10 Box Gor Lake, Columbia, Mo. 65201
Filed Dec. 27, 1979, Ser. No. 106,893
Int. Cl.³ B65D *85/00*
U.S. Cl. 215—6 **10 Claims**



1. A reusable compartmented container adaptable for holding a liquid and a non-liquid substance therein comprising a body member having a first substantially cup-like portion for holding the liquid substance therein and a second portion defining a second compartment for receiving and holding the non-liquid substance therein, said body member having first and second ends and a closed side wall portion extending therebetween, a wall member disposed at an intermediate location along the closed side wall portion separating the cup-like portion from said second compartment, a movable reclosable closure member attached to the closed side wall portion of said body member adjacent to the second end thereof, said closure member, said closed side wall portion and said wall member defining the second compartment, said closure member including means associated therewith for hingedly attaching said closure member to the second end of the closed side wall portion thereby enabling said closure member to be rotatable relative to the second end portion of said body member between a position closing the second compartment and a position providing access thereto, said first end of said body member being flared outwardly to facilitate drinking therefrom.

4,324,339
SAFETY DEVICE FOR USE WITH A CONTAINER
Oliver T. Spedding, 21 Oak Tree Plots, Krugersdorp, Transvaal, South Africa
Filed Aug. 13, 1980, Ser. No. 177,733
Claims priority, application South Africa, Aug. 14, 1979, 79/4263
Int. Cl.³ B65D *55/02*
U.S. Cl. 215—219 3 Claims

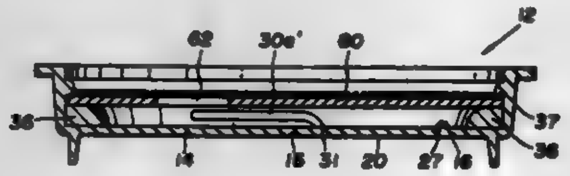


1. In combination, a container with a neck to which is fitted a screw cap which has an end wall and a side wall, said side wall being generally right cylindrical, and a safety device having a lower annular body portion into which said cap is insertable and within which is freely rotatable and a deformable portion near the mouth of said annular body portion which impedes withdrawal of said cap from said safety device, and said safety device also having an upper inwardly-tapered inner wall surface which is frictionally engageable with said cap at the junction of said end wall and said side wall when said safety device is forced axially towards said container, so that said cap and said safety device are prevented from being rotated relative to each other and can be rotated together relative to the container.

4,324,340
ALUMINUM CAN WITH COLLAPSIBLE SIDEWALL
Paul Belokin, Jr., Rte. 4, Hayward, Wis. 54843
Filed Feb. 25, 1980, Ser. No. 123,990
Int. Cl.³ B65D *1/40, 8/04*
U.S. Cl. 220—1 R 21 Claims

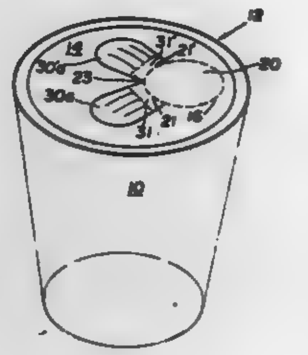
1. A metal container adapted to be axially collapsed when exhausted of its contents, comprising: an endless peripheral metal sidewall generally of right circular cylindrical shape and having open opposite end portions each provided with a closure member to afford an inner chamber for the contents of the container, access to the chamber being provided through one of the closure members, the sidewall being provided with a plurality of similar adjacent annuli each positioned substantially perpendicular to the axis of the container and each of continuous inwardly concave axial cross section and of substantially circular transverse cross section, the annuli extending peripherally of the sidewall between the opposite end portions, adjacent pairs of annuli affording therebetween a continuous outwardly extending substantially circular ridge positioned in a plane substantially perpendicular to the axis of the container, collapsing of the sidewall of the container being effected by manual axial pressure applied endwise of the container to fold each annulus centrally inwardly of its axial cross section as adjacent annuli fold peripherally about an interposed outwardly extending peripheral ridge to form in each annulus a series of inwardly folded segments and spaced apex portions, each segment of the series extending between adjacent apex portions of the series.

4,324,341
EASILY OPENABLE COVER MEMBER
Kisaburo Yamaguchi, Hachioji, and Tsukasa Yoshikawa, Yamato, both of Japan, assignors to Tokan Kogyo Kabushiki Kaisha, Japan
✓ Division of Ser. No. 55,909, Jul. 9, 1979, Pat. No. 4,256,239. This application Jun. 18, 1980, Ser. No. 160,590
Claims priority, application Japan, Jul. 26, 1978, 53-101939[U]; Oct. 19, 1978, 53-142787[U]; Oct. 23, 1978, 53-145655[U]
Int. Cl.³ B65D *51/22*
U.S. Cl. 220—258 5 Claims



1. An easily openable integrally injection-molded cover member for a container comprising a cover sheet formed from synthetic resin of high flexibility and having an integral opening portion defined by a thinned portion on said cover sheet, unsealing means contiguous to at least a portion of said openable portion for removing the openable portion from the cover sheet, whereby when said unsealing means is sheared off said cover sheet, said openable portion is removed from the cover sheet together with the unsealing means, and in which a rigid auxiliary cover disc is detachably fitted in said cover member above the upper surface of said cover sheet of the cover member having the openable portion in a spaced relationship to the cover sheet and said cover disc has a through hole therein for removing the openable portion.

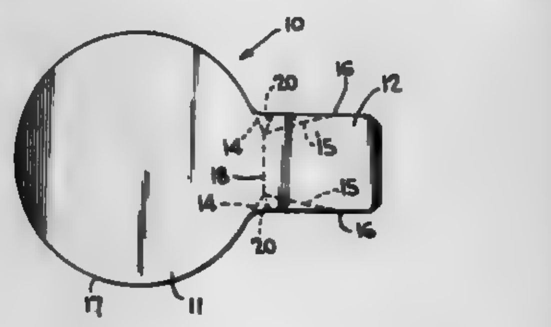
4,324,342
EASILY OPENABLE COVER MEMBER
Kisaburo Yamaguchi, Hachioji, and Tsukasa Yoshikawa, Yamato, both of Japan, assignors to Tokan Kogyo Kabushiki Kaisha, Japan
Division of Ser. No. 55,909, Jul. 9, 1979, Pat. No. 4,256,239. This application Jun. 18, 1980, Ser. No. 160,591
Claims priority, application Japan, Jul. 26, 1978, 53-101939; Oct. 19, 1978, 53-142787; Oct. 23, 1978, 53-145655
Int. Cl.³ B65D *17/32*
U.S. Cl. 220—268 4 Claims



1. An easily openable integrally injection-molded cover member for a container which cover member includes a cover sheet formed from synthetic resin of high flexibility and having an integral openable portion defined by a thinned portion on said cover sheet and rigid unsealing means for removing the openable portion from the cover sheet,

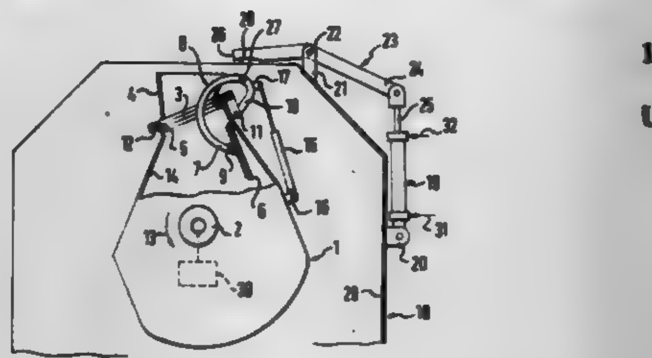
characterized in that said unsealing means does not provide a portion overlapping said cover sheet and characterized in that the total surface areas of the openable portion and the unsealing means are substantially equal to the surface area of said cover sheet.

4,324,343
FOLDED TAB
Jens L. Moller, Darien, Ill., assignor to The Continental Group, Inc., Stamford, Conn.
Filed Oct. 16, 1980, Ser. No. 197,720
Int. Cl.³ B65D *17/34*
U.S. Cl. 220—270 2 Claims



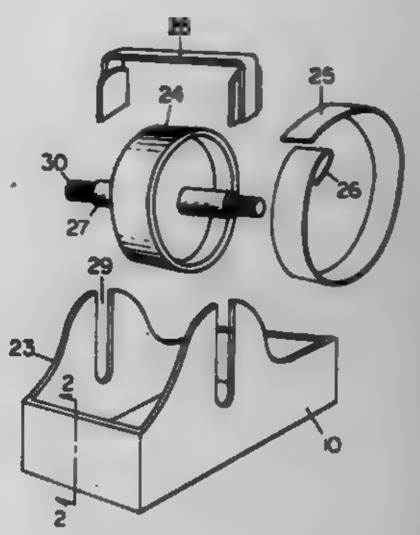
1. A closure tab comprising a body portion for overlying a container panel and closing an opening in the container panel, and a grip portion extending from said body portion, said grip portion being folded into overlying relation to said body portion, said closure tabs being characterized by fold lines primarily in said grip portion defining an inwardly directed folded gusset at each side of said grip portion at and adjacent to said body portion, said gussets defining a fold line between said grip portion and said body portion of a length materially less than the width of said grip portion, said tab being particularly adapted for overlying a circular end panel of a container end unit with said body portion being circular, said fold lines defining said gussets including fold lines extending substantially tangential to the periphery of said body portion.

4,324,344
ROTATABLE PRESSURE VESSEL
Paul Kunz, D-5419 Döttesfeld, Fed. Rep. of Germany
Filed Nov. 5, 1980, Ser. No. 203,560
Claims priority, application Fed. Rep. of Germany, Nov. 23, 1979, 2947345; Jun. 13, 1980, 3022245
Int. Cl.³ B65D *43/14*
U.S. Cl. 220—333 13 Claims



1. A rotatably mounted pressure vessel comprising a feed opening, a cover within said vessel, said cover being movable within said vessel between first and second positions in which, respectively, it closes and opens said opening, a lever movably supporting said cover, a pivot for the lever on the outside of the vessel such that when the cover is in said second position the lever extends into said vessel, a stationary support adjacent said vessel and, mounted on said support, an actuating element to move said cover to said first position to close said opening.

4,324,345
DISPENSER FOR AUTOMATICALLY DISPENSING PERMANENT WAVE TISSUE SHEETS
Manuel M. Martinez, 2105 Park Ave., San Jose, Calif. 95126
Filed Mar. 7, 1980, Ser. No. 128,163
Int. Cl.³ B65H *3/06*
U.S. Cl. 221—41 12 Claims



1. A rectangular container, open at the top and adapted to hold a stack of flat tissue sheets, each edge aligned with a pair of parallel edges, said container having four vertical walls, forward and aft walls identifying the long rectangular portion and determining the stack depth of said container with the two side walls providing vertical cutouts,

A single adhesive friction driving roll with its shaft guided on said cutouts positioned parallel to said sheet stack,

A sheet stop with legs thereof guided on said cutouts mounted parallel above said driving roll,

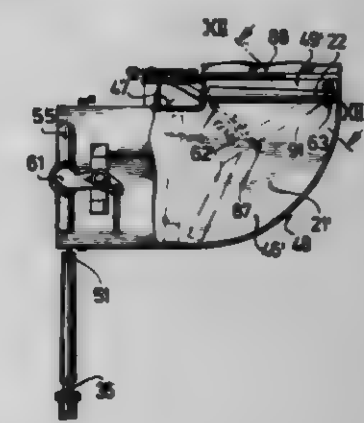
An adhesive paper attached to the periphery of said driving roll,

A knob connected on said driving roll shaft ends,

A serving port located between the forward wall and sheet stop,

Said driving roll and sheet stop further comprising a premeasured weight press.

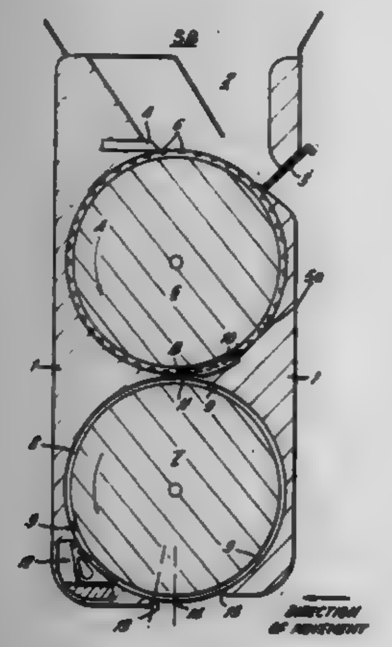
4,324,346
DEVICE FOR THE TRANSFER OF A COIL TUBE
Kamp Heinz, Wegberg, Fed. Rep. of Germany, assignor to W. Schlafhorst & Co., Monchen-Gladbach, Fed. Rep. of Germany
Filed Mar. 14, 1980, Ser. No. 130,214
Claims priority, application Fed. Rep. of Germany, Mar. 15, 1979, 2910091
Int. Cl.³ B23Q *7/08*
U.S. Cl. 221—171 6 Claims



1. Device for the controlled transfer of a coil tube from a coil

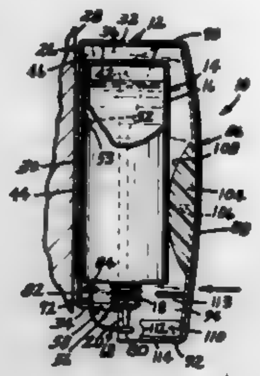
supplying device to a pickup device, comprising a chute, means for applying underpressure to a large area of the long side of the coil tube to transport the coil tube through said chute, said chute having an inner cross-sectional area with a length and a width which are greater than the respective length and width of the coil tube, said chute having narrow sides which are curved through an angle of substantially 90°, and said chute having an upper end with an at least substantially horizontal inlet opening formed therein and a lower end with an outlet opening formed therein, said underpressure applying means including a suction nozzle controllably acted upon by the underpressure disposed in vicinity of said outlet opening for the coil tube, a controllable coil tube feeding device disposed at said inlet opening, said coil tube feeding device including two supporting elements projecting into said chute, at least one of said supporting elements being controllably retractable from said chute, a controllable stop for the coil tube disposed substantially in the center of said chute below said inlet opening, and a controllable slide disposed partly above said inlet opening for closing off said inlet opening.

4,324,347
SEED DRILL APPARATUS
David W. Thomas, Fraithwen, Tregynon, Newtown, Powys, Wales (SY16 3EW)
Filed Aug. 6, 1980, Ser. No. 175,874
Int. Cl.³ A01C 7/04
U.S. Cl. 221—237 12 Claims



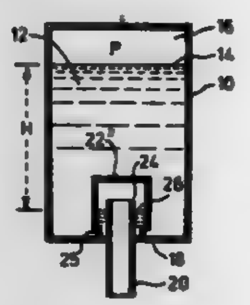
1. A seed drill apparatus comprising an inlet manifold for connection with a seed supply means; a seed collector wheel rotatably mounted in a casing and including a plurality of seed receiving cavities in spaced location around the periphery thereof, a portion of the periphery of said collector wheel lying adjacent said manifold whereby each cavity may receive a seed; a seed distributor wheel rotatably mounted in said casing adjacent and beneath said collector wheel, a gap in the casing defining a seed transfer aperture between said collector wheel and said distributor wheel, said distributor wheel including a peripheral groove to receive a seed dropping through said transfer aperture from a cavity in said collector wheel and to transfer said seed to a seed release outlet beneath said distributor wheel, the groove having therein one or more abutment stops; seed retardation means being located in the casing operatively engaging said groove to bring a seed into contact with the stop prior to release at the outlet.

4,324,348
DISPENSER FOR DISPENSING LIQUID FROM A REPLACEABLE CONTAINER
Logan Johnson, Edina; Grant Wood, Long Lake, and Jerry Brofft, Minnetonka, all of Minn., assignors to Minnetonka, Inc., Minnetonka, Minn.
Filed Jan. 18, 1980, Ser. No. 113,216
Int. Cl.³ B65D 37/00
U.S. Cl. 222—181 22 Claims



1. A dispensing enclosure for holding a flexible walled liquid container in a position wherein an outlet of the container is disposed downwardly, said enclosure comprising:
a housing having a back portion adapted for attachment to a support surface and a front portion;
means for coupling the front portion to the back portion of said housing for movement relative thereto;
means for releasably securing the liquid container in an inverted position on the back position of said housing such that the outlet of the container is disposed downwardly;
a sealing plug adapted for receipt in the outlet of the container;
a spring arm mounted on the back portion of said housing for supporting said sealing plug for movement between a sealing position in the outlet of the container and a dispensing position away from the container outlet, said spring arm normally biasing said plug toward the sealing position;
means mounted on the front portion of said housing for engaging and applying pressure to the container as the front housing portion is moved toward the back portion of said housing; and
means mounted on the front portion of said housing for engaging said spring arm and for moving said sealing plug to the dispensing position as the front portion is moved toward the back housing portion to thereby dispense liquid from the container.

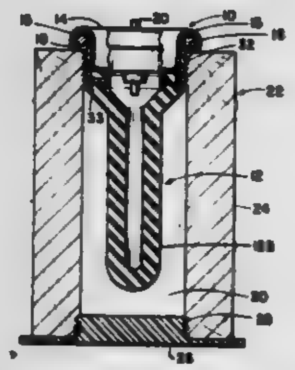
4,324,349
CONTAINER FOR DISPENSING LIQUID
John G. Kaufman, 858 Condor Dr., Burlington, Ontario, Canada (L7T 3A7)
Filed Jan. 14, 1980, Ser. No. 112,014
Int. Cl.³ B65D 37/00
U.S. Cl. 222—207 12 Claims



1. A liquid dispenser comprising:

a squeeze bottle for containing a supply of liquid to be dispensed;
an opening formed in the underside of said squeeze bottle to enable the liquid to be inserted into said squeeze bottle with said squeeze bottle in an inverted upwardly open position; and
a closure for closing said opening;
said closure forming a base for said squeeze bottle and including:
means for sealingly connecting said closure to said squeeze bottle around said bottle opening;
a chamber defining an air pocket in an upper portion thereof;
a liquid passageway connecting a lower portion of said chamber through said bottle opening to the interior of said bottle; and
a liquid outlet connecting said air pocket to the external atmosphere.

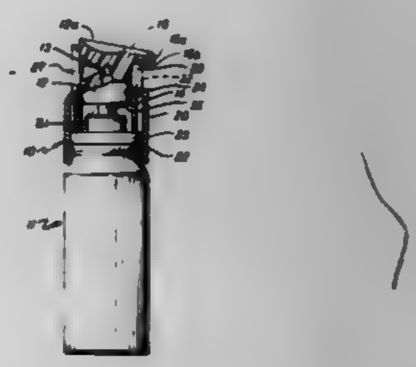
4,324,350
ELASTOMERIC APPARATUS FOR PRESSURE DISPENSING OF FLUID
Kenneth W. Thompson, Box 1455, Bartlesville, Okla. 74003
Continuation-in-part of Ser. No. 898,813, Apr. 24, 1978, abandoned. This application May 16, 1979, Ser. No. 39,497
Int. Cl.³ B65D 37/00
U.S. Cl. 222—212 16 Claims



1. A unitary, self-contained fluid spray dispenser comprising
(a) an elongated tubular expandable unit of selected diameter and length made of expandable elastomeric material of selected composition, a separate substantially rigid tubular neck means molded to an open end of the tubular expandable unit said neck means comprising a thin-walled curved flange at the outer end thereof, and at least one portion of said neck means terminating inside the elastomeric material of the tubular expandable unit;
(b) circular valve support plate means attached to and sealed across the open end of said unit;
(c) spray valve means inserted through and sealed to said valve support plate means;
(d) annular toroidal support ring for sealingly securing the valve support plate means to the thin-walled flange portion of the tubular neck means;
whereby said fluid to be sprayed is inserted under selected pressure into the interior of said unit through said valve, thereby expanding said tubular unit, which, because of its enlargement and its elasticity, continues to hold the liquid under pressure until dispensed.

4,324,351
LOCKING ACTUATOR FOR A DISPENSER
Philip Meshberg, 85 Old Oaks Rd., Fairfield, Conn. 06430
Filed Jul. 29, 1980, Ser. No. 173,340
Int. Cl.³ B65D 83/14
U.S. Cl. 222—402.11 6 Claims

1. In an actuator for dispensing material from a container, having means for controlling the dispensing of the material from the container, comprising:
(a) a housing provided with means to be fixedly secured to the container, and a bore extending therethrough;
(b) a dispensing button disposed within said bore and surrounded by the housing, said button being slidably and rotatably mounted within the bore and having a dispensing orifice on one side and located within the bore, an actuating portion for operating the dispensing means in response to inward movement of the button, said button having a control member on the opposite side thereof from said orifice and projecting laterally over the end of said housing and adapted to facilitate rotation of said button, said button being rotated in the housing by said control member between dispensing and nondispensing positions;
(c) stop means on the housing engaging said control member for limiting rotation in said positions;

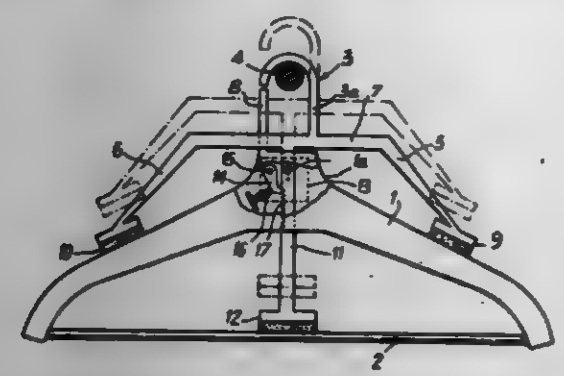


(d) said housing in the dispensing position having an opening to expose said orifice and in nondispensing position of the button having a wall within the bore adjacent said opening; and
(e) said housing, in the dispensing position of the button, having means to receive the control member to enable the button to be moved inwardly to dispense material and in the nondispensing position having an end wall disposed under the control member to prevent dispensing, the improvement comprising:
(f) an inwardly extending lip formed on the inward edge of said control member, said lip being in abutting relationship with the stop means on said housing when in said dispensing position, for limiting rotation to the dispensing position, to prevent said control means from overriding said stop; and
(g) said means to receive the control member having formed therein a recess for receiving said extended lip.

4,324,352
TAMPER-PROOF HANGER
Charles Goldfarb, 8 rue du Commandant Riviere, Paris 8eme, and Claude Iglitzki, 32 rue Manin a, Paris 19eme, both of France
Filed Mar. 5, 1980, Ser. No. 127,505
Claims priority, application France, Mar. 29, 1979, 79 07901
Int. Cl.³ A47J 51/14
U.S. Cl. 223—91 5 Claims

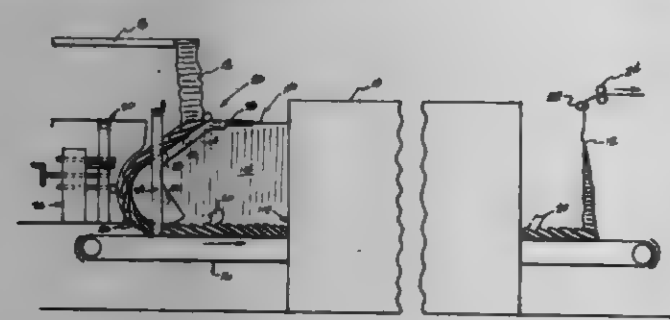
1. A tamper-proof hanger comprising an inverted V-shaped yoke formed of a pair of converging arms with shoulder portions at each end thereof; an horizontal cross-member below said arms and interconnecting said arms; at least one downwardly tapering elongated member associated with one of said shoulder portions; said member being connected to a central part; a vertical member movably mounted in said yoke and having a lower end adapted to move in and out of contact with said cross member; said vertical member having an upper end associated with said central part; a hook extending upwardly from said central part; an upstanding rod extending from said yoke and passing through said central part; said rod having an upper end cooperating with said hook to surround support means for said hanger; lock means in said yoke for locking said elongated member in engagement with a garment against said

shoulder portions, with said lower end of said vertical member in engagement with another garment against said cross mem-



ber and with said upper end of said rod in at least close, locking proximity to said hook.

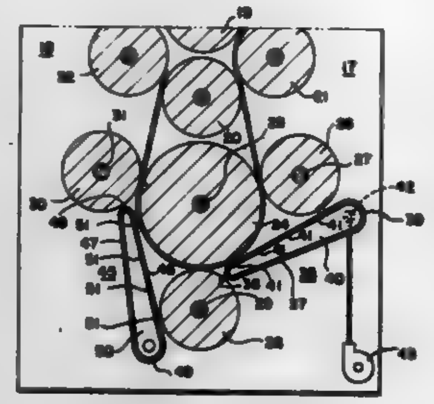
4,324,353
APPARATUS FOR HANDLING TEXTILE FILAMENTARY MATERIAL
Zachry G. Brantley, and Sidney H. Goode, both of Spartanburg, S.C., assignors to Hoechst Fibers Industries, Div. of American Hoechst Corp., Spartanburg, S.C.
Filed Mar. 31, 1980, Ser. No. 135,479
Int. Cl.³ B65H *17/50*
U.S. Cl. 226—118 7 Claims



1. A stationary tow inverter for depositing a continuous length of tow onto the surface of a moving conveyor in a plurality of overlapping layers with preceding layers of the tow overlying next succeeding layers in the direction of movement of the conveyor, comprising:

tow guiding means comprising a first stationary guide plate for receiving a continuous length of tow deposited thereon in a plurality of overlapping layers with preceding layers underlying next succeeding layers deposited thereon, a second stationary guide plate spaced from said first plate and cooperating therewith to gravitationally convey and guide the overlapping layers of tow through a downwardly curved passageway to invert the lay of the overlapping layers and deposit the same onto a conveyor surface with preceding layers of tow overlying next succeeding layers in the direction of movement of the conveyor, and support means for adjustably positioning the plates to vary the size of the passageway therebetween to facilitate gravitational guidance and inversion of layers of tow having different dimensional configurations, said support means including means pivotally mounting one of said plates for movement about a horizontal axis to move at least a portion of said one plate away from the other plate in response to a predetermined pressure exerted on said one plate manually or by tow passing through the passageway between the plates.

4,324,354
APPARATUS FOR PROCESSING PHOTOGRAPHIC MATERIALS
Henry F. Hope, and Stephen F. Hope, both of 2421 Wyandotte Rd., Willow Grove, Pa. 19090
Filed Jun. 13, 1980, Ser. No. 159,122
Int. Cl.³ B65H *17/22;* G03D *3/08*
U.S. Cl. 226—189 7 Claims



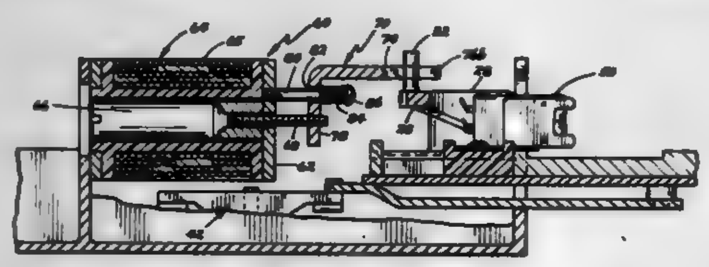
1. In apparatus for processing photographic material by conveying an elongated web for turnaround in a confined space comprising

space frame members,

means carried by said spaced frame members for directing the web in an arcuate path,

said means comprising a hollow vane having a wall portion with fluid delivery openings therethrough for directing the leading edge of a web and the web in an arcuate path.

4,324,355
MECHANISM FOR RETRACTING THE PRESSURE ROLLERS OF A TAPE TRANSPORT WHEN THE POWER IS OFF
James A. Dust, Minnetonka, Minn., assignor to Telex Communications, Inc., Minneapolis, Minn.
Filed Mar. 21, 1980, Ser. No. 132,383
Int. Cl.³ B65H *17/20*
U.S. Cl. 226—190 4 Claims



1. In a tape transport including a pair of capstans, a pair of carrier arms pivotally mounted adjacent one end thereof and each having a pinch roller intermediate said one end and the other end thereof, said pinch rollers being cooperable with said capstans, and respective means independently biasing each carrier arm in a direction so as to cause the pinch roller mounted thereon to move in the direction of the capstan with which it is cooperable, a pinch roller retraction mechanism comprising an upstanding pin at the other end of each of said carrier arms, a T-shaped bar having laterally issuing ears at one end thereof engagable with said upstanding pins when said T-shaped bar is moved in one direction, spring means for moving said T-shaped bar in said one direction, and solenoid means for moving said T-shaped bar in an opposite direction so as to disengage said ears from said upstanding pins whereby either one of said pressure rollers is biased in the direction of the capstan with which it is cooperable.

4,324,356
PROCESS FOR JOINING SILICON NITRIDE BASED CERAMIC BODIES
Howard D. Blair, Romulus, and Morton E. Milberg, Southfield, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed Mar. 29, 1979, Ser. No. 25,148
Int. Cl.³ B23K *31/00, 35/24, 35/38*
U.S. Cl. 228—193 14 Claims

1. A method of joining silicon nitride based bodies, comprising:

(a) providing separately shaped bodies of silicon nitride based materials, either one or both of such bodies being formed by at least one mode selected from the group comprising pressureless sintering, reaction sintering and hot pressing, each of said bodies having a mating surface along which they are to be bonded.

(b) applying to at least one of said surfaces a film of metallic aluminum based material,

(c) assembling said shaped bodies together with the mating surfaces juxtaposed and in contact with said film of aluminum based material intervening, said mating surfaces and metallic aluminum based material carrying surface oxide, and

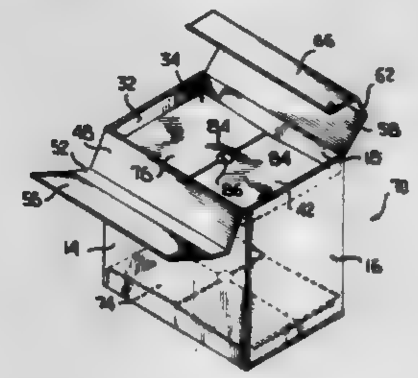
(d) while maintaining said surfaces in contact with said film, heating said assembly in a reactive nitriding atmosphere for a period of at least 0.5 hour at a temperature between 1400° C. and 1900° C. to effect an atomic displacement chemical bond between said silicon nitride based materials, metallic aluminum based material, surface oxide and nitriding atmosphere.

11. A method of joining surfaces of silicon nitride based bodies, comprising:

(a) vapor depositing a film of metallic aluminum onto at least one surface to be joined,

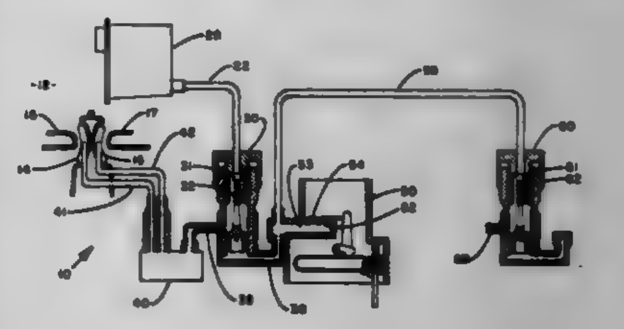
(b) while urging said surfaces together with tight contact, heating said bodies to a temperature of about 1600° C. for about one hour in a nitriding atmosphere to effect a Si—Al—O—N system bond therebetween.

4,324,357
CARTON WITH AIR CUSHION END STRUCTURE
Rita J. Markowski, Columbia, S.C., assignor to The Continental Group, Inc., New York, N.Y.
Filed Jan. 19, 1979, Ser. No. 4,963
Int. Cl.³ B65D *5/08, 81/04*
U.S. Cl. 229—37 E 2 Claims



1. A carton end structure comprising a carton body including first and second pairs of side members, first end wall members carried by said first side members and recessed within said carton body and forming an inner end wall, second end wall members carried by said second side members and forming an outer end wall, said outer end wall being spaced from said inner end wall with there being an air cushion space between said inner and outer end walls, and spacer means between said inner wall and said outer wall for maintaining said inner and outer walls in said spaced relation, said spacer means being carried by said second end wall members and including a spacer panel carried by each second end wall member remote from said second side members, said spacer panels being arranged in side-by-side relation and being generally normal to said first and second end walls, and support panels carried by said spacer panels and bearing against said inner end wall.

4,324,358
MINIMUM AIRFLOW CONTROL
David Tulowiecki, Liverpool, and Richard R. Lavasseur, Oneida, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.
Filed Jul. 2, 1980, Ser. No. 165,456
Int. Cl.³ F24F *7/06*
U.S. Cl. 236—49 2 Claims



1. A minimum airflow control for an air distribution unit comprising:

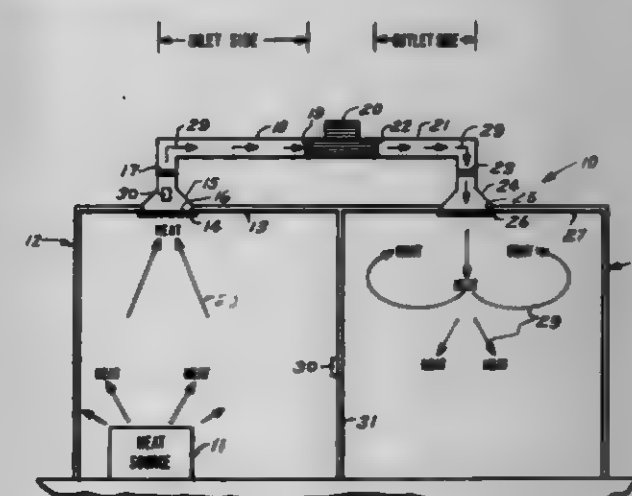
bellows controlled damper means for controlling the flow of conditioned air into an area;

first regulator means opening at a first pressure to supply control air to said bellows to cause said bellows to inflate in accordance with the pressure of said control air;

thermostatic means for controlling the pressure of said control air supplied to said bellows by said first regulator means over a first pressure range by bleeding said control air to atmosphere in response to the setting of said thermostatic means to thereby control the inflation of said bellows; and

second regulator means opening at a second pressure which is higher than said first pressure for controlling the pressure of said control air supplied to said bellows by said first regulator means over a second pressure range by bleeding said control air to atmosphere whereby said bellows are inflated so as to provide a minimum flow of conditioned air independent of said thermostatic means.

4,324,359
HEAT RECLAIMING SYSTEM
Wayne O. Bannister, 1502 Nance St., Newberry, S.C. 29108
Filed Jul. 28, 1980, Ser. No. 173,096
Int. Cl.³ F24F *7/00*
U.S. Cl. 237—46 1 Claim



1. A heat reclaiming system, comprising, in combination, an inlet vent covered by a grill, and secured in a ceiling opening

of a first room having a heat source; an inlet duct secured by a clamp to said inlet vent, said inlet duct being connected by a clamp to an inlet side of a blower; an outlet duct secured by a clamp to an outlet side of said blower, said outlet duct being connected by a clamp to an outlet vent covered by a grill, and located in a ceiling opening of a second room having need of more heat therein; whereby heated air adjacent the ceiling of said first room is reclaimed to said second room, both said vents, both said ducts and said blower being located at an elevation above both said ceilings; and a thermostat activating said blower being located on a wall of said first room.

4,324,360

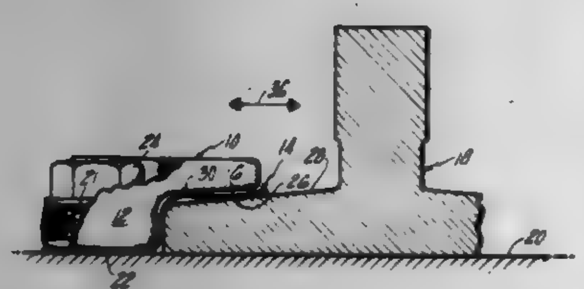
ELEVATOR GUIDE RAIL MOUNTING ARRANGEMENT

Lu Sun, and Janis J. Cilderman, both of Simsbury, Conn., assignors to Otis Elevator Company, Farmington, Conn.

Continuation of Ser. No. 19,199, Mar. 9, 1979, abandoned. This application Jan. 30, 1981, Ser. No. 229,914

Int. Cl.³ E01B *9/00*

U.S. Cl. 238—349 **2 Claims**



2. A rail clip apparatus for attachment at spaced apart points on a wall for holding a rail in position on the wall, the apparatus including a spacer for applying hold-down force to the rail surface and a retainer which holds the spacer on the wall, characterized in that:

the retainer is rigid and L-shaped, having a main body section and an arm-like section, said arm-like section for extending over a portion of the rail surface in a spaced relationship with the rail surface so as to restrain rail movement within a prescribed distance from said wall, and said main body section for restricting movement of the rail along the wall, when the apparatus is attached to the wall,

the spacer is constructed of springy steel and is Z-shaped and includes a concave portion, the concavity of which faces said arm-like section and which is forced against the rail surface by said arm-like section, which forces one end of said concave portion towards the wall when the retainer and spacer are attached thereto, said spacer including an additional portion which is squeezed between said main body section and the wall when the apparatus is attached thereto, and the balance of said concave portion, beginning at said one end, being free to move within the space between said arm-like section and the rail surface, whereby said balance of said concave portion applies resilient hold-down force to the rail for holding it resiliently in place against the wall while permitting it to move within the space between said arm-like section and the wall, and said arm-like section limits the travel of said concave portion and the rail away from the wall.

4,324,361

METHOD OF ATOMIZATION AND ATOMIZING DEVICE FOR COATING MATERIAL USING THE COANDA EFFECT

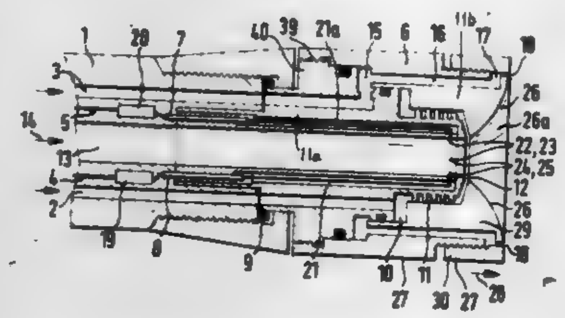
Kurt Moos, Wil, and Karl Buschor, St. Gallen, both of Switzerland, assignors to GEMA AG Apparatebau, Switzerland

Filed Nov. 29, 1979, Ser. No. 98,345

Claims priority, application Fed. Rep. of Germany, Dec. 4, 1978, 2852412; Jun. 9, 1979, 2923451

Int. Cl.³ B05B *5/00, 7/00, 7/10*

U.S. Cl. 239—3 **28 Claims**



1. A method for atomizing a material, comprising the steps of:

providing a stream of a material to be atomized flowing in a first direction;

injecting into the stream an atomizer gas in a direction generally across said first direction; and

moving the stream through a progressively enlarging annulus having an interior surface so curved that the stream will flow along the contour of said interior surface without reverse eddies and without substantial turbulence; said injecting and moving steps being performed in such a manner as to cause the stream, the injected atomizer gas and said interior surface to cooperate to cause the stream to expand into a broader stream of atomized material.

4,324,362

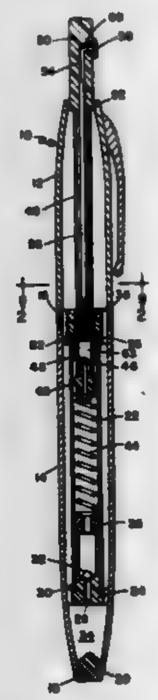
POCKET ATOMIZER

Benjamin H. Stansbury, Jr., Beverly Hills, Calif., assignor to Pocket Supportable Atomizer Device Trust

Filed Mar. 6, 1979, Ser. No. 127,903

Int. Cl.³ B05B *1/00*

U.S. Cl. 239—211 **7 Claims**



1. A pocket atomizer having an elongated barrel which forms a reservoir, a pump cylinder within said reservoir, a first check valve coupling the bottom of said pump cylinder to said reservoir, a hollow piston having a hollow piston rod, which piston is axially movable up and down within said pump cylinder to force liquid up the interior of said hollow piston rod, a second check valve within the lower end of said hollow piston rod, and an orifice in the upper end of said hollow piston rod for discharging the pumped liquid, characterized by

a capillary tube within the interior of said hollow piston rod having an upper end coupled to said orifice for preventing liquid from draining therefrom between uses and thereby eliminating the necessity of priming the atomizer between uses, wherein the lower end of said capillary tube terminates some distance above said second check valve to define a chamber above said second check valve; and

means sealing the space between the interior of said hollow piston rod and said capillary tube so that liquid flows only through said capillary tube when pumped up through said second check value;

wherein the second check valve includes a valve seat and a ball of greater diameter than said capillary tube and of sufficient mass to seat in said valve seat when said piston is moved up; and

wherein said chamber is of sufficient diameter and depth to enable said ball to move up off of said valve seat to enable liquid to be pumped up through said second check valve and into said capillary tube when said piston is moved down.

4,324,363

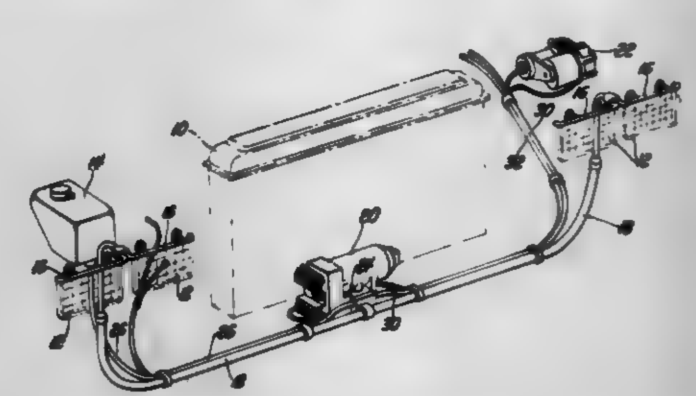
HEADLAMP WASHER ASSEMBLY HAVING A MULTIPORTED FLOW VALVE

John T. Rauen, Jr., Troy, Mich., assignor to C-D Marketing Ltd., Ann Arbor, Mich.

Continuation of Ser. No. 941,368, Sep. 11, 1978, abandoned. This application Sep. 2, 1980, Ser. No. 183,191

Int. Cl.³ B60S *1/56, 1/50*

U.S. Cl. 239—284 A **14 Claims**



1. A fluid dispensing assembly comprising: liquid storage means for storing liquid; gas storage means for storing a predetermined volume of gas; a gas source for charging said gas storage means; dispensing means for containing a predetermined quantity of dispensing liquid and for dispensing the liquid over a predetermined area; valve means in fluid communication with said liquid storage means, said gas storage means, said gas source and said dispensing means for charging said gas storage means from said gas source while simultaneously charging said dispensing means with said dispensing liquid from said liquid storage means when in a first position and for discontinuing said charging of said gas storage means and said dispensing means while simultaneously subjecting said dispensing means to gas from said gas storage means to force said dispensing liquid through said dispensing means when in a second position.

4,324,364

ADJUSTABLE SHOWER HEAD

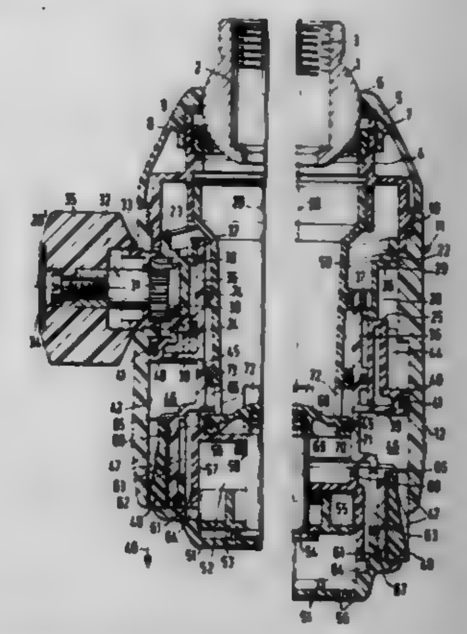
Günther Buzzi, and Magdalena Faisst, both of Schiltach, Fed. Rep. of Germany, assignors to Hans Grohe GmbH & Co. KG, Fed. Rep. of Germany

Filed Mar. 18, 1980, Ser. No. 131,378

Claims priority, application Fed. Rep. of Germany, Mar. 27, 1979, 2911936

Int. Cl.³ B05B *1/06, 1/08*

U.S. Cl. 239—383 **14 Claims**



1. An adjustable shower head for producing adjustable sprays comprising:

a housing having a major axis and at least one inner cylindrical guide surface;

a liquid supply connection connected to said housing for the input of liquid to said housing;

a slide bushing mounted for rotation on said inner cylindrical guide surface and for axial movement in said housing along said major axis, said slide bushing having an inclined slot defined on an outer cylindrical surface thereof, said slide bushing having a toothed rim thereon extending along a portion of said slot;

a stub shaft rotatably mounted on said housing extending radially of said housing and carrying a pinion engaged with said toothed rim for rotation of said slide bushing with rotation of said pinion;

a handle member connected to said stub shaft and extending out of said housing for rotation of said pinion;

a guide pin coaxially connected to said pinion and guided in a flushed fashion in said inclined slot for axial movement of said bushing with rotation of said pinion; and

at least one spray element fixed to said slide bushing for movement thereof and to define a variable nozzle opening with at least a portion of said housing to produce an output spray of the liquid which is adjustable with axial movement of said slide bushing in said housing which movement varies said variable nozzle opening, and flow path means connected between the liquid supply connection and said variable nozzle opening.

4,324,365

NEBULIZER

Harry Howarth, Mount Waverley, Australia, assignor to Varian Techtron Pty. Ltd., Victoria, Australia

Filed Oct. 31, 1979, Ser. No. 89,819

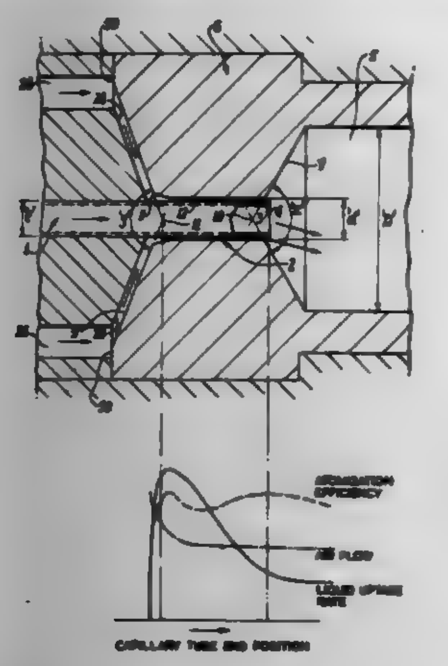
Claims priority, application Australia, Nov. 6, 1978, PD6655

Int. Cl.³ B05B *7/06*

U.S. Cl. 239—424 **7 Claims**

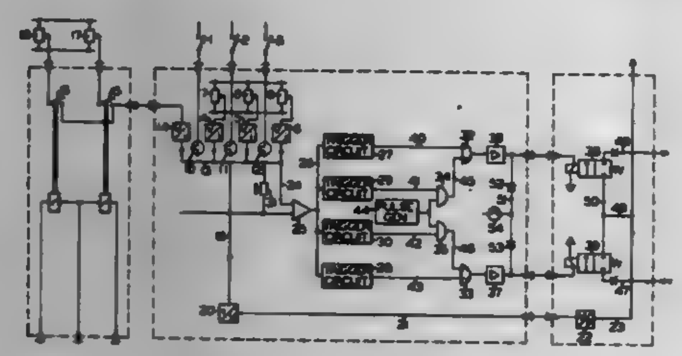
1. A nebulizer including venturi means, a cylindrical throat and a cylindrical chamber each forming part of said venturi means and being arranged in substantially coaxial end to end communication, the diameter of said chamber being larger

than the diameter of said throat, said throat having an inlet end remote from said chamber and an outlet end adjacent said chamber, said throat outlet end being at an end surface of said chamber, said end surface being frusto-conical and having an included angle within the range 110° to 130° inclusive, a liquid



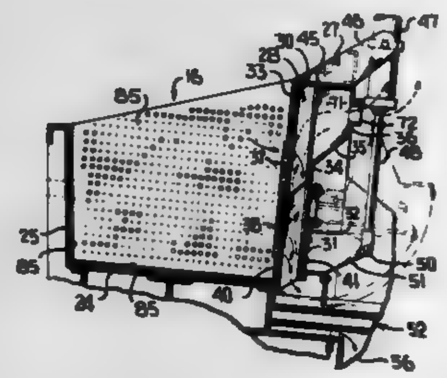
feed tube having an external diameter less than the diameter of said throat, said tube extending into said throat through said inlet and thereof and terminating at a location remote from said inlet end, and air feed passage means external of said tube and communicating with said throat inlet end.

4,324,366
CONTROL SYSTEM FOR REGULATING A SPRAY GUN PAINT PRESSURE
Georg Geier, and Manfred Löhne, both of Hanover, Fed. Rep. of Germany, assignors to WABCO Steuerungstechnik, Hanover, Fed. Rep. of Germany
Filed Jun. 2, 1980, Ser. No. 155,333
Claims priority, application Fed. Rep. of Germany, Jun. 15, 1979, 2924264
Int. Cl.³ B05B *1/30*
U.S. Cl. 239—533.1 7 Claims



1. A control system for automatically regulating the amount of paint emitted by a spray gun, said control system comprising:
(a) a consumer line connected to said spray gun;
(b) control valve means for varying the pressure in said consumer line and accordingly the desired amount of paint to be emitted by said spray gun;
(c) a control circuit including a differential amplifier having first and second inputs and an output providing a polarity signal when a voltage potential exists across said first and second inputs to operate said control valve means depending upon the sense of said polarity signal;
(d) means for providing a control signal representative of the ideal pressure of said consumer line including a collection line connected to said first input of said differential amplifier, said collection line having an electric current corresponding to said control signal;
(e) first transducer means connected to said consumer line for providing a voltage signal representative of the actual pressure of said consumer line;
(f) second transducer means connected between said first transducer means and said collection line for conducting the flow of electric current therefrom in accordance with said voltage signal;
(g) a reference potential line connected to said second input of said differential amplifier; and
(h) a resistor connected between said collection line and said reference potential line via which current in said collection line flows when the current thereof deviates from the current of said second transducer to thereby establish said voltage potential across said first and second inputs of said differential amplifier.

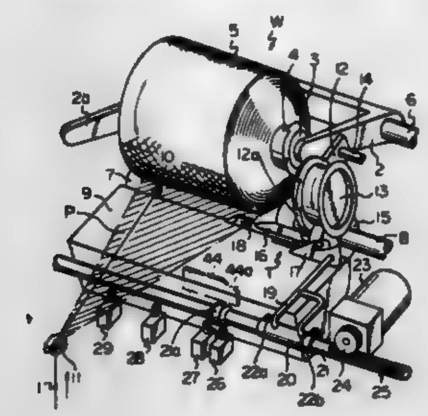
4,324,367
SAND LUMP CRUSHING DEVICE
Joseph E. Bowling, Waynesboro, Pa.; James H. Carpenter, and Russell L. Rowe, both of Hagerstown, Md., assignors to Kennecott Corporation, Stamford, Conn.
Filed Oct. 31, 1979, Ser. No. 90,028
Int. Cl.³ B02C *19/12*
U.S. Cl. 241—60 15 Claims



1. In a sand lump crusher an active end wall arrangement comprising inner and outer walls disposed in spaced relation and defining a vertical inner passage of restricted width, a perforated crusher plate forming a lower part of said inner wall and directing crushed sand into said inner passage for free downward flowing movement, and means for directing an air wash upwardly generally through the entire cross section of said inner passage counter to flow of crushed sand and removing undesired fines from downward flowing crushed sand.

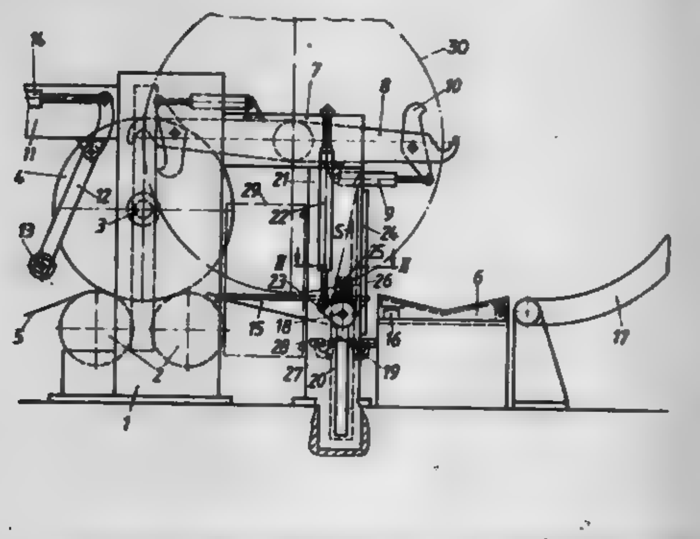
4,324,368
YARN WINDING APPARATUS
Yoshinori Inouye, and Tadahiko Ohkubo, both of Ootsu, Japan, assignors to Toray Industries, Inc., Tokyo, Japan
Filed Mar. 13, 1980, Ser. No. 130,114
Claims priority, application Japan, Mar. 15, 1979, 54-30436
Int. Cl.³ B65H *54/02, 54/34*
U.S. Cl. 242—18 PW 16 Claims

1. An apparatus for winding a yarn on a bobbin comprising:
a guide for serving as a fulcrum of the traverse motion of a yarn;
a mechanism for positively driving and holding said bobbin;
a traverse mechanism interposed between said bobbin and said fulcrum guide further comprising a traverse guide having a narrow opening and a wide yarn holding portion through which said yarn may travel and reciprocating means for traversing said traverse guide along the direction of the generatrix of said bobbin so as to form a yarn package on said bobbin, said yarn moving to and fro in accordance with said traverse guide forming a path between said fulcrum guide and said bobbin;
a yarn catching guide substantially parallel the moving direction of said traverse guide and substantially perpendicular to the plane of said yarn path, adjacent said traverse guide and movable along the moving direction of said traverse guide, having an inclined portion proximate said yarn path and having a hook portion adjacent said in-



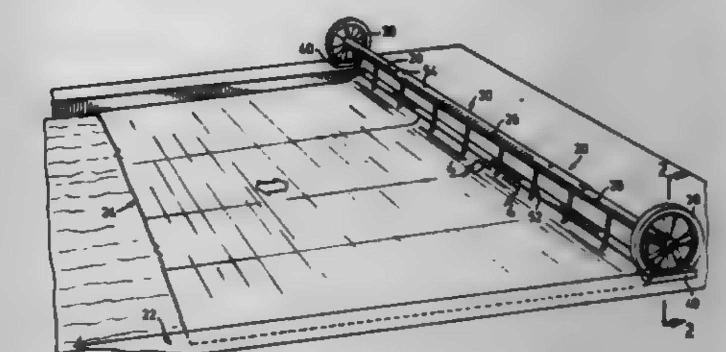
clined portion for catching said yarn, said inclined portion positioned to intersect said yarn path, and said hook portion projecting away from said yarn path and being positioned more distant from the plane of said yarn path than said opening of said traverse guide.

4,324,369
DOUBLE DRUM WINDER
Bernhard Bartmann, Heindenheim, Fed. Rep. of Germany, assignor to J. M. Voith GmbH, Fed. Rep. of Germany
Filed Jul. 3, 1980, Ser. No. 165,954
Claims priority, application Fed. Rep. of Germany, Jul. 14, 1979, 2928543
Int. Cl.³ B65H *17/08*
U.S. Cl. 242—66 20 Claims



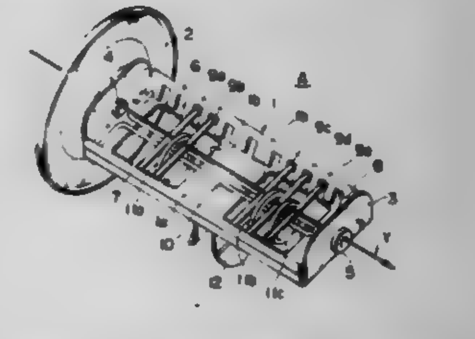
1. A double-drum winder for winding a roll of web material and for ejecting a wound roll of web material, the winder comprising:
drums for being driven to rotate and on which a roll of web material is to be wound;
a transfer table positioned next to the drums and to which a wound roll is to be transferred;
ejecting means for ejecting a wound roll off the drums and for moving the wound roll onto the transfer table;
the transfer table being pivotally mounted on a pivot axis, which is generally parallel to the axis of the wound roll, whereby the transfer table can be pivoted between a horizontal position at which the transfer table is positioned to receive an ejected roll, and a vertical position at which the transfer table serves as a protective shield against movement of a roll past the vertical transfer table.

4,324,370
POOL COVER ROLLER ASSEMBLY
Wayne Guard, and Tibor Feher, both of Milton, Canada, assignors to Fehergaard Products, Milton, Canada
Filed Nov. 6, 1980, Ser. No. 204,408
Int. Cl.³ B65H *17/46*
U.S. Cl. 242—86.52 20 Claims



1. An apparatus adapted to be rested on a surface adjacent to a pool for use in removing and storing a swimming pool cover and the like, comprising:
a telescoping roller member having a first tubular section and two second tubular sections, each section having inside and outside diameter walls, said second tubular sections adapted to be telescopically disposed one from each end of said first tubular section to provide first and second roller ends, said first tubular section further defining a plurality of uniformly spaced ribs disposed from its inner diameter wall and extending longitudinally of the section from end to end thereof, said second tubular sections further defining a plurality of similarly spaced ribs disposed from their outer diameter walls, and extending longitudinally of each section from end to end thereof, the said inner wall ribs of said first tubular section engaging upon the said outer wall ribs of said second member when the said ribs of each section are aligned radially, thereby fixing said sections relative to each other;
support means for mounting the first and second ends of the roller for rotational movement of the roller above the surface on which the apparatus is to be rested such that the pool cover can be wound onto the roller;
means for securing an edge portion of the pool cover to the roller; and,
means for use in rotating said roller for winding up and unwinding said pool cover.

4,324,371
APPARATUS FOR CONTROLLING TENSION OF FILAMENT YARN
Hichio Shimizu, Fukui, Japan, assignor to Oda Gosen Kogyo Kabushiki Kaisha, Komatsu, Japan, a part interest
Filed Nov. 3, 1980, Ser. No. 203,149
Int. Cl.³ B65H *59/26, 59/36*
U.S. Cl. 242—153 5 Claims



1. An apparatus for controlling the tension of a filament yarn, provided between a pirn of the filament yarn and a take-up especially in a warping machine to allow the filament yarn to start its run and to continue its run with substantially the

same required minimum tension as that which the filament yarn has during its rest state, comprising:

a generally oblong frame;

an inlet guide and an outlet guide provided at longitudinally opposed ends of said frame, through which a running filament yarn is introduced in and discharged out from said apparatus during a warping operation,

a plurality of rotatable roller-like guide means provided rotatably on the frame transversely of the direction of passage of the filament yarn for supporting the filament yarn at a topmost portion of the circumference of each of said roller-like guide means as the filament yarn passes through the apparatus,

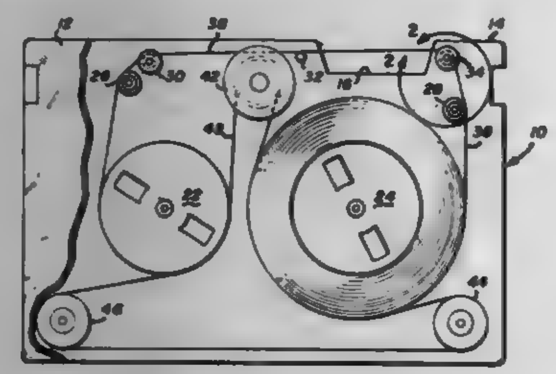
at least three movable ring-like members each being positioned between any two adjacent ones of said rotatable roller-like guide means, through which is passed a filament yarn, said three ring-like members being spaced along the path of travel of the filament yarn with the member closest the inlet guide being equal to or greater than the weight of the intermediate ring-like member and with said intermediate ring-like member being of greater weight than the ring-like member located closest to said outlet guide of said apparatus, and

a supporting means provided on the frame under said rotatable roller-like guide means to limit the lowest position of said movable ring-like members as the running filament yarn comes to a halt,

said lowest position of said ring-like members being defined by that topmost portion of the inner circumference of each ring-like member which is lower than the topmost portions of the circumferences of the rotatable roller-like guide means,

the topmost portion of the circumferences of the roller-like guide means being aligned in a horizontal plane to allow the filament yarn to pass through the apparatus horizontally and rectilinearly during the warping operation.

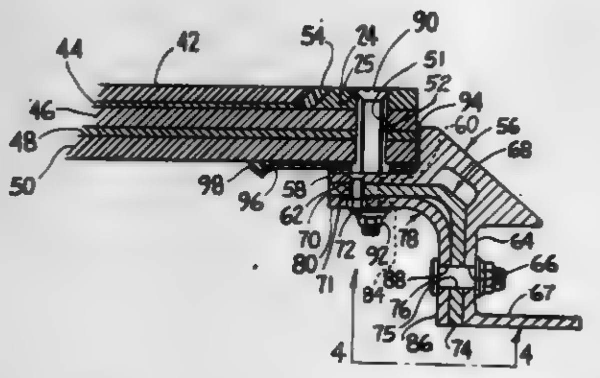
4,324,372
HIGH DENSITY BELT DRIVEN DIGITAL DATA TAPE CARTRIDGE
Stepan Majicek, San Jose, and Harry R. Robinson, Santa Clara, both of Calif., assignors to Verbatim Corporation, Sunnyvale, Calif.
Filed May 16, 1980, Ser. No. 150,571
Int. Cl.³ G03B *1/04;* **G11B** *15/32*
U.S. Cl. 242—192 **11 Claims**



1. An improved belt driven tape cartridge including a shell means defining an enclosure having a cutaway portion along one edge, a pair of reel hubs supported for rotation on spaced parallel axes within said enclosure, a length of tape convolutely wound on said reel hubs in opposite directions about the axes of said reel hubs and guided through a path along one edge of said enclosure and across said cutaway portion, and a driving belt supported within said enclosure by a driving roller and a pair of belt guide members defining a belt guide path spaced from said tape path and passing between said reel hubs from said belt driving roller to each of said belt guide members wherein the improvement comprises,

a first and a second flywheel rotatable about a fixed axis, the axes of the flywheels being parallel to the axes of said reel hubs, the first and second flywheel being located on opposite sides of said cutaway portion of said enclosure along said tape guide path, each flywheel situated intermediate one of said reels and said cutaway portion, both of the flywheels being rotatably mounted and positioned so as to intimately contact said tape across the full width of said tape with the tape wrapping around a portion of each of said flywheels at all times, whereby the flywheels absorb longitudinal vibrations in the tape.

4,324,373
METHOD AND APPARATUS FOR ADD-ON REINFORCEMENT FOR TRANSPARENCY SYSTEM FOR CREW MODULE FOR AIRCRAFT
George Zibritosky, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.
Filed Nov. 19, 1979, Ser. No. 95,806
Int. Cl.³ B64C *1/14;* **E04C** *1/00*
U.S. Cl. 244—121 **6 Claims**



1. A crew module for use in aircraft comprising a windshield and a canopy, said windshield including an aft edge portion, an aft arch assembly comprising an aft arch, an aft arch support and attachment means securing said aft arch to said aft arch support, said aft arch assembly interposed between the aft edge portion of the windshield and the front edge of the canopy, said aft arch assembly extending transversely of said crew module and secured thereto to provide reinforcement and resistance to impact penetration for said windshield, said aft arch assembly comprising an apertured flange having apertures aligned with apertures in said windshield along the aft edge portion thereof, an add-on reinforcement comprising an apertured flange having apertures aligned with the apertures of the flange of the aft arch assembly and said apertures for said aft edge portion of said windshield, and attachment bolts extending through said aligned apertures to secure said windshield and said add-on reinforcement to said aft arch assembly, wherein said add-on reinforcement has a scalloped edge provided with scallops corresponding to each of said attachment means to provide clearance for said attachment means between said aft arch and said aft arch support when said add-on reinforcement is secured to said aft arch, aft arch support and said windshield.

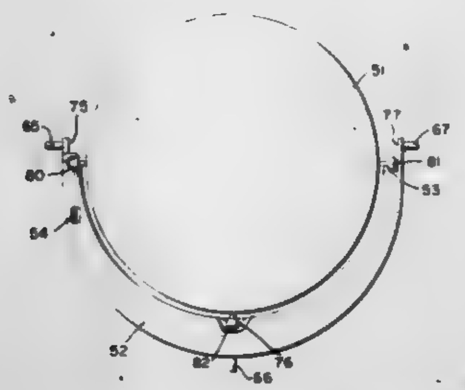
4,324,374
INTEGRATED SPACECRAFT AND CRADLE STRUCTURE
Alois Wittmann, Rancho Palos Verdes, and Charles P. Rubin, Santa Monica, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.
Continuation of Ser. No. 910,912, May 30, 1978, abandoned. This application Apr. 15, 1980, Ser. No. 140,555
Int. Cl.³ B64G *1/14, 1/64*
U.S. Cl. 244—158 R **1 Claim**

1. An integrated spacecraft and cradle assembly for supporting a spacecraft in the payload bay of a space shuttle comprising:

a generally U-shaped cradle of a light and thin construction having two end portions and an intermediate section between said end portions;

three trunnions projecting outwardly from said cradle, for mounting to the payload bay of the space shuttle, one at each of said end portions of the cradle and the third at said intermediate section;

means providing three attachment points for a spacecraft within said cradle, one at each of said end portions and the third at said intermediate section;



a spacecraft having three spacecraft trunnions around the periphery thereof, each pivotally engaging a corresponding one of said three attachment points of said cradle; and

a spacecraft truss frame structure interconnecting said spacecraft trunnions which provides a structural tie between said two end portions of said U-shaped cradle and said intermediate section to stiffen said cradle, said spacecraft truss frame structure also supporting major components mounted within said spacecraft.

4,324,375
HEAT SINK/FLUID-TO-FLUID MECHANICAL COUPLING OF SPACECRAFT COOLANT SYSTEMS
Richard F. O'Neill, Carlsbad, Calif., assignor to General Dynamics Corporation, San Diego, Calif.
Filed Dec. 26, 1979, Ser. No. 106,934
Int. Cl.³ B64G *1/50;* **G05D** *23/00*
U.S. Cl. 244—163 **15 Claims**

1. In a separable system having a first cooling system which contains heat generating elements adapted to couple with a second fluid circulating cooling system, the improvement comprising,

means in said first system for dissipating heat from the heat generating elements,

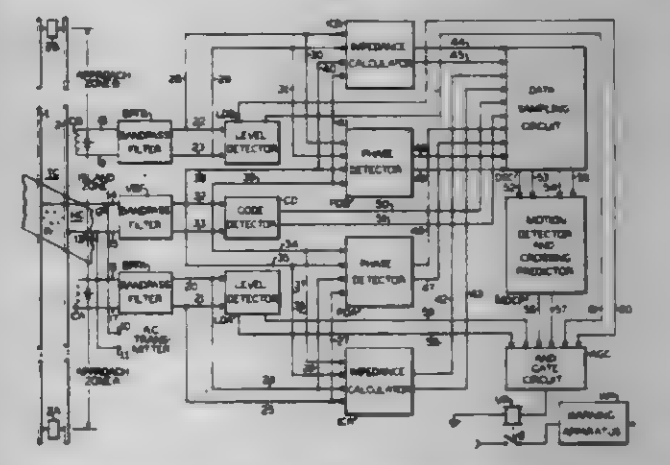
said heat dissipating means having means for selectively coupling to said second system in a direct mechanical connection when positioned adjacent thereto and uncoupling for removing said mechanical connection for remote positioning thereof in response to the pressure of the fluid in one of said systems.

14. A spacecraft for oribiting in a geosynchronous corridor and containing a plurality of individual self contained modules for the functioning of said satellite, said device having tubing containing fluid coolant as part of a cooling system which receives heat generated by said modules and transfers said heat to a radiator in said device so as to return cooler fluid to said modules,

means for pressurizing and moving the fluid in said tubing, said cooling system containing a plurality of subsystems one for each of said modules in said device,

each subsystem having means for coupling said tubing to said module in response to pressure in said cooling system and means for isolating each subsystem from other subsystems to permit depressurization of said subsystem and thus decouple said module from said subsystem without interference in the flow of fluid in said other subsystems.

4,324,376
RAILROAD HIGHWAY CROSSING WARNING SYSTEM
John J. Kuhn, Allison Park, Pa., assignor to American Standard Inc., Swissvale, Pa.
Filed Jun. 24, 1980, Ser. No. 162,471
Int. Cl.³ B61L *1/02*
U.S. Cl. 246—125 **11 Claims**

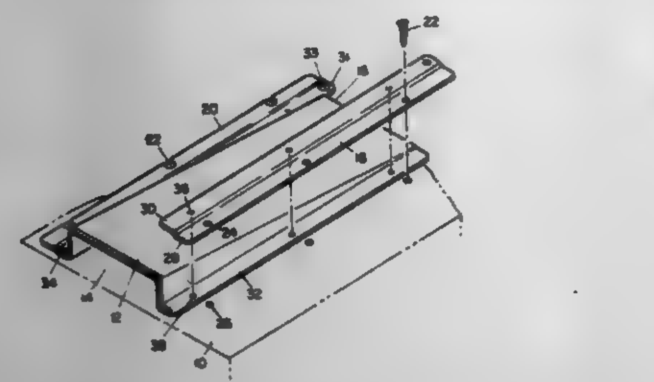


1. A railroad highway crossing warning system comprising, means for sensing current flowing in the track rails of an approach zone, means for sensing the voltage across the track rails, means connected to said current and voltage sensing means for filtering the voltage and current derived from the track rails, means connected to said filtering means for calculating the track impedance, means connected to said filtering means for detecting the phase angle between the voltage and current, means connected to said impedance and phase angle means for linearizing the calculated track impedance by multiplying the track impedance by a function of the phase angle, means connected to said voltage filtering means for detecting coded signals in the track rails, means connected to said linearizing and coded detecting means for sampling the linearized track impedance at given periodic intervals, means connected to said sampling means for detecting the motion of a train and for predicting the time of arrival at the crossing by comparing the predicted time of arrival at the crossing with an advance warning time, and means connected to said motion detecting and predicting means for activating the warning apparatus at the crossing when the predicted time of arrival is less than the advance warning time.

4,324,377
SAFETY KNIFE HOLDER
Allan P. Jones, 7340 Amestoy, Van Nuys, Calif. 91406, and Patrick L. Reichstein, 44808 Lorimer Ave., Lancaster, Calif. 93534
Filed Nov. 13, 1979, Ser. No. 93,302
Int. Cl.³ A47G *21/14*
U.S. Cl. 248—37.6 **1 Claim**

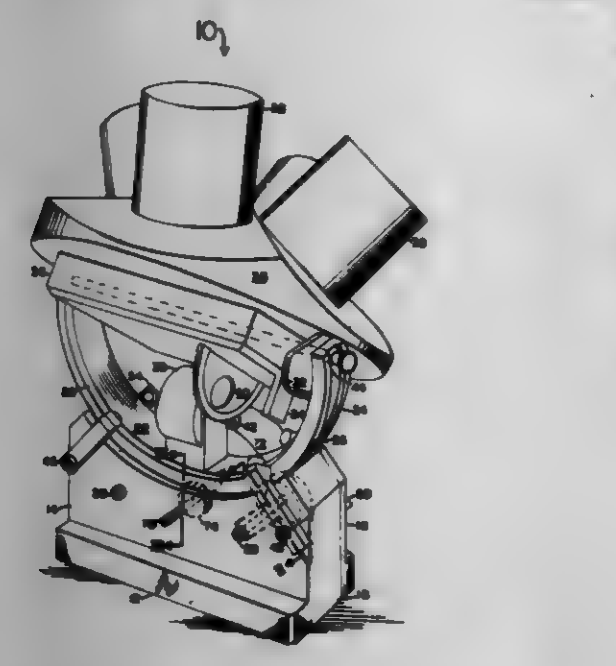
1. A safety knife holder comprising an elongated body portion, said body portion slanting from a raised open end to a narrow closed end, adapted to frictionally receive and hold the blade end of a knife, rail holders fixedly attached to a table to slidably receive said body portion, flanges at each side of said

body portion, in which one side of said rail holders is securable to a table and the other side is slightly raised for receiving of



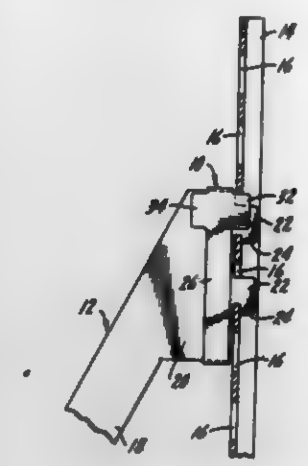
said flanges, in which said rail holders have pips adapted to match pips on the flanges for positioning of the body portion, a raised lip at the open end of said body portion.

4,324,378
HIGH-TORQUE/ACCELERATION STABILIZED SENSOR PLATFORM
Frederick D. Groutage, Bonita, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Mar. 3, 1980, Ser. No. 126,778
Int. Cl.³ F16M *11/12*
U.S. Cl. 248—184 **6 Claims**



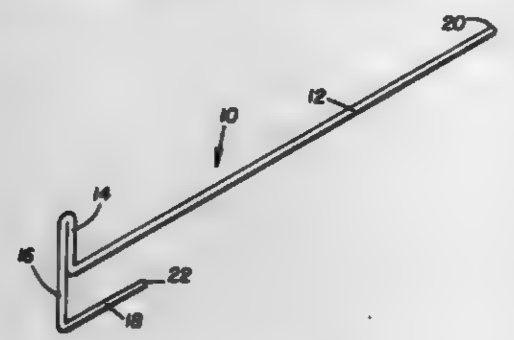
1. A gimbal high torque/acceleration stabilized platform comprising:
a selectively positionable member for securing a load to said stabilized platform;
an inner gimbal gear drive mechanically connected to said selectively positionable member for imparting a first degree of freedom to said selectively positionable member;
a pivot rod operatively engaged with said selectively positionable member for permitting said selectively positionable member to rotate about said pivot rod;
an outer gimbal ring operatively coupled to said pivot rod for imparting a second degree of freedom to said selectively positionable member;
a cradle assembly for providing a base for and for engaging said outer gimbal ring; and
a torque motor secured in fixed relation to said outer gimbal ring and mechanically coupled to said inner gimbal gear drive.

4,324,379
DISPLAY SHELF LOCK
Ernest Ovitz, III, Galva, Ill., assignor to John H. Best & Sons, Inc., Galva, Ill.
Filed Jan. 10, 1980, Ser. No. 111,117
Int. Cl.³ E04G *5/06;* **F16L** *3/06;* **F21L** *15/08*
U.S. Cl. 248—222.1 **7 Claims**



1. In a shelf support bracket releasably attached to an upright support wherein the bracket has an arm terminating at a body portion with at least one hook extending therefrom to engage a slot in the upright support, the improvement comprising a lock for preventing inadvertent removal of the bracket hook from the support slot, the lock having first and second attachment clips which are slidably engageable with the body portion of the bracket such that the lock can be mounted on either side of the body portion and the lock having an ear which projects into a slot in the upright support, adjacent the top edge of the slot to prevent lifting of the bracket.

4,324,380
MOUNTING PIN
Bruce J. Rothenberg, 200 B Rutledge St., San Francisco, Calif. 94110
Filed Feb. 4, 1980, Ser. No. 118,449
Int. Cl.³ A47H *1/16*
U.S. Cl. 248—302 **8 Claims**

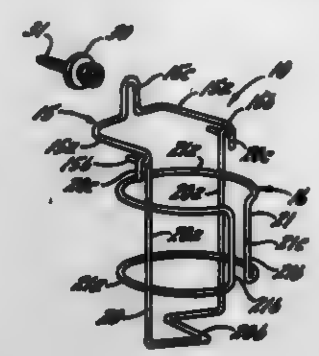


1. A mounting pin, comprising
(a) a straight long run,
(b) a straight short run extending perpendicular from said long run
(c) a straight inner run extending 180° from said short run and in touching relationship thereto, and
(d) a straight run extending perpendicular from said inner run.

4,324,381
BEVERAGE CONTAINER SUPPORT
Stephen Morris, 399 Fullerton, Apt. 15E, Chicago, Ill. 60614
Filed Jan. 16, 1980, Ser. No. 112,696
Int. Cl.³ A47K *1/08*
U.S. Cl. 248—311.2 **5 Claims**

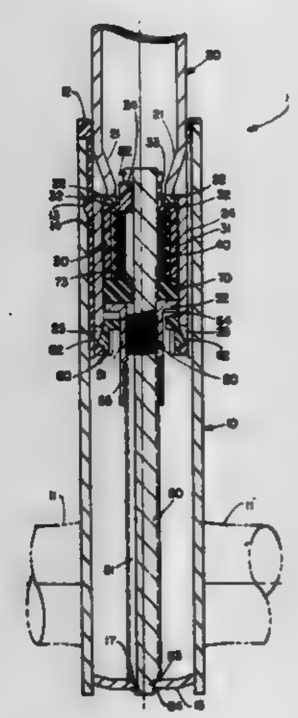
1. A beverage container support comprising a first wire

element formed with a pair of diametrically opposed uprights interconnected at their lower ends by a wire network which lies in a generally horizontal plane and forms the base of a container receiving receptacle, said wire network of said first wire element being formed to include a portion that lies transversely of a line extending between said uprights, said uprights of said first wire element each terminating in a hook, a second wire element forming a plurality of vertically spaced annular



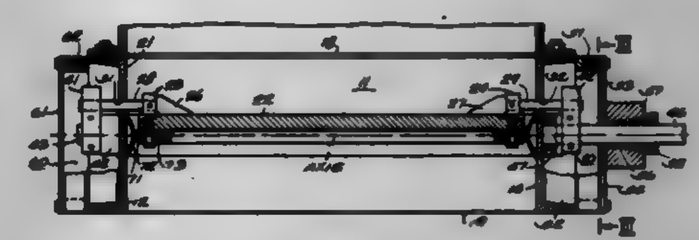
rings secured to said uprights and defining sides of said container receiving receptacle, a third wire element having a pair of spaced arms that terminate with means for supporting the receptacle formed by said first and second wire elements by said first hooks for pivotal movement relative to said third wire element in a first direction of movement, and said third wire element being formed with hanger means from which said support may be hung for pivotal movement in a second direction of movement.

4,324,382
HEIGHT ADJUSTABLE CHAIR BASE
Duane M. Beukema, Grand Rapids, and Jack R. Knoblauch, Byron Center, both of Mich., assignors to Steelcase Inc., Grand Rapids, Mich.
Filed Jun. 21, 1979, Ser. No. 50,660
Int. Cl.³ A47C *3/24*
U.S. Cl. 248—406 **29 Claims**



1. A height adjustable chair base having a hub tube, a seat column telescopically positioned within said hub tube, and being operably carried on a nut which is located within said column and which nut is threaded on an externally threaded post located within said hub tube, in which the improvement comprises: abutment means connected with said column for supporting the same, and being disposed above said nut;
a spring housing slidably mounted on said post, and having an upper surface engaging said abutment means for supporting said seat column thereon, and a lower edge disposed adjacent to said nut;
spring means positioned within said spring housing and extending between said housing and said nut in an abutting relationship with both, whereby said spring housing and said column are biased upwardly relative to said nut;
said nut including first detent means opening toward the underside of said nut;
said column extending downwardly outside of said nut to a point below said first detent means on said nut; said column including second detent means located below said first detent means on said nut and shaped for mating engagement therewith; said threaded post being fixed against rotation within said hub tube; said spring means being sufficiently soft that when a chair mounted on said column is occupied by a person, said spring means compresses to diverge said first and second detent means, and converge the lower edge of said spring housing into abutment with said nut for positively supporting the weight of the chair and occupant thereon, but being sufficiently stiff that when the chair is unoccupied, said spring means biases said column upwardly and biases said first and second detent means into locking engagement, whereby when the chair and said column are rotated relative to said hub tube, said nut rotates on said threaded post to adjust the chair upwardly or downwardly depending on the direction of rotation thereof.

4,324,383
SEAT CENTERLINE OPERATED BUTTERFLY VALVE
Anthony J. Ferro, York, Pa., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.
Filed Sep. 11, 1980, Ser. No. 186,290
Int. Cl.³ F16K *1/22*
U.S. Cl. 251—308 **2 Claims**



1. A butterfly valve including;
A valve body structure comprising four channel members operatively secured together and defining a passageway therethrough for fluid flow;
a valve vane supported by said valve body for pivotal movement within said passageway;
a valve seat within said passageway and secured to the inner surfaces of said channel members defining a continous seating surface and having a center line;
a seal carried by said vane at the outer edge thereof in position to engage with said seat on the center line thereof to provide bidirectional sealing;
drive means operably connected to effect pivotal movement of said vane to an open position or to a closed position selectively, said drive means having an actuating shaft, extending through and supported for rotation by said one of said channel members, said valve seat center line coinsides with the axis of said drive means;
a lever having one end secured to the inner end of said actuating shaft;
an arcuate slot formed in the wall of said channel member supporting said actuating shaft;
a secondary shaft carried by the opposite end of said lever and extending through said arcuate slot into said passageway;
an abutment secured to a surface of said vane and positioned to receive the end of said secondary shaft that extends into the passageway;
whereby rotation of said actuating shaft will effect the simulta-

neous movement of said connected lever, said secondary shaft, said abutment and, thereby, said vane; and

a compartment formed on the external surface of said channel member through which said drive means extends to enclose said drive means and said arcuate slot to prevent fluid leakage from the valve.

4,324,384

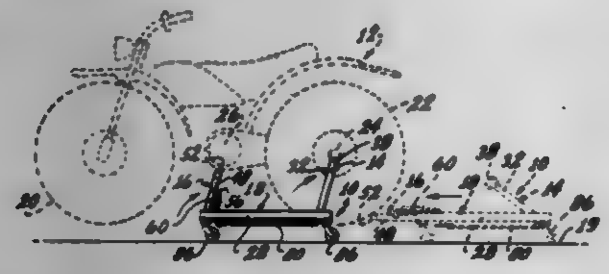
SERVICING STAND FOR THREE WHEELED VEHICLES

Kirby W. Elser, 8501 Rumson Dr., Santee, Calif. 92071

Filed Oct. 29, 1980, Ser. No. 201,031

Int. Cl.[3] B66F *3/00*

U.S. Cl. 254—8 B 10 Claims



1. A servicing stand for a three wheeled vehicle having two rear wheels mounted to opposite ends of an axle powered by an engine and a front wheel, comprising:

a horizontal base;

a rearward bracket having a pair of upper ends for engaging and supporting the axle at spaced apart locations adjacent the rear wheels;

means for pivotally mounting the rearward bracket to the rearward end of the base so that the rearward bracket can swing upwardly from a retracted position to an extended position;

a forward bracket having an upper end adapted to engage and support a portion of the vehicle adjacent the engine;

means for pivotally mounting the forward bracket to the forward end of the base so that the forward bracket can swing upwardly from a retracted position to an extended position;

means for urging the forward bracket towards its extended position;

releasable clamp means for retaining the forward bracket in its retracted position; and

linkage means for connecting the rearward bracket with the clamp means so that movement of the rearward bracket away from its retracted position operates the clamp means to release the forward bracket so that the forward bracket can swing towards its extended position.

4,324,385

DEVICE FOR REMOVING AND DEPOSITING LOADS BETWEEN TWO SUPPORTS IN REPEATED RELATIVE VERTICAL MOVEMENT

Maurice Cojean, Nantes, and Jean-Paul Colin, Saint Sebastien, both of France, assignors to Ateliers et Chantiers de Bretagne ACB, France

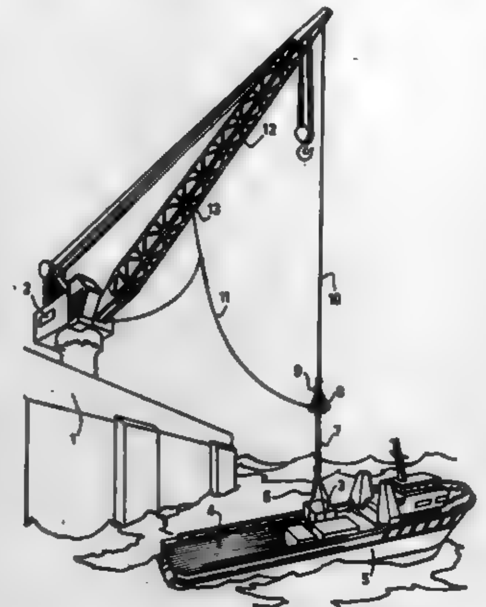
Filed Aug. 30, 1978, Ser. No. 938,247

Claims priority, application France, Aug. 31, 1977, 77 26503

Int. Cl.[3] B66D *1/48*

U.S. Cl. 254—270 12 Claims

1. Apparatus for transferring a load between relatively vertically moving supports on one of which is a crane having a load lifting cable, said apparatus comprising a frame suspended from said load lifting cable; a vertically extensible and retractable second cable carried by said frame and supporting a hook for fitting to said load; operating means supported wholly by said frame and including rotary winch means coupled to said second cable and drive means for rotating said winch means for vertically extending and retracting the latter to lower and raise said hook an amount at least equal to the amplitude of relative vertical movement of said supports; and means for



disabling said operating means and maintaining said hook in a selected position of vertical adjustment relative to said frame.

4,324,386

BATTENS SYSTEM FOR RAISING AND LOWERING SCENERIES OR SIMILAR LOADS ON A STAGE

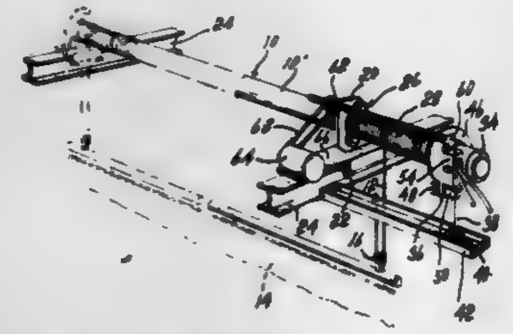
Pierre Gagnon, 5637 Wilderton St., Montreal, Quebec, Canada (H3T 1S1), and Pierre LaForest, 1945 Bruxelles St., Montreal, Quebec, Canada (H1L 5Z5)

Filed May 19, 1980, Ser. No. 151,280

Claims priority, application United Kingdom, Mar. 29, 1980, 10699/80

Int. Cl.[3] A63J *1/02;* B66D *1/39, 1/48*

U.S. Cl. 254—288 16 Claims



1. A battens system comprising:

(a) a support;

(b) an elongated winch drum upon which at least one cable supporting a scenery or similar load is wound, said winch drum being generally horizontally disposed;

(c) bearing means assembly secured to said support for rotatably mounting said winch drum and including means for longitudinally moving said winch drum at each turn by a distance equal to the pitch of the cable wound on, or unwound from, the winch drum;

(d) a reversible winch drum driving motor for rotating said winch drum in anyone of the two directions; and

(e) means to control the operation of said winch drum driving motor including a control mechanism having a body and an operating member mounted in said body and movable between three positions, namely: one limit position causing the motor to rotate in one direction; a central position causing the motor to stop; and another limit position causing said motor to rotate in the other direction, movement of said operating member relative to said body from said central position to one of the other of said limit positions, and vice versa, causing acceleration and deceleration of said winch drum driving motor, a controlling reversible motor having an output shaft, a control member responsive to and movable at a speed proportional to the speed of said output shaft and means responsive to the difference of movements of said control member and of said winch drum to move said operating member between its three positions relative to said body.

4,324,387

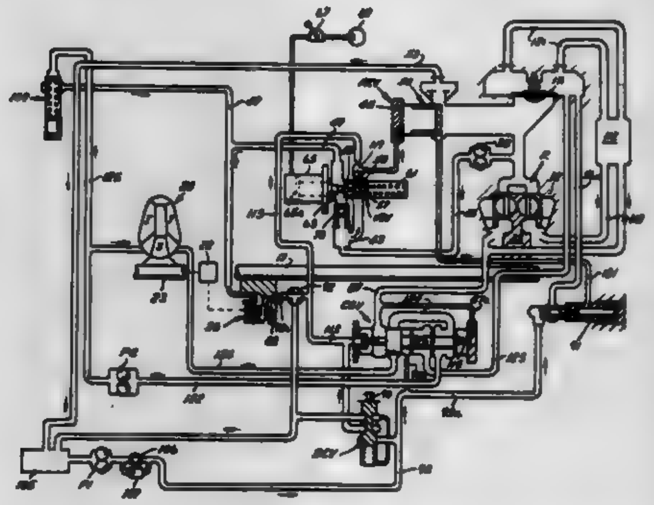
POWER DELIVERY SYSTEM HAVING A PRESSURE MODULATED HYDRODYNAMIC RETARDER FOR CONTROLLING A LOAD

Horst G. Steinhagen, Racine, Wis., assignor to Twin Disc, Incorporated, Racine, Wis.

Filed Jan. 30, 1980, Ser. No. 116,792

Int. Cl.[3] B66D *5/02;* F16D *57/02*

U.S. Cl. 254—310 35 Claims



1. A power delivery system comprising a pressurized fluid circuit, a fluid pressurized and modulatable hydrodynamic retarder having a rotor drivingly connected to a power output shaft, said retarder having a pressure fluid inlet and a pressure fluid outlet in said circuit, a retarder outlet pressure control valve in said circuit, speed sensing means for sensing the rotational speed of said output shaft and for producing a corresponding pilot signal acting upon the retarder outlet pressure control valve, including means to infinitely modulate the fluid relief pressure of said valve as a predetermined and selectively variable function of rotor speed to thereby modulate the torque of said retarder in accordance with a predetermined desired torque-speed relationship.

4,324,388

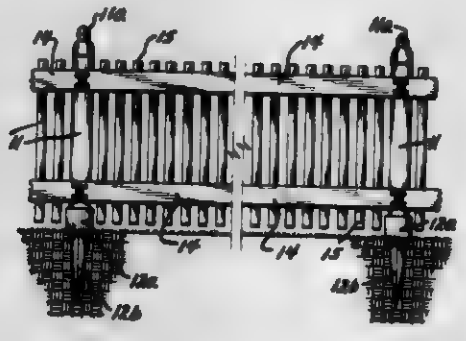
FENCE STRUCTURE

William A. Klaser, 1619 Lincoln Ave., Evansville, Ind. 47714

Filed Oct. 27, 1980, Ser. No. 200,926

Int. Cl.[3] E04H *17/14*

U.S. Cl. 256—19 3 Claims



1. A fence structure comprising, in combination, a fence post having an anchor, and rails interconnecting said fence post, where said fence post and said rails are fabricated from a plastic resin, and where said fence post is separable into a post anchor and a post, said post anchor having a lower cone portion extending downwardly and inwardly to a point and includes outwardly extending tapered flanges along the outer surfaces thereof and an upper polygonal portion socket slidably receiving said post on top of said cone and having a bottom wall extending radially beyond the largest diameter of said flanges.

4,324,389

DEVICE FOR SCARFING THE SURFACE OF A METAL WORKPIECE

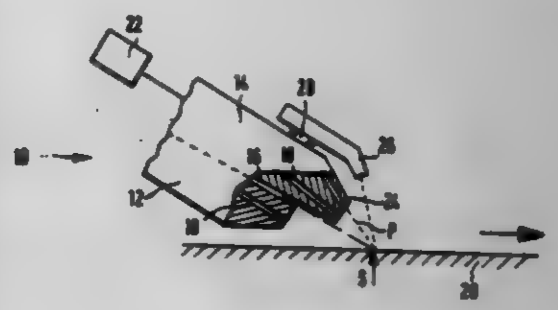
Alfred Baier, Kronberg, and Alfred Pfeuffer, Neu-Isenburg, both of Fed. Rep. of Germany, assignors to Messer Griesheim GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Apr. 29, 1981, Ser. No. 258,674

Claims priority, application Fed. Rep. of Germany, May 16, 1980, 3018548

Int. Cl.[3] B23K *7/06, 7/08*

U.S. Cl. 266—51 5 Claims



1. In a device for scarfing the surface of a metal workpiece, consisting of an upper and lower preheating block arranged at a distance from each other with a scarfing oxygen channel formed therebetween, and with an extra scarfing nozzle which can be actuated by a shutoff valve as well as with a powder supply apparatus associated with the device, the improvement being said powder supply apparatus having a plurality of discharge nozzles connected by pipelines to a supply bin, shutoff valve means associated with said pipelines, and at least one extra scarfing nozzle associated with one of said powder discharge nozzles.

4,324,390

APPARATUS FOR MANUFACTURING STEEL FROM IRON ORE DUST BY DIRECT REDUCTION

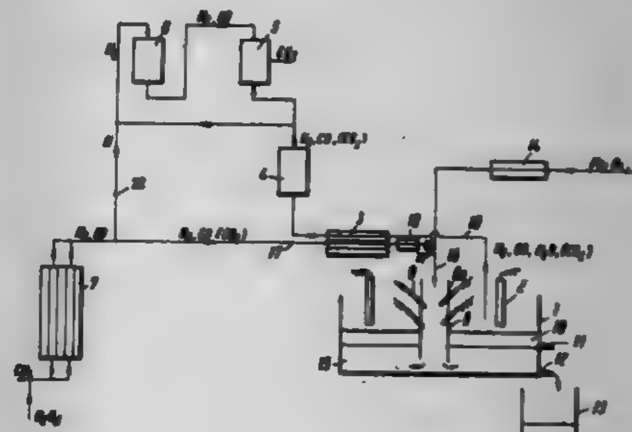
Manfred Driemeyer, Issum, Fed. Rep. of Germany, assignor to Mannesmann DeMag AG, Duisburg, Fed. Rep. of Germany

Division of Ser. No. 83,387, Oct. 10, 1979. This application May 22, 1980, Ser. No. 152,348

Claims priority, application Fed. Rep. of Germany, Oct. 10, 1978, 2844056

Int. Cl.[3] F27B *3/08, 3/18*

U.S. Cl. 266—155 5 Claims



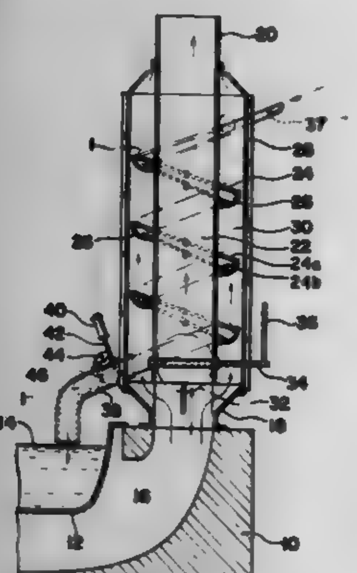
1. An apparatus for manufacturing steel by direct reduction of iron ore dust, comprising

(a) a single reactor vessel capable of containing both a smelting aggregate and a slag layer;
(b) said reactor vessel having a first heating means to maintain said smelting aggregage in the molten state;
(c) a metal tap located in the lower portion of said vessel for tapping said smelting aggregate;
(d) a slag tap located above said metal tap for tapping said slag layer;
(e) a tubular reduction duct vertically disposed in said reactor vessel, said reduction duct extending downwardly into said smelting aggregate below the surface layer of said smelting aggregate and to a point closely adjacent the bottom of said reactor vessel;
(f) a first feeding means for providing a reducing gas mixture containing a monoxide and predominantly H_2 to said tubular reduction duct;
(g) a second heating means for heating said first feeding means and said gas mixture provided thereby;
(h) a third heating means for preheating iron ore dust to a temperature in the range of about 400° to 800° C.;
(i) a second feeding means for providing said preheated iron ore dust to said tubular reduction duct and for mixing said preheated iron ore dust with said gas mixture;
(j) a fourth heating means for heating said tubular reduction duct to a temperature within the range of about 1000° to 1400° C. to thereby utilize the high reduction potential of H_2 of the gas mixture which is present at said temperature range, and;
(k) means for recovering and recycling the heat and components of waste gases of said reactor vessel.

4,324,391
PRE-HEATING ASSEMBLY TO BE USED FOR PRE-HEATING INGOTS

Terumoto Yamaguchi, Anjo, and Masaya Ohta, Toyohashi, both of Japan, assignors to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Aichi, Japan

Filed Jun. 5, 1980, Ser. No. 156,873
Claims priority, application Japan, Jun. 15, 1979, 54-82710
Int. Cl.³ F27B *1/20, 14/00*
U.S. Cl. 266—200 8 Claims

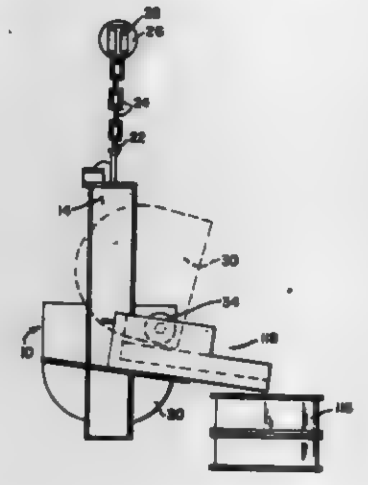


1. A pre-heater for pre-heating ingots being supplied to a melting furnace such as a pot of a casting apparatus, comprising:
a first elongated hollow member constituting a first passage for exhaust gas discharged from the melting furnace;
a second elongated hollow member concentric with said first hollow member and defining a second passage for exhaust gas between said first hollow member and said second hollow member;
a damper in the lower end of at least one of said passages for substantially closing off the passage to the flow of exhaust gas; and
an ingot supplying passage means sloping downwardly through said one passage for guiding movement of successive ingots down along said ingot supplying passage means for pre-heating each of said ingots prior to its introduction into the melting furnace.

4,324,392
MOLTEN METAL POURING DEVICE

Ellis S. White, Elkhart; William C. Zatkoff, South Bend, both of Ind.; John J. Light, Niles, Mich., and Ramon Michen, Mishawaka, Ind., assignors to Sandmold Systems, Inc., Newaygo, Mich.

Filed Feb. 4, 1980, Ser. No. 118,476
Int. Cl.³ B22D *37/00*
U.S. Cl. 266—240 11 Claims



1. Apparatus for manually pouring molten metal into a pouring cup in a mold comprising:
an elongate ladle for holding molten metal, the ladle having a pair of opposed end walls and having a pair of opposed side walls and a bottom wall, the cross section of the side walls and bottom wall along a section perpendicular to a longitudinal axis of the ladle having a "U" shaped outer periphery which for each section between the opposed end walls is of similar size and shape;
means for tilting the ladle about an axis of rotation to pour molten metal therefrom; and
the ladle having a molten metal discharge spout coincident with the axis of rotation of the ladle whereby upon tilting the ladle molten metal is discharged through the spout in a direction coincident with the axis of rotation of the ladle.

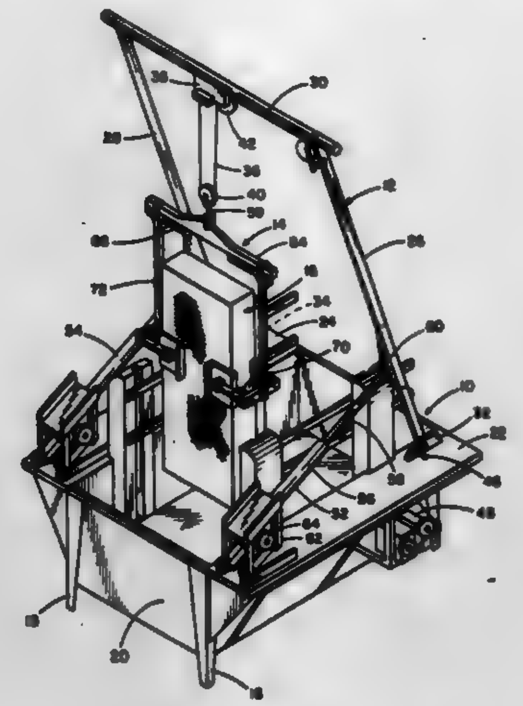
4,324,393
HEAVY DUTY RADIATOR BENCH AND HOIST

Leon C. Chausse, Bellevue, Nebr., assignor to Inland Manufacturing Company, Omaha, Nebr.

Filed May 8, 1980, Ser. No. 147,936
Int. Cl.³ B23Q *1/04*
U.S. Cl. 269—46 5 Claims

1. An improved radiator bench and hoist mechanism for positioning large vehicle radiators for repair comprising, in combination:
a bench including a generally rectangular reservoir, a planar top and at least four legs supporting the reservoir;
a gantry support including two, spaced, generally parallel legs, each leg having opposite ends, said gantry support also including a gantry cross member connecting one end of the legs, each of said legs having the opposite end pivotally attached to the bench substantially at the planar top and substantially adjacent one edge of the reservoir, one of said legs positioned on each side of the reservoir;
radiator clamp means for gripping a vehicle radiator, said clamp means being supported for vertical movement by the gantry cross member; and

adjustable gantry bracket means connecting each of the legs of the gantry support to the bench for adjustably pivoting the gantry cross member between a position over the reservoir and a position adjacent the bench, each of the adjustable gantry bracket means extending substantially

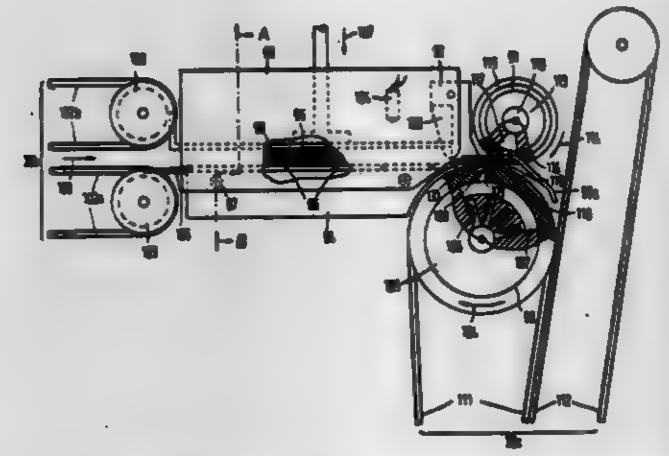


between (1) an edge opposite said one edge of the reservoir and (2) a point between the two ends of one of the legs, whereby a radiator resting alongside of the mechanism may be gripped by the radiator clamp means, raised by the gantry support and adjustable gantry bracket means, and deposited in the reservoir.

4,324,394
DEVICE FOR SEPARATING RECORD CARRYING ITEMS

Wilhelm Mitzel, Neu-Keferloh, and Herbert Bernardi, Haag, both of Fed. Rep. of Germany, assignors to G A O Gesellschaft für Automation and Organisation mbH, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 867,011, Jan. 5, 1978, and a continuation-in-part of Ser. No. 25,196, Mar. 29, 1979. This application Jan. 24, 1980, Ser. No. 115,074
Claims priority, application Fed. Rep. of Germany, Jul. 1, 1977, 2729830; Mar. 4, 1978, 2814306
Int. Cl.³ B65H *3/14*
U.S. Cl. 271—5 11 Claims

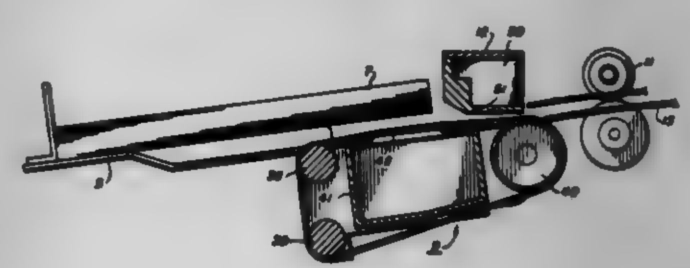


1. A feeder device for feeding sheets of a stack of paper sheets, such as bank notes, one at a time through a feed path from a stack feeder device to a sheet receiving device comprising: an air conducting plate having a surface for receiving the stack disposed along the feed path, said air conducting plate being mounted adjacent to and upstream of the receiving device and adjacent to the feeder device for conveying the stack through the feed path, said air conducting plate having a plurality of air air blast passages extending therethrough each of said passages having a hole in said surface at longitudinally and transversely aligned and spaced intervals along the length and width thereof, each of said passages extending obliquely of the feed path in the direction of the sheet receiving device, fluid pressure means connected to said passages for discharging a stream of pressurized fluid along the feed path in the direction of the sheet receiving device and producing a low pressure along said surface of said air conducting plate adjacent the feed path to pneumatically feed a sheet to the sheet receiving device and at least some of said passages of said holes aligned at the transversely spaced intervals along the width of said plate being divergent to opposite sides of the feed path, wherein said surface of said air conducting plate is divided into a plurality of air conducting areas, each of said air conducting areas including at least some air blast passages, and wherein each of said air conducting areas extends the length of said air conducting plate along said feed path with the orientation of each of said air blast passages in every one of said air conducting areas connected to longitudinally aligned holes in said air conduction area being parallel with each other, and said receiving device comprising a feeding suction drum rotatably mounted with its periphery adjacent the feed path and moving in the feed path direction and a retaining suction drum rotatably mounted with its periphery adjacent the feed path and moving in a direction opposite the feed path direction, adapted to retain sheets in the stack adjacent a sheet to be fed, with a feed slot defined between the peripheries of said feeding and retaining suction drums in the feed path.

4,324,395
SHEET SEPARATOR

Morton Silverberg, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Oct. 3, 1979, Ser. No. 81,591
Int. Cl.³ B65H *3/12*
U.S. Cl. 271—98 5 Claims



1. A bottom sheet separator-feeder for separating and forwarding sheets seriatum comprising;
a stack tray adapted for supporting a stack of sheets,
frictional feed means comprising a plurality of feed belts spaced below the supported position of the planar surface of the bottom sheet in the stack,
means forming a vacuum plenum associated with said feed means, said vacuum plenum having openings therein facing the bottom sheet in the stack, and having a raised portion therein underlying at least one of said belts to raise at least one of said belts above the plane of the top surface of the remainder of said belts, means for lowering the air pressure in said plenum below atmospheric pressure causing the bottom sheet in the stack to be drawn into contact with and acquired by said feed means, said feed belts thereby forming a corrugation in said sheet by said raised belt for separation and forwarding of the bottom sheet from said stack; and,
air knife means to direct an air flow against the lead edge of the acquired bottom sheet from the remainder of the sheets in the stack and reduce drag forces between the bottom sheet and the bottom of the remainder of the stack.

4,324,396

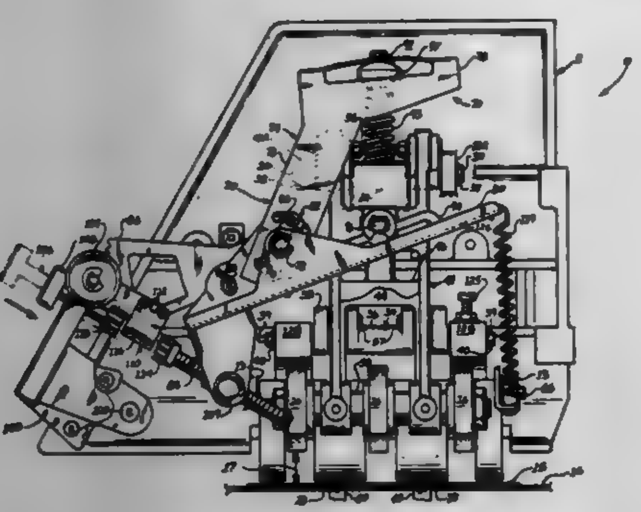
SHEET SEPARATING AND FEEDING APPARATUS

David B. Albright, Stratford, Conn., and Joseph A. Conti, Whitestone, N.Y., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed May 12, 1980, Ser. No. 148,866

Int. Cl.³ B65H *3/52*

U.S. Cl. 271—125 **8 Claims**



8. Apparatus for separating and feeding sheets, comprising: (a) a sheet feeding deck; (b) a sheet separating stone; (c) means for carrying the stone in overhanging relationship with respect to the deck; (d) a movable frame connected to the stone carrying means; (e) a shaft having a free end, knob means mounted on the free end of the shaft and manually rotatable for rotating said shaft, said shaft threadably engaging the frame for movement thereof to move the stone to a selected height above said deck when said shaft is rotated; and (f) means for permitting the shaft to be manually pushed for movement of said shaft without rotation thereof thereby raising the stone above the selected height, said means for permitting including a collar and spring means cooperative with each other for constraining rotation of said shaft when said shaft is pushed.

4,324,397

STACKING DEVICES AND PLATFORMS THEREFOR

Graham A. Byrt, and Bernard A. Graves, both of Bristol, England, assignors to Masson Scott Thrissell Engineering Limited, Bristol, England

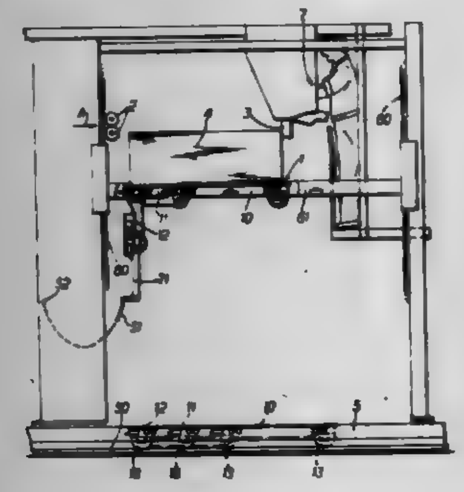
PCT No. PCT/GB79100148, § 371 Date May 8, 1980, § 102(e) Date Apr. 28, 1980, PCT Pub. No. WO80/00560, PCT Pub. Date Apr. 3, 1980

PCT Filed Sep. 7, 1979, Ser. No. 194,151

Claims priority, application United Kingdom, Sep. 8, 1978, 36061/78

Int. Cl.³ B65H *31/10, 31/20*

U.S. Cl. 271—217 **9 Claims**



1. A sheet stacking device including a sheet feeder, a platform constructed so that its effective length can be varied, said platform comprising at least two sections pivoted together, the axis of each pivot extending horizontally at right angles to the length of the platform, means for supporting said platform in a horizontal plane, and lifting means adapted to engage with one or more of the platform sections forming said effective length of the platform, to raise the platform to bring its thus engaged section or sections to a level at which sheets may be received from said sheet feeder and to then lower the platform as a stack accumulates thereon, the section or sections not thus engaged hanging down from the engaged section or sections.

4,324,398

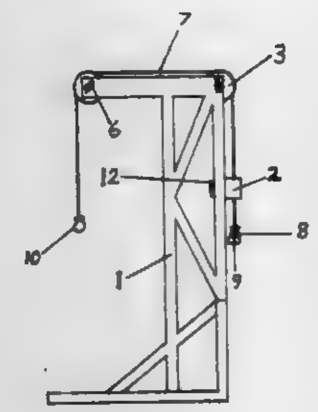
SAFETY APPARATUS FOR BARBELL

Robert W. Hole, 781 Woodbine Ave., Toronto, Ontario, Canada (M4E 2J5)

Filed Sep. 24, 1980, Ser. No. 190,247

Int. Cl.³ A63B *21/06*

U.S. Cl. 272—123 **2 Claims**



1. A weight-lifting apparatus for use in bench press and/or squat weight-lifting exercises comprising:
(a) a frame having an upright portion and an overhead boom portion arranged to be located at one side and above an exercising station, respectively,
(b) guide means on said upright portion and said boom portion defining a pair of spaced parallel guide tracks,
(c) a pair of cables mounted one on each guide track for movement therealong, a first portion of each cable depending vertically from the overhead boom into said exercising station and a second portion of each cable depending proximate the upright portion,
(d) mounting means on the first portion of each cable receiving a weight-lifting bar in a horizontal position extending therebetween,
(e) first stop means on the second portion of each cable to limit movement of the cables, and second stop means on said upright portion of said frame adapted to engage the first stop means to limit the extent to which said first portion of said cable may be lowered into said exercising station whereby upon release of the bar during exercise use the extent to which it will travel when said weight-lifting bar is released and the extent of travel of the bar, being limited by the interaction of the second stop means and the first stop means.

4,324,399

EXERCISING DEVICE

Robert B. Rickey, 2871 Bannockburn, Memphis, Tenn. 38128

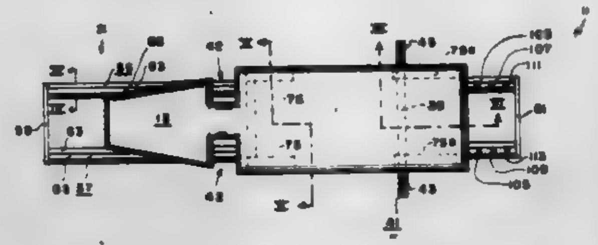
Filed May 27, 1980, Ser. No. 153,752

Int. Cl.³ A63B *23/00*

U.S. Cl. 272—144 **1 Claim**

1. An exercising device for exercising particular muscles of a user as he selectively accomplishes various exercises in conjunction therewith, said exercising device comprising an oblong planar board member for supporting the user in any of several exercising positions, fore and aft roller means for runningly ridably supporting said board member in a horizontal

disposition, track means for supportable engagement with said roller means as said board member is being runningly ridably supported by said roller means in a to-and-fro travel of said board member, and means for promoting resistance against enabling said planar board member to merely be free to travel to-and-fro as it is being runningly ridably supported by said roller means upon said track means, said means for promoting resistance effectively being utilized by requiring the user to exert more effort in the performance of certain exercise than would normally be expected if the to-and-fro travel of said board member were to be conventionally unconstrained, said means for promoting resistance including close fitting means for abnormally developing friction between said roller means and said planar board member, said close fitting means includ-



ing providing said board member with a plurality of block members for respectively engaging said fore and aft roller means, each of said roller means including an axle member having a pair of track engageable wheellike members disposed adjacent opposite ends thereof and being integrally joined therewith thus precluding relative rotation between said wheellike members and said axle member, each of said block members being provided with an arcuate shaped downwardly directed groove compatibly sized with said axle member for reception therein but in a particular fashion in which a close fitting relationship of said axle member within said arcuate shaped groove is established for purposely causing the development of friction therebetween as rotation of said axle member is established by the to-and-fro travel of said board member.

4,324,400

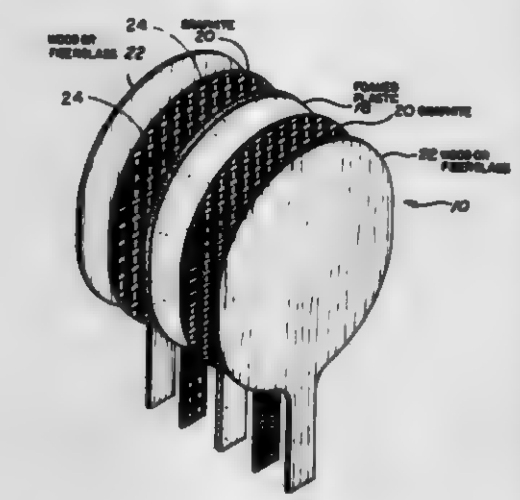
TABLE TENNIS BAT BLADE

Jackson Tse, Bellevue, Wash., assignor to EST Industries, Inc., Wash.

Filed Aug. 8, 1979, Ser. No. 64,555

Int. Cl.³ A63B *59/04*

U.S. Cl. 273—76 **5 Claims**



3. In a table tennis bat blade having a solid blade portion constituting the striking surfaces and a handle, such solid blade portion including a central core layer of lightweight, rigid, foamed plastic material, an improved blade portion comprising:
an intermediate, substantially homogeneous constraining layer of high modulus of elasticity graphite fibers arranged in a relatively thin layer and bonded to the two outer surfaces of the central core layer, said constraining layers having a modulus of elasticity of approximately 30 to 100 million pounds per square inch;
a thin outer layer of smooth, rigid, lightweight material overlying both constraining layers, said outer layers having a minimum modulus of elasticity of at least one million pounds per square inch and a maximum modulus of elasticity substantially lower than the modulus of elasticity of said constraining layers; and
said central core layer having a modulus of elasticity of approximately 12,000 to 16,000 pounds per square inch.

4,324,401

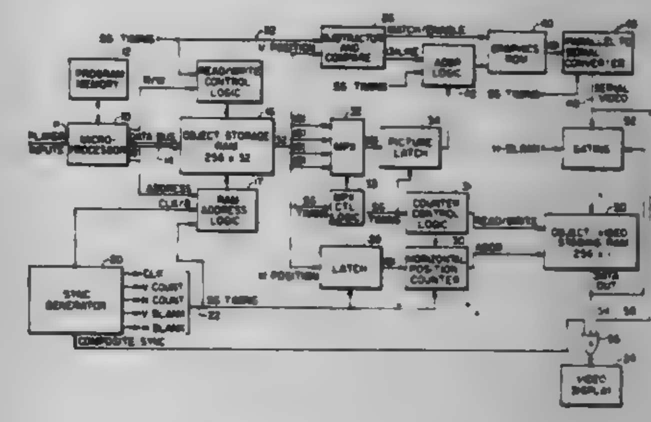
METHOD AND SYSTEM FOR GENERATING MOVING OBJECTS ON A VIDEO DISPLAY SCREEN

David R. Stubben, Milpitas, and Lyle V. Rains, San Jose, both of Calif., assignors to Atari, Inc., Sunnyvale, Calif.

Filed Jan. 15, 1979, Ser. No. 3,445

Int. Cl.³ A63F *9/22*

U.S. Cl. 273—85 G **15 Claims**



1. Apparatus for controlling the display of different objects on a raster scan video display screen of the type having image-forming means including a controllable electron beam forming a plurality of horizontal lines in response to horizontal and vertical timing signals, including horizontal retrace intervals, the apparatus comprising:
first memory means for storing data indicative of the desired position of first ones of said objects on the display screen;
means for scanning the first memory means during each horizontal retrace interval and for determining the objects to be displayed for the next horizontal line;
second memory means for containing video data for the objects to be displayed, the second memory means being responsive to the scanning means and the object position data obtained from the first memory means to provide said video data for the objects to be displayed for the next horizontal line;
third memory means for temporarily storing said video data at locations corresponding to the horizontal position of the video data within the next horizontal line; and
means for sequentially accessing the temporarily stored video data from said third memory means synchronously with the electron beam scan during each horizontal line and for communicating the accessed data to the video display screen.

7. A method of controlling the display of different objects on a video display screen of the type having image-forming means including a controllable electron beam for scanning said video display screen to form a plurality of horizontal line scans in response to horizontal and vertical timing signals, including horizontal retrace intervals, said method comprising the steps of:
storing data indicative of the desired position of first ones of said objects on the display screen in a first memory;
during each horizontal retrace interval preceding each active horizontal line:
a. scanning the object position data in said first memory

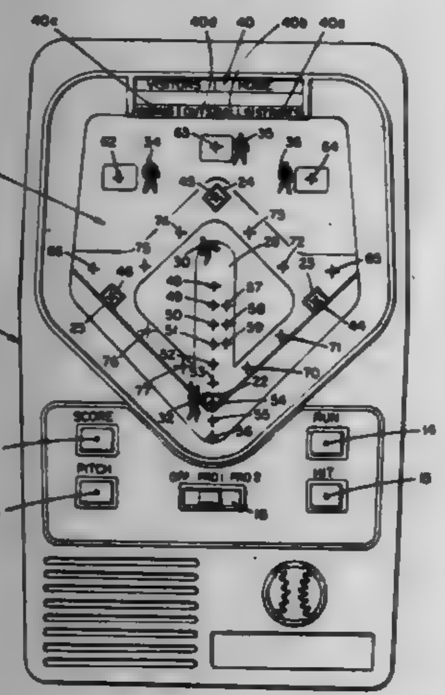
and determining the objects to be displayed for the next horizontal line scan;

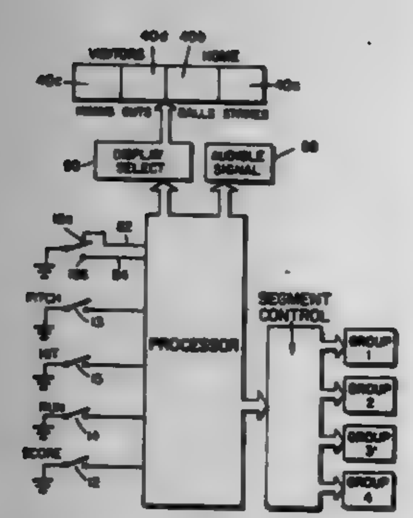
b. accessing video data for the objects to be displayed in the upcoming horizontal line scan from a second memory;

c. temporarily storing said video data in a third memory at locations corresponding to the horizontal position of the video data within the upcoming horizontal line scan; and

during each horizontal line scan, sequentially accessing said video data from said third memory synchronously with the electron beam and communicating said accessed video data to said video display screen for display.

4,324,402
ELECTRONIC BASEBALL GAME
George J. Klose, Redondo Beach, Calif., assignor to Mattel, Inc., Hawthorne, Calif.
Filed Jan. 5, 1979, Ser. No. 1,231
Int. Cl.³ A63F 9/00
U.S. Cl. 273—88 23 Claims





1. In an electronic game for simulating baseball or the like having a defined playing field with a defined path of travel of an object such as a ball to a defined opposing player location for contact therewith, the player then traveling a defined player advance path to the point of origin, the combination comprising;

a playing field;

a plurality of groups of illuminatable segments on said playing field, each segment within a group having a predetermined location and each group of segments having a predetermined orientation relative to each other;

control means internal to said game for selectively illuminating one or more segments of one or more of said groups;

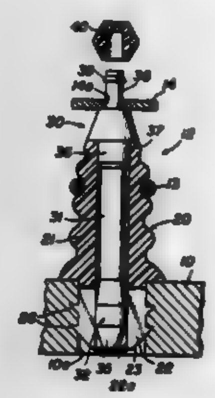
first manually operable means providing a first input signal to said control means for sequentially energizing the segments of one of said groups to simulate the path of travel of an object;

second manually operable means for providing a second input signal to said control means;

means responsive to a timed relation between said second input signal and the illumination of one of a selected number of segments of said one group for providing an intermediate signal; and

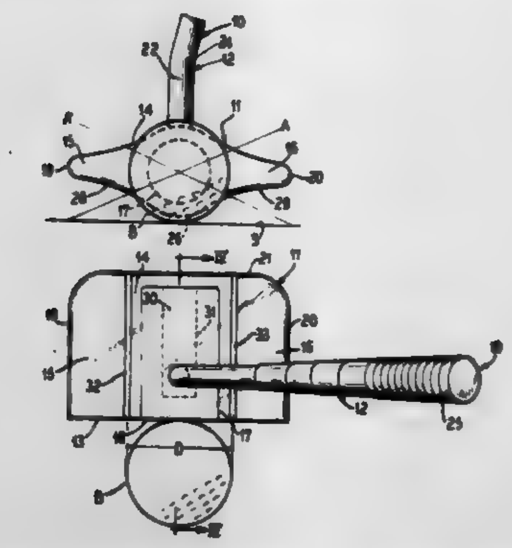
third manually operable means operable only in response to said intermediate signal for selectively and sequentially energizing at least one other group of said segments for simulating player advance in response thereto.

4,324,403
POST ASSEMBLY FOR PINBALL GAME
Vahram K. Sarrafian, Glenview, and Syng N. Kim, Hoffman Estates, both of Ill., assignors to Max Wiczer, Skokie, Ill.
Filed Aug. 25, 1980, Ser. No. 180,633
Int. Cl.³ A63B 71/00
U.S. Cl. 273—127 R 8 Claims



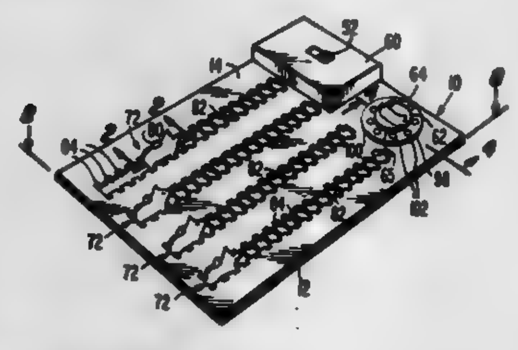
1. A post assembly for use in a pinball game having a playfield board for supporting a rolling pinball, the post assembly being adapted to support a cover plate having at least one hole therein and to be attached thereto with a fastener, the playfield board having at least one opening therein defined by a wall, the assembly comprising a post which includes an elongated body portion and a plurality of legs on one end of said body portion, said body portion having a longitudinal axis and having a substantially cylindrical bore extending axially therethrough and of substantially uniform transverse cross section along the entire length thereof, said legs extending generally parallel to the longitudinal axis and being movable toward said axis to enable insertion into the opening of the playfield board, and a plug having a relatively long cylindrical shank and an enlarged tip at one end of said shank and a lug at the other end of said shank, said enlarged tip being dimensioned to be received through said bore to a mounting position in engagement with said legs for forcing said legs outwardly into engagement with the wall of the opening, each of said legs having projections extending laterally outwardly therefrom and adapted to be embedded in the wall of the opening when said legs are forced outwardly by movement of said plug to the mounting position thereof, said lug extending beyond the other end of said post generally parallel to said longitudinal axis when said enlarged tip is in the mounting position thereof and having a diameter to enable insertion through the hole in the cover plate.

4,324,404
GOLF PUTTER
Walter Dian, Downers Grove, Ill., assignor to Walter Dian, Inc., Downers Grove, Ill.
Filed May 19, 1980, Ser. No. 151,373
Int. Cl.³ A63B 53/04
U.S. Cl. 273—169 4 Claims



2. A golf club putter comprising an elongated shaft, a transparent rectangular head on said shaft having an upright front putting face, a substantial front to rear longitudinally extending depth, a thick longitudinally extending central portion with front to rear extending sides and relatively thin toe and heel wings of less height than said central portion radiating laterally from said sides and having bottom surfaces at levels above the bottom of said thick central portion, an elongated heavy weight rod encased in the thick longitudinally extending central portion of said head and extending longitudinally from said putting face in the front to rear direction and visible along the length thereof through said transparent head, said rod having an end flush with said upright putting face, said rod having a heavier mass below the longitudinal axis thereof than the mass above said axis positioned to counteract the effect of the shaft in changing the sweet spot, and said shaft being anchored in the front third of the rod and extending upwardly therefrom through said transparent head.

4,324,405
BOARD GAMES HAVING VARIABLE GAME-PIECE-ENERGIZED CIRCUITS
Frederick W. Kruger, Jr., Churchville, Pa., and Warren E. Bosch, Beverly, N.J., assignors to Product Dynamics, Ltd., Levittown, Pa.
Filed Mar. 31, 1980, Ser. No. 135,955
Int. Cl.³ A63F 3/00
U.S. Cl. 273—238 4 Claims



1. A game comprising:

(a) a base plate having a circuit grid including:

(1) a first side of a given polarity formed with a single elongated main circuit element and with several branch elements connected to and extending from the main element at one end thereof;

(2) a second side of opposite polarity formed with a multiplicity of circuit element groups each including an elongated main element and several branch elements all of which are connected to and extend from one end of the main element of the same group, the branch elements of the first side alternating with and extending generally parallel to the branch elements of each of the several groups that comprise said multiplicity of groups, said main elements of the several groups having terminals at their other ends arranged in an annular series,

(3) a common terminal centered in said series,

(4) means for connecting the common terminal and the other end of the main circuit element of the first side to opposite sides of a source of electrical power, and

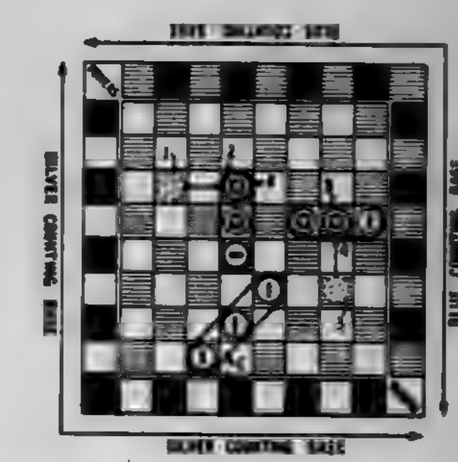
(5) a circuit selector overlying said common terminal and the several terminals of the annular series and having a bridging element for connecting the common terminal to at least one but less than all the terminals of said series, in selected positions to which the selector is rotated;

(b) a cover plate overlying and laminated with the base plate and having a series of slots each of which extends across all the branch elements of both sides of the circuit but omits traverse of the main elements;

(c) playing pieces each of which is movable along an associated slot and includes a signal element and contacts that are in circuit therewith and are engageable with adjacent branch elements of the respective sides of the circuit in each position to which the playing pieces are moved along the slots; and

(d) means for determining by chance the extent to which each of the playing pieces may be advanced within its associated slot.

4,324,406
BOARD GAME METHOD
Joseph D. Ocampo, 2437 Warring - Apt. D, Berkeley, Calif. 94704
Filed Apr. 7, 1980, Ser. No. 138,100
Int. Cl.³ A63F 3/00
U.S. Cl. 273—242 1 Claim



1. A method of playing a game adapted to be played on a board, which comprises the steps of:

each player or team placing a set of markers, each marker containing a single digit and at least two different digits in each set, on the individual marker locations;

assigning a reading direction or directions to each player or team in relation to the playing surface, the direction or directions being different for each player or team;

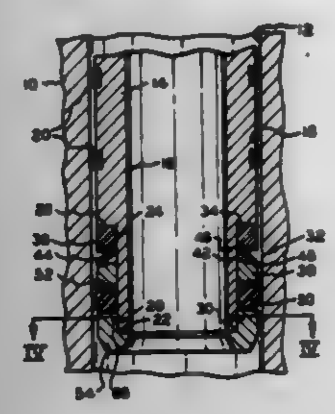
sequentially moving the markers to individual marker locations;

positioning a plurality of markers adjacent to one another forming a multidigit number, with each digit of the multidigit number formed from a single marker;

separately reading in the players assigned direction each of the plurality of markers forming the multidigit number;

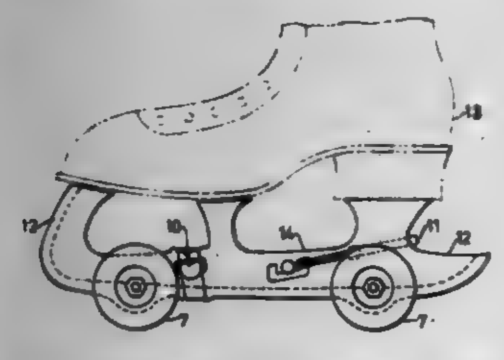
recording as a score the multidigit number that was read.

4,324,407
PRESSURE ACTUATED METAL-TO-METAL SEAL
Neil R. Upham, Jackson, and Russell L. Rogers, Munith, both of Mich., assignors to Aeroquip Corporation, Jackson, Mich.
Filed Oct. 6, 1980, Ser. No. 194,609
Int. Cl.[3] F16J *15/06, 15/48*
U.S. Cl. *277—27* 9 Claims



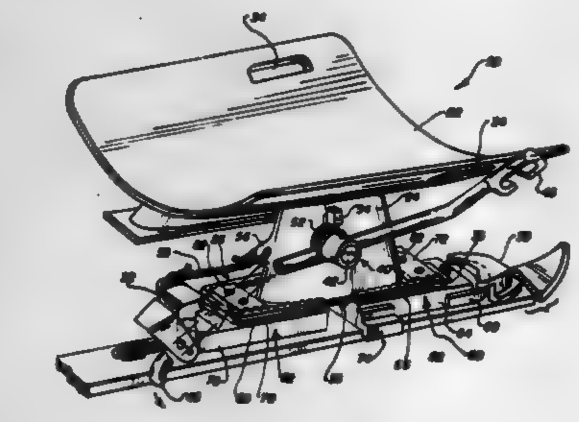
1. A seal assembly for a pressurized system for sealling a cylindrical conduit received within a cylindrical bore comprising, in combination, a tubular body having an axis, a cylindrical outer surface, an end, an inner reduced diameter cylindrical surface defined on said body of lesser diameter than said exterior surface and intersecting said body end, and an abutment defined on said body adjacent said inner surface and axially spaced from said end, an anvil ring circumscribing said inner surface engaging said abutment and having a conical anvil surface facing said body end, an annular conical deformable metal seal ring having inner and outer circular seal surfaces circumscribing said inner body surface having deformable radially expanded and retracted conditions, said seal ring having an expanded radial dimension greater than the radial dimensional difference between said body outer and inner surfaces, an annular piston ring circumscribing said body inner surface and axially displaceable thereon, said piston ring including a conical seal ring engagable surface disposed toward said seal ring and a pressure surface disposed toward said body end and acted upon by the pressure within the system to axially displace said piston ring toward said seal and anvil ring, and retaining means mounted on said body limiting movement of said piston ring toward said body end, pressure within the system displacing said piston ring toward said anvil ring to deform said seal ring from its normal retracted condition to its expanded condition whereby said seal ring inner seal surface sealingly engages said body inner surface and said seal ring outer seal surface sealingly engages the bore receiving said body.

4,324,408
ICE TO ROLLER SKATE CONVERTER
Leonard E. Bensette, and Joann Bensette, both of 468 Rosedale Ave., Windsor, Ontario, Canada (N9C 2N4)
Filed Jul. 8, 1980, Ser. No. 166,710
Int. Cl.[3] A63C *17/18*
U.S. Cl. 280—7.13 1 Claim



1. A device for converting boot-attached ice skates to roller skates, which consists of a casing which is used in connection with figure type of boot-attached ice skates, in which the blade supports which attach the said blade to the heel and sole of the boot are integral extensions of the blade, the said casing extending upwardly to cover the exterior of such extensions, including the entire skate blade; in combination with a pair of regulation roller skate wheels attached to the front and rear of said casing, said wheels rotating on shafts which pass through and are supported by said casing, and said shafts being embedded in rubber or any other resilient material, for the purpose of reducing shock and spills; a buckle equipped belt by means of which the casing is attached to the skate, located near the center of the casing; and a spring or elasticized band, located in the rear of the casing, wrapped around the rear blade to boot heel support, and removably attached to each side of the casing, in tension.

4,324,409
SLED BODY AND ADJUSTABLE ATTACHMENT MEANS FOR SNOW SKIS
Ronald A. Larsen, Arlington Hts., and Gustav F. Schmid, Palatine, both of Ill., assignors to Schmid Tool & Engineering Corp., Franklin Park, Ill.
Filed Aug. 15, 1980, Ser. No. 178,564
Int. Cl.[3] B62B *13/00*
U.S. Cl. 280—12 F 9 Claims



1. A sled body with adjustable mounting apparatus for detachably mounting said body to the bindings of snow skis, said apparatus comprising:
legs extending downwardly from said body,
a sole plate fixed to the lower portion of each leg, and
a toe portion on each sole plate, said toe portion being vertically adjustable with relation to its plate to be received by varying dimensioned ski bindings.

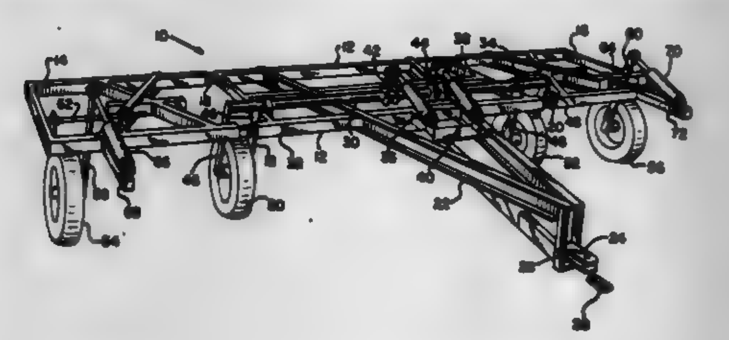
4,324,410
COLLAPSIBLE PERAMBULATOR COT FRAME STRUCTURE INCLUDING TELESCOPIC SIDE MEMBERS
Guiseppe Perego, Via De Gasperi, Arcore (Milano), Italy (20043)
Filed Jan. 31, 1980, Ser. No. 117,096
Claims priority, application Italy, Aug. 9, 1979, 22324/79[U]
Int. Cl.[3] B62B *11/00*
U.S. Cl. 280—42 5 Claims

1. An improved cot frame for a collapsible perambulator of the type having a pair of opposed side cross struts, each of said pair of side cross struts including a front leg and a rear leg adjacently connected to said front leg so that, in use, the front leg extends diagonally downwardly toward the front of the perambulator and the rear leg extends diagonally downwardly toward the rear of the perambulator, pivot means interconnecting said rear leg and said adjacent front leg of each of said pair of said cross struts intermediate the ends thereof, an arm member pivotally connected to the upper end portion of each front leg, a base cross strut including crossing arm struts pivoted together intermediate to the ends thereof, means for pivoting the opposed ends of the respective crossing arm struts

of said base cross strut to the lower end portion of a respective front leg and rear leg of said opposed side cross struts, the improvement comprising side elements interconnecting the side ends of the base cross strut at opposite sides of the frame whereby the structure is strengthened, each of said side elements including an outer tubular member and an inner tubular member telescopically received in said outer tubular member said inner tubular member having ends fixed to ends of said base cross strut, said outer tubular member having ends fixed to the opposite ends of said base cross strut so that the folding of

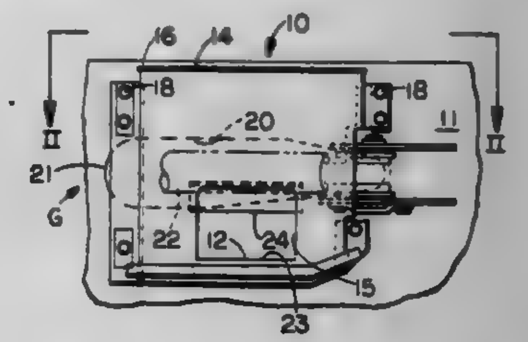
the base cross strut causes the sliding of said inner tubular member relative to the outer tubular member of the said side members, and further comprising first U-shaped rod means for fixing the ends of said inner tubular member to the lower ends of said front legs of the side cross struts, second U-shaped rod means for fixing the opposite ends of said outer tubular members to the lower ends of said rear legs of the side cross struts so that the folding of the side cross struts causes the sliding of said inner tubular member relative to said outer tubular member of the side members.

4,324,411
IMPLEMENT LEVEL LIFT SYSTEM
Hugh J. MacKenzie, Ancaster, Canada, assignor to International Harvester Company, Chicago, Ill.
Filed Jun. 5, 1980, Ser. No. 156,892
Int. Cl.[3] A01B *63/22*
U.S. Cl. 280—43.23 4 Claims



1. An agricultural implement carrier comprising:
a rigid main frame;
a first outrigger frame pivotally connected to said main frame;
a first wheel assembly pivotally mounted on said main frame;
a second wheel assembly pivotally mounted on said first outrigger frame;
a first hydraulic ram operatively connected with said main frame and said first wheel assembly to raise and lower said main frame;
a second hydraulic ram operatively connected with said outrigger frame and said second wheel assembly to raise and lower said first outrigger frame;
said rams hydraulically connected in parallel;
a first rotary flow divider hydraulically connected with said rams for assuring equal flow of hydraulic flow to and from said rams whereby said frames are raised and lowered in unison;
ram rephasing means directly communicating with said rams for equalizing operation of said rams when one of them reached its rod displacement limit; and
said ram rephasing means comprising a flow divider gear by-pass facilitating completion of another ram rod displacement.

4,324,412
COMPOSITE SHIELD-STEP
Bernard J. Wulff, Aurora, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.
Continuation-in-part of Ser. No. 21,370, Mar. 19, 1979, abandoned. This application Mar. 24, 1980, Ser. No. 132,757
Int. Cl.[3] B60R *3/00*
U.S. Cl. 280—163 7 Claims

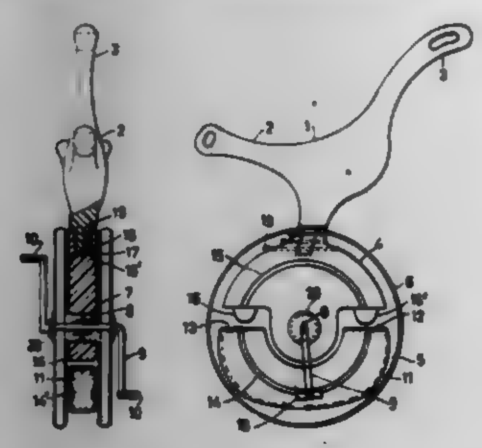


1. A composite shield-step (10) in combination with an articulated vehicle of the type having a frame (11) with a steering cylinder opening (20) through which vulnerable vehicle components (13) are exposed to damage in the work environment of the vehicle, said shield-step (10) comprising:
a first member (12) having an opening (15) therein with a lower side and positioned about the steering cylinder opening (20) with the first member opening (15) vertically offset from the steering cylinder opening with said vulnerable vehicle components being visible through the openings (20,15) wherein the first member (12) has a general "U" configuration, said first member (12) being mounted externally on said frame (11);
a first step (23) formed on the first member (12), said first step (23) constituting an edge of said first member (12) which bounds the lower side of said first member's opening (15); and
a second step (14) formed by at least one rigid elongate member (25) extending between the legs of the "U" and positioned at the top of the first member (12).

4,324,413
UNICYCLE WITH WATER BALANCE
Leonard E. Bensette, and Joann Bensette, both of 468 Rosedale Ave., Windsor, Ontario, Canada (N9C 2N4)
Filed Jun. 18, 1980, Ser. No. 160,643
Int. Cl.[3] B62K *1/00*
U.S. Cl. 280—205 2 Claims

1. A unicycle comprising in combination, an upper body shaped to generally resemble a simplified side view of a bird, the rear tail end of which plus its back form a seat for the rider, and the forward and upward continuation of said back form the neck of said bird, by means of which the rider holds on and steers the unicycle; a lower body which serves to support the wheel of the unicycle is attached to the said upper body by means of a telescopic, pin-held, height adjustment connection, which takes care of the usual difference in height between different sized riders; a wheel consisting of two parallel, rubber

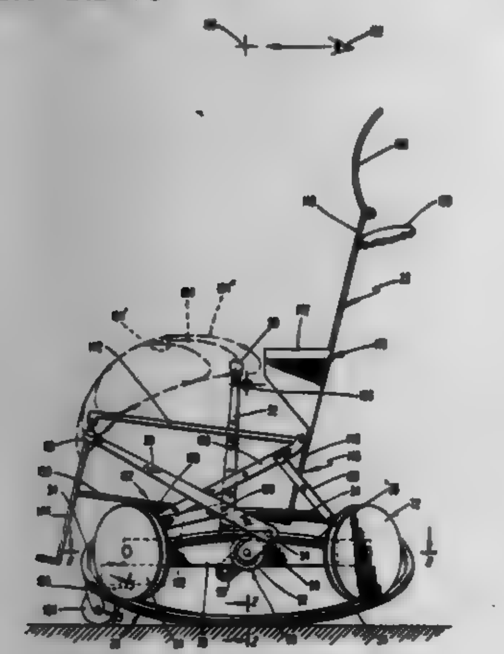
tired, circular walls, which are spaced from each other, each of said walls having half of their common hub attached thereto; a horizontal pedal bar which passes through the center of said hub sections and is keyed to them, said horizontal pedal bar having one side thereof bent at right angles to it, to form a vertical support for one of the foot pedals; the other end of said horizontal pedal bar being provided with a removable and reattachable vertical support for the other foot pedal; a semi-circular water container located loosely between the spaced



walls of the wheel, and held in suspension at the bottom of the unicycle at all times, during its use, by free moving bosses attached to the inside wheel walls, said bosses sliding freely within channels provided in the walls of said water container thereby keeping the water container suspended at the bottom of the unicycle; and bumpers of rubber or any other resilient material attached to the lower body, located above the said water tank, to prevent the water container from being pulled along by the rotation of the wheels; and said water tank being provided with a water filling plug and an air relief valve.

4,324,414
WHEELCHAIR

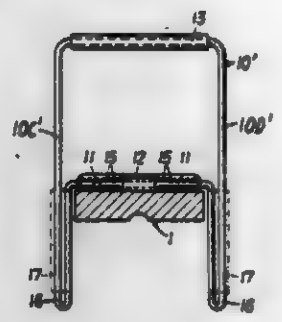
Donald F. Wilkes, Albuquerque, N. Mex., assignor to Atlantic Richfield Company, Los Angeles, Calif.
Division of Ser. No. 953,843, Oct. 23, 1978, Pat. No. 4,247,127. This application Jul. 29, 1980, Ser. No. 173,440
Int. Cl.³ B62M *1/06, 1/16, 3/06*
U.S. Cl. 280—242 WC 12 Claims



1. In a wheelchair of the type having a seat and a rolling suspension means, the improvement comprising locomotion means for driving the suspension means, the locomotion means including hand operable levers having end portions which orbit in a cambered elliptical path to efficiently utilize human anatomical strengths and weaknesses, the end portions being operable to drive the locomotion means throughout the orbit.

4,324,415
DEVICE FOR SKIS

Gottfried Schweizer; Axel Kubelka; Karl Stritzl, all of Vienna, and Josef Svoboda, Schwechat, all of Austria, assignors to TMC Corporation, Baar, Switzerland
Division of Ser. No. 705,268, Jul. 14, 1976, Pat. No. 4,189,163. This application Nov. 2, 1979, Ser. No. 90,788
Claims priority, application Austria, Jul. 18, 1975, 5599/75
Int. Cl.³ A63C *7/10*
U.S. Cl. 280—605 6 Claims



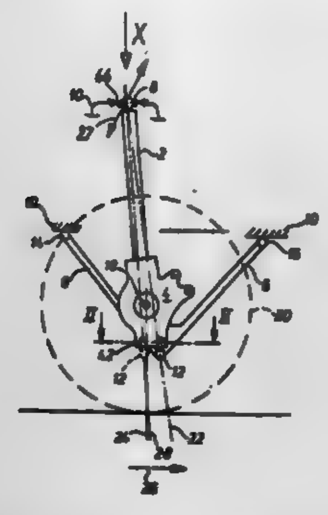
1. A ski brake apparatus for skis comprising an upstanding bracket adapted to extend substantially transversely across its associated ski, means mounting the upstanding bracket for pivotable movement about a transverse axis into a position bearing substantially flatly against the top surface of the ski, said upstanding bracket comprising a resilient spring bracket member having two axle segments, said two axle segments extending transversely to the ski in substantially parallel relationship to one another and terminating at a free end thereof located on said top surface of said ski, said axle segments being spaced from each other in the longitudinal direction of the ski and serving as pivot shafts for the spring bracket member, said spring bracket member having elongated brake arm means thereon and adjacent an end of each of said axle segments remote from said free end thereof which, when said spring bracket member is in said upstanding position, project beneath and beyond the undersurface of said ski, said mounting means comprising a base body, said two axle segments of spring bracket member being pivotably mounted in said base body, the spring bracket member and the pivotable mounting of the axle segments thereof enabling said spring bracket member to resiliently tilt over in the longitudinal direction of said associated ski in the event a user of said ski pushes down upon said spring bracket member with a ski boot, and to return to its upstanding position after the ski boot releases its engagement therewith, said free end of each of said two axle segments remote from said brake arm means including a free end segment extending coextensively with the longitudinal axes of said ski, said mounting means including further means for holding said free end segments in a position parallel to said top surface of said ski.

4,324,416
WHEEL SUSPENSION FOR MOTOR VEHICLES

Manfred Schneeweiss, Wettstetten; Adolf Götzenberger, and Aloys Ohm, both of Ingolstadt, all of Fed. Rep. of Germany, assignors to Audi NSU Auto Union Aktiengesellschaft, Ingolstadt, Fed. Rep. of Germany
Filed Mar. 27, 1980, Ser. No. 134,496
Claims priority, application Fed. Rep. of Germany, Mar. 29, 1979, 2912757[8]
Int. Cl.³ B62D *17/00*
U.S. Cl. 280—661 5 Claims

1. A wheel suspension for a motor vehicle comprising a wheel carrier, upper means for operatively connecting said wheel carrier to the body of said vehicle and lower means for operatively connecting said wheel carrier to said vehicle body,

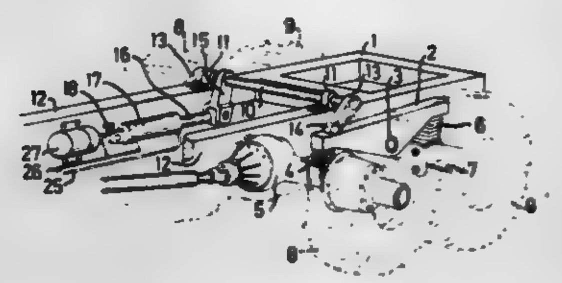
said upper and lower connecting means providing upper and lower pivot joints defining a steering axis about which said wheel carrier is pivotal, said steering axis being disposed at an angle to the vertical providing a predetermined caster, one component of said lower connecting means being disposable in at least a first or a second position to alter the angle of said steering axis relative to the vertical and correspondingly, said caster, said lower pivot joint being disposable at predetermined



distances from a reference line on said lower connecting means, and a mounting flange mounted on said wheel carrier, said mounting flange being mountable in a first position and mountable in a second position displaced 180° relative to a centerline thereof, said lower pivot joint being disposed on said mounting flange at a point displaced from the center line of said mounting flange a distance equal to the displacement of said lower pivot joint relative to the reference line on said lower connecting means.

4,324,417
VEHICLE WITH BOGIE-MOUNTED WHEELS AND RAISING DEVICE FOR A PAIR OF WHEELS

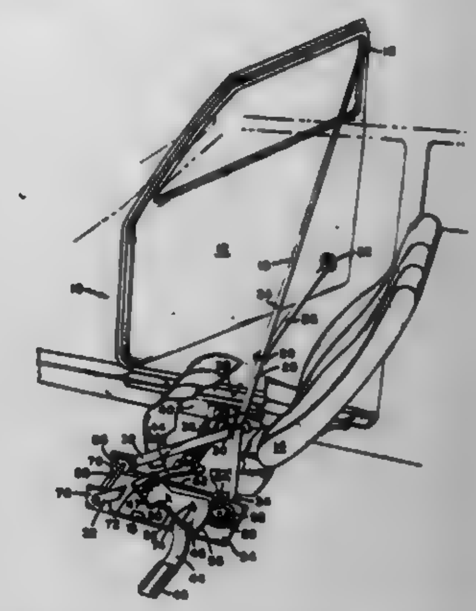
Sixten A. M. Johansson, Eskilstuna, Sweden, assignor to Volvo BM AB, Eskilstuna, Sweden
Filed Mar. 17, 1980, Ser. No. 130,626
Claims priority, application Sweden, Apr. 23, 1979, 7903536
Int. Cl.³ B60G *11/30*
U.S. Cl. 280—678 6 Claims



1. A vehicle having a load-carrying frame, a bogie frame disposed on either side of the load-carrying frame, means mounting the bogie frames on the load-carrying frame for vertical swinging movement about a horizontal axis, a first wheel pair mounted on the bogie frames on one side of said axis, a second wheel pair mounted on said bogie frames on the other side of said axis, spring means yieldably urging one said wheel pair downwardly relative to the other said wheel pair, and means for selectively applying and releasing the spring action of said spring means.

4,324,418
PASSIVE SEAT BELT SYSTEM

Robert L. Stephenson, Utica, Mich., assignor to Allied Corporation, Morris Township, Morris County, N.J.
Filed Mar. 26, 1980, Ser. No. 134,253
Int. Cl.³ B60R *21/10*
U.S. Cl. 280—802 9 Claims



1. A passive seat belt system for use in a vehicle having a driver's door and a passenger's door and seating positions adjacent to said doors, said system comprising:

actuating means associated with each of said doors and being actuated upon the opening of the respective door;

seat belt systems associated with each of said seating positions;

belt moving means associated with each of said seat belt systems for moving the same into and out of occupant restraint positions, said seat belt moving means comprising a pair of levers each associated with each of said seating positions and located inboard of said seating positions, said levers being in contact with said seat belt systems, connecting means connecting said levers to each other, a rotatable gear, and cable means extending between said gear and said connecting means; and

means responsive to actuation of each of said actuating means to permit said moving means to move each of said seat belt systems out of its occupant restraint position, said means comprising a rotatable gear segment having gear teeth on one end thereof, said gear teeth being intermeshed with said rotatable gear, and said gear segment being connected to each of said actuating means, whereby upon opening of either of said doors, each of said seat belt systems is moved out of its occupant restraint position.

4,324,419
LATCH FOR RUNNER UTILIZED IN PASSIVE TYPE SEAT BELT SYSTEM

Takeo Ueda, Fujisawa, Japan, assignor to Nippon Seiko Kabushiki Kaisha, Tokyo, Japan
Filed May 12, 1980, Ser. No. 148,779
Claims priority, application Japan, Jun. 6, 1979, 54-75857[U]
Int. Cl.³ B60R *21/10*
U.S. Cl. 280—804 5 Claims

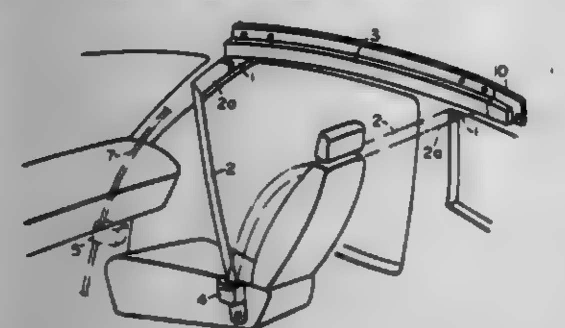
1. Latching apparatus for a runner member in a passive type seat belt system comprising:

a longitudinally extending guide member;

a runner member mounted on said guide member for movement therealong, the runner member having an engaging portion and a webbing attachment portion;

a driving member movable responsive to closing and opening of a vehicle door or the like to move said runner member between a passenger restraining position and a passenger releasing position;

a cam member fixed to a free end portion of said driving member;
a stop member fixed to the driving member spaced inwardly from the cam member;
connecting means between said runner member and said driving member, the connecting means being slidable relative to said driving member within a predetermined range between the stop member and the cam member;
a base member fixed to a body of the vehicle adjacent the passenger restraining position of the runner member; and
a latch member movably mounted on said base member between an engaging position in which the latch member is engageable with the engaging portion of the runner member to connect the runner member with the base

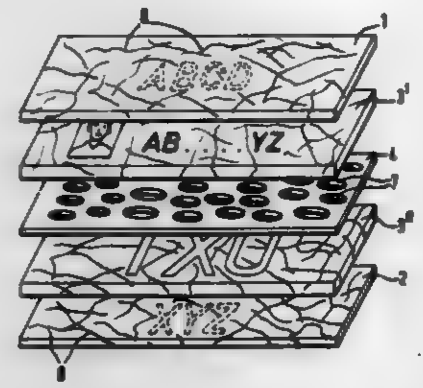


member, and a non-engaging position, the latch member being normally biased toward the engaging position;
movement of the driving member in one direction being effective to bring the stop member into engagement with the connecting means for moving the runner member into the passenger restraining position wherein the latch member engages said engaging portion of the runner member, and movement of the driving member in the opposite direction being effective initially to cause the cam member to move the latch member out of engagement with the runner member and then to move the runner member from the passenger restraining position towards the passenger release position by engagement of the cam member with the connecting means.

4,324,420
HEAT-SENSITIVE RECORDING OR COPYING MATERIAL
Horst Kosche, Düren, Fed. Rep. of Germany, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.
Continuation of Ser. No. 908,888, May 24, 1978, Pat. No. 4,202,566. This application Jan. 11, 1980, Ser. No. 111,422
Claims priority, application Fed. Rep. of Germany, May 28, 1977, 2724295; Jul. 1, 1977, 2729739
The portion of the term of this patent subsequent to May 13, 1997, has been disclaimed.
Int. Cl.³ B41M *5/18, 5/22*
U.S. Cl. 282—27.5 12 Claims

1. A heat-sensitive recording or copying material comprising at least one colour former and a support which contains or has coated on as developer for the colour former, at least one compound which is the reaction product of a mono- or polyaldehyde substituted by one or more electronegative substituents selected from the group consisting of halogen and cyano and a reactant selected from the group consisting of an epoxide, a carboxylic halide and a dicarboxylic acid anhydride, wherein the aldehyde is bonded to the radical of the reactant by means of at least one oxygen atom.

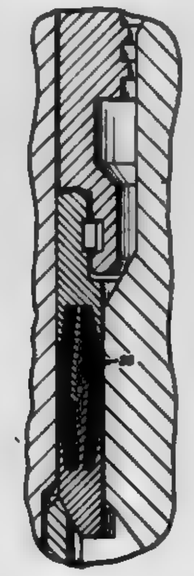
4,324,421
IDENTITY CARD WITH INCORPORATED FIBRIDS
Roland Moraw, Wiesbaden; Peter Steinau, Mainz, and Fritz Pierson, Taunusstein-Hahn, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany
Filed Dec. 19, 1979, Ser. No. 105,147
Claims priority, application Fed. Rep. of Germany, Dec. 30, 1978, 2856852
Int. Cl.³ B42D *15/00;* G09F *3/02*
U.S. Cl. 283—7 17 Claims



1. An identity card comprising:
(a) at least one outer transparent covering layer and
(b) a thermoplastic core,
said core being produced from a core material comprising fusible thermoplastic fibrids having a specific surface of at least 1 m^2 per gram measured by the BET method; said core material being printable by printing techniques wherein a toner image is produced thereon;
said core further comprising a reinforcing layer which is perforated with holes and is dimensionally stable at a temperature at which said core material is fusible; said core material being laminated through the holes in said reinforcing layer; said reinforcing layer providing dimensional stability for said fusible core material during laminating;
(c) said card carrying at suitable points on at least one of the component parts thereof information serving to identity the cardholder and security markings for protecting against forgeries.

4,324,422
LOW TORQUE PACK-OFF SEAL ASSEMBLY WITH RETRIEVABLE LOWER SECTION
John K. Raine, Ventura, and Larry E. Reimert, Thousand Oaks, both of Calif., assignors to Vetco Offshore, Inc., Ventura, Calif.
Filed Feb. 27, 1980, Ser. No. 125,301
Int. Cl.³ E21B *33/04*
U.S. Cl. 285—140 8 Claims

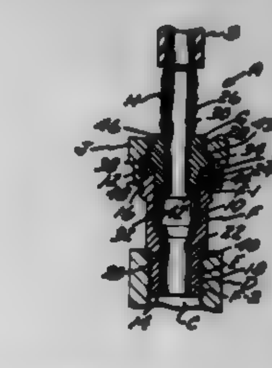
1. In a drilling system including at least a first body member and a second body member cooperatively associated with the first body member so as to define a clearance space therebetween, the improvement of a pack-off seal assembly supported in the drilling system for movement between a non-sealing position and a sealing position relative to the clearance space and operable when occupying the sealing position thereof to effect a packing off of the clearance space, said pack-off seal assembly comprising:
a. a first metal seal means having a first pair of lip portions projecting outwardly therefrom, said first pair of lip portions being operable to establish a metal-to-metal seal between the first and second body members when said pack-off seal assembly occupies the sealing position thereof;
b. a second metal seal means having a second pair of lip portions projecting outwardly therefrom, said second pair of lip portions being operable to establish a metal-to-metal seal between the first and second body members when said pack-off seal assembly occupies the sealing position thereof;
c. an elastomeric seal ring supported in interposed relation between said first metal seal means and said second metal seal means, said elastomeric seal ring means being operable to establish an elastomeric-to-metal seal between the first and second body members when said pack-off seal assembly occupies the sealing position thereof; and
d. retrieving means cooperatively associated with said first metal seal means and said second metal seal means, said retrieving means including a first elongated member projecting outwardly from said first metal seal means so as to extend in substantially parallel relation to said first pair of lip portions, said first elongated member having the free end thereof extending in a first direction into said elastomeric seal ring so as to be encircled thereby, said retrieving means further including a second elongated member projecting outwardly from said second metal seal means so as to extend in substantially parallel relation to said



second pair of lip portions, said second elongated member having the free end thereof extending in a second direction into said elastomeric seal ring so as to be encircled thereby, said free end of said first elongated member being spaced from said free end of said second elongated member so as to establish a lost motion connection between said first and second elongated members and thereby also between said first metal seal means and said second metal seal means when said pack-off seal assembly is moved in a first direction relative to the clearance space defined by the first and second body members, said free end of said first elongated member being interengaged with said free end of said second elongated member so as to establish a rigid connection between said first and second elongated members and thereby also between said first metal seal means and said second metal seal means when said pack-off seal assembly is moved in a second direction relative to the clearance space defined by the first and second body members thereby to insure the retrievability from the clearance space of said second metal seal means.

4,324,423
TUBULAR FITMENT
Isadore Pitesky, 4001 Linden Ave., Long Beach, Calif. 90807
Continuation of Ser. No. 14,683, Feb. 23, 1979, abandoned. This application Aug. 11, 1980, Ser. No. 177,361
Int. Cl.³ F16L *41/00*
U.S. Cl. 285—156 6 Claims

1. In combination with a rigid shell that has a tapped opening therein and that defines a confined space and a resilient tube, a fitment capable of selectively establishing either rotatable or fixed communication between said resilient tube and said confined space, said fitment including:
a. a first elongate tubular member that has first and second end portions that have a longitudinal smooth surfaced first bore extending therebetween, said first and second end portions having first and second transverse ring shaped surface extremities, said first end portion having first external threads defined thereon, said second end portion having second external threads defined thereon that extend longitudinally from said second ring shaped surface extremity to a transverse circumferentially extending first groove in said second end portion, and a part of said first groove most remote from said second transverse ring shaped extremity defining a first circumferentially extending body shoulder with said second threads engaging said tapped opening;
b. a second elongate tubular member that has third and fourth end portions and an intermediate portion therebetween, a longitudinal passage in said second elongate tubular member that extends between said third and fourth end portions, said third end portion of circular transverse cross section and such size as to snuggly and slidably engage said first longitudinal bore adjacent said first end portion, a second circumferentially extending groove in said third end portion, first means on said fourth end portion for sealingly engaging said resilient tube, and a circumferentially extending flange that projects outwardly from said intermediate portion, said flange having



first and second longitudinally spaced ring shaped end faces;
c. first and second resilient sealing rings disposed in said first and second grooves, said first resilient sealing ring being compressed and effecting a fluid tight seal between said body shoulder and said rigid material adjacent said tapped opening when said first sealing ring is compressed, and said second resilient sealing ring effecting a rotatable and slidable seal between said third end portion and said first longitudinal bore when said third end portion is slid longitudinally into the latter to dispose said first ring shaped face adjacent said first ring shaped end surface; and
d. a ring shaped collar that has an internal circular abutment from which second and third bores extend longitudinally in opposite directions, said second bore having third threads defined therein, said third bore capable of being slid downwardly over said flange for said third threads to engage said first threads, said second tubular member and said resilient tubing capable of being rotated relative to said first tubular member until said collar is screwed downwardly on said first threads to the extent said first and second ring shaped faces of said flange are frictionally gripped between said first ring shaped surface and said abutment to the extent rotation of said second tubular member relative to said first tubular member is no longer possible.

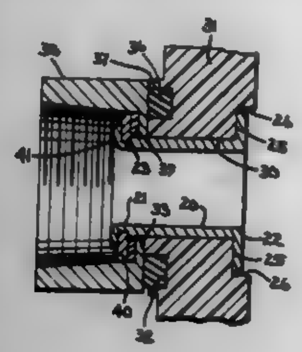
4,324,424
SLIP-TYPE CONDUIT HUB FOR ENCLOSURES
Ronald D. Woodliff, Milwaukee; Kenneth L. Paape, Mequon, and Edwin S. Johnston, New Berlin, all of Wis., assignors to Allen-Bradley Company, Milwaukee, Wis.
Filed Dec. 26, 1979, Ser. No. 106,590
Int. Cl.³ F16L *3/04*
U.S. Cl. 285—158 3 Claims

1. In a non-metallic enclosure for housing an electrical de-

vice including an apertured, supporting end wall, an assembly for connecting a tubular conduit to the apertured end wall comprising in combination:

a tubular insert seated in the end wall aperture and including a non-circular flanged portion arranged to be seated in a non-circular recessed area of the inner wall surface of said supporting end wall to prevent rotation of said insert with respect to said enclosure, and having a portion extending in a longitudinal plane outwardly of said end wall;

a rotatable, hollow, internally threaded hub member having an aperture inturned end wall, said apertured end wall being received and supported by the externally extending portion of said tubular insert, and the distal end of said



extending portion being formed with a hub-retaining lip extending laterally relative to the longitudinal axis of said insert; a first washer member received by the externally extending portion of the tubular insert and seated between the inner surface of the apertured end wall of said hub member and said hub-retaining lip, and a second washer member received by the externally extending portion of the tubular insert and seated internally of the hollow hub between the hub-retaining lip of said tubular insert and the said first washer member, said first washer member being formed of a material having a relatively low coefficient of friction with respect to the material of said second washer member and the material of said inturned end wall of said hub member.

4,324,425

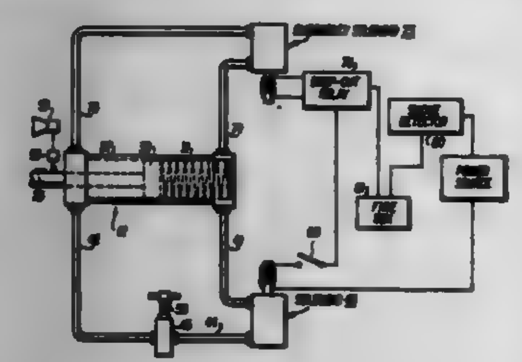
POINT-OF-EGRESS CONTROL DEVICE FOR SECURING EXIT DOORS SAFELY

Emanuel L. Logan, 9406 Flower Ave., Silver Spring, Md. 20901

Continuation-in-part of Ser. No. 877,893, Feb. 15, 1978, abandoned. This application Aug. 1, 1978, Ser. No. 929,968

Int. Cl.³ E05C *15/02*

U.S. Cl. 292—201 37 Claims



1. A latch for latching an emergency exit closure operable from inside of an enclosure and unlocked with respect to the inside of the enclosure comprising:

a bolt for latching the closure when the bolt is in a first position and for unlatching the closure when the bolt is in a second position;

means for prolonging over a time interval movement of the bolt from the first position to the second position to delay opening of the closure;

means for initiating running of the time interval upon attempting to open the closure from inside the enclosure, and

means responsive to an attempt to open the door for signaling that an attempt to open the door has occurred.

4,324,426

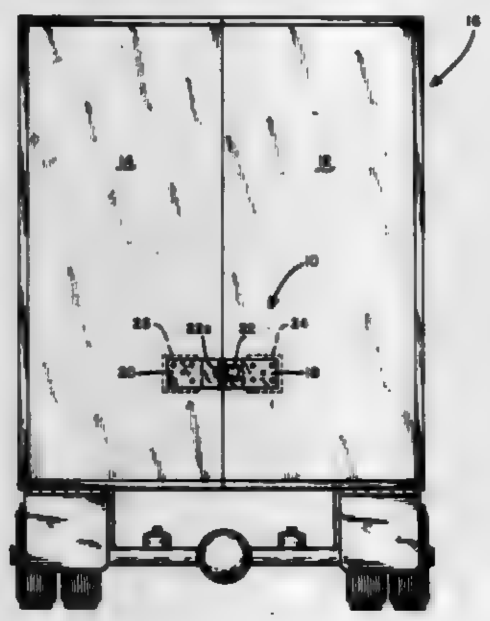
LOCK-PROTECTING HASP

Thorwald J. Michelson, Excelsior, Minn., assignor to Transportation Security, Inc., Eden Prarie, Minn.

Filed Mar. 10, 1980, Ser. No. 128,524

Int. Cl.³ E05C *19/08*

U.S. Cl. 292—281 14 Claims



1. A lock-protecting hasp for use on a stationary member and a movable member, the lock-protecting hasp comprising:

opposing aligned outside mounting hasps, each of said mounting hasps including a longitudinal member having a plurality of bolt holes, an angular member connected to the longitudinal member rising upward at a slight angle from said longitudinal member, and a vertical leg connected to said angular member, two elongated holes in said leg for accepting a shackle of a lock, a spacer member on each of said legs of said outside mounting hasp and including two aligned elongated holes for accepting said shackle of said lock, and a protector block affixed to a top of said spacer and running substantially the distance above said elongated holes whereby said shackle connects through each of said aligned holes of said aligned outside mounting hasps and said spacer thereby substantially protecting small space exposed between said shackle and said lock body of said legs of said outside mounting hasps and thereby securing said space between said shackle, said lock body, and said spacer by said protector block.

4,324,427

AUTOMOBILE BUMPER WITH ADIABATIC DEVICE

Vincent P. W. Huang, and Laurence P. Y. Huang, both of P.O. Box 22799, Taipei, Taiwan

Filed Jul. 3, 1980, Ser. No. 165,946

Int. Cl.³ B60R *19/02*

U.S. Cl. 293—106 10 Claims

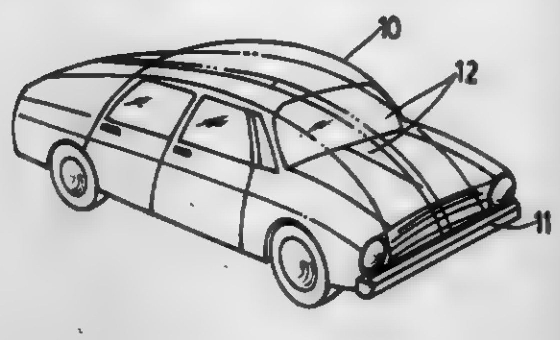
1. An automobile bumper comprising:

a supporting bracket having a substantially rectangular base for mounting on the front or rear side of the automobile;

a bracket casing mounted movably on said supporting bracket;

one or more adiabatic devices received movably in a space defined by said supporting bracket and said bracket casing; and

at least one buffer spring provided between said one or more adiabatic devices and said supporting bracket, wherein said one or more adiabatic devices comprises a plurality of stands, each supporting a winding shaft there-between, a roll of flexible adiabatic sheet wound on said winding shaft, and a reversing rotation means attached to one end



of said winding shaft for making the drawn-out flexible adiabatic sheet return to its original wound position when said adiabatic sheet is released, wherein each of said at least one buffer spring is separately supported by a pair of opposing stems, each opposing pair of stems being provided on one of said stands and on an opposing surface of said supporting bracket.

4,324,428

WOOD CARRIER

Gabriel J. Fieni, 31 Cedar La., Douglassville, Pa. 19518

Filed Dec. 27, 1979, Ser. No. 107,513

Int. Cl.³ B65D *71/00*

U.S. Cl. 294—169 20 Claims

1. A device for carrying wooden logs and the like, comprising:

a. two wire frame means for containing the wooden logs and the like;

b. handle means for lifting the two wire frame means containing the wooden logs and the like;

c. flange means, rigidly connected to the handle means, for moving one wire frame means relative to the other wire frame means by rotation of said handle means; and

d. wherein said two wire frame means each have an upper shoulder and said flange means moves said one wire frame means relative to the other wire frame means when a bottom edge of the flange means contacts the upper shoulder of said one wire frame means.

4,324,429

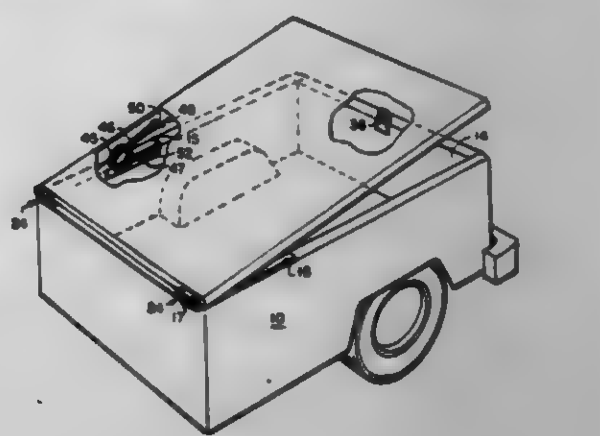
QUICK DETACHABLE HINGING COVER FOR PICKUP TRUCK BEDS

Charles E. Wilson; Arnold W. Wilson, and Reginald H. Morley, all of Calgary, Canada, assignors to Sunwil Manufacturing Ltd., Alberta, Canada

Filed Apr. 1, 1980, Ser. No. 136,269

Int. Cl.³ B60P *7/02*

U.S. Cl. 296—100 10 Claims



1. A cover for a pickup truck bed having upstanding side walls, a front wall and a rear wall, said cover comprising:

a top of sufficient size to include edges resting on and overlapping the upstanding walls of the truck bed;

a pair of angle brackets fixed to said upstanding side walls at spaced positions adjacent one selected edge of said top, said angle brackets each including an upstanding member extending adjacent said selected edge and forming a first recess facing said top and a second recess facing away from said top;

a latch aligned with and cooperation with each angle bracket and fastened to said selected edge of said top to fasten said top to said upstanding side walls while allowing the top to be pivoted about said one selected edge to a raised and closed position, each latch including a flange fitting into said bracket first recess and also including a rod pivotally connected and movable to positions engaging and disengaging from said second recess to prevent movement of said top selected edge away from said latch while allowing the top to be pivoted about said latch; and

means fixed to said top and side walls at a position remote to said angle brackets and flanges and operable to lock said top to said side walls and prevent pivoting of said top about said one selected edge.

4,324,430

INFANT CARRIER PARTICULARLY FOR GROCERY STORE SHOPPING CARTS

Herman Dimas, Jr., and Janice E. Dimas, both of Box 694, Guernsey, Wyo. 82214

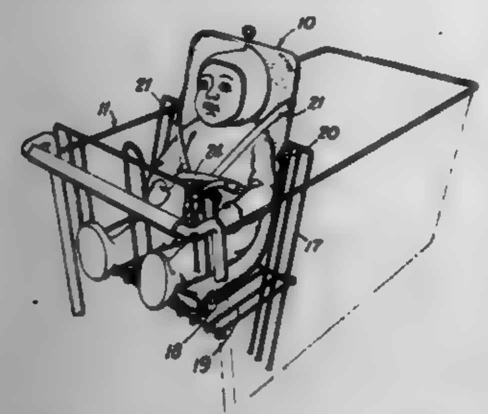
Filed Apr. 18, 1980, Ser. No. 141,646

Int. Cl.³ A47D *1/10*

U.S. Cl. 297—250 2 Claims

1. An infant carrier for the dual purpose of supporting an infant on the body and for supporting the infant in a safe sitting position in a shopping cart seat, said dual purpose carrier comprising a generally L-shaped substantially rigid support frame having the profile of a chair without legs and defining a comparatively short seat portion and a longer rising back portion, taut sheet material attached to said frame and providing support surfaces for an infant held in the carrier, a crotch flap attached to said sheet material at the seat portion of the carrier, first straps attached to opposite sides of the back portion of the carrier and adapted to be extended in crossed relationship forwardly and over the shoulders and chest of an infant seated in the carrier and adapted for connection releasably with said crotch flap, a second strap including portions attached to opposite sides of said back portion of the carrier

below the attachment points of the first straps and adapted to be releasably secured across the front of the torso of an infant seated in the carrier, whereby the infant is securely held against fore and aft movement, lateral movement and downward sliding movement in the carrier, a third strap including portions attached to opposite sides of the back portion of the carrier at an elevation between the first straps and second strap, the third strap adapted to be releasably fastened to a back portion of the shopping cart seat within which the infant car-



rier with the infant seated thereon can be bodily placed and removed, and a fourth strap including portions attached to opposite sides of the seat portion of the carrier and adapted to be releasably secured to an underlying seat portion of the shopping cart seat, whereby the back and seat portions of the carrier are firmly anchored to the corresponding portions of the shopping cart seat, and removable sling means attached to the carrier to enable supporting it with an infant seated therein on the body.

4,324,431

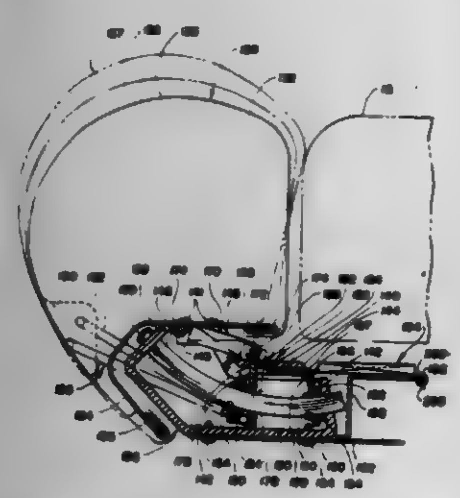
VEHICLE SEAT WITH INDIVIDUAL ADJUSTABLE FRONT THIGH SUPPORT

Randall T. Murphy, Farmington Hills, and Dennis H. Heling, Canton, both of Mich., assignors to Lear Siegler, Inc., Livonia, Mich.

Filed May 6, 1980, Ser. No. 147,409

Int. Cl.³ A47C *3/00, 7/02*

U.S. Cl. 297—284 **11 Claims**



1. In combination with a vehicle seat having a back rest portion and a seating portion retained on a frame structure, an independently supported slidable bolster portion located adjacent to the front end of said seating portion and adapted to support the thighs of an occupant of said seat; at least one slideway fixedly connected to said frame structure for defining a slide path for the bolster portion to allow the bolster portion to extend from a fully retracted position to a fully extended position; and said bolster portion including at least one slide member slidably mounted on said slideway for slidably moving said bolster portion between said fully retracted and extended positions, wherein one of said slide member and said slideway includes a support shaft and a pair of spaced support flanges extending outwardly therefrom for supporting said support shaft therebetween and wherein the other of said slideway and said slide member includes a pair of interconnected spaced slide elements, said slide support shaft extending through apertures formed through the slide elements, said slide elements sliding on the slide support shaft to allow said bolster portion to move between said fully extended and retracted positions.

4,324,432

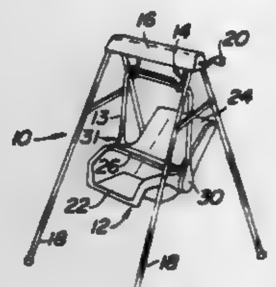
INFANT SWING CARRIER

James Eldon, III, Barto; David Saint, Elverson, and Thomas L. Latone, Quakertown, all of Pa., assignors to Graco Metal Products, Inc., Elverson, Pa.

Filed May 23, 1980, Ser. No. 152,956

Int. Cl.³ B60N *1/02;* **A47C** *1/00*

U.S. Cl. 297—377 **12 Claims**



1. Apparatus comprising:
(a) an infant carrier body, a generally U-shaped handle pivoted at its free ends to opposite sides of said body and with the handle bight being above and transverse of said body,
(b) latch means for latching said handle in at least two positions relative to said body, one of said positions being an operative position,
(c) a hanger for detachably coupling the handle bight to a swing when the handle is in its operative position, said handle bight and hanger having mating structure to prevent pivoting of the handle relative to the hanger.

4,324,433

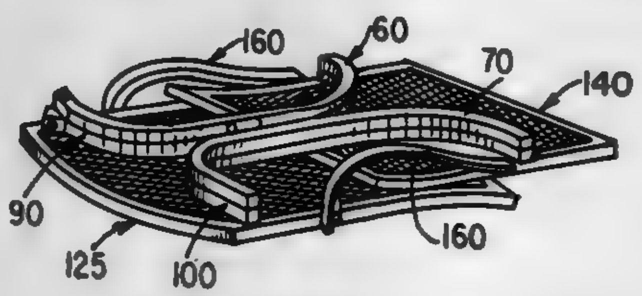
KNOCKDOWN ARM CHAIR

Herbert C. Saiger, Troy, Ohio, assignor to Plantation Patterns, Inc., Birmingham, Ala.

Filed Dec. 13, 1979, Ser. No. 103,287

Int. Cl.³ A47C *4/02*

U.S. Cl. 297—442 **10 Claims**



1. A knockdown arm chair, comprising: a pair of double leg members each including two legs, two seat assembly supports and a connecting spacer all disposed in a generally common plane, said pair of double leg members adapted to interfit rigidly at right angles with said spacers in alignment; a seat assembly including a seat, a back and a pair of arms pivoted at the free ends respectively to the sides of said seat and said back; detachable means rigidly connecting the rear of said seat to said back and to adjacent seat assembly supports when said back is pivoted by said arms to operative position; and spaced means at the bottom front of said seat for rigid attaching engagement of adjacent seat assembly supports of an interfitted pair of said double leg members; whereby said knockdown chair is readily and rigidly user-assembled by said rigid connecting means, and said seat and said back are movable into substantial alignment and said double leg members when separated may lie on said seat and back below the level of said arms thereby minimizing space required for packaging and storage.

4,324,434

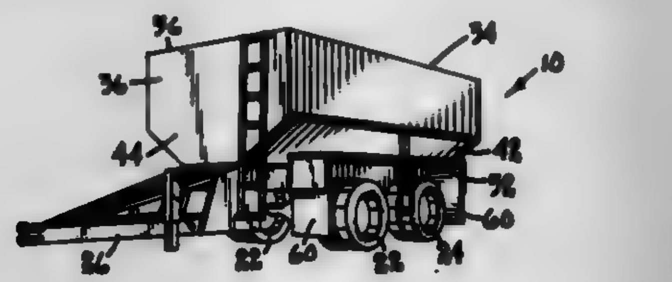
GRAIN CARRYING VEHICLE

Wayne G. Friese, Rte. 3, Box 150, Devils Lake, N. Dak. 58301

Filed Dec. 13, 1979, Ser. No. 103,366

Int. Cl.³ B60P *1/56*

U.S. Cl. 298—27 **8 Claims**



1. An improved vehicle suitable for carrying grain and other particulate materials, comprising:
a base frame including two laterally spaced, generally horizontal elongated support elements and an interconnecting member intersecting said laterally spaced support elements;
means mounting said frame for movement over the ground;
a carriage mounted to said frame and including a main body portion having a front wall, a rear wall, and two opposite side walls, each of said side walls including a planar portion extending obliquely with respect to the ground and upwardly and outwardly with respect to said body, and said carriage further including an open discharge portion extending downwardly from said main body portion between said support elements and spaced laterally from said interconnecting member and a lip forming a lower extremity of said discharge portion and defining a first plane, said discharge portion having formed therethrough a discharge aperture circumscribed by said lip providing communication between the interior of said main body portion and the exterior beneath said vehicle;
a pair of parallel and generally horizontal fender panels, one of said pair fixedly positioned beneath each of said obliquely disposed planar portions of said side walls;
a plate sized with respect to said discharge aperture such that it may completely obstruct said aperture, said plate having a closure surface engaging said lip of said discharge portion and a free surface;
a track having a bearing surface engaging said free surface of said plate to maintain said plate in a second plane parallel to said first plane and engaging said lip;
means for withdrawing said plate in said second plane along said track to open said discharge aperture; and
an acutely angled bracket, mounted to said vehicle, into which said plate wedges when moved to a positioned occluding said discharge aperture, said bracket having an oblique surface to urge said plate against said lip as said plate is moved in a direction toward said bracket.

4,324,435

LOCK ASSEMBLY FOR EARTHWORKING APPARATUS

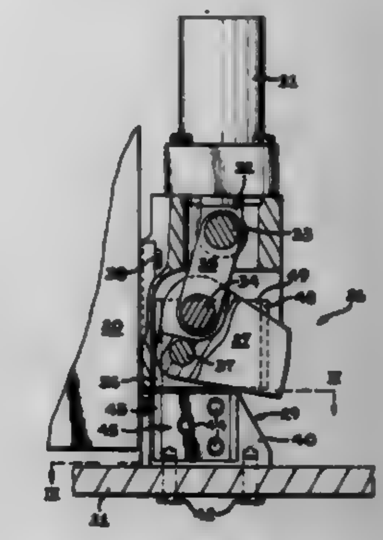
Robert L. Fischer, New Lenox, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US80/00536, § 371 Date May 8, 1980, § 102(e) Date May 8, 1980

PCT Filed May 8, 1980, Ser. No. 245,229

Int. Cl.³ A01B *15/20*

U.S. Cl. 299—37 **12 Claims**



1. In an earthworking apparatus (10) having an energy source (18) for activating an earthworking tool (19), a rotatable housing (20) for enclosing said energy source (18), a mounting assembly (21) for rotatably supporting said housing (20), and means for rotating said housing (20) relative to said mounting assembly (21), the improvement comprising:
a moveable lock member (27) mounted on said housing (20);
means (26) for locking said housing (20) to said mounting assembly (21) and preventing rotational motion, said means including a plurality of lock stations (28,29,30) disposed on said mounting assembly (21),
each block station (28, 29, 30) including first and second separate blocks (39, 40), said blocks (39, 40) each being connected to said mounting assembly (21) and spaced a preselected distance ("d") one from the other and defining an opening (41) having a longitudinal axis and being of a preselected size ("d"), said opening size ("d") being adapted to receive said lock member (27) for unrestrained movement of the lock member (27) along the longitudinal axis of the opening (41) and restrain movement of the lock member (27) in directions transverse to said longitudinal axis in the activation position of said earthworking tool; and
means (31) for moving said lock member (27) in and out of locking engagement with said lock stations (28,29,30).

4,324,436

AUTOMATIC LOAD-DEPENDENT BRAKING-FORCE CONTROL DEVICE

Erich Reinecke, Burgdorf, Fed. Rep. of Germany, assignor to WABCO Fahrzeugbremsen GmbH, Hanover, Fed. Rep. of Germany

Filed Feb. 1, 1980, Ser. No. 117,683

Claims priority, application Fed. Rep. of Germany, Feb. 26, 1979, 2907425

Int. Cl.³ B60T *8/22*

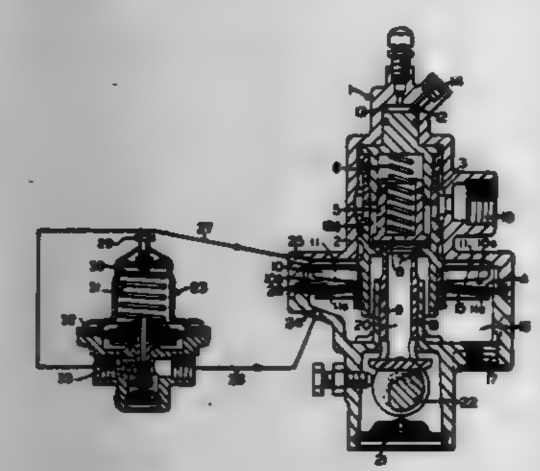
U.S. Cl. 303—22 R **4 Claims**

1. An automatic load-dependent braking-force control device for fluid pressure actuated brake systems in motor vehicles or trailers and comprising:
(a) a brake-pressure control piston assembly subjectable to brake control pressure and including a control piston and a flexible diaphragm secured thereto for axial movement therewith,
(b) a dual function valve body cooperating alternatively

with a supply valve seat to form a supply valve assembly and with an exhaust valve member to form an exhaust valve assembly,

(c) said control piston having an upper pressure surface subjectable to brake control pressure of a brake-pressure transmitter via a control chamber and a fluid pressure control port,

(d) said diaphragm having a lower pressure surface adjacent a brake-pressure delivery chamber communicating with

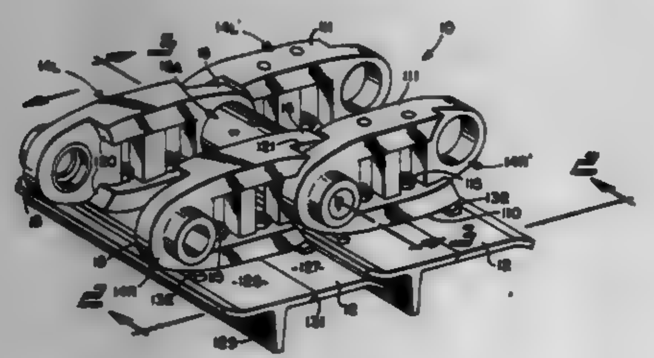


and for delivering wheel brake cylinder pressure to a delivery port,

(e) the degree of brake pressure delivered to said delivery port being determined via a cam element positionable according to vehicle weight, and wherein the improvement comprises:

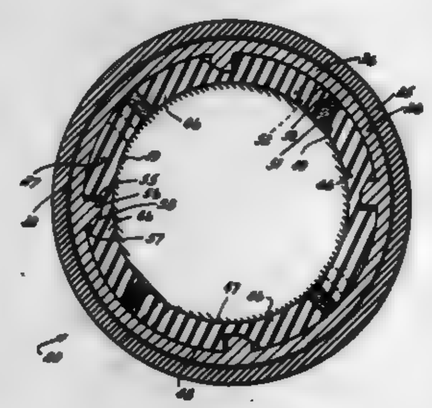
(f) a pressure-limiting valve device via which the brake-pressure delivery chamber situated below the diaphragm of said brake-pressure control piston assembly is connected with a supply chamber situated above said diaphragm.

4,324,437
ENDLESS TRACK
Rajendra K. Narang, 1535 Bonnie Rd., Macedonia, Ohio 44056
Filed May 12, 1978, Ser. No. 905,209
Int. Cl.³ B62D *55/20*
U.S. Cl. 305—11 25 Claims



1. A track assembly comprising a first pair of transversely spaced track links having aligned bores and counterbores in the front ends of their axially inner sidewalls, a second pair of transversely spaced track links having their back ends respectively proximately overlapping the inner sidewalls of said front ends of said first link pair, said back ends of said second link pairs having holes therethrough in assembled coaxial alignment with said bores and counterbores in said first link pair, and a pivot assembly articulately to interconnect said first and second link pairs, said pivot assembly including coupling means extending through said holes, bores and counterbores of the respective interconnected link pairs to permit said first link pair concurrently to pivot relative to the freely concurrently pivoting second link pair and to maintain said first and second link pairs in generally parallel axially spaced relationship, said coupling means including a pivot pin extending through said holes in said second link pair and said counterbores of said first link pair into said bores of said first link pair with the opposite ends of said pivot pin being connected to said track links of said first link pair commonly to pivot therewith, metal insert means positioned in said counterbores to resist wear and to permit independent selective replacement thereof when worn, a bushing having a bore through which the relatively movable pivot pin of a smaller diameter passes and portions received in and secured to said holes in said track links of said second link pair for common pivotal movement therewith, the ends of said bushing projecting into said counterbores in said link pair but being freely pivotable relative thereto and bearing against said metal insert means to maintain the proper spacing between the overlapped adjacent ends of the track links of said first and second link pairs, metal inserts in the bore in said bushing at opposite ends thereof, said metal inserts being selectively replaceable as required by wear, metal sleeve means extending axially circumferentially around said bushing to resist wear and to permit independent selective replacement thereof when worn, said sleeve means being press fitted on said bushing and forming at its ends shoulder means bearing against the axially inner sidewalls of said link pair to maintain the proper spacing therebetween.

4,324,438
DRILLING DECK BUSHING
Roy D. Lister, Fort Worth, Tex., assignor to Eagle-Picher Industries, Inc., Cincinnati, Ohio
Filed Nov. 13, 1980, Ser. No. 206,686
Int. Cl.³ F16C *31/02*
U.S. Cl. 308—3.5 6 Claims



1. A bushing for the deck of a drilling rig comprising,
an outer shell,
an inner shell mounted for rotation within said outer shell,
an elastomeric bushing mounted within said inner shell,
said bushing being formed of a plurality of arcuate segments which together present a generally cylindrical inner surface for engagement with a circular pipe,
abutment means between said bushing and said inner shell blocking rotation of said bushing with respect to said inner shell.

4,324,439
ANTI-RACK SYSTEM FOR WIDE DRAWERS AND THE LIKE
Magnus F. Hagen, Laguna Beach, and Richard O. Rask, Whittier, both of Calif., assignors to Standard Precision, Inc., Santa Fe Springs, Calif.
Filed Jan. 10, 1980, Ser. No. 111,121
Int. Cl.³ F16C *29/04*
U.S. Cl. 308—3.8 7 Claims

1. An anti-racking apparatus for wide drawers and the like supported within a cabinet structure comprising a pair of slide-suspension mechanisms, each being oppositely positioned on each side of said drawer, wherein each mechanism includes:

a first lower slide unit fixedly mounted to said cabinet structure, wherein said lower slide unit comprises an outer slide member fixedly secured to said cabinet structure, an inner slide member movably supported within said outer slide, and bearing means interposed therebetween;

a second upper slide unit mounted to the side of said drawer and movable therewith, wherein said upper slide unit comprises an outer slide member fixedly secured to said drawer, an inner slide member movably supported within said outer slide member thereof, and bearing means interposed between said outer and inner slide members;

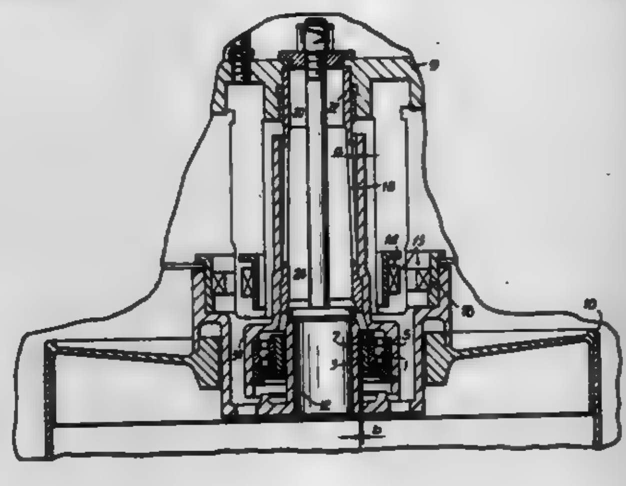
an intermediate member interconnecting said lower and upper slide units together;

a synchronizing means interconnected between said lower and upper slide units to control the relative linear movement therebetween, wherein said outer units of said upper and lower slide units are interconnected by said synchronizing means, and said inner units thereof are interconnected and movable with said intermediate member; and

a stabilizing means mounted between said opposing pair of said slide suspension means to establish a parallel linear motion therebetween.

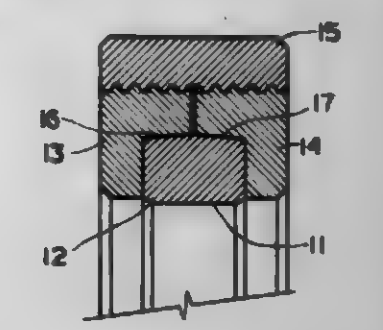
said stabilizing means is operably interconnected to each oppositely disposed intermediate member.

4,324,440
CONTAINING BEARING FOR SUPERCRITICAL ROTORS
Richard Steigenberger, Friedberg, and Dieter Hirt, Augsburg, both of Fed. Rep. of Germany, assignors to MAN Maschienfabrik Augsburg Nurnberg, Munich, Fed. Rep. of Germany
Filed Jun. 11, 1980, Ser. No. 158,622
Claims priority, application Fed. Rep. of Germany, Jun. 20, 1979, 2924815
Int. Cl.³ F16C *27/04*
U.S. Cl. 308—26 10 Claims



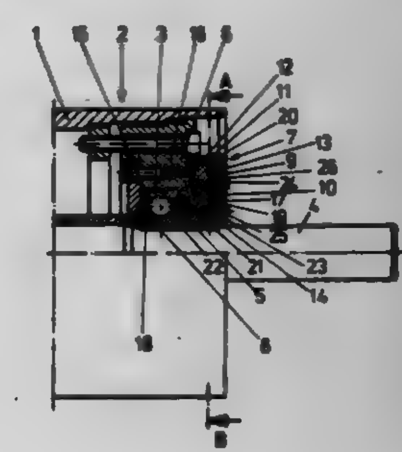
1. A containing bearing for a supercritical rotor which surrounds the rotor is adapted to stabilize the rotor in the presence of radial rotor vibrations, a gap is present between the containing bearing and the rotor, said gap being of a size equal to or larger than the maximum amplitude of vibration of the rotor in normal operation, wherein: an outer race (5) of the containing bearing (1) is supported by an oblong, resilient sleeve (20) which extends coaxially to and in extension of the rotor (10) and is further defined by having its far end (22) fixed to prevent its rotation.

4,324,441
ROLLING CONTACT ELEMENT
William S. Rouverol, 1331 Arch St., Berkeley, Calif. 94708, and Robert C. Krumme, 446 Forest Ave., Palo Alto, Calif. 94301
Filed Oct. 24, 1980, Ser. No. 200,373
Int. Cl.³ F16C *33/58*
U.S. Cl. 308—177 26 Claims



1. A pair of bodies, one of which is mounted to roll on the other,
one of said pair being composed of at least two parts, including a first part that has a surface in rolling contact with the other of said pair and at least one additional part that applies to said first part forces that induce at the point of contact of said bodies compressive stress on a first plane normal to said surface at said point,
said compressive stress being greater than one-fourth the yield point stress in simple tension for the material of said first part.

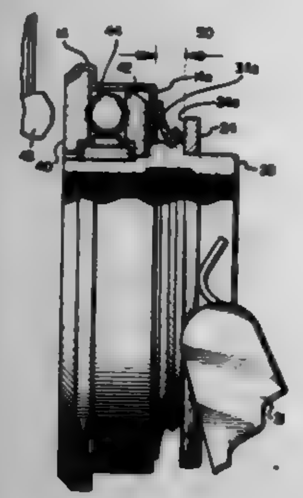
4,324,442
DEVICE FOR SUPPLYING AN OIL-AIR MIXTURE TO BEARING LOCATIONS
Horst G. Schrecke, Dittelbrunn, and Hermann Glöckner, Schweinfurt, both of Fed. Rep. of Germany, assignors to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany
Filed Mar. 3, 1980, Ser. No. 126,438
Claims priority, application Fed. Rep. of Germany, Mar. 10, 1979, 7906703[U]
Int. Cl.³ F16C *33/66*
U.S. Cl. 308—187 10 Claims



1. In a device for supplying an oil-air mixture to a bearing location from an oil reservoir, arranged on a shaft, in which the

oil is held by an absorbent and retentive material, the combination comprising said oil reservoir being in a bore of a revolving machine part and including a closed annular container filled with an absorbent and retentive material, fixed next to the bearing to be lubricated on a shaft and provided with substantially radial passages opening at the periphery thereof into a space communicating with one side of the bearing and at the bore thereof into grooves in communication with the other side of the bearing.

4,324,443
SEALED THRUST BEARING ASSEMBLY
Richard T. Dagiel, Elkgrove Village, Ill., assignor to Aetna Bearing Company, Chicago, Ill.
Filed Jan. 3, 1980, Ser. No. 109,224
Int. Cl.³ F16C *33/78*
U.S. Cl. 308—187.1 8 Claims



1. A sealed thrust bearing assembly, comprising: a bearing member comprising first and second spaced apart, oppositely disposed annular thrust rings, a plurality of bearing elements rotatably retained therebetween, a generally annular shell member for holding said spaced apart thrust rings in a fixed axial spaced relation to one another while permitting relative rotation therebetween about a common axis, a carrier plate having a face portion extending transversely of said axis and presented toward a facing surface of said shell, said plate having a generally circular opening, a generally cylindrical carrier member projecting through said opening and said bearing member to effectively hold the carrier plate and bearing member in assembled relation, a generally annular, elastomeric sealing member interposed between said face portion and said facing surface and being in sealing engagement with the facing surface and with the assembled carrier plate and carrier member, said sealing member being shaped to yield as the spacing of said face portion and said facing surface varies due to wear or the like while at the same time maintaining said sealing engagement.

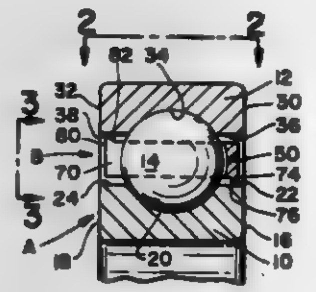
4,324,444
SNAP-IN BEARING RETAINER AND BEARING
Neal J. Baczynski, and Edward W. Kern, Jr., both of Jamestown, N.Y., assignors to TRW Inc., Cleveland, Ohio
Filed Aug. 11, 1980, Ser. No. 176,885
Int. Cl.³ F16C *33/38*
U.S. Cl. 308—201 6 Claims

3. In a snap-in type of bearing retainer adapted for use with a bearing assembly having a cylindrical outer race, a cylindrical inner race and a plurality of spaced apart ball members disposed circumferentially of and radially between said inner and outer races and wherein said retainer includes a generally cylindrical retainer body having a plurality of ball receiving pockets extending axially outward from one side thereof with at least some of said pockets having outermost entrance areas defind by finger-like members which are yieldable to accommodate capture of an associated ball member therein, the improvement comprising:

a web area interposed between each of said ball receiving pockets circumferentially of said retainer body, said web areas extending axially outward of said retainer body a greater distance than said pocket entrance areas; a first pilot rim disposed circumferentially of said retainer body and extending in at least one radial direction therefrom; and, a second pilot rim defined by arcuate pilot rim segments associated with said web areas circumferentially of said retainer body, said segments radially extending from said web areas at least the direction opposite to said at least one radial direction, said first pilot rim adapted to pilot against a land area adjacent the raceway of at least one of an inner and outer race in an associated bearing assembly and said second pilot rim is adapted to pilot against a land area adjacent the raceway of at least the other of the inner and outer races, whereby said retainer will be controlled and stabilized during high speed operations of an associated bearing assembly.

6. A snap-in type bearing retainer adapted to be piloted off at least one of the outer surface of an associated inner bearing race and the inner surface of an associated outer bearing race, said retainer comprising:

a generally cylindrical retainer body having a longitudinal axis, a plurality of ball receiving pockets extending axially outward from one side of said body circumferentially



therearound at substantially equidistantly spaced intervals, said pockets each including a pocket entrance area opening axially outward generally parallel to said axis and being defined between opposed outwardly yieldable fingers having outermost finger ends generally facing each other in a spaced apart relationship which is less than the maximum width of the associated pocket;

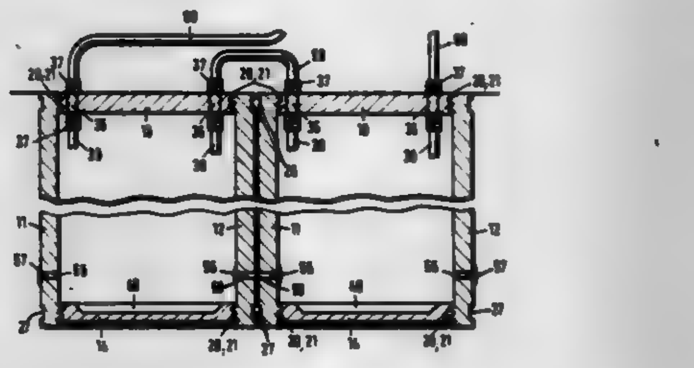
a web area interposed between at least selected ones of said pockets circumferentially of said retainer body, said web areas extending axially outward of said retainer body a greater distance than the entrance areas of said ball receiving pockets;

first means associated with said retainer body for piloting said retainer; and,

second means associated with at least selected ones of said web areas for piloting said retainer, said first pilot means adpated to pilot against at least one of the inside surface of an outer race and the outside surface of an inner race and said second pilot means adapted to pilot against at least the other of the outside and inside surfaces when said retainer is axially installed on a bearing assembly in order to provide enhanced retainer control and stability during high speed operation of the bearing assembly; and,

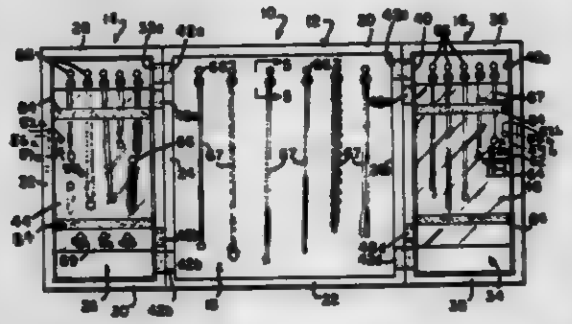
wherein a web area is interposed between each of said ball receiving pockets, said second pilot means comprising an arcuate rim segment associated with each of said web areas and extending radially of said body.

4,324,445
REFRIGERATING OR WARMING CABINET
Rudolf Schaefer, Brauerstr. 35, 4100 Duisburg 1, Fed. Rep. of Germany
Filed Oct. 9, 1979, Ser. No. 82,604
Claims priority, application Fed. Rep. of Germany, Oct. 9, 1978, 2843972
Int. Cl.³ A47B *77/08;* F16B *12/00*
U.S. Cl. 312—236 6 Claims



1. The combination of a refrigeration or warming cabinet with a detachably connected wall assembly formed of single flat wall elements coupled in connecting areas by connecting elements cooperating with one another to form groove-tongue connections; at least one wall element having on the front side a first type of connecting element and on a side surface a second type of connecting element; one of the connecting element types being a groove of approximately trapezoidal cross section and the other of the connecting element types being a tongue of approximately trapezoidal cross section; said first and second types of connecting elements running continuously along the wall elements such that in corner zones first and second types of connecting elements on the side surfaces of one of said wall elements merge into respective second and first type of connecting elements on the front side of another of said wall elements; the combination further comprising two clamping bands encircling the cabinet and holding together the flat wall elements and a releasable lock connected to said clamping bands for tightening each clamping band.

4,324,446
JEWELRY CASE
George J. LeSage, 12 Portland St., South Lawrence, Mass. 01843
Filed Jun. 19, 1980, Ser. No. 160,950
Int. Cl.³ A47F *5/08;* A47B *67/02;* B65D *25/10, 5/52*
U.S. Cl. 312—245 6 Claims



1. A jewelry case for receiving, storing, carrying and displaying jewelry in spaced hanging relationship comprising:

a back member having a plurality of walls extending outwardly therefrom, and defining a first compartment therebetween,

a front member hingedly mounted to said back member and having a plurality of walls extending outwardly therefrom and defining a second compartment therebetween similar to said first compartment,

a plurality of pins mounted in each said compartments and extending outwardly therefrom to receive jewelry in spaced hanging relationship,

a first transparent member adjacent said first compartment and having hinge means attaching said transparent member to allow said transparent member to swing from closed to open relationship with said compartment,

a second transparent member adjacent said second compartment and having hinge means attaching said second transparent member to allow said second transparent member to swing from closed to open relationship with said second compartment, and

resilient means disposed in spaced relationship upon said first and second transparent means and adjacent said first and second compartments respectively to contact said jewelry in each said compartments when said transparent members are in closed relationship with said respective compartments whereby said jewelry is retained in spaced hanging relationship free from mixed-up and tangled relationship.

4,324,447
METHOD OF PRODUCING A LOW-PRESSURE MERCURY VAPOR DISCHARGE LAMP
Rein W. van der Wolf, and Cornelis J. van den Broek, both of Roosendaal, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Mar. 14, 1980, Ser. No. 130,284
Claims priority, application Netherlands, Apr. 3, 1979, 7902571
Int. Cl.³ H01J *9/26*
U.S. Cl. 316—17 4 Claims

1. A method of producing a low-pressure mercury vapor discharge lamp comprising two or more substantially parallel co-extending glass discharge tubes, the discharge spaces of two adjacent discharge tubes being interconnected by a cross coupling extending substantially transversely to the wall of those discharge tubes, during operation of the lamp the discharge passing through the greater part of the discharge tubes, in which method the inner wall of each discharge tube is first coated with a luminescent layer and sealed at one end, characterized in that after application of the luminescent layer to the inner wall of the discharge tube, the connection between adjacent discharge tubes is effected in a gas-tight manner by making an aperture, having an outwardly-extending collar, in the wall of each of the tubes, by thereafter placing the apertures opposite one another and by thereafter fusing the collars together to form said cross coupling.

4,324,448

CIRCUIT BOARD WITH PLUG CONNECTOR

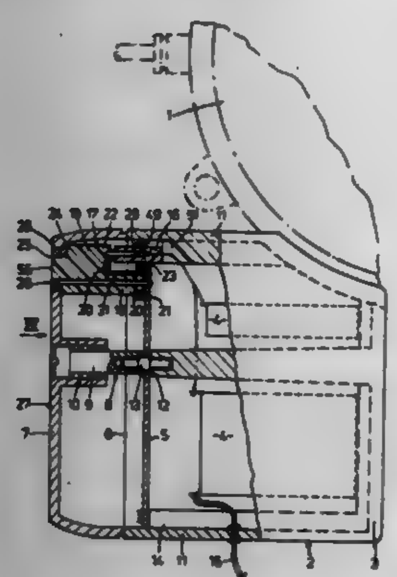
Herbert Palloch, Schwetzingen, and Hans Erndt, Wiesloch, both of Fed. Rep. of Germany, assignors to Frankl & Kirchner GmbH & Co. KG, Fabrik für Elektromotoren u. elektrische Apparate, Schwetzingen, Fed. Rep. of Germany

Filed Apr. 7, 1980, Ser. No. 137,892

Claims priority, application Fed. Rep. of Germany, Apr. 6, 1979, 2913937

Int. Cl.³ H05K *1/00*

U.S. Cl. 339—17 C 12 Claims



1. A circuit board arrangement disposed in a housing closable by a cover, the combination comprising a coupling element attached to the housing, a circuit board having a main planar surface, a plug connector having a plurality of plug prongs for electrical connection of circuitry disposed on the circuit board to said coupling element, the plug connector being secured on a rim portion of the circuit board and on the side of said circuit board oriented towards said cover, said plug connector comprising an insulating body formed with plug sockets in which said plug prongs are respectively mounted, said plug prongs extending substantially perpendicular to said main planar surface of said circuit board, said plug sockets opening towards an outer face of said plug connector remote from said circuit board, and said outer face of said plug connector being located in an opening in said cover.

4,324,449

NOISE REDUCTION CONNECTORS

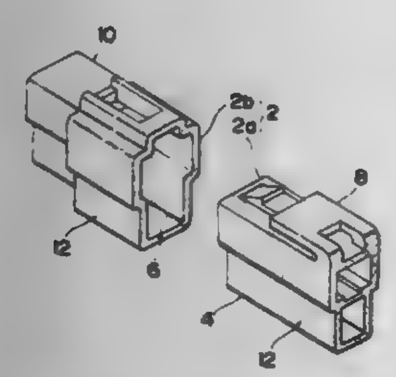
Mitsugu Watanabe, Numazu, and Tomoyuki Hirano, Cotenba, both of Japan, assignors to Yazaki Corporation, Tokyo, Japan

Continuation of Ser. No. 96,073, Nov. 20, 1979, abandoned, which is a continuation of Ser. No. 870,572, Jan. 18, 1978, abandoned. This application Dec. 17, 1980, Ser. No. 217,492

Claims priority, application Japan, Jan. 28, 1977, 52-7658

Int. Cl.³ H01R *13/62, 3/00*

U.S. Cl. 339—91 R 9 Claims



1. A connector structure comprising a female connector and a male connector, said female connector having a cavity and said male connector having a projecting portion slidably received within said cavity and retained therein to form a unitary connector structure, the exposed outer surfaces of said female connector and said male connector being coated with a thin dried adhesive film having embedded therein and projecting therefrom a multitude of fibers having a length of from 0.3 to 3 mm and having a thickness of from 1.5 to 30 denier, said fibers being selected from the group consisting of nylon, rayon and cotton, said fibers forming an integral uniform noise-reducing layer on the exterior surface of said connector structure.

4,324,450

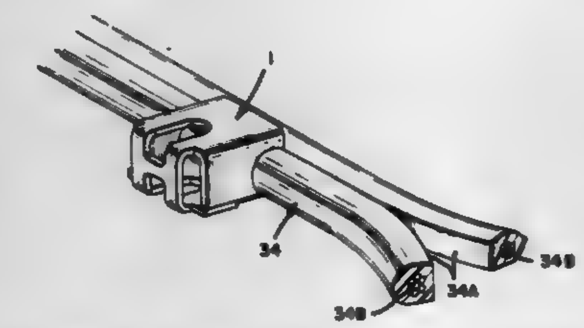
DROP WIRE TERMINAL

Lawrence P. Weisenburger, and Henry L. Delguidice, both of Winston-Salem, N.C., assignors to AMP Inc., Harrisburg, Pa.

Filed Mar. 5, 1980, Ser. No. 127,282

Int. Cl.³ H01R *4/24*

U.S. Cl. 339—97 R 7 Claims



1. A terminal for electrical connection to a stranded wire conductor, the terminal being stamped and formed from a single metal blank and comprising:

a first terminating section formed with a first bight section interconnecting a pair of opposed first plate portions bent outwardly from said first bight section,

said pair of first plate portions having aligned open ended slots, the sides of which define opposed insulating slicing and wire engaging jaws spaced apart a distance less than the diameter of a wire conductor to be engaged between said jaws,

a second terminating section opposed from said first terminating section, said second terminating section being formed with a second bight section interconnecting a pair of opposed second plate portions bent outwardly from said second bight section and spaced farther apart than said first plate portions, said second plate portions being provided with aligned open ended slots the sides of which define opposed insulation slicing and wire engaging jaws, spaced apart less than the diameter of a wire conductor to be terminated between said jaws,

a flange adjacent to and coplanar with said first bight section, said flange projecting laterally aside said first plate portions,

a web portion connecting said second terminating section with said flange,

said second terminating section being pivotable by bending said web portion to close toward said first terminating section and said flange, so that said slots of said first and said second plate portions are brought into alignment and simultaneously receive a wire conductor therein and establish electrical connection thereto,

said flange providing a stop against which said second plate portions engage to limit pivoting of said terminating sections relative to each other, and

said web portion having one or more bends therein, initially positioning said second terminating section partially closed toward said first terminating section.

4,324,451

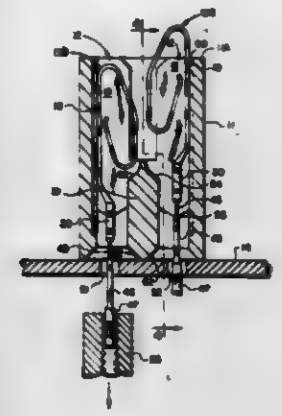
CARD EDGE CONNECTOR WITH PULL THROUGH BELLOWS CONTACT AND LAY-OVER INSULATOR

J. Preston Ammon; Harry R. Weaver, both of Dallas, Tex., and Richard O. Norman, Oxnard, Calif., assignors to Elfab Corporation, Dallas, Tex.

Filed Nov. 19, 1979, Ser. No. 95,226

Int. Cl.³ H01R *9/09, 13/42*

U.S. Cl. 339—176 MP 2 Claims



1. A printed circuit card edge electrical connector assembly adapted for structural mounting on a substrate having contact receiving apertures therein, said electrical connector assembly comprising:

an insulative block having a top and a bottom, said insulative block comprising:

interior walls defining a plurality of sleeves formed through said insulative block, said sleeves having a substantially unobstructed region which is open at the top and bottom portions thereof;

a first pair of parallel, laterally spaced alignment troughs in each said sleeve adjacent the substantially unobstructed region through said said insulator;

each said first pair of troughs defining a first alignment track, said first track being open at both ends and being substantially shorter than said sleeves, said first track having its lower termination portion near the bottom of the insulator and its lead in portion substantially beneath the top of the insulator; and a second pair of parallel, laterally spaced alignment troughs in each said sleeve adjacent the substantially unobstructed region through said insulator;

each said second pair of troughs defining a second alignment track, said second track being open at both ends and being substantially shorter than said sleeves;

contacts receivable in secure axial alignment into the sleeves of said insulative block, said contacts including:

a lower tail portion;

an intermediate mounting portion;

an upper contactor region comprising a loop portion which has a substantially elliptical-shaped torroidal cross section, the major axis of which extends longitudinally to the contact axis, said loop portion being compressable along its minor axis for reliable electrical engagement between the front portion of said loop and a printed circuit card edge to be connected and wherein the plane of the rear portion of said loop lies generally parallel to the plane of the intermediate and tail portions of the contact and is postitionable flush against the inside of the outer walls of said insulator sleeves;

a first laterally disposed projection comprising a first pair of transversely extending ears, said first ears being formed as an integral portion of said intermediate mounting portion, said first projection being in general axial alignment with said lower tail portion and extendable into and receivable in sliding engagement with said first alignment track;

a second laterally disposed projection comprising a second pair of transversely extending ears said second ears being formed as an integral part of the rear portion of the loop of said upper contactor region, said second projection being extendable into and receivable in sliding engagement with said second alignment track; and

whereby the axial alignment of said contact relative to said sleeve is securable by sliding engagement of said first and second projections with said first and second alignment tracks, respectively, said contacts being movable longitudinally within the substantially unobstructed region of said sleeve for structurally mounting the intermediate portions thereof in the contact receiving apertures in the substrate.

4,324,452

LIGHT BEAM SCANNING SYSTEM WITH MOTOR AND VIBRATION ISOLATING MEANS

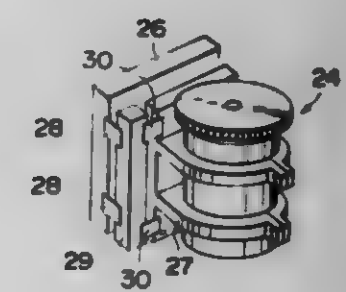
Masaru Noguchi; Shigenori Oosaka, and Tsuneo Komura, all of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Jul. 9, 1980, Ser. No. 167,227

Claims priority, application Japan, Jul. 13, 1979, 54-96570[U]

Int. Cl.³ G02B *27/17, 7/18;* H02K *5/24*

U.S. Cl. 350—6.7 8 Claims



1. In a light beam scanning system, comprising a light beam scanner including a high-speed motor and a rotating mirror driven by the high-speed motor, said light beam scanner being mounted on a mounting plate, and vibration isolating means for preventing vibration of the light beam scanner from being transmitted through said mounting plate, the improvement wherein said vibration isolating means comprises a bracket for holding said light beam scanner, an intermediate member disposed between said mounting plate and said bracket, and spring means disposed between said mounting plate and said intermediate member, and between said intermediate member and said bracket, for holding said mounting plate, said intermediate member and said bracket together while maintaining vibration isolation therebetween.

4,324,453

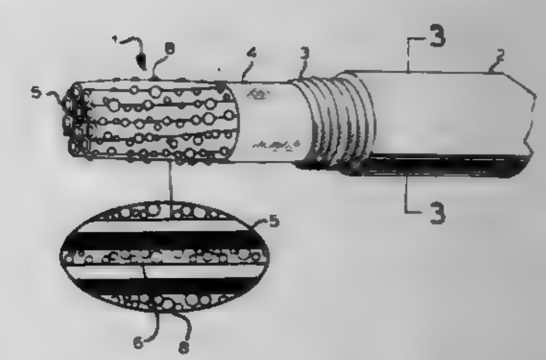
FILLING MATERIALS FOR ELECTRICAL AND LIGHT WAVEGUIDE COMMUNICATIONS CABLES

Naren I. Patel, Hickory, N.C., assignor to Siecor Corporation, Hickory, N.C.

Filed Feb. 19, 1981, Ser. No. 235,922

Int. Cl.³ B32B *17/00;* G02B *5/16;* H02G *15/20*

U.S. Cl. 350—96.23 4 Claims



1. A communications cable comprising a plurality of con-

ductors arranged to define a plurality of interstices therebetween, a jacket circumferentially surrounding said conductors, and a filling material filling at least a portion of such interstices, said filling material being comprised of styrene block copolymer rubber, mineral oil and inorganic hollow microspheres, wherein:

(a) the amount and type of said block copolymer rubber is either:
  (i) 1 to 30 percent by weight of styrene-ethylene-butylene-styrene block copolymer having a styrene to rubber ratio of approximately 0.4 and a specific gravity of approximately 0.9;
  (ii) 7 to 10 percent by weight of styrene-butadiene-styrene block copolymer having a styrene to rubber ratio of approximately 0.39 and a specific gravity of approximately 0.94; or
  (iii) 8 to 12 percent by weight of styrene-isoprene-styrene block copolymer having a styrene to rubber ratio of approximately 0.16 and a specific gravity of approximately 0.92;
(b) wherein said mineral oil is either:
  (i) 60 to 80 percent by weight of paraffinic mineral oil having a viscosity-gravity constant (ASTM D 2501-67) of approximately 0.78 to 0.85 with a minimum of 65 percent paraffinic carbon atoms and a maximum of 5 percent aromatic carbon atoms; or
  (ii) 60 to 80 percent by weight of naphthenic mineral oil having a viscosity-gravity constant (ASTM D 2501-67) of approximately 0.78 to 0.85 with a minimum of 35 percent naphthenic carbon atoms and a maximum of 5 percent aromatic carbon atoms; and
(c) said inorganic hollow microspheres are either:
  (i) 1 to 20 percent by weight of inorganic hollow microspheres made from glass, having a particle diameter between 10 and 200 microns and a particle density range of approximately 0.1 to 0.3 g/cm^3; or
  (ii) 1 to 35 percent by weight of inorganic hollow microspheres made from ceramic materials, having a particle diameter between 60 and 325 microns and a particle density of approximately 0.6 g/cm^3.

4,324,454

ELECTRIC MIRROR ANGLE ADJUSTING DEVICE

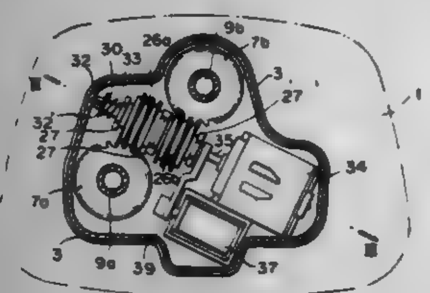
Toshiyuki Kumai, Fujieda, Japan, assignor to Murakami Kaimeido Co., Ltd., Shizuoka, Japan

Filed Sep. 20, 1979, Ser. No. 77,390

Claims priority, application Japan, Sep. 27, 1978, 53-131658[U]; May 26, 1979, 54-070195[U]

Int. Cl.^{3} G02B *7/18*

U.S. Cl. 350—289 **3 Claims**



1. An electric mirror angle adjusting device characterized by one end each of a pair of adjusting members for the adjustment of the mirror angle being attached to the back side of a mirror pivotally and unrotatably, said adjusting members being respectively provided around their roots with curved surfaces with projections, said curved surfaces being respectively fitted in round sliding surfaces with concaves provided in the central holes of worm wheels so that the adjusting members respectively rotate with the worm wheels and swing conically on their roots, adjusting nuts with catches holding the threaded portions of the adjusting members in between and being disposed coaxially with the adjusting members respectively, said worm wheels being in meshing contact with worm gears, a slide cylinder being axially slidably fitted in the worm gears, projections provided on the periphery of the slide cylinder being adapted to be selectively engaged with either of the worm gears, said slide cylinder being connected with the output shaft of a reversible motor and adapted to be axially moved by the plunger of a solenoid.

4,324,455

LIQUID CRYSTAL COMPOSITION

Seiichi Imahori, Kawasaki; Masaharu Kaneko, Yamato; Hitoshi Ono, Yokohama; Shuji Imazeki, Hitachi; Akio Mukoh, Hitachi, and Hirosada Morishita, Hitachi, all of Japan, assignors to Mitsubishi Chemical Industries Limited and Hitachi Ltd., both of Tokyo, Japan

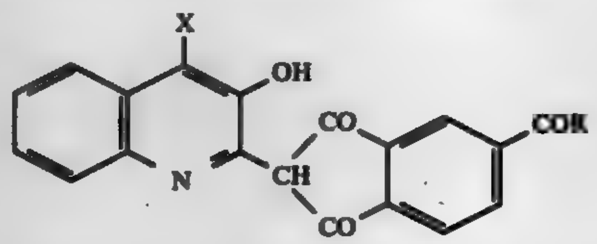
Filed Sep. 11, 1980, Ser. No. 186,043

Claims priority, application Japan, Sep. 11, 1979, 54/116313; May 7, 1980, 55/60150

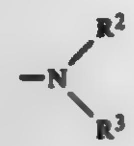
Int. Cl.^{3} C09K *3/34;* **G02F** *1/13*

U.S. Cl. 350—349 **11 Claims**

1. A liquid crystal composition containing at least one quinophthalone series dye represented by the formula



wherein: X represents hydrogen, a chlorine atom or a bromine atom; and R represents —OR^1 or —SR^1, wherein R^1 represents an alkyl group, a cycloalkyl group, an alkoxyalkyl group, a phenyl group, a p-hydroxyphenyl group, a p-cycloalkylphenyl group, a p-alkylphenyl group, a p-alkoxyphenyl group or an aralkyl group;



wherein R^2 and R^3 each represents hydrogen, an alkyl group, a hydroxyalkyl group, an alkoxyalkyl group, a cycloalkyl group, a phenyl group, a p-alkylphenyl group, a p-hydroxyphenyl group, a p-alkoxyphenyl group or an aralkyl group; or a saturated heterocyclic ring.

4,324,456

ELECTROPHORETIC PROJECTION DISPLAY SYSTEMS

Andrew L. Dalisa, Cupertino, Calif., assignor to U.S. Philips Corporation, New York, N.Y.

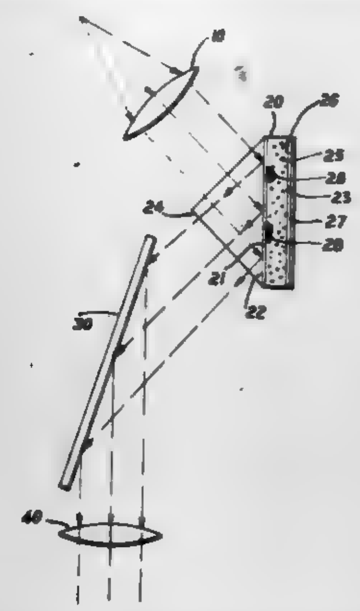
Filed Aug. 2, 1979, Ser. No. 63,214

Int. Cl.^{3} G02F *1/01*

U.S. Cl. 350—362 **17 Claims**

1. An electrophoretic projection display system comprising a light source, means for collimating light from said light source, total internal reflecting means receiving collimated light from said collimating means for totally reflecting said

light, electrophoretic means associated with said total internal reflecting means for controlling total reflection of said light,



means for projecting the reflected light, and viewing means for viewing the projected light.

4,324,457

MACRO PHOTOGRAPHIC CHANGE-OVER DEVICE FOR ZOOM LENS BARREL

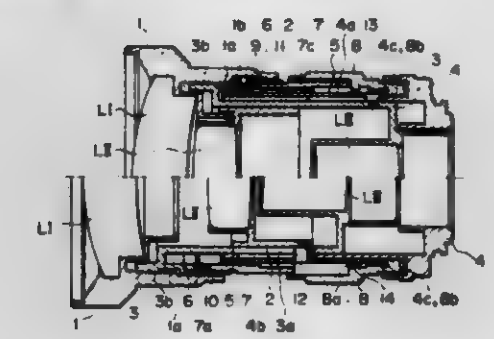
Yasumasa Tomori, Sakado, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 21, 1980, Ser. No. 132,714

Claims priority, application Japan, Apr. 4, 1979, 54/40723

Int. Cl.^{3} G02B *7/10, 15/18*

U.S. Cl. 350—430 **8 Claims**



1. A zoom lens comprising: a plurality of lens groups; a focusing barrel and a zooming barrel rotatable independently from one another; a cam sleeve for controlling movement of at least predetermined ones of said lens groups for zooming and close-up photographing; a guide ring operatively cooperating with said focusing barrel wherein information of only one rotational position indicative that change-over to a close-up photographing mode is possible is exchanged between said guide ring and said focusing barrel; and a change-over sleeve cooperating with said zooming barrel for zooming; said focusing barrel, said cam sleeve, said guide sleeve and said change-over sleeve cooperating such that after changing to said close-up photographing mode said change-over sleeve is prevented from rotating whereby the rotation of said guide ring and rotation of said focusing barrel are prevented while simultaneously cooperation between said zooming barrel and said change-over sleeve is released to thereby enable said zooming barrel to rotate for said close-up photographing mode.

4,324,458

TELE-OBJECTIVE LENS WITH A MOVABLE SUB-GROUP FOR FOCUSING

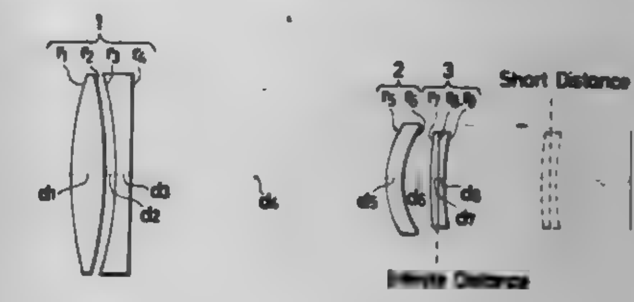
Yasuhisa Sato, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 870,228, Jan. 17, 1978, abandoned. This application Apr. 10, 1980, Ser. No. 136,086

Claims priority, application Japan, Jan. 20, 1977, 52-5182

Int. Cl.^{3} G02B *9/60, 9/34*

U.S. Cl. 350—454 **7 Claims**



1. A tele-objective lens, with a movable sub-group for focusing, comprising:

a positive lens group, consisting of one positive lens and one negative lens spaced from each other, and the curvature of the frontmost lens surface thereof being stronger than that of the rearmost lens surface, and

a negative lens group, being located axially in the image side of said positive lens group and consisting of a stationary meniscus lens and a movable sub-group for focusing;

said stationary meniscus lens facing with its concave surface toward said movable sub-group, and said movable sub-group including positive and negative lenses; and wherein, when the focal length of the whole system is F and the focal length of said movable sub-group is F_3, said tele-objective lens satisfies the condition of $0.7F < |F_3| < 1.3F$.

4,324,459

OPTICAL TEST PATTERN

Reinhold Gerharz, Bethesda, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 24, 1980, Ser. No. 114,866

Int. Cl.^{3} A61B *3/02;* **G01M** *11/00*

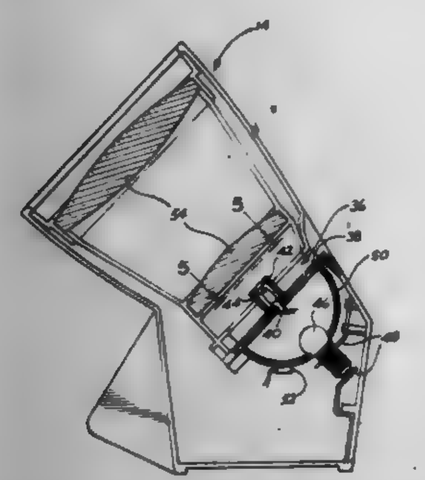
U.S. Cl. 351—32 **2 Claims**

1. An optical test pattern having wedge-shaped regions in a predetermined arrangement, wherein each of said regions is of uniform optical density but wherein different regions are of different optical densities.

4,324,460
METHOD AND APPARATUS FOR TESTING FLICKER FUSION FREQUENCY

Michael L. Daley, 9345 SW. Westhaven Dr., Portland, Oreg. 97225

Filed Apr. 18, 1980, Ser. No. 141,303
Int. Cl.³ A61B *3/02, 3/00*
U.S. Cl. 351—36 4 Claims

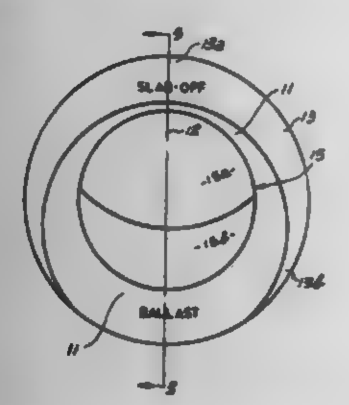


1. Apparatus for testing temporal vision comprising,
a viewing area,
means for producing a target light on a portion of said area,
means for producing background light on substantially all of said area,
target-defining means for defining a boundary which provides a viewably distinct separation between said target light and said background light,
first oscillator means operatively connected to said target-light producing means, said oscillator means being operative to switch said target light between a condition of full illumination and a condition of no illumination,
second oscillator means operatively connected to said background-light producing means, said second oscillator means being operative to switch said background light between a condition of full illumination and a condition of no illumination, and
a frequency control, operatively connected to said first oscillator means, operative to selectively vary the rate of switching of said target light.

4,324,461
CONTACT LENS FOR NON-ROTATIONAL ORIENTATION

Anthony L. Salvatori, Sarasota, Fla., assignor to Salvatori Ophthalmics, Inc., Sarasota, Fla.

Filed Nov. 26, 1979, Ser. No. 97,503
Int. Cl.³ G03B *21/46*
U.S. Cl. 351—160 H 5 Claims

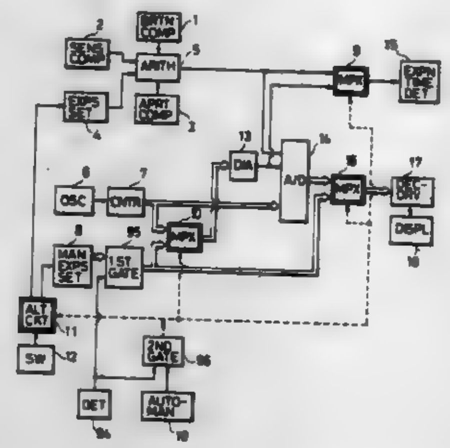


1. A contact lens for non-rotational orientation in the eye of a wearer, comprising a substantially circular lenticular carrier having a central concentric optical portion surrounded by a generally annular non-visual portion, and said non-visual portion having a thicker part at the lower part of said lenticular carrier when in the eye of a wearer and having a thinner part at the upper part of said lenticular carrier when in the eye of a wearer, there being no additional prism in the optical lens area.

4,324,462
EXPOSURE TIME CONTROL CIRCUIT FOR CAMERA

Eiichi Tano, Kamifukuoka, and Koji Suzuki, Asaka, both of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 31, 1980, Ser. No. 202,858
Claims priority, application Japan, Nov. 13, 1979, 54-146953
Int. Cl.³ G03B *7/08*
U.S. Cl. 354—23 D 9 Claims

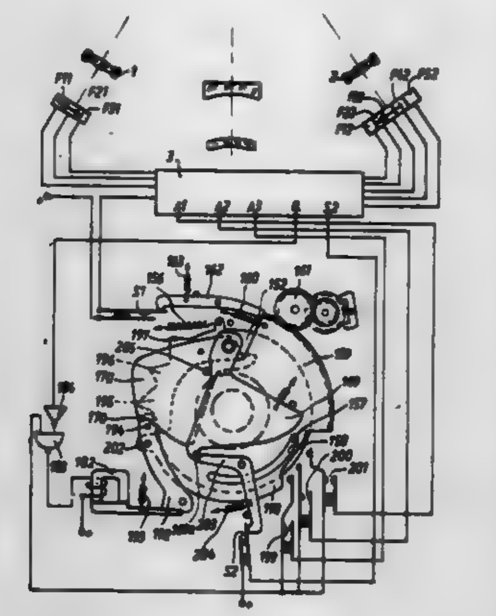


1. An exposure time control circuit for a camera comprising:
arithmetic operation circuit means coupled to receive signals representing object brightness, film sensitivity, aperture value and exposure factor logarithmic compression values for calculating an automatic exposure time;
manual exposure time setting means for producing digital data corresponding to a manually set exposure time;
detecting means for detecting when an electronic flash is ready for operation, said detecting means providing a first signal when said electronic flash is ready and a second signal when said electronic flash is not ready;
an automatic-manual change-over means for switching between an automatic exposure time control mode and a manual exposure time control mode;
first gate means operatively coupled for subjecting an output of said manual exposure time setting means and an output of said detecting means to a logic operation, said first gate means passing the output of said manual exposure setting means in response to said second signal and providing at its output a preselected flash exposure time in response to said first signal;
second gate means operatively coupled for subjecting an output of said automatic-manual change-over means and an output of said detecting means to a logic operation, said second gate means passing the output of said automatic-manual change-over means in response to said second signal, and providing a manual exposure time control mode in response to said first signal;
digital-to-analog converter means for converting a digital output of said first gate means to an analog signal; and
expansion time determination means for providing an exposure time determination in response to an output of one of said arithmetic means and said analog signal produced by said digital-to-analog converter means as determined by an output of said second gate means.

4,324,463
PHOTOGRAPHIC CAMERA

Peter Lermann, Narring; Istvan Cocron, Munich, and Günter Fauth, Unterhaching, all of Fed. Rep. of Germany, assignors to AGFA-Gevaert AG, Leverkusen, Fed. Rep. of Germany

Filed Jan. 12, 1979, Ser. No. 2,932
Claims priority, application Fed. Rep. of Germany, Jan. 13, 1978, 2801383
Int. Cl.³ G03B *3/10, 7/08, 13/20*
U.S. Cl. 354—25 8 Claims

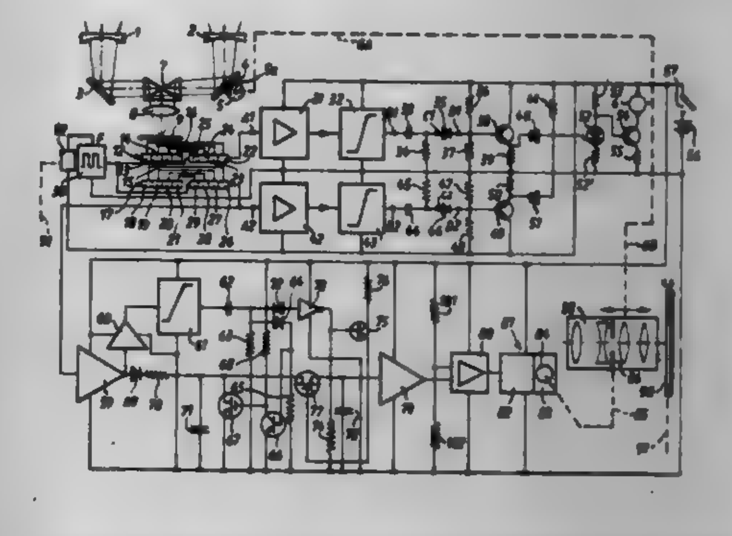


1. An automatic exposure control for an automatic focus photographic camera, comprising:
an adjustable objective successively adjustable to a number of different subject-distance settings;
an objective adjuster movable to a like number of successive positions, each position corresponding to a one of the subject-distance settings of the objective;
a control structure movable together with the objective adjuster through said like number of positions,
a subject-distance detector automatically generating information characteristic of subject-distance to a photographic subject;
a spring-powered drive mechanism urging the objective adjuster and the control structure to move together through said positions successively;
a single electromagnet arresting the objective adjuster in accordance with said information while leaving the control structure unarrested and free to continue to move through further positions successively;
a shutter;
a shutter trigger cooperating with the electromagnet and causing the shutter to open when the control structure reaches one of said further positions past that position at which the objective adjuster is arrested;
a shutter holder cooperating with the electromagnet and causing the shutter to remain open until an exposure is to be determinated;
an electronic exposure timer cooperating with the electromagnet to place the electromagnet in first and second states of energization, such cooperation taking place in a manner that when the electromagnet is placed in the first state of energization the objective adjuster is arrested to place the objective in an appropriate subject-distance setting, and when the electromagnet is placed in the second state of energization, the shutter holder causes the shutter to close and terminates an exposure; and
a start switch starting the exposure timer when at least one of the objective adjuster and control structure reaches a predetermined position.

4,324,464
PHOTOGRAPHIC APPARATUS WITH AUTOMATIC FOCUSING MEANS

Richard Wick, Munich, Fed. Rep. of Germany, assignor to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 874,495, Feb. 2, 1978, Pat. No. 4,240,726. This application Aug. 14, 1980, Ser. No. 177,984
Claims priority, application Fed. Rep. of Germany, Feb. 8, 1977, 2705104
Int. Cl.³ G03B *7/081, 13/20*
U.S. Cl. 354—25 10 Claims



1. In a photographic apparatus, the combination of monitoring means including means for generating first signals denoting the characteristics of at least a portion of scene light during individual monitoring cycles; adjustable exposure control means; automatic focusing means, said focusing means being adjustable as a function of the intensity of said first signals; first means for transmitting said first signals from said monitoring means to said focusing means; and second means for transmitting from said monitoring means to said exposure control means second signals denoting the peak value or the integral value of said first signals, including means for integrating said first signals during monitoring of said portion of scene light and means for blocking transmission of second signals from said integrating means back to said monitoring means during intervals between successive monitoring cycles.

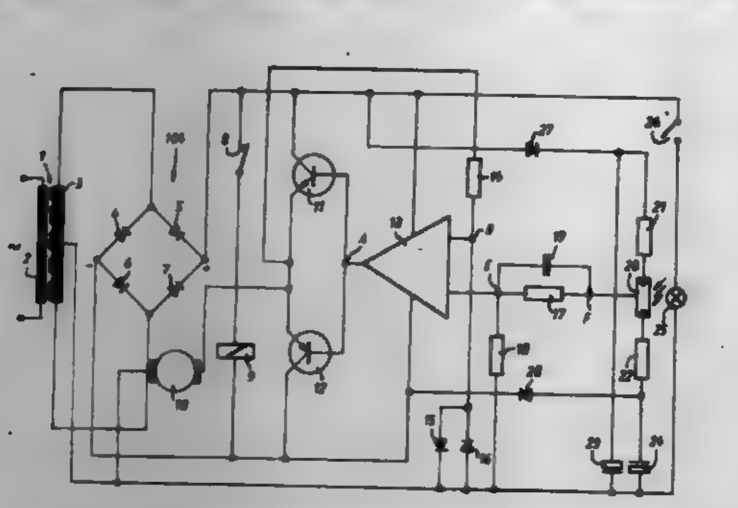
4,324,465
ARRANGEMENT FOR ADJUSTING COMPONENTS OF PHOTOGRAPHIC APPARATUS OR THE LIKE

Horst Rossbach, Eichenau, and Eduard Wagensonner, Aschheim, both of Fed. Rep. of Germany, assignors to AGFA-Gevaert AG, Leverkusen, Fed. Rep. of Germany

Filed Nov. 4, 1980, Ser. No. 203,955
Claims priority, application Fed. Rep. of Germany, Nov. 21, 1979, 2946939
Int. Cl.³ G03B *3/10, 7/10*
U.S. Cl. 354—25 25 Claims

1. An arrangement for moving a component of photographic apparatus or the like to a predetermined position, comprising electric motor means connected with and operable to move said component; monitoring means for monitoring the position of said component and generating primary signals having primary magnitudes indicative of the instantaneous position of said component; and circuit means establishing a path for transmission of said primary signals to said motor means to thereby regulate said motor means in response to said primary signals, said circuit means including modifying means for modifying said primary signals so as to produce modified signals

having modified magnitudes such that said monitoring means generates a primary signal indicative of said predetermined



position at a preselected time interval before completion of movement of said component to said predetermined position.

4,324,466

LIGHT SOURCE APPARATUS FOR ENDOSCOPE

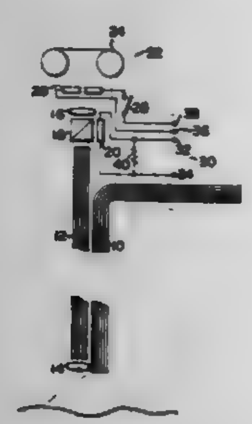
Syuichi Takayama, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Aug. 5, 1980, Ser. No. 175,504

Claims priority, application Japan, Sep. 3, 1979, 54/112635

Int. Cl.³ G03B *7/16, 29/00*

U.S. Cl. 354—33 8 Claims



1. A light source apparatus for a photographing endoscope arrangement for use with a camera, comprising:

light-emitting means;

a synchronizing terminal for receiving a synchronizing signal synchronized to a shutter release operation from a camera;

signal generating means coupled to said synchronizing terminal and being responsive to said synchronizing signal for producing a first signal for a first predetermined period of time and for subsequently producing a second signal for a second predetermined period of time;

gate means coupled to said synchronizing terminal and to said signal generating means and rendered conductive to pass said synchronizing signal to an output of the gate means responsive to said first signal and in the absence of said second signal, said gate means being rendered non-conductive so as not to pass said synchronizing signal during the presence of said second signal; and

energizing means coupled to the output of said gate means and to said light-emitting means for causing said light-emitting means to produce a light dose required for photographing by enabling said light-emitting means for a third predetermined period of time responsive to the output of said gate means.

4,324,467

PROGRAMED EXPOSURE CONTROL DEVICE

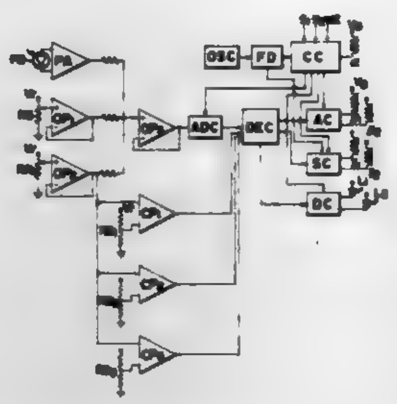
Kazuo Shiozawa, Tokyo, Japan, assignor to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Dec. 15, 1980, Ser. No. 216,664

Claims priority, application Japan, Dec. 18, 1979, 54-163540; Dec. 18, 1979, 54-163541; Dec. 18, 1979, 54-163542

Int. Cl.³ G03B *7/097*

U.S. Cl. 354—38 3 Claims



1. A programmed exposure control device for changeable lens type camera of the type in which the object brightness information is corrected in accordance with other exposure informations including the open F value and the corrected brightness information is ranked to permit the determination of the aperture value in accordance with the rank in a stepped manner and the determination of the shutter speed in accordance with the rank and the brightness information, characterized in that said device is further including at least one comparison circuit to compare whether the open F value is greater than the smallest aperture value corresponding to the rank or not and is so constructed as to provide, when the open F value of the lens to be used is greater than the smallest aperture value corresponding to the rank, a shutter speed signal representing a shutter time length is determined which is longer than the shutter time length corresponding to the rank which provides the open-side aperture value closest to the open F value of the lens and to the brightness information, by a time length corresponding to a predetermined light value.

4,324,468

ELECTRIC SOURCE CIRCUIT FOR CAMERA

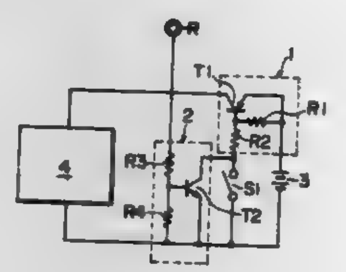
Eiichi Tano, Fukuoka, and Koji Suzuki, Asaka, both of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 15, 1980, Ser. No. 197,356

Claims priority, application Japan, Nov. 2, 1979, 54/152714[U]

Int. Cl.³ G03B *15/05*

U.S. Cl. 354—149 4 Claims



1. In an electronic source circuit for a camera having in the viewfinder thereof a display element which is activated upon the completion of charging of an electronic flash unit on the camera when a photometric switch is manually closed to connect a power source to the exposure control and display circuit of the camera, the improvement comprising:

first switching circuit means coupled between the power source and the exposure control and display circuit, said switching circuit means being rendered conductive upon closing of the photometric switch to connect the power source to the exposure control and display circuit; and

second switching circuit means, connected in parallel with the photometric switch and rendered conducting in response to the charge voltage upon completion of the charging of the electronic flash unit, for connecting the power source to the exposure control and display circuit even when the photometric switch is open.

4,324,469

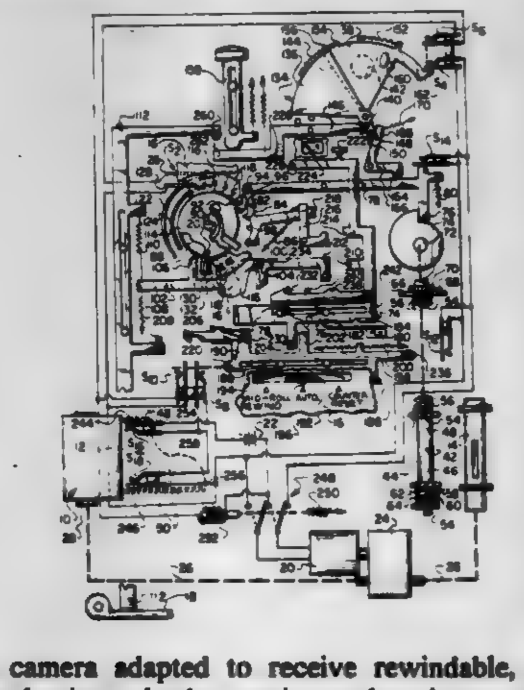
CAMERA ADAPTED TO FACILIATE REMOVAL AND REUSE OF PARTIALLY EXPOSED FILM CASSETTES

Donald M. Harvey, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 8, 1980, Ser. No. 166,939

Int. Cl.³ G03B *1/00, 1/60*

U.S. Cl. 354—214 4 Claims



1. In a camera adapted to receive rewindable, cassette loaded film having a leader portion and an image receiving portion, said camera including film advancing means for withdrawing film from the cassette, means for sensing the position of the film relative to the cassette and film rewinding means for rewinding film into the cassette, the improvement comprising: adjusting means for selectively adjusting said rewinding means to:

(a) a first condition in which said rewinding means is controlled by said sensing means to rewind the image receiving portion of said film into said cassette and then to automatically terminate its rewinding function to leave at least part of the leader portion of the film extending out of the cassette, and

(b) a second condition in which said rewinding means is controlled by said sensing means to rewind all of the film, including the leader portion, entirely into the cassette, and then to automatically terminate its rewinding function.

4,324,470

LIGHT INTERCEPTING DEVICE OF A CAMERA

Hiroshi Terunuma, Ichikawa, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

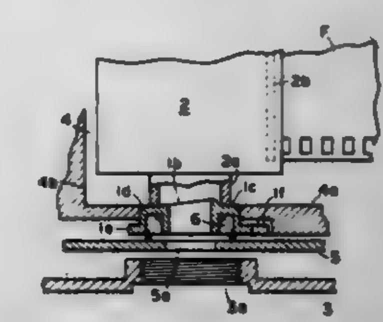
Filed Jan. 19, 1981, Ser. No. 226,511

Claims priority, application Japan, Jan. 11, 1980, 55-11046[U]

Int. Cl.³ G03B *19/04, 1/04, 17/02*

U.S. Cl. 354—214 4 Claims

1. In a camera which has a through-hole formed in a portion of a wall forming a chamber for containing therein a magazine of roll film wound around a spool shaft which faces the end surface of said spool shaft and to which is mountable an electric film rewind device having a drive shaft inserted into said chamber through said through-hole and coupled to said spool shaft and wherein a light-intercepting ring having a contact surface bearing against the end surface of said spool shaft and biased axially of said spool shaft toward the interior of said chamber is slidably fitted in said through-hole, the improve-



ment residing in that said light-intercepting ring (1, 10, 100) has on said contact surface an annular ridge (1*b*, 10*b*, 100*b*) projected axially of said spool shaft, said ridge being provided at a location which is adjacent to and along said end surface during the contact thereof with said end surface.

4,324,471

ELECTROMAGNETIC DRIVE DEVICE FOR CAMERA

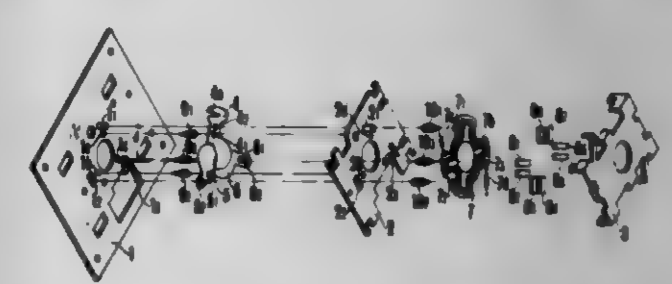
Yukio Ogawa, Kawasaki, and Michio Hirohata, Inagi, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 18, 1980, Ser. No. 141,280

Claims priority, application Japan, Apr. 28, 1979, 54-57163[U]

Int. Cl.³ G03B 9/22

U.S. Cl. 354—234 3 Claims



1. An electromagnetic drive device for a camera comprising:

(a) shutter blades made of synthetic resin, said shutter blades having axle bores formed therein:

(b) a shutter drive rotor having coil patterns arranged on opposite surfaces thereof, said rotor having axle bores formed therein;

(c) drive axles for drivingly connecting said rotor with said shutter blades, said drive axles being electrically conductive and fixed at respective ends thereof in said respective rotor axle bores to enable the coil pattern on one surface of said rotor to couple electrically with the coil pattern on the opposite surface thereof, the opposite ends of said drive axles being received in said respective shutter blade axle bores; and

(d) permanent magnets arranged to apply a magnetic field to said coil patterns, said magnetic field and said coil patterns producing an electromagnetic force that moves said rotor, thereby controlling the operation of the shutter blades.

4,324,472

SWITCH FOR CAMERA

Katsumi Terada, and Michiharu Saito, both of Hachioji, Japan, assignors to Olympus Optical Company Ltd., Tokyo, Japan

Filed May 18, 1979, Ser. No. 40,169

Claims priority, application Japan, Jun. 14, 1978, 53-81240

Int. Cl.³ G03B *17/38;* H01H *13/70*

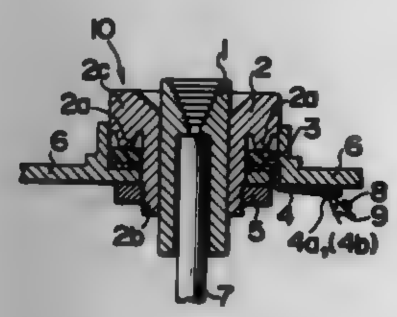
U.S. Cl. 354—266 8 Claims

1. A switch for a camera adapted to be disposed on the

surface of said camera including a shutter release button, said switch comprising:

a button seat which surrounds said shutter release button and which is movable independently of and along said shutter release button;

a switching element which is made of a resilient and conductive material, said switching element being disposed beneath said button seat;



a pair of conductive contacts;

said switching element being adapted to bridge across said pair of conductive contacts in response to an external pressure applied to said switching element through said button seat when it is depressed, whereby said switch is rendered conductive.

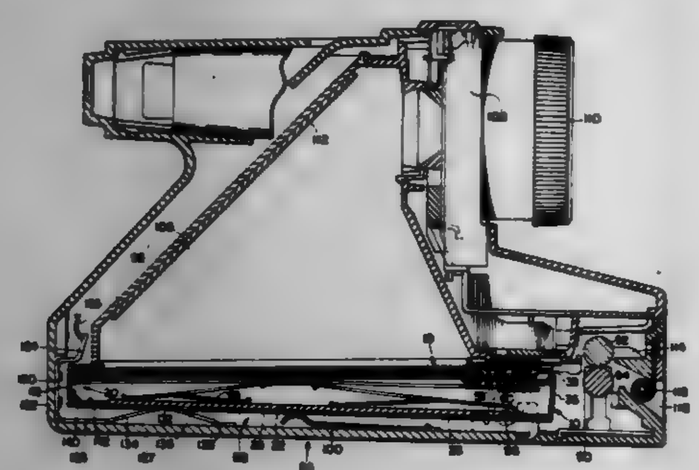
4,324,473
SX-70 FILM PACK WITH BATTERY HOLD DOWN STRUCTURE

Edward H. Coughlan, Norwood, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Oct. 3, 1980, Ser. No. 193,618

Int. Cl.³ G03B *17/26*

U.S. Cl. 354—276 7 Claims



1. A photographic film assemblage for use with battery energized photographic apparatus of the type including a chamber for slidably receiving and supporting said assemblage at a fully inserted operative position and a pair of resiliently displaceable battery contact members in the chamber, each contact member including a convexly-bowed, electrically-conductive leaf spring having an upwardly facing battery contact at the apex of the leaf spring, said assemblage comprising:

a film container having a plurality of walls including a forward wall having an exposure aperture therein, a rear wall oppositely spaced from said forward wall and engageable with said battery contact members as said film container is inserted into the chamber for compressing said leaf springs so that aligned facing sections of said rear wall may slide over said battery contacts, and a leading end wall having a film withdrawal slot therein adjacent said forward wall;

means for defining a pair of generally diamond-shaped battery terminal access openings in said rear wall configured to be registered with the battery contacts when said film container is at said operative position thereby allowing said contacts to extend into said container under the bias of said leaf spring to a depth of penetration limited by engagement of portions of said leaf springs on opposite sides of said corresponding contacts with portions of said rear wall defining edges of said access slots;

a plurality of film units arranged in stacked relation within said container behind said forward wall so that when the forwardmost film unit is urged against the interior surface of said forward wall it is in position for exposure through said exposure aperture and subsequent advancement through said withdrawal slot;

a substantially flat electrical battery located within said container and having a pair of battery terminals on its rear surface which is configured to overlie the interior surface of said rear container wall with said terminals in facing registration with said access openings;

a spring platen located between the rear of said stack of film units and the forward surface of said battery for urging said stack towards said forward wall so that said forwardmost film unit is pressed against said forward wall interior surface; and

means within said container engageable with a portion of said battery for blocking movement of at least that section of said battery having said terminals thereon away from said rear wall in the vicinity of said access openings in response to an upwardly directed force applied to said battery terminals by the spring biased contacts thereby minimizing the depth of penetration of said battery contacts into said container required for good electrical contact with said battery terminals and consequently widening the tolerances of the shape of said leaf springs which can achieve such minimum penetration before the leaf spring portions engage the edges of said access openings.

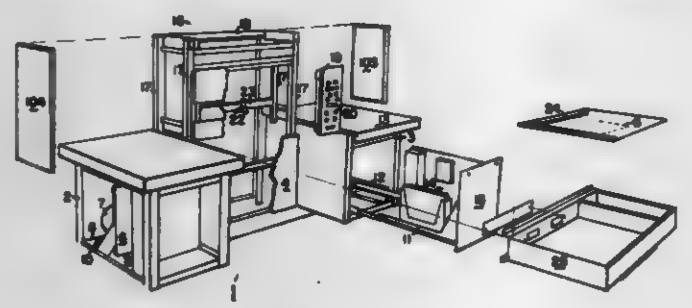
4,324,474
MICROFILMING SYSTEM

Edward J. Kraemer, Canoga Park; Robert D. Therien, Newbury Park; Michael W. Rudy, Thousand Oaks; Frederick E. Walsh, Reseda; Han J. Lee, Simi Valley; Ronald Bell, North Hollywood, and Thomas D. Horning, Sepulveda, all of Calif., assignors to Terminal Data Corporation, Woodland Hills, Calif.

Filed May 21, 1980, Ser. No. 152,071

Int. Cl.³ G03B *27/58, 27/64, 27/80*

U.S. Cl. 355—65 15 Claims



1. A microfilming system, comprising;

(a) a support (25),

(b) plural tables (24,70,73,91) selectively horizontally fitable upon said support to horizontally receive a document (5),

(c) a stationary camera (26), having film, a shutter, and actuating means,

(d) a non-image-reversing plural-reflective orthogonal optical system (29,27,27') for forming an image of said document upon said film,

(e) adjustable mask means (42,44) intermediately disposed in said optical system relatively adjacent to said document to fix the size of the image upon said film,

(f) means (46-49) to illuminate said document,

(g) an exposure control (22) disposed to receive illumination reflected from said document, and

(h) a microprocessor (50,51) for receiving information regarding the presence of (57) and the size of (57') a said document upon said table, and from the output of said exposure control, and for exercising control over said actuating means of said camera, said shutter, and the size of the opening of said mask, in accordance with the information received, on a priority interrupt basis in which exposure of said film has the highest priority.

4,324,475
LASER COMPONENT

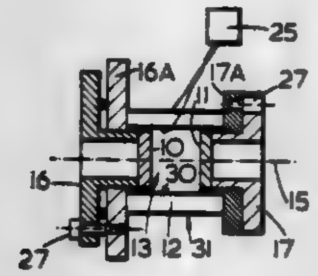
Anthony F. Purdie, Glasgow, Scotland, assignor to Barr & Stroud Limited, Glasgow, Scotland

Filed Apr. 29, 1980, Ser. No. 145,496

Claims priority, application United Kingdom, Jun. 26, 1979, 22261/79

Int. Cl.³ G01B *9/02*

U.S. Cl. 356—352 9 Claims



1. An etalon for use in a laser comprising a pair of plates respectively mounted at the ends of a tube with the distal faces of the plates parallel, the chamber formed within the tube between the plates being substantially completely filled with a fluid whose refractive index matches that of the plates, and means for causing extension and contraction of the axial spacing of the plates.

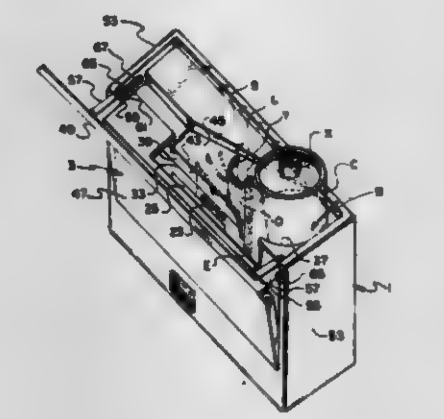
4,324,476
CAMERA DOOR APPARATUS

Neil G. Seely, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed May 6, 1981, Ser. No. 260,876

Int. Cl.³ G03B *17/02, 1/00*

U.S. Cl. 354—288 8 Claims



1. In a photographic camera of the type wherein a loading door is opened to allow insertion of a film container into said camera, and a back door is opened to move a film pressure member on said back door to provide space for locating film from the container in said camera, the improvement comprising:

means supporting said loading door and said back door for opening and closing movement on separate axis; and

moving means for opening said back door in response to opening movement of said loading door and for closing said back door in response to closing movement of said loading door.

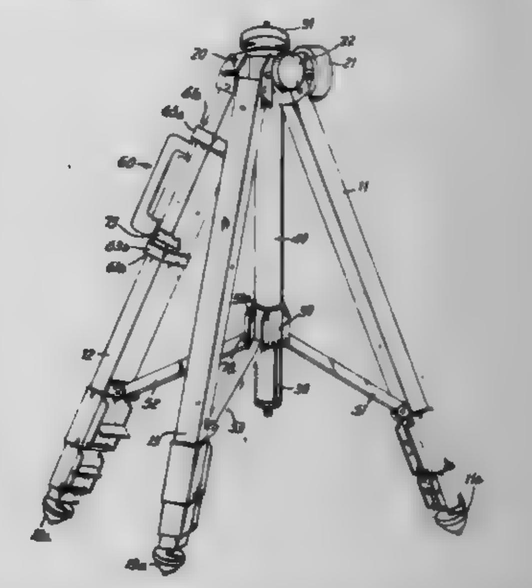
4,324,477
PHOTOGRAPHIC TRIPOD APPARATUS

Kiyoshi Miyazaki, Tokyo, Japan, assignor to Kabushiki Kaisha L.P.L, Japan

Filed Nov. 18, 1980, Ser. No. 207,965

Int. Cl.³ G03B *17/00;* F16M *11/38*

U.S. Cl. 354—293 16 Claims



1. Photographic tripod apparatus comprising: a base plate; a set of legs, each of which is pivotally mounted on one of its ends to said base plate; an elongate elevator support extending through said base plate; a sleeve-type bushing situated over said elongate elevator support and extending downwardly from an under surface of said base plate to at least partially enclose said elevator support; a slidable member situated over the outer peripheral surface of said bushing so as to be vertically slidable thereover; a linkage assembly including a set of rods, each of which is pivotally mounted at one of its ends to a respective one of said legs and at its other end to said slidable member, whereby said legs are operatively coupled to said slidable member so that movement of said slidable member to a particular position on said bushing causes said legs to pivot to a collapsed position; a handle member provided on one of said legs adapted to be held by a single hand whereby the apparatus can be carried thereby; and latching means extending between said handle and slidable members for holding said legs in the collapsed position, said latching means being adapted to be operated by the same hand holding said handle member.

4,324,478
PHOTOSENSITIVE SHEET HANDLING METHOD AND DEVICE

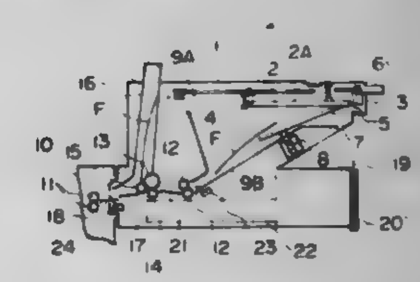
Osamu Fukushima; Masahide Akiseda, and Takashi Koizumi, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed May 19, 1980, Ser. No. 151,050

Claims priority, application Japan, May 24, 1979, 54-64297; Jun. 8, 1979, 54-72045

Int. Cl.³ G03D *3/08;* G01N *23/04*

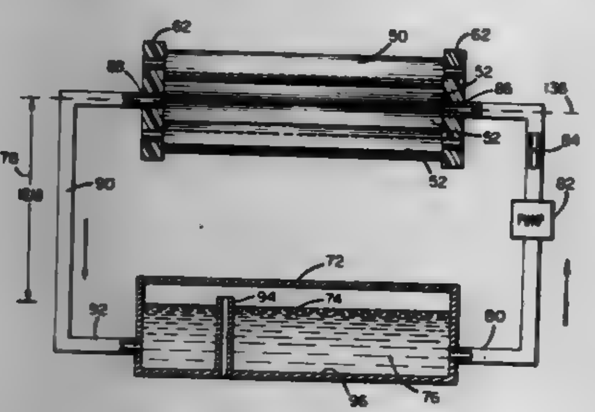
U.S. Cl. 354—312 10 Claims



1. A method for processing photosensitive sheets to an automatic developing machine comprising the steps of: opening a

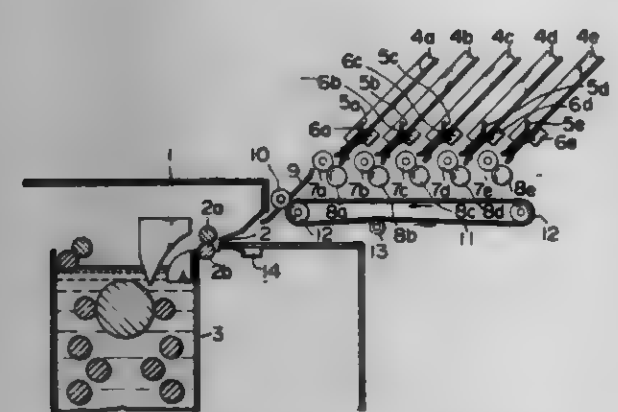
cassette holding a photosensitive sheet; allowing said photosensitive sheet to drop by force of gravity in response to said step of opening said cassette; delivering said photosensitive sheet thus dropped to a retaining position shielded from light at a speed higher than a conveyance speed in said automatic developing machine which subsequently processes said photosensitive sheet; shifting a rear edge of said photosensitive sheet to a self-weight slide down position; and delivering said photosensitive sheet to said automatic developing machine from said retaining position.

4,324,479
FILM PROCESSING METHOD AND APPARATUS
Emanuel M. Sachs, 42 Old Middlesex Rd., Belmont, Mass. 02172
Filed Nov. 1, 1979, Ser. No. 90,394
Int. Cl.³ G03D *3/08, 3/06*
U.S. Cl. 354—319 — 14 Claims



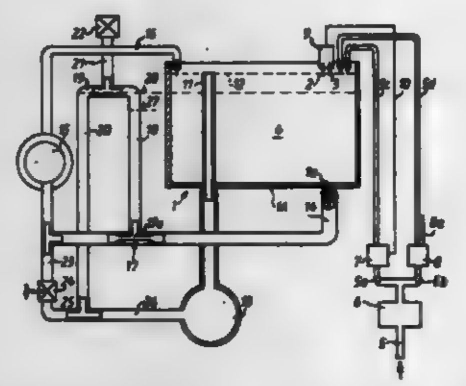
1. In an automatic film processor of the type in which the processing tanks are formed by a plurality of contacting rollers, a method of leak prevention comprising:
providing a processing tank with a closed loop liquid delivery system; and,
controlling the pressure within the loop such that the internal tank pressure is less than the atmospheric pressure at the exterior of the tank.

4,324,480
AUTOMATIC FILM FEEDER FOR AN AUTOMATIC DEVELOPER
Norimasa Nomura, Mori, and Atsushi Yoshida, Kyoto, both of Japan, assignors to Dainippon Screen Seizo Kabushiki Kaisha, Kyoto, Japan
Filed Feb. 17, 1981, Ser. No. 235,423
Claims priority, application Japan, Feb. 27, 1980, 55/23676
Int. Cl.³ G03D *3/12*
U.S. Cl. 354—320 — 11 Claims



1. An automatic film feeder for an automatic developer wherein a film exposed is processed through a developing tank, comprising:
(a) an endless belt for transferring a film to a developer;
(b) a plurality of trays which are arranged above the belt and each of which contains one film;
(c) film ejectors of the same number as the trays, each ejecting the film from the corresponding tray onto the belt; and
(d) a control means which controls the ejectors so that the films may be ejected from the trays in the desired order and may be fed to the developer one by one without overlapping one on another.

4,324,481
DEVELOPING MACHINE FOR RADIATION-SENSITIVE MATERIAL
Walter Becherer, Munich, Fed. Rep. of Germany, assignor to AGFA-Gevaert AG, Leverkusen, Fed. Rep. of Germany
Filed Jan. 29, 1981, Ser. No. 229,770
Claims priority, application Fed. Rep. of Germany, Feb. 14, 1980, 3005471
Int. Cl.³ G03D *3/06*
U.S. Cl. 354—324 — 15 Claims

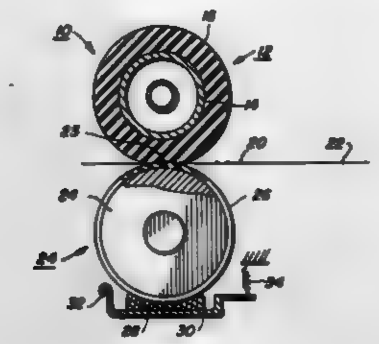


1. In a developing machine for radiation-sensitive material, the combination comprising a vessel having an upper portion and a lowermost portion and arranged to normally confine a body of liquid having an upper surface located at or close to a predetermined level; means for circulating the liquid along a first path extending from the lowermost portion, outside of and to the upper portion of said vessel, said circulating means including pipe means and a first pump installed in said pipe means; liquid removing means; and means for evacuating the contents of said vessel in response to stoppage of said first pump along a second path extending between an intermediate portion of said first path and said removing means, said evacuating means including a jet pump installed in said intermediate portion of said first path and having a suction side, and a siphon having an intake end connected with said suction side and a discharge end connected with said removing means, said siphon having an uppermost section disposed at a level above said jet pump and below said predetermined level.

4,324,482
PRESSURE ROLL CLEANING DEVICE
Thomas F. Szlucha, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Nov. 28, 1980, Ser. No. 210,966
Int. Cl.³ G03G *15/00; F27B 9/28*
U.S. Cl. 355—3 FU — 4 Claims

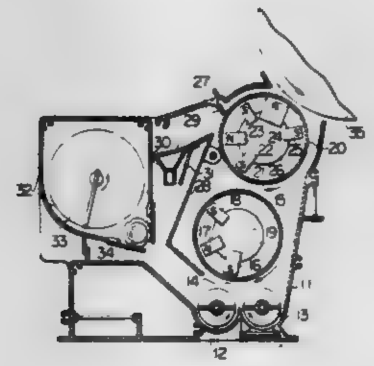
1. Roll fuser apparatus comprising:
a heated fuser roll;
a backup roll cooperating with said fuser roll to form a nip through which copy substrates carrying toner images pass with the toner images contacting said heated fuser roll;
a cleaning pad;
means for supporting said cleaning pad in rubbing contact with

said backup roll for removing toner therefrom, said pad being constructed such that about 75% of its total volume is



made up of intercommunicated voids whereby the removed toner can freely pass into and through the pad.

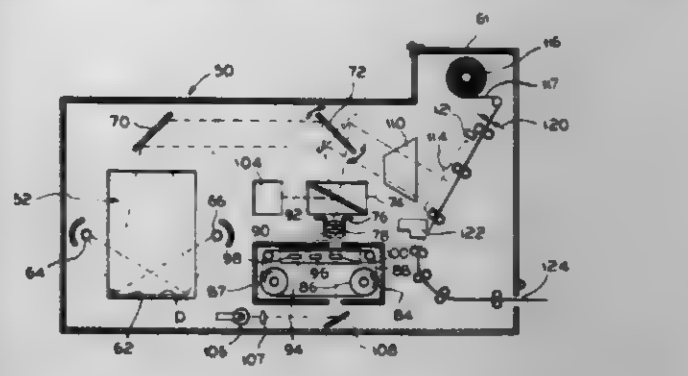
4,324,483
MAGNETIC BRUSH DEVELOPMENT APPARATUS
Kazuaki Tagawa, Tokyo; Minoru Suzuki, Yokohama, and Makoto Hashimoto, Kawasaki, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan
Filed Aug. 20, 1980, Ser. No. 179,646
Claims priority, application Japan, Aug. 21, 1979, 54-106169; Sep. 4, 1979, 54-113262; Sep. 4, 1979, 54-113263
Int. Cl.³ G03G *15/00, 15/09*
U.S. Cl. 355—3 DD — [illegible] Claims



1. In a magnetic brush development apparatus comprising a rotatable, non-magnetic sleeve for development having stationary, inner magnets therein, and at least one rotatable, non-magnetic sleeve having similar stationary, inner magnets therein, for supplying developer to said first rotatable, non-magnetic development sleeve, the improvement wherein said magnets in the sleeves located in a developer transition region where the developer is transferred from the developer supplier sleeve to the development sleeve are of the same polarity.

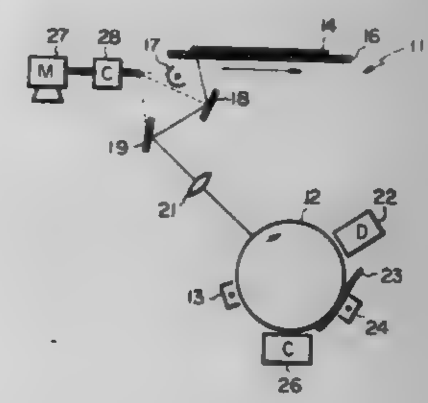
4,324,484
MICROFILM FILING SYSTEM
Delmar R. Johnson, Barrington, Ill., assignor to Bell & Howell Company, Chicago, Ill.
Filed Oct. 1, 1980, Ser. No. 192,787
Int. Cl.³ G03B *13/26, 15/00*
U.S. Cl. 355—5 — 28 Claims

1. A microfilm document recording and retrieval system comprising means for microcopying on a web images of individual documents; means for simultaneously recording on said web an operator-assigned, document-identifying, machine-readable code adjacent each microcopied document; means for immediately processing the microcopied image so that it is available for retrieval; means for identifying to said system a preselected one of said machine readable codes; means for searching over said web for said preselected code; and means responsive to finding said preselected code for selectively



projecting the image identified thereby onto either a screen or a printing mechanism.

4,324,485
ELECTROSTATIC COPYING APPARATUS
Kouichi Asakura, and Toyoo Okamoto, both of Tokyo, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan
Filed Oct. 24, 1979, Ser. No. 87,902
Claims priority, application Japan, Nov. 20, 1978, 53-142253
Int. Cl.³ G03G *15/28; G03B 27/72*
U.S. Cl. 355—8 — 7 Claims

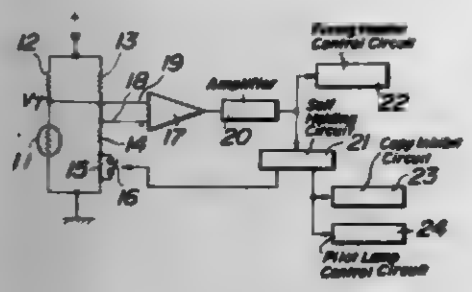


1. An electrostatic copying apparatus including a document support platen, document scan means and scan drive means for producing reciprocating relative movement between the platen and the scan means including a scan stroke and a return stroke, characterized by comprising:
control means for energizing the scan drive means to perform the scan stroke, then de-energizing the scan drive means for a predetermined length of time and then energizing the scan drive means to perform the return stroke;
the scan means comprising a document illumination light source, the control means energizing the light source when energizing the scan drive means to perform the scan stroke and de-energizing the light source after substantially the predetermined length of time has elapsed after termination of the scan stroke.

4,324,486
RECORDING DEVICE INCLUDING A HEATING MEANS
Masaji Nishikawa, Hachioji, Japan, assignor to Olympus Optical Company Limited, Tokyo, Japan
Filed Jun. 4, 1979, Ser. No. 44,968
Claims priority, application Japan, Jun. 8, 1978, 53/68253
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—14 FU — 10 Claims

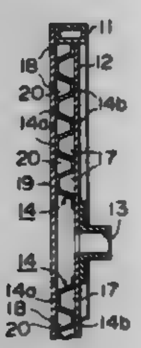
1. In a recording device including a heating means being operated and controlled to a predetermined operating temperature, means for inhibiting starting of recording by the recording device until the heating means reaches a predetermined operating temperature after a power supply source of the

recording device has been switched on, and an operating means for performing the start of recording, said operating means being effective after the heating means has reached the predetermined operating temperature, wherein:



the improvement comprises: means for releasing said inhibiting means so as to allow the start of recording upon actuation of said operating means within a certain time period before the heating means has reached the predetermined operating temperature.

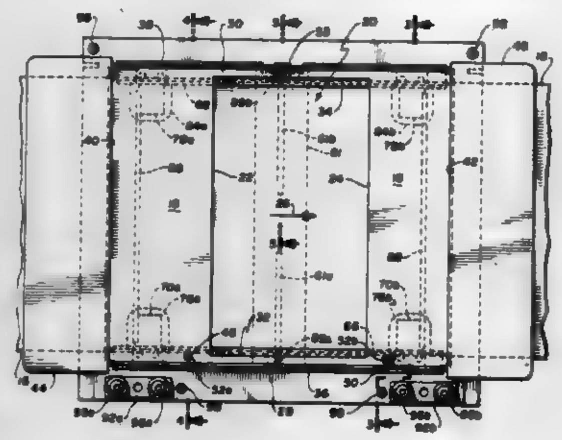
4,324,487
FILM SUCTION PLATE FOR A PROCESS CAMERA
Takamichi Nishihama, Hikone, Japan, assignor to Dainippon Screen Seizo Kabushiki Kaisha, Japan
Filed Jan. 29, 1981, Ser. No. 229,464
Claims priority, application Japan, Feb. 21, 1980, 55-19714
Int. Cl.³ G03B *17/26, 27/60*
U.S. Cl. 355—73 5 Claims



1. A film suction plate for a process camera, comprising:
a base frame;
a base plate having a suction pipe in its center, which is mounted to the rear of the base frame;
a perforated plate having a plurality of small holes, which is mounted to the front of the base frame so that the base frame, the base plate and the perforated plate may compose a box-shape; and
corrugated plates which are mounted between the base plate and the perforated plate so that tops and bottoms of the corrugated plates may be arranged concentrically and so that ventilating paths whose widths are widened gradually from the edges of the base plate toward the suction pipe, may be formed in spaces between the corrugated plates.

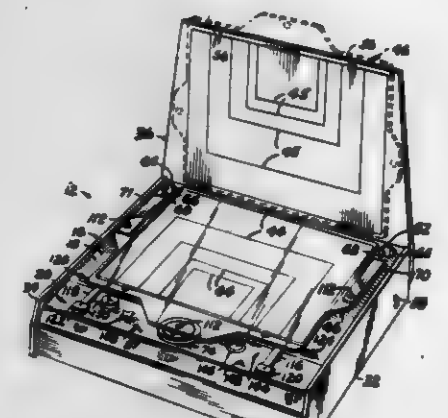
4,324,488
FLOATING EDGE-FOLLOWER BORDERED PAPER MASK
Richard D. Anderson, Maple Grove; Ronald B. Harvey; Randall C. Knudsen, both of Minneapolis, and John A. Wedel, Crystal, all of Minn., assignors to Pako Corporation, Minneapolis, Minn.
Filed May 19, 1980, Ser. No. 151,131
Int. Cl.³ G03B *27/58*
U.S. Cl. 355—74 28 Claims

1. For use in a photographic printer in which a photographic print paper web is sequentially advanced across a paper deck and photographic images are sequentially exposed thereon, apparatus for masking the photographic print web during exposure of the photographic images paper to create unexposed borders along first and second longitudinal edges of the print paper web, the apparatus comprising:
a base adapted to be mounted on the paper deck of the photographic printer;
a first guide movably mounted to the base and having a first guiding edge for engaging a first longitudinal edge of the photographic print paper web and having an overhanging masking lip with a first longitudinal masking edge parallel to the first guiding edge;
a second guide having a second guiding edge for engaging a



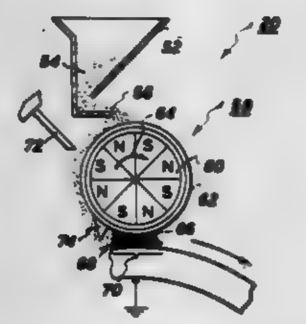
second longitudinal edge of the photographic print paper web and having an overhanging masking lip with a second longitudinal masking edge parallel to the second guiding edge; and
means for yieldably urging the first and second guides toward one another to engage the first and second longitudinal edges, respectively, of the photographic print paper web and to maintain the first and second longitudinal masking edges in alignment with the first and second longitudinal edges of the print paper web, respectively, despite variation in transverse positions of the first and second longitudinal edges.

4,324,489
APPARATUS FOR MODIFYING IMAGES ON PHOTOGRAPHIC FILM
Thomas L. Byers, P.O. Box 26624, Oklahoma City, Okla. 73126
Continuation-in-part of Ser. No. 5,617, Jan. 22, 1979, Pat. No. 4,268,166. This application Sep. 2, 1980, Ser. No. 183,119
Int. Cl.³ G03B *27/10*
U.S. Cl. 355—84 7 Claims



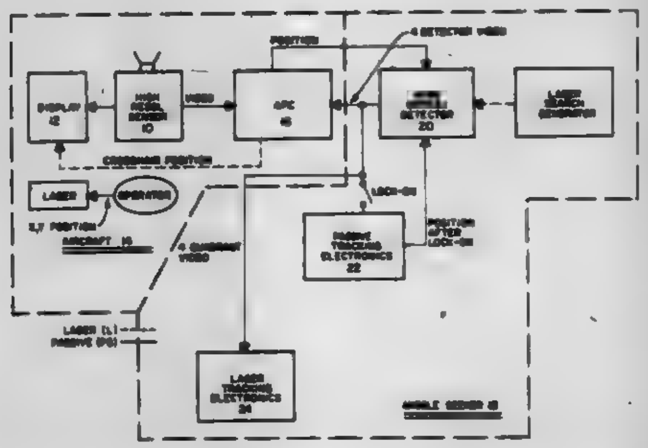
1. In a graphics modifier having a planar base defining forward and rearward ends and supported by opposing side panels, a stationary face plate overlying the base and a planar transparent film carriage superposed on the face plate, the improvement comprising:
motion guide means mounted on said base and connected with a marginal edge portion of said film carriage for moving said film carriage in an orbital path of predetermined magnitude;
motor means drivably connected with said motion guide means; and,
arm, shaft and flexible rod means connecting opposing marginal edge portions of said film carriage remote from said motion guide means with said base for maintaining marginal edges of said film carriage parallel with the respective marginal edges of said base during motion guide means induced orbital movement.

4,324,490
DEVELOPMENT SYSTEM
Paul W. Burnham, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Apr. 28, 1980, Ser. No. 144,510
Int. Cl.³ G03G *15/00, 15/09*
U.S. Cl. 355—3 DD 30 Claims



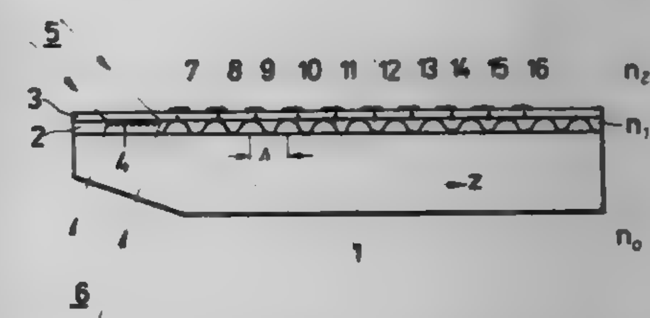
1. An apparatus for developing a latent image with developer material, including:
means for transporting the developer material;
a plurality of fibers extending outwardly from said transporting means with the free end regions of at least a portion of said fibers being closely adjacent to the latent image; and
means, secured to said transporting means, for guiding the developer material being transported to the free end regions of said fibers to develop the latent image therewith.

4,324,491
DUAL MODE GUIDANCE SYSTEM
Werner G. Hueber, China Lake, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Feb. 12, 1973, Ser. No. 334,173
Int. Cl.³ G01B *11/26;* F41G *7/00;* G01J *1/20*
U.S. Cl. 356—152 5 Claims



1. A dual mode guidance system having a first, passive mode and a second, active mode in which a missile seeker is aligned with a sensor in response to the output of the sensor in the first mode, and the seeker acquires a laser illuminated object and the outputs of the seeker and the sensor are compared to determine whether or not the object illuminated is the object of interest in the second mode, wherein the modes are mutually exclusive and selectable by the operator, comprising:
sensing means for electronically scanning the field of view of said system and providing a video signal output thereof;
a source of laser light for selectively illuminating an object of interest within said field;
seeking means for electronically scanning at least a portion of said field of view independently of said sensing means and providing a video signal output thereof;
first means coupled to said seeking means for aligning the scan of said seeking means with the illumination reflected by said laser illuminated object in the second of said dual modes;
correlating means coupled to the video signal outputs of said seeking means and said sensing means for comparing said signals and providing an error signal to said seeking means in said first mode for adjusting the scan of said seeking means such that its scan is aligned with a pre-selected portion of the scan of said sensing means, and providing an output in said second mode indicative of the scene scanned by said seeking means; and
displaying means coupled to said sensing means and said correlating means for visually displaying the field of view scanned by said sensing means in said first mode, and visually displaying a graphic representation of the portion scanned by said seeking means in covering relationship to said field of view display in said second mode.

4,324,492
METHOD OF AND ARRANGEMENT FOR PERFORMING OPTICAL INTERFERENCE MEASUREMENTS
Jürgen Drenckhan, Greifswald, and Roland Trinks, Querfurt, both of German Democratic Rep.
Filed May 21, 1979, Ser. No. 40,935
Claims priority, application German Democratic Rep., Jun. 1, 1978, 205706
Int. Cl.³ G01B *9/02;* G02B *5/14*
U.S. Cl. 356—345 2 Claims



1. Method of optical interference meansurement by means of an integrated optical arrangement, comprising the steps of coupling two modes to a waveguide, effecting interference between said two modes within said waveguide, and measuring the relative phase positions of both modes varied through a measuring operation.

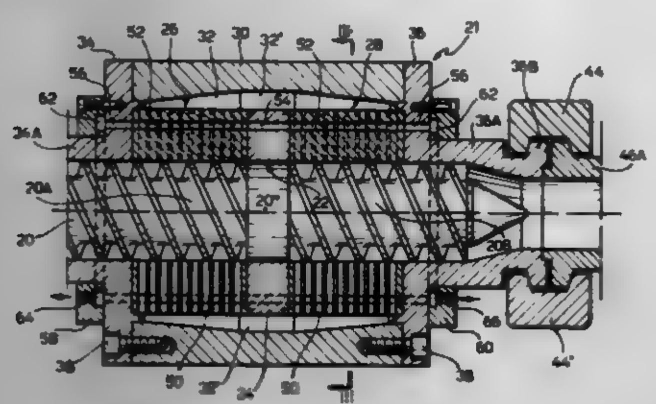
4,324,493
MIXER-COOLER DEVICE FOR THE EXTRUSION OF THERMOPLASTIC FOAMS
Roberto Colombo, Turin, Italy, assignor to Lavorazione Materie Plastiche L.M.P-S.p.A., Turin, Italy
Filed Jul. 8, 1980, Ser. No. 166,874
Claims priority, application Italy, Aug. 6, 1979, 68617 A/79
Int. Cl.³ B29B *1/06, 3/00*
U.S. Cl. 366—79 9 Claims

1. A mixer device for the extrusion of thermoplastic material comprising:
a barrier disc having a central axially extending circular aperture,

a pair of cylindrical blocks having axially extending circular apertures disposed in axial alignment against opposite faces of said disc, each of said blocks having a plurality of radial holes extending therethrough,

a tubular casing surrounding said disc and said blocks in concentric spaced relation to define a collector channel,

a pair of head plates having central axially extending circular apertures connected to opposite ends of said casing and clamping said blocks against said disc,



an advancement screw rotatably mounted in said circular apertures and having an intermediate barrier section sealingly rotatable in said barrier disc whereby material conveyed by said advancement screw from one end of said device to the other is forced outwardly through the radial holes in one block, axially over the outer periphery of said disc and inwardly through the radial holes in the other block, and

passage means extending through said headplates, blocks and disc for the circulation of a coolant fluid.

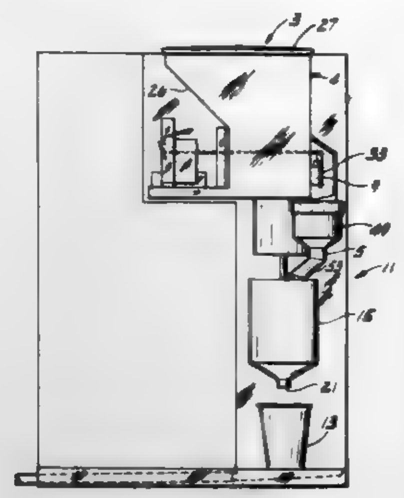
4,324,494
DRINK DISPENSING

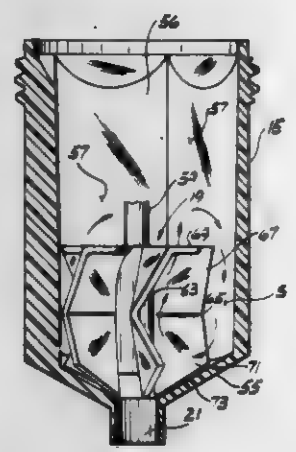
Harry H. Pryor, Crestwood, and James J. Schinker, Hazelwood, both of Mo., assignors to UMC Industries, Inc., Stamford, Conn.

Filed Nov. 19, 1979, Ser. No. 95,209
Int. Cl.³ B01F *15/02*

U.S. Cl. 366—156 16 Claims

1. Drink dispensing apparatus comprising a container for holding a supply of a particulate drink ingredient adapted to be mixed with water to constitute a drink, said container having an outlet, means for dispensing a charge of the particulate drink ingredient from the container through the outlet for the mixing of a drink, a mixing and delivery system for receiving the charge of the drink ingredient disposed from the container and a charge of water, mixing the two and delivering the resultant drink into a cup, said system comprising a blender, and means for supplying said charge of water for mixing with said charge of the drink ingredient in the blender, said blender having means for mixing said charges while holding them in the blender and having an outlet for flow of the resultant mixture out of the blender and into a cup after mixing has been completed, the outlet of the blender being a constantly open outlet, said mixing means comprising an impeller rotatable in the blender for mixing the drink ingredient and the water adapted when in operation to impel the water away from the blender outlet thereby to hold the drink ingredient and the water in the blender for the mixing thereof without closing the blender outlet, the blender defining a mixing chamber, the impeller having blades for impelling the water away from the outlet and around the interior periphery of the chamber, the mixing chamber being of non-circular shape in transverse section with certain portions of its interior periphery disposed closely adjacent to the surface of revolution defined by the rotating impeller, and other portions of its interior periphery spaced radially outwardly of the surface of revolution so as to provide spaces between the interior periphery of the mixing chamber and the surface of revolution enabling water to flow back toward the blender outlet after it has been impelled away from the blender outlet, the impeller and said spaces thereby





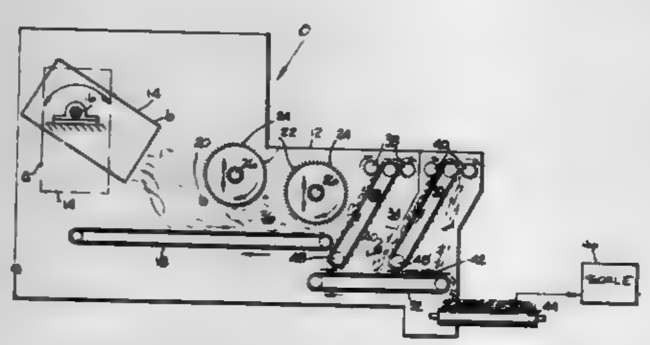
enabling the water to be circulated within the mixing chamber during the mixing of the drink.

4,324,495
FIBER FEEDER PULLEY CLEANING SYSTEM

Emilio M. Martinez, Windsor, Colo., assignor to Manville Service Corporation, Denver, Colo.

Filed Jul. 24, 1980, Ser. No. 171,779
Int. Cl.³ B01F *7/02*

U.S. Cl. 366—271 3 Claims



1. In a feeder for fibrous material, comprising means for supplying fibrous material to said feeder, a forward feed conveyor, means for distributing said material onto said forward conveyor, means for agitating said material as it is being transported by said forward conveyor, a first lift apron for receiving fibrous material from said forward conveyor, said first lift apron being provided with a plurality of pulleys, a conveyor belt being trained for movement around said pulleys, said belt comprising a plurality of slats, a plurality of tines fixedly supported upon each of said slats and means for conveying said fibrous material from said feeder, the improvement comprising:

at least one of said pulleys comprising an open-ended cylindrical drum,

a plurality of waste fibrous material intake openings extending through the exterior surface of said drum, said openings being staggered along the circumference of said drum and being sized to ensure noninterference with the motion of said slats and proper flow of waste material into said drum; and means for conveying said waste material from said drum.

4,324,496
TYPE DISC PRINTER

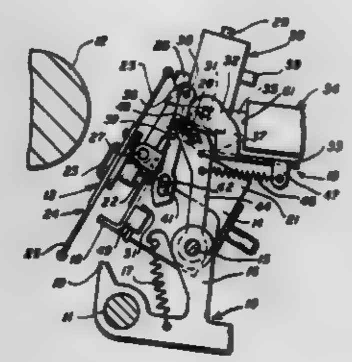
Manfred Link, Nuremberg, Fed. Rep. of Germany, assignor to Triumph-Adler A.G., Nuremberg, Fed. Rep. of Germany

Filed Dec. 12, 1980, Ser. No. 215,648

Claims priority, application Fed. Rep. of Germany, Apr. 15, 1980, 3014296

Int. Cl.³ B41J *1/46*

U.S. Cl. 400—144.2 7 Claims



1. Printing mechanism including a support frame,

a type disc drive assembly pivotally mounted on said support frame for movement from a printing position to a type disc change position,

a hammer magnet assembly pivotally mounted on said support frame for movement from a type disc impacting position to an inoperative position to a type disc change position, and

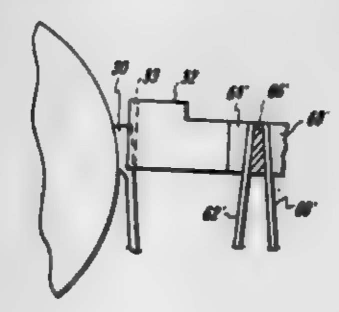
means to enable said hammer magnet assembly to be moved from said impacting position to said inoperative position without movement of said type disc drive assembly, said means further serving to pivot said type disc drive assembly to said type disc change position in response to movement of said hammer magnet assembly from said inoperative position to said type disc change position, said means including a lost motion connection between said hammer magnet assembly and said type disc drive assembly.

4,324,497
PRINT HAMMER ASSEMBLY WITH AMPLIFIED MULTI-LOCATION IMPACTS

Andrew Gabor, Alamo, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 5, 1979, Ser. No. 91,657
Int. Cl.³ B41J *9/02*

U.S. Cl. 400—144.2 6 Claims



1. A print hammer assembly for use with a platen upon which a record receiving member may be supported, a movable print element bearing a plurality of print characters, and means for moving said print element from character to character and for stopping said print element for impaction, said hammer assembly comprising:

a hammer element;

hammer actuator means for moving said hammer element under force toward said platen and impacting said print element when said actuator means is energized;;

a support structure movable by said hammer actuator means acting adjacent a first location thereon and connected to said hammer element at a second location thereon; and

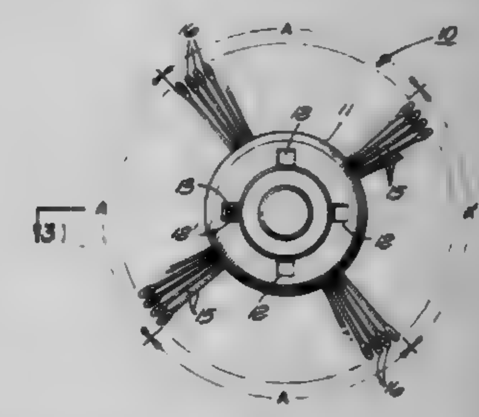
spring means coupled to said hammer element for causing said hammer element to impact said print element more than one time for each energization of said hammer actuator means and for altering the location of maximum impact force of said hammer element following initial impact of said hammer element, said spring means comprising a plurality of adjacent, non-parallel spring members each coupling said hammer element to said support structure.

4,324,498
MULTIPLE INDEX PRINTWHEEL

Maxwell Steinhardt, Orinda, Calif., assignor to Qume Corporation, San Jose, Calif.

Filed Feb. 26, 1980, Ser. No. 124,766
Int. Cl.³ B41J *00/00*

U.S. Cl. 400—144.2 2 Claims



1. A printwheel for a printer comprising:

a hub;

multiple sets of spokes attached to said hub and extending radially therefrom, a character type or font being formed at the ends of said spokes; and

multiple index means in said hub for receiving an index pin associated with said printer, a separate index means being associated with each of said sets of spokes, each of said separate index means being positioned substantially at the same relative location in said hub with respect to its associated set of spokes, each said index means being provided with a layer of material positioned such that said index pin will puncture the layer provided on one of said index means when said printwheel is installed on said printer.

4,324,499
CONTROL UNIT FOR A SERIAL PRINTER

Felice Giacone, Via Rosario di Santa Fe, 14, 10100 Torino, Italy

Filed Feb. 26, 1980, Ser. No. 124,952

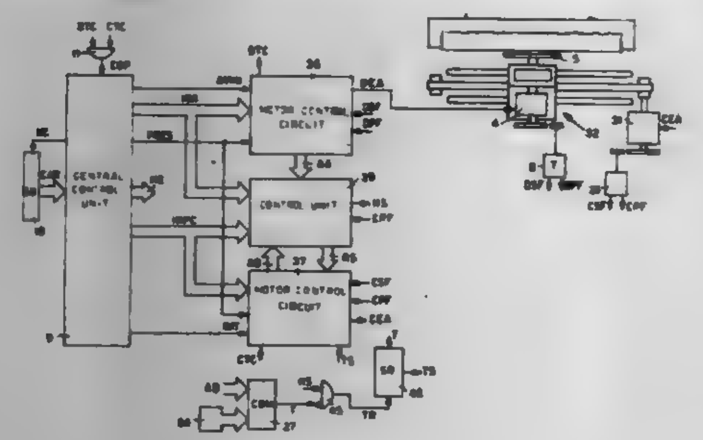
Claims priority, application Italy, Feb. 26, 1979, 67417 A/79

Int. Cl.³ B41J *1/26, 19/30*

U.S. Cl. 400—144.2 15 Claims

1. A serial printer comprising a carriage movable by a motor along a printing line from a preceding print position to a new print position; a print hammer and a rotatable type member mounted on the carriage; selecting means for intermittently rotating said type member a variable angle from one character position to another character position according to a predetermined law of motion for positioning a selected character in front of the print hammer, in the path of the impact of said

selected character; length of selection time forecast means for generating length of selection time data dependent on a forecast length of selection time required by said selecting means for the rotation of the type member through said variable angle; control means comprising a servo control feedable with predetermined speed data dependent on the selection length of



selection time data causing said motor to maintain said carriage in movement during the impact of said hammer; and updating means for feeding said servo control with updated speed data dependent on an updated forecast of the length of selection time effected during rotation of said type member through said variable angle.

4,324,500

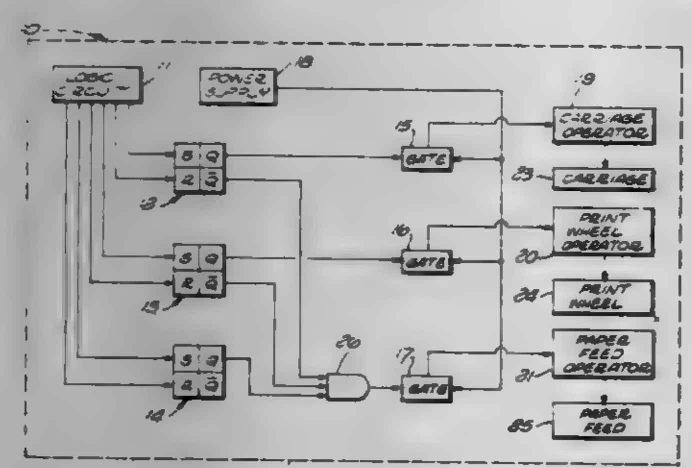
MEANS TO INHIBIT PAPER FEED DURING CARRIAGE OR PRINT WHEEL MOVEMENT

Suhdok D. Moon, Los Altos, and Marshall H. Trackman, San Leandro, both of Calif., assignors to Qume Corporation, San Jose, Calif.

Filed Aug. 15, 1980, Ser. No. 178,682

Int. Cl.³ B41J *29/54*

U.S. Cl. 400—664 **3 Claims**



1. A printer comprising: a carriage; a carriage operator; a printwheel mounted on said carriage; a printwheel operator; a paper feed; a paper feed operator; and first means including a power supply actuable to deliver respective electric currents to said carriage operator, said printwheel operator, and said paper feed operator, said first means including second means to inhibit movement of said paper feed when either said carriage or said printwheel is being moved.

4,324,501

JOINT ASSEMBLY

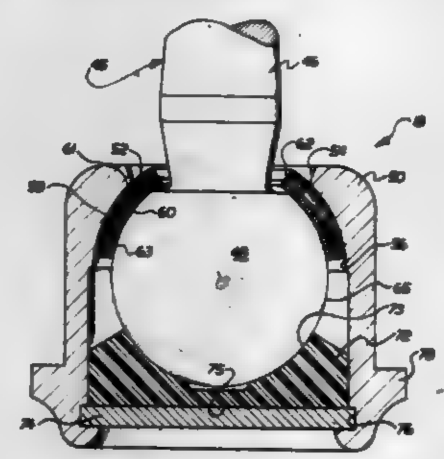
Edward J. Herbenar, Birmingham, Mich., assignor to TRW Inc., Cleveland, Ohio

Filed Oct. 5, 1979, Ser. No. 82,281

Int. Cl.³ F16C *11/00;* **F16D** *1/12*

U.S. Cl. 403—133 **1 Claim**

1. A ball and socket joint having a relatively low resistance to rotation and to oscillation within a first portion of a range of oscillatory movement and a relatively high resistance to oscillation within a second portion of the range of oscillatory movement, said ball and socket joint comprising a metal socket housing having first surface means for defining a metal seat having the configuration of a portion of a sphere and second surface means for defining an opening in the housing extending through a central portion of the seat, a metal ball stud having a spherical head end with a center of curvature which is coincident with the center of curvature of said metal seat, said ball stud having a shank extending through the opening in said metal seat, said shank having a cross sectional area which is substantially smaller than the cross sectional area of the opening in said metal seat to accommodate oscillation of said shank through a relatively large range of movement prior to engagement of said shank with said second surface means, a movable bearing disposed between the outer surface of the spherical head end of said ball stud and said metal seat, said bearing including a movable one-piece metal shell having an outer side surface with the configuration of a portion of a sphere having a center of curvature which is coincident with the center of curvature of said metal seat, said bearing further including a one-piece inner layer of polymeric material connected with said metal shell for movement therewith relative to said socket housing, said inner layer having an inner side surface with the configuration of a portion of a sphere having a center of curvature which is coincident with the center of curvature of said metal seat, said bearing including third surface means for defining an opening extending through a central portion of said



bearing, said opening through said bearing having an area which is substantially smaller than the area of the opening in said metal seat and which is substantially greater than the cross sectional area of said shank to accommodate oscillation of said shank through the first portion of the range of oscillatory movement without abutting engagement of said shank with said third surface means and to enable said shank and said bearing to move together through the second portion of the range of oscillatory movement after said shank has moved into abutting engagement with said third surface means and prior to abutting engagement of said shank with said second surface means, said polymeric inner layer of said bearing being disposed in abutting engagement with said spherical metal heat end of said ball stud and having a relatively low coefficient of friction to provide a relatively low resistance to rotation of said ball stud about a central axis of said shank and to provide a relatively low resistance to oscillation of said ball stud through the first portion of the range of oscillatory movement, said metal shell of said bearing being disposed in abutting engagement with said metal seat and having a relatively high coefficient of friction to provide a relatively high resistance to oscillation of said ball stud through the second portion of the range of oscillatory movement, and a preload bearing disposed between said socket housing and said spherical head end of said ball stud at a location which is opposite from said shank when said ball stud is in a central portion of the range of oscillatory movement, said preload being including surface means disposed in abutting engagement with the head end of said ball stud to urge the head end of said ball stud toward said seat.

4,324,502

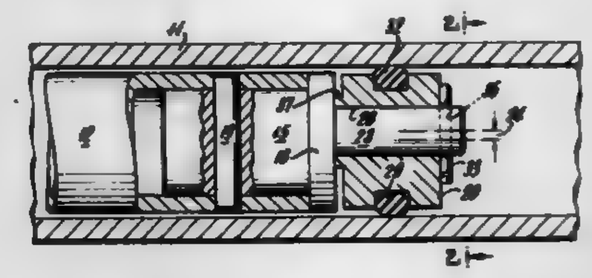
LOCKING MECHANISM FOR TELESCOPIC TUBING

Robert A. Pickles, Beacon, N.Y., assignor to Texaco, Inc., White Plains, N.Y.

Filed Dec. 31, 1979, Ser. No. 108,870

Int. Cl.³ F16B *7/14*

U.S. Cl. 403—104 **2 Claims**



1. Locking mechanism for use with telescopic tubing having an outside tube and an inside tube, comprising
concentric means for providing radial support to the inside of said inside telescopic tube,
means for attaching said concentric means to said inside tube for rotation therewith,
cylindrical means having an outside diameter less than the inside diameter of said outside telescopic tube and including a peripheral groove thereon, with an O-ring in said groove, and
eccentric means for attaching said cylindrical means to said concentric means, comprising
a shaft integrally attached to said concentric means for rotatably supporting said cylindrical means,
said shaft being located with the axis thereof parallel to but offset from the axis of said concentric means, and
a hole through said cylindrical means for receiving said shaft,
said hole having the axis thereof offset from the axis of said cylindrical means the same amount as said shaft axis offset, and
a reduced cylindrical portion on one end of said cylindrical means providing an anti-friction shoulder for engagement with said concentric means.

4,324,503

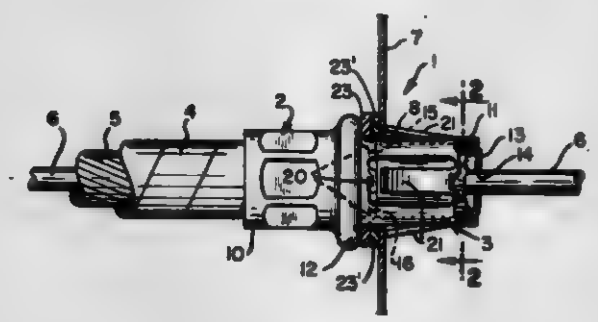
TWO-PIECE ANCHORAGE DEVICE

Warren E. Sevrence, Adrian, Mich., assignor to Acco Industries, Inc., Bridgeport, Conn.

Filed Dec. 21, 1979, Ser. No. 105,914

Int. Cl.³ F16B *9/00*

U.S. Cl. 403—197 **7 Claims**



3. A two-piece anchorage device for securing a cable conduit with respect to a wall opening, said device including a tubular body piece adapted to extend through a wall opening and to be secured to the outer periphery of a cable conduit where said tubular body piece comprises a collar adapted to operatively engage a side of said wall opening, a lower body piece portion connected to one side of said collar and adapted to extend longitudinally along the cable conduit and an upper body portion connected to a side of said collar opposite said lower body portion having a groove adjacent said collar between the upper body portion and said collar with a wall of said groove forming a radially extending shoulder, and an anchor clip piece surrounding and fixed to said upper body portion including a plurality of depressible prongs adapted to engage a side of a wall opening opposite said collar whereby relative movement of said cable conduit with respect to said wall opening is prevented and including a plurality of stops engaging said shoulder to prevent longitudinal movement of said clip piece with respect to said body piece in a direction away from said collar.

4,324,504

METHOD OF SEALING BRIDGE DECK JOINTS

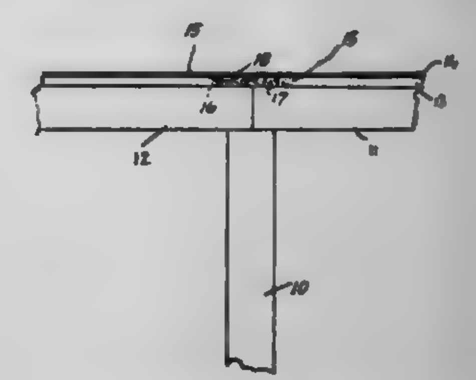
Richard L. Cottingham, Piltdown; David J. Thorpe, Eastbourne, and Eric Bickerstaff, Seaford, all of England, assignors to Thormack Sealants Limited, Uckfield, England

Continuation of Ser. No. 925,156, Jul. 17, 1978. This application Feb. 12, 1980, Ser. No. 120,849

Claims priority, application United Kingdom, Jul. 22, 1977, 30990/77; Oct. 12, 1977, 42544/77; Nov. 30, 1977, 49968/77

Int. Cl.³ E01C *11/02*

U.S. Cl. 404—74 **8 Claims**



1. A method of sealing a bridge deck joint in which the bridge deck members comprise a concrete base and a road surfacing material, said method comprising the steps of providing a channel in the road surfacing material at the location of the joint, the channel extending through the full depth of the road surfacing material across the width of the bridge, and filling the channel substantially completely with a flexible composition of chips of stone aggregate in a rubberized binder, said binder consisting mainly of bitumen, pitch, pitch-tar or tar together with rubber wherein the chips occupy 40 to 70% by volume of the composition, and said chips of stone aggregate being all of substantially the same mesh size.

4,324,505

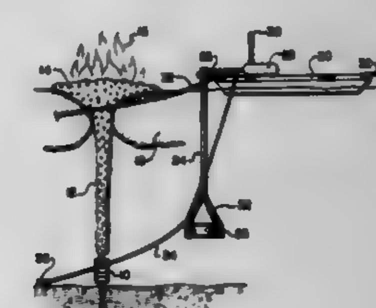
SUBSEA BLOWOUT CONTAINMENT METHOD AND APPARATUS

Dillard S. Hammett, 3729 Alta Vista La., Dallas, Tex. 75229

Filed Sep. 7, 1979, Ser. No. 73,367

Int. Cl.³ E02B *3/00;* **E02D** *23/00*

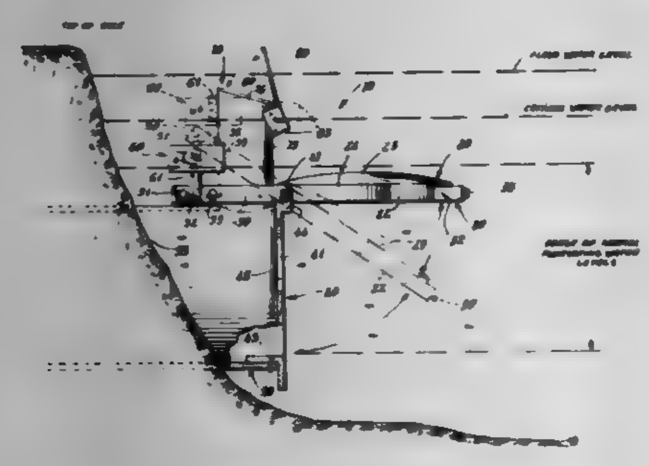
U.S. Cl. 405—60 **15 Claims**



1. Apparatus for containment of hydrocarbons flowing from a subsea well blowout comprising:
support means comprising a floating vessel;

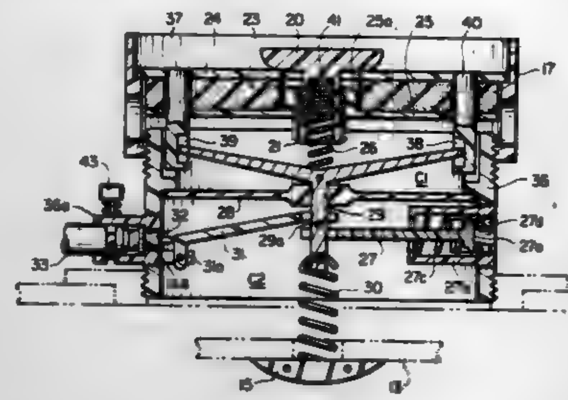
an elongated conduit supported by said vessel at an upper end of said conduit;
a funnel having a small end connected to the lower end of said conduit and a large end directed downwardly toward the sea floor;
positioning means for positioning said vessel so that said large end of said funnel is disposed over said well blowout for substantially capturing the flowstream of hydrocarbons emanating from said well blowout;
means forming a connection between said vessel and said conduit to permit limited movement of said conduit and said funnel with respect to said vessel upon capturing at least a portion of said flowstream by said funnel to permit said funnel to be pulled into position over said well blowout by said flowstream; and
receiving means connected to said upper end of said conduit and carried by said vessel for receiving hydrocarbons recovered from said well blowout through said funnel and said conduit.

4,324,506
SELF-REGULATING FLUID CONTROL VALVES
Thomas J. Steinke, 1673 Melville Ave., Fairfield, Conn. 06430
Filed Aug. 28, 1980, Ser. No. 182,129
Int. Cl.³ F02B *7/40*
U.S. Cl. 405—96 **18 Claims**



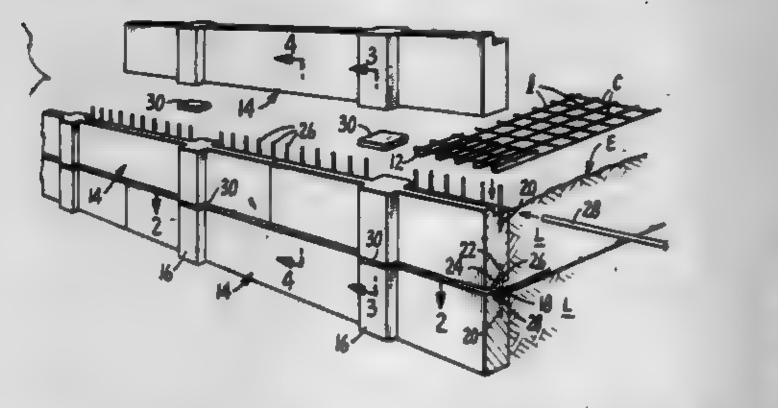
17. An improvement in water control valves of the type comprising a door pivotally mounted to the input end of a generally horizontal conduit leading out of a body of water, the door being held in an open position permitting flow through the water conduit and freely pivotal to a closed position blocking flow through the water conduit, wherein when there exists a full and swift flow through the water conduit and the door is closed, the freely pivotal transition of the door from its open to its closed position is rapid and a column of water continues to move through the water conduit after the water is closed, thereby drawing a vacuum behind the door and subjecting the door to a large and potentially damaging pressure differential, the improvement comprising a vacuum break including,
(A) an air pipe intersecting the conduit connecting the two bodies of water adjacent the door pivotally mounted thereto, the air pipe extending from the conduit to the air above the critical water level at which the door closes, whereby when the door closes the vacuum break permits air to enter the conduit immediately adjacent the closed door, and
(B) a float operated lid pivotally mounted to the open end of the air pipe and a counterweight float mounted to the lid across the pivot axis of the lid,
whereby the counterweight action of the counterweighted float maintains the lid in an open position when the water level is below the open end of the air pipe and the float action of the counterweighted float pivots the lid to a closed position blocking the open end of the air pipe after the door closes and before the water level rises to the open end of the air pipe.

4,324,507
AUTOMATICALLY-CONTROLLED BUOYANCY VEST
Shane Harrah, 700 Coleman Ave., Apt. 7, Menlo Park, Calif. 90425
Filed Apr. 14, 1980, Ser. No. 139,812
Int. Cl.³ B63C *11/02*
U.S. Cl. 405—186 **21 Claims**



1. Buoyancy regulating apparatus for scuba divers, and the like, comprising:
a stationary plate;
a movable plate, spaced apart from said stationary plate;
a sheet of compressible material similar to a diver's wetsuit material, positioned between and in contact with said stationary plate and said movable plate;
a first tensioned spring with first end coupled to said movable plate, with said compressible sheet being operatively associated with said first spring such that as said movable plate moves toward said stationary plate, the tension in said first spring increases;
a movable connecting bar mechanically coupled to the second end of said first spring;
a hollow housing, with said stationary plate positioned at first end of said housing, that contains said compressible sheet, said movable plate, said first spring, and said connecting bar in the housing interior;
a flexible, waterproof diaphragm, through which said connecting bar passes, that is attached to the interior side walls of said housing, for defining a first chamber, which is open to the surrounding water, between said stationary plate and said diaphragm, and for defining a gas-filled second chamber between said diaphragm and the second end of said housing;
flexible bladder means, with front wall of said bladder means connected to said second end of said housing such that gas can flow between said bladder means and said second chamber of said housing;
a second tensioned spring, substantially coaxial with said first spring, with first end mechanically coupled to said connecting bar and the second end operatively associated with the back wall of said bladder means, such that said second spring's tension increases as said bladder means expands;
a source of compressed gas, such as the diver's scuba tank;
first valve means, positioned adjacent to said second chamber of said housing, for admitting gas from said compressed gas source into said second chamber;
a first rotatable valve control arm, operatively associated with said connecting bar and with said first valve means, for opening and closing said first valve means in response to movement of said connecting bar toward or away from said compressible sheet, such that gas flows from said gas source through said second chamber and then into said bladder means whenever said compressible sheet or said bladder means is further compressed;
second valve means, positioned adjacent to said second chamber of said housing, for releasing gas from said second chamber into the surrounding water;
a second rotatable valve control arm, operatively associated with said connecting bar and with said second valve means, for closing and opening said second valve means in response to movement of said connecting bar toward or away from said compressible sheet, such that gas flows from said bladder means through said second chamber and then out to the surrounding water whenever said compressible sheet or said bladder means further expands; and
suspension means attached to said bladder means for supporting the apparatus on a diver.

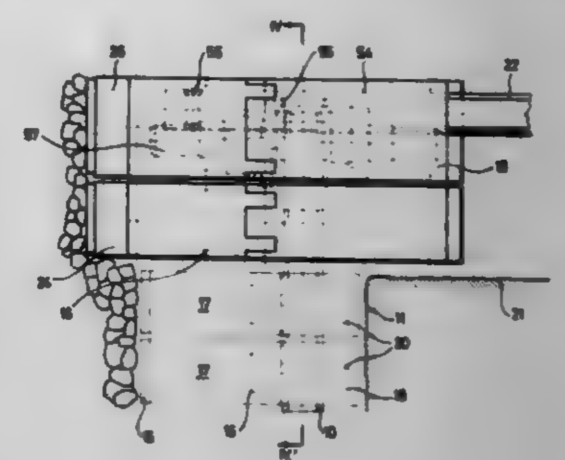
4,324,508
RETAINING AND REINFORCEMENT SYSTEM METHOD AND APPARATUS FOR EARTHEN FORMATIONS
William K. Hilfiker; Harold O. Hilfiker, and William B. Hilfiker, all of Eureka, Calif., assignors to Hilfiker Pipe Co., Eureka, Calif.
Filed Jan. 9, 1980, Ser. No. 110,763
Int. Cl.³ E02D *5/00*
U.S. Cl. 405—284 **4 Claims**



1. A retaining system for an earthen formation, said system comprising: a plurality of elongate precast face panels stacked in generally horizontally disposed relationship to provide a wall, said panels including complementally engageable means to maintain the panels in aligned stacked condition and at least certain of the panels having a recessed shoulder formed in the upper surface thereof and a plurality of pin members extending from the shoulder; anchor mats disposed within the earthen formation behind the stacked face panels, said mats each comprising a plurality of elongate tension rods extending from the panels and a plurality of cross rods welded to and extending transversely of the tension rods in spaced relationship to one another; tension rod extensions on at least certain of said mats extending over and within the confines of the shoulder; and a retention rod carried by the extensions and engaged with the pin members to secure the mats along the length of the panels.

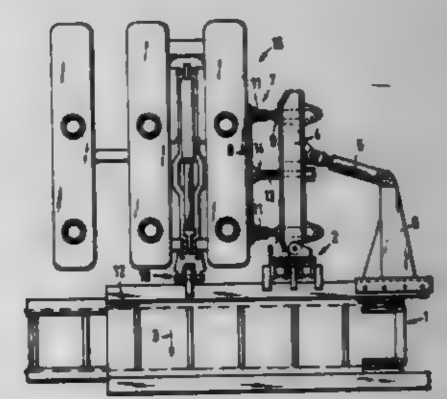
4,324,509
MECHANIZED LONGWALL SYSTEM FOR MINING
György Ignatko; Zoltan Ilyes, both of Budapest; Ferenc Nemeth, Mor; Matyas Racz, Környe; Albert Varga, and Jenö Varro, both of Oroszlany, all of, Hungary, assignors to Kozponti Banyaszati Fejlesztesi Intezet, Budapest and Oroszlanyi Szenbanyak, Oroszlany, both of, Hungary
Filed May 21, 1980, Ser. No. 151,774
Claims priority, application Hungary, May 23, 1979, KO 2993
Int. Cl.³ E21D *23/00*
U.S. Cl. 405—299 **6 Claims**

1. A mechanized longwall system for mining including face roof supporting units disposed adjacent each other along the longwall, fluid operated advancing cylinders connecting said roof supporting units to a face transport track laid over the length of the longwall, each supporting unit comprising a floor element and a roof element, hydraulic props supporting said roof elements by coupling to said floor elements, a drift transport track mounted at and perpndicular to one end portion of the face transport track for extending into the drift in the conveying direction, said system further comprising at least two drift supporting units adjoining said face roof supporting units and located in the drift adjacent to each other, said drift supporting units each having a supplementary floor element, a linkage connecting each of said drift supporting units to the front end of the floor element thereof, a supplementary prop, linkages connecting said supplementary prop between the supplementary floor element and the front end of the roof element, the floor element and supplementary floor element of the outermost drift supporting unit of the said two adjacent drift supporting units lying further from the face are constructed for receiving a take-over section and a reversing unit



of the drift transport track, a transfer unit formed at the end of the face transport track for projecting over the take-over section of the drift transport track, a guide system including said supplementary floor element of the outermost drift supporting unit for guiding the transfer unit in the longitudinal direction of the drift transport track and a fluid operated advancing cylinder, one end of said advancing cylinder being hinged onto the transfer unit, the other end of said cylinder being connected to the floor element and/or to the supplementary floor element of said outermost drift supporting unit.

4,324,510
APPARATUS FOR SUPPORTING A MINE ROOF SUPPORT ASSEMBLY
Hans-Joachim Dreher, Dortmund-Asseln, and Kunibert Becker, Werl, both of Fed. Rep. of Germany, assignors to Gewerkschaft Eisenhutte Westfalia, Fed. Rep. of Germany
Filed Apr. 25, 1980, Ser. No. 143,721
Claims priority, application Fed. Rep. of Germany, Apr. 24, 1979, 2917047
Int. Cl.³ E21D *15/44*
U.S. Cl. 405—291 **12 Claims**



1. Apparatus for supporting the lowermost roof support unit of a series of roof support units positioned side-by-side on the goaf side of a conveyor in an inclined longwall working, the apparatus comprising a beam mounted on the conveyor for pivotal movement in a plane parallel to the floor of the working, means for pivoting and holding the beam in any given position relative to the conveyor, a support device for engage-

ment with the lower side of the lowermost roof support unit, said support device being connected to and being movable towards, and away from, the beam, and means for holding the support device and the beam at any given spacing within a predetermined range of spacings.

4,324,511

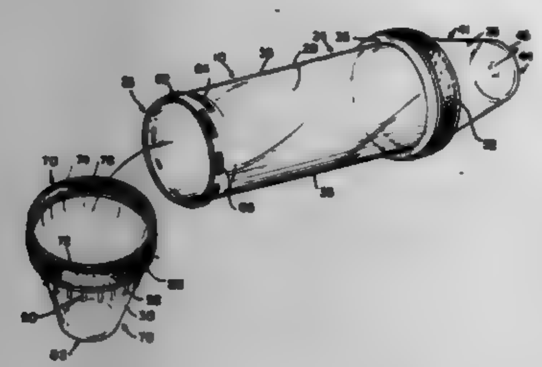
CARRIER FOR PNEUMATIC TUBE SYSTEMS

John T. Irish, Indianapolis, Ind., assignor to J. I. Industries, Incorporated, Indianapolis, Ind.

Filed Mar. 6, 1980, Ser. No. 127,600

Int. Cl.³ B65G *51/06*

U.S. Cl. 406—189 **8 Claims**



4. A carrier for pneumatic tube sytems of the type which include a passageway and a controlled fluid source for moving the carrier through the passageway, comprising a first frustoconically shaped end section; a second frustoconically shaped end section integrally formed with an elongated intermediate section; each end section including a domed distal portion, a proximal portion having an outer surface with a cross-sectional dimension for engaging the inner surface of the passageway, and a tapered intermediate portion therebetween; the intermediate section having an outer surface with a cross-sectional dimension which is smaller than the outer cross-sectional dimension of the proximal portions of the end section and an inner surface with a uniform cross-sectional dimension; the first end section being removable to allow access to the intermediate and second end sections; cooperating threads formed on an inner surface of the first end section and on the outer surface of the intermediate section for securing the first end section to the intermediate section; the threads on at least one of the first end section and the intermediate section including a plurality of long and short segments intermittingly spaced apart to reduce surface friction between the cooperating threads; at least the first end section including a plurality of spaced-apart ribs extending longitudinally from the proximal portion toward the distal portion for reinforcement of the intermediate portion thereof; and a structurally reinforced area between the proximal portion of the second end section and the intermediate section, the reinforced area being formed by an extension of the inner surface of the intermediate section to the intermediate portion of the second end section.

4,324,512

PORTABLE DRILL WITH BUILT-IN CHUCK KEY

John A. Sroky, 809 Madiera, Shorewood, Ill. 60436

Filed Mar. 31, 1980, Ser. No. 135,705

Int. Cl.³ B23B *45/00*

U.S. Cl. 408—240 **13 Claims**

1. In a power drill including a chuck for holding a working tool the combination comprising:

a housing;

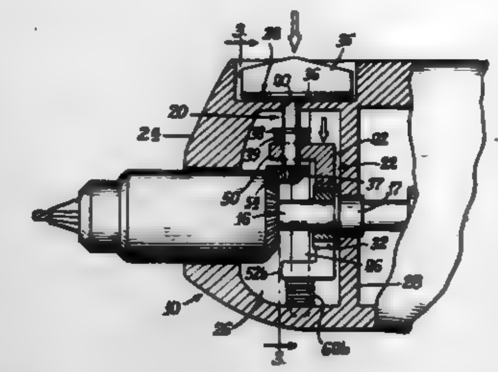
a motor-driven main shaft mounted in said housing for rotation by a driving motor;

a main shaft locking mechanism disposed within said housing for engaging said main shaft to selectively lock the main shaft;

a chuck key permanently slidably mounted in said housing and engageable with the chuck, said chuck key being moveable in said housing between an operating and a nonoperating position;

spring biasing means for normally retaining said main shaft locking mechanism and said chuck in a nonoperating position; said main shaft locking mechanism including

an inverted substantially U-shaped bracket member slidably



supported within said housing and straddling said main shaft;

a pair of bearing support rods disposed within the housing on each side of said main shaft for slidably supporting said U-shaped bracket member, and

means formed on said U-shaped bracket member for lockingly engaging said main shaft.

4,324,513

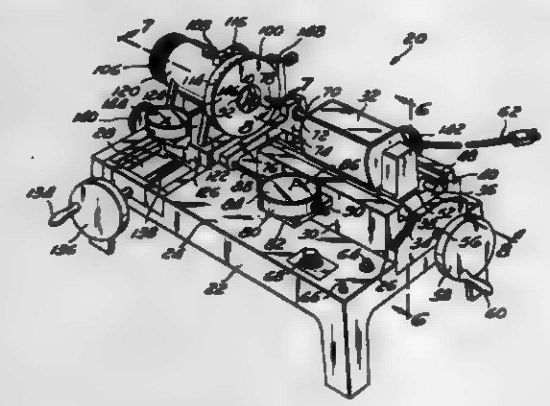
TUBULAR KEY MANUFACTURING MACHINE

Donald R. Hughes, 2600 Brower Ave., Simi Valley, Calif. 93065

Filed Feb. 8, 1980, Ser. No. 119,997

Int. Cl.³ B23C *3/35*

U.S. Cl. 409—82 **3 Claims**



1. A machine for manufacturing keys comprising:

a base;

cutting means including a cutter rotatable about a first axis, said cutting means being movably mounted by first movement means on said base, said first movement means comprising a first crank assembly and a first dovetail slot assembly, manual operation of said first crank assembly causes movement of said cutting means within said first dovetail slot assembly parallel to said first axis;

key support means movably mounted by second movement means on said base, said second movement means comprising a second crank assembly having a second dovetail slot assembly, manual operation of said second crank assembly causes movement of said tubular key support means within said second dovetail slot assembly along a second axis transverse to said first axis, a tubular key mounted within said key support means parallel to said second axis, to tightly hold said tubular key in a desired position, said key support means including a housing and an indexing plate assembly, said indexing plate assembly being pivotable about a pivot axis upon said housing, the longitudinal center axis of the said tubular key coinciding with said pivot axis, said indexing plate including a mea-

suring scale to facilitate the accurate locating of said indexing plate in a certain desired pivotal position relative to said housing to thereby facilitate the forming of a plurality of spaced-apart longitudinal grooves about the periphery of said tubular key, said indexing plate including locking means for fixing of said indexing plate at a particular established position in respect to said key support means, said locking means comprising a locating pin lock and a separate screw engaging lock, said locating pin lock to fix the position of said indexing plate at any one of several pre-established positions, said screw engaging lock to fix the position of said indexing plate at any position;

a first measuring indicator connected to said first movement means, said first measuring indicator having a first measurement scale formed on a first indicator face and a first pointer to be movable across said first measurement scale, said first measurement scale to be manually moved relative to said first pointer to be setable at an initial (zero) measuring value when said cutting means has been moved longitudinally to just touch the said tubular key;

a second measurement indicator connected to said key support means, said second measurement indicator having a second measurement scale formed on a second indicator face and a second pointer to be movable across said second measurement scale, said second measurement scale to be manually moved relative to said second pointer to be settable at an initial (zero) measuring value with the said tubular key transversely moved to just touch said cutting means; and

said cutting means is to be longitudinally moved to a desired value and the said tubular key is also to be moved to a desired transverse value causing a groove to be cut within the said tubular key.

4,324,514

ROUTER GUIDE APPARATUS FOR CUTTING PRINTING PLATES

Mark Craven, 6691 Melbourne Dr., Huntington Beach, Calif. 92646

Continuation-in-part of Ser. No. 16,361, Mar. 1, 1979, abandoned. This application Mar. 31, 1980, Ser. No. 135,857

Int. Cl.³ B23C *1/20*

U.S. Cl. 409—179 **7 Claims**

1. Router apparatus for cutting printing plates to outlines which include arcuate and linear segments, comprising:

a router head with a router bit;

a mounting block having retaining means retaining said router head and having vertical adjusting means to adjust the depth of cut of said bit;

a mounting bar;

a rod;

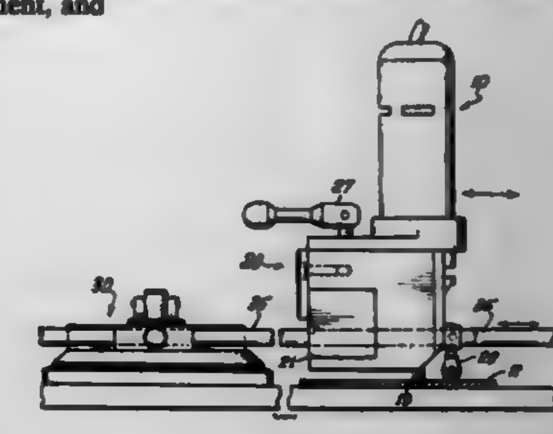
means in said mounting block to fasten it detachably to a said mounting bar, said router head, mounting block, and mounting bar forming an assembly,

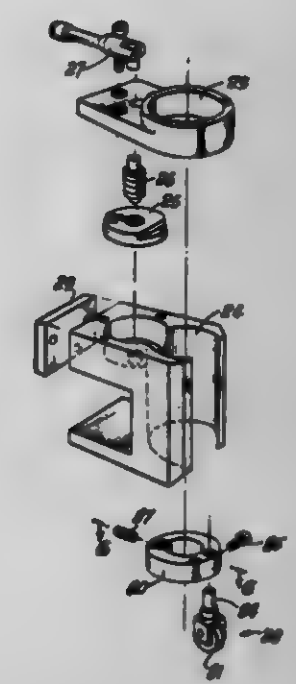
said mounting bar having at least one opening fittable slidably over said rod;

a first center head comprising a suction-cup base and a first top portion mounted rotatably thereon for substantially 360° pivotal movement and having an opening fittable over a said rod, and means to clamp said rod therein to prevent sliding;

at least one second center head comprising a suction-cup base and a second top portion having a second opening fittable over a said rod,

a said assembly being attachable to a said rod acting as a radius rod on a said first center head to cut a said arcuate segment, and





a said assembly being slidable along a said rod held in a said second opening in a said second center head, to cut a said linear segment.

4,324,515

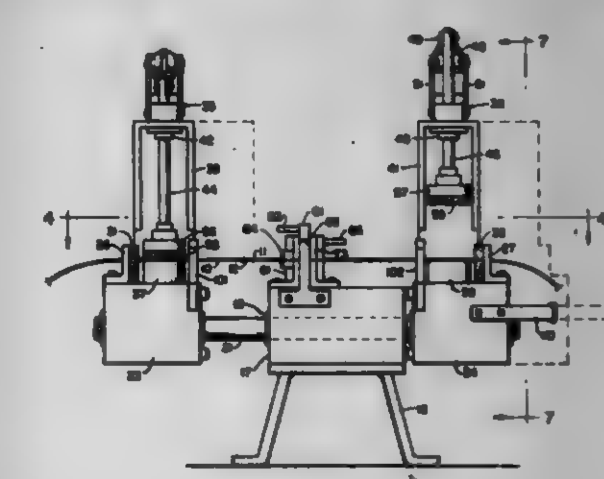
DIE SHEAR APPARATUS FOR TRIMMING WIRE WELD BULGES

John W. Ehling, LaGrange Park, Ill., assignor to Western Electric Company, Inc., New York, N.Y.

Filed Mar. 31, 1980, Ser. No. 135,731

Int. Cl.³ B23D *1/02*

U.S. Cl. 409—300 **3 Claims**

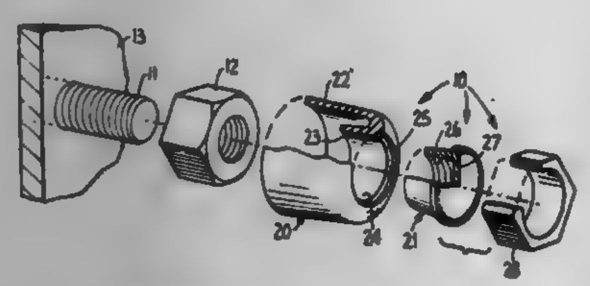


1. An apparatus for removing a bulbous portion formed on a strand member, which comprises:

a stationary frame;

a pair of shafts slidably mounted in and extending horizontally in parallel relation through said frame;
a first slide mounted on said shafts and positioned on a first side of said frame, and a second slide mounted on said shafts and positioned on the other side of said frame;
a pair of clamping devices mounted individually on the respective slides for gripping spaced sections of the strand with the bulbous portion interposed between the clamps;
a cutting die having a longitudinal bore extending therethrough, said die having a pair of end surfaces axially displaced from each other and tapered toward and intersecting said bore to form a pair of axially spaced cutting edges; and
means for securing said cutting die to said stationary frame to shear successively a first section and then a second section of said bulbous portion upon movement of the clamps and slides to advance the bulbous portion into said die.

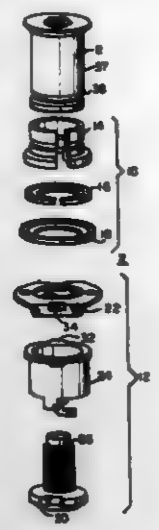
4,324,516
TIRE SECURITY CAP
Bernard S. Sain, and James M. Dudley, both of Jacksonville, Fla., assignors to Trailer Marine Transport Corporation, Jacksonville, Fla.
Filed May 27, 1980, Ser. No. 153,081
Int. Cl.³ F16B *31/02*
U.S. Cl. 411—5 **4 Claims**



1. A lug nut cap attachment for detecting the removal of a wheel lug nut comprising: a frangible shroud having an outer skirt and an integral internal coaxial collar, said outer skirt defining a rear opening and housing for receiving a lug nut within said skirt and a front opening that provides a coaxial circular recess; means for attaching said shroud to a lug nut and comprising a sleeve having an internally threaded surface extending from one end for engagement with the exterior thread of a lug nut upon which said shroud is to be mounted, the threaded extension of said sleeve being adapted to be received through the front opening and coaxial collar of said shroud to be threadably engaged with a housed lug nut, said sleeve having a circular flange circumferentially larger than the internal circumference of said coaxial collar but receivable within the circular recess of said shroud; and a breakaway nut integrally formed with said sleeve as an axial extension of said circular flange, said breakaway nut projecting forwardly of the front opening of said shroud to provide an engageable means for threadably tightening said sleeve onto a lug nut and attaching said shroud.

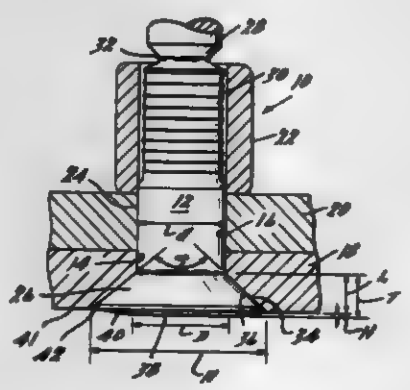
4,324,517
PANEL FASTENER ASSEMBLY WITH RETAINER RING
Ervin J. Dey, Sante Fe Springs, Calif., assignor to SPS Technologies, Inc., Jenkintown, Pa.
Filed Jun. 16, 1980, Ser. No. 159,334
Int. Cl.³ F16B *41/00*
U.S. Cl. 411—353 **12 Claims**

1. An improved quick-acting fastener assembly for joining a panel to a substructure including a grommet assembly having an annular body which is adapted to be secured to the panel and an annular resilient retainer having a split therein, said annular body being adapted to receive said retainer; a receptacle assembly which is adapted to be connected to the substructure including a threaded stud; and a threaded sleeve bolt having a head at one end formed to abut the panel and adapted to threadably engage said stud, said sleeve bolt having an annular groove adjacent the other end thereof and being adapted to be engaged by said retainer at said groove to secure said sleeve bolt to said grommet assembly when said sleeve



bolt is threadably disengaged from said stud, the improvement characterized in that said annular body includes an annular cavity which is adapted to receive said retainer, said cavity having an outwardly sloping surface forming an angle x greater than zero degrees with respect to a plane perpendicular to the centerline of said body.

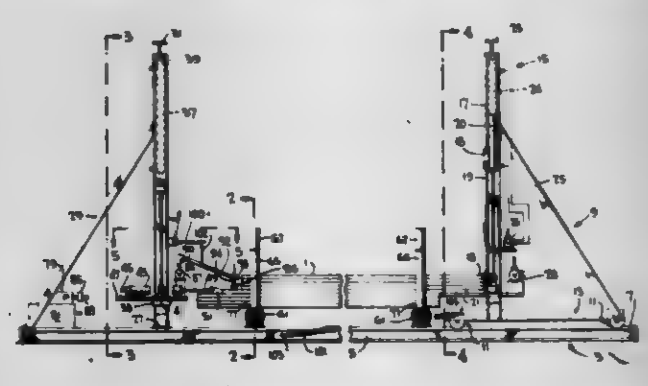
4,324,518
DISH COMPENSATING FLUSH HEAD FASTENER
Richard D. Dixon, El Toro, Calif., assignor to Huck Manufacturing Company, Irvine, Calif.
Filed Jul. 13, 1979, Ser. No. 57,341
Int. Cl.³ F16B *19/05*
U.S. Cl. 411—361 **8 Claims**



1. In a two piece shear type fastener for joining together a plurality of workpieces including a pin having a preformed head provided on one end thereof, a shank portion provided with a plurality of grooves and one piece circumferentially continuous collar means adapted to engage one of the outer surfaces of said plurality of workpieces and to cooperate with said grooves to join said plurality of workpieces together, said preformed head being subjected to an axially directed installation tensile loading resulting in part from a pulling force and from the engagement of said collar means with said one surface of said plurality of workpieces, said preformed head comprising a sidewall including a generally concially shaped portion adapted to be received in and substantially conform to the shape of a prepared countersunk opening in the other outer surface of said plurality of workpieces, a centrally disposed raised axially outwardly facing surface portion and an annular beveled radially outwardly extending surface portion surrounding said raised surface portion and forming an intersection with said sidewall, said intersection being adapted to be positioned in substantially coplanar relationship with said

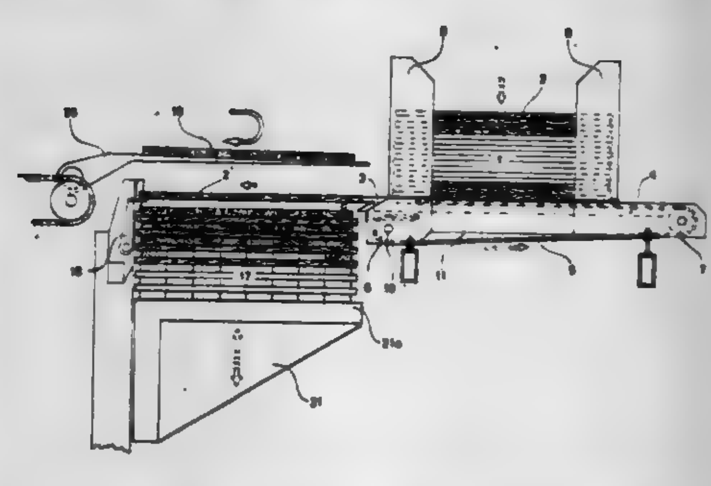
other outer surface of said plurality of workpieces, said raised surface portion being positioned axially outwardly from said other outer surface a distance proportioned to the shear stress of the pin material and to the difference between a predetermined anticipated peak installation loading and the desired installation fastener head strength divided by the anticipated peak installation load so that said preformed head may operate to relieve a portion of said axially directed installation load whereby said raised surface portion is operative to substantially eliminate dishing of said head during installation loading.

4,324,519
WOOD HANDLING MACHINE
Robert L. Moore, P.O. Box 836, North Little Rock, Ark. 72115
Filed Feb. 27, 1981, Ser. No. 239,014
Int. Cl.³ B27B *31/00*
U.S. Cl. 414—28 **9 Claims**



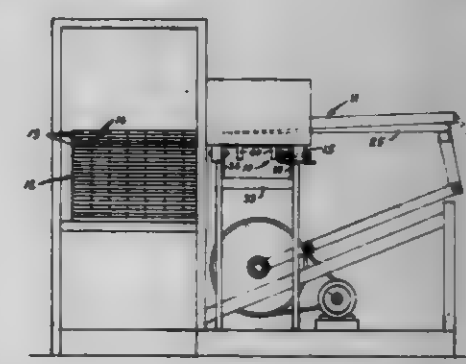
1. A wood handling machine for handling stacked layers of board lumber to facilitate marking the boards, comprising a support bed for supporting a stack of boards in layers, clamping means to clamp the stacked layers of boards to hold the layers in alignment, pushing means to move at least one layer of boards at a time to uncover the adjacent layer to facilitate marking said adjacent layer, means to limit the distance said layer of boards is moved, stop means to prevent movement of said adjacent layer, and fluid pressure means to operate said clamping means, pushing means and stop means.

4,324,520
METHOD OF LAYING-OUT SPACING STICKS, AND APPARATUS FOR CARRYING OUT THE METHOD
Jan E. Kjellberg, Norra Bäckvägen 40, 821 00 Bollnäs, Sweden
Filed Jan. 15, 1980, Ser. No. 112,256
Claims priority, application Sweden, Jan. 17, 1979, 7900439
Int. Cl.³ B65G *57/18*
U.S. Cl. 414—42 **11 Claims**



1. A method in the stacking of layers of lumber to form a stack by inserting spacing sticks between various lumber layers at right angles to the longitudinal axis of said layers, laying means carrying said lumber layers being arranged to move towards, over and away from a stack support surface on which the lumber layers are placed, and spacing sticks being inserted between separate lumber layers by movable means which feeds said spacing sticks substantially parallel with the direction of return movement of the laying means, wherein the movable means while engaging one end of a spacing stick feeds said stick towards the stack support layer substantially simultaneously with the movement of the laying means in a manner such that spacing sticks and lumber layers move in mutually opposite relative movements at different levels and out of contact with each other during at least part of a stacking sequence.

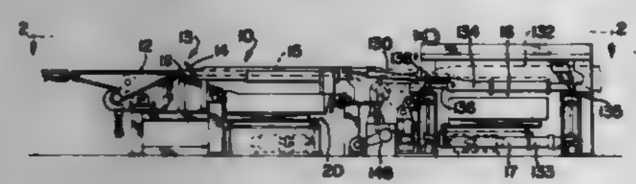
4,324,521
STICKER PLACING APPARATUS
Sidney L. Lunden, and Larry A. Gillingham, both of Spokane, Wash., assignors to Lunden Industries, Inc., Spokane, Wash.
Filed Sep. 24, 1980, Ser. No. 190,449
Int. Cl.³ B65G *57/26*
U.S. Cl. 414—42 **11 Claims**



1. Sticker placing apparatus for use in conjunction with lumber stacking equipment for forming a stack of boards having a plurality of superimposed layers of elongated boards, in which selected layers are separated by stickers that are oriented transversely to the elongated dimension of the boards at desired sticker intervals along the length of the boards, said sticker placing apparatus comprising:
a frame adjacent the stack;
an elongated sticker distribution conveyor mounted on the frame and extending from a sticker magazine to a plurality of spaced sticker stations spaced along one side of the stack corresponding to the desired sticker intervals for receiving a plurality of stickers from the magazine means and distributing the stickers individually to the sticker stations alongside the stack;
a sticker transfer means movably mounted on the frame for removing stickers from the elongated sticker distribution conveyor and lifting the stickers upward and laterally to sticker transfer positions in which the stickers are positioned transverse to the elongated dimension of the boards in the stack;
sticker depositing means movably mounted on the frame for receiving the stickers at the sticker transfer positions and moving the stickers longitudinally over the stack and depositing the stickers between the selected layers of boards;
wherein the sticker transfer means includes:
an elongated carriage extending between the sticker stations and movably mounted on the frame for linear reciprocating movement on the frame substantially parallel with the elongated sticker distribution conveyor;
a plurality of sticker pickup assemblies mounted on the frame at spaced locations corresponding to the desired sticker intervals for reciprocating movement with the carriage in prescribed reciprocating paths between the sticker stations and the sticker transfer positions;
each of said sticker pickup assemblies being movably mounted on the carriage for vertical movement between the sticker stations and the sticker transfer positions;
drive means operatively connected to the elongated carriage for linearly reciprocating the carriage to move the sticker pickup assemblies in a forward stroke from the sticker

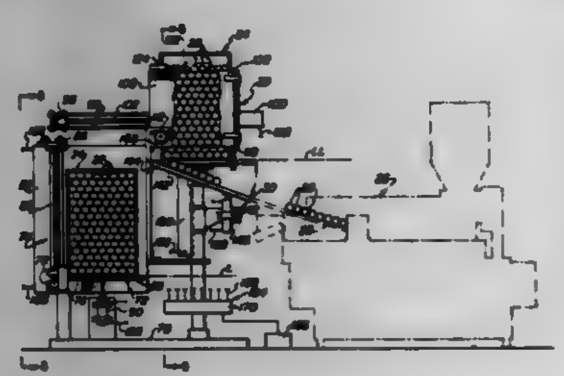
stations to the sticker transfer positions and move the sticker pickup assemblies in a return stroke from the sticker transfer positions to the sticker stations; and
cam means mounted in the prescribed reciprocating paths of the sticker pickup assemblies for engaging the sticker pickup assemblies as the sticker pickup assemblies are moved in a forward stroke and moving the assemblies elevationally upward from the sticker stations to the sticker transfer stations to pick up the stickers at the sticker stations and to carry the stickers upward and laterally from the sticker stations to the sticker transfer positions.

4,324,522
METAL SHEET HANDLING MACHINE
Vello S. Buccicone, Portage, Ind., assignor to Buccicone Engineering Co., Inc., Gary, Ind.
Filed Mar. 4, 1980, Ser. No. 127,224
Int. Cl.³ B65H *29/62, 31/20*
U.S. Cl. 414—51 **10 Claims**



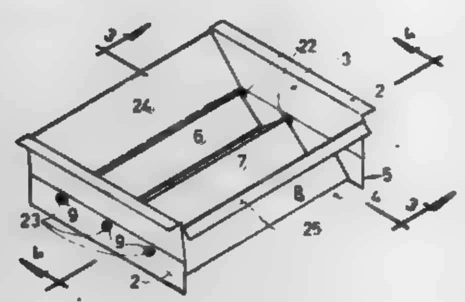
9. In a sheet piling machine having a pile supporting member, an end stop device and a back stop device, said back stop device comprising a sheet edge engaging forward face formed by a vertically disposed center plate member and hingedly connected wing forming side plate members adapted to be swung forwardly into angular relation relative to the center plate member, said plate members each having one or more apertures permitting the passage of an air stream, a conduit extending rearwardly of said plate members and to an air supply member and means forming air passageways connecting said conduit and said plate members so as to enable flow of air from said conduit through said passageways, said means forming said air passageways comprising chamber forming members secured on the back face of each of said wing forming side plate members which chamber members are hinged on an axis adjoining the opposite side edges of said center plate member and said means forming said passageways telescoping the end portion of said conduit.

4,324,523
SYSTEM FOR HANDLING TUBULAR CONTAINERS, INCLUDING APPARATUS AND CASES THEREFOR
William J. Zablocky, 312 Myers Ave., Hasbrouck Heights, N.J. 07604
Filed Apr. 25, 1980, Ser. No. 143,914
Int. Cl.³ B65B *69/00*
U.S. Cl. 414—131 **10 Claims**



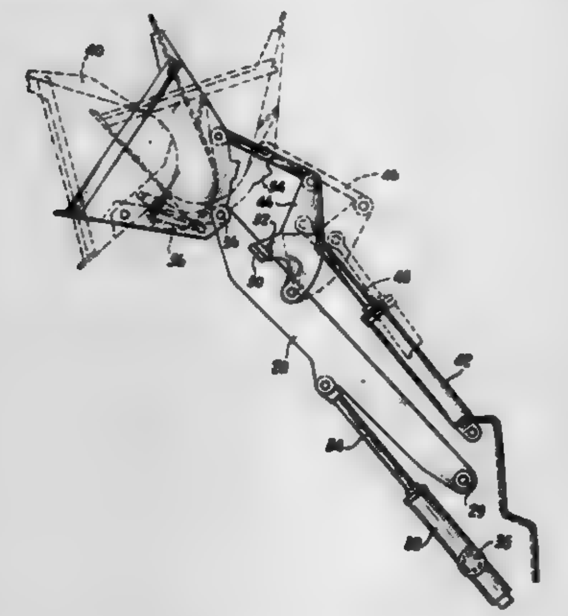
1. Apparatus for unloading tubular containers from incoming cases within which the tubular containers are arranged in freely stacked rows, each container having a longitudinal axis and each case having an access opening and a longitudinally opposite egress opening, the unloading being such that the rows emerge from a case through the egress opening thereof and are delivered serially to a selected delivery point, said apparatus comprising:
a frame;
an unloading station on the frame;
holding means on the frame for holding a case at the unloading station with the case oriented such that the rows of tubular containers extend generally laterally and are stacked essentially altitudinally to include a first row located in an unloading location registered with the access opening and the egress opening of the case, and subsequent rows stacked beyond the first row and biased toward the unloading location, with the longitudinal axes of all of the tubular containers extending in a transverse direction;
pusher means on the frame juxtaposed with the unloading station and including a pusher member movable in directions parallel to the transverse direction between a retracted position, wherein the pusher member is located outside the unloading station and adjacent the row of tubular containers located at the unloading location in the case held in the unloading station and in longitudinal alignment with the access opening and egress opening of the case, and an advanced position, wherein the pusher member is located inside the unloading station in place of the row of tubular containers at the unloading location, to complete a cycle of operation;
a receiving station on the frame juxtaposed with the unloading station in position for receiving a row of tubular containers pushed out of the unloading station in response to advancement of the pusher member from the retracted position to the advanced position;
delivery means on the frame at the receiving station for moving the tubular containers received at the receiving station laterally relative to the longitudinal axes thereof until the tubular containers arrive at the delivery point; and
actuating means for actuating the pusher means through a plurality of cycles of operation to enable each subsequent row of tubular containers to be placed in the unloading location and to push each so-placed subsequent row of tubular containers from the case.

4,324,524
DUST RETENTION DEVICE
Jonathan D. Barston, Dalkeith, and Robert G. Henley, Bickley, both of Australia, assignors to Barrett Barston (Australia) Limited, Melbourne, Australia
Filed Jan. 31, 1980, Ser. No. 117,306
Claims priority, application Australia, Feb. 12, 1979, PD7654
Int. Cl.³ B65G *3/04, 65/32*
U.S. Cl. 414—291 **7 Claims**



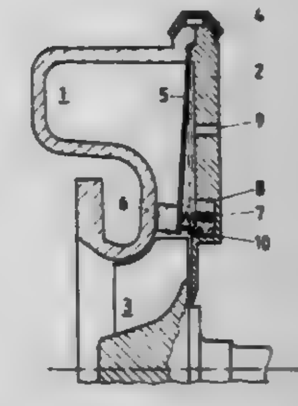
1. A dust retention device for a passage to a container for particulate material, the dust retention means comprising
a plurality of openings,
a restrictor for each opening being mounted in close proximity to one another so as to normally restrict the respective opening,
and wherein each restrictor comprises an inverted V-shape cross-section shutter extending across the respective opening, each shutter comprising a central axis about which it is pivotally mounted and a leaf being an arm of the V-shape extending to each side thereof; the arrangement being such that unequal loading of the leaves will cause each restrictor to move when loaded by particulate material in excess of a predetermined amount independently of the other restrictors to open the respective opening and dump the material thereon and thereafter return to restrict the respective opening while the other restrictors not so loaded remain in restricting condition to restrict egress of dust through their respective said openings, wherein fixed directing means mounted above the shutters is provided to direct falling particulate material to unequally load one leaf with respect to the other leaf of selected shutters.

4,324,525
LOADING APPARATUS
John Lane, Youngstown, and Jerry C. Tu, Medina, both of Ohio, assignors to Anvil Attachments, Inc., Brecksville, Ohio
Filed Feb. 19, 1980, Ser. No. 122,132
Int. Cl.³ E02F *3/82, 3/86*
U.S. Cl. 414—699 **6 Claims**



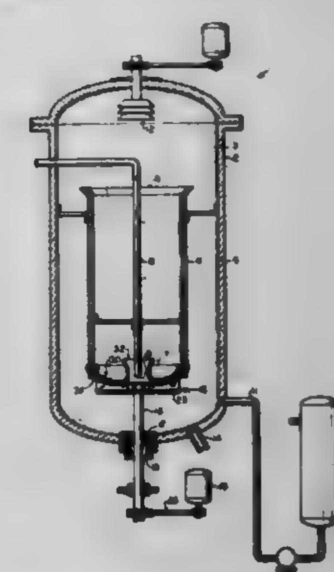
1. For a front end loader having an elevatable boom, the improvement comprising:
(a) a loading bucket;
(b) a bucket support means pivotally attached to the boom, and rotatably supporting said loading bucket;
(c) means for rotating said bucket support means between rollback and dump positions, on a first rotational axis defined by hinge points on said boom;
(d) means for rotating said bucket between its own rollback and dump positions on a second rotational axis defined by hinge points on said bucket support means, said second rotational axis being laterally spaced from said first rotational axis.
(e) abutments, mounted to said boom, defining dump stops for said bucket support means; and
(f) said bucket support means including integrally formed bucket stops for said bucket.

4,324,526
APPARATUS FOR REGULATING A TURBO-SUPERCHARGER
Max Berchtold, Küssnacht, and Ernst Jenny, Baden, both of Switzerland, assignors to BBC Brown, Boveri & Company, Limited, Baden, Switzerland
Filed Feb. 7, 1980, Ser. No. 119,399
Claims priority, application Switzerland, Mar. 16, 1979, 2500/79
Int. Cl.³ F01D *17/16*
U.S. Cl. 415—48 **16 Claims**



1. Apparatus for regulating a turbo-supercharger, comprising:
a housing, which housing includes a gas inlet for the turbo-supercharger;
a diaphragm having an inner periphery and an outer periphery, which diaphragm is connected at its outer periphery to the housing, said inner periphery of said diaphragm being movable between a first position and a second position relative to said housing; and
deflection means for deflecting a flow of gas within said inlet from a first flow angle to a second flow angle, said deflection means being provided at the inner periphery of the diaphragm.

4,324,527
CENTRIFUGAL PUMP
John W. Vanderveen, and Emil A. Malick, both of Bartlesville, Okla., assignors to Provesta Corporation, Bartlesville, Okla.
Division of Ser. No. 887,279, Mar. 16, 1978, Pat. No. 4,224,414. This application Apr. 11, 1980, Ser. No. 139,499
Int. Cl.³ F04D *29/24*
U.S. Cl. 415—213 B **12 Claims**



1. A centrifugal pump including:
a shaft;
bearing means rotatably mounting said shaft;
a plurality of vanes, means for mounting said vanes for rotation with said shaft with said vanes extending out-

wardly with respect to said shaft, each adjacent pair of vanes at least partially defining a flow path therebetween, each of said vanes having a first end adjacent said shaft and a second end spaced from said shaft outwardly of the respective said first end, each of said vanes having first and second side boundaries extending between the respective first and second ends, said first and second side boundaries of each vane being in diverging relation in a direction generally parallel to the longitudinal axis of said shaft from an inner radial position to an outer radial position along at least the outer portion of the length of the respective vane, each said pair of vanes at least partially defining an inlet opening adjacent said respective first ends and at outlet opening adjacent said respective second ends;

cover means extending between and cooperating with said first side boundaries and said second side boundaries of adjacent pairs of vanes to substantially enclose the flow paths between the adjacent pairs of vanes;

said cover means including a first member secured to said shaft for rotation therewith, said vanes being secured to the first member at their respective first side boundaries; and

the maximum distance between the respective first and second side boundaries being at least about 2 the times minimum distance between the first and second side boundaries.

4,324,528
AUTOMATIC REGULATING DEVICE FOR KEEPING CONSTANT THE SPEED OF WIND-POWERED PROPELLERS

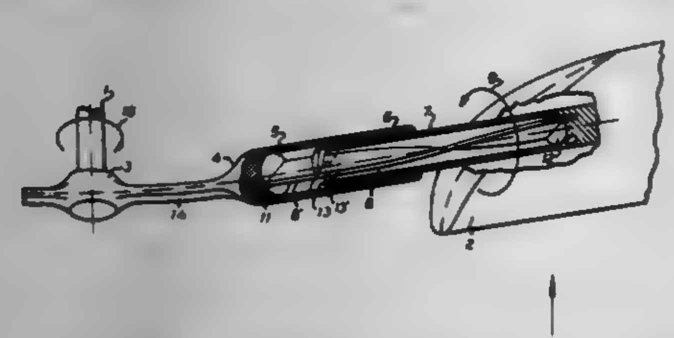
Sven G. W. Svenning, Partille, Sweden, assignor to Sven Svenning Konsult AB, Partille, Sweden

Continuation-in-part of Ser. No. 897,241, Apr. 18, 1978, abandoned, which is a continuation of Ser. No. 683,895, May 6, 1976, abandoned. This application Jul. 12, 1978, Ser. No. 924,051

Claims priority, application Sweden, May 12, 1975, 7505407

Int. Cl.³ F03D *7/04*

U.S. Cl. 416—132 B 11 Claims



1. Apparatus for maintaining the rotational speed of a wind-powered propeller substantially constant at a preset value, comprising:

a hub rotatable about a first axis,

a plurality of propeller blades mounted on said hub and extending radially therefrom,

each of said blades having a root portion,

a hub portion secured to the hub,

a torsion spring connecting said root and hub portions such that the pitch of the blade is adjustable about a pivot axis substantially at right angles to the axis of rotation of the propeller, and

means for prestressing at least one portion of said torsion spring for presetting the pitch of said blade to a desired minimum value about said axis,

each of said blades having a curved mean profile chord and being so formed and disposed in relation to its pivot axis that the degree of torque exerted by wind forces acting on the blade against the action of said torsion spring is determined substantially solely by the curvature of the mean chord of the curved blade profile and substantially independently of any lifting force on the blade, the torque exercised by the wind forces being counterbalanced by the elastic torque from the prestressed torsion spring portion, whereby with increased wind force each blade is pivoted about its pivot axis from said preset pitch value to positions of increased pitch against the action of its torsion spring, and with decreasing wind force each blade is pivoted about its pivot axis towards said preset pitch value by the action of its torsion spring, such that the speed of the propeller is automatically maintained substantially constant over a range of variation in the wind force.

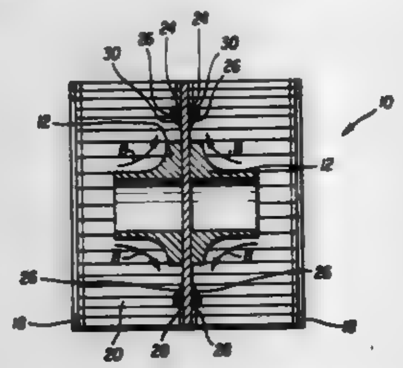
4,324,529
AXIAL-CENTRIFUGAL FLOW IMPELLER

Aubrey G. Nickels, Dunwoody, Ga., assignor to General Electric Co., Schenectady, N.Y.

Filed Jun. 16, 1980, Ser. No. 159,981

Int. Cl.³ F04D *29/28*

U.S. Cl. 416—187 12 Claims



1. In an axial-centrifugal flow impeller including a support plate, at least one hub member fixedly secured to one surface of said support plate, at least one end plate disposed axially upstream of said at least one hub member, and at least one set of impeller blades fixedly secured between said at least one end plate and said support plate and disposed in a peripheral array about said at least one hub member, the improvement comprising:

deflector means, secured to said one surface of said support plate and radially interposed between said at least one hub member and said at least one set of impeller blades, for deflecting the air flow, discharged by said at least one hub member, radially outwardly and axially rearwardly toward said axially upstream at least one end plate and redistributing said air flow along the entire axial length of each of the impeller blades of said at least one set of impeller blades.

4,324,530
HELICOPTER BLADE WITH A TIP HAVING A SELECTED COMBINATION OF SWEEP, TAPER AND ANHEDRAL TO IMPROVE HOVER EFFICIENCY

Evan A. Fradenburgh, Fairfield; William D. Jepson, Huntington, and Robert C. Moffitt, Seymour, all of Conn., assignors to United Technologies Corp., Hartford, Conn.

Filed Jan. 21, 1980, Ser. No. 114,131

Int. Cl.³ B63H *1/26*

U.S. Cl. 416—228 9 Claims

1. A helicopter blade having high blade twist, a leading edge, a trailing edge, a root, a tip, a chord dimension extending between said edges, and being fabricated so that aerodynamic blade loading during rotor hover operation will induce slight torsional deflection of the blade to a preferred pitch position and thereby improve rotor performance and reduce the total power required to drive the rotor and including:

a root section adapted to be connected to a helicopter rotor hub for rotation therewith about an axis of rotation,

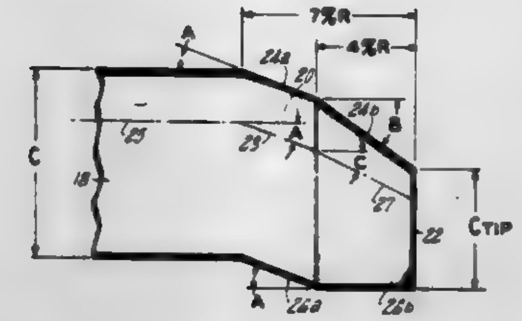
a central portion of selected aerodynamic shape connected to and extending outwardly from the blade root portion,

a tip portion connected to and extending outwardly from the blade central portion to establish a blade radius between

the axis of rotation and the blade tip, said blade tip portion being selectively shaped to improve helicopter hover performance by diminishing the intensity of the tip vortex generated during hover operation and directing the tip vortex away from the following blade to minimize interference therewith,

said tip portion extending for approximately 7% of blade radius,

said tip portion being swept rearwardly to reduce the velocity of the air in the direction of the tip local chord to thereby reduce blade tip loading and the strength of the tip trailing edge vortex generated in hover,



said tip portion also being tapered so that the chord dimension at its outboard end is approximately $\frac{3}{5}$ the chord dimension at its inboard end to reduce tip portion area and to thereby further reduce blade tip loading and the strength of the tip trailing edge vortex generated in hover, and

said tip portion also being deflected downwardly throughout the outer 4% of blade radius so as to direct the shed trailing edge tip vortex away from the following blade in hover.

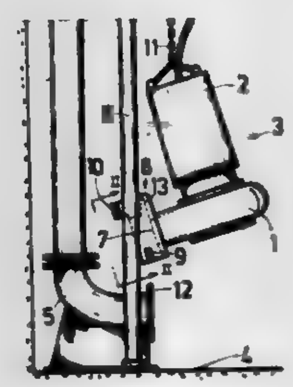
4,324,531
GUIDE APPARATUS FOR A SUBMERSIBLE PUMP

Hannu Sarvanne, Vantaa, Finland, assignor to Oy E. Sarlin AB, Kaivoksela, Finland

Continuation of Ser. No. 915,073, Jun. 12, 1978, abandoned. This application Dec. 28, 1979, Ser. No. 108,404

Int. Cl.³ F04B *39/14*

U.S. Cl. 417—360 1 Claim



1. An improved apparatus employing a pump and a motor, these being combined to form a pump unit for submersion in a liquid, said unit being integrally mounted in a liquid tank, a pump delivery pipe and a vertical guide track, the latter guiding the pump unit and enabling it to be lowered into the liquid tank whereby said pump is provided with a delivery port which is connected with the delivery pipe, said pump unit being connected to a bipartite slide resting against the guide track, said slide having a recess therein for receiving a flange formed of said delivery pipe, wherein the improvement comprises, providing the guide track with two guides and said slide is defined by two lower projections and two upper projections between which said guides are disposed, said lower projection being positioned on the same side of said guides as said delivery port and said upper projection being positioned on the opposite side of said guides, whereby, uninhibited vertical travel of said pump with respect to said slide and guides is possible by tilting of said pump unit during lifting or lowering, and said slide being connected to the delivery port of the pump, whereby the lower projections are located below and the upper projections above the delivery port; and said projections during lowering of said pump unit guide said flange of said delivery pipe into said recess of said slide to urge registration between said delivery port and said delivery pipe.

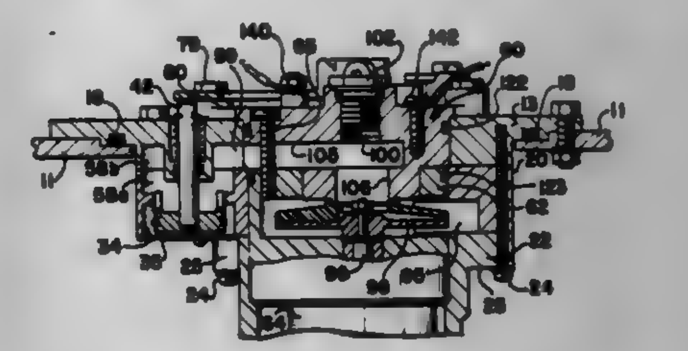
4,324,532
CARTRIDGE PUMP

James E. Knife, Dayton, Ohio, assignor to TRW Inc., Cleveland, Ohio

Filed Jan. 24, 1980, Ser. No. 114,926

Int. Cl.³ B67D *5/40;* F04R *39/14*

U.S. Cl. 417—360 7 Claims



1. A cartridge pump assembly in which a pump housing is positioned within a tank of liquid to be pumped and a motor-driven cartridge pump unit is removably received in said pump housing, the improvement comprising:

means in said pump housing defining an inlet and an outlet, cooperating inlet and discharge ports formed in said cartridge pump unit opening into said housing inlet and outlet,

valve means in said pump housing at said inlet movable between open and closed positions to permit flow of liquid to be pumped to flow through said inlet to the corresponding inlet port of the cartridge pump unit,

valve operator means on said housing for moving said valve means from said closed to said open position,

a bale-type handle on said cartridge pump unit for lifting said cartridge pump unit out of its seated position within said housing, said handle movable between a raised lifting position and a lowered storage position, and

said valve operator means being engaged by said handle only in said storage position to open said valve means.

4,324,533
UNIVERSAL GUARD

Earle E. Schroeder, New Richmond, and James E. Baker, Amelia, both of Ohio, assignors to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Feb. 15, 1980, Ser. No. 121,670

Int. Cl.³ F16P *3/00;* F16D *3/84*

U.S. Cl. 417—360 1 Claim

1. A guard for a rotating drive connection between a drive motor and a pump, comprising:

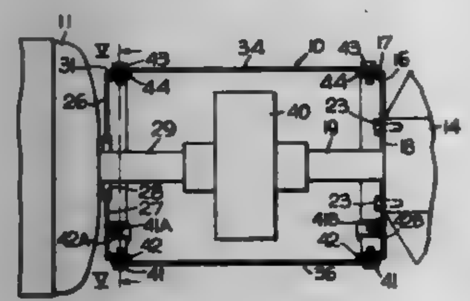
a first elongated semi-cylindrical guard sleeve member having one longitudinal edge deformed to provide a seat;

a second elongated semi-cylindrical guard sleeve member having one longitudinal edge deformed to provide a seat for the non-deformed longitudinal edge of said first guard sleeve member and its other longitudinal edge seated within said seat provided by said deformed longitudinal edge of said first guard sleeve member so that the assembled first and second guard sleeve members present a substantially smooth contour without protruding edges;

a circular pump motor end cap, said end cap having an annular flange extending parallel to the axis of the pump motor shaft toward said drive motor and an axial opening adapted to receive the pump motor shaft with adequate clearance;

fastening means to removably secure said pump motor end cap to the pump frame in position where the pump shaft may rotate freely without striking said pump motor end cap;

a circular drive motor end cap having an annular flange extending parallel to the axis of said pump motor shaft toward said pump frame and an axial opening adapted to fit over the drive shaft of the drive motor;



first removable means to secure said first guard sleeve member to said annular flange of said pump motor end cap;

second removable means to secure said second guard sleeve member to said annular flange of said pump motor end cap; and

means to removably secure said first and second guard sleeve members to said annular flange of said motor end cap, whereby said guard is secured solely to the frame of the pump and encloses the rotating drive connection between the motor and pump in extended cantilever fashion.

4,324,534
POWER SUPPLY APPARATUS

Robert L. Sharkey, Paisley, England, assignor to Andrew Master Hones Limited, Paisley, England

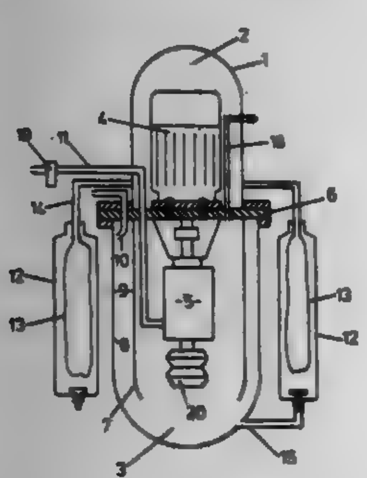
PCT No. PCT/GB79/00086, § 371 Date Jan. 26, 1980, § 102(e) Date Jan. 23, 1980, PCT Pub. No. WO79/01136, PCT Pub. Date Dec. 27, 1979

PCT Filed May 29, 1979, Ser. No. 189,833

Claims priority, application United Kingdom, May 26, 1978, 21266/78

Int. Cl.³ F04B *49/00*

U.S. Cl. 417—414 7 Claims



1. Power supply apparatus having

a housing having an external wall,

a gas-containing chamber in the housing,

a motor in said gas-containing chamber,

a fluid-containing chamber in the housing, the fluid being different from said gas,

a pump in said fluid-containing chamber for pressurizing said fluid,

said pump being drivably connected to said motor,

inlet and outlet means for said fluid-containing chamber and extending through the housing wall,

pressure-equalizing means for altering the pressure of said gas in said gas-containing chamber and of said fluid in said fluid-containing chamber in response to changes in ambient pressure external of the housing,

said pressure-equalizing means comprising a plurality of deformable gas-filled containers external of the housing in gas flow communication with each other and with said gas-containing chamber of the housing,

at least two of said containers being exposed externally to said ambient pressure and

at least one other of said containers being exposed externally to said fluid in said fluid-containing chamber of the housing.

4,324,535
SLANT AXIS ROTARY PISTON MECHANISM WITH FIXED SINUOUS PARTITION IN GROOVED ROTOR

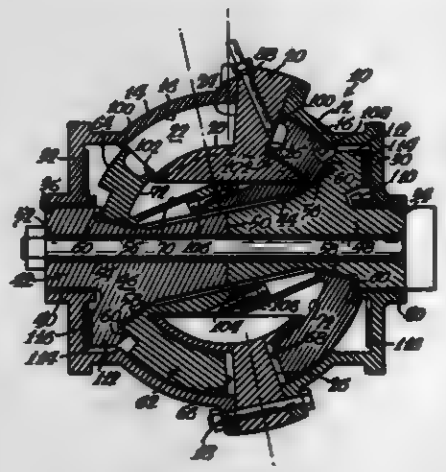
John M. Clarke, Dunlap, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US80/00076, § 371 Date Jan. 24, 1980, § 102(e) Date Jan. 24, 1980, PCT Pub. No. WO81/02183, PCT Pub. Date Aug. 6, 1981

PCT Filed Jan. 24, 1980, Ser. No. 149,351

Int. Cl.³ F01C *1/00, 19/00*

U.S. Cl. 418—51 8 Claims



1. A slant axis rotary piston mechanism comprising:

a shaft (42) having an angularly offset eccentric (44);

a housing (10) defining a chamber (22) having a generally concave spherical portion (16) and journalling said shaft and containing said eccentric;

a peripheral, generally sinuous wall (20, 24, 26) for said chamber extending radially toward said eccentric and terminating in an inner convex spherical wall (28) extending about said eccentric;

a rotor (62) journalled on said eccentric having generally spherical exterior and interior parts (64, 72) and a peripheral, radial wall (66, 68), said rotor wall facing said chamber wall and defining with said chamber wall and said housing at least two working volumes (A, B, C, D, E, F) whose volume varies as the shaft and rotor rotate relative to the housing;

seals (100, 102) carried by said rotor spherical parts immediately adjacent said radial wall and sealing engaging respective ones of said spherical portion and said spherical wall;

means (108, 110) for synchronizing relative movement between the shaft, the rotor and the housing; and

means (90–96) for directing working fluid into and out of said working volumes.

4,324,536
LINK-COUPLED ROTOR ASSEMBLY

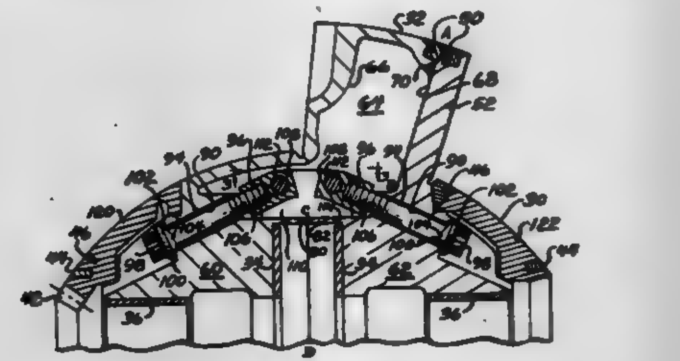
Dane G. Shank, Painesville, Ohio, assignor to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US80/00645, § 371 Date May 28, 1980, § 102(e) Date May 28, 1980, PCT Pub. No. WO81/03519, PCT Pub. Date Dec. 10, 1981

PCT Filed May 28, 1980, Ser. No. 245,234

Int. Cl.³ F01C *1/00, 21/08;* F16D *1/02*

U.S. Cl. 418—53 4 Claims



1. A structure comprising:

first and second members (60,62) brought into abutment at a common interface (ABCD) with each other by movement toward each other along an axis (84);

link means (110) abutting each of said members about said interface and spanning said interface, said link means having first ends abutting said first member and second ends abutting said second member;

pivotable nut structures (108) journalled (112) in each of said ends;

linear passageways (90) in each of said members nominally aligned with said nut structures, said passageways each being at an acute angle to said axis and each terminating in a shoulder (100) at their ends remote from the corresponding nut structures; and

threaded, headed fasteners (94) having their heads (98) in operative engagement with corresponding ones of said shoulders and extending through the corresponding passageway and threadably received by the corresponding nut structure to tension the corresponding link means and hold said members in assembled relation.

4,324,537
ROTARY MACHINE WITH A PLURALITY OF ROTORS HAVING PERIPHERAL ROLLING CONTACT

Usher Meyman, 230 Ocean Pkwy., Brooklyn, N.Y. 11218

Filed Nov. 13, 1979, Ser. No. 93,609

Int. Cl.³ F01C *1/12, 17/02, 17/06*

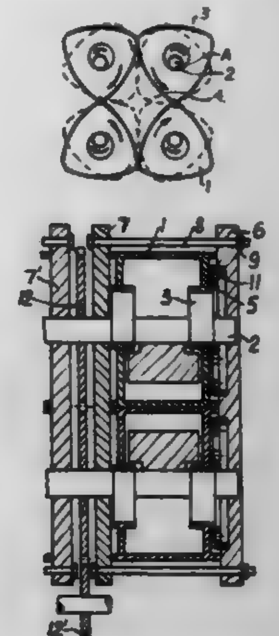
U.S. Cl. 418—58 9 Claims

1. A rotary machine, such as a rotary combustion engine, a rotary pump and the like, comprising

a plurality of rotors rotatable about substantially parallel axes and having peripheral surfaces, said rotors being located relative to one another and each having a shape such that said rotors during the rotation about said axes roll by their peripheral surfaces one over the other without slippage and together bound at least one working cavity which is open at its both axial ends but is permanently closed peripherally by said peripheral surfaces of said rotors, each of said rotors having a shaft with an eccentric and being rotatable on said eccentric;

means for closing said cavity at said axial ends thereof and including two cover members located at both axial sides of said rotors;

a gear provided on each of said rotors so that said gear is arranged not on said shaft of said rotor but on said rotor itself, said gears having outer teeth; and



gears provided on said cover members and each having inner teeth, each of said gears of said rotors engaging with a respective one of said gears of said cover members.

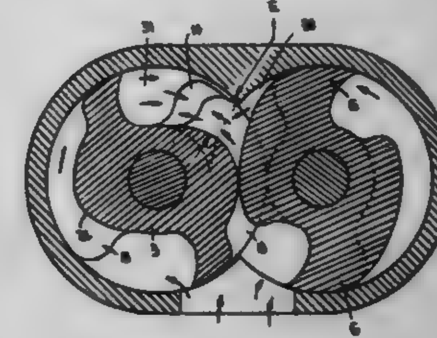
4,324,538
ROTARY POSITIVE DISPLACEMENT MACHINE WITH SPECIFIC LOBED ROTOR PROFILES

Arthur E. Brown, Lake George, N.Y., assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Continuation-in-part of Ser. No. 946,320, Sep. 27, 1978, Pat. No. 4,224,016. This application Apr. 11, 1980, Ser. No. 139,224

Int. Cl.³ F01C *1/20;* F04C *18/20*

U.S. Cl. 418—191 5 Claims



1. A rotary positive displacement machine adapted to handle a working fluid comprising: a casing structure having two intersecting bores, a first rotor mounted for rotation in one of said bores; a second rotor mounted for rotation in the other said bore; each rotor having both a main cross section profile and an end cross section profile; each main cross section profile being taken perpendicular to the axis of rotation of the rotor and midway along the axial width of the rotor; each end cross section profile being taken perpendicular to the axis of rotation of the rotor and near the axial end of the rotor; the main cross section profile of the first rotor having a main hub and two main lobes projecting radially outward therefrom; each main lobe of the first rotor having a concave face and a convex face; the main cross section profile of the second rotor having a main hub and two main lobes projecting radially outward therefrom and each main lobe having a concave face and a convex face; said main hub of the second rotor having two main grooves therein and each main groove being located angularly adjacent the concave face of a respective lobe; timing gears constraining said two rotors to rotate in timed relation; said main lobes on the first rotor being adapted to interengage with said main grooves in the main hub of the second rotor as the rotors

rotate; said main hub of the second rotor being profiled so as to rotate in sealing relation with said main hub of the first rotor during portions of each rotation of the rotors; said end cross section profile of the first rotor being defined by a flat end plate with two grooves therein; the outermost radius of said end plate being larger than an outermost radius of the main hub of the first rotor; said end cross section profile of the second rotor having a smaller diameter hub with two end lobes projecting radially outward therefrom; each said end lobe being adapted to interengage with a said groove in the end plate as the rotors rotate; said smaller diameter hub being profiled so as to rotate in sealing relation with the outermost radius of said end plate during portions of each rotation of the rotors; said casing structure having a lower pressure port for passage therethrough of the working fluid at lower pressure; said casing structure also having a higher pressure port for passage therethrough of the working fluid at higher pressure; said higher pressure port being located in an end wall of the bore containing said first rotor; said end plate and its grooves therein serving to alternately cover and uncover said higher pressure port so as to control the flow of the working fluid through the higher pressure port; said higher pressure port having an outer radius which is larger than the outermost radius of said main hub of the first rotor; the said outer radius of the higher pressure port being measured from the axis of rotation of the first rotor; said first rotor and said bore containing the first rotor forming a first chamber; said second rotor and said bore containing the second rotor forming a second chamber; each rotor being adapted to displace the working fluid within its respective said chamber as the rotors rotate and wherein the improvement is comprised by said main hub of said first rotor having given radius profiles, at angular locations thereon which are adjacent to said concave faces of said main lobes of said first rotor, and other radius profiles which are larger than said given radius profiles at angular locations thereon which are adjacent to said convex faces of said main lobes of said first rotor, to reduce an interchamber throttling loss, during flow of the working fluid between said two chambers; and said first rotor hub further has rounded convex transition sections which interconnect said given radius profiles with said other larger radius profiles.

4,324,539

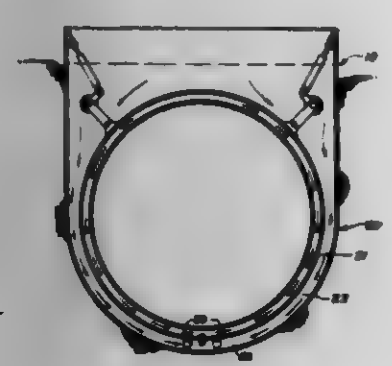
CONCRETE PRESSURE MONITORING DEVICE FOR MONOLITHIC CONCRETE STRUCTURE FORMING APPARATUS

Richard W. Hanson, Spokane, Wash., assignor to R. A. Hanson Co., Inc., Spokane, Wash.

Filed May 3, 1979, Ser. No. 35,554

Int. Cl.³ B28C *7/16*

U.S. Cl. 425—99 — 12 Claims



1. In an apparatus for continuously forming an elongated monolithic concrete structure along a prepared soil surface within an excavation formed with walls converging downwardly and transversely to a bottom surface and with the apparatus having a distributor assembly including a forward upright bulkhead conforming to the transverse configuration of the excavation adapted to move longitudinally along the prepared soil surface, and an inner form member supported by the distributor at an elevation spaced from the excavation walls to transversely shape concrete fed into the distributor rearward of the bulkhead during longitudinal movement thereof; a pressure monitoring device, comprising:

pressure sensing means mounted to the distributor rearward of the bulkhead adjacent the bottom surface of the excavation for sensing pressure variance within the concrete rearwardly adjacent the bulkhead and between the inner form member and excavation bottom; and

remote indicator means communicating with the pressure sensing means and responsive thereto for indicating pressure levels of the concrete adjacent the pressure sensing means.

4,324,540

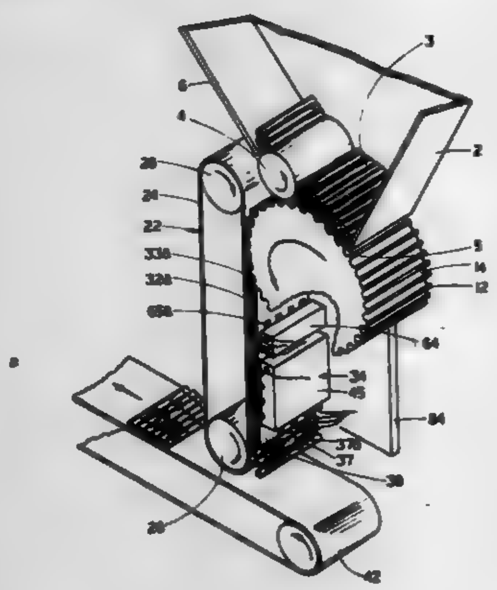
APPARATUS FOR MAKING GROOVES IN TOBACCO SMOKE FILTERS

John H. Sexstone, Anchorage; Tom Lewis, and Ken Milliner, both of Louisville, all of Ky., assignors to Brown & Williamson Tobacco Corporation, Louisville, Ky.

Filed Jul. 11, 1980, Ser. No. 167,554

Int. Cl.³ A24D *3/04*

U.S. Cl. 425—385 — 11 Claims



1. A filter rod groove-making machine comprising:

(a) conveying means;

(b) means to feed filter rods to said conveying means;

(c) stationarily mounted heated groove-making means in preselected co-operating spaced relation with said conveying means, said groove-making means being transversely disposed in relation to movement of said conveying means whereby a groove is impressed into the filter rod as it is conveyed past the groove-making means; and

(d) receiving means in discharge relation with said conveying means.

4,324,541

APPARATUS FOR MANUFACTURING AN OBJECT IN PLASTICS MATERIAL

Ennio G. Curetti, and Andre M. Collombin, both of Grand-Lancy, Switzerland, assignors to Motosacoche S.A., Geneva, Switzerland

Division of Ser. No. 923,084, Jul. 7, 1978, Pat. No. 4,243,620, which is a continuation of Ser. No. 692,508, Jun. 3, 1976, abandoned. This application Jul. 10, 1980, Ser. No. 168,370

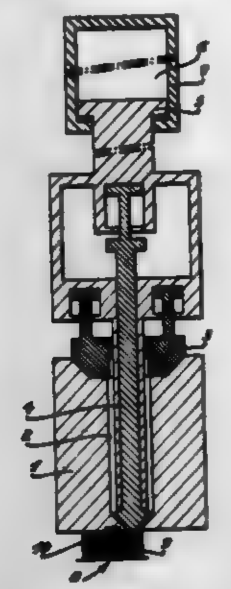
Claims priority, application Switzerland, Jun. 13, 1975, 7666/75

Int. Cl.³ B29F *1/00, 1/05*

U.S. Cl. 425—562 — 2 Claims

1. Apparatus for producing an object made of plastic material, comprising a mold comprised by a hollow die having an open end for the reception of plastic material, a punch having a free end and having an external diameter smaller than the internal diameter of the die, means for reciprocating said

punch in the die toward and away from said open end to close and respectively open said end of said die, the internal side walls of said die adjacent said end thereof tapering toward said end thereof whereby said end thereof is of a diameter smaller than the greatest internal diameter of the die, said punch adjacent said free end tapering to a smallest diameter at said free end which is substantially the same as the diameter of said end of said die, said free end of said punch being flush with the outer surface of the die when the punch closes the die, and a



nozzle having a duct therethrough for supplying plastic material under pressure to the die, the nozzle being slidable on the die between a first position in which the duct is out of registry with the open end of the die and a second position in which the duct is in registry with the open end of the die, the die closing the duct in said first position and the free end of the punch closing the duct in said second position when the punch closes the die, the punch and die in said second position defining between them a mold cavity that surrounds the punch.

4,324,542

ELECTRONIC SAFETY DEVICE FOR A FLUID, PARTICULARLY GASEOUS, FUEL BURNER

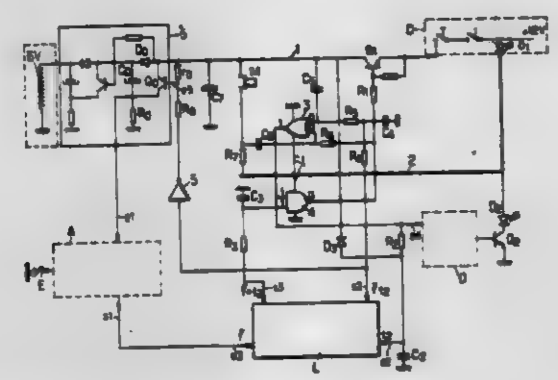
Jacques Challet, Allegre, France, assignor to Constructions Electriques, Le Puy, France

Filed Jan. 30, 1980, Ser. No. 116,787

Claims priority, application France, Feb. 1, 1979, 79 02683

Int. Cl.³ F23N *5/00*

U.S. Cl. 431—78 — 6 Claims



1. An electronic safety device for fluid, particularly gaseous, fuel burner, of the intermittent operating type, said device being of the type adapted to operate in successive heat demand cycles for alternately producing a flame and for providing for extinction of the flame depending respectively on the presence or absence of a heat demand, the fuel supply to the burner being controlled by an electromagnetic valve connected to an electrical power supply circuit comprising at least two controlled switches, a first one of said switches comprising a thermostatic switch subjected to the temperature to be regulated, and a further one of said switches comprising a manually controlled on/off switch, the connection to the electrical power supply being made by means of a controlled switch member, said device having several operating states at least one of which comprises a safety state in which the input of the fuel to the burner is inhibited, said safety state being removed only by manual actuation of a resetting means, wherein the improvement comprises the provision of a said controlled switch member comprising a semi-conductor switch member and of a multi-input logic circuit means, which provides bistable operation and includes an output terminal connected to the control electrode of said switch member, for producing, responsive to the manual actuation of said resetting means, a first, "normal operating" output in which the said switch member is maintained in a conductive condition and the fuel valve is open and for producing, responsive to at least one fault requiring interruption of the fuel supply at least by the time at which the subsequent heat demand cycle is initiated, a second, "fault detection" output in which said switch member is rendered non-conductive and said fuel valve is closed; and the provision of short circuit detection means, connected to one input of said multi-input logic means, for detecting short-circuiting of said controlled switch member and for causing said logic means to produce said "fault detection" output responsive to short circuiting of said controlled switch member.

4,324,543

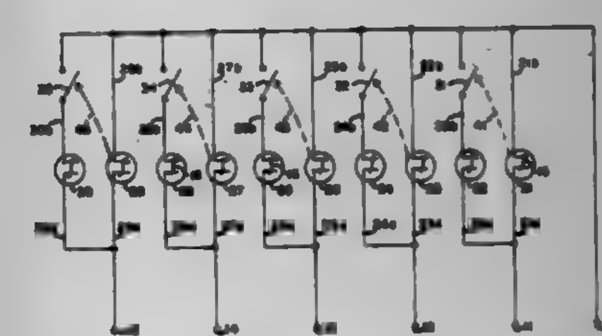
PHOTOFLASH ARRAY WITH SELECTIVE PAIRING OF LAMPS AND SWITCHING OF COMMON CIRCUIT

David R. Broadt, Lewisburg, Pa., assignor to GTE Products Corporation, Stamford, Conn.

Filed Jun. 6, 1980, Ser. No. 156,991

Int. Cl.³ F21K *5/02*

U.S. Cl. 431—359 — 8 Claims



1. A photoflash lamp array comprising, in combination:

a plurality of 2 n flashlamps, each having first and second lead-in wires;

a plurality of n selective terminal means, each associated with a respective pair of said 2 n lamps and electrically connected to the first lead-in wire of each of the lamps of said respective pair;

a common terminal means associated with all of said 2 n lamps and directly connected in electrical circuit to the second lead-in wire of one of the lamps of each of said respective pairs of 2 n lamps; and

a plurality of n normally open switches, each coupled in electrical circuit between said common terminal and the second lead-in wire of the other of the lamps of an associated one of said respective pairs of 2 n lamps, whereby each of said normally open switches is coupled between the second lead-in wires of an associated one of said respective pairs of 2 n lamps;

said common and selective terminal means being adapted for connection to a source of firing pulses, and each of said switches being responsive to the flashing of the directly connected lamp of an associated pair so as to electrically connect the other lamp of said associated pair to said common terminal means.

4,324,544

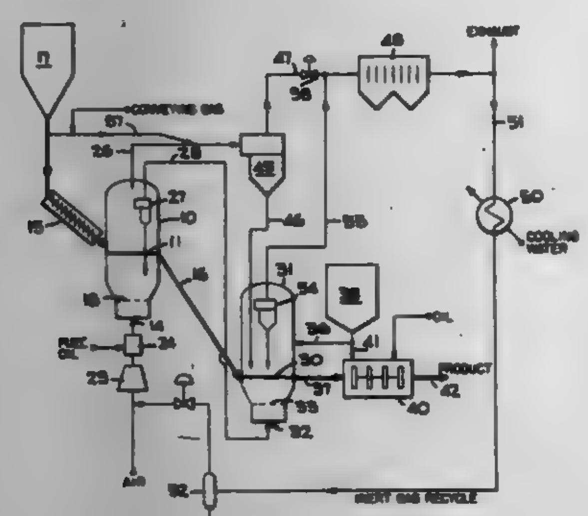
PROCESS AND SYSTEM FOR DRYING COAL IN A FLUIDIZED BED BY PARTIAL COMBUSTION

John H. Blake, Menlo Park, Calif., assignor to FMC Corporation, Chicago, Ill.

Filed Jan. 12, 1980, Ser. No. 158,857

Int. Cl.³ F26B *3/08;* **F27B** *15/00*

U.S. Cl. 432—14 **9 Claims**



1. A continuous process for drying particulate coal utilizing heat obtained only from controlled combustion of coal within a fluidized bed of particulate coal after the fluidized bed has first been initially fluidized and raised to a temperature between about 400°-600° F., comprising the steps of:

maintaining fluidization of the particulate wet coal with an unheated fluidizing gas containing oxygen to form the fluidized bed;

maintaining sufficient oxygen for combustion within the fluidized bed so that the bed temperature is controlled within the range between 400° F. and 600° F. whereby the coal is in partial combustion and the temperature is substantially the same throughout the fluidized bed;

withdrawing the fluidizing gas, gaseous coal combustion products and water vapor from above the fluidized bed;

withdrawing dried coal from the fluidized bed;

maintaining said withdrawn dried coal in a substantially inert off-gas atmosphere; and

cooling said dried coal to a temperature below 140° F.

4,324,545

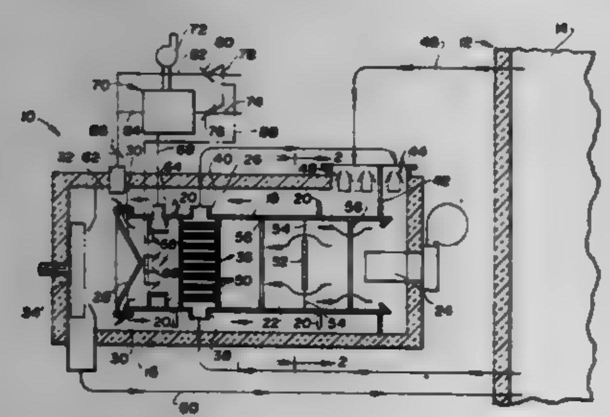
RECIRCULATING HEATER FOR PROCESSING OVEN

Gordon F. Hubbert, Plymouth, Mich., assignor to Gladd Industries, Inc., Detroit, Mich.

Filed Sep. 22, 1980, Ser. No. 189,483

Int. Cl.³ F24H *1/00*

U.S. Cl. 432—223 **12 Claims**



1. A recirculating heater for processing ovens comprising: an elongated outer housing; an elongated inner housing received within the outer housing in a spaced relationship thereto so as to define a first gas flow path through the inner housing and a second gas flow path between the outer and inner housings; a burner at the upstream end of the inner housing along the first path to provide heating of gas flowing therealong; a mixing member of a conical shape located at the downstream end of the inner housing and pointing upstream toward the burner so as to deflect gas flowing along the first path outwardly toward gas flowing along the second path; a mixing chamber defined by the outer housing downstream from the conical mixing member such that gas from the first and second paths is mixed therein; a blower within the mixing chamber for drawing gas through the first and second gas flow paths; an internal heat exchanger located within the inner housing between the burner and the conical mixing member so as to extract heat from the gas flowing along the first path; and a supply conduit for delivering gas carrying the heat extracted by the heat exchanger to the upstream end of one of the flow paths such that the gas temperature within the inner housing upstream from the heat exchanger can be sufficiently high to provide thermal incineration of combustible pollutants while still delivering gas of a much lower temperature from the heater.

4,324,546

METHOD FOR THE MANUFACTURE OF DENTURES AND DEVICE FOR CARRYING OUT THE METHOD

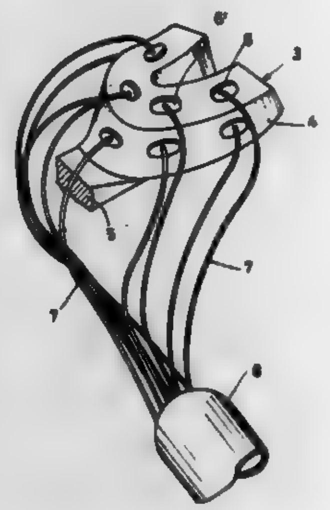
Paul Heitlinger, Chemnitzer Strasse 15, 6054 Rodgau 3, and Fritz Rodder, Schulstrasse 1, 6273 Waldems/Esch, both of Fed. Rep. of Germany

Filed Jul. 14, 1980, Ser. No. 167,974

Claims priority, application Fed. Rep. of Germany, Sep. 12, 1979, 2936847

Int. Cl.³ A61C *13/00*

U.S. Cl. 433—25 **16 Claims**



1. Apparatus for the manufacture of dentures in which the prepared tooth stump is reproduced in a working model, and a denture suitably conformed to the working model is formed, comprising means forming an optical reproducing device for sweeping over a tooth or tooth stump and providing an electrical output signal of three dimensional surface-information coordinates, a computer for receiving said output signal, and a milling machine operated and controlled by said computer for forming a three dimensional reproduction of said tooth or tooth stump in accordance with said surface-information coordinate signals.

4,324,547

DENTISTRY TECHNIQUE

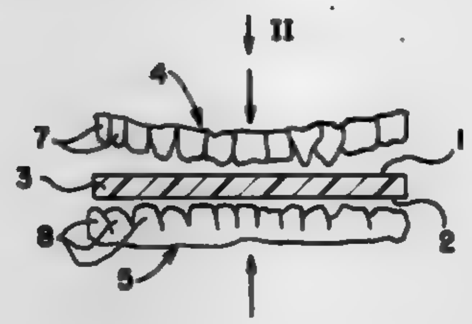
Mircea Arcan, Tel-Aviv, Israel, and Benedict Heinrich, Bremen, Fed. Rep. of Germany, assignors to Vishay Intertechnology, Inc., Malvern, Pa.

Filed Jan. 4, 1979, Ser. No. 1,009

Claims priority, application Fed. Rep. of Germany, Sep. 16, 1978, 2840365; Sep. 16, 1978, 7827611[U]

Int. Cl.³ A61C *9/00*

U.S. Cl. 433—71 **58 Claims**



1. A method of examining and determining the characteristics of a set of teeth and especially of human teeth, comprising

placing between the teeth to be examined at least one strip-like segment of a material which is not completely elastic (i.e. elasto-plastic), optically isotropic and exhibiting mechanical birefringence (i.e. stress birefringence),

bringing the jaws which hold the teeth to be examined to bear under pressure against the strip-like segment,

removing the strip-like segment deformed by the teeth to be examined, and

studying the impressions formed within the strip-like segment under polarized light.

4,324,548

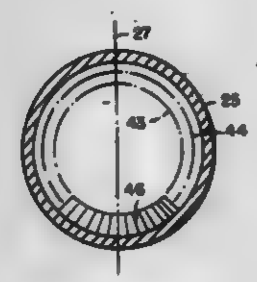
LATCH MECHANISM FOR DENTAL HANDPIECE ASSEMBLY

John D. Nilles, Roselle; Stanley L. Stankiewicz, Chicago, and David S. Zabriski, Mt. Prospect, all of Ill., assignors to American Hospital Supply Corporation, Evanston, Ill.

Filed Jun. 23, 1980, Ser. No. 161,680

Int. Cl.³ A61C *1/08*

U.S. Cl. 433—126 **22 Claims**



1. A dental handpiece assembly comprising a motor section and a handpiece section having a motor casing and a handpiece casing, respectively; each of said sections having a power-transmitting shaft axially disposed therein; said sections normally being disposed in longitudinal alignment with the respective power-transmitting shafts thereof in operative engagement with each other; and latching means releasably connecting said sections in operative relationship; wherein the improvement comprises

said latching means including a tubular latching ring provided by said motor section adjacent said handpiece section; said latching ring having a circumferentially-exposed annular outer surface continuing axially beyond the outer surface of said motor section; means mounting said ring for transverse movement between a latching position wherein said ring is coaxial with said motor section and has its annular outer surface substantially aligned with the outer surface of said motor section and an unlatching position wherein said ring is displaced laterally relative to said motor section; a spring urging said ring into said latching position; said handpiece casing having a tubular neck provided with an annular flange disposed within said ring when said sections are latched together; and an arcuate projection provided within said ring and engaging said neck and flange to prevent axial separation of said sections when said ring is in its latching position; said projection being shifted laterally away from said neck and flange when said ring is urged into its unlatching position for disconnection of said section.

4,324,549

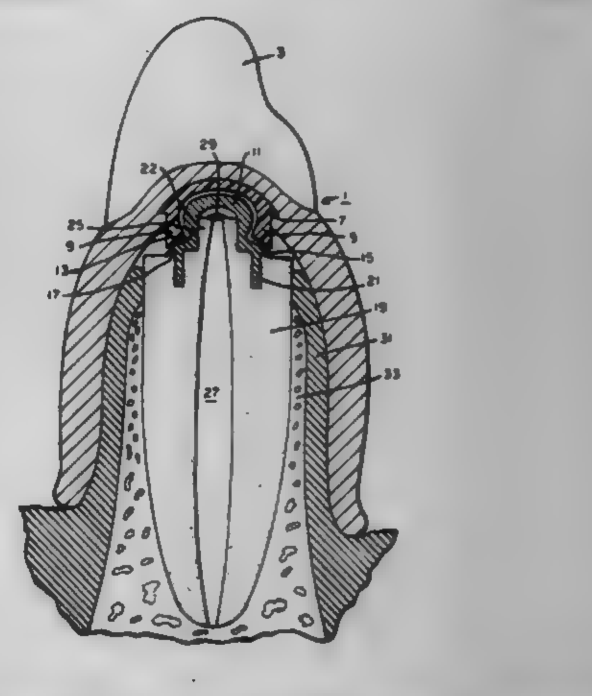
ASSEMBLY FOR ATTACHING A DENTAL PROSTHESIS TO TEETH

George W. Madray, 2525 Community Rd., Brunswick, Ga. 31520

Continuation of Ser. No. 960,118, Nov. 13, 1978, abandoned. This application Sep. 26, 1980, Ser. No. 191,019

Int. Cl.³ A61C *13/28*

U.S. Cl. 433—169 **4 Claims**



1. In combination, an assembly of elements for removably securing a denture in the mouth of a person who needs to wear a denture, comprising a tooth cap having a selected bottom contour so that the cap may be securely cemented to a prepared surface on the outer end of an anchor tooth, the prepared surface on the anchor tooth being made to accurately match the selected contour on the cap, said cap including, a stud element, having a head portion and a narrow neck portion, projecting from the tooth cap in a direction away from the anchor tooth, an elastic member having a ring portion with an internal diameter less than the head portion of the stud element but slightly greater than the neck portion of the stud element, so that the elastic member may be forced over the head portion to the neck portion and thus be held in place, the denture material above the head of the stud element being hollowed out sufficiently so that the pressure load on the dentures during use is not transferred to the head of the stud element, means for securing the outer region of the elastic member to the denture, the tooth cap also including, at its lower outer peripheral region, a ring portion in the shape of a frustum of a cone having an upper load receiving surface during use engaging the bottom of the ring portion of the elastic member to thus during use take some of the denture load on the gums onto the shoulder region of the anchor tooth, the ring portion of the cap also having a lower surface in the shape of the frustum of a cone to thus, when cemented to the matching surface on the anchor tooth, firmly circumferentially grips the anchor tooth to strengthen the anchor tooth against splitting.

4,324,550

IMPLANT FOR THE JAW

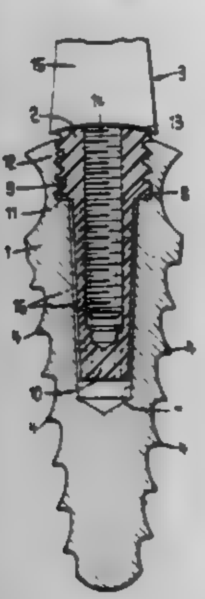
Jürgen Reuther, Frankfurt, Fed. Rep. of Germany; Heinz Moser, and Hermann Krauss, both of Selzach, Switzerland, assignors to Osteo AG, Selzach, Switzerland

Filed Nov. 21, 1980, Ser. No. 209,296

Claims priority, application Switzerland, Nov. 21, 1979, 10374/79

Int. Cl.³ A61C *8/00*

U.S. Cl. 433—174 **9 Claims**



1. An implant for the jaw, comprising:

a conical implant body having support ribs provided on the external surface thereof and an internal passageway extending from the base of said implant body towards the vertex of said implant body;

a conical bed of a plastics material having an internal passageway extending from the base of said bed towards the vertex of said bed, said bed positioned coaxially within said internal passageway of said implant body; and

an implant support positioned coaxially within said internal passageway of said bed, whereby said implant support is maintained in the jaw by cementless implantation of said implant body into the jaw.

4,324,551

BOW-MOUNTED PROPELLER DRIVEN BOAT

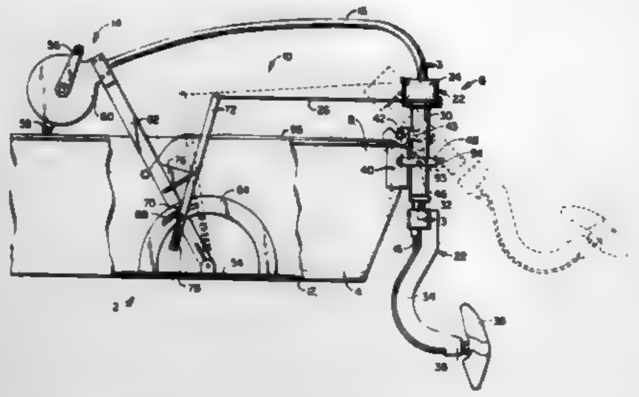
Albert G. Gurries, 3540 Hecker Pass Rd., Gilroy, Calif. 94939

Filed Dec. 29, 1980, Ser. No. 220,404

Int. Cl.³ B63H *16/14*

U.S. Cl. 440—28 **4 Claims**

2. A propeller driven boat for use on a body of water, said boat of the type having a bottom, sides and a seat comprising: a bow-mounted, hand-powered propeller drive, said propeller drive having a forwardly disposed propeller configured to pull said boat over said body of water and being pivotally mounted to said boat along a first axis generally parallel to said bottom, and foot-actuated steering means for changing the directional orientation of said propeller drive around a second axis generally normal to said bottom so that activating a first pedal moves said propeller drive around said second axis in one direction and activating a second pedal moves said propeller drive around said second axis in a direction opposite said one direction, and simultaneous activation of said first and second pedals moves said hand-powered propeller drive about said first axis



to lift at least a portion of said propeller drive out of said body of water to a raised position.

4,324,552

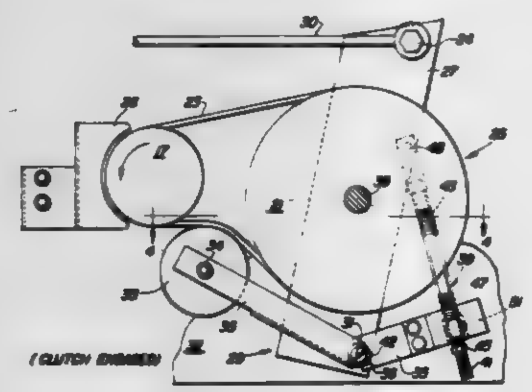
BELT DRIVE SYSTEM WITH CLUTCH

Sidney J. Boushek, Jr., Ottumwa, and Travis B. Unterzuber, Agency, both of Iowa, assignors to Deere & Company, Moline, Ill.

Filed Mar. 14, 1980, Ser. No. 130,271

Int. Cl.³ F16H *7/00, 7/12, 7/14*

U.S. Cl. 474—118 **7 Claims**



1. In a belt drive system comprising

(a) a support;

(b) a first sheave rotatably mounted relative to said support;

(c) a second sheave rotatably mounted relative to said support;

(d) a belt entrained around said sheaves for providing driving engagement between said sheaves;

(e) an idler assembly including an idler pulley and a bias member for biasing said pulley toward and away from said belt; and

(f) an actuator member pivotally mounted relative to said support and having said second sheave rotatably mounted thereon, said actuator member and said second sheave movable together toward and away from said first sheave for slackening and tensioning said belt, respectively; wherein the improvement comprises said bias member connected to said actuator member for biasing said idler pulley toward and away from said belt when said actuator member and said second sheave are moved away from and toward said first pulley, respectively.

4,324,553

HAIR DYEING COMPOSITIONS CONTAINING AT LEAST ONE 2,4-DIAMINO-ALKYLBENZENE AS COUPLER

Andrée Bugaut, Boulogne, and Alex Junino, Aulnay Sous Bois, both of France, assignors to L'Oreal, Paris, France

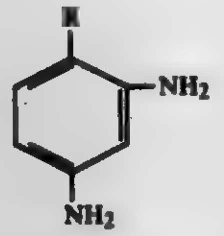
Filed Jul. 7, 1980, Ser. No. 166,234

Claims priority, application France, Jul. 24, 1979, 79 19039

Int. Cl.³ A61K *7/13*

U.S. Cl. 8—407 **34 Claims**

1. A composition suitable for dyeing human hair in the presence of an oxidizing agent selected from the group consisting of hydrogen peroxide, urea peroxide and ammonium persulfate, said composition comprising an aqueous solution of at least one oxidation base and, as a coupler, at least one metaphenylenediamine of the formula (I)



(I)

wherein R represents n-propyl, isopropyl or n-butyl, or a salt thereof.

20. A composition suitable for dyeing human hair in the presence of at least one oxidizing agent selected from the group consisting of hydrogen peroxide, urea peroxide and ammonium persulfate comprising an aqueous solution of an effective amount of an oxidation base selected from the group consisting of (a) a paraphenylenediamine, (b) 2,5-diaminopyridine and (c) a para-aminophenol and 0.005 to 2.5 percent by weight based on the total weight of the composition of, as a coupling agent, at least one of a member selected from the group consisting of 2,4-diamino n-butyl benzene, 2,4-diamino n-propyl benzene, 2,4-diamino isopropyl benzene, and a salt thereof, said composition having a pH ranging from 8 to 11.5.

22. The composition of claim 20 which also contains an effective amount of a direct dye selected from the group consisting of 3-nitro-6-N-(β-hydroxyethyl) amino anisole, 3-nitro-4-aminophenol, 3-nitro-4-N-(β-hydroxyethyl) aminophenol, 2-amino-3-nitro isopropyl benzene, 3-nitro-4-N-methylamino-N,N-di-(β-hydroxyethyl) aniline, 2-nitro-4-methyl-6-amino phenol and 2-methyl-4-amino-5-nitrophenol.

4,324,554

USE OF TKP AS AN ANTIMIGRANT

Joseph S. Racciato, San Diego, Calif., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Nov. 9, 1978, Ser. No. 959,119

Int. Cl.³ D06P *1/50*

U.S. Cl. 8—561 **8 Claims**

1. In an aqueous dye-bath liquor suitable for impregnating substrates, the improvement that comprises the incorporation in said dye-bath liquor, as an antimigrant, of TKP at a concentration ranging from about 0.01% to about 5.00% by weight based on the total weight of said dye-bath liquor, wherein said TKP is tamarind kernel powder or cold-water soluble tamarind kernel powder.

4,324,555

URANIUM EXPLORATION

Roger L. Borst, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jun. 27, 1980, Ser. No. 163,661

Int. Cl.³ G01V *9/00*

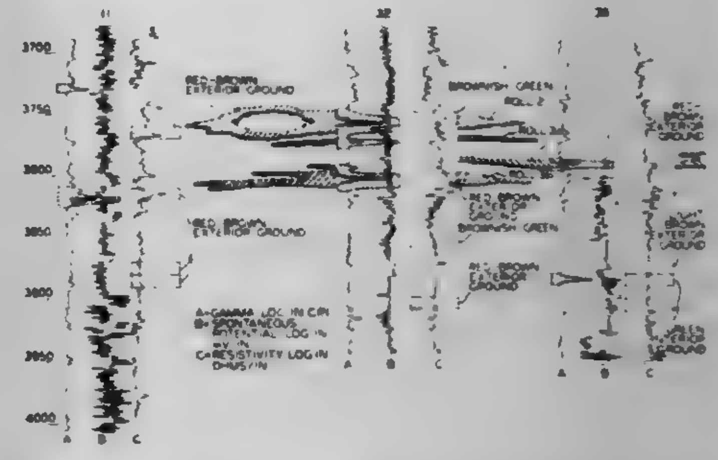
U.S. Cl. 23—230 EP **4 Claims**

1. Process for prospecting for uranium roll front deposits comprising

(a) establishing a relationship between the clay content of samples from a formation, said clay content being determined for one or more clays selected from the group of montmorillonite, chlorite, kaolinite and illite, and the relative location of the underground origin of such samples with respect to a uranium roll front in said formation, where the establishing is done by determining clay content for each sample and recording whether the sample for which the clay is determined is an interior, uranium roll front, or exterior sample,

(b) drilling at least one first hole through said formation,

(c) obtaining one or more clay-bearing samples from the so drilled hole or holes,



(d) analyzing said sample or samples obtained in step (c) for the content of said clay or clays for which said relationship has been established in step (a), and characterizing the samples so analyzed as to their relative positions with respect to a roll front in the formation by said relationship,

(e) drilling at least one second hole through the formation, the geographic location of which is determined from said characterizing of said samples in step (d), and analyzing one or more samples from the second hole, in order to determine the location and/or shape of a uranium bearing formation.

4,324,556

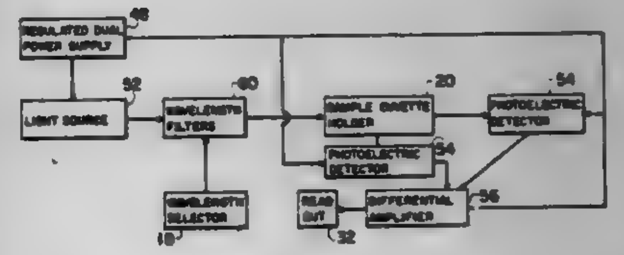
PORTABLE COHB ANALYZER

Robert F. Robertson, Gaithersburg; Thomas J. Conner, Riverdale, and F. Lee Rodkey, Kensington, all of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 25, 1980, Ser. No. 133,749

Int. Cl.³ G01N *33/72*

U.S. Cl. 23—230 B **18 Claims**



1. An apparatus for determining the percentage of carboxyhemoglobin in blood comprising:

a spectrophotometer operable at preselected light wavelengths for determining relative light absorption values for each of a test sample and a reference sample at each of said preselected light wavelengths;

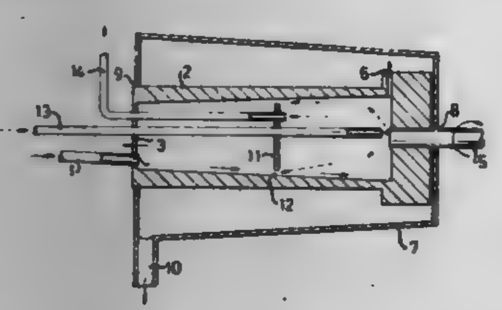
means for selecting first and second respective wavelengths of substantially 420 nanometers and 432 nanometers of operation of said spectrophotometer;

means for testing said samples at said first and second wavelengths, the reference sample comprising a mixture of a liquid carrier and a reducing reagent, the test sample

comprising a mixture of the liquid carrier, the reducing reagent, and a sample of blood under test; and
means for determining the percentage of carboxyhemoglobin in said blood from the ratio of said relative light absorption values.

8. A method for determining the percentage of carboxyhemoglobin in blood comprising the steps of:
preparing a reference and a test samples, the first reference sample comprising a mixture of a liquid carrier and a reducing reagent, the test sample comprising a mixture of the liquid carrier, the reducing reagent, and a sample of blood under test,
testing said samples at a first and a second respective light wavelength of substantially 420 nanometers and 432 nanometers and determining the relative light absorption values of each of the samples at each of the first and second light wavelengths; and
determining the percentage of carboxyhemoglobin in the blood from the ratio of derived relative absorption values.

4,324,557
METHOD AND APPARATUS FOR DEGASSING AND ANALYSIS OF FOAMING LIQUIDS
Gunnar L. Wegstedt, Järfälla, Sweden, assignor to Servochem AB, Vallingby, Sweden
Filed Dec. 3, 1979, Ser. No. 99,505
Claims priority, application Sweden, Dec. 14, 1978, 7812850
Int. Cl.³ G01N *9/30, 31/12*
U.S. Cl. 23—232 R 5 Claims



1. A method of analysis of foaming liquids, comprising spreading a foaming liquid in a thin film by centrifugal force in a container shaped as a figure of revolution by rotating the container about its axis, blowing air into the container thereby to enrich the air in a component of the liquid to be measured, removing from the container and analyzing the thus-enriched air, said container having a slightly conical internal wall, introducing the liquid to be degassed at the small end of the conical wall, removing degassed liquid from adjacent the large end of the conical wall, removing foam from adjacent the small end of the conical wall, and introducing said air into the container and removing said enriched air from the container a substantial distance from said small end of said conical wall.

4,324,558
METHOD OF MONITORING TOXIC FLUIDS
Arthur S. Obermayer, 139 Main St., Cambridge, Mass. 02142
Division of Ser. No. 62,973, Aug. 2, 1979, Pat. No. 4,258,000. This application Mar. 19, 1981, Ser. No. 245,339
Int. Cl.³ G01N *31/00*
U.S. Cl. 23—232 R 22 Claims

1. A method of detecting a toxic fluid, which method comprises:
(a) providing a material for the detecting and monitoring of a toxic fluid, which material comprises a solid, microporous, transparent, polymeric, matrix material having interconnecting micropores, the micropores being of sufficiently small size or of index-matching polymeric composition to permit the material to be transparent or be made transparent, when the micropores contain a liquid composition, and which micropores permit a high solute-liquid diffusion coefficient, and which matrix material includes, within the interconnecting small micropores, a liquid composition, which liquid composition is nonreactive with the polymeric matrix material and which is retained within the interconnecting pores of the matrix material in a volume greater than 20% by volume of the polymeric matrix material, and which liquid composition comprises
(i) a nonevaporative solvent for the toxic fluid to be detected, whereby the fluid will be dissolved rapidly in the solvent, on exposure of the badge-monitoring material to the toxic fluid, and
(ii) a reactant for the toxic fluid dissolved in the solvent which reacts with the toxic fluid and which, on such reaction, results or causes a change in visual appearance of the liquid composition maintained within the micropores of the matrix material, whereby a rapid, diffusive change in the appearance of the transparent matrix material appears throughout the depth of the matrix material which signals and detects the presence of the toxic fluid to which the matrix material has been exposed;
(b) exposing the toxic fluid, whose presence is to be detected, to the liquid-filled matrix material; and
(c) observing a change in appearance of the liquid-composition-filled matrix material, after exposure of the material, over a predetermined time period, to the toxic fluid, thereby detecting the presence of a toxic fluid.

4,324,559
METHOD FOR THE REMOVAL OF SULFUR FROM CARBONACEOUS MATERIAL
Clifford R. Porter, 11457 W. 69th Pl., Arvada, Colo. 80004, and Herbert D. Kaesz, 2631 Westridge Rd., Los Angeles, Calif. 90049
Filed Sep. 22, 1980, Ser. No. 189,087
Int. Cl.³ C10L *9/02*
U.S. Cl. 44—1 SR 28 Claims

1. A method of reducing the sulfur content of coal, comprising:
contacting the coal with a sulfur content reducing agent selected from the group consisting of metal carbonyls, other low valent metal complexes of the transition metals, derivatives thereof and mixtures thereof, and water to form a reaction mixture,
maintaining the pH of the reaction mixture greater than about 7.5, and
heating the reaction mixture to a temperature within the range of about 30° C. to below the decomposition temperature of the sulfur content reducing agent for a sufficient period of time to obtain a reduction in the sulfur content of the coal.

2. The method of claim 1 wherein the sulfur content reducing agent is a metal carbonyl selected from the group consisting of vanadium carbonyl, chromium carbonyl, manganese carbonyl, iron carbonyl, cobalt carbonyl, nickel carbonyl, molybdenum carbonyl, ruthenium carbonyl, palladium carbonyl, tungsten carbonyl, derivatives thereof, and mixtures thereof.

4. The method of claim 1 wherein the sulfur content reducing agent is a low valent metal complex selected from the group consisting of the metallocenes and derivatives thereof.

4,324,560
PYRITE REMOVAL FROM COAL
Anthony G. Fonseca, Ponca City, Okla., assignor to Conoco Inc., Ponca City, Okla.
Filed Mar. 5, 1980, Ser. No. 127,346
Int. Cl.³ C10L *9/02*
U.S. Cl. 44—1 SR 5 Claims

1. A method for the separation of pyrite and refuse from coal when a majority of said coal is crushed to a suitable size for air classification, comprising
(a) crushing said coal to a suitable size;

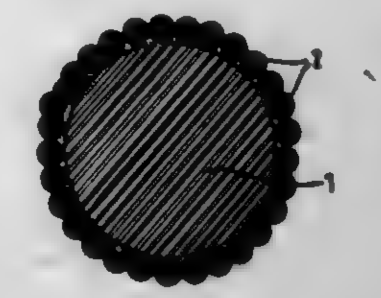
(b) passing said crushed coal through an air classifying means, said means separating crushed coal into a fine, low pyrite fraction suitable for immediate use and a coarse, pyrite-rich fraction and drying said coarse fraction to a surface water content of not more than 5% by weight.
(c) contacting the coarse pyrite rich fraction with an organic heavy media selected from the group consisting of perchloroethylene, trichloroethylene, carbon tetrachloride, pentachloropropane, tetrachloropropane, 1,1,1-trichloroethane, chloroform, methylene chloride, 1,1,2-trichloroethane, 1,1,1,2-tetrachloroethane, and 1,1,2,2-tetrachloroethane.
(d) thoroughly mixing the organic media and coal;
(e) allowing the coal to separate in the organic media forming a sink pyrite-rich refuse phase and a float coal phase;
(f) recovering the float coal phase; and
(g) separating coal from the float coal phase.

4,324,561
COMBUSTIBLE FUEL PELLETS FORMED FROM BOTANICAL MATERIAL
John J. Dean, and Lloyd M. Helzig, both of Springfield, Oreg., assignors to NIPAC, Ltd., Eugene, Oreg.
Continuation of Ser. No. 1,962, Jan. 8, 1979, abandoned, which is a division of Ser. No. 770,990, Feb. 22, 1977, Pat. No. 4,211,740, which is a continuation-in-part of Ser. No. 590,511, Jun. 26, 1975, abandoned. This application Jul. 24, 1980, Ser. No. 171,730
Int. Cl.³ C10L *5/08*
U.S. Cl. 44—10 E 5 Claims

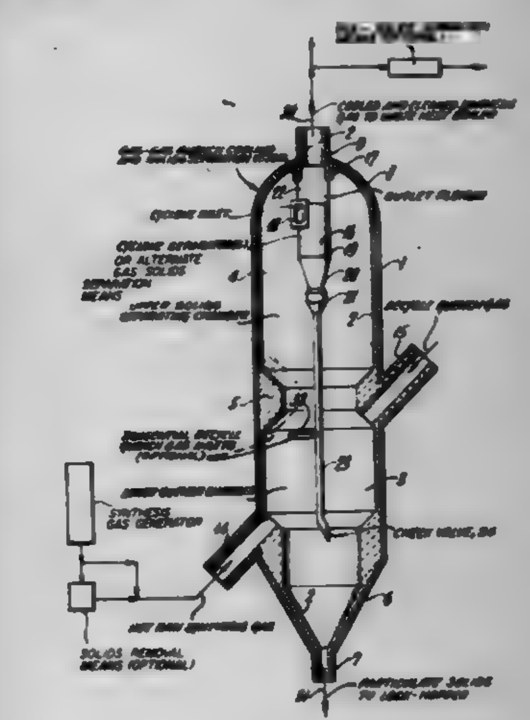
5. Combustible fuel pellets formed from botanical fuel material produced by reducing the moisture content of the material to an average of approximately 12 percent, grinding the dried material to a size sufficiently small to pass through a screen having openings no greater than 0.95 cm., heating the ground material to within an average range of 90° C. to 121° C., forcing the dried, ground and heated material under substantial pressure and friction through extrusion passages having a cross-section not exceeding approximately 0.635 cm. and while being forced through the passages compacting the material to substantially increase the density of the formed pellets and simultaneously reducing the moisture content to approximately 10 percent and increasing the temperature of the pellets thereby causing the natural bonding agents in the material to plasticize throughout substantially the length and diameter of the formed pellets so as to produce a bonded pellet product having a smooth and plasticized surface coating and the formed pellets having the required properties and characteristics to provide an extended storage and shipping life in an atmospheric environment.

4,324,562
METHOD OF IMPROVING THE STORAGE SAFETY OF PULVERIZED BROWN COAL
Fritz Schoppe, Max-Rüttgers-Strasse 24, 8026 Ebenhausen, Fed. Rep. of Germany
Continuation of Ser. No. 865,483, Dec. 29, 1977, abandoned. This application Sep. 17, 1979, Ser. No. 76,084
Int. Cl.³ C10L *9/00*
U.S. Cl. 44—1 G 1 Claim

1. Method of improving the storage safety of pulverized brown coal by covering brown coal particles with smaller particles of finely pulverized anthracite, wherein about 2% or less of the anthracite particles have a size over 0.010 mm and about 23% or less of the anthracite particles have a size over 0.005 mm, and wherein the brown coal particles are about ten times the size of the anthracite particles, about 14% or less of the brown coal particles having a size over 0.2 mm and about 40% or less of the brown coal particles having a size over 0.063 mm, comprising mixing such brown coal particles with at least about 20% by weight of such anthracite particles before storage and continuing mixing until the particle mixture shows a uniform, black, anthracite-like color.



4,324,563
GASIFICATION APPARATUS WITH MEANS FOR COOLING AND SEPARATING SOLIDS FROM THE PRODUCT GAS
Henry B. Jones, and Randlow Smith, both of Houston, Tex., assignors to Texaco Inc., White Plains, N.Y.
Filed Jul. 13, 1979, Ser. No. 57,228
Int. Cl.³ C10J *3/84*
U.S. Cl. 48—62 R 10 Claims



1. An apparatus for producing a hot gas stream comprising H_2, CO, CO_2, H_2O, and containing entrained solid matter and slag by the partial oxidation of solid carbonaceous fuel and cooling and cleaning said hot raw gas stream and separating therefrom entrained solid matter and slag comprising:
(1) a partial oxidation gas generator for producing said hot gas stream;
(2) a separate closed vertical cylindrical pressure vessel internally lined with high temperature resistant refractory with a coaxial lower gas-gas quench cooling and solids separation chamber in communication with a coaxial upper chamber; a coaxial choke-ring passage of reduced diameter connecting said lower and upper chambers;
(3) a first gas inlet nozzle in said lower chamber, said first nozzle connected to said gas generator for introducing said hot raw gas stream into said lower chamber; a second gas inlet nozzle in said lower chamber, said second nozzle connected to a source of recycle quench gas comprising at least a portion of the cooled and cleaned gas stream from (4) directly opposite and coaxial with said first gas inlet nozzle for simultaneously introducing into said lower

chamber a cooled and cleaned recycle quench gas stream; wherein said gas streams impinge, said hot raw gas stream is cooled by direct heat exchange with said cooled and cleaned gas stream, and solid matter separates by gravity and falls to the bottom of said lower chamber;

(4) at least one gas-solids separation means supported in said upper chamber with inlet means for receiving the mixture of gases passing up the vessel from (3) and removing additional solid matter therefrom and means for discharging said solid matter into said lower chamber; upper outlet means in the upper portion of said upper chamber connected to said gas-solids separation means for discharging a cooled and cleaned gas stream from said apparatus; and

(5) an outlet means in the bottom of said lower chamber for discharging solid matter.

4,324,564

ADSORPTION BEDS AND METHOD OF OPERATION THEREOF

Michael D. Oliker, Boston, Mass., assignor to Near Equilibrium Research Associates, Boston, Mass.

Filed Jul. 7, 1980, Ser. No. 166,054

Int. Cl.³ B01D *53/04*

U.S. Cl. 55—20 **24 Claims**

1. A method of operating an adsorption bed having an adsorbent material disposed within a housing defining a feed entrance, a fluid flow path, and a product exit, said adsorbent material being of the type used to reduce the concentration of an adsorbate carried by a fluid feed, said method including cycling the bed through an adsorption stage wherein the fluid feed is passed through the bed and a fluid product of reduced adsorbent concentration is collected at the product exit, and a thermal regeneration stage wherein a hot regenerant fluid and a cooling fluid are serially passed through the bed co-currently to one another to produce a fluid waste having an adsorbate concentration substantially greater than said fluid feed at a waste exit wherein, during said regeneration stage,

there is created in the bed an RW front having a first velocity, said RW front being bounded on its downstream side by bed conditions characteristic of equilibrium between the adsorbent material and the fluid waste and on its upstream side by bed conditions characteristic of equilibrium between the adsorbent material and the hot regenerant fluid, and

upstream of said RW front, there is created in the bed by the introduction of said cooling fluid having a lower temperature than said regenerant fluid, a thermal front having a velocity greater than said first velocity, said thermal front being bounded on its downstream side by high temperature conditions and on its upstream side by low temperature conditions,

wherein the improvement comprises:

introducing said cooling fluid into the bed before the midpoint of the RW front exits the bed to produce, during a portion of the cooling fluid flow, fluid waste at said waste exit having an adsorbate concentration substantially greater than the adsorbate concentration of said feed.

4,324,565

REMOVAL OF LUBRICANT MISTS AND LUBRICANT VAPORS FROM A GASEOUS STREAM

Christian Benkmann, Graefelfing, Fed. Rep. of Germany, assignor to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany

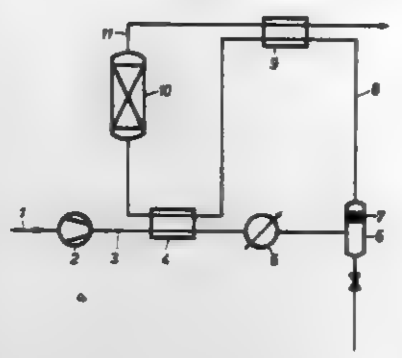
Filed Aug. 22, 1980, Ser. No. 180,286

Claims priority, application Fed. Rep. of Germany, Aug. 30, 1979, 2935147

Int. Cl.³ B01D *49/00, 53/04*

U.S. Cl. 55—23 **17 Claims**

1. In a process for the removal of oil mists and vapors from an oil-contaminated compressed gas comprising passing the compressed gas through an oil separator wherein liquid phase oil is removed from the gas and passing the resultant gas through an adsorber to remove gaseous phase oil, the improvement which comprises, after passing the compressed gas through the oil separator, heating the withdrawn compressed



gas to such an extent that any oil mist remaining therein is completely vaporized before the withdrawn compressed gas is conducted through the adsorber.

4,324,566

PROCESS FOR THE SEPARATION OR PURIFICATION OF MIXTURES BY THE USE OF A SOLID ADSORPTION

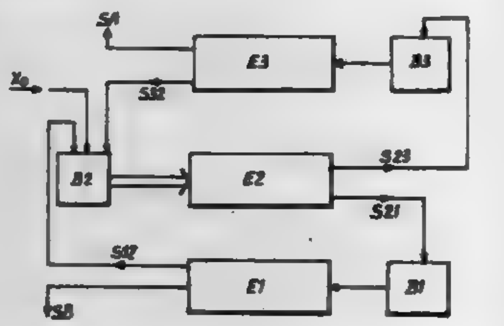
Philippe Jacob, Champagne en Valmorey, and Daniel Tondeur, Neuves-Maisons, both of France, assignors to ELF France, Paris, France

Filed Jul. 2, 1980, Ser. No. 165,243

Claims priority, application France, Jul. 6, 1979, 79 17624

Int. Cl.³ B01D *53/04*

U.S. Cl. 55—28 **17 Claims**



1. A process for the continuous separation of the constituents of a gaseous feed mixture which comprises introducing the gaseous feed mixture into an enclosure containing a selective adsorbent, and subjecting the mixture to a cyclical series of hot and cold stages by sudden variations in the feed temperature between a hot temperature T_c and a cold temperature T_F to create in the cold feed stage three successive distinct zones which move in the flow-direction at different speeds;

(A) a first low speed zone of propagation comprising a sorption front in which the concentration of the most adsorbable constituents in the gas decreases;

(B) a second zone called the "thermal wave" caused at times determined by the sudden cooling of the feed mixture to the cold temperature T_F, in which the only constituents left are the least adsorbable ones, this wave propagating at a speed higher than that of the first zone and proportional to the ratio:specific heat of the non-adsorbable or least adsorbable gases/specific heat of the adsorbent;

(C) a desorption zone the speed of whose propagation is higher than that of the preceding first and second zones, where the mixture is enriched in the most adsorbable constituents; the different effluent fractions or cuts being collected separately or recycled in the feed mixture.

4,324,567

SEPARATION OF GASEOUS COMPONENTS FROM A GASEOUS MIXTURE BY PHYSICAL SCRUBBING

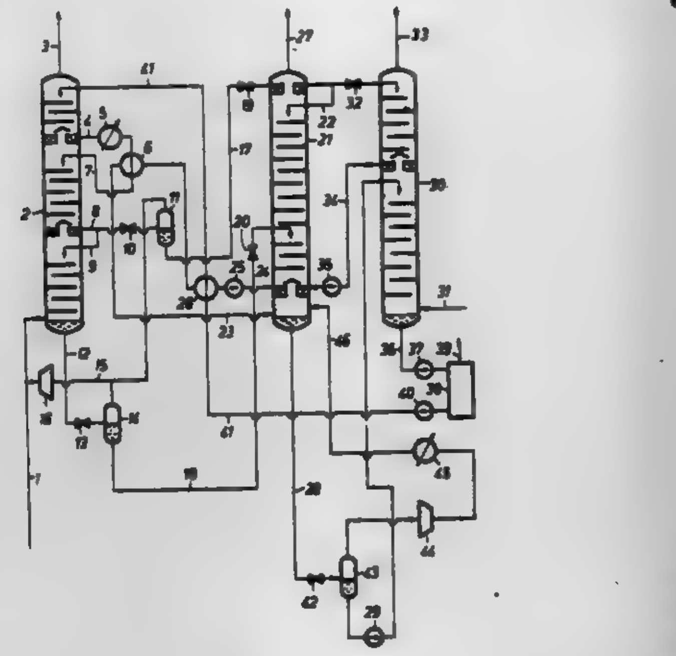
Gerhard Ranke, Poecking, and Horst Weiss, Munich, both of Fed. Rep. of Germany, assignors to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany

Filed Dec. 26, 1979, Ser. No. 107,119

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1978, 2856078

Int. Cl.³ B01D *53/14*

U.S. Cl. 55—43 **11 Claims**



1. In a process for separating and obtaining as product gases at least two gaseous components from a gaseous mixture containing same comprising the following steps:

(a) scrubbing said gaseous mixture with a physical scrubbing liquid exhibiting a higher dissolving power for at least one of the components to be separated than for at least one other of these components;

(b) withdrawing a first scrubbing liquid stream, loaded with all of the components to be separated;

(c) withdrawing a second scrubbing liquid stream, merely containing substantially only proportions of the less soluble component or components;

(d) expanding said first scrubbing liquid stream of step (b) to liberate a gaseous fraction and reduced pressure first scrubbing liquid stream;

(e) expanding said second scrubbing liquid stream of step (c) to obtain reduced pressure second scrubbing liquid stream and a gaseous stream containing less soluble component or components;

(f) scrubbing the gaseous fraction of step (d) with the reduced pressure second scrubbing liquid stream of step (e) to remove from said gaseous fraction the more soluble component or components and withdrawing resultant gaseous fraction as a first product stream; and

(g) subjecting combined reduced pressure scrubbing liquid streams to a separation of a gas comprising the more soluble components as well as of residual proportions of the less soluble components and withdrawing said gas as a second product gas,

the improvement which comprises:

(h) prior to the separation of step (g), further expanding the combined reduced pressure scrubbing liquid streams to obtain a gaseous fraction and a liquid fraction, and separating said gaseous fraction from said liquid fraction;

(i) recompressing the liberated gaseous fraction of step (h);

(j) scrubbing the recompressed gaseous fraction of step (i) with the reduced pressure second scrubbing liquid stream of step (e); and

wherein the raw gas contains carbon dioxide as the less soluble component and hydrogen sulfide and/or carbonyl sulfide as the more soluble components.

4,324,568

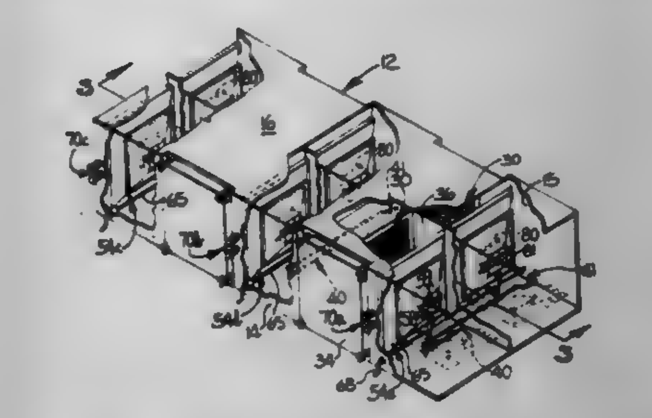
METHOD AND APPARATUS FOR THE LEAK TESTING OF FILTERS

David E. Wilcox, Carpinteria, and Thomas T. Allan, San Francisco, both of Calif., assignors to Flanders Filters, Inc., Washington, N.C.

Filed Aug. 11, 1980, Ser. No. 177,234

Int. Cl.³ B01D *46/12*; G01M *3/20*

U.S. Cl. 55—97 **12 Claims**



1. A method for testing for leakage of particles of predetermined size through a bank of filters installed in a parallel arrangement in a housing and which is characterized by the ability to individually test the filters in the bank under balanced flow conditions and so as to permit the immediate identification of a leaking filter in the bank, and comprising the steps of

passing an airstream concurrently through all of the filters in the bank, while dividing the airstream into isolated portions immediately upstream of each filter such that each isolated portion of the airstream passes through a single filter,

partially restricting and imparting turbulence to the flow concurrently through all of the isolated portions and at a point upstream of each filter, and so as to obtain turbulence throughout substantially the full cross sectional area of each isolated portion and a substantially balanced flow among the isolated portions, and including pivoting a restriction member mounted within each of said separate channels from a non-operative position disposed in general alignment with the sides of the channel to an operative position disposed transversely across the channel, then

sequentially introducing particles of predetermined size within each isolated portion of the airstream and upstream of the point at which the flow is partially restricted and made turbulent, to thereby result in the particles being mixed in the air, and while maintaining a substantially unrestricted flow between the point of particle introduction and the point at which the flow is partially restricted and made turbulent, and

monitoring the airstream downstream of the bank of filters to detect at least a portion of any particles in the airstream, such that a determination may be made as to which if any of the filters in the bank is leaking.

4,324,569

AIRCRAFT FUEL BOOSTER PUMP ASSEMBLY WITH ALTITUDE START CAPABILITIES

Anthony J. Klimczak, Parma, Ohio, assignor to Lear Siegler, Inc., Elyria, Ohio

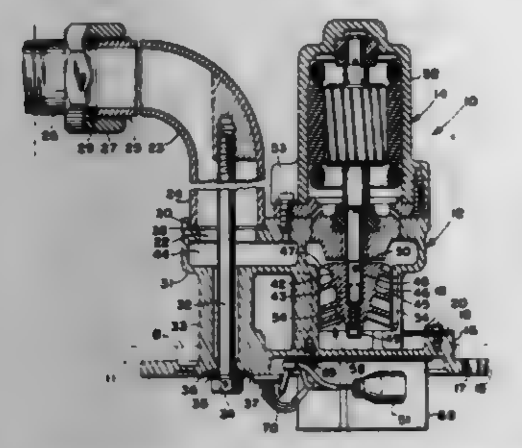
Filed Mar. 22, 1977, Ser. No. 780,229

Int. Cl.³ B01D *19/00*

U.S. Cl. 55—182 **11 Claims**

1. A centrifugal aircraft fuel booster pump with altitude start capabilities comprising a housing containing an inlet and an

outlet for the fuel to be pumped, a pump impeller rotatably mounted in said housing for pressurizing the fuel received from said inlet and delivering such pressurized fuel to said outlet, said housing including a shroud surrounding said impeller, and



vent means extending radially outwardly from said impeller through said shroud for venting vapor and air bubbles in the fuel away from said impeller to facilitate priming of said pump during starting at high altitudes.

4,324,570

APPARATUS FOR DE-DUSTING GASES

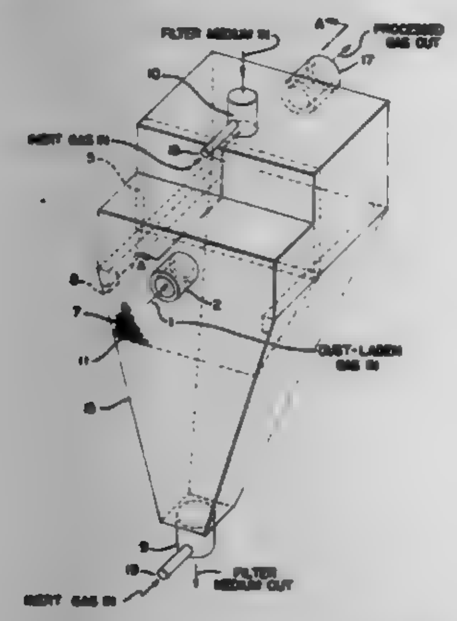
Gerhard Pforr, Ludwigshafen; Gerhard Peschau, Frankenthal; Guenter Schippmann, Mannheim; Max Appl, Dannstadt-Schauernheim; Erfried Voelkl, Frankenthal, and Hans Stark, Bobenheim-Roxheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Apr. 24, 1980, Ser. No. 143,444

Claims priority, application Fed. Rep. of Germany, May 10, 1979, 2918779

Int. Cl.³ B01D *46/30*

U.S. Cl. 55—267 4 Claims



1. Apparatus for de-dusting hot and corrosive gases including a granular-bed filter having a pourable granular filter medium which flows downward through the bed from a filter medium inlet to a filter medium outlet, said apparatus comprising:

a vessel of rectangular cross-section, having a vertical side wall extending continuously downward to said filter medium outlet, a partition which protrudes into said vessel from the upper end thereof and is also vertical and parallel to said said wall, and three further side walls which taper, at least starting from the level of the lower end of said partition, downward to said filter medium outlet of said vessel,

said four side walls on their inside comprising respective plane panels of corrosion resistant material,

said filter medium inlet being located in a vertical plane on one side of said partition and generally centrally of the upper part of said vessel,

said filter medium outlet being located in a vertical plane on the other side of said partition,

said filter medium extending in said vessel along a generally S-shaped path between said filter medium inlet and said filter medium outlet, producing on said other side a first talus at the lower edge of said partition and producing on said one side a second talus at the lower edge of said filter medium inlet,

a gas inlet and a gas entrance chamber, both being formed on said other side of the partition,

a gas collecting chamber and a gas outlet, both being formed on said one side of the partition,

the gas to be purified passing from said gas inlet generaly downwardly by way of said entrance chamber and said first talus into said fluid medium, and the purified gas passing out of said fluid medium generally upwardly by way of said second talus and said collecting chamber into said gas outlet.

4. Apparatus for de-dusting gases including, a granular-bed filter having a pourable granular filter medium which flows downward through the bed from a filter medium inlet to a filter medium outlet, said apparatus comprising:

a vessle of rectangular cross-section, having a vertical side wall extending continuously downward to said filter medium outlet, a partition which protrudes into said vessel from the upper end thereof and is also vertical and parallel to said side wall, and three further side walls which taper, at least starting from the level of the lower end of said partition, downward to said filter medium outlet of said vessel,

said filter medium inlet being located in a vertical plane on one side of said partition and generally centrally of the upper part of said vessel,

said filter medium outlet being located in a vertical plane on the other side of said partition,

said filter medium extending in said vessel along a generally S-shaped path between said filter medium inlet and said filter medium outlet, producing on said other side a first talus at the lower edge of said partition and producing on said one side a second talus at the lower edge of said filter medium inlet,

a gas inlet and a gas entrance chamber, both being formed on said other side of the partition,

a gas collecting chamber and a gas outlet, both being formed on said one side of the partition,

the gas to be purified passing from said gas inlet generally downwardly by way of said entrance chamber and said first talus into said fluid medium, and the purified gas passing out of said fluid medium generally upwardly by way of said second talus and collecting chamber into said gas outlet.

4,324,571

BAG-TYPE FILTER APPARATUS WITH AIR DIFFUSER HAVING EXTENDED BAG SUPPORT

Allen S. Johnson, Jr., Post Office Drawer 1037, Salisbury, N.C. 28144

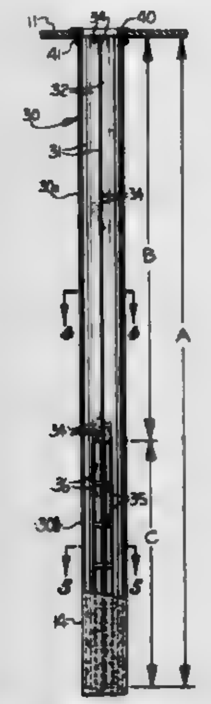
Continuation-in-part of Ser. No. 76,942, Sep. 26, 1979, Pat. No. 4,259,095. This application Mar. 25, 1981, Ser. No. 247,254

Int. Cl.³ B01D *46/04*

U.S. Cl. 55—302 26 Claims

1. In a filter apparatus of the type wherein a particulate-laden gas is directed through a tubular filter bag for filtering and retaining the particulate material on the exterior of the filter bag, and wherein the filter bag is cleaned by a periodic reverse purge flow of air directed into one end of the filter bag, the combination therewith of means positioned within said filter bag and serving for supporting and holding the filter bag

in an open tubular configuration and for also diffusing and distributing air throughout the filter bag when a periodic reverse purge flow of air is directed into the filter bag so as to thereby more effectively clean the filter bag while also reducing excessive flexing of the filter bag and abrasive wear thereof, said means comprising an elongate tube means extending longitudinally within said filter bag and including substantially axially aligned first and second elongate tube sections, each tube section having a series of spaced peripheral portions extending generally outwardly beyond other portions of the respective tube section and serving for engaging the adjacent portion of the filter bag and holding the same in a generally



open tubular configuration substantially out of contact with said other portions of each tube section, said other portions of the first tube section having perforations therein located for diffusing and distributing air along the filter bag when a periodic reverse purge flow of air is directed into said first tube section at its end remote from said second tube section, and said other portions of said second tube section being open to the flow of air therethrough between adjacent peripheral portions thereof so that the second tube section serves only to hold the adjacent surrounding portion of the filter bag in generally open tubular configuration without effecting any significant diffusion or distribution of the air during the periodic reverse purge.

4,324,572

SOOT FILTER FOR AN EXHAUST ARRANGEMENT OF AN INTERNAL COMBUSTION ENGINE

Hans Erdmannsdörfer, Ludwigsburg; Horst Bergmann, Esslingen, and Helmut Daudel, Schorndorf, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

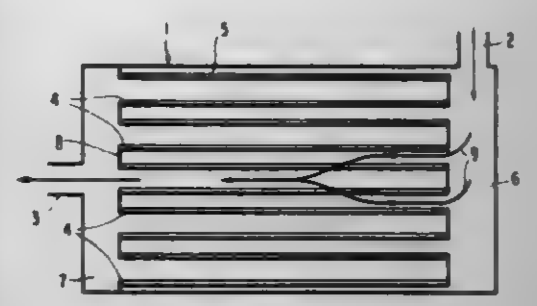
Filed Feb. 25, 1981, Ser. No. 237,899

Claims priority, application Fed. Rep. of Germany, Feb. 29, 1980, 3007642

Int. Cl.³ B01D *46/02*; F01N *3/02*

U.S. Cl. 55—385 R 19 Claims

1. A filter arrangement for an exhaust gas flow of an internal combustion engine, the filter arrangement including a housing provided with feed means for enabling a feeding of the exhaust gas flow into the housing, discharge means for enabling a discharge of the exhaust gas flow from the housing, and filter material disposed between said feed and discharge means and arranged in the housing such that the entire exhaust gas flow flows through said filter material to reach said discharge means, characterized in that a support means is provided for supporting the filter material in the housing so as to be exposed to the exhaust gas flow, and in that the filter material includes



a thread spun of silicon dioxide fibers wound onto the support means.

4,324,573

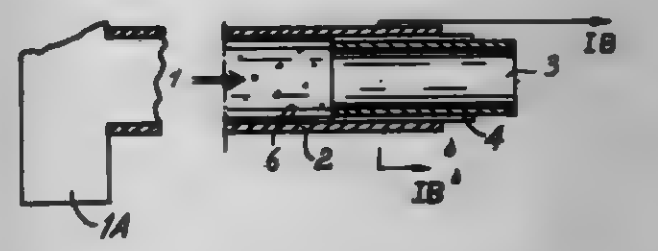
APPARATUS FOR REMOVING OIL FROM COMPRESSED AIR

Gunnar V. Eriksson, Högbyn, S-890 31, Arnäsvall, Sweden

Filed Oct. 24, 1979, Ser. No. 88,073

Int. Cl.³ B01D *45/00*

U.S. Cl. 55—396 8 Claims



1. An oil separator connected to a machine operating with pulsating compressed air for separating an oil mist which is otherwise expelled together with the air and is let out in the ambient atmosphere when the compressed air is drained from the machine, the oil separator consists essentially of a tube or hose open at each end and connected at one end to the air outlet of the machine operating with compressed air, a tubular scraper sleeve (3) coaxially mounted in said tube through the other end and spaced radially therefrom, said tubular scraper sleeve extending substantially inside said tube or hose and some distance outside said tube or hose thereby forming an annular space between the overlapping portions of said sleeve and said tube or hose thereby providing free flow areas in said tube or hose, said sleeve and the annular space between the tube or hose and the sleeve, said annular space being provided with a plurality of channels surrounding said scraper sleeve and opened at each end so as to permit free flow therethrough, said channels extending substantially co-axially with the flow direction of the air between the overlapping portions of scraper sleeve and the tube or hose, in which channels condensed oil is collected and moved out of the channels with a little portion of the air stream, whereas the main portion of the air flow is let out through the scraper sleeve.

4,324,574

FELT-LIKE LAYERED COMPOSITE OF PTFE AND GLASS PAPER

Joseph P. Fagan, Huntington, Conn., assignor to E. I. Du Pont De Nemours and Company, Wilmington, Del.

Filed Dec. 19, 1980, Ser. No. 218,214

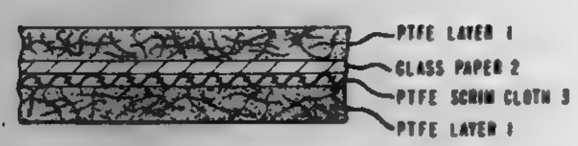
Int. Cl.³ B01D *46/00*

U.S. Cl. 55—487 10 Claims

1. A felt-like layered composite comprising the following:

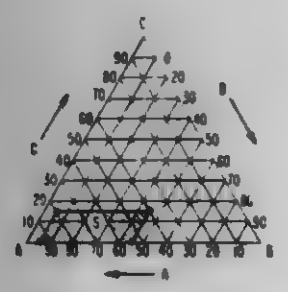
a. a first layer of predominantly horizontal coplanar superimposed layers of filamentary polytetrafluoroethylene components interrupted by occasional interlayered orientation;

b. a thin high density nonwoven layer comprising fine glass staple fibers;
c. a scrim fabric of polytetrafluoroethylene fibers and
d. a second predominantly horizontal coplanar superimposed layers of filamentary polytetrafluoroethylene components interrupted by occasional interlayer orientation;



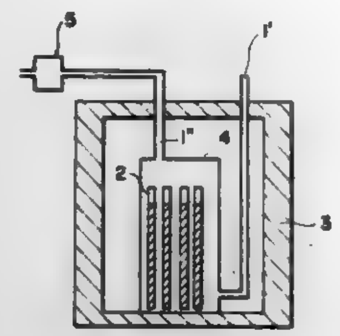
wherein the layers are mechanically bonded together by filamentary polytetrafluoroethylene components extending vertically throughout the composite and the composite has a filter efficiency of greater than 98%.

4,324,575
LOW TG SOFT UV-CURABLE COATINGS
Nicha Levy, Atlanta, Ga., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Continuation-in-part of Ser. No. 177,096, Aug. 11, 1980, abandoned. This application Dec. 24, 1980, Ser. No. 219,839
Int. Cl.[3] G02B *1/10, 5/14, 5/172;* C03C *25/02*
U.S. Cl. 65—3.11 7 Claims



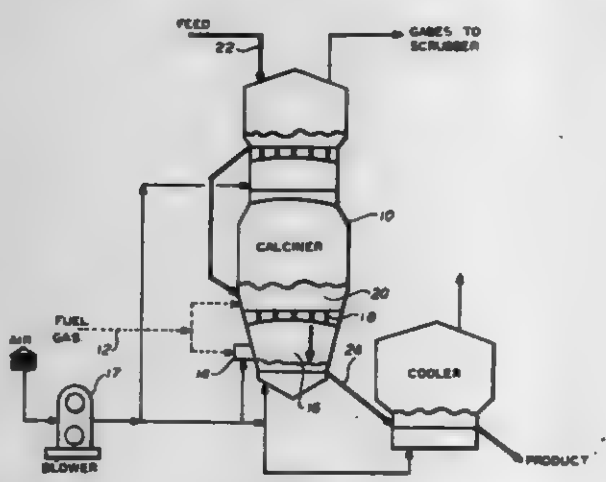
1. A method for producing a fiber lightwaveguide comprising the steps of:
drawing the fiber lightwaveguide
passing the drawn fiber lightwaveguide through a prepolymer mixture to wet the fiber lightwaveguide with the prepolymer mixture,
passing the wetted fiber through a die to form a coating of prepolymer mixture on the fiber lightwaveguide,
curing the prepolymer coating by exposing the prepolymer coated fiber lightwaveguide to radiant energy
the invention characterized in that the prepolymer mixture contains a mixture of at least two oligomers having more than 10 carbon atoms and the specific rates of polymerization of the oligomers have values that match to within 15% of the smallest value.

4,324,576
METHOD FOR PRODUCING OPTICAL GLASS
Iwao Matsuyama, Sagamihara; Kenzo Susa, Hinodemachi; Shin Satoh, Iruma, and Tsuneo Suganuma, Tokorozawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Nov. 21, 1980, Ser. No. 209,711
Claims priority, application Japan, Dec. 21, 1979, 54-150082; Dec. 27, 1979, 54-169335; Jul. 15, 1980, 55-95755; Jul. 15, 1980, [illegible]
Int. Cl.[3] C03C *3/04, 3/06*
U.S. Cl. 65—26 20 Claims
1. A method for producing optical glass, which comprises the steps of,
(i) charging a mixed solution capable of forming a high-silica-content gel by hydrolysis reaction into a vessel having a predetermined shape which is similar to the shape of the desired glass block to be produced, at least the inner surface of said vessel being provided with a material which is unwettable to the mixed solution said mixed solution containing a silicon alkoxide, water and a polar organic solvent, said silicon alkoxide being represented by the general formula $Si(OR)_4$ in which R is an alkyl group;
(ii) causing gelation of the mixed solution in said vessel;



(iii) gradually drying the gel thus obtained to form a dry gel, and
(iv) heating the dry gel to gradually elevate the temperature thereof and sintering the dry gel at a collapsing temperature lower than the melting point of the dry gel, thereby forming a glass block of desired shape.

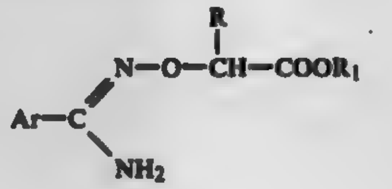
4,324,577
METHOD AND APPARATUS FOR BENEFICIATING PHOSPHATE ORES
Hossein K. Sepehri-Nik, Luling, La., assignor to Beker Industries, Inc., Greenwich, Conn.
Filed Feb. 25, 1980, Ser. No. 123,965
Int. Cl.[3] C05B *13/02*
U.S. Cl. 71—33 4 Claims



1. A method for increasing the bone phosphate of lime (BPL) content of a phosphate feed stock material to be used for the manufacture of phosphate fertilizers or phosphate animal feed products and which contains fractions respectively of relatively low BPL content and relatively high BPL content which fractions are not differentiated magnetically, comprising, heating said feed stock material to a temperature within the range from about 1000° F. to about 1600° F. for a time sufficient to increase the magnetic attraction of one of said fractions relative to the other of said fractions, and separating said fraction of increased magnetic attraction from the other of said fractions by means of a magnetic field to form two separate fractions one of which has increased BPL and the other of which has decreased BPL.

4,324,578
METHOD OF PREPARING A COPPER COMPLEX FOR USE AS AN ALGAECIDE
Donald E. Seymour, River Hills; Greg A. Seymour, Brown Deer, both of Wis., and Mark J. Jaber, Goldsboro, N.C., assignors to Applied Biochemists, Inc., Mequon, Wis.
Continuation-in-part of Ser. No. 833,458, Sep. 15, 1977, abandoned, which is a continuation of Ser. No. 100,335, Jun. 8, 1976, abandoned. This application Feb. 25, 1980, Ser. No. 124,098
Int. Cl.[3] A01N *31/02, 55/02, 59/20*
U.S. Cl. 71—67 9 Claims
1. An algaecide comprising an aqueous solution containing an algaecidal effective amount of a water soluble copper complex produced by mixing finely divided water insoluble copper carbonate with the combination of monoethanolamine and triethanolamine, said monoethanolamine being present in a molar ratio slightly in excess of 2:1 with respect to the copper concentration and the triethanolamine being present in a molar ratio slightly in excess of 1:1 with respect to the copper concentration, said combination acting to completely solubilize and chelate the copper carbonate to form the complex, said aqueous solution being free of acids.

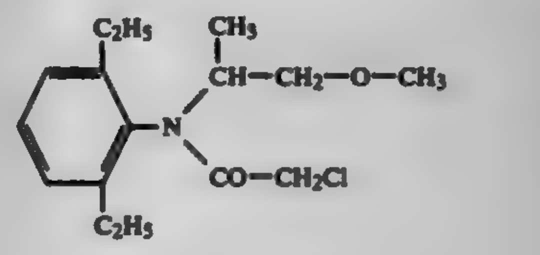
4,324,579
HERBICIDAL AND PHYTOHORMONAL AMIDOXIMES
Daniel Farge, Thiais; Jean Leboul, Gif sur Yvette; Yves Le Goff, Bretigny/Orge, and Gilbert Poiget, Thiais, all of France, assignors to Philargo, Lyons, France
Division of Ser. No. 906,863, May 17, 1978, Pat. No. 4,216,006, which is a division of Ser. No. 722,215, Sep. 10, 1976, Pat. No. 4,116,974. This application Jan. 29, 1980, Ser. No. 116,452
Claims priority, application France, Sep. 11, 1975, 75 27884; Jul. 8, 1976, 76 21717
Int. Cl.[3] A01N *43/36;* C07D *207/34*
U.S. Cl. 71—74 7 Claims
1. A new amidoxime of the formula



in which
R represents a hydrogen atom or an alkyl group containing 1 to 4 carbon atoms, or a phenyl group,
R_1 represents a hydrogen atom or an alkyl group containing 1 to 4 carbon atoms, or a metal atom, and
Ar represents a 5 membered aromatic heterocyclic group which contains an atom of nitrogen as the hetero-atom and is optionally substituted by a halogen atom, an alkyl group an alkoxy group, an alkythio group or a phenylalkyl group, wherein the alkyl moiety of each of said groups contains 1 to 4 carbon atoms.

4. A phytohormonal and herbicidal composition for plants containing, as the active material, at least one compound according to claim 1 in phytohormonal or herbicidally effective amount, in association with a carrier and/or a surface-active agent compatible with the said compound and suitable for agricultural use.

4,324,580
HERBICIDAL AND PLANT GROWTH INHIBITING AGENT
Christian Vogel, Binningen, and Rudolf Aebi, Basel, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.
Continuation-in-part of Ser. No. 678,774, Apr. 20, 1976, abandoned, which is a continuation-in-part of Ser. No. 512,285, Oct. 4, 1974, abandoned, which is a continuation-in-part of Ser. No. 366,955, Jun. 4, 1973, abandoned. This application Sep. 20, 1977, Ser. No. 835,071
Claims priority, application Switzerland, Jun. 6, 1972, 8345/72; Mar. 30, 1973, 4607/73
Int. Cl.[3] A01N *37/22;* C07C *103/32*
U.S. Cl. 71—118 3 Claims
1. 2,6-diethyl-N-(1'-methoxyprop-2'yl)-chloroacetanilide of the formula

 (I)

4,324,581
HERBICIDAL COMPOSITION FOR CONTROL OF SEDGES AND PERENNIAL GRASSY WEEDS
Theodore W. Holmsen, Clayton, Calif.; Keith C. Barrons, Holmes Beach, Fla., and Leonard L. Smith, Jr., Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.
Continuation-in-part of Ser. No. 751,631, Dec. 17, 1976, Pat. No. 4,086,081. This application Apr. 25, 1978, Ser. No. 900,035
The portion of the term of this patent subsequent to Apr. 25, 1995, has been disclaimed.
Int. Cl.[3] A01N *29/10*
U.S. Cl. 71—126 12 Claims
1. A herbicidal composition which consists essentially of, by weight and in admixed form:
an effective amount, for the preemergent control of sedges and perennial grassy weeds by soil incorporation primarily above the underground stems and tubers of said sedges and grassy weeds, in the range of from about 0.005 to about 90 percent, of a meta-halostyrene selected from the group consisting of alpha-(2,2,2-trichloroethyl)-m-chlorostyrene, alpha-(2,2,2-trichloroethyl)-m-bromostyrene and a co-mixture thereof, and;
the balance a herbicide carrier selected from
(a) a surface active dispersing means;
(b) a surface active dispersing means admixed with a liquid carrier selected from the group consisting of water, and a non-aqueous liquid, the non-aqueous liquid being selected from the group consisting of petroleum distillate, agricultural spray oil, kerosene, fuel oil, naphtha, xylene, chlorinated hydrocarbon, acetone, and ether of ethylene glycol;
(c) a surface active dispersing means admixed with a finely divided solid agricultural carrier;
(d) a finely divided solid agricultural carrier in the form of a dust; and
(e) a finely divided solid agricultural carrier in granulated form,
provided that the surface active dispersing means is provided in sufficient amount to emulsify or suspend the meta-halostyrene in any water present in the composition or a tank mix prepared therefrom.
and provided further that in an admixture containing finely divided solid agricultural carrier the proportion of meta-halostyrene does not exceed about 20 percent by weight.

4,324,582

PROCESS FOR THE RECOVERY OF COPPER FROM ITS ORES

Paul R. Kruesi, 13950 Crabapple Rd., Golden, Colo. 80401, and Veryl H. Frahm, Jr., 380 S. 36th St., Boulder, Colo. 80303

Filed Jun. 11, 1980, Ser. No. 158,448

Int. Cl.³ C22B *1/02, 1/06, 1/08*

U.S. Cl. 75—1 R 14 Claims

1. A process for the recovery of copper from its sulfide and oxidic ores which comprises subjecting the ores to microwave energy under conditions to convert the sulfidic and oxidic compounds in the ores to compounds from which copper is more readily recoverable.

4,324,583

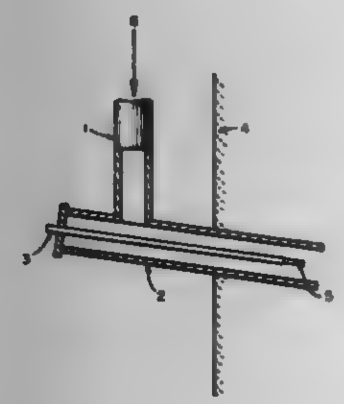
SUPERSONIC INJECTION OF OXYGEN IN CUPOLAS

Jarrette A. Hamilton, Sauk Village, Ill., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Jan. 21, 1981, Ser. No. 226,553

Int. Cl.³ C21B *11/02*

U.S. Cl. 75—43 11 Claims



1. In a process for producing molten metal in a cupola furnace comprising:

(a) charging coke and metal to the cupola furnace,

(b) causing said coke to burn by the introduction of a first oxygen-containing gas,

(c) additionally injecting directly into said cupola furnace a second oxygen-containing gas having an oxygen concentration greater than said first oxygen-containing gas, said second oxygen-containing gas being injected at a flow rate equivalent to that required to enrich the oxygen concentration of said first oxygen-containing gas by from 0.5 to 10 percent, the improvement comprising:

injecting said second oxygen-containing gas directly into said cupola furnace at a supersonic velocity.

4,324,584

PROCESS FOR THE DECARBURIZATION OF CHROMIUM-CONTAINING PIG IRON

Georges Marizy, Ugine, France, assignor to Ugine Aciers, Paris, France

Filed Dec. 31, 1980, Ser. No. 221,903

Claims priority, application France, Jan. 24, 1980, 80 01809

Int. Cl.³ C21C *7/00*

U.S. Cl. 75—60 5 Claims

1. A process for the decarburization of a molten bath of chromium-containing pig iron initially containing by weight from about 1.5% to about 7% of C, from about 10% to about 30% of Cr, from about 0% to about 30% of Ni, from about 0% to about 20% of Co+Mn+Mo, and less than about 4% of Si, trace impurities, and balance Fe, said process comprising the steps of: (1) contacting the surface of the molten pig iron bath with an oxygen stream at supersonic speed from an oxygen jet whereby the force of the jet impact on the surface of the bath by turbulence effected by the oxygen stream, expells a slag coating covering the surface of the molten pig iron, (2) oxidizing in a first reaction phase the most oxidizable elements contained within the pig iron and more specifically Cr, Si, and Fe, while simultaneously increasing with a corresponding rise in temperature, the reduction of the metallic oxides of Cr, Si, and Fe thus formed by the reaction of said oxides with carbon; (3) in a second reaction phase, continuing the supersonic oxygen jet thereby maintaining the turbulence at the surface of the molten pig iron resulting in a further temperature rise and increased reduction rate of metallic oxides by carbon which reduction predominates the reaction; and (4) wherein a final reaction phase of decarburization commences when the carbon content in the pig iron attains the relationship C_D/n, wherein C_D is the initial carbon content in weight percent and n is a number from about 1.5 to about 2.5, and said final reaction phase of decarburization is further characterized by the formation of a gas and pig iron emulsion resulting from the direct action of the oxygen on the molten pig iron, which emulsion is formed essentially free of a slag coating thereon and said gas comprising a mixture of oxides of carbon and oxygen.

4,324,585

PROCESS FOR MANUFACTURE OF ALUMINUM

Henry B. Haas, 95 Fernwood Rd., Summit, N.J. 07901

Filed Jun. 2, 1980, Ser. No. 155,687

Int. Cl.³ C22B *21/02*

U.S. Cl. 75—68 B 2 Claims

1. A process for obtaining aluminum metal comprising the steps of (1) reacting an aluminum containing ore selected from the group consisting of bauxite, alumina, and clay with a carbon containing material, gaseous oxygen, and bromine in a blast furnace at elevated temperatures to obtain aluminum tribromide, (2) thermally decomposing aluminum tribromide to aluminum monobromide and bromine in a blast furnace, (3) separating the aluminum monobromide and thereafter (4) disproportionating the aluminum monobromide to form aluminum and aluminum tribromide.

4,324,586

SEPARATION OF TELLURIUM FROM TELLURIUM-ANTIMONY-CONTAINING METAL OXIDE CATALYSTS

Yutaka Sasaki, Yokohama, and Kiyoshi Moriya, Kanagawa, both of Japan, assignors to Nitto Chemical Industry Co., Ltd., Tokyo, Japan

Filed Sep. 25, 1980, Ser. No. 191,091

Claims priority, application Japan, Sep. 25, 1979, 54-122815

Int. Cl.³ C22B *30/02;* C01B *19/02*

U.S. Cl. 75—69 10 Claims

1. A method for separating tellurium from a tellurium-antimony-containing metal oxide catalyst comprising heating the tellurium-antimony-containing metal oxide catalyst at a temperature of from about 900° C. to about 1,000° C. in a non-reducing gaseous atmosphere to evaporate the tellurium component separately from the antimony-containing catalyst.

4,324,587

PROCESS FOR MAINTAINING MAGNESIUM-CONTAINING CAST IRON MELTS IN A CASTABLE STATE

Richard Schlinselberger, Vienna, Austria, assignor to Elin-Union AG, Vienna, Austria

Filed Sep. 22, 1980, Ser. No. 189,167

Int. Cl.³ C22C *33/08*

U.S. Cl. 75—130 B 9 Claims

1. In a process for casting an iron-magnesium alloy in a closed furnace, the improvement in combination therewith comprising

the steps of

supplying a gas atmosphere from the outside into said furnace, said atmosphere comprising an inert gas and magnesium vapour to protect said magnesium-containing iron melt from oxidation,

retaining said protective gas atmosphere above the surface of the melt, above the boiling point of magnesium of 1102° C., and

maintaining at least as high a partial pressure of magnesium vapour in said protective atmosphere as said magnesium vapour pressure within said melt.

4,324,588

ARC EROSION RESISTANT COMPOSITE MATERIALS AND PROCESSES FOR THEIR MANUFACTURE

Edward D. Zysk, Livingston, and Robert Stephans, Westwood, both of N.J., assignors to Engelhard Corporation, Iselin, N.J.

Filed Aug. 17, 1979, Ser. No. 67,268

Int. Cl.³ B22F *3/00, 3/02, 7/04*

U.S. Cl. 75—208 R 5 Claims

1. A method for obtaining arc erosion-resistant composite material for use with electrodes, which method comprises:

compressing a core of green state pellets of (a) an arc erosion resistant material selected from the group consisting of ruthenium, iridium, alloy of ruthenium, alloy or iridium, alloy of ruthenium and iridum, and mixtures thereof, and (b) a matrix metal selected from the group consisting of silver, copper, gold, palladium, nickel, alloys thereof, and mixtures thereof;

inserting said core into a close-fitting tube of a material selected from the group consisting of nickel and nickel alloy;

sealing said tube; and

reducing the diameter of said tube by cold working to a predetermined outside diameter.

4,324,589

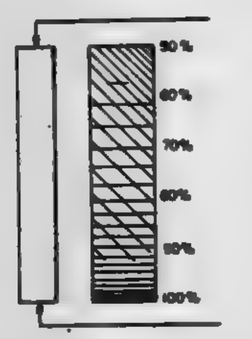
SOLUTE MONITORING PROCESS

Michael Gulla, Sherborn, Mass., and Barry J. Hartnett, Nashua, N.H., assignors to Shipley Company Inc., Newton, Mass.

Division of Ser. No. 9,542, Feb. 5, 1979, Pat. No. 4,229,218. This application Jan. 29, 1980, Ser. No. 116,579

Int. Cl.³ C23C *3/02*

U.S. Cl. 106—1.22 32 Claims



1. A process for monitoring the concentration of a plating metal in an electroless plating solution during use of the same and plate-out of the metal, said process comprising the steps of plating metal from said solution observing light passing through the solution containing a colorant, which observed solution remains capable of depositing metal over a catalytic surface in the absense of electricity, where the colorant is selected to absorb and transmit light in portions of the spectrum differing from those portions of the spectrum where the plating metal in solution absorbs and transmits light and where the colorant and the plating metal in solution have maximum transmittance at wavelengths separated by at least 50 millimicrons and the wavelength of the maximum transmittance of the plating metal in solution is within 50 millimicrons of the wavelength for the maximum absorption by the colorant; whereby the perceived color of the plating solution will change as the concentration of the plating metal changes, and correlating the color of the solution with the concentration of the plating metal.

4,324,590

FIXATIVES FOR DENTISTRY AND THEIR USE

Hans H. Schulz, Leichlingen; Walter Uerdingen, Berg.Gladbach, and Kuno Wagner, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jan. 5, 1978, Ser. No. 867,210

Claims priority, application Fed. Rep. of Germany, Jan. 29, 1977, 2703709

Int. Cl.³ C09K *3/00*

U.S. Cl. 106—35 8 Claims

1. A two-component composition for use in forming a solvent-free fixing material suitable for use in dentistry, which fixing material is liquid at room temperature and has a viscosity in the range of from 5,000 to 100,000 cP, said composition having a first component comprising, at least one organic polyioscyanate with aliphatically and/or cycloaliphatically bonded isocyanate groups; and a second component comprising (a) at least one polyhydroxy-polyester having a molecular weight in the range of from 200 to 20,000 being substantially free of ether groups, and having at least 2 aliphatically bonded OH groups and (b) from 1 to 60% by weight, relative to the total mixture, of monohydric and/or polyhydric alcohols with a molecular weight below 200 and/or from 0 to 40% by weight, relative to the total mixture, of oligomeric polyesters containing at least 2 OH groups or ester-diols, with an average molecular weight of from 100 to 500, the first and second components of the mixture being present in amounts corresponding to a NCO/OH ratio of 1:1.

4,324,591

MODIFYING AGENTS FOR ION-LEACHABLE CEMENT COMPOSITIONS

Charles H. Beede, East Brunswick, and Richard N. Ziraite, Somerset, both of N.J., assignors to Johnson & Johnson, New Brunswick, N.J.

Filed Nov. 7, 1980, Ser. No. 204,984

Int. Cl.³ C09K *3/00*

U.S. Cl. 106—85 20 Claims

1. In a cementitious composition comprising dry, ion-leachable glass powder, the improvement wherein said composition further comprises an essentially water insoluble, non-hydroxylic polycaroxylic aromatic compound having a solubility of less than 5 grams per 100 grams of water at room temperature.

4,324,592

CARTRIDGE CONTAINING FAST ACTING INORGANIC ADHESIVE SYSTEMS, GROUTING COMPOSITIONS AND METHOD OF USE

Natvarial K. Patel, Warrensville Heights, and Anthony C. Plaisted, North Royalton, both of Ohio, assignors to Celtite, Inc., Cleveland, Ohio

Filed Dec. 10, 1979, Ser. No. 102,065

Int. Cl.³ C04B *9/04*

U.S. Cl. 106—85 26 Claims

23. A grouting composition produced from mixing together first and second components, said first component being a paste including 10 to 30% by weight of total system of magnesium oxide and 1 to 3% by weight of total system of a dispersing agent, said second component being a paste including 10 to 25% by weight of total system of a dihydrogen phosphate salt and 2 to 10% by weight of total system of a combination of trisodium phosphate and an agent selected from the group consisting of a polyphosphate salt and an alkyl acid phosphate or both, the balance being at least one filler and other ingredients.

4,324,593

SHAPEABLE TERTIARY AMINE N-OXIDE SOLUTION OF CELLULOSE, SHAPED CELLULOSE PRODUCT MADE THEREFROM AND PROCESS FOR PREPARING THE SHAPEABLE SOLUTION AND CELLULOSE PRODUCTS

Julianna K. Varga, Asheville, N.C., assignor to Akzona Incorporated, Asheville, N.C.

Filed Sep. 1, 1978, Ser. No. 938,906

Int. Cl.³ C08J *3/06, 3/08;* **C08L** *1/02*

U.S. Cl. 106—203 **29 Claims**

1. In a process for preparing a solution containing cellulose dissolved in a solvent containing a tertiary amine N-oxide, the improvement which comprises dissolving the cellulose in a solvent containing both a tertiary amine N-oxide and an alkaline compound which increases the rate at which the cellulose dissolves in the solvent.

4,324,594

METHOD FOR CLEANING METAL PARTS

Jack W. Chasteen, Ketering, Ohio, assignor to University of Dayton, Dayton, Ohio

Continuation-in-part of Ser. No. 874,915, Feb. 2, 1978, Pat. No. 4,188,237. This application Feb. 6, 1980, Ser. No. 119,060

The portion of the term of this patent subsequent to Feb. 12, 1997, has been disclaimed.

Int. Cl.³ B08B *5/00*

U.S. Cl. 134—2 **6 Claims**

1. In a method for brazing or otherwise metallic bonding metal parts comprising cleaning said parts to depassivate the surface and thereafter brazing or forming a metal-metal bond, the improvement which comprises cleaning said parts by a process consisting essentially of:

(a) placing the part in a hermetically sealed passage having inlet and outlet gas ports,

(b) locating a fluorocarbon resin in said passage upstream of said part,

(c) heating said fluorocarbon resin to above its decomposition temperature to release gaseous decomposition products,

(d) introducing hydrogen gas through said inlet port and flowing it past said fluorocarbon resin and, then, past said part to carry the decomposition products through said passage and toward said outlet port and thereby subject said part to the action of the gases in said passage and render said part brazable or otherwise able to form a metal-metal bond, and

(e) exiting the gas from said outlet port.

4,324,595

METHOD FOR REMOVING TACKY ADHESIVES AND ARTICLES ADHERED THEREWITH

Kenneth A. Kasprzak, Saginaw, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Aug. 31, 1979, Ser. No. 71,453

Int. Cl.³ B08B *3/08*

U.S. Cl. 134—38 **5 Claims**

1. A process for removing a pressure-sensitive adhesive from a substrate, said adhesive having tack, as measured by ASTM D2979-71, said process comprising applying a composition consisting essentially of a volatile methylsiloxane fluid to said adhesive and removing the thus-treated adhesive from said substrate, said volatile methylsiloxane fluid being sufficiently volatile to leave substantially no residue after 30 minutes at room temperature when 1 gram thereof is placed at the center of a No. 1 circular filter paper having a diameter of 185 mm. and being supported by its perimeter in an open room atmosphere.

4,324,596

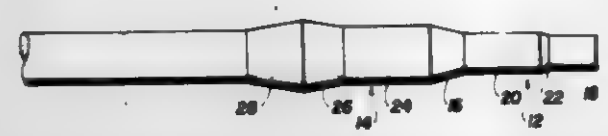
METHOD FOR SUBSTANTIALLY COLD WORKING NONHEAT-TREATABLE ALUMINUM ALLOYS

Robert A. Wuebker, Westerville, Ohio, assignor to General Signal Corporation, Stamford, Conn.

Filed Oct. 29, 1980, Ser. No. 201,782

Int. Cl.³ C22F *1/04*

U.S. Cl. 148—11.5 A **16 Claims**



1. A method of forming an article of an aluminum alloy by cold working comprising:

selecting a strain-hardened, H-tempered, nonheat-treatable aluminum alloy bar;

cold working an end of said bar to create a first and second reshaped portion;

selectively heating said second reshaped portion to regain ductility; and

selectively cold working said second reshaped portion.

4,324,597

MAGNETIC ALLOY

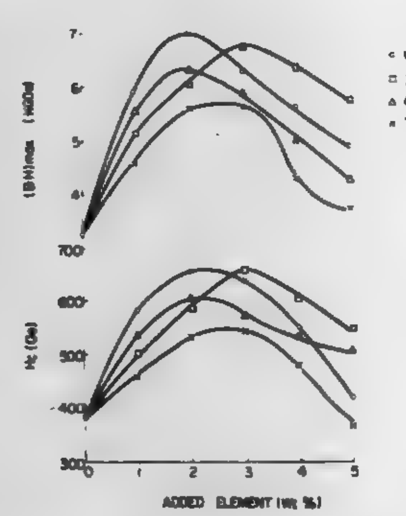
Kimiyaki Kamino, Tokyo, and Masakatsu Fukuda, Sendai, both of Japan, assignors to Mitsubishi Seiko Kabushiki Kaisha, Japan

Continuation of Ser. No. 965,285, Dec. 1, 1978, abandoned. This application Jan. 21, 1980, Ser. No. 113,723

Claims priority, application Japan, Dec. 27, 1977, 54/156429

Int. Cl.³ H01F *1/02*

U.S. Cl. 148—103 **3 Claims**



1. In a five element spinodal decomposition-type magnetic alloy consisting essentially of, by weight, 5 to 30% Co, 15 to 35% Cr, 0.1 to 10% Ti, 0.1 to 10% V, and the balance being Fe, wherein the improvement comprises increasing the magnetic energy product of said alloy by the replacement of a portion of said Fe by about 0.1 to 5% of one element selected from the group consisting of W, Mo and Zr in an amount sufficient to increase said magnetic energy product of said alloy to greater than about 4 MGOe.

4,324,598

FINISH ANNEALING PROCESS FOR GRAIN-ORIENTED ELECTRICAL STEEL STRIP OR SHEET

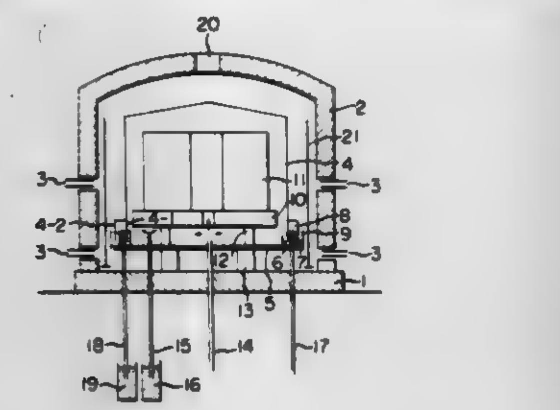
Tetsuo Kimoto; Hisao Takahashi; Hiromichi Koshiishi; Yasuhiro Shinkai, all of Kitakyushu, and Toshimi Kawabata, Fukuoka, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Nov. 21, 1980, Ser. No. 209,300

Claims priority, application Japan, Dec. 7, 1979, 54/157996

Int. Cl.³ H01F *1/04*

U.S. Cl. 148—111 **8 Claims**



1. In a process for finish annealing a grain-oriented electrical steel strip containing 2.0 to 4.0% Si in the form of a strip which has been subjected to a conventional series of operations including hot rolling, cold rolling and annealing, the improvement comprising:

coating said steel strip with an annealing separator having a water content of not more than 10%;

drying said coating on said strip;

forming said strip coated with said annealing separator into a coil;

positioning said coil within an inner cover of a combustion annealing furnace;

supplying an atmosphere gas into the interior of said inner cover and maintaining the pressure of said atmosphere gas within said inner cover at least 5 mm of water higher than the gas pressure exterior of said inner cover; and

carrying out combustion exterior of said inner cover and subjecting said inner cover, said interior of said inner cover and said coil within said inner cover to the heat of said combustion, and thereby finish annealing said coil, while preventing combustion gases resulting from said combustion from entering into said interior of said inner cover.

4,324,599

GELLED SLURRY EXPLOSIVE

Kenneth Range, Arlington, Va.; William J. Irwin, Port Hueneme, Calif.; Russell Reed, Jr., and Wallace E. Silver, both of Ridgecrest, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 28, 1980, Ser. No. 144,483

Int. Cl.³ C06B *33/10*

U.S. Cl. 149—39 **8 Claims**

1. An explosive composition comprising:

about 20 to about 40 weight percent "red water", a mixture of sellite and reaction products of sodium sulfite and trinitrotoluene isomers which includes sodium sulfite, sodium sulfate, sodium nitrite, sodium nitrate and water, such "red water" mixture being a by-product of the manufacture of trinitrotoluene,

about 20 to about 50 weight percent of propellant nitrocellulose;

about 10 to about 25 weight percent oxidizer;

about 7 to about 10 weight percent passivated aluminum; and

about 0.3 to 0.8 weight percent thickening agent.

4,324,600

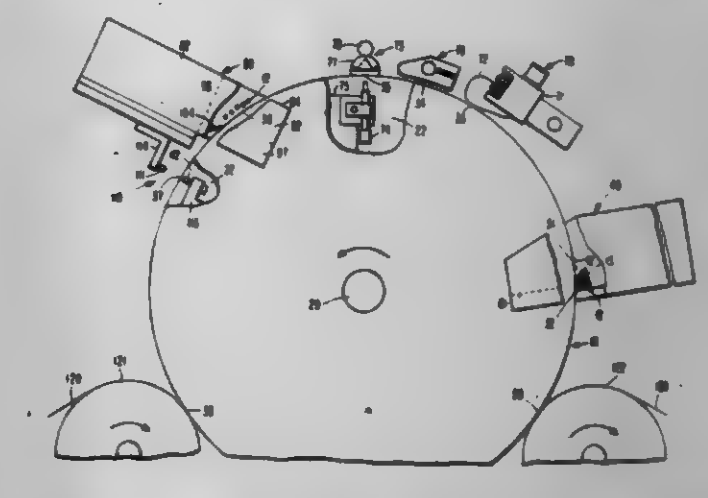
INTRODUCING ELONGATED MAGNETIC ARTICLES INTO VACANT POSITIONS ON A CARRIER

Kristen E. Bankes, Reading; Donald M. Large, Temple; Fred J. Reinhard, Whitfield Reading, and Joseph A. Tamashasky, New Philadelphia, all of Pa., assignors to Western Electric Co., Inc., New York, N.Y.

Filed Jul. 28, 1980, Ser. No. 172,730

Int. Cl.³ B31C *1/00*

U.S. Cl. 156—64 **13 Claims**



1. Apparatus for introducing elongated magnetic articles into vacant positions on a carrier, comprising:

a bin containing such articles, having a feed end in communication with the carrier and having spaced sidewalls with arm sections thereof extending substantially beyond the periphery of the carrier and along the sides thereof;

means for advancing the carrier along a path in communication with the articles in the bin;

means for establishing between and transverse to said sidewalls a first magnetic field of sufficient strength relative to the weight and material of the articles to orient and suspend such articles between the sidewalls; and

means for establishing between and transverse to the sidewall arm sections of the bin a second magnetic field of sufficient strength relative to the weight and material of the articles and the conditions on the carrier to introduce such articles into vacant positions on the carrier.

4,324,601

PREPARATION OF GLASS CONTAINER FOR THERMOPLASTIC CLOSURE

Michael T. Dembicki, and William J. Pond, both of Brockport, Pa., assignors to Brockway Glass Company, Inc., Brockway, Pa.

Continuation-in-part of Ser. No. 86,398, Oct. 19, 1979, Pat. No. 4,260,438. This application Feb. 10, 1981, Ser. No. 233,056

Int. Cl.³ B67B *3/00;* **B32B** *17/10;* **C03C** *15/00, 21/00*

U.S. Cl. 156—69 **14 Claims**

9. A method for sealing an opening in a glass container having side walls comprising:

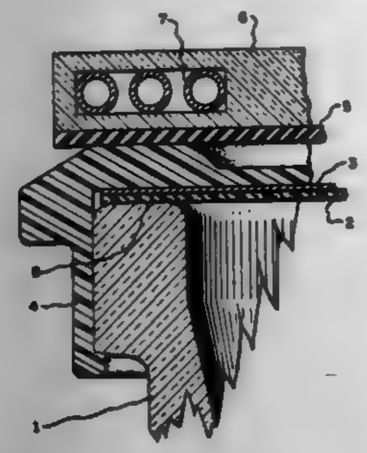
providing a rim-like sealing surface around said opening;

treating said sealing surface at a high temperature with a chemical agent which renders said surface adherable to a thermoplastic membrane;

coating the exterior surface of said container including said side walls with a lubricity enhancing agent;

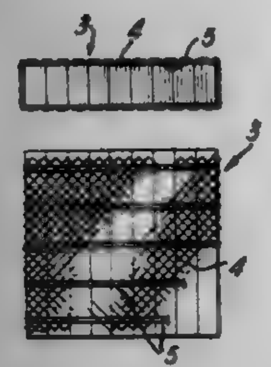
removing said lubricity enhancing agent from only said sealing surface by briefly exposing said surface to an intense heat source and heating it to below flame polishing temperature while avoiding destruction by heat of the effect of the cold end treatment on the side walls;

pressing a membrane comprising a thermoplastic material against said sealing surface at a temperature above the



softening point but below the melting point of said thermoplastic.

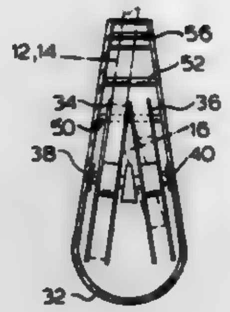
4,324,602
METHOD FOR REDUCING THE THERMAL INERTIA OF FURNACE OR OVEN WALLS
Richard P. B. Davis; Harold G. Emblem; Richard D. Shaw, and Stanley J. Shelley, all of Bromley, England, assignors to Zirconal Processes Limited, Bromley, England
Continuation of Ser. No. 129,818, Mar. 12, 1980, abandoned, which is a continuation of Ser. No. 804,079, Jun. 6, 1977, Pat. No. 4,194,036, which is a division of Ser. No. 707,108, Jul. 20, 1976, abandoned. This application Dec. 15, 1980, Ser. No. 216,971
Claims priority, application United Kingdom, Jul. 29, 1975, 31736/75; Nov. 28, 1975, 49043/75
The portion of the term of this patent subsequent to Mar. 18, 1997, has been disclaimed.
Int. Cl.³ B32B *31/26*; E04F *13/00*; F27D *1/16*
U.S. Cl. 156—71 15 Claims



1. In a method for reducing the thermal inertia of a furnace or wall oven by lining the oven with refractory fibers disposed with their ends end on to the wall, the improvement comprising
(i) compressing a plurality of modules of said refractory fibers disposed with one end, end on to the plane of one end of the modules, by wrapping the compressed modules in a thermally combustible material;
(ii) applying the modules side by side to a furnace or oven wall;
(iii) firing the furnace or oven to thermally destroy the wrapping material and release the modules from compression thereby causing each module to press against adjacent modules.

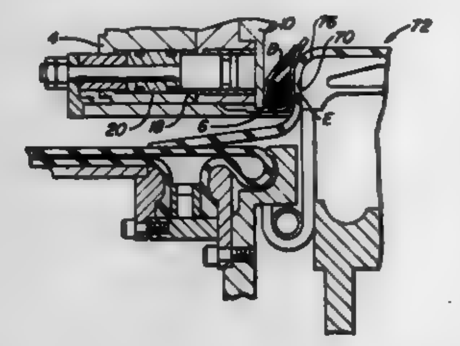
14. In a module for application to a furnace or oven wall to reduce the thermal inertia thereof and having refractory fibers with one end end on to the plane of one end of the module, the improvement comprising a wrapping of thermally combustible material which on first firing of the furnace or oven is thermally destroyed, said wrapping being disposed about said module to hold said module in elastic compression whereby, when said wrapping is thermally destroyed, said module is released from compression and free to expand.

4,324,603
HOSIERY REPAIR KIT
Janice L. Crandall, and Richard W. Crandall, both of 150 W. Huron, Chicago, Ill. 60610
Filed Jul. 30, 1979, Ser. No. 62,510
Int. Cl.³ B32B *35/00*
U.S. Cl. 156—584 6 Claims



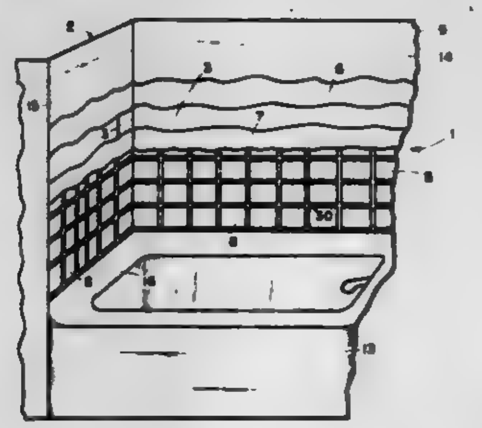
1. A hosiery repair kit comprising:
a tape including a repair layer having a textured appearance, and an adhesive layer on said repair layer;
a peel-off removable support layer carrying said adhesive layer, with repair and adhesive layers to be removed from said support layer so that said repair layer may be applied to a hose and adhered thereto by said adhesive layer;
said carrier means comprising a first reel having said tape wound thereon,
a second reel mounted for rotation with said first reel to take up the removable support layer after the same has parted from said adhesive layer; and
a single spindle mounted for rotation; said first and second reels fixedly mounted on said spindle for mutual rotation.

4,324,604
BEAD SETTING APPARATUS WITH RETRACTABLE FLANGE
Joseph H. Alexander, Kent, and Frank R. Jellison, Canton, both of Ohio, assignors to The General Tire & Rubber Co., Akron, Ohio
Filed Dec. 22, 1978, Ser. No. 972,317
Int. Cl.³ B29H *17/22*
U.S. Cl. 156—131 3 Claims



3. A method of setting a bead ring against the plies of a tire carcass overhanging the shoulder of a tire building drum, including the steps of carrying said bead ring on the support flange of a carrier member to a first position spaced axially from said building drum shoulder, then expanding said building drum with said carcass plies thereon, thereby causing the end portions of said carcass plies to be drawn around the drum facing edge of said support flange and toward the end face of said building drum, characterized by the steps of:
(1) moving said carrier member further toward said drum from said first position to press said bead ring and said support flange against said carcass ply end portions and also to press said carcass ply end portions against the end face of said building drum, while allowing said support flange to move axially with respect to said carrier member under the pressure of the engagement of said support flange with said carcass ply end portions;
(2) sliding said support flange on said carrier member axially away from said tire building drum to release the hold that said carrier member and support flange have on said bead ring, and
(3) then moving said carrier member axially away from said tire building drum, leaving said bead ring pressed against said end portions of said carcass plies overhanging said building drum shoulder.

4,324,605
TILING ARRANGEMENT AND METHOD
James R. Bethea, Denham Springs, La., assignor to Noble Manufacturing Company, Baton Rouge, La.
Filed Nov. 4, 1980, Ser. No. 203,985
Int. Cl.³ B32B *3/14, 31/04*
U.S. Cl. 156—247 31 Claims

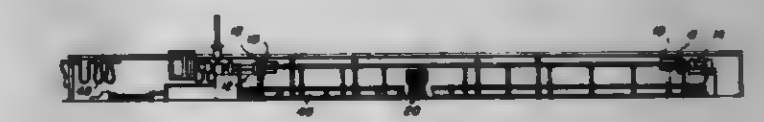


1. A method for forming a watertight barrier between ceramic tile and a supporting substrate therefor, comprising:
providing a sheet of imperforate, substantially waterpfoof material having a dry, solvent-based film adhesive on one side thereof;
adhering the other side of said waterproof sheet to said substrate;
applying a tile adhesive over the film adhesive on said waterproof sheet one side; said tile adhesive having a solvent of said film adhesive therein for partially dissolving said film adhesive, and a cross-linking agent to interlink said tile and film adhesives and securely bond the same to said waterproof sheet;
pressing said ceramic tile into said tile adhesive; and
curing said adhesives.

4,324,606
PROCESS FOR FORMING A REINFORCED MEMBRANE
Michael S. Withers, Landenberg, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Continuation-in-part of Ser. No. 107,521, Dec. 27, 1979, abandoned. This application Feb. 14, 1980, Ser. No. 121,461
Int. Cl.³ B29C *19/02*
U.S. Cl. 156—272.2 10 Claims

1. A process for continuously forming a reinforced membrane comprising
(1) continuously bringing at least two films of melt-fabricable fluorinated polymer which contain side chains containing sulfonyl and/or carboxyl functional groups in melt fabricable form and a web of reinforcing material into face-to-face contact such that proximate surfaces of two of said films contact opposite planar surfaces of said web, and moving the resulting combination of said films and said web vertically, unsupported except at two opposite edges thereof,
(2) applying vacuum to said combination at only the two opposite edge portions thereof, whereby air is removed from between said films,
(3) applying heat to the two outermost opposite planar film surfaces, first in the center portions thereof and progressively moving toward and including the edge portions thereof, and
(4) cooling the resulting reinforced membrane.

4,324,607
HOSE BUILDING MACHINE
Doyle Dugger, Muscatine, Iowa, assignor to Bandag Incorporated, Muscatine, Iowa
Continuation of Ser. No. 909,183, May 24, 1978, abandoned. This application Apr. 7, 1980, Ser. No. 137,972
Int. Cl.³ B65H *81/00*.
U.S. Cl. 156—350 13 Claims



1. A machine for building a steel wire reenforced laminated rubber hose in a controlled cycle by depositing the several separate layers of rubber and wires to be laminated together on a generally cylindrical mandrel in a condition to be cured and stripped therefrom, comprising a means to support the mandrel to rotate about its longitudinal axis, variable speed drive means to rotate said mandrel, carriage means reciprocably movable in a path parallel to the axis of said mandrel, drive means to simultaneously reciprocate said carriage means in said path while said mandrel rotates, a first supply means of said carriage for delivering a rubber material in strip form in a controlled sequence from the carriage to the mandrel to be wrapped in a spiral so that each strip forms a layer around the exposed outer surface on the mandrel, other supply means for delivering multiple strands of wire in an alternate sequence of wrapping, said other supply means including let-off means having a plurality of individually rotatable sheaves positioned on said let-off means so that each sheave cooperates with an individual wire, and means for braking the rotational motion of each sheave to produce tension in each of said wire strands passing through the let-off means, means to place the individual strands of wire under tension as they are being positioned in a spiral layer around the exposed outer surface on the mandrel, and means for precisely coordinating the relative rotation of said mandrel and the reciprocation of said carriage whereby the multiple strands of rubber and wire are laid in an exact pattern on the surface of the mandrel to form their respective layers that cover the entire surface thereof, said means including a computer system which monitors rotation of said mandrel and which controls said drive means for said reciprocating carriage so that said mandrel and carriage move in a predetermined ratio without any accumulation of error, said means for precisely coordinating the relative rotation of said mandrel and the reciprocation of the carriage also including means arranged to precisely rotate the mandrel through a portion of one revolution at the start of each of said steps of wire wrapping, whereby to produce the precise laydown of all of the wires over the entire surface on which the strands of wire are wrapped.

4,324,608

LABELING APPARATUS

Max H. Klinger, Obere Ringstrasse 54, D-4901 Hiddenhausen, Fed. Rep. of Germany

Filed May 22, 1981, Ser. No. 266,234

Claims priority, application Fed. Rep. of Germany, May 22, 1980, 3019506

Int. Cl.³ B32B *31/00*

U.S. Cl. 156—351 8 Claims

1. Labeling apparatus for the transfer of self-adhesive labels from label carrier means to material to be labeled, comprising
(a) conveyor means moving transversely to the path of the material to be labeled;
(b) means adjacent one end of said label carrier means laterally of said path for redirecting said label carrier means and for transferring said labels to said conveyor means;
(c) an indicator movable transversely of said path oppositely to and in synchronism with the movement of said conveyor means;
(d) at least one sensor means for scanning said indicator, said sensor means being arranged laterally of the path of movement of said indicator and being adjustable transversely of said path of the material to be labeled, and producing a signal for controlling the drive of said label carrier means upon passage of said indicator.

4,324,609

HUMIDIFIER ARRANGEMENT FOR A TRAVELLING HYDROPHILIC WEB

Gabriel Corradi, Soissons, France, assignor to Sarl dite: Astin-France-Assistance Technique Industrielle, France

Filed Jun. 3, 1980, Ser. No. 156,023

Claims priority, application France, Jun. 8, 1979, 79 15212

Int. Cl.³ B32B *31/06, 31/08, 31/12;* B05C *5/00*

U.S. Cl. 156—470 6 Claims

1. A humidifier arrangement for at least one web of travelling hydrophilic material, which arrangement is intended to distribute humidity in a pre-determined manner over the width of the web in order to correct any tendency thereof towards warping of a material formed by the connection of this first web face to face with a second web, the arrangement comprising a first table over which the web can travel, a plurality of jets arranged tranversely in association with said first table and located upstream thereof with respect to the direction of travel of the first web over said first table and opposite the intended path of at least one side of the first web, and means for the individual regulation of the rate of flow of humidifying liquid through each jet, which means comprise a control table, and a slide for each jet tor regulating the rate of flow through the respective jet, the various slides corresponding to the various jets being able to move longitudinally with respect to said control table so that the position of the slides on said control table for a given flow regulation provides a visualisation of the shape of the cross-section of material which is to be corrected by this regulation.

4,324,610

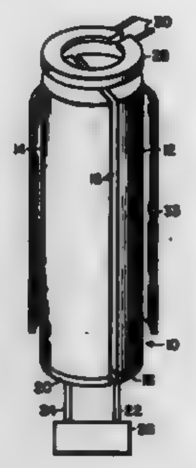
METHOD FOR THE CONTROLLED MELTING OF SEMICONDUCTOR BODIES

Donald R. Clement, Phoenix, and Roger G. Nikirk, Tempe, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 20, 1978, Ser. No. 888,072

Int. Cl.³ C01B *15/18*

U.S. Cl. 156—602 10 Claims



1. A method for converting a polycrystalline semiconductor body to a substantially monocrystalline semiconductor body comprising the steps of:
dividing said polycrystalline body into electrically isolated vertical segments separated by a narrow gap and having a top portion; connecting each of said segments to a source of electrical power; providing a radio frequency induction coil located in proximity to said top portions of said segments and connected to a source of radio frequency power; induction heating said top portions of said segments by means of said induction coil to cause said top portions to melt; allowing the molten material so formed to flow into said gap and to electrically connect together said segments; passing current from said source of electrical power through said segments and said molten material to resistance heat said segments; continuing said induction heating and said resistance heating, said resistance heating and said induction heating together being sufficient to maintain a mass of molten semiconductor material on said top portions; inserting a semiconductor seed crystal into said mass of molten material and pulling said substantially monocrystalline semiconductor body therefrom.

4,324,611

PROCESS AND GAS MIXTURE FOR ETCHING SILICON DIOXIDE AND SILICON NITRIDE

Diane C. Vogel, Fremont; Marian C. Tang, Rodeo, and Richard F. Reichelderfer, Castro Valley, all of Calif., assignors to Branson International Plasma Corporation, Hayward, Calif.

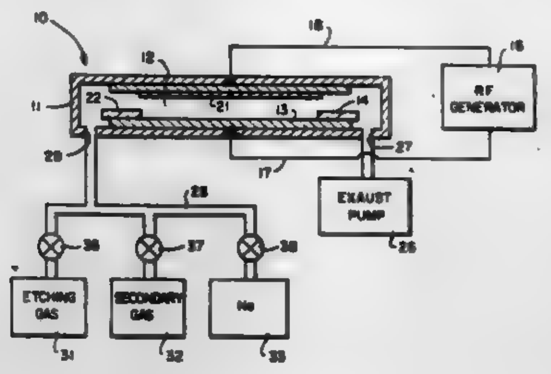
Filed Jun. 26, 1980, Ser. No. 163,386

Int. Cl.³ H01L *21/306;* C03C *15/00, 25/06;* B44C *1/22*

U.S. Cl. 156—643 13 Claims

1. In a process for etching silicon dioxide and/or silicon nitride on a substrate in a reactor having a chamber and a pair of spaced apart generally planar electrodes, the steps of: positioning the substrate between the electrodes, admitting a primary gas consisting of a pure carbon-fluorine gas into the

chamber at a pressure on the order of 1-3 torr, admitting a secondary gas containing hydrogen at a pressure on the order



of 0.5-1.5 torr, and energizing the electrodes to ionize the gas and form a plasma between the electrodes.

4,324,612

PROCESS FOR THE PREPARATION OF GROUNDWOOD PULP

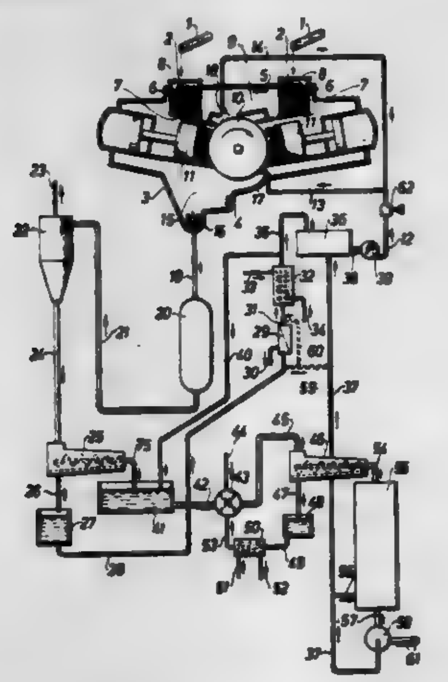
Jonas A. I. Lindahl, Domsjo, Sweden, assignor to Mo och Domsjo Aktiebolag, Ornskoldsvik, Sweden

Filed Nov. 26, 1979, Ser. No. 97,466

Claims priority, application Sweden, Nov. 24, 1978, 7812111

Int. Cl.³ D21B *1/14*

U.S. Cl. 162—23 11 Claims



1. A process for preparing groundwood pulp from debarked pulpwood logs, which comprises grinding the logs in the presence of water under a superatmospheric pressure of a gas selected from the group consisting of steam, air, and steam and air, and forming and discharging a pulp suspension in the resulting aqueous liquor, while continuously supplying said water to the grinding in a volume of less than 35 parts per part of bone dry pulp at a rate of addition such that the temperature of the discharged pulp suspension is below 200° C. and within the range from about 1.5 to about 50 times the temperature in °C. of the added water, at a pressure within the range from about 8 to about 40 kiloponds/cm² higher than the superatmospheric pressure of said gas and at a temperature within the range from about 2° to about 63° C.

4,324,613

METHODS AND APPARATUS FOR THE RAPID CONSOLIDATION OF MOIST POROUS WEBS

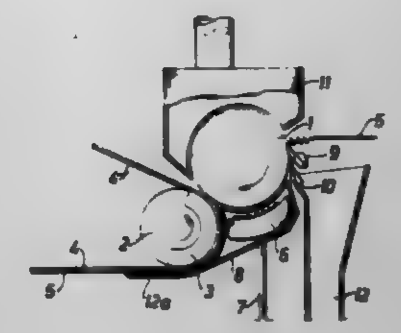
Douglas Wahren, John Ericssonsg. 48, S-652 21 Karlstad, Sweden

Continuation of Ser. No. 21,442, Mar. 19, 1978, abandoned. This application Jun. 10, 1980, Ser. No. 158,080

Claims priority, application Sweden, Mar. 31, 1978, 7803672

Int. Cl.³ D21F *5/02*

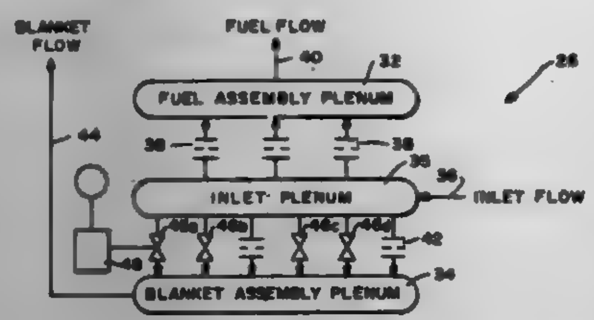
U.S. Cl. 162—111 18 Claims



1. In a method for consolidating and drying a moist, porous web, the steps of running the web through the nip between a pair of rotatable rolls with one side in contact with one roll and its other side facing a permeable surface pressing the rolls together to develop a high pressure linear load in the press nip sufficient to produce good thermal contact between said one roll and the web at least in areas subjected to said high pressure linear load and to overcome any steam pressure developed between the web and said one roll, supplying heat to the outer surface of said roll as it approaches said nip at a rate such that the roll arrives at said nip with a temperature and heat content high enough to cause moisture in the web to be converted rapidly and violently into steam as the web passes through said nip, and heat is transferred rapidly from the surface of the roll directly to the web under high pressure, the steam thus formed tending to pass straight through the web, carrying with it any free water remaining in the cavities between the fibers of the web, whereby the steam is cooled and practically all of its heat energy is transferred to the web and the water remaining therein.

17. Apparatus for consolidating and drying a moist, porous web of material comprising:
a pair of rotatable rolls defining a nip;
means for running the web through said nip with one side in contact with the surface of one of said rolls and with the other side facing a permeable surface;
heating means disposed externally of said one roll for supplying heat to a portion of the outer surface thereof as it approaches said nip so that said surface portion is brought to a temperature and heat content high enough to cause the moisture in the web to be converted suddenly and violently into steam as the web passes through said nip, said heating means including conduit means having outlet means generally conforming to the shape of part of said one roll in closely adjacent relation to the surface thereof and disposed upstream of said nip, and means for supplying a liquid heating medium to said conduit means; and
means for pressing said rolls together so that a load is created which is sufficient to overcome any steam pressure developed between the web and said one roll in the nip area and sufficient to produce good thermal contact between the web and said one roll in said nip area, whereby heat is transferred rapidly from the surface of the roll directly to the web under high pressure, at least in said nip area.

4,324,614
FLOW DISTRIBUTION SYSTEM FOR COOLANT IN A NUCLEAR REACTOR AND METHOD
Edward Moody, Simi, Calif., assignor to Electric Power Research Institute, Inc., Palo Alto, Calif.
Filed Apr. 23, 1979, Ser. No. 32,361
Int. Cl.³ G21C *15/04*
U.S. Cl. 376—175 4 Claims

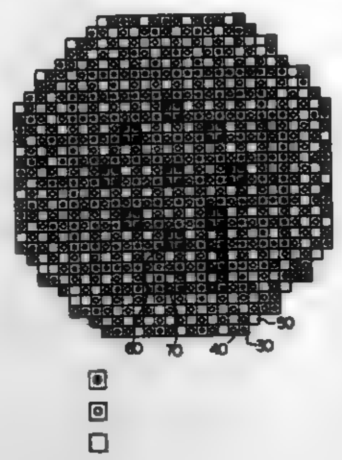


1. In a nuclear reactor including an inner core containing both fuel assemblies and blanket assemblies and means for cooling the assemblies by passing liquid coolant across and in contact with the latter, a flow distribution system comprising an inlet plenum having inlet means for receiving a continuous supply of said coolant, a fuel plenum including a plurality of inlets remaining opened at all times during operation of the reactor for continuously receiving coolant from said inlet plenum, a blanket plenum including at least one inlet remaining opened at all times during operation of the reactor for continuously receiving a lesser amount of coolant from said inlet plenum than the amount passing into said fuel plenum through its plurality of inlets, said fuel and blanket plenums being in fluid communication with said fuel assemblies and blanket assemblies, respectively, for passing received coolant across and in contact with said assemblies, and means for automatically changing the distribution of coolant between said fuel and blanket plenums in response to predetermined changes in temperature at said assemblies, said distribution changing means including a plurality of second inlets into said blanket plenum from said inlet plenum and an equal plurality of valve means for opening predetermined ones of said second inlets at different times as the temperature at said blanket assemblies increases for automatically increasing the amount of coolant passing into said blanket plenum and decreasing the amount of coolant passing into said fuel plenum whereby to provide said change in coolant distribution, said valve means including means responsive to said temperature changes for opening said second inlets, whereby increases in temperature at said blanket assemblies cause an increase of said coolant to be distributed to said blanket plenum for passage to said blanket assemblies and an automatic decrease in coolant to be distributed to said fuel plenum for decreasing the amount of coolant passing to said fuel assemblies.

4,324,615
CONSTRUCTION OF NUCLEAR REACTOR CORE
Yasuhiro Kobayashi, Hitachi, and Renzo Takeda, Yokohama, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Nov. 29, 1979, Ser. No. 98,633
Claims priority, application Japan, Nov. 29, 1978, 53-146538
Int. Cl.³ G21C *19/20*
U.S. Cl. 376—267 7 Claims

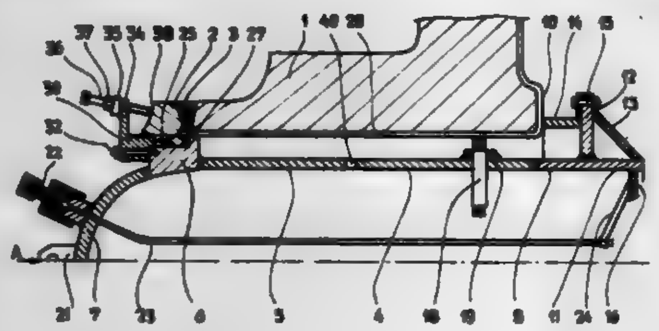
1. In a nuclear reactor core having a plurality of fuel units arranged in the central region of the reactor core and occupying more than 50% of the total area of the reactor core, each fuel unit including four adjacent fuel assemblies which adjacently surround one control rod, said fuel assemblies of each fuel unit being adapted to be replaced one by one at each of successive fuel replacement cycles,

an improvement wherein each of said fuel units in the state of an initial core includes one poison-containing fuel assembly, and three other assemblies containing no poison



and having mean enrichments lower than that of said poison-containing fuel assembly.

4,324,616
DETACHABLE AND LEAKTIGHT DEVICE FOR CLOSING AN ORIFICE OF A NUCLEAR REACTOR VESSEL
Andre Marmorat, and Rene Montaron, both of Le Creusot, France, assignors to Framatome, Courbevoie, France
Filed Mar. 7, 1980, Ser. No. 127,969
Claims priority, application France, Mar. 7, 1979, 78 05856
Int. Cl.³ G21C *19/20*
U.S. Cl. 376—203 5 Claims



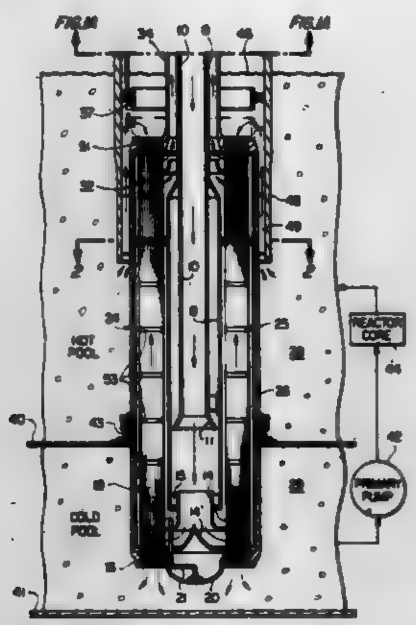
1. A removable and leaktight device for closing the orifice of a pipe connection in the vessel of a water cooled nuclear reactor during hydraulic pressure testing, and before connecting a pipe for primary fluid, said device comprising:

a body adapted to bear, inside the vessel, on an internal part of the vessel which is resistant to thrust stresses during application of pressure, being defined by at least one cylindrical shell having a diameter which is less than the internal diameter of the pipe connection, said cylindrical shell being joined, at the inner end thereof, which inner end is intended to enter the vessel, to a bearing member for bearing on the internal part of the vessel, and being fixed at the outer part thereof, to be located near the exterior of the vessel, with a ring and a curved cover closing said shell and producing an entirely closed structure relative to the exterior of the vessel,

sealing means comprising a set of annular gaskets being carried by said ring and located, when said device is in position in the pipe connection, between an external surface of said ring and an internal surface of the outer end of the pipe connection,

and operating means for fixing said device comprising a clamping flange, means for fixing said clamping flange to said ring, and clamping screws for bearing on the outer end of the pipe for exerting a tractive stress on said clamping flange and on the remainder of said device.

4,324,617
INTERMEDIATE HEAT EXCHANGER FOR A LIQUID METAL COOLED NUCLEAR REACTOR AND METHOD
Michael G. Sowers, Hixson; Ronald B. Creek, Chattanooga, and Donovan D. DeFur, Hixson, all of Tenn., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.
Filed Apr. 27, 1979, Ser. No. 34,165
Int. Cl.³ G21C *15/00*
U.S. Cl. 376—405 11 Claims



1. A tube and shell heat exchanger for a liquid metal cooled, multi-pool, nuclear reactor comprising:

(a) a plurality of thermally uncompensated tubes mounted in a heat exchanger for carrying a liquid metal heating fluid from a hot pool to a cold pool in the nuclear reactor;

(b) a thermally uncompensated and thermally expandable heat exchanger shell enclosing said tubes for bringing a liquid metal heated fluid into thermal communication with both said tubes and said heating fluid thereby heating said heated fluid, said shell being simultaneously immersed in both the hot pool and the cold pool to an extent that the temperature of the shell is higher than the temperature of the tubes whereby to cause said shell to expand to a greater extent than said tubes, said shell being inter-connected with said tubes such that the difference in thermal expansion therebetween places said tubes in a state of tension; and

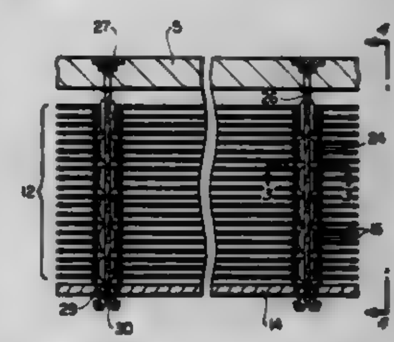
(c) nozzle means connected to the heat exchanger shell for directing the heated fluid into and out of said heat exchanger.

4,324,618
FUEL ELEMENT ASSEMBLY
Donald C. Schluderberg, Lynchburg, Va., assignor to The Babcock & Wilcox Company, New Orleans, La.
Filed Jun. 8, 1979, Ser. No. 47,591
Int. Cl.³ G21C *3/08*
U.S. Cl. 376—434 4 Claims

1. A tight lattice fuel element assembly for a pressurized-water cooled nuclear converter reactor comprising: a multiplicity of fuel rods disposed in a spaced parallel array having an equilateral triangular pitch for all of said fuel rods and longitudinal coolant channels between multiple adjacent fuel rods for a generally longitudinal coolant flow, one or more longitudinal fins formed on at least some of said fuel rods disposed serially at equally spaced common axial intervals, said fins having an equal angular orientation relative to the longitudinal axis of the fuel rods, each of said fins extending over a portion of the circumference of the fuel rods and between adjacent coolant channels, each of said fins spirally rotating in the same direction, each of said fins having a peripheral point in contact with and joined to an outer cylindrical portion of an adjacent fuel rod, and said points in each axially spaced series lying in substantially the same transverse plane whereby a

transverse flow component part of the longitudinal coolant flow is established throughout the fuel element assembly.

4,324,619
APPARATUS FOR SUSPENDING THERMAL SHIELDING WITHIN A NUCLEAR REACTOR
William F. Guerin, Greensburg, Pa., assignor to Electric Power Research Institute, Inc., Palo Alto, Calif.
Filed Oct. 1, 1979, Ser. No. 80,515
Int. Cl.³ G21C *13/04*
U.S. Cl. 376—290 3 Claims



1. Apparatus for suspending thermal shielding within a nuclear reactor, comprising: (a) a nuclear reactor having a core wherein heat is produced by nuclear fission and a reactor vessel housing the core and liquid metal coolant and having a deck means which provides an upper horizontal boundary for the reactor; (b) a plurality of horizontally disposed thermally reflective plates; and (c) a plurality of horizontally deformable chains having interconnected links, said chains being connected to the deck and the reflective plates so that the transfer of heat from the liquid coolant above the reactor core to the deck is substantially reduced and said chains being connected to the lower surface of the deck so that the reflective plates are suspended therefrom.

4,324,620
PYROLYZING APPARATUS
Kanichi Ito, Yokohama; Yoshio Hirayama, Zushi; Yoshiaki Ishii, and Naoyoshi Ando, both of Yokohama, all of Japan, assignors to Ebara Corporation, Tokyo, Japan
Filed Dec. 5, 1979, Ser. No. 100,406
Int. Cl.³ C10B *15/00, 21/10, 49/10, 49/22*
U.S. Cl. 202—99 9 Claims

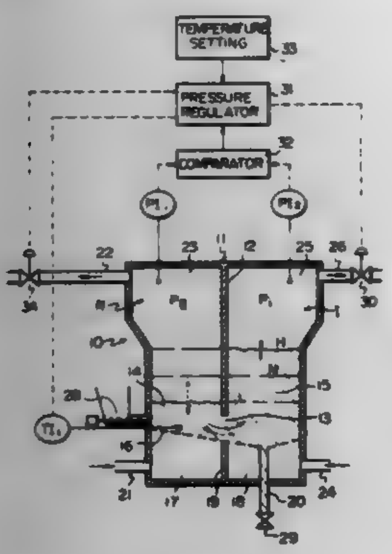
1. A pyrolizing apparatus of a fluidized bed type comprising:

a vessel having a perforated bottom plate;

a pyrolysis fluidized bed chamber above said plate in said vessel;

an incineration fluidized bed chamber above said plate in said vessel, said chambers being in communication with each other at the lower portions of said chambers above said plate; and

means for regulating the pressure difference between the free boards of said chambers;
wherein said regulating means regulates said pressure difference with elapse of time;
wherein said perforated bottom plate is inclined so that the lowest portion thereof is located below either of said incineration chamber or said pyrolysis chamber, and a discharge duct is connected to the bottom plate at its said lowest portion;



wherein a pyrolysis gas chamber and an incineration gas chamber are provided under said perforated bottom plate and below said pyrolysis fluidized bed chamber and said incineration fluidized bed chamber, respectively;
wherein said gas chambers are separated from each other by a dividing wall disposed therebetween; and
wherein the position of said dividing wall is arranged to be adjustable so that a pyrolysis gas chamber may extend to a region partially below said incineration fluidized bed chamber.

4,324,621

METHOD AND APPARATUS FOR CONTROLLING THE QUALITY OF ELECTROLYTES

Robert C. Kerby, Rossland, Canada, assignor to Cominco Ltd., Canada

Continuation-in-part of Ser. No. 107,180, Dec. 26, 1979, abandoned. This application Jun. 26, 1980, Ser. No. 163,282

Int. Cl.³ G01N *27/46*

U.S. Cl. 204—1 T 38 Claims

1. A method for controlling a process for the electro deposition of a metal using an electrolyte containing concentrations of impurities, said method comprising the steps of establishing a test cell, a sample of electrolyte, a moving cathode, made of an electrically conductive material other than the metal being deposited, which moving cathode has an area exposed to said electrolyte, an anode, and a reference electrode, said electrodes being immersed in said sample, a constant current supply and measuring means electrically connected to said electrodes; applying a low current to the electrodes in said test cell, said current being sufficient to cause inchoate desposition of said metal or said cathode; measuring the activation overpotential at the point of inchoate deposition of said metal; relating the measured activation overpotential to the concentration of impurities in said sample; and adjusting the concentration of impurities in the electrolyte of the process for the deposition of metal to obtain optimum deposition of metal, wherein inchoate deposition is defined as the deposition of metal which has just begun and is limited to a partial covering of the moving cathode surface by deposited metal.

4,324,622

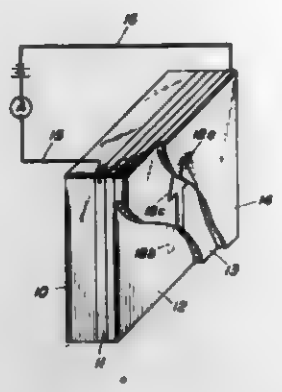
MULTILAYERED ELECTROPLATOGRAPHIC ELEMENT COMPRISING ION CONDUCTIVE AND ELECTROCHROMIC LAYERS

Satyendra K. Deb, Stamford, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 509,578, Sep. 26, 1974, abandoned. This application Mar. 7, 1977, Ser. No. 774,728

Int. Cl.² G03G *5/00*

U.S. Cl. 430—63 7 Claims



1. An electrophotographic element comprising, on a support, a photoconductive insulating layer on an ion conductive layer and, in conductive contact with said photoconductive layer, a persistent electrochromic layer of solid inorganic electrochromic substance responsive upon the application of a critical voltage across said layer in an electric field of one polarity by changing without chemical transfer, from a first absorption state to second absorption state and responsive upon the application of said critical voltage in a field of opposite polarity by changing without chemical transfer, from said second state to said first state, said substance being persistent in either of said states without chemical fixing after discontinuing the application of said critical voltage and being reversibly changeable at said critical voltage from either of said first and second states to the other, the reversible changes of absorption states in said electrochromic substance being the appearance and disappearance, respectively, of a radiation absorption band in the absorption spectrum of said substance, which band is created upon the change to one state and destroyed upon the change to the other state.

4,324,623

METHOD AND APPARATUS FOR REPLENISHING AN ELECTROPLATING BATH WITH METAL TO BE DEPOSITED

Glenn R. Schaer, Columbus, Ohio, assignor to Koito Seisakusho Co. Ltd., Tokyo, Japan

Filed Jan. 7, 1981, Ser. No. 223,207

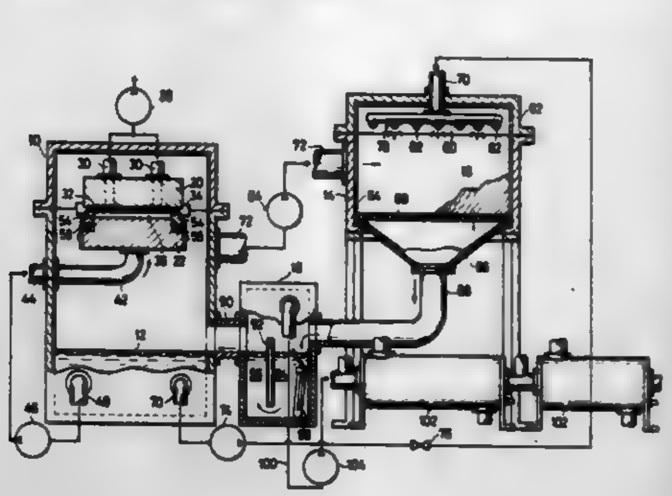
Claims priority, application Japan, Jan. 12, 1980, 55/2243

Int. Cl.³ C25D *5/00, 21/02, 21/06, 21/18*

U.S. Cl. 204—15 11 Claims

1. In a copper electroplating operation of the type wherein the copper is electrodeposited from an acid copper plating solution in a plating tank, a method of replenishing the plating solution with copper, which comprises:
(a) providing a solid-state supply of copper in an enclosed space;
(b) directing into the enclosed space the oxygen evolved within the plating tank with the progress of the electroplating operation;
(c) spraying the plating solution from the plating tank over

the copper supply in the oxygen-enriched atmosphere for dissolving the copper supply; and,



(d) returning the plating solution with its increased copper concentration into the plating tank.

4,324,624

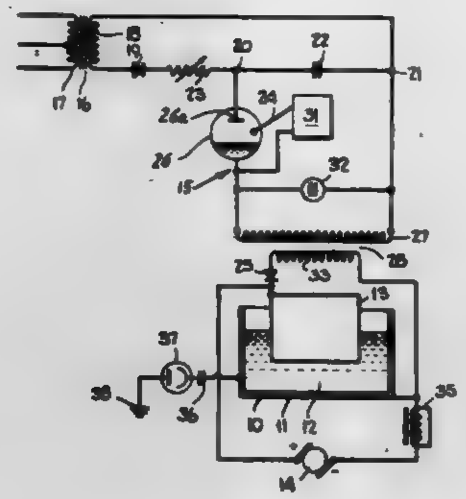
METHOD FOR THE ACTIVATION OF A COMPOSITION FOR FUSED BATH ELECTROLYSIS

Isaac M. Diller, 50 Park Ave., New York, N.Y. 10016

Continuation of Ser. No. 428,779, Dec. 27, 1973, abandoned, which is a division of Ser. No. 3,668, Jan. 19, 1970, Pat. No. 3,806,433, which is a continuation-in-part of Ser. No. 241,895, Dec. 3, 1962, Pat. No. 3,244,604, Ser. No. 305,768, Aug. 30, 1963, Pat. No. 3,392,092, and Ser. No. 539,906, Apr. 4, 1966, abandoned. This application Jun. 30, 1976, Ser. No. 701,200

Int. Cl.³ B01J *19/12;* C25C *3/06, 3/16*

U.S. Cl. 204—67 31 Claims



24. A process of activating a fused electrolyte comprising applying a high energy impulse by means of a firing electrode structure to a fused electrolyte in order to activate the electrolyte and thereby increase the yield of metal per kilowatt-hour for a given rate of production of an electrolytic cell for the electro-winning of aluminum when the activated electrolyte is electrolyzed in the cell, the firing electrode including a pair of electrode members adapted to be inserted into the melt, each of the members having an insulated lead portion adapted to extend into the melt and a leg portion extending at an angle from the lead portion and adapted to extend toward a vertical wall of the cell, said leg portion of each of said electrode members converging toward one another with the minimum gap between the electrodes being adjacent the free ends thereof, whereby the discharge of the impulse occurs between said leg portions.

4,324,625

PROCESS FOR PREPARING ALKANEDIOLS BY ELECTROCHEMICAL COUPLING OF HALOHYDRINS

Charles C. Cambo, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 67,351, Aug. 14, 1979, abandoned. This application Jul. 29, 1980, Ser. No. 171,380

Int. Cl.³ C25B *3/10, 11/04, 13/08*

U.S. Cl. 204—72 14 Claims

1. A process for preparing an alkanediol from a halohydrin represented by the structure

HO—R—X

where
R is an alkylene radical of 2–4 carbon atoms and
X is iodine or bromine,
the process comprising
(A) passing a direct electric current through a divided electrolytic cell having a copper cathode and having
(1) a cathode compartment containing a catholyte which is an aqueous solution comprising
(a) the halohydrin,
(b) an electrolyte
(c) 0.01–1 mole per liter of a stabilizing ligand, and
(d) copper ions, and
(2) an anode compartment containing an anolyte which is an aqueous solution comprising
(e) an iodide or bromide and
(f) an electrolyte, the cathode compartment being separated from the anode compartment by an electroconductive diaphragm permeable to electrolyte cations; and
(b) recovering alkanediol from the catholyte.

4,324,626

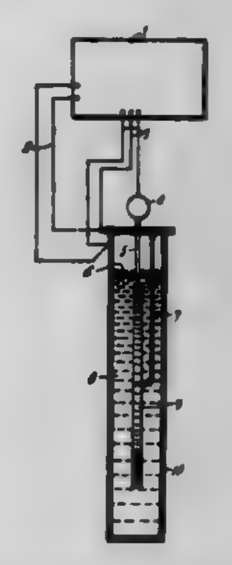
SELECTIVE REMOVAL OF NICKEL-BASED BRAZE ALLOY FROM NICKEL-BASED METALS

James F. McGivern, Jr., Avon, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Continuation-in-part of Ser. No. 93,655, Nov. 13, 1979, Pat. No. 4,261,804. This application Feb. 17, 1981, Ser. No. 235,199

Int. Cl.³ C25F *5/00, 3/00*

U.S. Cl. 204—146 9 Claims



1. A process for the selective removal of nickel-based braze alloy from nickel-based metal/nickel-based alloy composites comprising immersing at least one composite in a solution of electrolyte comprising 4% to 6% by volume sulfuric acid and about 0.5% to 5% by volume hydrochloric acid which is substantially non-corrosive to the nickel-based metal at voltages of 0.7 volt to 0.9 volt, imposing such voltage across the composite and potentiostatically controlling such voltage while the composite is immersed in the electrolyte producing a

nickel braze alloy/nickel-based metal current density ratio in the composite which selectively etches the nickel-based metal.

4,324,627

PROCESS FOR PREPARING 2-CHLORO-5-TRICHLOROMETHYLPYRIDINE

David Cartwright, Reading, England, assignor to Imperial Chemical Industries Limited, London, England

Continuation of Ser. No. 29,341, which matured from PCT/GB78/00008 Filed Aug. 10, 1978, 102(e) date Apr. 11, 1979, 371 date Apr. 11, 1979. This application Aug. 27, 1980, Ser. No. 181,876

Claims priority, application United Kingdom, Aug. 12, 1977, 34039/77; Oct. 26, 1977, 44541/77; Feb. 9, 1978, 5230/78

Int. Cl.³ C07D *213/26;* B01J *19/08*

U.S. Cl. 204—158 HA 2 Claims

1. A liquid phase process for preparing 2-chloro-5-trichloromethylpyridine, said process consisting essentially of dissolving dry 3-methylpyridine in a dry inert liquid organic solvent and then passing dry chlorine through the resulting liquid reaction medium, at 50° to 130° C. and under the influence of ultra violet light whereby the 3-methyl group of the 3-methylpyridine is trichlorinated and chlorine is also introduced into the 2-position so as to give 2-chloro-5-trichloromethylpyridine as the major product.

4,324,628

ALKYL-ARYL SULFOXIDES IN PHOTOINITIATING PROCESS AND PRODUCT

Lajos Avar, Biel-Benken; Hans-Werner Finck, Oberwil, both of Switzerland, and Evelyne Kalt, Riedisheim, France, assignors to Sandoz Ltd., Basel, Switzerland

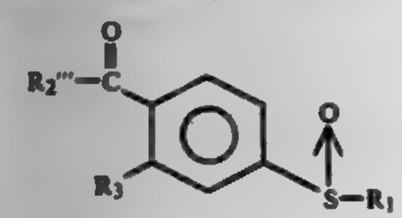
Continuation-in-part of Ser. No. 49,572, Jun. 18, 1979, abandoned. This application Dec. 3, 1980, Ser. No. 212,662

Claims priority, application Switzerland, Jun. 23, 1978, 6876/78; Oct. 16, 1978, 10692/78

Int. Cl.³ C08F *2/50*

U.S. Cl. 204—159.24 13 Claims

1. A photopolymerization process comprising irradiating a photopolymerizable material with U.V. light of wave length 250 to 400 nm in the presence of a photosensitizing amount of a photoinitiator of formula I,



I

in which

R_1 is $(C_{1\text{-}12})$alkyl, and

either

R_2''' is $(C_{1\text{-}2})$alkyl, phenyl or phenyl substituted by up to two $(C_{1\text{-}9})$alkyl groups with the proviso that the total number of carbon atoms in said combined substituents is 9,

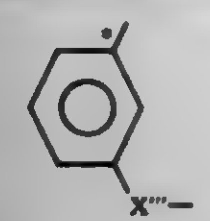
and

R_3 is hydrogen,

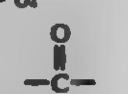
or

R_2''' and R_3 together form a radical of formula (b)

(b)



in which X''' is —S— or



and in which the carbon atom marked with the asterisk is bound to the

group in formula I.

4,324,629

PROCESS FOR REGENERATING CHEMICAL COPPER PLATING SOLUTION

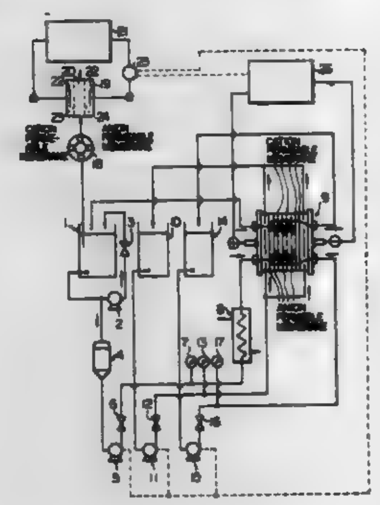
Hitoshi Oka, Yokohoma; Hiroshi Kikuchi, Zushi; Hitoshi Yokono, Yokohama; Haruo Suzuki; Toyofusa Yoshimura, both of Katsuta; Akira Matsuo, Yokohama; Osamu Miyazawa; Isamu Tanaka, both of Yokosuka, and Tokio Isogai, Fujisawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 17, 1980, Ser. No. 160,201

Claims priority, application Japan, Jun. 19, 1979, 54/77161; Mar. 27, 1980, 55/38236; Mar. 27, 1980, 55/38237

Int. Cl.³ B01D *13/02;* C25D *21/16*

U.S. Cl. 204—180 P 6 Claims



1. A process for regenerating a chemical copper plating solution, which comprises adjusting pH of a solution containing copper ions, a reducing agent for copper ions, a chelating agent for copper ions and an alkali metal hydroxide as essential components, used in chemical copper plating, to 2–11, leading the plating solution to desalting compartments of an electrodialysis cell, provided alternately with anion exchange membranes and cation exchange membranes, and removing counter ions to copper ions, ions formed by oxidation reaction of the reducing agent, and CO_3^{-2} or HCO_3^- formed from carbon dioxide dissolved in the plating solution, which have an inhibiting effect upon chemical copper plating, and alkali metal ions which is free from inhibition of chemical copper plating, accumulated in the solution used in the chemical copper plating by electrodialysis.

4,324,630

METHOD FOR FORMING A DENTAL CARIES PREVENTIVE COATING

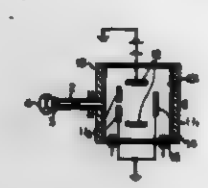
Toshio Sugita, 17-12, Takamatsu-Cho 2-Chome, Tachikawa-Shi, Tokyo; Takanobu Morinushi, 19-1-205, Ogikubo 5-Chome, Suginami-Ku, Tokyo, and Shigeharu Hanashima, 39-11, Mejirodai 1-Chome, Hachioji-Shi, Tokyo, all of Japan

Filed Jul. 31, 1980, Ser. No. 174,222

Claims priority, application Japan, Jul. 31, 1979, 54/96741

Int. Cl.³ C23C *15/00*

U.S. Cl. 204—192 R 1 Claim



1. Method for forming a dental caries preventive coating by ion sputtering consisting of;

forming neutral or charged particles of metal, alloy, semiconductor or insulator in a discharge space; and

guiding said neutral or charged particles through a duct so that said particles reach selectively an limited portion of a tooth surface and form a coating covering said portion of the surface.

4,324,631

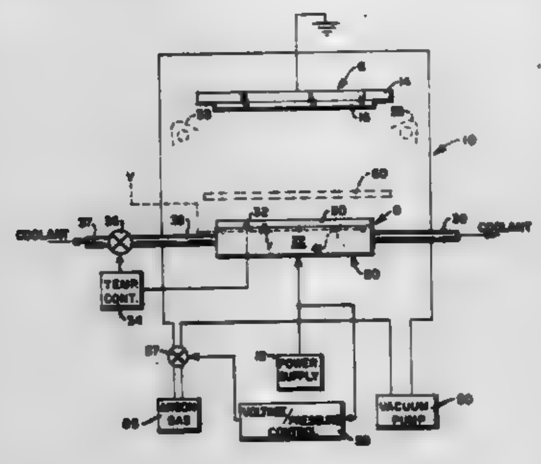
MAGNETRON SPUTTERING OF MAGNETIC MATERIALS

Benjamin B. Meckel, and Emily I. Bromley, both of Del Mar, Calif., assignors to Spin Physics, Inc., San Diego, Calif.

Filed Jul. 23, 1979, Ser. No. 59,932

Int. Cl.³ C23C *15/00*

U.S. Cl. 204—192 M 10 Claims



1. An improved method for magnetron sputtering a magnetic target to produce a magnetic film having substantially the same magnetic properties as the magnetic target wherein the improvement comprises heating the magnetic target, by means of a heater capable of heating said target independent of said sputtering method, to a temperature substantially equal to or above its Curie temperature to render said target non-magnetic, and magnetron sputtering said target while in a non-magnetic state to produce a magnetic film on a substrate spaced from said target.

10. Apparatus for magnetron sputtering a magnetic target plate to produce a magnetic film on a substrate spaced therefrom, said apparatus comprising:

(a) a magnetron comprising a non-magnetic housing having magnetic means positioned therein, said magnetic means being adapted to produce magnetic flux at selected regions outside said housing;

(b) means for controlling the temperature of said housing;

(c) a magnetic target plate;

(d) thermally conductive spacer means for thermally coupling selected portions of said magnetic target plate with said housing, said spacer means being effective to thermally isolate other portions of the target plate from said housing, such other portions being arranged in said selected regions of the magnetic flux produced by said magnetic means;

(e) means for producing a gas plasma in the vicinity of said target plate thermally coupled with said housing and for attracting gas ions from said plasma toward such target plate, whereby the target plate is subjected to ion bombardment which causes at least the other portions of the target plate to be heated to a temperature substantially equal to or above the Curie temperature of the magnetic target plate, whereby said other portions of the target plate are rendered non-magnetic, allowing said magnetic flux to pass through the plate to densify said plasma;

(f) means for monitoring the temperature of said target plate thermally coupled with said housing and for producing a signal representative of the target plate temperature; and

(g) means responsive to said signal and operatively coupled to said temperature controlling means for maintaining said other portions of said target plate thermally coupled with said housing at a temperature equal to or in excess of said Curie temperature.

4,324,632

GAS SENSOR

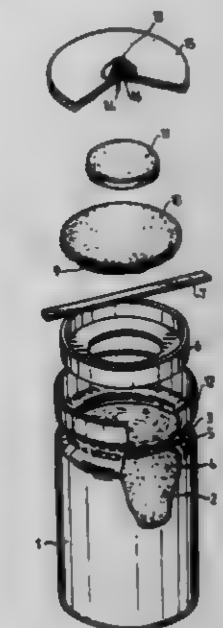
Anthony D. S. Tantram, Great Bookham, and Yat S. Chan, London, both of England, assignors to City Technology Limited, London, England

Filed May 15, 1980, Ser. No. 150,025

Claims priority, application United Kingdom, May 17, 1979, 17237/79

Int. Cl.³ G01N *27/30*

U.S. Cl. 204—195 P 9 Claims



1. An electro-chemical sensor for measuring concentrations of electro-chemically reactable gas or vapour in accordance with a limiting current principle, comprising:

a casing;

a sensing electrode;

a counter electrode;

a means for restricting gas or vapour access to said sensing electrode, said means comprising a porous diffusion barrier having a temperature co-efficient which is negative with respect to diffusion rate wherein substantially all active pores in said barrier are sufficiently small so that diffusion through them is in accordance with the Knudsen principle and diffusion occurs by a diffusion mechanism effectively determined solely by collisions between diffusing molecules and walls of pores in said barrier, said barrier proportioned such that the barrier's minimum linear dimension measured at right angles to the overall direction of diffusion is less than twice the mean linear dimension along the direction of diffusion.

4,324,633

ELECTROLYTIC APPARATUS FOR TREATING CONTINUOUS STRIP MATERIAL

Curtis N. Lovejoy, 460 Matthew St., Bristol, Conn. 06010

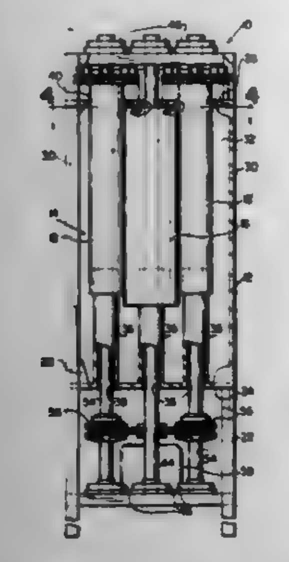
Filed Oct. 20, 1980, Ser. No. 198,774

Int. Cl.³ C25D *17/06*

U.S. Cl. 204—206 10 Claims

1. An electrolytic apparatus for treating continuous strip material comprising a tank and a contact roller assembly including a plurality of generally cylindrical rollers, means supporting said rollers for rotation about parallel axes, each of said rollers being at least partially disposed within said tank, said rollers cooperating to define a serpentine path along which strip material is constrained to pass in traveling through said tank, at least one of said rollers comprising an electrical contact roller having an electrically conductive surface and a diametrically enlarged annular flange, said flange having a

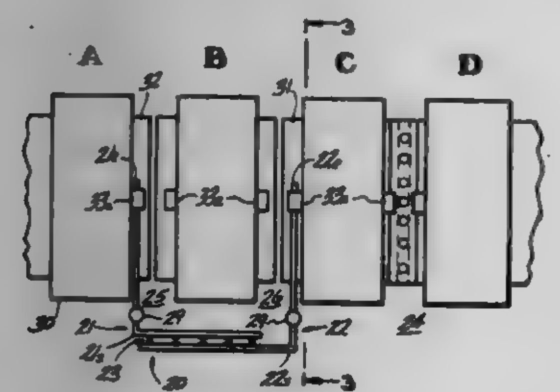
radially disposed contact surface, a brush holder supported in fixed position relative to said tank, and at least one brush carried by said brush holder and biased into electrically contacting engagement with said contact surface.



4,324,634
REMOTELY CONNECTING AND DISCONNECTING CELLS FROM CIRCUIT

Morton S. Kircher, Clearwater, Fla., and Steven J. Specht, Mentor, Ohio, assignors to Olin Corporation, New Haven, Conn.

Continuation-in-part of Ser. No. 93,425, Nov. 13, 1979. This application Jan. 28, 1980, Ser. No. 116,366
Int. Cl.³ C25B *15/00, 9/04*
U.S. Cl. 204—228 47 Claims



1. A method of by-passing and disconnecting one of a plurality of electrolytic cells connected in electrical series circuit while maintaining the remaining cells of said electrical series in operation, each of said cells having a cathode terminal, an anode terminal, and an intercell conductor for electrically connecting said anode and cathode terminals, which method comprises the steps of:

(a) positioning a jumper aside said series of cells;

(b) inserting a first portion of said jumper having two spaced apart members between a cell to be disconnected and the preceding cell in said series of cells;

(c) inserting a second portion of said jumper having two spaced apart members between said cell to be disconnected and the succeeding cell in said series of cells;

(d) contacting the cathode terminal of said preceding cell with said inserted first portion of said jumper at a location between said preceding cell and said cell to be disconnected while said cell to be disconnected is still fully connected to said preceding cell by remotely moing said two spaced apart members of said first jumper portion towards each other about and into contact with said cathode cell terminal of said preceding cell;

(e) contacting the anode terminal of said succeeding cell with said inserted second portion of said jumper at a location between said succeeding cell and said cells to be disconnected while said cell to be disconnected is still fully connected to said succeeding cell by remotely moving said two spaced apart members of said second jumper portions toward each other about and into contact with said anode cell terminal of said succeeding cell;

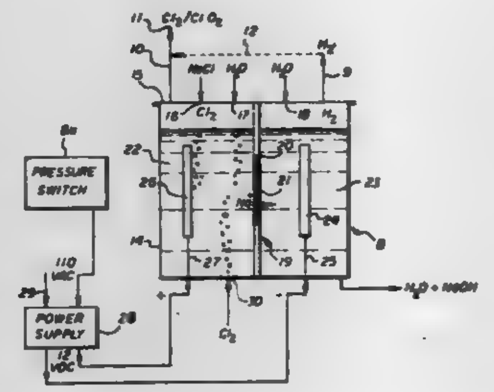
(f) electrically connecting said first and second jumper portions so as to electrically by-pass said cell to be disconnected; and

(g) remotely disconnecting said cell to be disconnected from said preceding and succeeding cells to thereby electrically by-pass said disconnected cell through said jumper.

4,324,635
GENERATION OF CHLORINE-CHLORINE DIOXIDE MIXTURES

Charles T. Sweeney, 448 Earle Rd., Hewitt, Tex. 76643

Filed Aug. 25, 1980, Ser. No. 180,674
Int. Cl.³ C25B *9/00*
U.S. Cl. 204—266 1 Claim



1. An electrolytic gas generator for production of chlorine-chlorine dioxide mixtures comprising

a hollow container having a wall including a permeable cation exchange membrane, dividing said container into two compartments,

an anode positioned in one compartment and a cathode positioned in the other compartment,

an outlet from each of said compartments for removal of gasses therefrom,

an inlet to the bottom portion of said anode-containing compartment for continuous introduction of chlorine gas thereto,

inlets to the top portion of each of said compartments for introduction of a chloride salt solution to said anode-containing compartment and an aqueous electrolyte to said cathode-containing compartment,

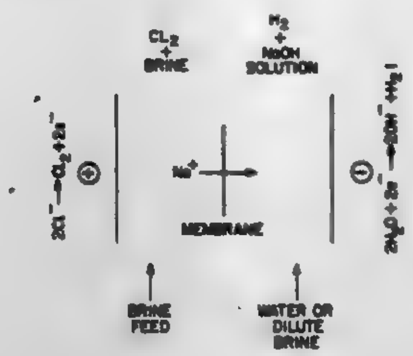
means for maintaining the pH of said anode-containing compartment in a predetermined range, comprising a pump and associated conduits for circulating caustic solution in controlled, selected amounts from said cathode-containing compartment to said anode-containing compartment and pH monitoring and controlling means controlling operation of said pump,

said generator being operable, when filled with an aqueous solution of chloride salt in said anode-containing compartment and with aqueous electrolyte in said cathode-containing compartment and energized, and circulating additional quantities of chlorine therethrough while maintaining said anode-containing compartment at pH 1.8–5.0, to produce a mixture of chlorine and chlorine dioxide therein.

4,324,636
ION EXCHANGE MEMBRANES

Joseph P. Dankese, 17 Arcadia St., Dorchester, Mass. 02122

Division of Ser. No. 33,550, Apr. 26, 1979, Pat. No. 4,243,508. This application Aug. 3, 1979, Ser. No. 63,835
The portion of the term of this patent subsequent to Jan. 6, 1998, has been disclaimed.
Int. Cl.³ G25B *13/08*
U.S. Cl. 204—296 17 Claims



1. An ion exchange membrane product comprising at least two polymeric components, a first component forming a chemically inert matrix structure formed of an ion exchange resin, the second component being a solid polymer at least partially infused into the matrix formed by said first component and forming means to substantially reduce the conductivity of said ion exchange product.

4,324,637
PYROLYSIS PROCESS WITH FEED PRETREATMENT UTILIZING A BENEFICIALLY REACTIVE GAS

Kandaswamy Durai-Swamy, Culver City, Calif., assignor to Occidental Research Corporation, Irvine, Calif.

Filed Aug. 26, 1980, Ser. No. 181,538
Int. Cl.³ C10C *1/00*; C10B *43/00*
U.S. Cl. 208—8 LE 20 Claims

1. A process for producing condensed stabilized hydrocarbons from a solid particulate carbonaceous material comprising:

(a) contacting a solid particulate carbonaceous feed material in a pretreatment zone with a predetermined amount of a capping agent which is a liquid or solid at ambient temperature, at an elevated temperature sufficient to maintain said capping agent in the liquid or vaporous state and under first conditions of time and elevated temperature sufficient to allow said solid particulate carbonaceous feed material to sorb at least a portion of said capping agent, thereby forming a premixture of said capping agent and said solid particulate carbonaceous feed material containing said sorbed capping agent;

(b) removing said premixture from said pretreatment zone, introducing said premixture, a carbon containing particulate solid source of heat which has been heated to a high temperature, and a beneficially reactive gas into a pyrolysis zone, and pyrolyzing said premixture under turbulent flow conditions in said pyrolysis zone under second predetermined conditions of time and elevated temperature sufficient to produce therefrom a pyrolysis product comprising particulate solids and pyrolytic product vapors which comprise hydrocarbons which comprise newly formed volatilized hydrocarbon free radicals, a portion of said hydrocarbons containing larger hydrocarbons, said larger hydrocarbons being all the hydrocarbon vapors in said pyrolytic product vapors containing four or more carbon atoms, said predetermined amount of capping agent and said second predetermined conditions also being operative for stabilizing said newly formed volatilized hydrocarbon free radicals, and substantially simultaneously stabilizing in said pyrolysis zone at least a major portion of said newly formed volatilized hydrocarbon free radicals to produce stabilized newly formed volatilized hydrocarbons, said particulate solids comprising a char product produced from said solid particulate carbonaceous feed material and said carbon containing particulate solid source of heat, said beneficially reactive gas reducing the polymerizing or cracking of said pyrolytic product vapors by inhibiting the reactivity of said char product and said carbon containing particulate solid source of heat, said high temperature being higher than said elevated temperature of said second conditions;

(c) separating said particulate solids from a gaseous mixture which comprises said pyrolytic vapors, said beneficially reactive gas, and any other gases which are mixed therewith to form a substantially solids-free gaseous mixture stream;

(d) contacting said substantially solids-free gaseous mixture stream with a quench fluid and substantially simultaneously condensing at least a major portion of said larger hydrocarbons, thereby forming a gaseous residue and a condensed stabilized hydrocarbon stream, said condensed stabilized hydrocarbon stream being formed from at least a major portion of said stabilized newly formed volatilized hydrocarbons; and

(e) separating at least a portion of said condensed stabilized hydrocarbon stream thusly formed from said gaseous residue.

4,324,638
PYROLYSIS PROCESS FOR STABILIZING VOLATILE HYDROCARBONS

Kandaswamy Durai-Swamy, Culver City, Calif., assignor to Occidental Research Corporation, Irvine, Calif.

Filed Aug. 26, 1980, Ser. No. 181,540
Int. Cl.³ C10R *1/00*; C10B *43/00*
U.S. Cl. 208—8 LE 17 Claims

1. A process for producing condensed stabilized hydrocarbons from a solid particulate carbonaceous material comprising:

(a) pyrolyzing in a pyrolysis zone a solid particulate carbonaceous feed material in the presence of a capping agent under predetermined conditions of time, elevated temperature, and amount of capping agent sufficient to produce therefrom a pyrolysis product comprising particulate product solids and pyrolytic product vapors which comprise hydrocarbons which comprise newly formed volatilized hydrocarbon free radicals, a portion of said hydrocarbons containing larger hydrocarbons, said larger hydrocarbons being all the hydrocarbons vapors in said pyrolytic product vapors containing four or more carbon atoms, said capping agent and said predetermined conditions also being operative for stabilizing said newly formed volatilized hydrocarbon free radicals, and substantially simultaneously stabilizing at least a major portion of said newly formed volatilized hydrocarbon free radicals to produce stabilized newly formed volatilized hydrocarbons, said capping agent being a liquid or a solid at ambient temperature;

(b) separating solids which comprise said particulate product solids from a gaseous mixture which comprises said pyrolytic product vapors to form a substantially solids-free gaseous mixture stream;

(c) contacting said substantially solids-free gaseous mixture stream with a quench fluid and substantially simultaneously condensing at least a major portion of said larger hydrocarbons, thereby forming a gaseous residue and a condensed stabilized hydrocarbon stream, said condensed stabilized hydrocarbon stream being formed from at least a major portion of said stabilized newly formed volatilized hydrocarbons; and

(d) separating at least a portion of said condensed stabilized hydrocarbon stream thusly formed from said gaseous residue.

4,324,639
PYROLYSIS PROCESS WITH FEED PRETREATMENT

Kandaswamy Durai-Swamy, Culver City, Calif., assignor to Occidental Research Corporation, Irvine, Calif.

Filed Aug. 26, 1980, Ser. No. 181,550

Int. Cl.³ C10C *1/00;* C10B *43/00*

U.S. Cl. 208—8 LE 21 Claims

1. A process for producing condensed stabilized hydrocarbons from a solid particulate carbonaceous material comprising:

(a) contacting a solid particulate carbonaceous feed material in a pretreatment zone with a predetermined amount of a capping agent which is a liquid or solid at ambient temperature, at an elevated temperature sufficient to maintain said capping agent in the liquid or vaporous state and under first conditions of time and elevated temperature sufficient to allow said solid particulate carbonaceous feed material to sorb at least a portion of said capping agent, thereby forming a premixture of said capping agent and said solid particulate carbonaceous feed material containing said sorbed capping agent;

(b) removing said premixture from said pretreatment zone and pyrolyzing said premixture in a pyrolysis zone under second predetermined conditions of time and elevated temperature sufficient to produce therefrom a pyrolysis product comprising particulate product solids and pyrolytic product vapors which comprise hydrocarbons which comprise newly formed volatilized hydrocarbon free radicals, a portion of said hydrocarbons containing larger hydrocarbons, said larger hydrocarbons being all the hydrocarbon vapors is said pyrolytic product vapors containing four or more carbon atoms, said predetermined amount of capping agent and said second predetermined conditions also being operative for stabilizing said newly formed volatilized hydrocarbon free radicals, and substantially simultaneously stabilizing in said pyrolysis zone at least a major portion of said newly formed volatilized hydrocarbon free radicals to produce stabilized newly formed volatilized hydrocarbons;

(c) separating solids which comprise said particulate product solids from a gaseous mixture which comprises said pyrolytic product vapors to form a substantially solids-free gaseous mixture stream;

(d) contacting said substantially solids-free gaseous mixture stream with a quench fluid and substantially simultaneously condensing at least a major portion of said larger hydrocarbons, thereby forming a gaseous residue and a condensed stabilized hydrocarbon stream, said condensed stabilized hydrocarbon stream being formed from at least a major portion of said stabilized newly formed volatilized hydrocarbons; and

(e) separating at least a portion of said condensed stabilized hydrocarbon stream thusly formed from said gaseous residue.

4,324,640
PYROLYSIS PROCESS

Kandaswamy Durai-Swamy, Culver City, Calif., assignor to Occidental Research Corporation, Irvine, Calif.

Filed Aug. 26, 1980, Ser. No. 181,595

Int. Cl.³ C10C *1/00;* C10B *43/00*

U.S. Cl. 208—8 LE 20 Claims

1. A process for producing condensed stabilized hydrocarbons from a solid particulate carbonaceous material comprising:

(a) contacting a solid particulate carbonaceous feed material in a pretreatment zone with a predetermined amount of a first capping agent under conditions of time and elevated temperature sufficient to sorb said first capping agent on or in said solid particulate carbonaceous feed material thereby forming a premixture comprising said solid particulate carbonaceous feed material containing sorbed first capping agent, wherein said first conditions will maintain said first capping agent in a liquid or gaseous state, and wherein said first capping agent is a liquid or solid at ambient conditions;

(b) rapidly heating said premixture from said pretreatment zone in the presence of a predetermined amount of a second capping agent in a pyrolysis zone to pyrolyze said solid particulate carbonaceous feed material of said premixture and to produce from said solid particulate carbonaceous feed material a char product and pyrolytic product vapors which comprise newly formed volatilized hydrocarbon free radicals and substantially simultaneously stabilizing at least a major portion of said volatilized hydrocarbon free radicals by reaction with said sorbed first capping agent and said second capping agent to form stabilized volatilized hydrocarbons;

(c) removing from said pyrolysis zone a gas-solid mixture which comprises gases which comprise said stabilized volatilized hydrocarbons and solids which are entrained in said gases and comprise said char product, and separating at least a major portion of said solids in said gas-solid mixture from said gases in a separation zone;

(d) cooling said gases separated from said solids in said separation zone by contacting said gases with a quench fluid in a quench zone to form condensed stabilized hydrocarbons which are formed from at least a major portion of said stabilized volatilized hydrocarbons; and

(e) recovering at least a portion of said condensed stabilized hydrocarbons.

4,324,641
PYROLYSIS PROCESS UTILIZING A BENEFICIALLY REACTIVE GAS

Kandaswamy Durai-Swamy, Culver City, Calif., assignor to Occidental Research Corporation, Irvine, Calif.

Filed Aug. 26, 1980, Ser. No. 181,596

Int. Cl.³ C10C *1/00;* C10B *43/00*

U.S. Cl. 208—8 LE 20 Claims

1. A process for producing condensed stabilized hydrocarbons from a solid particulate carbonaceous material comprising:

(a) contacting a solid particulate carbonaceous feed material in a pretreatment zone with a predetermined amount of a first capping agent under first conditions of time and elevated temperature sufficient to sorb said first capping agent on or in said solid particulate carbonaceous feed material thereby forming a premixture comprising said solid particulate carbonaceous feed material containing sorbed first capping agent, wherein said first conditions will maintain said first capping agent in a liquid or gaseous state, and wherein said first capping agent is a liquid or solid at ambient conditions;

(b) removing said premixture from said pretreatment zone, introducing said premixture, a predetermined amount of a second capping agent, a carbon containing particulate solid source of heat which has been heated to a high temperature, and a beneficially reactive gas into a pyrolysis zone and rapidly heating and pyrolyzing said solid particulate carbonaceous feed material of said premixture in said pyrolysis zone under turbulent flow conditions and under second conditions of time and elevated temperature sufficient to produce from said solid particulate carbonaceous feed material of said premixture a char product and pyrolytic product vapors which comprise newly formed volatilized hydrocarbon free radicals and substantially simultaneously stabilizing at least a major portion of said volatilized hydrocarbon free radicals by reaction with said sorbed first capping agent and said second capping agent to form stabilized volatilized hydrocarbons, said beneficially reactive gas reducing the polymerizing or cracking of said pyrolytic product vapors by inhibiting the reactivity of said char product and said carbon containing particulate solid source of heat, said high temperature being higher than said elevated temperature of said second conditions;

(c) removing from said pyrolysis zone a gas-solid mixture which comprises gases which comprise said stabilized volatilized hydrocarbons and solids which are entrained in said gases and comprise said char product, and separating at least a major portion of said solids in said gas-solid mixture from said gases in a separation zone;

(d) cooling said gases separated from said solids in said separation zone by contacting said gases with a quench fluid in a quench zone to form condensed stabilized hydrocarbons which were formed from at least a major portion of said stabilized volatilized hydrocarbons; and

(e) recovering at least a portion of said condensed stabilized hydrocarbons.

4,324,642
PYROLYSIS PROCESS FOR PRODUCING CONDENSED STABILIZED HYDROCARBONS UTILIZING A BENEFICIALLY REACTIVE GAS

Kandaswamy Durai-Swamy, Culver City, Calif., assignor to Occidental Research Corporation, Irvine, Calif.

Filed Aug. 26, 1980, Ser. No. 181,597

Int. Cl.³ C10C *1/00;* C10B *43/00*

U.S. Cl. 208—8 LE 17 Claims

1. A process for producing condensed stabilized hydrocarbons from a solid particulate carbonaceous material comprising:

(a) pyrolyzing a solid particulate carbonaceous feed material at a pyrolysis temperature by introducing said solid particulate carbonaceous feed material, a carbon containing particulate solid source of heat which has been heated to a temperature higher than said pyrolysis temperature, and a beneficially reactive gas into a pyrolysis zone, under turbulent flow conditions, and under conditions of time and elevated temperature sufficient to produce therefrom a pyrolysis product comprising particulate solids and pyrolytic product vapors which comprise hydrocarbons which comprise newly formed volatilized hydrocarbon free radicals, a portion of said hydrocarbons containing larger hydrocarbons, said larger hydrocarbons being all the hydrocarbon vapors in said pyrolytic product vapors containing four or more carbon atoms, said particulate solids comprising a char product produced from said solid particulate carbonaceous feed material and said carbon containing particulate solid source of heat, said beneficially reactive gas reducing the polymerizing or cracking of said pyrolytic product vapors by inhibiting the reactivity of said char product and said carbon containing particulate solid source of heat;

(b) separating said particulate solids from a gaseous mixture which comprises said pyrolytic product vapors, said beneficially reactive gas, and any other gases which are mixed therewith to form a substantially solids-free gaseous mixture stream;

(c) contacting said substantially solids-free gaseous mixture stream with a quench fluid comprising a capping agent suitable for stabilizing said newly formed volatilized hydrocarbon free radicals, under predetermined conditions of temperature and flow rate of capping agent sufficient for substantially simultaneously stabilizing substantially all of said newly formed volatilized hydrocarbon free radicals by termination, and substantially simultaneously condensing at least a major portion of said larger hydrocarbons, thereby forming a gaseous residue and condensed stabilized hydrocarbons; and

(d) separating at least a portion of said condensed stabilized hydrocarbons thusly formed from said gaseous residue.

4,324,643
PYROLYSIS PROCESS FOR PRODUCING CONDENSED STABILIZED HYDROCARBONS

Kandaswamy Durai-Swamy, Culver City, Calif., assignor to Occidental Research Corporation, Irvine, Calif.

Filed Aug. 26, 1980, Ser. No. 181,598

Int. Cl.³ C10C *1/00;* C10B *43/00*

U.S. Cl. 208—8 LE 14 Claims

1. A process for producing condensed stabilized hydrocarbons from a solid particulate carbonaceous material comprising:

(a) pyrolyzing a solid particulate carbonaceous feed material under conditions of time and elevated temperature sufficient to produce therefrom a gas-solids mixture which is a pyrolysis product comprising particulate product solids and pyrolytic product vapors which comprise hydrocarbons which comprise newly formed volatilized hydrocarbon free radicals, a portion of said hydrocarbons containing larger hydrocarbons, said larger hydrocarbons being all the hydrocarbon vapors in said pyrolytic product vapors containing four or more carbon atoms;

(b) separating solids which comprise said particulate product solids from a gaseous mixture which comprises said pyrolytic product vapor to form a substantially solids-free gaseous mixture stream;

(c) contacting said substantially solids-free gaseous mixture stream with a quench fluid comprising a capping agent suitable for stabilizing said newly formed volatilized hydrocarbon free radicals, under predetermined conditions of temperature and flow rate of capping agent sufficient for substantially simultaneously stabilizing substantially all of said newly formed volatilized hydrocarbon free radicals by termination, and substantially simultaneously condensing at least a major portion of said larger hydrocarbons, thereby forming a gaseous residue and condensed stabilized hydrocarbons; and

(d) separating at least a portion of said condensed stabilized hydrocarbons thusly formed from said gaseous residue.

4,324,644
PYROLYSIS PROCESS FOR STABILIZING VOLATILE HYDROCARBONS UTILIZING A BENEFICIALLY REACTIVE GAS

Kandaswamy Durai-Swamy, Culver City, Calif., assignor to Occidental Research Corporation, Irvine, Calif.

Filed Aug. 26, 1980, Ser. No. 181,599

Int. Cl.³ C10G *1/00;* C10B *43/00*

U.S. Cl. 208—8 LE 17 Claims

1. A process for producing condensed stabilized hydrocarbons from a solid particulate carbonaceous material comprising:

(a) pyrolyzing in a pyrolysis zone, under turbulent flow conditions a solid particulate carbonaceous feed material, in the presence of a capping agent which is a liquid or a solid at ambient temperature, at a pyrolysis temperature by introducing said solid particulate carbonaceous feed material, a carbon containing particulate solid source of heat which has been heated to a temperature higher than said pyrolysis temperature, and a beneficially reactive gas into a pyrolysis zone under predetermined conditions of time, elevated temperature, and amount of capping agent sufficient to produce therefrom a pyrolysis product comprising particulate solids and pyrolytic product vapors which comprise hydrocarbons which comprise newly formed volatilized hydrocarbon free radicals, a portion of said hydrocarbons containing larger hydrocarbons, said larger hydrocarbons being all the hydrocarbon vapors in said pyrolytic product vapors containing four or more carbon atoms, said capping agent and said predetermined conditions also being operative for stabilizing said newly formed volatilized hydrocarbon free radicals, and substantially simultaneously stabilizing at least a major portion of said newly formed volatilized hydrocarbon free radicals

to produce stabilized newly formed volatilized hydrocarbons, said particulate solids comprising a char product produced from said solid particulate feed carbonaceous material, and said carbon containing particulate solid source of heat, said beneficially reactive gas reducing the polymerizing or cracking of said pyrolytic product vapors by inhibiting the reactivity of said char product and said carbon containing particulate solid source of heat;

(b) separating said particulate solids from a gaseous mixture which comprises said pyrolytic product vapors, said beneficially reactive gas, and any other gases which are mixed therewith to form a substantially solids-free gaseous mixture stream;

(c) contacting said substantially solids-free gaseous mixture stream with a quench fluid and substantially simultaneously condensing at least a major portion of said larger hydrocarbons, thereby forming a gaseous residue and a condensed stabilized hydrocarbon stream, said condensed stabilized hydrocarbon stream being formed from at least a major portion of said stabilized newly formed volatilized hydrocarbons; and

(d) separating at least a portion of said condensed stabilized hydrocarbon stream thusly formed from said gaseous residue.

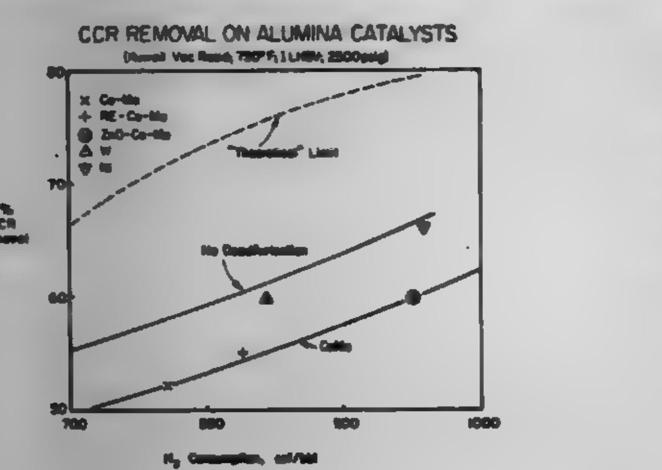
4,324,645

UPGRADING RESIDUAL OIL

Philip J. Angevine, W. Deptford, and Thomas R. Stein, Pennington, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed May 7, 1980, Ser. No. 147,033
Int. Cl.³ C10G *45/00*; B01J *23/16*

U.S. Cl. 208—50 **13 Claims**



1. A process of upgrading a hydrocarbon oil fraction which comprises contacting a hydrocarbon oil fraction with hydrogen and a catalyst at conversion conditions including a temperature of from about 650° F. to about 850° F., a pressure of from about 1000 psig to about 3000 psig, a liquid hourly space velocity of from about 0.5 to about 4 and a hydrogen circulation rate of from about 1000 scf/bbl to about 20,000 scf/bbl, said catalyst comprising a porous inorganic refractory support having greater than about 50% of its pore volume contribution in pores having diameters of from about 100 to about 200 Angstroms and at least about 30% of its pore volume contribution in pores having diameters of from about 0 to about 50 Angstroms, said support having deposited thereon a metal or combination of metals, oxides, sulfides or oxysulfides thereof, said metal or combination of metals being selected from the group consisting of molybdenum, tungsten, iron, cobalt, nickel, palladium, molybdenum-tungsten, molybdenum-iron, molybdenum-palladium, tungsten-iron, tungsten-cobalt, tungsten-palladium, iron-cobalt, iron-nickel, iron-palladium, cobalt-nickel, cobalt-palladium and nickel-palladium, whereby the Conradson Carbon Residue of said fraction is selectively reduced.

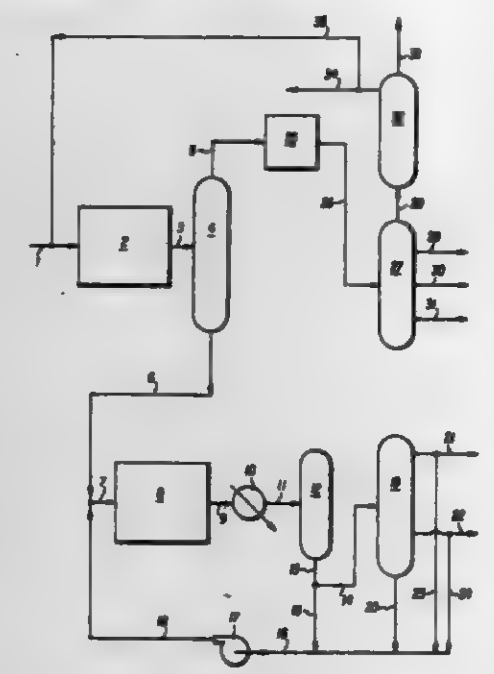
4,324,646

PROCESS FOR CONVERTING C_4 OLEFINIC CRACKING CUTS TO ALKYLATE AND GASOLINE

Jean-Francois Le Page, Rueil-Malmaison; Jean Cosyns, Maule; Jean Miquel, Paris, and Bernard Juguin, Rueil-Malmaison, all of France, assignors to Institute Francais du Petrole, Rueil-Malmaison, France

Continuation of Ser. No. 25,360, Mar. 30, 1979, Pat. No. 4,244,806. This application Aug. 21, 1980, Ser. No. 180,205
Claims priority, application France, Mar. 31, 1978, 78 09639
The portion of the term of this patent subsequent to Apr. 8, 1997, has been disclaimed.
Int. Cl.³ C10G *69/12*

U.S. Cl. 208—71 **6 Claims**



1. A process for selectively polymerizing isobutene in an olefinic C_4 cut comprising isobutene and normal butenes, said process comprising the step of contacting the olefinic C_4 cut with a catalyst consisting essentially of silica-alumina; whereby at least 90% of the isobutene and less than 10% of the normal butenes in the cut are converted.

4,324,647

CATALYTIC HYDROCRACKING, HYDRODESULFURIZATION, AND/OR HYDRODENITROGENATION OF ORGANIC COMPOUNDS EMPLOYING PROMOTED ZINC TITANATE AND A ZEOLITE AS THE CATALYTIC AGENT

Lloyd E. Gardner, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 1, 1980, Ser. No. 145,639
Int. Cl.³ C10G *47/20*

U.S. Cl. 208—111 **16 Claims**

1. A process for the catalytic hydrocracking of a feedstock which contains at least one hydrocrackable organic compound comprising the step of contacting said feedstock under suitable hydrocracking conditions with a catalyst composition comprising zeolite, zinc, titanium, and at least one promoter selected from the group consisting of vanadium, chromium, cobalt, nickel, molybdenum, tungsten, rhenium, platinum, palladium, rhodium, ruthenium, and compounds thereof.

4,324,648

CRACKING CATALYST POISONS PASSIVATED WITH TIN COMPOUNDS PLUS BOTH SULFUR AND PHOSPHORUS

John S. Roberts; Brent J. Bertus; Dwight L. McKay, and H. Wayne Mark, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Mar. 24, 1980, Ser. No. 132,719
Int. Cl.³ C10G *11/05*

U.S. Cl. 208—114 **20 Claims**

1. In a process comprising:

(a) contacting a hydrocarbon feedstock with a fluidized zeolite-containing cracking catalyst in a cracking zone under cracking conditions in the absence of added hydrogen or antimony to obtain a cracked product;

(b) recovering the cracked product;

(c) passing the cracking catalyst from the cracking zone to a regeneration zone;

(d) regenerating the cracking catalyst in the regeneration zone by contact with oxygen-containing gas under regeneration conditions to produce a regenerated catalyst; and

(e) introducing the regenerated catalyst to the cracking zone for contact with the hydrocarbon feedstock;

wherein the regenerated catalyst contains contaminants selected from the group consisting of nickel, vanadium and iron deposited on said cracking catalyst in such a way that said cracking catalyst cannot be fully regenerated in the regeneration zone, the improvement comprising contacting the cracking catalyst with a treating agent containing tin, phosphorus and sulfur in an amount sufficient to impart to said cracking catalyst a tin concentration of from about 0.0001 to about 4 percent by weight of contacted cracking catalyst wherein the cracking catalyst is contacted with from about one-half to about 8 parts by weight of sulfur and/or from about one quarter to about one part by weight of phosphorus for each part by weight of tin with which it has been contacted.

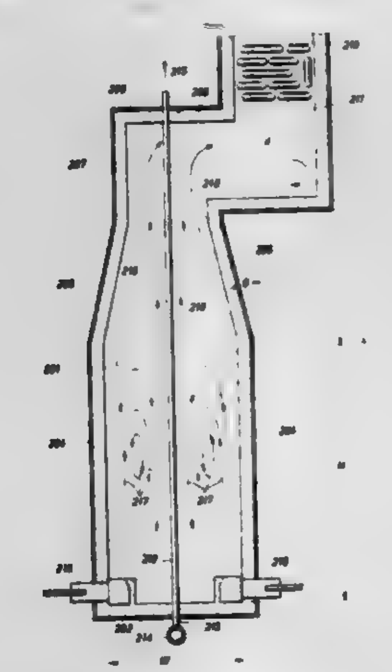
4,324,649

FIRED PROCESS HEATER

William D. Parizot; Paul D. O'Leaick, both of Katy, and Lowell D. Fraley, Sugarland, all of Tex., assignors to Pullman Incorporated, Chicago, Ill.

Filed Jul. 8, 1980, Ser. No. 166,880
Int. Cl.³ C10G *9/20*

U.S. Cl. 208—130 **6 Claims**



1. In a process for heating hydrocarbons by indirect heat exchange with combustion gas in a fired, tubular heater having a radiant chamber and a plurality of straight, vertical, tubular heat exchange means disposed therein, each of the means having a single pass in heat exchange relationship with the combustion gas and the hydrocarbon passing upwardly through the single pass, the improvement which comprises passing combustion gas in a predominantly back-mixed flow condition over lower portions of the tubular heat exchange means within the radiant chamber and then passing the combustion gas in a predominantly plug-flow condition over upper portions of the tubular heat exchange means within the radiant chamber.

4,324,650

CATALYTIC COMPOSITE AND PROCESS FOR USE

David H. J. Carlson, Park Ridge, Ill., assignor to UOP Inc., Des Plaines, Ill.

Division of Ser. No. 111,752, Jan. 14, 1980, Pat. No. 4,290,916, which is a continuation-in-part of Ser. No. 80,638, Oct. 1, 1979, Pat. No. 4,276,194. This application Nov. 24, 1980, Ser. No. 209,553
Int. Cl.³ C10G *27/06*

U.S. Cl. 208—206 **13 Claims**

1. A method of treating a mercaptan-containing sour petroleum distillate by contacting said distillate at oxidation conditions with a catalytic composite prepared by contacting a molecular sieve support with a substituted ammonium compound represented by the structural formula:

$$\left[R'-\overset{\displaystyle R}{\underset{\displaystyle R}{N}}-R \right]^{+} X^{-}$$

wherein R is a hydrocarbon radical containing up to about 20 carbon atoms and selected from the group consisting of alkyl, cycloalkyl, aryl, alkaryl and aralkyl, R' is a substantially straight-chain alkyl radical containing from about 5 to about 20 carbon atoms, and X is an anion selected from the group consisting of halide, nitrate, nitrite, sulfate, phosphate, acetate, citrate, tartrate and hydroxide, drying the resulting composite, thereafter contacting the resulting composite with a metal chelate and with an alkali metal hydroxide, said alkali metal hydroxide being in a weight ratio with said molecular sieve support from about 0.1:1 to about 1:1, and thereafter drying the resulting catalytic composite.

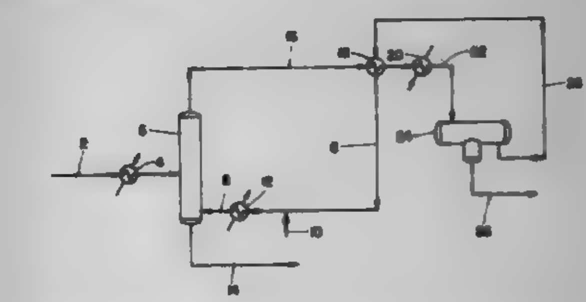
4,324,651

DEASPHALTING PROCESS

Louis D. Rollmann, Princeton, N.J., and Dennis E. Walsh, Richboro, Pa., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 9, 1980, Ser. No. 214,602
Int. Cl.³ C10C *3/00*; C10G *21/16*

U.S. Cl. 208—309 **11 Claims**

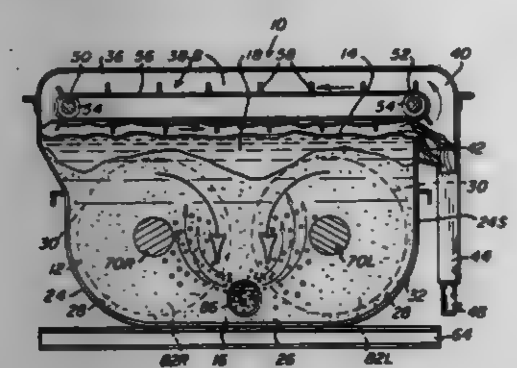


1. A process for deasphalting an asphalt-containing mineral oil which comprises:

(a) contacting an asphalt-containing mineral oil at an elevated pressure and a temperature greater than about 80° C. with an amount of methanol effective to form two liquid phases, a deasphalted oil phase comprising a major amount of the methanol and an asphalt phase comprising a minor amount of the methanol, said pressure and said

temperature being effective to maintain the methanol in the liquid phase,
(b) separating the two phases, and
(c) maintaining the deasphalted oil phase at a pressure and a temperature less than about 80° C. for a period of time sufficient to form two liquid phases, a methanol phase and a second deasphalted oil phase comprising a minor amount of methanol, said pressure and said temperature being effective to maintain the methanol in the liquid phase.

4,324,652
FLOTATION METHOD AND APPARATUS FOR RECOVERING CRUDE OIL FROM TAR-SAND
Albert G. Hack, Denver, Colo., assignor to Crescent Engineering Company, Denver, Colo.
Division of Ser. No. 38,398, May 14, 1979. This application Oct. 9, 1980, Ser. No. 195,596
Int. Cl.³ B03B *5/52*
U.S. Cl. 209—3 4 Claims



1. The method for removing water-immiscible bitumens and the like from the surface of tar-sands and separating same from the sand grains which includes the steps of: providing a vessel, introducing coated sand in the form of an aqueous slurry into the vessel, rubbing the coated sand grains together under water by tumbling them in a generally downward direction between two counterrotating screw conveyors to rub the grains together and scrub water immiscible materials from the surface thereof, bubbling an air-water mixture up through the descending sand grains at a rate and in a quantity effective to lift the immiscibles free of the sand and deposit same on the surface of the water without inducing undue turbulence of a degree which would result in sand particles being elevated to the surface of the water bath where the freed immiscibles are located so that said washed sand does not contact said surface-located freed immiscibles while simultaneously washing the sand with said water so that said water and air bubbles are directed upwardly through said slurry simultaneously with said rubbing effected by said screw conveyors, skimming the immiscibles thus deposited off the surface of the water while moving the progressively cleaner sand grains toward one end by means of the screw conveyors, and dumping the clean sand out the bottom while maintaining the water level above that of the sand.

4,324,653
PROCESS FOR THE TREATMENT OF PHOSPHATE ORES WITH SILICO-CARBONATE GANGUE
Amar Heschiri; Jean-Luc Cecile; Gerard Baudet; Gilles Barbery, all of Orleans, and Rene Bloise, Saint Denis en Val, all of France, assignors to Bureau de Recherches Geologiques et Minieres, Paris, France
Filed Nov. 26, 1980, Ser. No. 210,757
Claims priority, application France, Dec. 17, 1979, 79 30868
Int. Cl.³ B03D *1/06*
U.S. Cl. 209—167 9 Claims

1. A process for the treatment by flotation of phosphate ores with silico-carbonate gangue, comprising the steps of:
(1) overall flotation of the ore with a collector comprising essentially phosphoric ester in an amount and under conditions capable of causing the silicate compounds to pass into the flotation residue, said flotation step being effected at the natural pH of the ore pulp, and recovering a float product containing the phosphate and carbonate compounds,
(2) conditioning the float product in an acid medium free of phosphoric acid for a time sufficient to effect the flotation of carbonates, while the phosphates, which are the valuable product desired, remain in the residue.

4,324,654
RECOVERY OF COPPER FROM COPPER OXIDE MINERALS
William T. Rule, Hibbing, Minn., assignor to The Hanna Mining Company, Cleveland, Ohio
Filed Oct. 12, 1978, Ser. No. 950,859
Int. Cl.³ B03D *1/02*
U.S. Cl. 209—166 6 Claims

1. A method of recovering copper from ores containing copper as atacamite/paratacamite by flotation which comprises
(a) preparing a slurry of the ore in water,
(b) adjusting the pH of the slurry to the desired value,
(c) adding to the slurry a first chelating agent having the formula

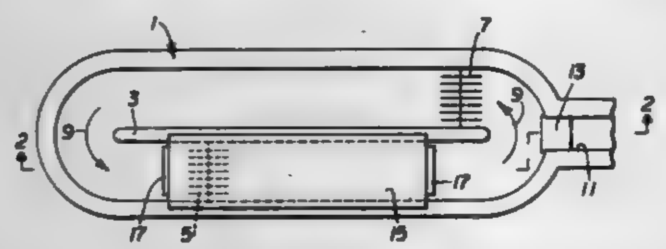
$$R{-}C(OH){=}N{-}OR^1 \quad \text{(Formula I)}$$

and a second chelating agent having the formula

$$R^2OCSSX \quad \text{(Formula II)}$$

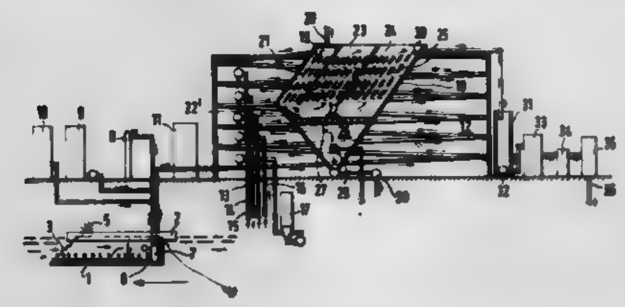
wherein
R is an aliphatic or aromatic group containing from 5 to 10 carbon atoms,
R^1 is hydrogen or an alkali metal,
R^2 is an alkyl group containing up to 10 carbon atoms, and
X is an alkali metal,
(d) adding a frothing agent to the slurry,
(e) agitating the slurry to form a froth containing the floated copper,
(f) removing the froth, and
(g) recovering the floated copper from the froth.

4,324,655
APPARATUS FOR TREATING WASTEWATER WITH OXYGEN
Josef Muskat, Aarbergen, Fed. Rep. of Germany, assignor to Passavant-Werke Michelbacher Hutte, Fed. Rep. of Germany
Division of Ser. No. 47,062, Jun. 11, 1979, Pat. No. 4,285,818. This application Apr. 24, 1980, Ser. No. 143,268
Int. Cl.³ C02F *3/26*
U.S. Cl. 210—96.1 20 Claims



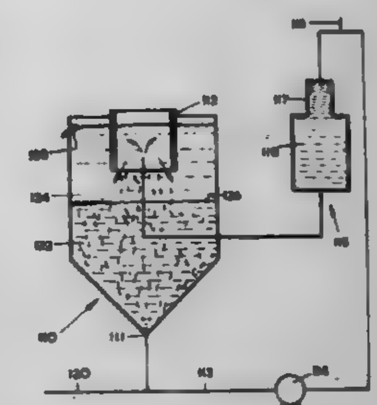
1. Apparatus for treating wastewater comprising:
(a) a basin,
(b) means continuously circulating said wastewater within said basin on an endless horizontal course,
(c) controllable means for introducing gas containing oxygen at a concentration exceeding that of air into the wastewater by agitating the surface of said wastewater,
(d) a cover closing an area of said endless horizontal course to the atmosphere and defining a compartment underneath said cover which is filled by said gas with the remainder of the course being exposed to the atmosphere,
(e) said controllable means for introducing said gas by agitating the surface of said wastewater being arranged underneath said cover, and
(f) means for adjustably withdrawing gas from beneath said cover.

4,324,656
INSTALLATION FOR THE WITHDRAWAL AND PURIFICATION TREATMENT OF WATERS AND AQUEOUS EFFLUENTS
Serge E. Godar, Avenue des Croix de Guerre, 330, 1120 Bruxelles, Belgium
Filed Oct. 11, 1979, Ser. No. 84,032
Claims priority, application Belgium, Oct. 24, 1978, 46 646
Int. Cl.³ C02F *1/74, 1/52*
U.S. Cl. 210—170 9 Claims



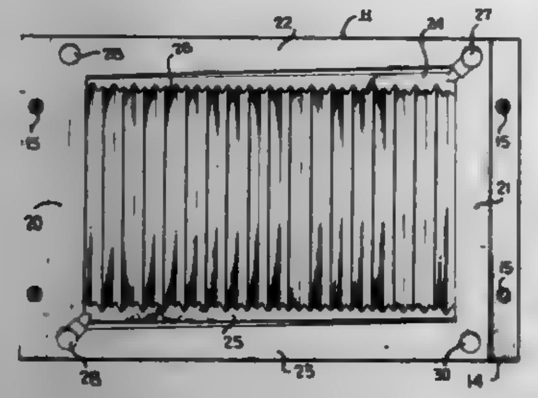
1. In an installation for withdrawal and purification treatment of liquid comprising water and aqueous effluents, respectively, comprising two essential elements, namely a water intake apparatus defining an intake and including means for pretreatments of the liquid to take place in said intake apparatus, and a purification apparatus including means for controlling the purification apparatus by the intake apparatus and for further treatments of the liquid to take place in the purification apparatus, the purification apparatus having a settling unit for settling out heavy matter, the improvement comprising
a single pump means for transferring the water and aqueous effluents, respectively, to be treated from the intake all the way up to the settling,
a continuous tubular reactor, extending from the intake apparatus to the purification apparatus, of tubular form and length and operatively connected with said pump means, the latter for forcing the liquid through said continuous tubular reactor,
said pump means for providing a rate of flow which conditions all of the pretreatments in the water intake apparatus and all of the treatments in the purification apparatus and being such that the linear velocity of liquid plus any particles circulating in the tubular reactor is between 0.40 m/sec and 1 m/sec,
said water intake apparatus comprises,
a receptacle adapted to be partially immersed,
floats support said receptacle such that the receptacle is partially immersed in the water and aqueous effluents,
said receptacle is formed with a hydrodynamically shaped front and rear formed by an inclined grid constituting said intake through which the liquid flows,
said receptacle having an interior portion located in front of said grid downstream with respect to the flow of the water and the aqueous effluents, respectively, to be treated, said interior portion forms an aeration compartment constituting means for aerating the water and aqueous effluents and liberating air bubbles, said aerating means comprises a plurality of porous members,
said aeration compartment has an upper open edge extending above the surface of the water and aqueous effluents,
the degree of immersion of said receptacle by means of said floats being such that said open edge of said aeration compartment does not permit entry of water that has not passed through said grid.

4,324,657
APPARATUS FOR THE TREATMENT OF LIQUIDS
Michael E. Garrett, 92 York Rd., Woking, Surrey, England
Filed Feb. 2, 1978, Ser. No. 874,700
Claims priority, application United Kingdom, Feb. 4, 1977, 4699/77; Feb. 16, 1977, 6490/77; Mar. 17, 1977, 11368/77; Sep. 12, 1977, 37978/77
Int. Cl.³ C02F *3/22*
U.S. Cl. 210—197 2 Claims



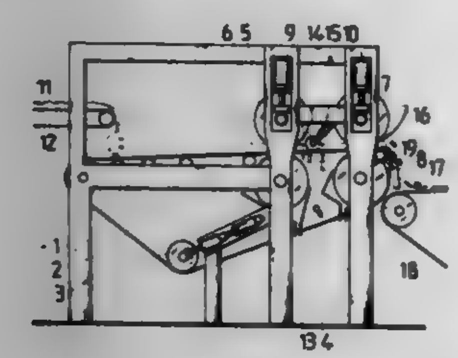
1. Apparatus for treating aqueous waste material having a biochemical oxygen demand, comprising a vessel for containing a volume of the material; means for continuously feeding a stream of aqueous waste material through a conduit in communication with means for defining a confined stilling zone positioned in an upper portion of the vessel; means for feeding a second stream of aqueous liquor containing bacterial sludge into said conduit to combine the streams; baffle means defining said stilling zone for keeping the combined streams separate from an upper layer of clarified liquor to be separately maintained in the upper portion of the vessel; means for withdrawing clarified liquor maintained in the upper layer of the vessel; means for combining the streams and introducing the streams into the stilling zone wherein the momentum of the liquid is substantially reduced before the liquid passes to a lower zone of the vessel wherein biological treatment of the aqueous material and collection of bacterial sludge takes place; means for introducing oxygen or oxygen-containing gas mixture into the combined streams to form discrete bubbles of oxygen gas therein and thereby facilitate dissolution of the oxygen; said means for feeding a second stream comprising means for recycling aqueous material containing bacterial sludge to the upper region of said stilling zone by withdrawing aqueous waste material containing bacterial sludge to be collected in the lower zone, said means for feeding the stream of aqueous material through the conduit and to recycle the bacterial sludge comprising pump means, an oxygen injection conduit in communication with the conduit adjacent the pump means, a partition across the stilling zone dividing it into separate upper and lower regions, said means for recycling comprising a conduit for feeding aqueous material into the upper region of the stilling zone; a passage through the partition, the passage being wider at its outlet than its inlet thereby constituting the expansion chamber, means for creating a flow, initially turbulent, of aqueous material from the upper region of the stilling zone through the passage and into the lower region of the stilling zone, and means for introducing oxygen or oxygen-containing gas mixture into the turbulent flow.

4,324,658
TRANSFER DEVICE HAVING A THIN WALL PLATE
William G. Esmond, 800 Country Club Rd., Havre de Grace, Md. 21078
Filed Jan. 10, 1977, Ser. No. 805,394
Int. Cl.³ B01D *31/00*
U.S. Cl. 210—321.3 **17 Claims**



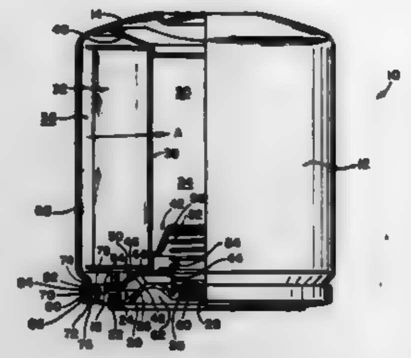
1. A transfer plate for a dialyzer and like transfer device, said transfer plate being formed from sheet material shaped to define adjacent to two opposite edges thereof and on both faces thereof fluid flow troughs, said transfer plate further having a central portion disposed between said troughs formed to define a generally corrugated arrangement defining adjacent fluid flow passages on both faces thereof, said passages extending between and generally normal to and being in communication with respective ones of said troughs, adjacent ones of said troughs on opposite faces of said plate having cross sections which overlap when viewed from said edge of said transfer plate, said transfer plate having a substantially uniform material thickness throughout.

4,324,659
LIME SLUDGE PRESS UNIT
Juha Titoff, Savonlinna, Finland, assignor to Enso-Gutzeit Osakehitö, Helsinki, Finland
Filed Nov. 10, 1980, Ser. No. 205,273
Claims priority, application Finland, Nov. 13, 1979, 793549
Int. Cl.³ B01D *33/04*
U.S. Cl. 210—386 **6 Claims**



1. Improvement in a lime sludge press unit comprising at least two pairs of press rolls, the lime sludge web passing, supported by an endless wire, through their press nips and moisture escaping from the lime sludge therein, wherein the improvement comprises that after the first pair of rolls is located a lime sludge treatment screw transversal to the lime sludge web and which breaks up the pressed lime sludge web and carrying helical threads starting at its ends and opposite in direction so that these both transport the lime sludge from the margin of the web towards its center.

4,324,660
FLUID FILTER
Richard H. Peyton, Berkley, Mass., and Donald I. Thornton, Warwick, R.I., assignors to Fram Corporation, East Providence, R.I.
Filed Aug. 25, 1980, Ser. No. 180,734
Int. Cl.³ B01D *27/08*
U.S. Cl. 210—440 **8 Claims**



1. In an automotive oil filter, a housing defining a chamber therein, said housing including a cup-shaped member having a circumferentially-extending wall defining an axis and an open end and a closure member closing said open end, an annular fluid-permeable filtering element within said housing chamber, said filtering element dividing said chamber into a pair of compartments, said closure member including a threaded opening communicating with one of said compartments, another opening in said closure member communicating with the other of said compartments, an annular seal mounted on said closure member wherein the improvement comprises:

said open end of said cup-shaped member is defined by a circumferentially-extending marginal edge, said closure member being a stamping consisting of a single member having a circumferentially-extending marginal edge;

the marginal edges of said cup-shaped member and of said closure member having cooperating means for forming a fluid-tight seal between the closure member and the cup-shaped member;

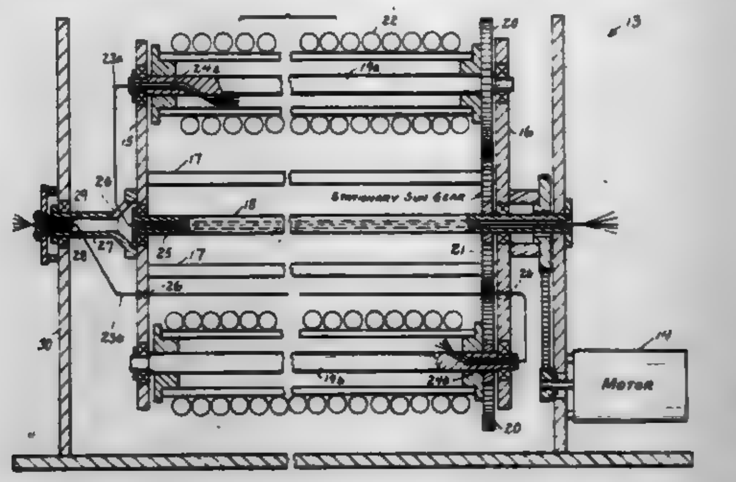
said cooperating means including a bead circumscribing the marginal edge of said cup-shaped member, and an inner annular flange and an outer annular flange defined by the marginal edge of said closure member;

said inner flange formed of a double thickness fold of said closure member projecting perpendicularly to the plane of said closure member and extending into said housing chamber;

said outer flange formed of a single upwardly bent thickness of said closure member, located radially outward of said first flange, projecting perpendicular to the plane of said closure member and extending outside said housing chamber;

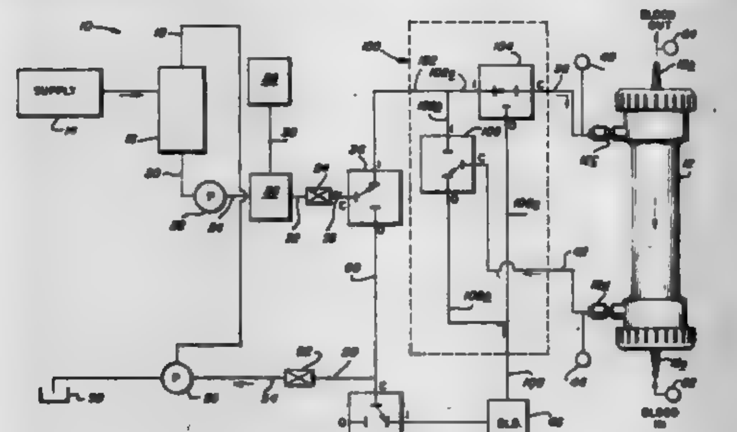
wherein the marginal edge of said cup-shaped member is received in a channel formed between said inner and outer flanges; said outer flange includes a section projecting radially inwardly toward the wall of said cup-shaped member; and said fluid-tight seal is formed by crimping said bead between said inner and outer flanges and further crimping the bead between said inwardly projecting section and the floor of said channel.

4,324,661
APPARATUS AND METHOD FOR CONTINUOUS COUNTERCURRENT EXTRACTION AND PARTICLE SEPARATION
Yoichiro Ito, Bethesda, Md., assignor to The United States of America as represented by the Department of Health, Education and Welfare, Washington, D.C.
Filed May 9, 1980, Ser. No. 148,491
Int. Cl.³ B01D *15/08*
U.S. Cl. 210—635 **2 Claims**



1. A method of centrifugal continuous countercurrent chromatographic extraction of separable components from a liquid sample comprising first eluting two respective solvent phases of different viscosity and density through opposite ends of an axially rotating column, revolving the column simultaneously around an axis spaced from and parallel to the axis of rotation of the column at the same angular velocity and in the same angular direction, then, after a steady hydrodynamic equilibrium is substantially reached, introducing the liquid sample at a middle portion of the column, and then collecting a selected separable component of the sample from one end of the column.

4,324,662
FLOW REVERSAL IN A DIALYZER
William J. Schnell, Wheeling, Ill., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.
Filed Dec. 28, 1979, Ser. No. 108,119
Int. Cl.³ B01D *13/00, 31/00*
U.S. Cl. 210—646 **13 Claims**



9. A method for operating:

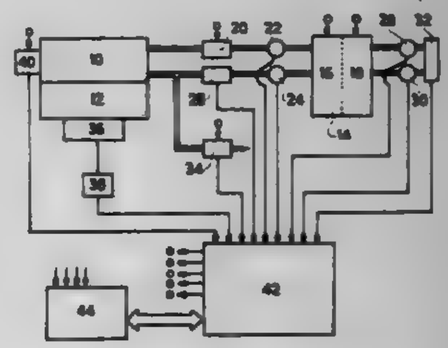
an artificial kidney system which includes a negative-pressure-type dialyzer having spaced blood inlet and outlet ports, spaced first and second dialysis solution ports which are constructed to be positioned one above the other, and a semipermeable membrane that separates dialysis solution and blood flowing through said dialyzer and defines separate flow paths; and a dialysis machine coupled to said dialyzer and having negative pressure pump means for drawing dialysis solution through the dialyzer and having valve means for selectively controlling the direction of flow of dialysis solution through said dialyzer, said method comprising the steps of:

(a) orienting said dialyzer at an attitude in which the blood inlet port is positioned below the blood outlet port and one of said first and second dialysis solution ports is positioned above the other;

(b) priming the dialysis solution side of the dialyzer by operating the valving system to cause dialysis solution to flow under a negative pressure into the lower dialysis solution port, upwardly through the dialyzer and out from the upper dialysis solution port, so as to expel air from the dialysis solution flow path; and thereafter

(c) operating the valving system so as to reverse the direction of dialysis solution flow to a normal flow direction wherein dialysis solution enters said upper port, flows downwardy through the dialyzer and exits the lower port.

4,324,663
METHOD AND APPARATUS FOR REGULATING HAEMODIALYSIS CONDITIONS
Jean C. Hirel, Villebon-sur-Yvette; Francois M. Goupy, Paris; Pierre G. Bloch, Sceaux, and Patrice E. Degoulet, Paris, all of France, assignors to Institut National de la Sante et de la Recherche Medicale, Paris, France
Filed Aug. 1, 1977, Ser. No. 820,642
Claims priority, application France, Jul. 30, 1976, 76 23423
Int. Cl.³ B01D *13/00*
U.S. Cl. 210—646 **12 Claims**



1. A method of regulating haemodialysis conditions while simultaneously subjecting a patient to ultrafiltration of the blood, which method comprises:

circulating the blood of the patient to and from one side of a membrane of a haemodialyser,

circulating a haemodialysis solution to and from the other side of the said membrane of the haemodialyser,

supplying physiologically acceptable fluid to the patient by perfusion,

monitoring variations in the weight of the patient during the haemodialysis,

determining a validity zone defined by two weight/time curves defining at any given moment an area of weight values,

comparing variations in weight with said area at any one moment, for generating a control signal, and

controlling at least a parameter determining the course of ultrafiltration according to said control signal.

6. A haemodialysis apparatus for effecting dialysis of the blood by ultrafiltration, comprising:

a haemodialyser having membrane means separating a blood compartment for a dialysis solution compartment,

means for causing the circulation of the blood of a patient and a haemodialysis solution on either side of said membrane,

a perfusion arrangement for a patient whose blood is to undergo haemodialysis,

at least one sensor of a parameter related to the weight of a

patient for providing a signal representing variations in the weight of the patient,

means for comparing the signal of variations in weight with an area of weight values defined by plotting maximum and minimum acceptable weights of the patient at each time within a haemodialysis period during which the haemodialyser is to be employed, to give a control signal when the signal of weight variation is not within said area, and

means for controlling at least a parameter determining the course of ultrafiltration according to said control signal.

4,324,664

METHOD AND COMPOSITION FOR TREATING AQUEOUS MEDIUMS

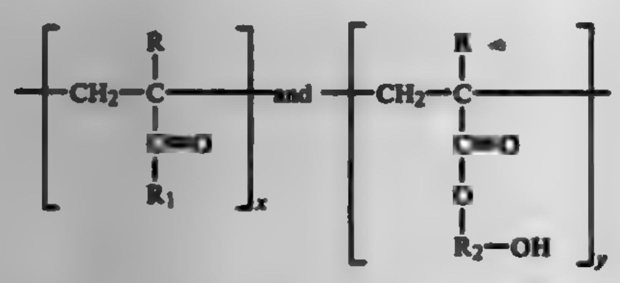
William R. Snyder, Warminster, and Diane Feuerstein, Bensalem, both of Pa., assignors to Betz Laboratories, Inc., Trevose, Pa.

Filed Apr. 16, 1981, Ser. No. 254,842

Int. Cl.[3] C02F *5/12*

U.S. Cl. 210—701 **10 Claims**

1. In a method of controlling the deposition of scale imparting precipitates on the structural parts of the system exposed to an aqueous medium containing scale imparting precipitates under deposit forming conditions, which method comprises adding to said aqueous medium an effective amount for the purpose of a water soluble polymer (I) comprising moieties (a) derived from an acrylic acid or water soluble salt thereof and moieties (b) of an hydroxylated lower alkyl acrylate, wherein the moieties of the polymer have the following formula



wherein R is hydrogen or a lower alkyl of from 1 to 3 carbon atoms; R_1 is OH, OM or NH_2 where M is a water soluble cation; R_2 is a lower alkyl of from about 2–6 carbon atoms and a mole ratio of x to y is 34:1 to 1:4, the improvement comprising adding to said aqueous medium an effective amount of a water soluble ester of an aliphatic sulphodicarboxylic acid (II).

4,324,665

PROCESS FOR RECOVERING BROMINE FROM WASTE LIQUID

Isao Yokomichi, Moriyama; Takeo Yamada, Nagoya; Akio Mohri, Yokkaichi; Kiyoshi Ota, Tokyo, and Minoru Ikeda, Onoda, all of Japan, assignors to Ishihara Sangyo Kaisha, Ltd., Osaka and Nissan Chemical Industries, Ltd., Tokyo, both of, Japan

PCT No. PCT/JP79/00239, § 371 Date Nov. 5, 1980, § 102(e) Date Oct. 28, 1980, PCT Pub. No. WO80/01905, PCT Pub. Date Sep. 18, 1980

PCT Filed Sep. 7, 1979, Ser. No. 201,404

Claims priority, application Japan, Mar. 5, 1979, 54-25204

Int. Cl.[3] C02F *1/76;* C01B *7/09*

U.S. Cl. 210—718 **5 Claims**

1. A process for recovering bromine, from a waste liquid formed in the production of an aniline derivative by ammonolysis of a bromobenzene derivative nuclear substituted with at last one halogen atom or functional group, or from a similar liquid, said process being characterized by containing the following steps:

(a) adding to said liquid an alkaline material in an amount of not less than 1.1 mole-times the combined ammonia content in said liquid;

(b) bringing the resulting liquid into contact with gaseous chlorine until the oxidation-reduction potential of the liquid reaches at least 400 mV;

(c) filtering and removing the formed percipitate;

(d) adding a mineral acid or an acidic waste liquid containing a mineral acid before or after the above-said step (c) to adjust the pH of the liquid to 3 or less; then,

(e) bringing the resulting liquid into contact with gaseous chlorine while allowing the liquid to flow down through a vertically long, gas-liquid contact equipment, and simultaneously introducing steam to distill bromine out.

4,324,666

METHOD OF REMOVING FERROCYANIDE IONS FROM RINSE WATER OF AN ALKALINE CYANIDE METAL PLATING PROCESS

John E. Hunt, Barrington, Ill., assignor to DuTone Corporation, Waukegan, Ill.

Filed Jul. 23, 1980, Ser. No. 171,599

Int. Cl.[3] C02F *1/52*

U.S. Cl. 210—722 **6 Claims**

1. In an alkaline cyanide metal plating process including plating metal articles, rinsing the improvement comprising the plated articles in water, and subjecting the rinse water to chlorination, the steps of removing ferrocyanide ions present in the rinse water prior to chloriniation by mixing with the rinse water maintained at pH values ranging from pH 7 to pH 10 at least one equivalent of soluble manganous salt required to react with the ferrocyanide ions present, thereby forming manganous ferrocyanide $[Mn_2Fe(CN)_6]$ as a water insoluble precipitate and removing the precipitate from the treated rinse water.

4,324,667

PROCESS FOR PURIFICATION OF WASTE WATERS FROM AROMATIC AMINES

Igor I. Konstantinov, prospekt Lenina, 101, kv. 12; Antonina I. Kormushechkina, ulitsa Pirogova, 1/2, kv. 26; Jury A. Avdonin, prospekt Tsiolkovskogo, 31, kv. 52; Vladimir M. Kotlyarsky, prospekt Pobedy, 3, kv. 34; Albert A. Kim, ulitsa Griboedova, 33, kv. 22; Nikolai V. Obraztsov, ulitsa Kljukvina, 8, kv. 24, and Alexei V. Efimov, prospekt Lenina, 85, kv. 43, all of Dzerzhinsk, U.S.S.R.

PCT No. PCT/SU79/00010, § 371 Date Oct. 17, 1980, § 102(e) Date Oct. 17, 1980, PCT Pub. No. WO80/01800, PCT Pub. Date Sep. 4, 1980

PCT Filed Feb. 23, 1979, Ser. No. 198,208

Int. Cl.[3] C02F *1/54*

U.S. Cl. 210—729 **3 Claims**

1. A process for purifying waste waters containing aromatic amines, comprising adding, to said waste waters, an amine precipitating agent selected from the group consisting of 3,3'-dimethyldiphenylmethanediisocyanate-4,4'; 3.5-dibromotolylenediisocyanate-2,4; diphenylmethanediisocyanate-4,4'; tolylenediisocyanate-2,4; a mixture of isomers of diphenylmethanediisocyanate consisting of 4,4'-isomer, 2,4'-isomer and 2,2'-isomer, or a mixture of polyphenylpolymethylene-polyisocyanates, in a molar ratio to said aromatic amines ranging from 1:1 to 30:1, respectively; wherein said amine precipating agent is introduced into said waste waters as a solution in an inert organic solvent, and separating the precipitate thereby formed from the waste waters.

4,324,668

HIGH VISCOSITY ACIDIC TREATING FLUIDS AND METHODS OF FORMING AND USING THE SAME

Lawrence E. Harris, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Oct. 2, 1978, Ser. No. 947,327

Int. Cl.[3] C09K *3/00*

U.S. Cl. 252—8.55 C **24 Claims**

1. A method of treating a subterranean well formation comprising the steps of:

combining a hydratable gelling agent having a molecular

weight greater than 100,000 and having carboxyl functionability and capable of being crosslinked with metal ions and selected from the group consisting of carboxymethylhydroxyethyl cellulose having a DS in the range of about 0.1 to 1.0 and a MS in the range of about 0.5 to 5, carboxymethylhydroxypropyl guar having a DS in the range of about 0.05 to 0.5 and a MS in the range of about 0.01 to 1.0, carboxyethylhydroxypropyl guar having a DS in the range of from about 0.01 to 0.5 and a MS in the range of from about 0.01 to 1.0 and mixtures thereof and a zirconium crosslinking agent with an aqueous acid solution said acid being present in sufficient quantities to form a high viscosity acidic treating fluid with a pH below 3 and which is stable at high temperatures; and

introducing said treating fluid into said formation.

4,324,669

FOAMED HIGH VISCOSITY AQUEOUS INORGANIC ACID SOLUTIONS AND METHODS OF USING THE SAME

Lewis R. Norman, and Tommy R. Gardner, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Nov. 19, 1979, Ser. No. 95,860

Int. Cl.[3] E21B *43/27*

U.S. Cl. 252—8.55 C **12 Claims**

1. A foamed and gelled aqueous inorganic acid solution consisting of:

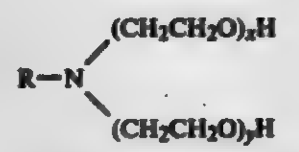
(a) an inorganic acid;

(b) water;

(c) an inert gas; and,

(d) a gelling-foaming agent, said gelling-foaming agent consisting of a water soluble organic solvent; and

a mixture of ethoxylated fatty amines having the general formula:



wherein: R is selected from saturated and unsaturated aliphatic groups having in the range of from about 8 to about 22 carbon atoms and mixtures thereof; the average sum of the value of x and y in said mixture is in the range of from about 1.8 to 2.2 and said ethoxylated fatty amine is present in said gelling agent in the range of from about 10.0% to about 80.0% by weight of said gelling agent.

4,324,670

PROCESS FOR MAKING A MIXED OXYALUMINUM ACYLATE COMPOSITION USEFUL IN GREASE MANUFACTURE

Charles E. Pratt, Signal Mountain, Tenn., assignor to Chattem, Inc., Chattanooga, Tenn.

Continuation-in-part of Ser. No. 96,933, Nov. 23, 1979, Pat. No. 4,280,917. This application Nov. 4, 1980, Ser. No. 201,271

Int. Cl.[3] C10M *5/12, 7/16, 1/20*

U.S. Cl. 252—37.7 **13 Claims**

1. A process for making a composition comprised of mixed oxyaluminum acylate and mixed esters of carboxylic acid material, said process comprising the steps of sequentially,

(A) first heating a mixture of an aluminum alkoxide material and a carboxylic acid material to a first temperature which is above the melting point of said carboxylic acid material but which is below the boiling point of an alkanol material while agitating said mixture, said first heating being continued for a time sufficient to form a substantially homogeneous mixture,

(1) said aluminum alkoxide material being characterized by the formula:

$Al(OR)_3$

where R is a lower alkyl radical,

(2) said carboxylic acid material being comprised of:

(a) at least one aliphatic monocarboxylic acid containing from 8 to 40 carbon atoms per molecule, and

(b) at least one aromatic monocarboxylic acid containing from 7 to 14 carbon atoms per molecule,

(c) the mole ratio of said aromatic acid to said aliphatic acid ranging from about 2:3 to 19:1.

(3) said alkanol material being characterized by the formula:

ROH

where R is defined above and where ROH is derived from reaction between said aluminum alkoxide material and said carboxylic acid material,

(4) the mole ratio of said aluminum alkoxide material to said carboxylic acid material is about 1 to 2,

(B) secondly heating said liquid to second temperatures in the range where said alkanol material is distilled off and maintaining said second heating for a time sufficient to remove the equivalent of at least about 2 theoretical moles of said alkanol based upon said aluminum alkoxide material, and

(C) thirdly heating the resulting product from said second heating to gradually increasing third temperatures from a temperature corresponding to the final temperature of said second heating up to about 200° C., thereby to convert said resulting product into a homogeneous final liquid having a viscosity substantially less than that of said resulting product from said second heating.

4,324,671

GREASE COMPOSITIONS BASED ON FLUORINATED POLYSILOXANES

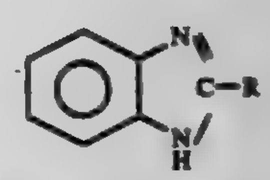
John B. Christian, Yellow Springs, and Christ Tamborski, Dayton, both of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Continuation-in-part of Ser. No. 100,180, Dec. 4, 1979, abandoned. This application Feb. 10, 1981, Ser. No. 233,277

Int. Cl.[3] C10M *1/32, 1/50*

U.S. Cl. 252—49.6 **14 Claims**

1. A grease composition comprising a major amount of a fluorinated polysiloxane base fluid, a minor amount of a thickening agent for the base fluid, and a rust and corrosion inhibiting amount of a benzimidazole having the following structural formula:



wherein R is hydrogen, hydrocarbon alkyl, hydrocarbon aryl, perfluoroalkyl or perfluoroalkyleneether.

4,324,672

DISPERSANT ALKENYLSUCCINIMIDES CONTAINING OXY-REDUCED MOLYBDENUM AND LUBRICANTS CONTAINING SAME

Stephen A. Levine; Raymond C. Schlicht, both of Fishkill, and Harry Chafetz, Poughkeepsie, all of N.Y., assignors to Texaco, Inc., White Plains, N.Y.

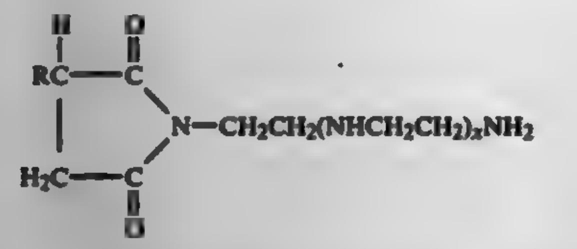
Filed Jun. 25, 1980, Ser. No. 162,709

Int. Cl.[3] C10M *1/54*

U.S. Cl. 252—49.7 **4 Claims**

1. A composition of matter having oxidation inhibiting, dispersant and friction reducing properties in lubricants consisting essentially of the product obtained by reacting a hexava-

lent salt or oxide of molybdenum with from 15:1 to 1:15 equivalents of hydrogen peroxide and then with an alkenyl succinimide of the formula:

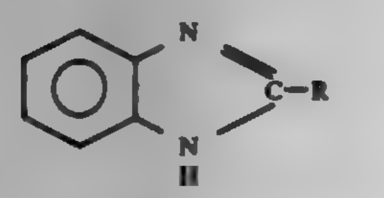


wherein R is an alkenyl radical having from 50 to 200 carbon atoms in the chain and x ranges from 0 to 10.

4. A lubricant comprising a major amount of an oil of lubricating viscosity and a sufficient amount of the composition of claim 1 to provide from 0.01 to 1.0 percent by weight of molybdenum in said lubricant.

4,324,673
GREASE COMPOSITIONS BASED ON POLYFLUOROALKYLETHERS
John B. Christian, Yellow Springs, and Christ Tamborski, Dayton, both of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Continuation-in-part of Ser. No. 100,179, Dec. 4, 1979, abandoned. This application Jan. 16, 1981, Ser. No. 225,546
Int. Cl.³ C10M *1/32, 1/50*
U.S. Cl. 252—51.5 R **14 Claims**

1. A grease composition comprising a major amount of a polyfluoroalkylether base fluid, a minor amount of a thickening agent for the base fluid, and a rust and corrosion inhibiting amount of a benzimidazole having the following structural formula:



wherein R is hydrogen, hydrocarbon alkyl, hydrocarbon aryl, perfluoroalkyl or perfluoroalkyleneether.

4,324,674
AMINE SALT STABILIZED PHOSPHATE ESTER-BASED FUNCTIONAL FLUID
Hugh S. MacKinnon, Hercules, Calif., assignor to Chevron Research Company, San Francisco, Calif.
Filed Aug. 28, 1980, Ser. No. 182,159
Int. Cl.³ C10M *3/26, 3/28*
U.S. Cl. 252—78.5 **8 Claims**

1. An erosion-inhibited phosphate ester-based functional fluid comprising a major amount of a phosphate ester and from 10 to 50,000 parts per million by weight of a perfluorinated anionic surfactant selected from the soluble amine salts of a perfluoroalkane sulfonic acid or perfluoroalkane disulfonic acid wherein the alkane is from 1 to 18 carbon atoms.

4,324,675
PROTECTIVE ADDITIVE FOR RADIATORS IN COOLANTS CONTAINING WATER
Klaus Barthold, Weinheim, and Gert Liebold, Edingen, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany
Filed Dec. 29, 1980, Ser. No. 220,799
Claims priority, application Fed. Rep. of Germany, Jan. 10, 1980, 3000687
Int. Cl.³ C09K *5/00*
U.S. Cl. 252—79 **10 Claims**

1. An anticorrosive additive free of nitrites, amines, and phosphates for use in an aqueous solution to inhibit the corrosion of metals present in the cooling system of a water-cooled internal combustion engine consisting essentially of in admixture

(A) an effective corrosion inhibiting amount of at least one conventional corrosion inhibitor for metals and

(B) an effective corrosion inhibiting amount of at least one nucleus-substituted benzoic acid having strongly electron-attracting groups and a pKa of less than 3 selected from the group consisting of the halogen-ring-substituted benzoic acids.

4,324,676
COMPOSITIONS CONTAINING β-DIKETO CHELATING COMPOUNDS
Herman S. Gilbert, Angleton, Tex., assignor to The Dow Chemical Company, Midland, Mich.
Filed Jan. 21, 1980, Ser. No. 113,911
Int. Cl.³ C23F *11/12;* **C09K** *5/00*
U.S. Cl. 252—79 **8 Claims**

1. An aqueous corrosion resistant glycol composition comprising

(A) 25 to 98 percent by weight of an alkylene glycol or mixtures of alkylene glycols,

(B) a soluble amount effective to reduce metal corrosion of β-dicarbonyl compounds having the formula

$$R_1\text{-C(O)-C}(R_2)(R_3)\text{-C(O)-}R_4$$

where

R_1 and R_4 are independently alkyl groups of 1–4 carbons, and alkoxy groups, of 1–4 carbons,

R_2 and R_3 are hydrogen, hydroxyl, alkyl groups of 1–4 carbons, or acetyl groups, with the proviso that R_1 and R_2 can be joined to form a 5 or 6 membered ring when R_3 is hydrogen and R_4 is an alkyl group of 1–4 carbons,

with the proviso that R_1 and R_4 can be joined to form a 5 membered ring when R_2 is hydrogen and R_3 is an alkyl group of 1–4 carbons,

with the proviso that R_1 and R_4 can be joined to form the 1,2-phenylene group when R_2 and R_3 are hydrogen, and with the proviso that R_1 and R_4 can be joined to form the 1,2 phenylene group when R_2 is hydroxyl and R_3 is the 2-hydroxy 1,3-dione-indanyl-2 group.

4,324,677
STABLE DISHWASHING AGENT COMPOSITIONS CONTAINING ACTIVE CHLORINE
Jochen Kaufmann; Theodor Altenschöpfer, both of Dusseldorf; Klaus Schumann, Erkrath, and Friedel Rings, Monheim, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Dusseldorf-Holthausen, Fed. Rep. of Germany
Filed Dec. 29, 1980, Ser. No. 221,341
Claims priority, application Fed. Rep. of Germany, Jan. 12, 1980, 3000981; Mar. 1, 1980, 3007998
Int. Cl.³ C11D *7/56, 7/54*
U.S. Cl. 252—99 **12 Claims**

1. A stable, alkaline, granulated dishwashing agent composition containing active chlorine and alkali metal hydroxide for

use in mechanical dishwashers consisting essentially of an admixture of:

(a) from 1% to 30% by weight of finely divided trichloroisocyanuric acid in the form of granulates or prills having particles of which more than 84% by weight pass through a screen with an inside mesh diameter of 1.6 mm and more than 90% by weight are retained by a screen with the inside mesh diameter of 0.2 mm and having a degree of purity of ≧99% as determined by laser-Raman spectroscopy,

(b) from 10% to 40% by weight of granulated alkali metal hydroxide having particles of which more than 80% by weight pass through a screen with an inside mesh diameter of 1.6 mm and less than 10% by weight pass through a screen with an inside mesh diameter of 0.2 mm,

(c) from 5% to 60% by weight of builders selected from the group consisting of alkali metal polyphosphates and mixtures of said polyphosphates with up to 60% by weight of the builders of synthetic, water-insoluble alkali metal aluminosilicates having a calcium binding capacity of between 50 and 200 mg CaO/gm of anhydrous inorganic active substance,

(d) from 5% to 50% by weight of alkali metal silicates,

(e) from 2% to 50% by weight of alkali metal carbonates, or sulfates, and

(f) from 0 to 5% by weight of nonionic surface-active compounds.

4,324,678
METHOD OF CLEANING FIBREGLASS
Barry R. Howson, 21 Rochdale Rd., Mount Claremont, Western Australia, Australia
Filed Nov. 20, 1980, Ser. No. 208,573
Claims priority, application Australia, Nov. 23, 1979, PE1455
Int. Cl.³ B60S *1/00;* **B63B** *59/00;* **C11D** *7/08, 7/10*
U.S. Cl. 252—136 **8 Claims**

1. A method of cleaning fibreglass which comprises applying thereto an aqueous composition, the composition containing from about 40 to 50% W/W of phosphoric acid, from about 0.1 to 3.0% by weight of a wetting agent and from about 0.1 to 5.0% W/V of ferrous ammonium sulphate.

4,324,679
CONTROLLING ODOR IN PHOTOPOLYMERIZATION
Robert C. Carlson, Hudson, Wis., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Division of Ser. No. 876,113, Feb. 8, 1978, Pat. No. 4,218,531. This application Feb. 21, 1980, Ser. No. 123,268
Int. Cl.³ G03C *1/68;* **C08F** *8/18, 8/34*
U.S. Cl. 252—182 **6 Claims**

1. A liquid composition consisting essentially of:

(a) aromatic sulfonium complex salt, said salt being photodecomposable and being capable of initiating polymerization of cationically polymerizable monomers upon exposure to actinic radiation;

(b) at least about 15% by weight of liquid neutral oxyethylene-containing material selected from:

(i) compounds having the formula

$$R[(OC_2H_4)_n(OC_3H_6)_mOH]_p$$

where R is a polyvalent neutral organic radical having a valence of p, n+m is in the range of 1 to about 25, p is in the range of 2 to 6, wherein the oxyethylene units in such compounds constitute at least about 15% by weight of such compounds; and wherein the number of carbon atoms in R divided by the product of n and p is less than three; and

(ii) compounds having the formula:

$$R^1(OC_2H_4)_n(OC_3H_6)_mOH$$

where R^1 is monovalent neutral organic radical, where n+m is in the range of 1 to 25, wherein the oxyethylene units in such compounds constitute at least about 50% by weight of such compounds; and

(iii) compounds of the formula:

$$H(OC_2H_4)_n(OC_3H_6)_mOH$$

where n+m is in the range of 2 to about 25, wherein the oxyethylene units in such compounds constitute at least about 15% by weight of such compounds; and

(c) an organic material containing at least one site of non-aromatic carbon-carbon unsaturation; wherein said unsaturation in said organic material is ethylenic and wherein each ethylenically unsaturated carbon atom has no more than one hydrogen atom bonded thereto; and wherein said organic material is present in an amount of about 0.5 to 20% by weight of said composition.

4,324,680
SILVER-SILVER CHLORIDE ELECTRODE AND MANUFACTURING METHOD THEREOF
Misao Kubota, Maruku; Yoshitada Hanai, Ueda, and Toshiaki Yamaguchi, Tobe, all of Japan, assignors to Totoku Electric Co., Ltd., Tokyo, Japan
Filed Aug. 22, 1980, Ser. No. 180,428
Int. Cl.³ H01M *4/58, 4/04*
U.S. Cl. 252—182.1 **8 Claims**

1. A silver-silver chloride electrode characterized in that said electrode is obtainable by forming silver chloride on the surface of silver powder particles in a proportion of 0.05 to 80% by weight and compression-forming the resultant compound powder.

4. A method of manufacturing a silver-silver chloride electrode comprising the steps of chemically reacting silver powder particles with chlorine in a solution containing chlorine ions or in a gas mixture containing chlorine or a chlorine compound to form silver chloride on the surface of the silver powder particles, and compression-forming the resultant silver-silver chloride compound powder into a desired shape.

4,324,681
CHIRAL SUPPORTS FOR RESOLUTION OF RACEMATES
David W. House, Arlington Heights, Ill., assignor to UOP Inc., Des Plaines, Ill.
Filed Jun. 12, 1980, Ser. No. 158,750
Int. Cl.³ B01D *15/08*
U.S. Cl. 252—184 **9 Claims**

1. A composition for resolution of racemic mixtures comprising:

(a) a core support selected from the group consisting of silica and alumina;

(b) a spacer molecule, one terminus of which is bonded to at least one oxygen atom of the core support via a silicon atom;

(c) a chiral amino acid or derivative thereof covalently bonded to the remaining terminus of the spacer molecule via amidation of a carboxyl group so as to retain its chirality.

4,324,682

ENCAPSULATED FLUORESCENT COMPOSITION

Norma A. Weston, Annandale, and Edward J. Schurdak, Somerville, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Continuation of Ser. No. 178,529, Dec. 18, 1970, abandoned. This application Jun. 18, 1973, Ser. No. 371,424

Int. Cl.³ C09K *11/06*

U.S. Cl. 252—301.27 9 Claims

1. A continuous, pressure rupturable capsule useful for marking and identification purposes, insoluble in (B) and having encapsulated therein a composition consisting essentially of (A) from about 5% to about 50% of a fluorescent material and (B) from about 50% to about 95% of a water-insoluble, volatile, hydrocarbon solvent, said percentages being by weight based on the total weight of (A) and (B).

4,324,683

ENCAPSULATION OF LABILE BIOLOGICAL MATERIAL

Franklin Lim, Richmond, and Richard D. Moss, Chester, both of Va., assignors to Damon Corporation, Needham Heights, Mass.

Filed Aug. 20, 1975, Ser. No. 606,166

Int. Cl.³ B01J *13/02;* A61K *9/50*

U.S. Cl. 252—316 39 Claims

1. A process for encapsulating a chemically active core material in a porous capsule membrane from which the active core material cannot diffuse, said membrane comprising a polymer selected from the group consisting of polyamides, polyesters, polyureas, polycarbonates, and polysulfonamides, said process comprising the steps of:

1. preparing a solution of a first monomer and said core material in a first solvent selected from the group consisting of water and hydrophilic solvents, said first monomer being selected from the group consisting of polyols and diamines;
2. emulsifying said solution in a hydrophobic solvent in which the first monomer is slightly soluble to produce a hydrophilic discontinuous phase;
3. adding a second monomer selected from the group consisting of diacids, diacid halides, diisocyanates, and multifunctional sulfonyl halides to said emulsion to cause an interfacial polymerization reaction between the first and second monomers at the interface of the phases of the emulsion to form macroporous polymeric capsule membranes about the members of the discontinuous phase;
4. separating the capsules produced in step 3 from the hydrophobic solvent to terminate the polymerization reaction;
5. resuspending the capsules in a liquid, said liquid being selected to be less soluble with said first monomer than said hydrophobic solvent;
6. adding a second portion of said second monomer to the resuspension to cause further polymerization at said capsule membranes to strengthen said membranes and to render them microporous yet impermeable to said core material; and
7. quenching the polymerization reaction in the resuspension.

4,324,684

STABLE COMPOSITIONS FOR USE AS CORROSION INHIBITORS

Gary E. Geiger, Philadelphia, and Roger C. May, Glenside, both of Pa.; assignors to Betz Laboratories, Inc., Trevose, Pa.

Continuation-in-part of Ser. No. 89,076, Oct. 29, 1979, and a continuation-in-part of Ser. No. 27,346, Apr. 5, 1979, abandoned. This application Mar. 19, 1980, Ser. No. 131,592

Int. Cl.³ C23F *11/18, 11/16, 11/14, 11/12*

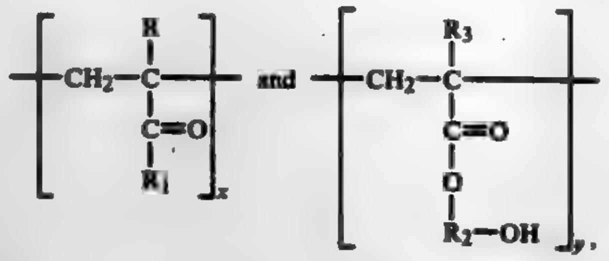
U.S. Cl. 252—389 A 20 Claims

1. A composition comprising in combination:

(i) water-soluble zinc compound,

(ii) water-soluble chromate compound, and

(iii) water-soluble polymer comprising moieties derived from acrylic acid or water-soluble salt thereof and moieties of hydroxylated lower alkyl acrylate, wherein the moieties of said polymer have the following formulas:



where R is hydrogen or a lower alkyl of from 1 to 3 carbon atoms; R_1 is OH, NH_2 or OM where M is a water-soluble cation; R_2 is a lower alkyl of about 2 to 6 carbon atoms, R_3 is H or lower alkyl of from 1 to 3 carbon atoms and the mole ratio of x:y is 1:4 to 36:1, said polymer being capable of retaining a corrosion inhibiting amount of said zinc compound in soluble form in said aqueous medium.

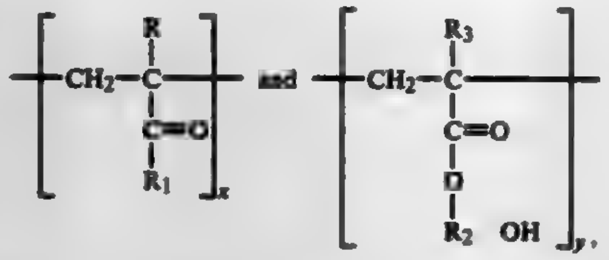
13. A composition comprising in combination:

(i) water-soluble zinc compound,

(ii) water-soluble chromate compound,

(iii) water-soluble orthophosphate or precursor thereof, and

(iiii) water-soluble polymer comprising moieties derived from acrylic acid or water-soluble salt thereof and moieties of hydroxylated lower alkyl acrylate, wherein the moieties of said polymer have the following formulas:



where R is hydrogen or a lower alkyl of from 1 to 3 carbon atoms; R_1 is OH, NH_2 or OM where M is a water-soluble cation; R_2 is a lower alkyl of about 2 to 6 carbon atoms, R_3 is H or lower alkyl of from 1 to 3 carbon atoms and the mole ratio of x:y is 1:4 to 36:1, said polymer being capable of retaining a corrosion inhibiting amount of said zinc compound in soluble form in said aqueous medium.

4,324,685

BLOOD SERUM REFERENCE STANDARD

Allan L. Louderback, Temple City, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Continuation of Ser. No. 925,481, Jul. 17, 1978, abandoned. This application Mar. 21, 1980, Ser. No. 132,609

Int. Cl.³ G01N *33/16;* C09K *3/00*

U.S. Cl. 252—408 5 Claims

1. An improved blood serum reference composition of the type comprising blood serum having constituents of known values, characterized in that said standard further comprises a water soluble amine chloride selected from a group consisting of dimethylamine hydrochloride, diethylamine hydrochloride, monomethylamine hydrochloride, monoethylamine hydrochloride, trimethylamine hydrochloride, and triethylamine hydrochloride.

4. A process for reconstituting a freeze-dried blood serum reference composition comprising blood serum having constituents of known values comprising adding to said freeze-dried standard a diluent comprising a water soluble amine chloride selected from a group consisting of dimethylamine hydrochloride, diethylamine hydrochloride, monomethylamine hydrochloride, monoethylamine hydrochloride, trimethylamine hydrochloride, and triethylamine hydrochloride and a composition selected from a group consisting of sodium carbonate and sodium bicarbonate.

4,324,686

HEMATOLOGY CONTROL COMPOSITION AND METHODS FOR ITS USE

David D. Mundschenk, Minneapolis, Minn., assignor to R & D Systems, Inc., Minneapolis, Minn.

Filed Jun. 11, 1979, Ser. No. 47,063

Int. Cl.³ G01N *33/16;* C09K *3/00*

U.S. Cl. 252—408 11 Claims

1. A control blood platelet preparation comprising bovine or porcine blood platelets stabilized as to size and against surface aggregation and derived, respectively, from bovine or porcine platelet rich blood plasma, the platelets of the preparation being larger in size than, but substantially retaining the natural log-normal volume size distribution of, the platelet rich blood plasma from which the platelets were derived.

8. A method for preparing a control blood preparation comprising:

(a) Providing bovine or porcine platelet rich blood plasma;

(b) Swelling the platelets of said plasma to a size within the size range corresponding to human blood platelets while substantially maintaining the natural log-normal platelet distribution; and

(c) Stabilizing and fixing the platelets to inhibit surface aggregation and fix their size.

4,324,687

BLOOD BIOCHEMISTRY CONTROL STANDARD

Allan L. Louderback, 9661 Longden Ave., Temple City, Calif. 91780, and Paul R. Szatkowski, 24 Winthrop Rd., Bethel, Conn. 06801

Continuation-in-part of Ser. No. 12,849, Feb. 15, 1979, abandoned. This application Jun. 23, 1980, Ser. No. 162,065

Int. Cl.³ G01N *33/48;* C09K *3/00*

U.S. Cl. 252—408 4 Claims

1. A blood biochemistry control standard for the quality control of the analytical measurement of non-gaseous blood biochemistry components comprising an aqueous suspension of red blood cells which are (a) stabilized by mild treatment with aldehyde and saline at ambient temperature whereby said cells are lyseable in water and then (b) slowly and gradually equilibrated by washing over a period of at least about five minutes with an aqueous biochemical wash solution of at least one additionally incorporated non-gaseous biochemical analyte selected from the group consisting of the following analytes in the following concentrations of clinical diagnostic significance:

Sodium: 120 to 160 meq/l
Potassium: 2 to 9 meq/l
Urea: 10 to 130 mg/dl
Glucose: 25 to 500 mg/dl
Uric acid: 2 to 12 mg/dl
Chloride: 80 to 130 meq/l
Magnesium: 0.5 to 5 meq/l
Creatinine: 0.5 to 10 mg/dl
Phosphorus: 0.5 to 10 mg/dl
Calcium: 0.5 to 14 mg/dl
Bicarbonate: 3 to 40 meq/l
Iron: 25 to 300 μgm/dl
Lithium: 0.2 to 4 meq/l
Bilirubin: 0.5 to 30 mg/dl.

4,324,688

REGENERATION OF CRACKING CATALYST

Leonce F. Castagnos, Jr., Nederland; William R. Menzies, III, Houston, and Roy E. Pratt, Groves, all of Tex., assignors to Texaco Inc., White Plains, N.Y.

Continuation of Ser. No. 963,243, Nov. 22, 1978, abandoned, which is a continuation of Ser. No. 535,270, Dec. 23, 1974, abandoned, which is a continuation-in-part of Ser. No. 272,264, Jul. 17, 1972, abandoned. This application Apr. 21, 1980, Ser. No. 142,582

Int. Cl.³ B01J *29/38, 21/20;* C10G *11/05, 11/04*

U.S. Cl. 252—417 3 Claims

1. In a process for regeneration of coke-contaminated fluidized cracking catalyst which has been partially deactivated with coke deposits in a fluidized catalytic cracking zone, wherein said coke-contaminated catalyst is introduced into a single dense catalyst phase contained in the lower portion of a regeneration vessel maintained at a temperature sufficient to support combustion of the coke, wherein said dense catalyst phase is fluidized by an upwardly flowing molecular oxygen-containing regeneration gas which combusts said coke, wherein a single dilute phase comprising regeneration gas containing oxygen and carbon oxides, and entrained catalyst is maintained in the upper portion of said regeneration vessel in direct communication with said dense catalyst phase, wherein a flue gas comprising carbon oxides is recovered from the top of said regeneration vessel, and wherein a regenerated catalyst of reduced coke contamination is recovered from said dense catalyst phase; the improvement for essentially completely combusting said coke to carbon dioxide in said dense catalyst phase and for avoiding afterburning in said dilute phase which comprises:

(a) maintaining said dense phase catalyst bed at a temperature of 1420° F. to 1445° F. and greater than the temperature in the dilute phase but sufficient to initiate and substantially complete carbon monoxide combustion within said dense phase bed, wherein said dense phase temperature is less than a temperature which will thermally deactivate said catalyst;

(b) maintaining a flow of oxygen-containing regeneration gas to said dense phase bed sufficient for maintaining a molar excess of oxygen in said flue gas; and

(c) maintaining an amount of catalyst in said dense phase bed sufficient to provide adequate catalyst residence time for burning coke from said catalyst and absorbing heat of combustion such that said regeneration gas and said catalyst entering said dilute phase are at a temperature sufficient for combustion of carbon monoxide to carbon dioxide and less than a temperature which will thermally deactivate said catalyst.

2. The method of claim 1, including adjusting oxygen supplied to said dense phase regeneration zone for varying the mole percent excess oxygen in said flue gas, wherein a change in said mole percent excess oxygen is inversely proportional to carbon remaining on regenerated catalyst and to percent carbon monoxide in said flue gas wherein the molar excess of oxygen in said flue gas is maintained within the range of about 1–10 volume percent, wherein residence time of catalyst in said dense phase is within the range of about 3–10 minutes, wherein said dilute phase temperature is maintained within the range of 1375° F. to about 1395° F.; wherein carbon monoxide content of said flue gas is about 500 ppm or less, and wherein carbon on regenerated catalyst is about 0.15 weight percent or less.

3. In a process for regeneration of coke-contaminated fluidized cracking catalyst which has been partially deactivated with coke deposits in a fluidized catalytic cracking zone, wherein said coke-contaminated catalyst is introduced into a single dense catalyst phase contained in the lower portion of a regeneration vessel maintained at a temperature sufficient to support combustion of the coke, wherein said dense catalyst phase is fluidized by an upwardly flowing molecular oxygen-containing regeneration gas which combusts said coke, wherein a single dilute phase comprising regeneration gas containing oxygen and carbon oxides and entrained catalyst is

maintained in the upper portion of said regeneration vessel in direct communication with said dense catalyst phase, wherein a flue gas comprising carbon oxides is recovered from the top of said regenerator vessel, and wherein a regenerated catalyst of reduced coke contamination is recovered from said dense catalyst phase, the improvement for essentially completely combusting said coke to carbon dioxide in said dense catalyst phase and for avoiding afterburning in said dilute phase which comprises:

(a) maintaining said dense phase catalyst bed at a temperature of 1420° F. to 1445° F. and greater than the temperature of the dilute phase but sufficient to initiate and to substantially complete carbon monoxide combustion within said dense phase bed, wherein said dense phase temperature is less than a temperature which will thermally deactivate said catalyst;

(b) maintaining a flow of oxygen-containing regeneration gas to said dense phase bed sufficient for maintaining a molar excess of oxygen in said flue gas;

(c) maintaining an amount of catalyst in said dense phase bed sufficient to provide adequate catalyst residence time for burning coke from said catalyst and absorbing heat of combustion such that said regeneration gas and said catalyst entering said dilute phase are at a temperature sufficient for combustion of carbon monoxide to carbon dioxide and less than a temperature which will thermally deactivate said catalyst; and

(d) simultaneously adjusting said dense catalyst phase temperature and the flow of oxygen to said fluidized dense catalyst phase to inhibit afterburn of carbon monoxide to carbon dioxide within said dilute phase, wherein a change in said dense phase temperature is inversely proportional to a change in said dilute phase temperature, wherein a change in mole percent oxygen in said flue gas is inversely proportional to residual carbon on regenerated catalyst and carbon monoxide content of said flue gas, wherein excess oxygen in said flue gas is within the range of about 1–10 mole percent; wherein residence time of catalyst in said dense phase is within the range of about 3–10 minutes, wherein said dilute phase temperature is maintained within the range of about 1375° F. to about 1395° F., wherein carbon monoxide content of said flue gas is about 500 ppm or less, and wherein carbon on regenerated catalyst is about 0.15 weight percent or less.

4,324,689

HIGH CARBON CONTENT CHROMATOGRAPHIC PACKING AND METHOD FOR MAKING SAME

Ramesh M. Shah, 3028 Lehigh Ct., Indianapolis, Ind. 46268

Filed Feb. 26, 1980, Ser. No. 124,711

Int. Cl.[3] B01J *20/30, 20/22;* **B01D** *15/08*

U.S. Cl. 252—428 **12 Claims**

1. A method for making a 'reverse-phase' chromatographic packing having a carbon content of at least about 20% by weight comprising hydrolyzing silica gel by treating the silica gel with a mixture of sulfuric and nitric acids at a temperature which does not exceed 100° C., the strength of the acid mixture being sufficient to provide an exothermic reaction upon admixture with the silica gel, washing the treated silica gel to remove said acids, and drying the treated silica gel to maintain a water content of between about 5.5% to 9.5% water by weight of the silica gel, silanizing the hydrolyzed silica gel by: (a) reacting it with an alkylchlorosilane at a temperature which does not exceed 100° C., (b) washing the resulting product and (c) drying it to maintain a moisture content of between about 5.5% to 9.5% water by weight of the silica gel, and hydrolyzing the bonded chlorosilane to replace the chlorine atoms of the bonded chlorosilane with hydroxyl groups, washing the hydrolyzed product and then drying it, said carbon content being based upon the alkyl group of the bonded alkylchlorosilane.

10. A method according to claim 1 wherein reaction (a) is repeated after washing step (b) to obtain a silanized silica having a carbon content of at least 20% by weight.

11. A method according to claim 1 wherein a water content of between 7.5% and 8.5% by weight of the silica gel is maintained prior to hydrolyzing the bonded chlorosilane.

4,324,690

ALPHA-OLEFIN POLYMERIZATION CATALYST

Nicholas M. Karayannis, Naperville, and John S. Skryantz, Lisle, both of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Continuation-in-part of Ser. No. 14,891, Feb. 15, 1979, abandoned. This application Jan. 21, 1980, Ser. No. 113,542

Int. Cl.[3] C08F *4/64*

U.S. Cl. 252—429 B **17 Claims**

1. A catalyst composition comprising

(A) at least one organoaluminum component; and

(B) a solid reaction product of components comprising

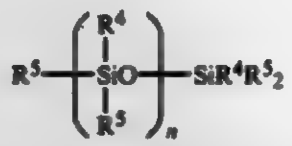
(1) at least one titanium(IV) halide or haloalcoholate containing 1 to about 20 carbon atoms per alcoholate group;

(2) at least one organic electron donor containing at least one of oxygen, nitrogen, sulfur and phosphorus; and

(3) at least one hydrocarbon-insoluble, magnesium-containing pretreatment product of components comprising

(a) at least one magnesium alcoholate and

(b) at least one organosilicon component selected from the group conisting of silanes corresponding to the formula R_xSiX_{4-x} wherein each R is independently a hydrocarbyl radical of 1 to about 20 carbon atoms, X is hydrogen or halogen and $1 \leqq x \leqq 4$; hydrocarbyl disilazanes and trisilazanes containing 1 to about 20 carbon atoms per hydrocarbyl radical; and liquid polysiloxanes corresponding to the formula



wherein each R^4 is independently a hydrocarbyl radical of 1 to about 20 carbon atoms, each R^5 is independently hydrogen or R^4 and n is an integer equal to or greater than 2,

wherein (3)(b) is present in an amount effective to improve polymerization performance, the atomic ratio of titanium in (1) to metal in (3) (a) is at least about 0.5:1, and (2) is employed in an amount ranging from about 0.001 to about 1 mole per gram-atom of titaniun contained in (1); said reaction product being prepared by combining, in the substantial absence of extraneous catalyst poisons, component (1) with a suspension of component (3) in an inert hydrocarbon or halogenated hydrocarbon diluent and then adding component (2) to the resulting mixture, or by adding a mixture of components (1) and (2) to a suspension of (3) in an inert hydrocarbon or halogenated hydrocarbon diluent.

4,324,691

CATALYST COMPONENT

Angus J. Hartshorn, Runcorn, and Eric Jones, Kelsall, both of England, assignors to Imperial Chemical Industries Limited, London, England

Filed Jul. 1, 1980, Ser. No. 164,928

Claims priority, application United Kingdom, Jan. 10, 1980, 00889/80; Jun. 6, 1980, 18583/80

Int. Cl.[3] C08F *4/64*

U.S. Cl. 252—429 B **30 Claims**

1. A catalyst component which is the product of reacting a particulate support material which has a reactive surface comprising a plurality of sites on the surface of the support which are capable of abstracting a magnesium hydrocarbyl from a solution thereof with (a) at least one organomagnesium compound in which magnesium is directly bonded through a carbon atom to a first hydrocarbyl group and is bonded to a halogen, or oxyhydrocarbyl or a second hydrocarbyl group, which hydrocarbyl group(s) is (are) alkyl, aryl, cycloalkyl, aralkyl, alkadienyl or alkenyl, (b) at least one aluminum compound of the general formula: R_nAlY_{3-n} wherein R, each of which may be the same or different, represents a hydrocarbyl group which is an alkyl, aryl, cycloalkyl, aralkyl, or alkadienyl group; n is 0, 1, 2, 3 or a fraction less than 3 and Y is a singly charged ligand which is hydride, fluoride, chloride, bromide, iodide or oxyhydrocarbyl, (c) at least one transition metal compound of Groups IVA, VA or VIA of the Periodic Table which is known to be useful in forming Ziegler-Natta catalysts, (d) at least one pacifying agent which is capable of breaking metal-carbon or metal-hydrogen bonds in the catalyst component but does not have a deleterious effect on the catalyst component and which is used in sufficient quantity to break substantially all the metal-hydrocarbyl or metal-hydride bonds in the catalyst component, and optionally one or more compounds selected from the group consisting of

an organometallic compound of the general formula: $R_m{}^1MX_p$ wherein M is a metal of Groups IA, IIA, IIB, IIIB, IVA, VA OR VIA of the Periodic Table, R^1 is a hydrocarbyl or a substituted hydrocarbyl group, X is a halogen, m is an integer up to the highest valency of the metal M and p is 0 or an integer up to 2 less than the valency of the metal M, except when M is a metal from Group VIA, p is always 0, and when M is a metal from Groups IVA, VA or VIA m has a value from 2 to the highest valency of the metal and p has a value from 0 to a value of 2 less than the valency of the metal M,

a halogenating agent and

a Lewis Base compound, with the proviso (i) that the particulate support material is treated with the at least one organomagnesium compound, the at least one aluminum compound of general formula R_nAlY_{3-n}, the at least one transition metal compound of Groups IVA, VA or VIA, and the one or more compounds selected from the aforesaid group, where one or more is used, prior to being treated with the at least one pacifying agent, except that where (a) the pacifying agent is a hydrogen halide and (b) the particulate support material is treated with the aluminum compound of general formula R_nAlY_{3-n} and the at least one organomagnesium compound separately, the pacifying agent may be added to the support after the support has been treated with the at least one organomagnesium compound and the aluminum compound of general formula R_nAlY_{3-n} and before the support is treated with the at least one transition metal compound of Groups IVA, VA or VIA and (ii) that where the support is treated with an organometallic compound $R_m{}^1MX_p$ it is treated with a halogenating agent and/or a Lewis base compound, in which catalyst component the molar ratio of the aluminum compound of general formula R_nAlY_{3-n} to the organomagnesium compound is between 0.5 and 100 and the molar ratio of the aforesaid aluminum compound to the transition metal compound is between 1.0 and 2000.

4,324,692

POLYMERIZATION CATALYST AND PROCESS

Alexander Johnstone, Stenhousemuir, Scotland, assignor to BP Chemicals Limited, London, England

Filed Oct. 8, 1980, Ser. No. 194,999

Claims priority, application United Kingdom, Oct. 12, 1979, 35462/79

Int. Cl.[3] C08F *4/64*

U.S. Cl. 252—429 B **9 Claims**

1. A process for preparing a supported Ziegler catalyst component comprising reacting together an alcohol and a halogen-containing transition metal compound having the general formula MOX_{m-2} or $M(OR)_{m-n}X_n$, wherein M is a transition metal, X is halogen, R is hydrocarbyl, m is the valency of M and n is an integer from 1 to m in the presence of a substantially anhydrous zinc halide so as to liberate hydrogen halide therefrom, and impregnating a support material containing at least some surface hydroxyl groups with the reaction mixture.

4,324,693

OLEFIN POLYMERIZATION CATALYST

Gregory G. Arzoumanidis, Naperville, and Sam S. Lee, Hoffman Estates, both of Ill., assignors to Standard Oil Company (Indiana)

Filed Oct. 10, 1980, Ser. No. 196,012

Int. Cl.[3] C08F *4/64*

U.S. Cl. 252—429 B **16 Claims**

1. In a method to produce an alpha-olefin polymerization catalyst comprising reducing titanium tetrachloride with an aluminum alkyl, contacting the resulting reduced solid with a pretreatment amount of alpha-olefin monomer under polymerization conditions, and reacting the resulting product with an ether complexing agent and additional titanium tetrachloride, the improvement comprising reacting a mixture of di-n-butyl and diisoamylethers in a molar ratio to the reduced titanium compound of greater than 1.15 to 1.

4,324,694

SUPPORTED CATALYSTS CONTAINING VANADIUM PENTOXIDE, TITANIUM DIOXIDE, PHOSPHORUS, RUBIDIUM AND/OR CESIUM, WITH OR WITHOUT ZIRCONIUM DIOXIDE

Peter Reuter, Bad Duerkheim; Kurt Blechschmitt, Schifferstadt, and Friedrich Wirth, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Jun. 9, 1980, Ser. No. 157,782

Claims priority, application Fed. Rep. of Germany, Jun. 26, 1979, 2925682

Int. Cl.[3] B01J *21/06, 23/04, 23/22, 27/16*

U.S. Cl. 252—435 **12 Claims**

1. A supported catalyst which contains vanadium pentoxide, titanium dioxide, phosphorus, rubidium and/or cesium, with or without zirconium dioxide, obtained by applying an appropriate solution or suspension of the components in two layers onto a preheated inert carrier, so that after drying, the catalyst

carries an 0.02–2 mm thick coating of the catalytic material, wherein the catalytic material used contains from 1 to 40% by weight of V_2O_5, from 60 to 99% by weight of TiO_2 and any optionally added ZrO_2 and, based on the total amount of TiO_2, ZrO_2 and V_2O_5, up to 2% by weight of phosphorus and up to 1.5% by weight of rubidium and/or cesium, and the application of the material is effected by first providing the preheated carrier with a layer of the catalytic material which contains more than 0.2 and up to 2% by weight of phosphorus but no rubidium and/or cesium and then providing the carrier, thus coated with a first, inner layer, with a second, outer layer of the catalytic material which contains from 0 to 0.2% by weight of phosphorus and from 0.02 to 1.5% by weight of rubidium and/or cesium, the coating being applied in such a way that the catalytic material of the outer layer—which is free from phosphorus or has the lower phosphorus content—of the supported catalyst accounts for from 10 to 90% by weight of the total catalytic material.

4,324,695

CATALYST COMPOSITIONS OF TRANSITION METAL CARBONYL COMPLEXES INTERCALCATED WITH LAMELLAR MATERIALS

James A. Hinnenkamp, Cincinnati, Ohio, assignor to National Distillers & Chemical Corp., New York, N.Y.

Filed Nov. 17, 1980, Ser. No. 207,166

Int. Cl.[3] C01B *1/02, 2/06*

U.S. Cl. 252—437 **6 Claims**

1. An intercalate composition comprising graphite interca-

lated with transition metal, said transition metal being present substantially as transition metal carbonyl.

4,324,696
METHOD OF PREPARING CRYSTALLINE ZEOLITE CATALYST OF HIGH ACTIVITY
Joseph N. Miale, Lawrenceville, N.J., assignor to Mobil Oil Corporation, New York, N.Y.
Filed Mar. 10, 1980, Ser. No. 128,757
Int. Cl.[3] **B01J** *29/28*
U.S. Cl. 252—455 Z **8 Claims**

1. A method for preparing a super active synthetic crystalline zeolite catalyst material of high hydrocarbon conversion activity having a constraint index between about $\frac{1}{2}$ and 12 and a SiO_2/Al_2O_3 mole ratio greater than 7 which comprises contacting the hydrogen form of zeolite ZSM-12, ZSM-20 or ZSM-23 with steam followed by base exchange of the resultant steamed product with an ammonium salt.

4,324,697
FLUORIDED COMPOSITE CATALYST
Paul H. Lewis, Groves, Tex., and James C. Vartuli, West Chester, Pa., assignors to Texaco Inc., White Plains, N.Y.
Filed Oct. 20, 1980, Ser. No. 198,662
Int. Cl.[3] **B01J** *29/12*
U.S. Cl. 252—455 Z **3 Claims**

1. An improved composite cracking catalyst consisting essentially of from about 90 to about 95 percent by weight of a composite of a Y zeolite in a silica-alumina matrix, and from about 5 to about 10 percent by weight of a fluorided metallic reforming catalyst comprising platinum on alumina and containing from about 0.01 to about 2 percent by weight platinum and from about 0.5 to about 5 percent by weight fluorine.

4,324,698
FLUORIDED CRACKING CATALYST
Paul H. Lewis; Joseph A. Durkin, both of Groves, and Joseph A. Froelich, Nederland, all of Tex., assignors to Texaco Inc., White Plains, N.Y.
Filed Oct. 20, 1980, Ser. No. 198,859
Int. Cl.[3] **B01J** *29/12, 37/26*
U.S. Cl. 252—455 Z **8 Claims**

1. An improved fluorided zeolite type cracking catalyst consisting essentially of at least 90 percent by weight of a composite of a Y-zeolite in a silica-alumina matrix and containing about 0.1 to about 5 percent by weight of fluorine, said improved cracking catalyst prepared by contacting said composite with an aqueous solution of a fluorine compound, in an amount just sufficient for incipient wetting of said composite for a period of 16 to 24 hours, drying, and calcining the resulting fluorided catalyst.

8. An improved method for the preparation of a fluorided zeolite cracking catalyst containing from about 0.1 to about 5 percent fluorine by weight which comprises contacting a composite of a Y zeolite in a silica-alumina matrix with an aqueous solution of a fluorine compound in an amount just sufficient to produce incipient wetness of said composite for a period of 16 to 24 hours at 32° F., and thereafter drying and calcining the resulting fluorided composite.

4,324,699
SUPPORTED CATALYSTS AND THEIR TREATMENT FOR THE PREPARATION OF ETHYLENE OXIDE
Wolf D. Mross; Eckart Titzenthaler, both of Ludwigshafen; Juergen Koopmann, Neustadt; Volker Vogt, Wachenheim, and Matthias Schwarzmann, Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany
Filed Jan. 28, 1980, Ser. No. 115,732
Claims priority, application Fed. Rep. of Germany, Feb. 9, 1979, 2904919
Int. Cl.[3] **B01J** *21/04, 23/04, 23/50*
U.S. Cl. 252—463 **8 Claims**

1. A process for the treatment of supported catalysts containing silver and alkali metals, for the preparation of ethylene oxide from ethylene and oxygen in the gas phase, which process comprises modifying a new supported catalyst which already contains metallic silver and may or may not contain the light alkali metal lithium and/or sodium with a modifier solution containing at least one of the heavy alkali metals, potassium, rubidium and/or cesium, the modifier solution used also containing
(a) a surfactant and/or
(b) a reducing agent.

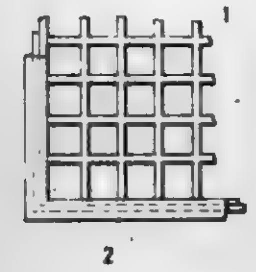
4,324,700
PROCESS FOR PREPARING PLATINUM GROUP METAL CATALYSTS
John P. Heffer, Reading, England, assignor to Johnson Matthey Public Limited Company, London, England
Continuation-in-part of Ser. No. 100,881, Dec. 6, 1979, abandoned. This application Nov. 3, 1980, Ser. No. 203,626
Claims priority, application United Kingdom, Dec. 8, 1978, 47720/78
Int. Cl.[3] **B01J** *23/42, 23/44, 23/46*
U.S. Cl. 252—472 **9 Claims**

1. A process for the preparation of a catalyst containing a catalytic metal comprising the steps of:
(a) precipitation of a hydroxide or hydrated oxide of the catalytic metal from a solution containing a water soluble salt of the catalytic metal,
(b) collection of the precipitate from step (a) and redispersal to form a dispersion in a fresh quantity of water,
(c) passage through the dispersion of step (b) of a sufficient quantity of sulphur dioxide gas to cause dissolution by sulphurous acid of substantially all the solid hydroxide or hydrated oxide,
(d) contacting a solid support, to which a washcoat of a high surface area refractory metal oxide has previously been applied, with the requisite volume of solution obtained from step (c) thus causing adsorption of a catalytic metal containing species to the external surface of the said solid support, and
(e) drying and firing the solid obtained from step (d) thus producing an active catalyst.

4,324,701
RECTANGULAR-SOLID PACKAGED CATALYST ASSEMBLY
Mitsuyasu Honda; Yoshihiro Shiraishi, and Toru Seto, all of Hiroshima, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Japan
Filed Dec. 3, 1980, Ser. No. 212,559
Claims priority, application Japan, Dec. 13, 1979, 54-161922
Int. Cl.[3] **B01J** *12/00;* **F01N** *3/28*
U.S. Cl. 252—477 R **3 Claims**

1. An improved rectangular-solid catalyst assembly of the type having a plurality of rectangular-solid unit catalysts stacked and assembled together, the unit catalysts having a honeycomb structure with a multiplicity of gas passages each extending from a gas inlet end to a gas outlet end, the improvement comprising, in combination therewith, heat-resistant

packings covering at least the vertices and the neighboring peripheral areas of the faces of the unit catalysts other than the gas-passage faces thereof and also covering the edges of the gas-passage faces surrounding the gas passages, a rectangular-



solid housing, said packings being integrally secured to said unit catalysts and packed together in said rectangular-solid housing, and retaining strips placed over the edges of the gas-passage faces on at least one of said unit catalysts and securely attached to said housing:

4,324,702
OXIDE THERMISTOR COMPOSITIONS
Yoshihiro Matsuo, Neyagawa; Takuoki Hata, Sakai, and Takayuki Kuroda, Nishinomiya, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan
Filed Oct. 28, 1980, Ser. No. 201,441
Claims priority, application Japan, Nov. 2, 1979, 54-142233; Nov. 2, 1979, 54-142239; Nov. 10, 1979, 54-145840; Dec. 14, 1979, 54-162949; Dec. 14, 1979, 54-162950; Jan. 18, 1980, 55-4905
Int. Cl.[3] **H01B** *1/06*
U.S. Cl. 252—519 **5 Claims**

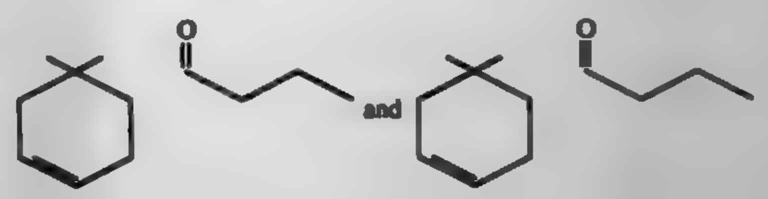
1. Oxide thermistor composition consisting essentially of metal oxide, wherein said metal consists essentially of 94.6 to 30 atomic % of Mn ion, 5 to 30 atomic % of Ni ion, 0.1 to 15 atomic % of at least one kind of ion selected from the group consisting of Cu and Fe, and 0.3 to 40 atomic % of Cr ion.

4,324,703
POLYOL FRAGRANCE FIXATIVES
Abraham Seldner, Princeton, N.J., assignor to Amerchol Corporation, Edison, N.J.
Division of Ser. No. 106,791, Dec. 26, 1979, Pat. No. 4,264,478, which is a continuation-in-part of Ser. No. 955,672, Oct. 30, 1978, abandoned. This application Dec. 11, 1980, Ser. No. 215,972
Int. Cl.[3] **A61K** *7/46*
U.S. Cl. 252—522 R **14 Claims**

1. A fragrance composition comprising aromatic materials and from about 0.5% to about 5% by weight of the alcoholic, aqueous or hydroalcoholic content of said composition of an alkoxylated methyl glucoside.

4,324,704
PROCESS FOR HYDROGENATION OF DAMASCENONE, PRODUCTS PRODUCED THEREBY AND ORGANOLEPTIC USES OF SAID PRODUCTS
Robert W. Trenkle, Bricktown; Braja D. Mookherjee; Frederick L. Schmitt, both of Holmdel; Manfred H. Vock, Locust; Joaquin F. Vinals, Red Bank, all of N.J., and Jacob Kiwala, Brooklyn, N.Y., assignors to International Flavors & Fragrances Inc., New York, N.Y.
Division of Ser. No. 969,852, Dec. 15, 1978, Pat. No. 4,292,447. This application Feb. 27, 1981, Ser. No. 238,680
Int. Cl.[3] **A61K** *7/46;* **C11B** *9/00*
U.S. Cl. 252—522 R **3 Claims**

1. A process for augmenting or enhancing the aroma of a perfume composition or a cologne comprising the step of adding to a perfume base or a cologne base an aroma augmenting or enhancing quantity of at least one compound having the structure selected from the group consisting of:



4,324,705
PROCESS FOR RECOVERING MATERIALS FROM SCRAPPED FILM
Kunihiro Seto, and Kyoichi Naruo, both of Fujinomiya, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Jun. 12, 1980, Ser. No. 158,755
Claims priority, application Japan, Jun. 13, 1979, 54-74259
Int. Cl.[3] **C08J** *11/04*
U.S. Cl. 521—44 **12 Claims**

1. A process for recovering materials from scrapped photographic film which comprises separating coating layers and a film base from a scrapped photographic film having at least one coating layer on a plastic film base, wherein the improvement comprises:
impregnating the coating layers of said scrapped film with a strong alkaline solution having a pH of at least 9.0 at 25° C. and stripping the coating layers by means of high pressure jet water having a temperature of from about 5° to 95° C. and a pressure of from about 3 to 50 kg/cm^2 to separate said coating layers from the film base before the coating layers are dissolved in or separated from the film base by said alkaline solution.

4,324,706
FRICTION MATERIAL
Yutaka Tabe; Hiromitsu Takemoto; Keizo Shimada, all of Iwakuni, and Yasusaburo Sugita, Tokyo, all of Japan, assignors to Teijin Limited and Adebono Brake Industry Co., Ltd., both of Osaka, Japan
Filed Jan. 14, 1981, Ser. No. 224,967
Claims priority, application Japan, Jan. 22, 1980, 55-5216
Int. Cl.[3] **C08L** *21/00*
U.S. Cl. 523—149 **16 Claims**

1. A friction material comprising the elements of:
(A) 5 to 70% by weight of pulp-like particles consisting essentially of a heat-resistant aromatic polymeric material;
(B) 1 to 70% by weight of a fibrous material comprising at least one member selected from the group consisting of inorganic fibrous materials and heat-resistant organic fibrous materials;
(C) 1 to 35% by weight of a friction-regulating agent and;
(D) 5 to 40% by weight of a thermosetting polymeric resin.

4,324,707
FLOWABLE POLYACRYLONITRILE POWER TREATED WITH ESSENTIALLY PURE SOLVENT
Gordon P. Hungerford, Palmyra, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.
Filed Apr. 1, 1980, Ser. No. 136,192
Int. Cl.[3] **C08K** *5/36*
U.S. Cl. 524—173 **9 Claims**

1. A method for preparing free flowing particles consisting essentially of polyacrylonitrile polymer and essentially pure dimethyl sulfoxide which comprises:
(a) maintaining an agitated bed of finely-divided polyacrylonitrile particles in a dry essentially moisture free contact zone at temperature from about 1° C. to 18° C.;
(b) injecting finely-dispersed dimethyl sulfoxide into said contact zone at an addition rate sufficiently low to prevent significant agglomeration of the polyacrylonitrile particles, wherein about 80 to 140 parts by weight of dimethyl

sulfoxide are added per 100 parts by weight of polyacrylonitrile; and

(c) permitting migration of an effective amount of dimethyl sulfoxide into said particles while maintaining the contact zone below 18° C.

4,324,708

METALLIC PAINTING

Satoru Ito; Tadashi Watanabe, and Shinji Sugiura, all of Hiratsuka, Japan, assignors to Kansai Paint Co., Ltd., Hyogo, Japan

Division of Ser. No. 134,140, Mar. 26, 1980. This application Oct. 31, 1980, Ser. No. 202,763

Claims priority, application Japan, Apr. 5, 1979, 54-40305

Int. Cl.[3] C08L *1/10, 1/14*

U.S. Cl. 524—599 12 Claims

1. A metallic paint comprising:

(a) a modified vinyl-type copolymer obtained by copolymerizing 5–75% by weight of cellulose acetate butyrate with 95–25% by weight of a monomer component consisting of one or more vinyl-type monomers, as a vehicle component,

(b) a metallic powder, and

(c) an organic solvent.

4,324,709

PROCESS FOR INCORPORATING A MODIFIER OF PROPERTIES OF A SHAPED SYNTHETIC POLYMER CONTAINING A BIODEGRADABLE SUBSTANCE THEREIN, AND THE PRODUCT OF THE PROCESS

Gerald J. L. Griffin, London, England, assignor to Coloroll Limited, London, England

Division of Ser. No. 940,839, Sep. 8, 1978, Pat. No. 4,218,350. This application Feb. 20, 1980, Ser. No. 122,851

Claims priority, application United Kingdom, Sep. 16, 1977, 38772/77

Int. Cl.[3] C08L *23/06, 23/12, 3/02*

U.S. Cl. 523—210 5 Claims

1. A method of manufacturing a synthetic polymer based composition including a synthetic polymer and starch granules, said method comprising the steps of suspending the starch granules in a solution of a substance which modifies the properties of the composition in a solvent which does not dissolve the starch granules, evaporating the solvent thereby leaving the granules coated with the modifying substance, and mixing the coated starch granules with the synthetic polymer.

4,324,710

NATURALLY OCCURRING THERMOPLASTIC RESINS AS A SUBSTITUTE FOR VARIOUS PETROLEUM-DERIVED MATERIALS IN RUBBER STOCKS

James A. Davis, Uniontown, and Robert C. Koch, Akron, both of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Oct. 2, 1980, Ser. No. 193,198

Int. Cl.[3] C08L *93/04;* C09F *1/00*

U.S. Cl. 524—76 9 Claims

1. In a cured rubber stock containing conventional rubber components, said stock being a layer in a rubber article, the improvement, comprising:

the stock layer having incorporated therein prior to curing thereof a minor portion of a thermoplastic resin derived from crude wood rosin and comprising carboxylic acid groups,

said thermoplastic resin substituted for at least 25% by weight of a petroleum derived product normally contained in said stock layer.

4,324,711

MELT-ADHESIVE TRAFFIC PAINT COMPOSITION

Tsugio Tanaka, Ageo; Kohichi Hashimoto, Urawa, and Yukio Nagasaka, Kawagoe, all of Japan, assignors to Atom Chemical Paint Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 805,465, Jun. 10, 1977, abandoned. This application Jun. 4, 1979, Ser. No. 45,020

Claims priority, application Japan, Jun. 29, 1976, 51-76044

Int. Cl.[3] C08L *77/08, 93/04;* C09D *3/42*

U.S. Cl. 523—172 12 Claims

1. A melt-adhesive traffic paint composition having improved low temperature stability consisting essentially of:

20–35% by weight of a dimer acid modified polyamide resin, said polyamide resin being prepared by condensing a dimer acid with a polyamine selected from the group consisting of ethylenediamine and diethylenetriamine,

1–5% by weight of a plasticizer selected from the group consisting of a phthalate, a trimellitate, a mixture of saturated linear C_6, C_8 and C_{10} alcohols, a mixture of saturated linear C_8 and C_{10} alcohols and a toluenesulfonamide,

30–45% by weight of an inorganic filler,

the balance being a coloring pigment and a reflective agent.

4,324,712

SILICONE RESIN COATING COMPOSITION

Howard A. Vaughn, Jr., Schenectady, N.Y., assignor to General Electric Company, Waterford, N.Y.

Continuation-in-part of Ser. No. 964,910, Nov. 30, 1978. This application Jan. 18, 1980, Ser. No. 113,278

Int. Cl.[3] C08K *3/36;* C08L *83/06, 83/08*

U.S. Cl. 524—767 11 Claims

1. An aqueous coating composition comprising a mixture of colloidal silica, a lower aliphatic alcohol-water solution of the partial condensate of a silanol of the formula $RSi(OH)_3$, wherein R is selected from the group consisting of alkyl having from 1 to 3 carbon atoms and aryl, and flexibilizing amount of a linear functionally terminated oligosiloxane having the general formula,

$$X-\underset{R''}{\overset{R'}{\underset{|}{\overset{|}{Si}}}}\left(-O-\underset{R''}{\overset{R'}{\underset{|}{\overset{|}{Si}}}}-\right)_n O-\underset{R''}{\overset{R'}{\underset{|}{\overset{|}{Si}}}}-X$$

wherein X is selected from the group consisting of hydroxy, alkoxy,

$$\text{and } -\overset{\overset{Y}{|}}{N}-Y$$

wherein Y is hydrogen or alkyl, R′ and R″ may be the same or different and are selected from the group consisting of alkyl, haloalkyl, cyanoalkyl and alkenyl and n is a number from about 1 to about 18, at least 70 weight percent of the silanol being $CH_3Si(OH)_3$, said composition containing 10 to 50 weight percent solids consisting essentially of 10 to 70 weight percent colloidal silica, 30 to 90 weight percent of the partial condensate, and 0.5 to 5 weight percent of said linear functionally terminated oligosiloxane, said composition having a pH of 7.1 to about 7.8.

4,324,713

TWO-PACKAGE SOLVENTLESS RUST PREVENTIVE MATERIAL

Ryuji Kita, Yokohama; Hisataka Komai, Kamakura; Makoto Wakabayashi, Koshigaya, and Haruyoshi Takagishi, Yamato, all of Japan, assignors to Nippon Zeon Co. Ltd., Tokyo and Nisson Motor Co. Ltd., Kanagawa, both of, Japan

Filed Feb. 4, 1980, Ser. No. 118,321

Claims priority, application Japan, Feb. 9, 1979, 54-14538; Nov. 14, 1979, 54-148017

Int. Cl.[3] C08G *63/00*

U.S. Cl. 523—457 10 Claims

1. A two-package rust preventive material which is free of volatile solvents, consisting essentially of (A) a sprayable component containing a liquid epoxy resin and a liquid polycarboxylic acid anhydride and (B) a sprayable component containing a liquid primary or secondary amino compound and a curing accelerator, at least one of said components (A) and (B) containing a diluent which is not reactive with epoxy resin compositions having a molecular weight of 300 to 4,000 and an electrically conductive powder.

4,324,714

VINYLIDENE CHLORIDE POLYMER MICROGEL POWDER LACQUER COATING COMPOSITION AND SUBSTRATES COATED THEREWITH

Dale S. Gibbs; James F. Sinacola, both of Midland, and Dan E. Ranck, Sanford, all of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 942,516, Sep. 15, 1978, abandoned. This application Apr. 30, 1980, Ser. No. 145,169

Int. Cl.[3] C09D *3/74;* C08K *5/15*

U.S. Cl. 524—113 8 Claims

1. A lacquer coating composition comprising an organic solvent and a crosslinked vinylidene chloride polymer microgel powder dispersed therein, said powder being recovered from a latex obtained by emulsion polymerizing a monomer mixture consisting essentially of

(a) about 85 to 92 parts by weight of vinylidene chloride,

(b) about 8 to 15 parts by weight of a copolymerizable ethylenically unsaturated comonomer,

and

(c) from about 2 to about 10 parts by weight of a copolymerizable crosslinking polyfunctional comonomer

wherein the microgels in the resulting latex have a gel content in the range of about 25 to 99 percent.

4,324,715

LOW CURING EPOXY N-RESIN COATING COMPOSITION

Dennis P. Emerick, Aston, Pa., assignor to E. I. DuPont de Nemours and Company, Wilmington, Del.

Filed Oct. 29, 1980, Ser. No. 201,784

Int. Cl.[3] C08K *5/10*

U.S. Cl. 523—400 6 Claims

1. A coating composition consisting essentially, in percent by weight of (A), (B), (C), (D) plus (E), of a dispersion in a liquid organic media of about:

(A) 10–50% of an epoxy resin containing, on the average, two terminal 1,2-epoxy groups per molecule and having an epoxy equivalent weight of 750–5000;

(B) 1–20% of a melamine formaldehyde resin;

(C) 1–10% particulate polymer polymerized or copolymerized from monomers selected from one or more monoethylenically unsaturated hydrocarbon monomers and hydrocarbon ether monomers, said monomers being completely substituted with fluorine atoms;

(D) 0.2–5% citric acid; and

(E) the balance being said liquid organic media.

4,324,716

SOLUTIONS OF POLYISOCYANATE POLYADDITION PRODUCTS

Artur Reischl, Leverkusen, and Gert Jabs, Cologne, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 968,240, Dec. 11, 1978, abandoned, which is a continuation of Ser. No. 827,292, Aug. 24, 1977, abandoned. This application Nov. 24, 1980, Ser. No. 209,633

Claims priority, application Fed. Rep. of Germany, Aug. 27, 1976, 2638759

Int. Cl.[3] C08G *18/32, 18/14;* C08K *5/05, 5/06*

U.S. Cl. 524—761 4 Claims

1. A process for the preparation of clear, transparent, uniform and homogeneous polyhydric alcohol solutions of polyisocyanate polyaddition products with a solids content of 5 to 70% by weight in 30 to 95% by weight polyhydric alcohol solvent having a molecular weight between 62 and 200 comprising reacting:

(A) polyisocyanates or isocyanate containing prepolymers of polyisocyanates and higher molecular weight and/or low molecular weight polyhydroxyl compounds in situ with

(B) hydrazines and/or polyamines and/or dihydrazides and/or ammonia and optionally formaldehyde in

(C) polyhydric alcohols having a molecular weight of between 62 and 200,

optionally in the presence of water, and the water, if used, being subsequently removed in known manner.

4,324,717

NORBORNENE POLYMERS STABILIZED WITH HINDERED AROMATIC ALCOHOLS

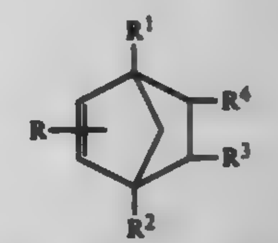
Robert W. Layer, Cuyahoga Falls, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Jun. 23, 1980, Ser. No. 162,300

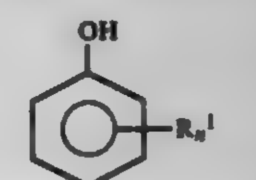
Int. Cl.[3] C08K *5/35, 5/34, 5/17*

U.S. Cl. 524—244 10 Claims

1. Composition of matter comprising a norbornene polymeric material and an antioxidant in amount sufficient to provide the desired degree of protection from oxidation degradation, said norbornene polymeric material is prepared from norbornene monomers that contain the following moiety:



where each R, R^1, R^2, R^3, and R^4 is selected from hydrogen, alkyl and alkenyl groups of 1 to 20 carbon atoms, and groups formed by joining R^3 and R^4 selected from aryl groups of 6 to 18 carbon atoms, and cycloalkyl and cycloolefin groups of 5 to 6 carbon atoms; said antioxidant is selected from (A) hindered phenols, (B) bis compounds of said hindered phenols, (C) hindered naphthols, and mixtures of said antioxidants, said hindered phenols are selected from compounds falling within the definition of the following structural formula:



where n represents 1 to 5 R^1 groups on the phenol ring with at least one R^1 group positioned ortho to the hydroxyl group on said phenyl ring, said R^1 group or groups are individually

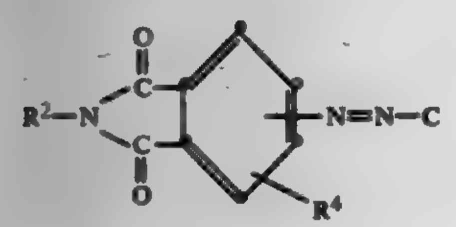
selected from substituted and unsubstituted alkyl, alkoxy, hydroxyl, and hydroxyalkyl groups wherein carbon chains therein contain 1 to 12 carbon atoms; said R^1 group or groups are also individually selected from alkylaminoalkyl groups $-CH_2N(R^2)(R^3)$, provided, however, that at least one R^1 group is an alkylaminoalkyl group, where R^2 and R^3 groups are individually selected from hydrogen, and hydroxy substituted and unsubstituted normal and branched alkyl groups of 1 to 12 carbon atoms and where R^2, R^3 and N of said alkylaminoalkyl groups form a heterocyclic ring containing 5 to 7 atoms selected from carbon, nitrogen, oxygen, and sulfur atoms; said bis compounds of said hindered phenols are bridged through the nitrogen atom of said alkylaminoalkyl groups by a carbon chain containing 2 to 12 carbon atoms or by a heterocyclic structure of 5 to 7 atoms selected from carbon, nitrogen, oxygen, and sulfur atoms; and said hindered naphthols are defined same as said hindered phenols.

4,324,718
THERMAL STABILIZATION OF VINYL RESINS
Michel Foure, Artix, France, assignor to Societe Nationale Elf Aquitaine, France
Filed May 1, 1980, Ser. No. 145,679
Claims priority, application France, May 4, 1979, 79 11284
Int. Cl.³ C08K *5/36, 5/46*
U.S. Cl. 524—108 19 Claims

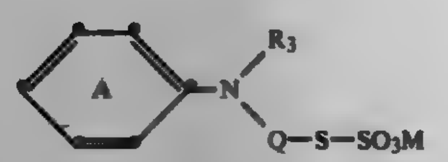
15. A halovinyl resin stabilized to heat which contains 0.09 to 1.65 percent by weight of a tin tetramercaptide the molecule of which contains 4 to 80 carbon atoms, and 0.1 to 1.6 percent by weight of a crown compound having 8 to 30 carbon atoms and 4 to 10 metalloid atoms selected from the group consisting of oxygen, sulfur and nitrogen.

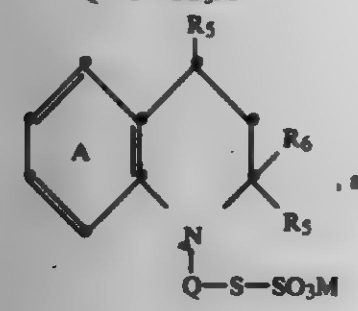
4,324,719
AZO DYES FROM AMINOPHTHALIMIDES AND ANILINE, TETRAHYDROQUINOLINE, AND BENZOMORPHOLINE COUPLERS HAVING THIOSULFATE GROUPS
Max A. Weaver, and Clarence A. Coates, Jr., both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Jun. 13, 1980, Ser. No. 159,093
Int. Cl.³ C09B *29/036, 29/36, 29/44;* D06P *3/26*
U.S. Cl. 260—152 4 Claims

1. A compound having the formula



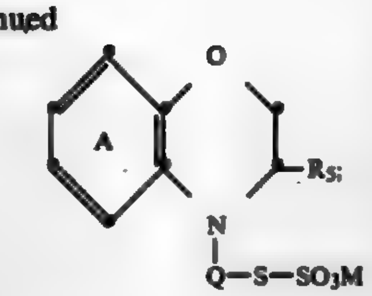
wherein C is a coupler selected from those having the formula



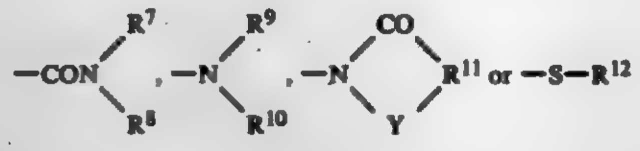


, and

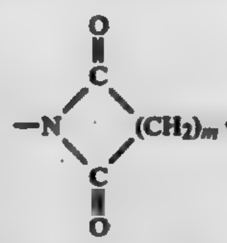
-continued



wherein R^2 is selected from hydrogen and the following groups: alkyl; cyclohexyl; cyclohexyl substituted with alkyl; and alkyl substituted with alkoxy, aryl, aryloxy, cyclohexyl, cyano, alkanoyloxy, alkoxycarbonyl, alkoxycarbonyloxy, aroyloxy, alkylcarbamoyloxy, arylcarbamoyloxy, or with a group having the formula



wherein
- R^7 is hydrogen, alkyl or aryl;
- R^8 is hydrogen or alkyl;
- R^7 and R^8 collectively are $-(CH_2)_5-$ or $-CH_2CH_2OCH_2CH_2-$;
- R^9 is alkanoyl or aroyl;
- R^{10} is hydrogen, alkyl, aryl or cyclohexyl;
- R^{11} is ethylene, propylene, trimethylene, o-cyclohexylene, or o-arylene, or when Y is —CO—, R^{11} also can be $-NHCH_2-$, —N(lower alkyl)CH_2-, $-SCH_2-$, $-OCH_2-$ or $-CH_2OCH_2-$;
- Y is $-CH_2-$, —CO—, or $-SO_2-$; and
- R^{12} is aryl, benzyl, cyclohexyl, 1,2,4-triazol-3-yl, or 2-benzothiazolyl;
- R^4 represents one or two substituents each of which is selected from hydrogen, halogen, cyano, alkyl, alkylsulfonyl, arylsulfonyl, arylthio, cyclohexylthio, alkoxy, aryloxy, 2-benzothiazolylthio, 2-thiazolylthio, 2-thiadiazolylthio, 2-oxadiazolylthio, 1,2,4-triazol-3-ylthio, 2-pyrimidinylthio, and such groups substituted with up to three of halogen, OH, aryl, CN, alkoxy, alkanoyl, aroylamino, alkylamino, alkanoyloxy, carbamoyl, alkylcarbamoyl, sulfamyl, alkylsulfonyl, succinimido, or alkoxycarbonyl groups;
- each ring A of the couplers is unsubstituted or substituted with up to three substituents selected from alkyl, alkoxy, halogen, $NHSO_2$-alkyl, $NHCOR_1$ or such groups substituted with up to three of halogen, OH, aryl, CN, alkoxy, alkanoyl, aroylamino, alkylamino, alkanoyloxy, carbamoyl, alkylcarbamoyl, sulfamyl, alkylsulfonyl, succinimido, or alkoxycarbonyl groups, wherein R_1 is hydrogen, alkyl, alkoxy, alkylamino, aryl, cyclohexyl, furyl, cycloalkyl, or such groups substituted with up to three of halogen, OH, aryl, CN, alkoxy, alkanoyl, aroylamino, alkylamino, alkanoyloxy, carbamoyl, alkylcarbamoyl, sulfamyl, alkylsulfonyl, succinimido, or alkoxycarbonyl groups;
- R_3 is selected from hydrogen; alkyl; alkyl substituted with alkoxy, alkoxyalkoxy, aryl, cycloalkyl, cyano, CONRR, SO_2NRR, SO_3M, aryloxy, cyclohexoxy,



wherein m is 2, 3, or 4,

2-pyrrolidono, furyl, alkylthio, or alkylsulfonyl wherein each

R is independently selected from hydrogen, alkyl, and alkyl substituted with halogen, hydroxy, phenoxy, aryl, cyano, cycloalkyl, alkylsulfonyl, alkylthio, alkanoyloxy, or alkoxy; alkylcarbamoyl; alkenyl; aryl; cycloalkyl; and alkylycloalkyl;
- R_5 and R_6 are each independently selected from hydrogen; alkyl, and alkyl substituted with up to three of halogen, OH, aryl, CN, alkoxy, alkanoyl, aroylamino, alkylamino, alkanoyloxy, carbamoyl, alkylcarbamoyl, sulfamyl, alkylsulfonyl, succinimido, or alkoxycarbonyl groups;
- Q is selected from alkylene of 2–8 carbons, alkylene of 2–8 carbons substituted by one to three groups selected from —OH, $-OCOCH_3$, $-C_6H_5$, and $-SO_3K$, and alkylene of 2–8 carbons which contain in its chain one to three groups selected from —O—, $-SO_2-$, —S—, $-N(SO_2CH_3)-$, $-N(COCH_3)-$, $-NHSO_2-$, $-N(CH_3)SO_2-$, $-SO_2NH-$, —NHCOO—, —NHCO—, —NHCONH—, and $-N(SO_2C_6H_5)-$; and M is H^+, Na^+, K^+, or NH_4^+.

4,324,720
LUBRICANT-BEARING FIBERS AND LUBRICANT COMPOSITIONS THEREFOR
Terence J. Swihart, Essexville, Mich., assignor to Dow Corning Corporation, Midland, Mich.
Filed Sep. 22, 1980, Ser. No. 189,494
Int. Cl.³ C08L *91/00;* D06M *13/18, 15/66*
U.S. Cl. 260—185 12 Claims

1. A composition consisting essentially of
(a) 1.0 part by weight of a silicone-glycol copolymer having the formula

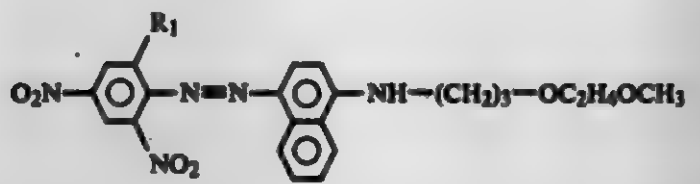
$$(CH_3)_3SiO\{(CH_3)_2SiO\}_x\{(CH_3)(G)SiO\}_ySi(CH_3)_3$$

wherein
- G denotes a silicon-bonded radical of the formula $-R-(OC_3H_6)_zOH$,
- R denotes an alkylene radical containing from 1 to 18 carbon atoms,
- x has an average value of from 40 to 90,
- y has an average value of from 1 to 10, and
- z has an average value of from 1 to 10, and

(b) from 1.0 to 9.0 parts by weight of butyl stearate.

4,324,721
1-(4-ALKYLAMINONAPHTHYLAZO)-4-NITROBENZENE DISPERSE DYES
Salvatore A. Bruno, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Continuation of Ser. No. 826,063, Aug. 19, 1977, abandoned, which is a continuation-in-part of Ser. No. 645,702, Dec. 31, 1975, Pat. No. 4,054,560, which is a continuation-in-part of Ser. No. 449,063, Mar. 7, 1974, abandoned. This application Jan. 4, 1979, Ser. No. 45,567
The portion of the term of this patent subsequent to Oct. 18, 1994, has been disclaimed.
Int. Cl.³ C07C *107/04;* C09B *29/095*
U.S. Cl. 260—196 3 Claims

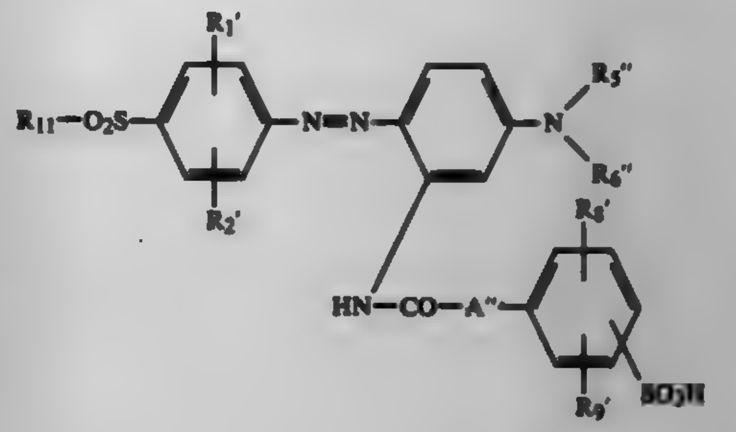
1. The dye having the formula



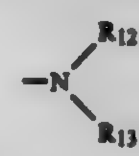
wherein
R_1 is Br or Cl.

4,324,722
WATER-SOLUBLE SUBSTITUTED AMINOCARBONYL MONOAZO DYESTUFFS
Dieter vor der Brück, Bonn, and Gerhard Wolfrum, Leverkusen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany
Continuation of Ser. No. 51,660, Jun. 25, 1979, abandoned, which is a continuation of Ser. No. 940,669, Sep. 8, 1978, abandoned. This application Sep. 12, 1980, Ser. No. 186,375
Claims priority, application Fed. Rep. of Germany, Sep. 10, 1977, 2740846
Int. Cl.³ C07C *107/06;* C09B *29/18*
U.S. Cl. 260—207 2 Claims

1. Water-soluble monoazo dyestuff which in the form of the free acid corresponds to the formula



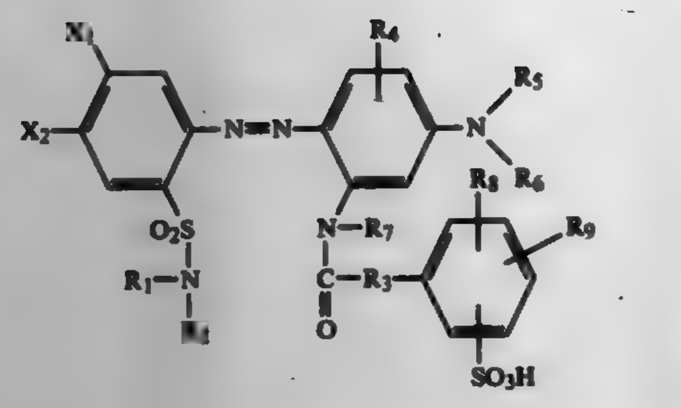
wherein
- R_8' and R_9' denote hydrogen, chlorine, methyl, ethyl, methoxy, ethoxy, trifluoromethyl or cyano;
- A″ denotes a direct bond, NH, CH_2—O, CH_2 or C_2H_4,
- R_1' denotes hydrogen, chlorine, bromine or trifluoromethyl,
- R_2' denotes hydrogen or chlorine,
- R_5'' denotes methyl or ethyl,
- R_6'' denotes methyl, ethyl or cyanoethyl, and
- R_{11} denotes benzyl, phenyl which is optionally substituted by chlorine or methyl, or a radical of the formula



- R_{12} denotes hydrogen or C_1–C_4-alkyl and
- R_{13} denotes C_1–C_{12}-alkyl, C_1–C_4-alkoxy-C_1–C_4-alkyl, phenyl which is optionally substituted by methyl, ethyl, chlorine, methoxy or ethoxy, or benzyl, phenethyl, cyclohexyl or methylcyclohexyl.

4,324,723
MONOAZO DYESTUFFS
Dieter vor der Brück, Bonn, and Gerhard Wolfrum, Leverkusen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany
Filed Sep. 20, 1979, Ser. No. 77,501
Claims priority, application Fed. Rep. of Germany, Oct. 5, 1978, 2843475
Int. Cl.³ C07C *107/06;* C09B *29/085, 29/26*
U.S. Cl. 260—207.1 2 Claims

1. Monoazo dyestuffs which, in the form of the free acid, correspond to the formula



(I)

in which

X_1 and X_2 denote chlorine, bromine or trifluoromethyl,
R_1 denotes hydrogen or C_1–C_8-alkyl, which can be substituted by hydroxyl,
R_2 denotes hydrogen, C_1–C_4-alkoxy-C_1–C_4-alkyl, C_1–C_{13}-alkyl, phenyl which is optionally substituted by methyl, ethyl, chlorine, methoxy or ethoxy, benzyl, phenethyl, cyclohexyl or methylcyclohexyl,
R_3 denotes a direct bond, methylene, ethylene, methyleneoxy, methyleneoxycarbonyl, methyleneoxycarbonylamino, aminomethylene or aminoethylene,
R_4 denotes hydrogen, methyl, methoxy or ethoxy,
R_5 and R_6 denote C_1–C_4-alkyl, which can be further substituted by cyano, chlorine, C_1–C_4-alkoxy, C_1–C_4-alkoxycarbonyloxy, C_1–C_4-alkylcarbonyloxy or phenylaminocarbonyloxy, benzyl or phenethyl,
R_7 denotes hydrogen or C_1–C_4-alkyl, and R_8 and R_9 denote hydrogen, chlorine, methyl, ethyl, methoxy, ethoxy, trifluoromethyl or cyano.

4,324,724

MANUFACTURE OF POLYALKYLENEPOLYAMINES

Hans Mueller; Klaus Walz, both of Ludwigshafen; Karl-Heinz Beyer, Frankenthal, and Werner Streit, Bobenheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

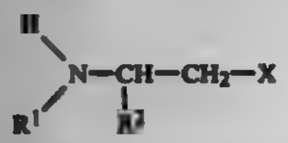
Filed Oct. 2, 1978, Ser. No. 947,585

Claims priority, application Fed. Rep. of Germany, Oct. 6, 1977, 2744982

Int. Cl.³ C07C 85/04, 85/02; C07D 295/12, 203/12

U.S. Cl. 260—239 E 5 Claims

1. In a process for the manufacture of polyalkylenepolyamines wherein a primary or secondary amine is reacted with a compound of the formula



(I)

where X is —Cl, —Br or —OSO_3H and R^1 and R^2 are H or saturated alkyl of 1 to 4 carbon atoms in a molar ratio of at least 2 moles of I per mole of amine, and with at least the stoichiometric amount, based on the compound of the formula I of an alkali metal hydroxide or alkaline earth metal hydroxide, the improvement which comprises: carrying out the reaction at a temperature of from 60° to 200° C. and in the presence of an aqueous solution of the alkali metal hydroxide or alkaline earth metal hydroxide having a strength of from 15 to 45 percent, cooling the reaction mixture with continuous mixing to a temperature at which two aqueous phases form, and thereafter separating off the upper aqueous phase containing the polyalkylenepolyamines.

4,324,725

PREPARATION OF 5-(2,2-DIHALOVINYL)-4,4-DIALKYL-TETRAHYDRO-FURAN-2-ONES

Rudolf Kropp, Limburgerhof; Martin Fischer, Ludwigshafen, and Klaus Halbritter, Mannheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Aug. 14, 1980, Ser. No. 178,177

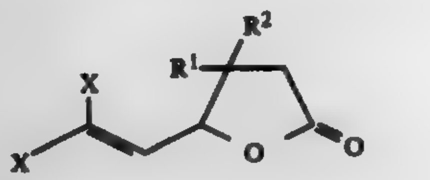
Claims priority, application Fed. Rep. of Germany, Sep. 19, 1979, 2937763

The portion of the term of this patent subsequent to Mar. 16, 1999, has been disclaimed.

Int. Cl.³ C07D 307/32

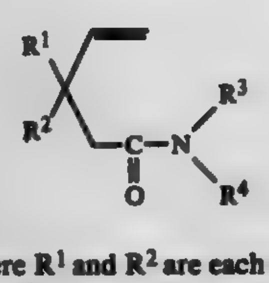
U.S. Cl. 260—343.6 3 Claims

1. A process for the preparation of a 5-(2,2-dihalovinyl)-4,4-dialkyl-tetrahydrofuran-2-one of the formula I



(I)

where R^1 and R^2 are each alkyl of 1 to 4 carbon atoms and X is halogen, wherein a carboxylic acid amide of the formula II

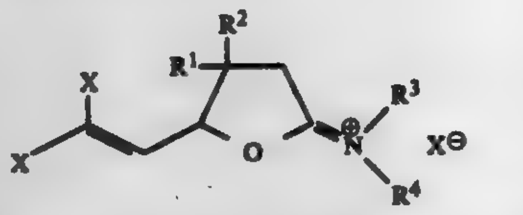


(II)

where R^1 and R^2 are each alkyl of 1 to 4 carbon atoms and R^3 and R^4 are each alkyl of 1 to 4 carbon atoms, aralkyl of 7 to 9 carbon atoms or aryl of 6 to 10 carbon atoms or together with the nitrogen on which they are present as substituents form a 5-membered or 6-membered saturated ring which may contain a further hetero-atom, is reacted with a carbon tetrahalide of the formula III

CX_4 (III)

where X is halogen, in the presence of an initiator and of an organic diluent or solvent, at from 120° to 160° C., to give an iminium salt of the formula IV



(IV)

where R^1, R^2, R^3, R^4 and X have the above meanings, and this iminium salt is subsequently hydrolyzed.

4,324,726

CHIRAL SYNTHESIS OF AMINO SUGARS

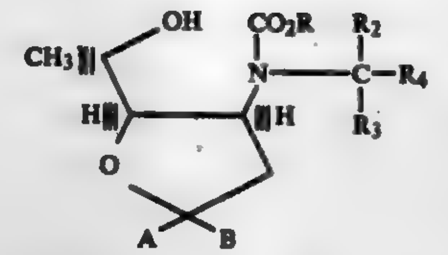
Milan R. Uskokovic, Upper Montclair, and Peter M. Wovkulich, Nutley, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 60,261, Jul. 25, 1979, Pat. No. 4,252,964. This application Aug. 18, 1980, Ser. No. 179,126

Int. Cl.³ C07D 307/32

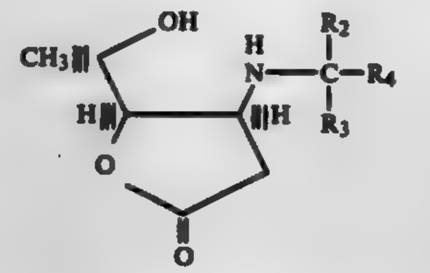
U.S. Cl. 260—343.6 4 Claims

1. A compound of the formula:



wherein B taken together with A forms oxo; R is lower alkyl; R_2 and R_4 are hydrogen, aryl, aralkyl, or lower alkyl and R_3 is aryl, or enantiomeric or racemic mixtures thereof.

3. A compound of the formula



wherein R_2 and R_4 are hydrogen, lower alkyl, aryl or aralkyl; and R_3 is aryl, or enantiomeric or racemic mixtures thereof.

4,324,727

PREPARATION OF BUTYROLACTONES

Franz Merger, Frankenthal, and Gerhard Nestler, Ludwigshafen, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

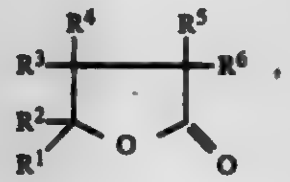
Filed Feb. 27, 1981, Ser. No. 238,980

Claims priority, application Fed. Rep. of Germany, Mar. 13, 1980, 3009604

Int. Cl.³ C07D 307/32

U.S. Cl. 260—343.6 2 Claims

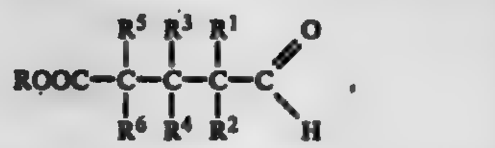
1. A process for the preparation of a butyrolactone of the formula



I

where R^1 is unsubstituted or substituted alkyl or phenyl and R^2 to R^6 are hydrogen or unsubstituted or substituted alkyl or phenyl, which comprises:

treating a γ-formylcarboxylic acid ester of the formula



II

where R is lower alkyl, with oxygen at an elevated temperature of 60°–150° C.

4,324,728

COMPOUND NANAOMYCIN A AND DERIVATIVES THEREOF AND A PROCESS FOR PRODUCING THE SAME

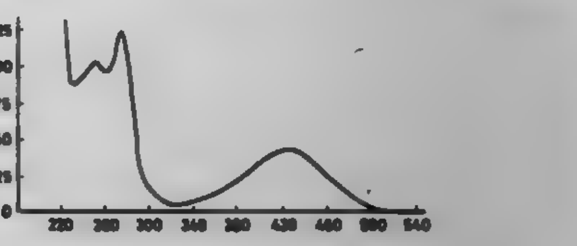
Satoshi Omura, Tokyo; Haruo Tanaka, Machida; Juichi Awaya, Souka, and Toju Hata, Tokyo, all of Japan, assignors to The Kitasato Institute, Tokyo, Japan

Division of Ser. No. 858,215, Dec. 7, 1977, Pat. No. 4,196,266, which is a continuation of Ser. No. 719,744, Sep. 2, 1976, abandoned, which is a continuation-in-part of Ser. No. 558,563, Mar. 14, 1975, abandoned. This application Jun. 11, 1979, Ser. No. 47,451

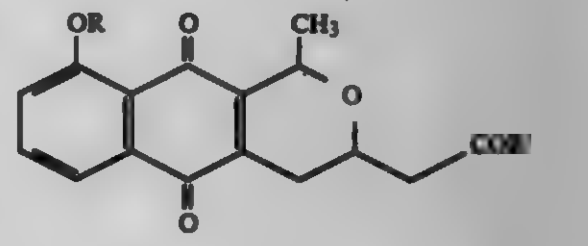
Claims priority, application Japan, Apr. 28, 1976, 51-49224

Int. Cl.³ C07D 311/92

U.S. Cl. 260—345.2 5 Claims



1. New compounds represented by the following general formula:



wherein

(a) R = H, R′ = OH and the compound has a specific rotation $[\alpha]_D^{26}$ −27.5° (C = 1.0 in methanol)
(b) R = H, R′ = NH_2 and the compound has a specific rotation $[\alpha]_D^{26}$ −2° (C = 0.5 in dioxane)
(c) R = $COCH_3$, R′ = OH and the compound has a specific rotation $[\alpha]_D^{22}$ +32.4° (C = 1.02 in $CHCl_3$)
(d) R = H, R′ = OCH_3 and the compound has a specific rotation $[\alpha]_D^{20}$ −21.7° (C = 1.02 in $CHCl_3$)

4,324,729

NOVEL ACETYLENIC COMPOUNDS USEFUL AS STARTING MATERIALS FOR PREPARING AN ALICYCLIC KETONE

Peter Fankhauser, Onex, Switzerland, assignor to Firmenich SA, Geneva, Switzerland

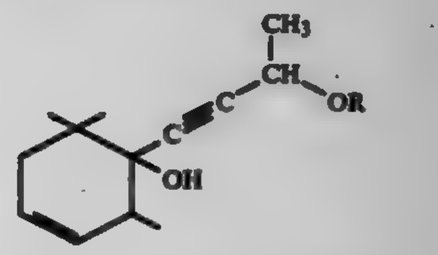
Filed Oct. 17, 1980, Ser. No. 198,250

Claims priority, application Switzerland, Oct. 24, 1979, 9526/79

Int. Cl.³ C07D 309/06; C07C 35/18, 43/30

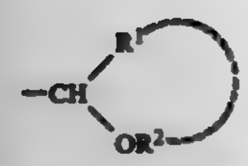
U.S. Cl. 260—345.9 R 1 Claim

1. Compounds of formula



(I)

wherein symbol R represents a hydrogen atom, a trialkylsilyl radical or a group of formula

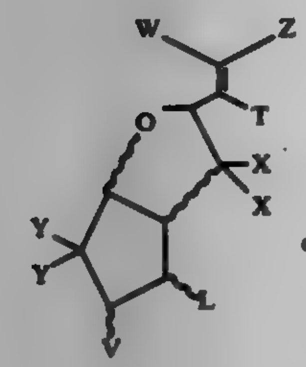


(II)

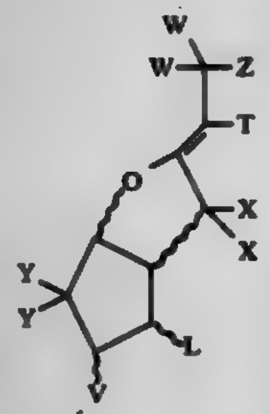
wherein, when taken separately, each of symbols R^1 and R^2 represents a lower alkyl radical or, when taken together, R^1 and R^2 represent a tetramethylene group.

4,324,730
CERTAIN FLUORINE SUBSTITUTED PGI$_2$ COMPOUNDS
Josef Fried, Chicago, Ill., assignor to The University of Chicago, Chicago, Ill.
Continuation of Ser. No. 83,398, Oct. 10, 1979, abandoned, and a continuation of Ser. No. 108,525, Dec. 31, 1979, abandoned. This application Oct. 8, 1980, Ser. No. 195,291
Int. Cl.^{3} C07D *307/935*
U.S. Cl. 260—346.22 20 Claims

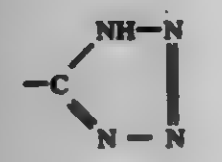
1. A compound of the formulae:



or



wherein Y, T, W and X may each be H or F; provided that at least one of Y, T, W and X is F; V may be hydrogen, hydroxy, acyloxy, lower alkoxy, hydroxy lower alkyl, or oxo; Z may be —Z_1—E wherein: Z_1 is $(CH_2)_g$—CH_2—CH_2—, or —$(CH_2)_g$—O—CH_2—, or —$(CH_2)_g$—CH_2—CF_2—, or trans-$(CH_2)_g$—CH=CH—; wherein g is 0, 1 or 2; and E is —$COOX_1$, wherein X_1 is hydrogen, alkyl, cycloalkyl, aralkyl, phenyl, phenyl substituted with chloro or alkyl, an alkali metal or an ammonium cation; or —CH_2OH; or



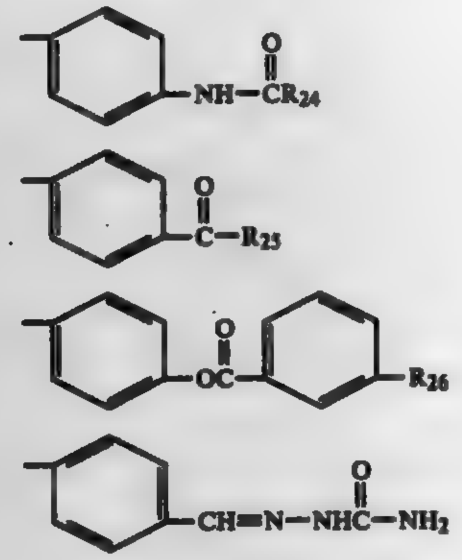
or

—$CH_2NL_2L_3$, wherein L_2 or L_3 are hydrogen, alkyl or —$COOX_1$ wherein X_1 is as defined above; —COL_4, wherein L_4 is,

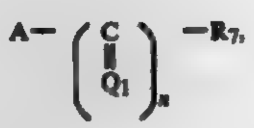
(a) amino of the formula —$NR_{21}R_{22}$, wherein R_{21} and R_{22} are hydrogen, alkyl of 1 to 12 carbon atoms inclusive, aralkyl of 7 to 12 carbon atoms inclusive, phenyl, phenyl substituted with 1, 2 or 3 chloro or alkyl substituents of 1 to 3 carbon atoms inclusive, or phenyl substituted with hydroxy carbonyl or alkoxy carbonyl of 1 to 4 carbon atoms inclusive; or

(b) carbonylamino of the formula, —$NR_{23}COR_{21}$, wherein R_{23} is hydrogen or alkyl of 1 to 4 carbon atoms and R_{21} is as defined above; or

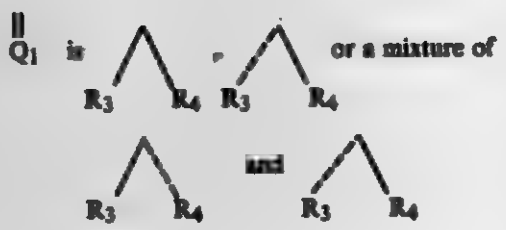
(c) sulfonylamino of the formula —$NR_{23}SO_2R_{21}$, wherein R_{21} and R_{23} are as defined above; or —$COOL_5$, wherein L_5 is p-substituted phenyl selected from the group consisting of:



wherein R_{24} is methyl, phenyl, acetamidophenyl, benzamidophenyl, or —NH_2; R_{25} is methyl, phenyl, —NH_2, or methoxy; and R_{26} is hydrogen or acetamido; and L is

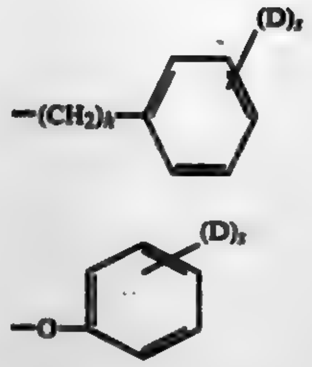


wherein n is 1 or 2; and A is trans—CH=CH—, or cis—CH=CH—, or —CH_2—CH_2—, or —C≡C—, or trans—CH=C(Halogen)—; and



wherein R_3 and R_4 may be H, OH, alkoxy, acyloxy, or fluoro with the proviso that one of R_3 and R_4 is fluoro only when the other is fluoro or hydrogen and when taken together R_3 and R_4 is oxo; and R_7 may be:

(a) —$(CH_2)_g$—CH_3, wherein g is 3, 4 or 5;

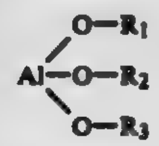


(b)

wherein h is 0, or 1; s is 0, 1, 2 or 3; and D is chloro, fluoro, trifluoromethyl, alkyl of one to 3 carbon atoms, inclusive, or with the proviso that not more than two D's are other than alkyl and the 1,5- and 1,15-lactones thereof.

4,324,731
PROCESS FOR THE PREPARATION OF 2,3-DIHYDRO-2,2-DIMETHYL-7-HYDROXYBENZOFURAN
Daniel Michelet, Tassin La Demi Lune, and Serge Veracini, Lyons, both of France, assignors to Rhone-Poulenc Agrochimie, Lyons, France
Filed Nov. 7, 1980, Ser. No. 204,992
Claims priority, application France, Dec. 7, 1979, 79 30645
Int. Cl.^{3} C07D *307/86*
U.S. Cl. 260—346.22 14 Claims

1. A process for the preparation of 2,3-dihydro-2,2-dimethyl-7-hydroxybenzofuran by heating orthomethallylpyrocatechol, which comprises heating ortho-methallylpyrocatechol in the presence of an aluminium derivative of the formula



in which R_1, R_2 and R_3, which are identical or different, each represent an organic radical.

4,324,732
PROCESS FOR THE PREPARATION OF MONOAROYLATED 1,4-DIAMINOANTHRAQUINONES
Norbert Majer, Berg.-Gladb., and Günther Boehmke, Leverkusen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany
Filed Sep. 5, 1980, Ser. No. 184,569
Claims priority, application Fed. Rep. of Germany, Sep. 19, 1979, 2937876
Int. Cl.^{3} C07C *143/665*
U.S. Cl. 260—377 8 Claims

1. In a process for the preparation of monoaroylated 1,4-diaminoanthraquinone by contacting 1,4-diaminoanthraquinone with an aroyl halide in the presence of an organic solvent and an acid-binding agent and in the presence of a small amount of water at an elevated temperature, the improvement which comprises carrying out the process in the presence of a tertiary aliphatic aminoalcohol and/or quaternary ammonium compound by heating a reaction mixture comprising 1,4-diaminoanthraquinone, organic solvent, acid binding agent, a small amount of water and said tertiary aliphatic aminoalcohol and/or quaternary ammonium compound up to a temperature of 20° to 50° C., adding aroyl halide thereto and completing the reaction at a temperature of 80° to 130° C.

4,324,733
Patent Not Issued For This Number

4,324,734
DE-EMULSIFIER
Stephen J. Rehm, Tulsa, and Young R. Lee, Broken Arrow, both of Okla., assignors to Combustion Engineering, Inc., Windsor, Conn.
Filed Oct. 27, 1980, Ser. No. 200,733
Int. Cl.^{3} C07F *9/02*; C08H *3/00*
U.S. Cl. 260—403 12 Claims

1. The method of forming a polyester which is strongly lipophilic by,

combining a polyol whose lipophilic portion has a high molecular weight with a polybasic acid and with a non-oxidative reactive acidic phosphorus derivative catalyst, and heating the solution to a high viscosity.

4,324,735
METHOD FOR WINTERIZING (DEWAXING) OF VEGETABLE OILS
Karl W. H. Sarehjörk, Tumba, and Anders B. Pallmer, Tullinge, both of Sweden, assignors to Alfa-Laval AB, Tumba, Sweden
Filed Jul. 2, 1980, Ser. No. 164,535
Claims priority, application Sweden, Jul. 9, 1979, 7905963
Int. Cl.^{3} C11B *3/06*
U.S. Cl. 260—425 7 Claims

1. A method for winterizing (dewaxing) vegetable oils characterized by the combination of the following steps:

(a) neutralizng the oil to a soap content of 100-7000 ppm;

(b) chilling of said oil to a temperature below 15° C., preferably 5-15° C. and addition to said oil of an alkali corresponding to 0.01- 0.06 kgs NaOH per 100 kgs oil;

(c) addition to said oil of 3-10 kgs water per 100 kgs oil with intense agitation;

(d) separation of the mixture so obtained into one heavy fraction containing water- lye- soap- waxes- other high melting matters and a lighter fraction consisting of the winterized (dewaxed) oil.

4,324,736
TETRAVALENT VANADIUM COMPOUNDS WHICH ARE SOLUBLE IN ORGANIC SOLVENTS
Walter Josten, Rheinfelden, and Hans-Joachim Vahlensieck, Wehr, both of Fed. Rep. of Germany, assignors to Dynamit Noble Aktiengesellschaft, Cologne, Fed. Rep. of Germany
Filed Aug. 21, 1980, Ser. No. 179,586
Claims priority, application Fed. Rep. of Germany, Aug. 24, 1979, 2934277
Int. Cl.^{3} C07F *9/00*
U.S. Cl. 260—429 R 11 Claims

1. A compound of tetravalent vanadium of the general formula

$$_3(RO)\text{—}M\text{—}O\text{—}\overset{\overset{O}{\|}}{V}\text{—}O\text{—}M\text{—}(OR)_3$$

wherein M represents a metal of the fourth group of the Periodic Table of the Elements and R represents an alkyl, cycloalkyl or aryl moiety of 1 to 20 carbon atoms.

4,324,737

PROCESS FOR THE PREPARATION OF ORGANOSTANNIC TRIHALIDES

Michel Foure, Artix, France, assignor to Societe Nationale Elf Aquitaine, France

Filed May 20, 1980, Ser. No. 151,642

Claims priority, application France, May 23, 1979, 79 13100

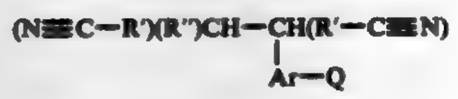
Int. Cl.³ C07F 7/22

U.S. Cl. 260—429.7 10 Claims

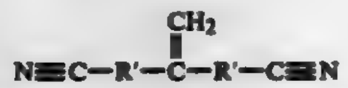
1. A process of preparing organostannic trihalides obtained by the action of a stannous compound on an olefin compound activated by a carbonyl group adjacent to the carbon-carbon double bond in the presence of a hydracid, characterized by the fact that the reaction medium is free of solvent but contains an excess of olefin, said excess being at least 0.5 mol per mol of stannous compound.


(III)

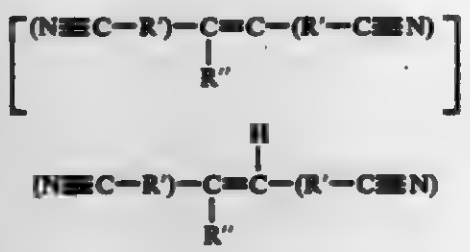
and


(IV)

which comprises reacting at least one unsaturated dinitrile represented by at least one of


(V)

and


(VI)

with at least one aromatic compound represented by H—Ar—Q in the presence of a Lewis Acid compound as catalyst under reaction conversion conditions;

wherein each R' is an alkylene or alkylidene radical of at least one carbon atom with one valence attached to the cyano group, R'' is an alkyl radical of at least one carbon atom, and Ar is a divalent phenylene or naphthylene radical wherein Q is selected from the group consisting of —H, —X, —R''', —N(R''')₂, —NH₂. HX, —SH, —OH, and —SR''', wherein X is halogen and is fluorine, chlorine, bromine, or iodine, and R''' is an alkyl radical of 1 to 6 carbon atoms.

4,324,738

DINITRILES AND THEIR PREPARATION

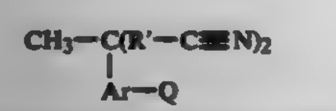
Charles A. Drake, and Stanley D. Turk, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

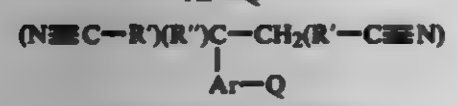
Division of Ser. No. 716,406, Aug. 23, 1976, Pat. No. 4,288,625, which is a continuation of Ser. No. 499,660, Aug. 22, 1974, abandoned. This application Apr. 9, 1980, Ser. No. 138,942

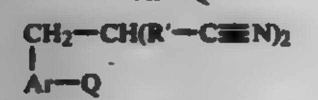
Int. Cl.³ C07C 121/66, 121/70, 121/75, 121/78

U.S. Cl. 260—465 H 21 Claims

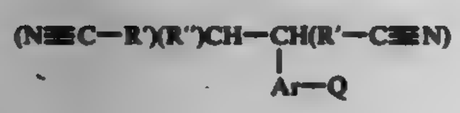
1. As compositions of matter, aralkylenedinitriles represented by:


(I)


(II)

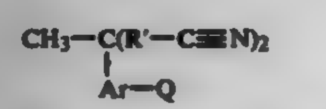

(III)

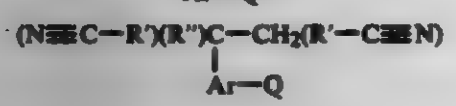
and


(IV)

wherein each R' is an alkylene or alkylidene radical of at least one carbon atom with one valence attached to the cyano group, R' is an alkyl radical of at least one carbon atom, and Ar is a divalent phenylene or naphthylene radical wherein Q is selected from the group consisting of —H, —X, —R''', —N(R''')₂, —NH₂.HX, —SH, —OH, and —SR''', wherein X is halogen and is fluorine, chlorine, bromine, or iodine, and R''' is an alkyl radical of 1 to 6 carbon atoms.

10. A process for the preparation of aralkylenedinitriles represented by


(I)


(II)

4,324,739

DIMETHYLAMINO DERIVATIVES AND THEIR USE

Helmut Zondler, Bottmingen, and Roland Moser, Basel, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Mar. 31, 1980, Ser. No. 135,800

Claims priority, application Switzerland, Apr. 10, 1979, 3406/79

Int. Cl.³ C07C 121/417, 121/46, 121/52, 121/66

U.S. Cl. 260—465.4 2 Claims

1. A compound of the formula

$(CH_3)_2N—X—NR^{10}CONHR^9$

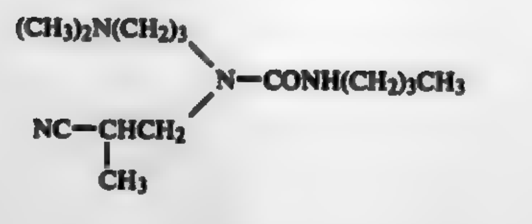
wherein

X is ethylene, 1,3-propylene or 1,3-propylene substituted in the 1- or 2-position by methyl,

R^9 is alkyl of 1 to 12 carbon atoms, cycloalkyl of 5 to 7 carbon atoms, aryl of 6 to 12 carbon atoms, alkaryl of 7 to 16 carbon atoms or alkaralkyl of 8 to 16 carbon atoms, and

R^{10} is β-cyanoethyl or β-cyanoethyl substituted in the 1- or 2-position by methyl.

2. A compound according to claim 1 which is



4,324,740

PREPARATION OF 2-PHENYLETHYLENE PHOSPHONIC ACID

Meffert Alfred, and Holger Tesmann, both of Düsseldorf, Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Düsseldorf-Holthausen, Fed. Rep. of Germany

Filed Mar. 4, 1981, Ser. No. 240,394

Claims priority, application Fed. Rep. of Germany, Mar. 19, 1980, 3010471

Int. Cl.³ C07F 9/38

U.S. Cl. 260—502.4 R 1 Claim

1. In a process for preparing 2-phenylethylene phosphonic acid by reacting styrene and PCl_5 in an inert organic solvent and hydrolyzing the reaction product formed,

the improvement which comprises forming a mixture of styrene and PCl_5 in a molar ratio of about 1:1 at a temperature of from 60° to 70° C. in an inert organic solvent having a boiling point above 70° C.; maintaining the mixture under agitation at a temperature of from 60° to 70° C. with evolution of HCl gas until a clear solution forms; distilling off the solvent under vacuum; hydrolyzing the remaining reaction mixture in water at temperatures not exceeding 70° C. and cooling the hydrolyzed mixture to cause crystals of 2-phenylene phosphonic acid to precipitate; and recovering said crystals.

4,324,741

PERFLUOROALKYL COMPOUNDS AND PROCESS FOR PREPARING THE SAME

Teruo Umemoto, Sagamihara, Japan, assignor to Sagami Chemical Research Center, Tokyo, Japan

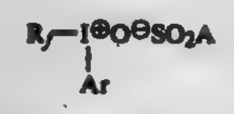
Filed Jun. 6, 1980, Ser. No. 156,951

Claims priority, application Japan, Jun. 6, 1979, 54/69979

Int. Cl.³ C07C 143/24; A61K 31/185

U.S. Cl. 260—505 R 2 Claims

1. Perfluoroalkyl compounds represented by the formula (I):


(I)

wherein R_f represents a perfluoroalkyl group having 1 to 20 carbon atoms, Ar represents a substituted or unsubstituted phenyl group wherein the substituent is an alkyl group having 1 to 4 carbon atoms or a halogen atom, I represents an iodine atom, and A represents a perfluoroalkyl group having 1 to 20 carbon atoms which can be the same as or different from R_f or, an alkyl group having 1 to 4 carbon atoms or an aryl group.

4,324,742

PROCESS FOR SEPARATION OF NAPHTHALENEDISULFONIC ACIDS

Hiroaory Fujii; Tsuyoshi Nagashima, and Nobuyori Shibamoto, all of Wakayama, Japan, assignors to Sugai Chemical Industry Co., Ltd., Wakayama, Japan

Continuation-in-part of Ser. No. 48,247, Jun. 13, 1978, abandoned. This application Aug. 25, 1980, Ser. No. 180,895

Claims priority, application Japan, Jun. 15, 1978, 53-72622

Int. Cl.³ C07C 143/24

U.S. Cl. 260—505 C 10 Claims

1. A process for separating 2,6-naphthalenedisulfonic acid from a reaction mixture resulting from the disulfonation of naphthalene, which comprise the steps of:

(a) disulfonating naphthalene under β,β-disulfonation reaction conditions in order to obtain a reaction mixture containing predominantly 2,6-naphthalenedisulfonic acid and 2,7-naphthalenedisulfonic acid therein;

(b) adding water to said reaction mixture obtained by said disulfonation of naphthalene in order to adjust to 50 to 70% by weight the sulfuric acid concentration in said reaction mixture;

(c) maintaining the reaction mixture at a temperature of 0° to 70° C.; and

(d) separating away precipitated crystals of 2,6-naphthalenedisulfonic acid.

4. A process for separating 1,6-naphthalenedisulfonic acid from a reaction mixture resulting from the disulfonation of naphthalene, which comprises the steps of:

(a) disulfonating naphthalene under α,β-disulfonation reaction conditions, in order to obtain a reaction mixture containing predominantly 1,6-naphthalenedisulfonic acid and 1,7-naphthalenedisulfonic acid and minor amounts of 2,6- and 2,7-naphthalenedisulfonic acids;

(b) adding water to said reaction mixture obtained by disulfonation of naphthalene in order to adjust to 35 to 90% by weight of sulfuric acid concentration in said reaction mixture;

(c) maintaining said reaction mixture at a temperature of 0° to 80° C.; and

(d) separating away precipitated crystals of 1,6-naphthalenedisulfonic acid.

8. A process for separating 2,7-naphthalenedisulfonic acid from a reaction mixture resulting from the disulfonation of naphthalene, which comprises the steps of:

(a) disulfonating naphthalene under β,β-disulfonation reaction conditions in order to obtain a resulting reaction mixture containing predominantly 2,6-naphthalenedisulfonic acid and 2,7-naphthalenedisulfonic acid therein;

(b) adding water to said reaction mixture obtained by said disulfonation of naphthalene in order to adjust to 35 to 45% by weight the sulfuric acid concentration within said reaction mixture;

(c) maintaining said reaction mixture at a temperature of 0° to 50° C.; and

(d) separating away precipitated crystals of 2,7-naphthalenedisulfonic acid.

4,324,743

METHOD OF PREPARING GAMMA-L-GLUTAMYL TAURINE

Laszlo Feuer; Arpad Furka; Ferenc Sebestyen; Jolan Hercsel nee Szepespataky, and Erzsebet Bendefy nee Dobay, all of Budapest, Hungary, assignors to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara Rt., Budapest, Hungary

Continuation of Ser. No. 571,766, Apr. 25, 1975, abandoned. This application Jul. 11, 1977, Ser. No. 814,726

Claims priority, application Hungary, Apr. 29, 1974, FE 920; Mar. 26, 1975, CI 1558

Int. Cl.³ C07C 143/02

U.S. Cl. 260—513 N 3 Claims

1. A method of preparing gamma-L-glutamyl taurine which comprises the steps of:

(a) reacting carbobenzyloxy-L-glutaminic acid-α-benzyl ester with a substantially equivalent quantity of triethylamine and a substantially equimolar quantity of isobutylchloroformate, then stirring the reaction mixture with cystamine dihydrochloride, and recovering N,N'-bis-(N-carbobenzyloxygamma-L-glutamyl)-cystamine;

(b) treating the N,N'-bis-(N-carbobenzyloxygamma-L-glutamyl)-cystamine obtained in step (a) with hydrogen peroxide in lacial acetic acid to produce carbobenzyloxy-gamma-(α-benzyl)-L-glutamyl-taurine;

(c) dissolving the carbobenzyloxy-gamma-(α-benzyl)-L-glutamyl-taurine obtained in step (b) in an alkali hydroxide solu-

tion, treating an ion-exchange resin with the resulting solution, eluting said treated resin with water and evaporating the eluate to produce carbobenzyl-gamma-L-glutamyl-taurine; and

(d) subjecting the carbobenzyloxy-gamma-L-glutamyl-taurine to acidolysis to produce gamma-L-glutamyl-taurine.

4,324,744

ACYLPHOSPHINE OXIDE COMPOUNDS

Peter Lechtken, Frankenthal; Ingolf Buethe, Mannheim, and Anton Hesse, Luetzelsachsen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

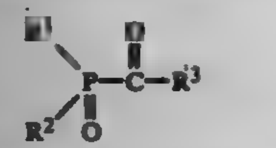
Continuation of Ser. No. 55,360, Jul. 6, 1979, abandoned. This application May 9, 1980, Ser. No. 148,221

Claims priority, application Fed. Rep. of Germany, Jul. 14, 1978, 2830927

Int. Cl.³ C07F *9/30, 9/38, 9/53*

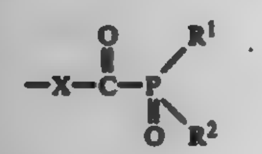
U.S. Cl. 260—932 3 Claims

1. An acylphosphine oxide compound of the formula



(I)

where R^1 is straight-chain or branched alkyl of 1 to 6 carbon atoms, cyclohexyl, cyclopentyl, phenyl or naphthyl which are unsubstituted or substituted by halogen, alkyl of 1 to 6 carbon atoms or alkoxy of 1 to 6 carbon atoms, a pyridyl or thienyl radical, R^2 has one of the meanings of R^1 or is alkoxy of 1 to 6 carbon atoms, phenoxy, methylphenoxy, benzyloxy or vinyloxy, or R^1 and R^2 may be joined together to form a five- or six-membered P-containing ring, and R^3 is straight-chain or branched alkyl of 2 to 18 carbon atoms, a cyclopropyl, cyclobutyl, cyclopentyl, 1-methylcyclopentyl, cyclohexyl, 1-methylcyclohexyl, norbornadienyl, adamantyl, vinyl, methylvinyl, naphthyl radical, phenyl or naphthyl which are substituted by alkyl of 1 to 8 carbon atoms or by thioalkoxy of 1 to 6 carbon atoms, a naphthyl which is substituted by alkoxy of 1 to 6 carbon atoms, a pyridyl or thienyl radical, and may contain additional functional groups, or is the group



where R^1 and R^2 have the above meanings and X is phenylene or butane-1,4-diyl with the proviso that R^1 is not t-butyl or benzyl if R^3 stands for t-butyl or n-butyl.

4,324,745

DEVICE FOR AUTOMATICALLY REGULATING A CHOKE VALVE IN A CARBURETOR FOR AN INTERNAL COMBUSTION ENGINE

Yasuaki Kono, Aichi, and Hisaharu Arai, Nagoya, both of Japan, assignors to Aisin Kogyo Kabushiki Kaisha, Japan

Filed Jul. 14, 1980, Ser. No. 168,699

Claims priority, application Japan, Oct. 6, 1979, 54-129262

Int. Cl.³ G05D *23/00*

U.S. Cl. 261—39 E 1 Claim

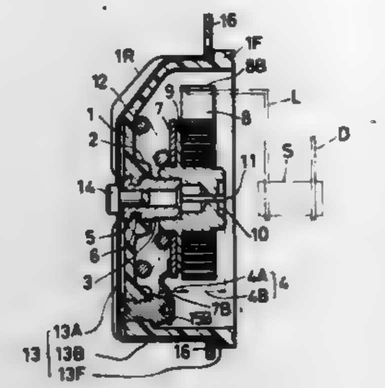
1. A device for automatically regulating a choke valve mounted for variable movement across the air/fuel induction passage in a carburetor of an internal combustion engine, said device comprising:

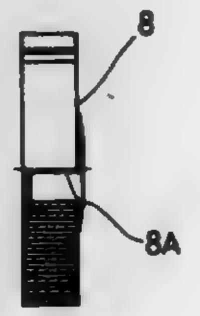
a housing fixed to the body of the carburetor,

a bimetal coil provided in said housing and operably connected to the choke valve shaft urging the choke towards a closed position with a force increasing as a function of decreases in the temperature of the bimetal coil from a predetermined level,

an electric heater device located in a fixed state adjacent to said bimetal coil operable to transfer its heat output to said bimetal coil up to its limit to thereby open the choke valve,

and a heat conductive member interposed between said bimetal coil and said electric heater device





wherein each surface of said heat conductive member is kept in contact with said heater device and the bimetal coil operable to transfer the heat output from said heater device to said bimetal coil by direct heat conduction, said bimetal coil being formed in a conical shape and mounted on a bimetal coil retainer and operable to press said heat conductive member with its compressive spring force.

4,324,746

CARBURETOR IMPROVEMENT FOR PART THROTTLE VACUUM STAGING

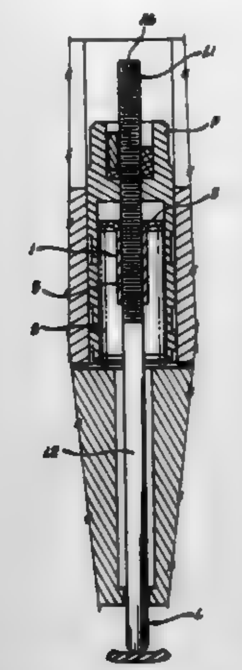
William A. Green, St. Charles, Mo., assignor to ACF Industries, Inc., New York, N.Y.

Filed Nov. 26, 1980, Ser. No. 210,724

Int. Cl.³ F02M *7/20*

U.S. Cl. 261—51 2 Claims

1. In a carburetor for an internal combustion engine, the carburetor having a fuel metering rod, a throttle shaft, a cam carried on the throttle shaft, a cam follower movable by the cam, a metering rod lifter contacted by the cam follower for moving the metering rod as the throttle shaft rotates, a step-up piston mounted on the lifter and responsive to engine vacuum for moving the lifter and the metering rod when a change in engine vacuum occurs while the throttle shaft is stationary, the position of the step-up piston on the lifter being adjustable for part throttle carburetor operation, and a step-up spring normally bearing against the step-up piston to exert a force on the piston which balances the force exerted thereon by engine vacuum, the improvement comprising spring seating means attachable to the metering rod lifter, the spring seating means including a sleeve sized to fit over the metering rod lifter, one end of the sleeve being flared outwardly to form a circumferential seat against which the step-up spring bears, the step-up spring bearing against the circumferential seat rather than the step-up piston whereby part throttle adjustment of the step-up piston position on the metering rod lifter does not alter the step-up spring force from that which the step-up spring is



designed to exert when changes in engine vacuum occur and the throttle shaft is stationary.

4,324,747

PULP WASTE LIQUOR-PHENOLIC RESIN BINDER

Krishan K. Sudan, Ste-Therese, and Antoine Berchem, St. Hippolyte, both of Canada, assignors to Reichhold Limited, Ontario, Canada

Filed Apr. 4, 1980, Ser. No. 137,501

Claims priority, application United Kingdom, Feb. 20, 1979, 13914/79

Int. Cl.³ C08G *8/28;* C08H *5/02;* C08J *3/12;* B01J *2/02*

U.S. Cl. 264—13 17 Claims

1. A process for preparing a modified phenol-formaldehyde resin which consists essentially of admixing at ambient temperature an aqueous phenol-formaldehyde resin with paper or board mill pulping process waste block kraft liquor in a weight ratio of from 1:10 to 10:1 based upon the solids content of both the aqueous resin and the waste liquor, the mixing being effected under conditions such that there is substantially no reaction between the aqueous resin and the black kraft liquor.

4,324,748

PROCESS AND APPARATUS FOR EXTRUDING PLASTIC FOAMS THROUGH A FLUOROCARBON LINED DIE SHAPING MEANS HAVING EXTENDED WEAR CHARACTERISTICS

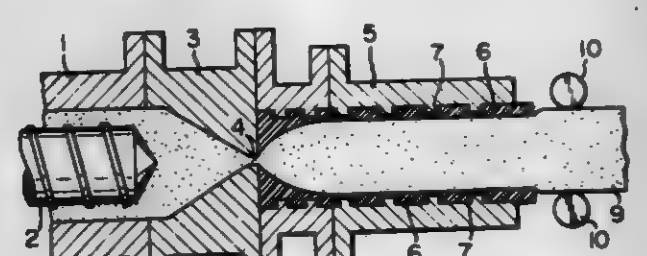
Hideo Hatakeyama, Hiratsuka, and Toru Yamamoto, Kanuma, both of Japan, assignors to Japan Styrene Paper Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 60,664, Jul. 25, 1979, abandoned. This application Sep. 22, 1980, Ser. No. 189,944

Claims priority, application Japan, Jul. 28, 1978, 53-92183

Int. Cl.³ B29D *27/00;* B29C *1/04*

U.S. Cl. 264—51 11 Claims



1. In a method for producing plastic foam by extruding a melt of a thermoplastic synthetic resin containing a blowing agent through an extrusion die on the end of an extruder, and forming and solidifying it by passing it through a shaping device having a metallic body secured to the discharge end of the extruder and extending away from said die in the direction of extrusion on the extruder opening into the inlet of the shaping device, the improvement comprising providing a plate of a fluorocarbon resin on at least a part of the inside surfaces of the metallic body, one of said body and said plate having recesses therein and the other of said body and said plate having projections thereon interfitted with said recesses, the inner surfaces of said recesses and the exterior surfaces of said projections being spaced from each other when the plate is unheated, said spaces being sufficiently large to just accommodate the resin plate at the temperature of extrusion from the heat of the resin for causing said projections to fit in said recesses for holding said plate securely on said shaping device.

4,324,749

THREE-DIMENSIONAL EXCHANGE ELEMENT FOR LIQUID GUIDANCE IN LIQUID-GAS CONTACT SYSTEMS

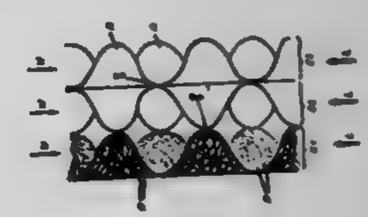
Jürgen Brouner, Wuppertal, Fed. Rep. of Germany, assignor to Akzona Incorporated, Asheville, N.C.

Continuation of Ser. No. 915,412, Jun. 14, 1978, abandoned. This application Jun. 18, 1980, Ser. No. 160,671

Claims priority, application Fed. Rep. of Germany, Jun. 14, 1980, 2726723

Int. Cl.³ F28C *1/02*

U.S. Cl. 261—112 2 Claims

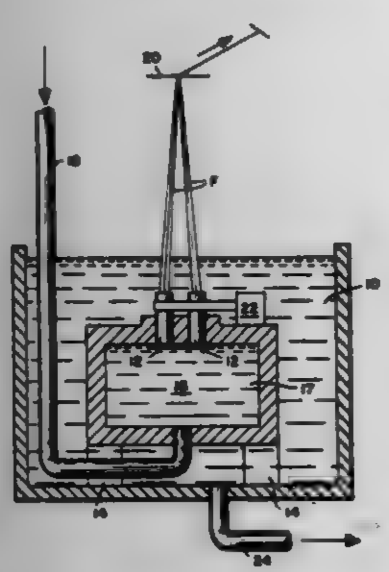


1. In a liquid-gas contact system wherein said liquid-gas comprises a vertical tower which contains a heat exchange unit through which water flows countercurrently or cross-currently to a stream of gas flowing therethrough, the improvement of said a heat exchange unit comprising a plurality of 3-dimensional, mutually supporting exchange elements arranged side-by-side, in contact with each adjacent element and each of said elements comprising randomly intersecting synthetic filaments having a diameter of about 0.1 to 2.5 mm, fused at their points of intersection, wherein said filaments form a self-supporting planar web with a density of from 5 to 10 kg per cubic meter and having hump-like projections of a substantially identical height of from about 20 to about 70 mm at regular intervals on the face of said planar web, said projections comprising contact surfaces for adjacent elements of like construction, wherein said elements are positioned parallel to each other and in contact with an adjacent element at said projections.

4,324,750
METHOD FOR MAKING HIGH K PLZT CERAMIC CAPACITOR
Galeb H. Maher, North Adams, Mass., assignor to Sprague Electric Company, North Adams, Mass.
Continuation-in-part of Ser. No. 2,837, Jan. 12, 1979, Pat. No. 4,219,866, which is a continuation-in-part of Ser. No. 802,160, May 31, 1977, Pat. No. 4,135,224, which is a continuation-in-part of Ser. No. 619,089, Oct. 2, 1975, Pat. No. 4,027,209. This application Aug. 18, 1980, Ser. No. 178,669
Int. Cl.[3] C04B *35/49*
U.S. Cl. 264—61 9 Claims

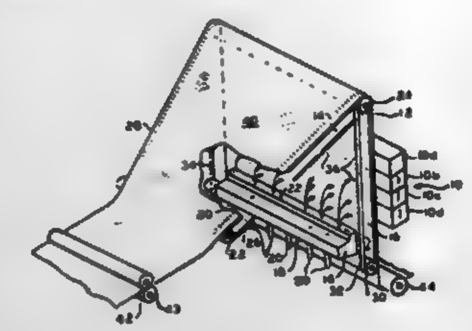
1. A method for making a PLZT ceramic capacitor comprising:
(a) forming a powder blend consisting essentially of precursors of a single antiferroelectric compound of lead-barium-lanthanum-zirconate-titanate doped with silver and bismuth;
(b) calcining said blend in a closed container at a peak temperature of less than 1130° C. to form said antiferroelectric compound;
(c) pulverizing said calcined compound;
(d) forming a body of said pulverized compound;
(e) sintering said body in a closed container;
(f) annealing said sintered body in an open atmosphere at less than 1000° C. to drive out the free lead oxide residing in said body; and
(g) forming two spaced electrodes in contact with said body.

4,324,751
PROCESS FOR PREPARING VISCOSE RAYON
Charles J. Geyer, Jr., and Ben E. White, both of Berwyn, Pa., assignors to Fiber Associates, Incorporated, Berwyn, Pa.
Filed Nov. 5, 1979, Ser. No. 91,147
Int. Cl.[3] B06B *3/00*
U.S. Cl. 264—23 3 Claims



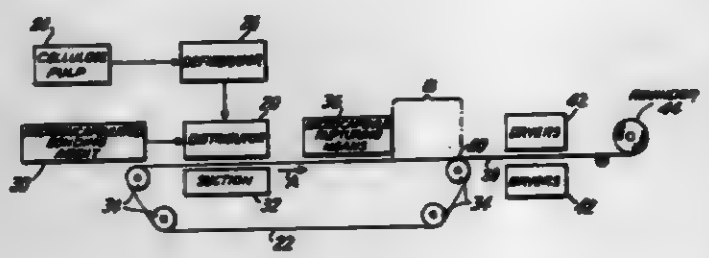
1. A process for removing particle and gel impurities from a jet for spinning viscose rayon filaments which comprise directly contacting said jet with a source of ultrasonic sound of vibrations of at least 20,000 hz so as to remove said impurities by vibration from said jet without altering the filament structure.

4,324,752
PROCESS FOR PRODUCING A FUSED FABRIC
Richard C. Newton, and Gerald A. Romanek, both of Greenville, S.C., assignors to Phillips Petroleum Company, Bartlesville, Okla.
Continuation of Ser. No. 905,072, May 11, 1978, abandoned, which is a division of Ser. No. 797,213, May 16, 1977, Pat. No. 4,105,484. This application Dec. 31, 1979, Ser. No. 108,440
Int. Cl.[3] H05B *1/00*
U.S. Cl. 264—25 12 Claims



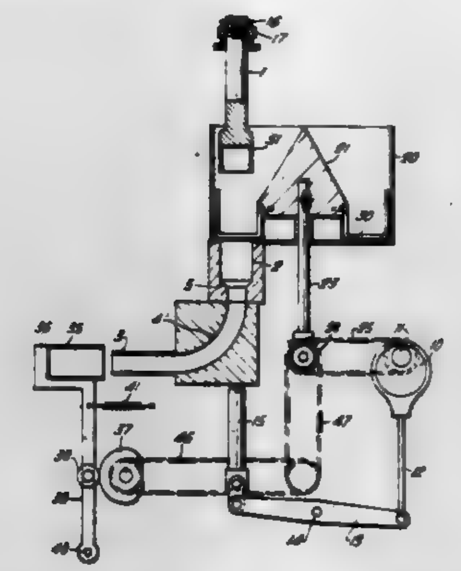
1. A process for the controlled fusing of at least a portion of the synthetic thermoplastic fibers in an unfused fabric, having a first and second surface, to produce a fused fabric having a uniform appearance and a soft hand, said process comprising the steps of:
exposing a portion of the first surface of said unfused fabric to infrared radiation to thereby fuse at least a portion of said synthetic thermoplastic fibers together; and
directing a fluid towards a portion of the second surface of said unfused fabric, which is directly opposite the portion of the first surface of said unfused fabric which is exposed to said infrared radiation, in such a manner that at least a portion of said fluid passes completely through said unfused fabric so as to prevent overfusing of said synthetic thermoplastic fibers by said infrared radiation, the exposing of a portion of the first surface of said unfused fabric to said infrared radiation occurring simultaneously with the directing of said fluid towards the portion of the second surface of said unfused fabric.

4,324,753
METHOD OF PRODUCING AN AIR LAID PAPER WEB UTILIZING MICROENCAPSULATED HYDROGEN BOND PROMOTING MATERIAL
Robert A. Gill, 7452 Red Coat Dr., Hamilton, Ohio 45011
Filed Nov. 3, 1980, Ser. No. 203,070
Int. Cl.[3] B27J *5/00*
U.S. Cl. 264—121 12 Claims



1. A method of producing a web of hydrogen-bonded wood pulp fibers comprising the steps of:
forming a suspension of wood pulp fibers in air;
mixing a hydrogen-bond promoting agent in the form of microcapsules into said suspension;
depositing the wood pulp and microcapsule mixture on a moving screen to form a continuous web; and
rupturing said microcapsules to release said bonding agent so that hydrogen-bonds are formed between said wood pulp fibers within said web.

4,324,754
METHOD OF INSERTING A POWDER IN THE MANUFACTURE OF ELECTRICAL DRY CELLS
Edward G. Stephenson, Tyne and Wear, and Tom Taylor, Newcastle-upon-Tyne, both of England, assignors to Crompton Parkinson Limited, Leeds, England
Filed Jul. 6, 1979, Ser. No. 55,142
Claims priority, application United Kingdom, Jul. 13, 1978, 29768/78
Int. Cl.[3] B28B *1/24*
U.S. Cl. 264—268 4 Claims

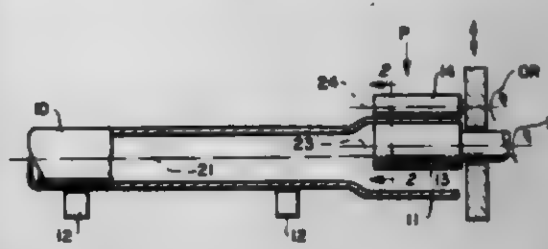


1. A method for filling a container having an open mouth and a bottom, with a slug of powdery material, for subsequently forming an electrical dry cell, comprising:
(a) feeding from a reservoir said powdery material into a cylinder having an inlet connected to a passage having a downstream restriction, followed by an exit nozzle,
(b) moving a reciprocating ram during a first part of the stroke towards said inlet to consolidate said powdery material and to urge said powdery material against said restriction,
(c) effecting relative movement between the nozzle and the container until said exit nozzle is adjacent the bottom of said container, and
(d) extruding a slug of said powdery material from said exit nozzle into said container, during a second part of the stroke of said ram while progressively separating said container from said exit nozzle at a rate wherein the rate of increase of available volume in the container as it moves relative to the nozzle does not exceed the rate of extrusion of said slug from said exit nozzle, to thereby fill said container with said powdery material by a single stroke of said ram as said container is so relatively moved.

4,324,755
PROCESS FOR PUTTING A LIP ON A THICK-WALLED TUBE OF FLEXIBLE MATERIAL, AND APPARATUS FOR PRACTICING SAME
Raymond Bommer, La Forteresse, France, assignor to Cabinet Patco, Paris, France
Continuation-in-part of Ser. No. 96,510, Nov. 21, 1979, abandoned, which is a continuation of Ser. No. 849,422, Nov. 7, 1977, abandoned. This application Sep. 5, 1980, Ser. No. 184,364
Claims priority, application France, Nov. 5, 1976, 76 33363
Int. Cl.[3] B28B *1/46*
U.S. Cl. 264—312 10 Claims

1. A procedure for flaring thick-walled tubes of flexible plastic material, of the type in which the said flaring is accomplished cold, wherein, in order to obtain a preferred and permanent orientation of the molecules of the plastic material, avoiding any shrinkage after flaring, the said flaring is obtained by means of the step of rolling at room temperature with the step being effected by an outer roller and an inner roller, and with both rollers and the tube rotating simultaneously, and further by the step of reducing friction to the maximum extent possible.

4. A device for flaring thick-walled tubes of flexible plastic material wherein the structure making the said flaring possible comprises only two mandrels applied to both sides of the wall



constituting the said tube, by one mandrel inside of said tube having its axis offset from the axis of the pipe to be flared and the other mandrel outside of said tube and with said mandrels exerting a radial pressure with respect to the said wall, and with both of said mandrels being maintained at room temperature.

4,324,756
PROCESS FOR SHAPING SOLID POLYBUT-1-ENE AND THE RESULTING SHAPED ARTICLES
Andre Kepes, Le Vesinet; Eric Weynant, Golfe Juan; Pierre Avenas, Sceaux, and Jean-Marc Haudin, Antibes, all of France, assignors to Societe Chimique des Charbonnages-CdF CHIMIE, Bully-les-Mines, France
Filed Oct. 18, 1979, Ser. No. 85,949
Claims priority, application France, Oct. 30, 1978, 78 30701
Int. Cl.[3] B29B *1/00, 3/00*
U.S. Cl. 264—322 12 Claims

1. A process for shaping solid polybut-1-ene, comprising preheating polybut-1-ene in the crystalline form II at a temperature between 20° and 90° C. and then press-forging it under a pressure between 8 and 100 kgf/mm^2 for a period of 1 to 40 seconds into a desired shape.

4,324,757
HALOGENATED HYDROCARBONS INHIBITED AGAINST DENICKELIFICATION WITH LOWER ALKYLCYANIDE COMPOUNDS
John B. Ivy, and Ted S. Boozalis, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.
Filed Jul. 2, 1979, Ser. No. 53,671
Int. Cl.[3] F28F *19/00;* C23F *11/14*
U.S. Cl. 422—7 11 Claims

1. A method of inhibiting the denickelification of a nickel alloy in contact with a halogenated aliphatic hydrocarbon having from 1 to 10 carbon atoms and from 1 to 10 halogen atoms capable of causing denickelification of the nickel alloy comprising maintaining a lower alkylcyanide compound having from 1 to 6 carbon atoms in the alkyl group capable of inhibiting denickelification of the nickel alloy dissolved in the halogenated aliphatic hydrocarbon in an amount sufficient to inhibit denickelification of the nickel alloy.

11. In a heat recovery and transfer system employing a halogenated aliphatic hydrocarbon having from 1 to 10 carbon atoms and from 1 to 10 halogen atoms or a mixture of such halogenated aliphatic hydrocarbons in contact with a nickel alloy under conditions capable of causing denickelification of the nickel alloy, the improvement comprising maintaining methylcyanide dissolved in the halogenated aliphatic hydrocarbon in an amount sufficient to inhibit denickelification of the nickel alloy.

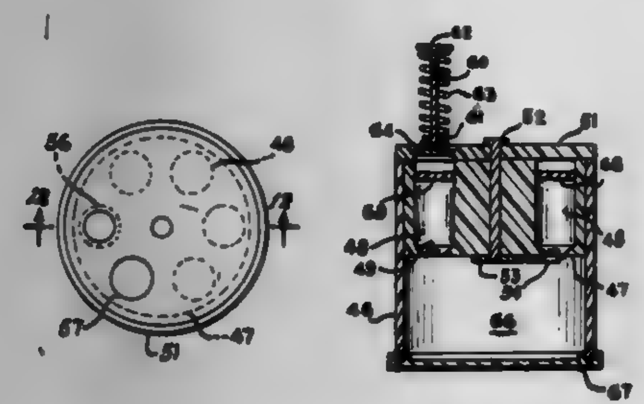
4,324,758
ANALYSIS OF LUBRICATING OILS FOR IRON CONTENT

Kent J. Eisentraut, Xenia; William D. Ross, Eaton; William J. Hillan, Kettering; Joseph J. Brooks, Centerville, all of Ohio, and Thomas G. Duffy, Jacksonville, Fla., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Division of Ser. No. 29,586, Apr. 12, 1979, Pat. No. 4,238,197. This application Apr. 18, 1980, Ser. No. 141,500

Int. Cl.[3] G01N *33/28*

U.S. Cl. 422—61 2 Claims



1. Apparatus for use in determining the amount of iron present in a used lubricating oil which comprises a reaction chamber having upper and lower ends; a closure member formed of a rubbery material adapted to close the lower end of the reaction chamber; a solid body member non-rotatably attached to the upper end of the reaction chamber, the said body member having a plurality of cavities formed therein with each of the cavities having a lower opening therein communicating the cavity with the reaction chamber; a rotatable top member having an opening therein positioned on the body member and rotatable relative thereto; and means for sequentially positioning an opening in the rotatable top member so that it is in vertical alignment with one of said plurality of cavities in the body member.

4,324,759
APPARATUS FOR TREATING WASTE GAS BY IRRADIATION WITH ELECTRON BEAMS

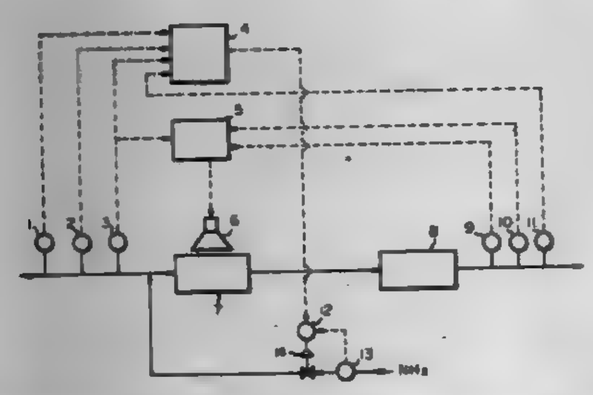
Shinji Aoki, Tokyo; Ryuichi Ishikawa, Yokohama, and Yasuhiro Sawada, Fuchu, all of Japan, assignors to Ebara Corp and Japan Iron and Steel Federation, both of Tokyo, Japan

Filed May 19, 1980, Ser. No. 150,941

Claims priority, application Japan, Jul. 11, 1979, 54/87578

Int. Cl.[3] B01D *53/34;* B01J *12/02, 19/08;* F23J *15/00*

U.S. Cl. 422—62 5 Claims



1. An apparatus for treating waste gas containing nitrogen oxides (NO_x) and sulfur dioxide (SO_2) by irradiation with electron beams and with the addition of ammonia (NH_3), which apparatus comprises:

a reactor having a gas inlet through which the untreated waste gas is introduced, a window through which electron beams are irradiated and a gas outlet through which the irradiated gas is delivered;

a dust collector having a gas inlet which is connected to the gas outlet of said reactor and a gas outlet through which the gas purified by the dust collector passes;

an electron beam accelerator which generates electron beams which pass through the window of the reactor and are absorbed by the waste gas in the reactor;

means for adding ammonia to said waste gas;

means for measuring the concentration of NO_x and SO_2 and the flow rate of the waste gas;

first controlling system for automatically controlling both the amount of ammonia added to the waste gas and the electron beam current depending on the normal changes of the respective NO_x and SO_2 concentrations and the flow rate of the waste gas at or before the reactor inlet;

a second controlling system for automatically controlling both said amount of ammonia and said amount of electron beam current in response to the abnormal changes of the respective NO_x, SO_2 and NH_3 concentrations of the waste gas which has left the outlet of the reactor;

a judging system which can instruct to make the second controlling system start operating only when any of the NO_x, SO_2 and NH_3 concentrations of the waste gas which has left the outlet of the reactor is outside of a predetermined range so that the second controlling system may operate preferentially over the first controlling system; and

an inlet for NH_3 which is given in the passage of the waste gas lying between (1) the point where said means for measuring the concentration of NO_x and SO_2 and the flow rate of the waste gas are installed and; (2) the inlet of said dust collector, characterized in that said second controlling system can operate according to the instructions from said judging system only when at least one of the concentrations of NO_x, SO_2 and NH_3 of the waste gas in the downstream of the outlet of the reactor is outside of the predetermined range.

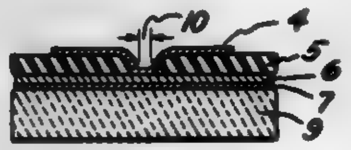
4,324,760
HYDROGEN DETECTOR

Lawrence A. Harris, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Apr. 1, 1981, Ser. No. 249,791

Int. Cl.[3] G01N *31/06, 27/40, 27/12*

U.S. Cl. 422—98 12 Claims



1. A hydrogen detector comprised of a substrate supporting an electrically conducting base metal film, an electrically conducting top film of metal able to dissociate hydrogen into atomic form, a polycrystalline film of titanium dioxide sandwiched between the base and top films, said polycrystalline titanium dioxide film electrically insulating the base film from said top film, the base film being in electrical contact with the titanium dioxide film, an insulating layer electrically insulating said titanium dioxide film from said top film except for a predetermined surface portion thereof in electrical contact with said top film, said predetermined electrically contacting portion being at least sufficiently large to produce a measurable electrical conductance, said top and base films being electrically connected to an external circuit to measure conductance, the electrical conductance of said hydrogen detector varying with the concentration of hydrogen in the atmosphere surrounding it.

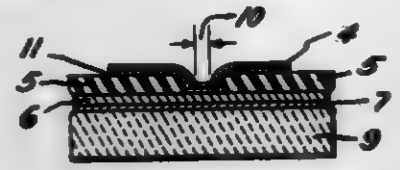
4,324,761
HYDROGEN DETECTOR

Lawrence A. Harris, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Apr. 1, 1981, Ser. No. 249,790

Int. Cl.[3] G01N *27/40, 27/12, 31/06*

U.S. Cl. 422—98 20 Claims



1. A hydrogen detector comprised of a substrate supporting an electrically conducting base metal film, an upper electrically conducting diffusion barrier metal film, a polycrystalline film of titanium dioxide sandwiched between the base and diffusion barrier films, said polycrystalline titanium dioxide film electrically insulating the base film from said diffusion barrier film, the base film being in electrical contact with the titanium dioxide film, an insulating layer electrically insulating said titanium dioxide film from said diffusion barrier film except for a predetermined surface portion thereof in electrical contact with said diffusion barrier film, said predetermined electrically contacting portion being at least sufficiently large to produce a measurable electrical conductance, an electrically conducting or non-conducting catalytic top film of metal able to dissociate hydrogen into its atomic form in electrical contact with said diffusion barrier film and at least substantially coextensive with said barrier film throughout said predetermined electrically contacting portion, said top film when it is electrically conducting or said diffusion barrier film and said base film being electrically connected to an external circuit to measure conductance, the electrical conductance of said hydrogen detector varying with the concentration of hydrogen in the atmosphere surrounding it.

4,324,762
APPARATUS FOR STERILIZATION BY STEAM OF FERMENTATION OBJECTS

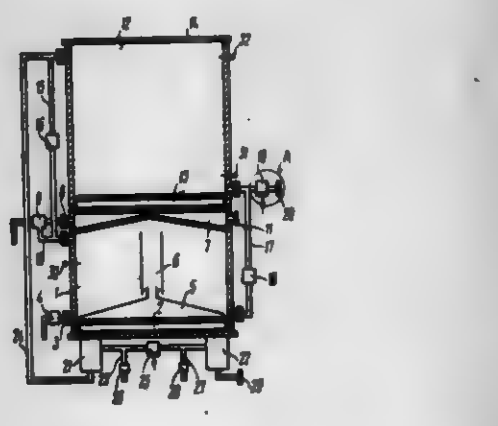
Jury V. Redikultsev, mikroraion "G", dom 19, kv. 133; Leonid A. Litvinenko, mikroraion "AB", dom 8,kv. 74; Svetlana B. Petrikevich, mikroraion "V", dom 30, kv. 54; Taisia S. Chermenskay, mikroraion "G", dom 7, kv. 67; David S. Vershkov, mikroraion "AB", dom 6, kv. 33; Boris F. Nesterov, mikroraion "V", dom 24, kv. 62, and Irina V. Bogoroditskaya, mikroraion "AB", dom 6, kv. 41, all of Puschino Moskovskoi oblasti, U.S.S.R.

Filed Mar. 7, 1980, Ser. No. 128,366

Claims priority, application U.S.S.R., Jul. 3, 1979, 2777125

Int. Cl.[3] G05D *9/00;* C01B *6/10;* C12M *1/12*

U.S. Cl. 422—106 5 Claims



1. Apparatus for sterilization by steam of fermentation objects, comprising: a closed sterilization vessel; a first heater mounted on one wall within said sterilization vessel; a condenser mounted on the wall within said sterilization vessel opposite to said one wall; an inlet to said sterilization vessel; a closed buffer vessel; a second heater mounted on a wall within said buffer vessel; lines communicating said buffer vessel with said sterilization vessel; valve means in said lines; at least two gas filters mounted on said first heater; a steam flow rate regulator having an input and an output, the input thereof being connected to one side of the first one of said gas filters and the output thereof being connected to one side of the second one of said gas filters; said first gas filter having its other side communicating with said buffer vessel; a gas outlet pipe connected to the other side of said second gas filter, and a sterile medium outlet pipe connected to said buffer vessel.

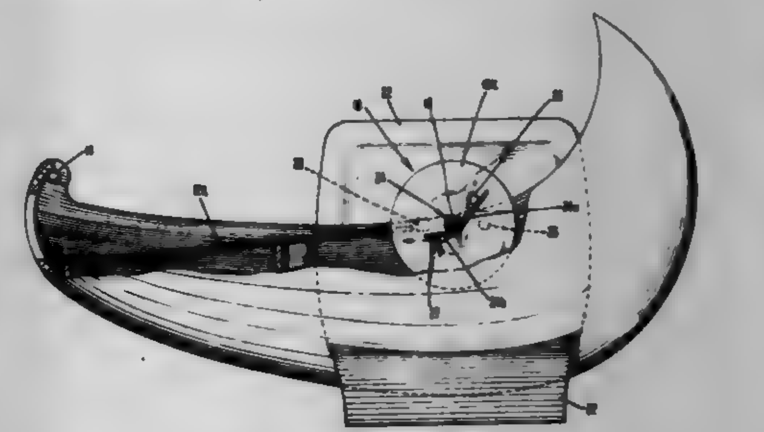
4,324,763
INCENSE BURNING APPARATUS

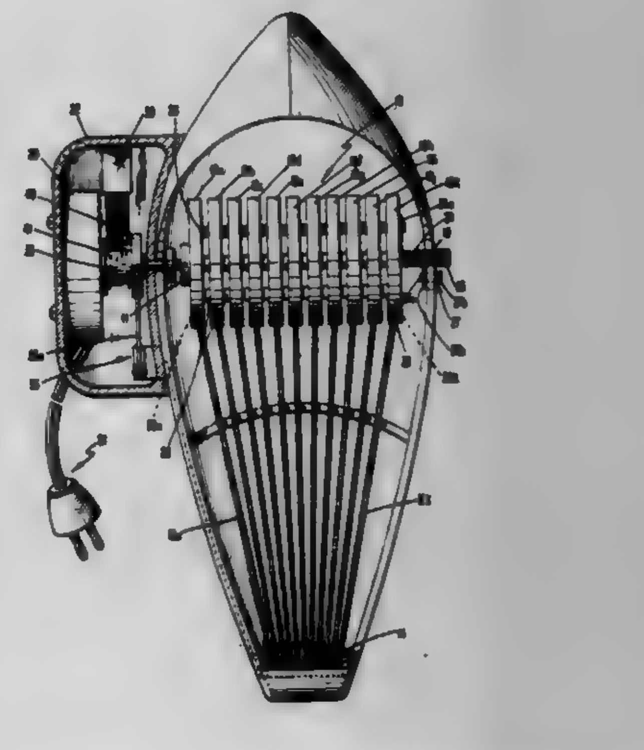
James C. Jarman, 3610 Gramby St., Landover, Md. 20784

Filed Apr. 23, 1981, Ser. No. 256,826

Int. Cl.[3] A61L *9/03*

U.S. Cl. 422—116 17 Claims





1. An apparatus for successively igniting a plurality of incense sticks, comprising:

an igniter member;

means for supporting said plurality of incense sticks spaced apart from said igniter member;

means for rotating said incense sticks successively and sequentially into contact with said igniter member; and

means for energizing said igniter member during contact with said incense sticks to sequentially ignite said sticks.

4,324,764

APPARATUS FOR CONTINUOUS LEACHING OF ORES

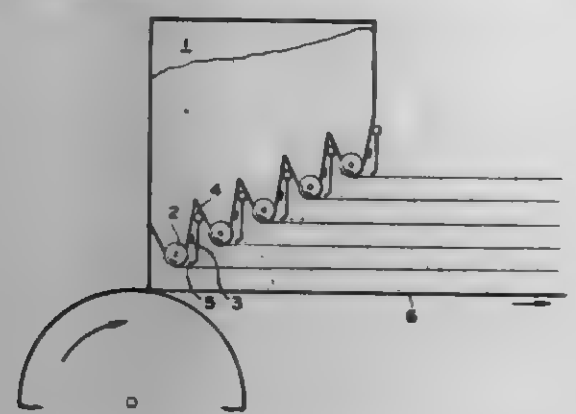
Shoichi Hasegawa, Tokyo; Thoru Yamashita, Yokohama, and Mitsuo Kameda, Tokyo, all of Japan, assignors to International Resources Company, Ltd., Tokyo, Japan

Division of Ser. No. 935,501, Aug. 21, 1978, Pat. No. 4,225,563. This application Jul. 23, 1980, Ser. No. 171,394

Claims priority, application Japan, Sep. 9, 1977, 52/108488

Int. Cl.[3] **B01D** *11/02;* **B01J** *4/00, 8/02;* **C22B** *3/02*

U.S. Cl. 422—159 **6 Claims**



1. Apparatus for the continuous leaching of pulverized ore for continuously leaching out and extracting metal component(s) contained in the ore, which comprises a bin for storing said pulverized ore having hoppers disposed in the bottom portion thereof, means for transporting pulverized ore, a plurality of feeding means for continuously feeding pulverized ore in a predetermined amount, the first pulverized ore feeding means being disposed above the transportation means and the other pulverized ore feeding means being disposed in a multi-staged manner at predetermined intervals along a path extending gradually upwardly in an inclined direction so that the respective pulverized ore feeding means are positioned below openings of said hoppers and above said transportation means, said plurality of feeding means being operable to form on said transportation means multi-staged, continuous, adjacent unit layers of a uniform thickness, each unit layer being composed of a predetermined amount of said pulverized ore, and a plurality of solvent sprinkling means cooperating with said feeding means for sprinkling a metal-extracting solvent between every two adjacent unit layers of pulverized ore, there being a said sprinkling means between every two adjacent feeding means at a location immediately before the two adjacent unit layers formed thereby come in contact with each other, whereby a laminar structure of unit layers of a uniform mixture of the pulverized ore and the solvent is formed continuously on the moving transportation means.

4,324,765

APPARATUS FOR PUMPING GASES USING A CHEMICALLY REACTIVE AEROSOL

Frithjof N. Mastrup, Palos Verdes Peninsula, and Leonard J. Marabella, Torrance, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

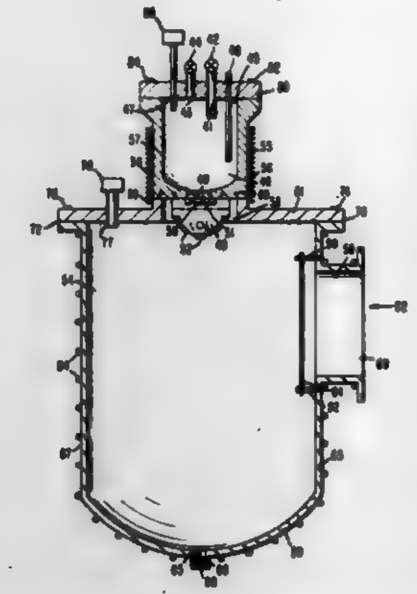
Division of Ser. No. 960,681, Nov. 13, 1978, abandoned. This application Jul. 21, 1980, Ser. No. 170,434

Int. Cl.[3] **B01D** *50/00*

U.S. Cl. 422—173 **5 Claims**

1. Apparatus for pumping certain exhaust gases from a container therefor by converting said gases into solids by chemically reacting said gases with a chosen highly reactive substance in the form of aerosol particles, and to thereby generate a partial vacuum surrounding said solids, and provide said pumping of said exhaust gases, which comprises:

(a) a chamber having first and second openings therein;
(b) means adjacent said first opening of said chamber for providing the influx of said exhaust gases from said container into said chamber through said first opening in said chamber,
(c) an antechamber adjacent said second opening of said chamber, to contain said reactive substance in solid form and having first and second openings therein;
(d) means adjacent said antechamber for heating said antechamber to raise the temperature therein sufficiently to liquefy said solid;
(e) means associated with said first opening of said antechamber and said second opening of said chamber, for dispersing said liquefied reactive substance into said aerosol particles; and



(f) means associated with said second opening of said antechamber for applying a chosen inert gas to said liquefied reactive substance under pressure sufficient to cause said substance to flow through said dispersing means to form said aerosol particles and to inject said aerosol particles into said chamber through said second opening in said chamber.

4,324,766

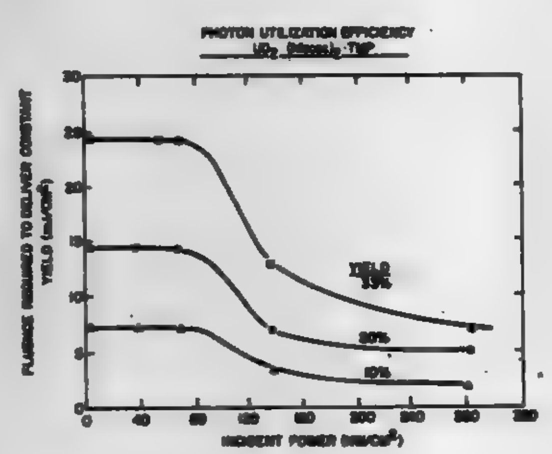
METHOD OF SEPARATING ISOTOPES OF URANIUM EMPLOYING $UO_2(HFACAC)_2.L$ WITH AN IMPROVED PHOTON EFFICIENCY

Richard B. Hall, Clark, N.J., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Sep. 12, 1979, Ser. No. 75,155

Int. Cl.[3] **B01D** *59/00*

U.S. Cl. 423—3 **3 Claims**



1. A method of separating isotopes of U including the step of irradiating a compound having the general formula $UO_2AA'.L$, where A and A' are anions having a total net charge of 2, and L is a neutral ligand, with radiation of a wavelength, λ, at which said $UO_2AA'.L$ has a predetermined absorption cross section $\sigma\lambda$ at a power >120 kw/cm^2 times

$$\sigma\lambda/4\times 10^{18}\ cm^2,$$

thereby increasing photon efficiency due to localized energy dissociating the molecule before the energy equilabrates throughout the molecule.

4,324,767

SEPARATION PROCESS UTILIZING MICROCAPSULES

Martin B. Dines, Santa Ana, Calif., assignor to Occidental Research Corporation, Irvine, Calif.

Filed Aug. 4, 1980, Ser. No. 175,161

Int. Cl.[3] **C01G** *43/00*

U.S. Cl. 423—3 **29 Claims**

28. A process for removing ionic uranium in the +4 valence state from an aqueous solution which comprises:

(a) contacting said aqueous solution with a microcapsule having a polymeric wall surrounding an aqueous solution containing a reagent selected from the group consisting of Fe^{+3}, I_2 and quinone, said wall being substantially insoluble in said fluid and said ionic uranium in the +4 valence state being permeable to said wall;
(b) permeating ionic uranium in the +4 valence state through said wall into said aqueous solution;
(c) converting said ionic uranium in the +4 valence state in said aqueous solution to ionic uranium in the +6 valence state and which is impermeable to said wall;
(d) separating said microcapsules from said aqueous solution;
(e) converting the ionic uranium in the +6 valence state into permeable ionic uranium in the +4 valence state; and
(f) permeating the ionic uranium in the +4 valence state through said wall.

4,324,768

PROCESS FOR PREPARATION OF LEAD COMPOUNDS

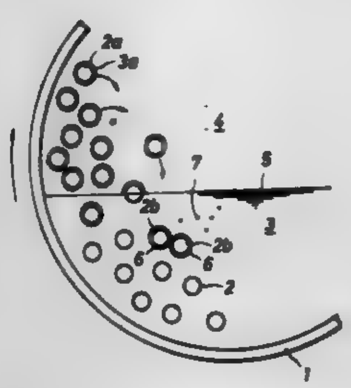
Yujiro Sugahara, Tokyo; Hiroyuki Naito, Tsuruoka; Mamoru Saito, Tsuruoka; Takashi Mori, Tsuruoka, and Toshio Honma, Tsuruoka, all of Japan, assignors to Mizusawa Kagaku Kozyo Kabushiki Kaisha, Osaka, Japan

Continuation-in-part of Ser. No. 958,490, Nov. 7, 1978, abandoned. This application Dec. 16, 1980, Ser. No. 217,084

Claims priority, application Japan, Nov. 12, 1977, 52-135908

Int. Cl.[3] **C01G** *21/14;* **C04B** *31/02;* **C07F** *7/24*

U.S. Cl. 423—92 **8 Claims**



1. A process for the preparation of water insoluble lead compounds having a composition represented by the following general formula

$$nPbO.PbX_{2/x}$$

wherein X stands for an inorganic acid or organic acid radical, x indicates the valency of the radical X and n is a number of from 0 to 5, which comprises reacting a lead monoxide with an acidic component which is a corresponding inorganic acid, its acidic oxide, a corresponding organic acid or an acid anhydride of said organic acid of an acetic acid or of an acetic acid or in the presence of no more than a catalytic amount of an acetic acid, wherein the lead monoxide is a lead monoxide containing a higher lead oxide selected from the group consisting of lead dioxide and minimum in an amount of 0.001 to 5% by weight based on the total weight and being obtained by charging granules of metallic lead, an aqueous liquid medium and oxygen in a rotary mill, rotating the rotary mill under such conditions that at least parts of the metallic lead granules wetted with the liquid medium are located in the gas phase above the level of the liquid medium and friction is caused among the metallic granules through the liquid medium, to thereby form a dispersion of very fine particles of lead monoxide in the liquid medium and separating the dispersion from the metallic lead granules, and wherein the lead monoxide in the form of the as-prepared dispersion is mixed with said acidic component in the presence of 0.001 to 5% by weight, based on the lead monoxide, of an acid addition salt of hydroxylamine with a nonoxidizing acid under such conditions that the initial pH value of the mixture is maintained at a level not higher than 7, said acid addition salt being present in an amount sufficient to reduce most or all the lead dioxide or minimum in the starting lead monoxide.

4,324,769

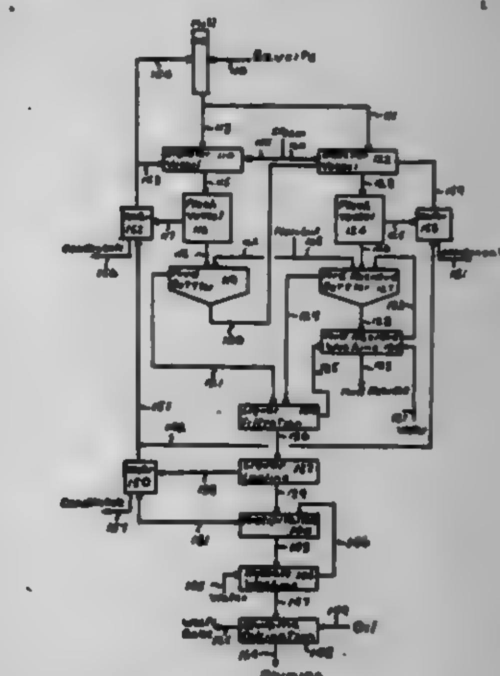
EXTRACTION AND PRODUCTION OF ALUMINA CONTAINING LESS THAN 0.03 PERCENT IRON OXIDE

James W. McDaniel, Baton Rouge, La., assignor to Alumina Development Corporation, Baton Rouge, La.

Continuation-in-part of Ser. No. 80,183, Oct. 1, 1979, abandoned. This application Oct. 22, 1980, Ser. No. 199,135

Int. Cl.[3] **C01F** *7/06, 7/20, 7/34*

U.S. Cl. 423—121 **6 Claims**



1. A process for extracting from an ore containing alumina wherein said alumina is predominantly in the form of alumina trihydrate, but also wherein said alumina is at least about 5% in the form of alumina monohydrate, the extracted alumina having an Fe_2O_3 content of less than 0.03% by weight, which comprises:

(a) digesting in a first reaction vessel at 100°-230° C. a mixture of spent caustic aluminate liquor, and a first portion of said ore for a period of time sufficient to form a first supersaturated caustic aluminate liquor stream and a mud stream,
(b) separating said aluminate liquor stream from said mud stream,
(c) digesting in a second reaction vessel at a temperature greater than in said first reaction zone but between 200°-300° C. a second portion of said ore, said mud stream, and spent caustic aluminate liquor for a period of time sufficient to form a second supersaturated caustic aluminate stream and a second mud stream, wherein the alumina to caustic weight ratio is between 0.58-0.8, and said mud stream to said second portion of said ore weight ratio is between 0.1 to 2.5,

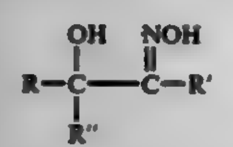
(d) separating said second aluminate stream from said second mud stream,
(e) combining said first and second aluminate streams in a third reaction vessel with diluted spent caustic aluminate liquor and alumina hydrate seeding to precipitate out alumina hydrate, and
(f) calcining said alumina hydrate to form said alumina.

4,324,770
PROCESS FOR DRY SCRUBBING OF FLUE GAS
Even Bakke, Stamford, Conn., assignor to Peabody Process Systems, Inc., Stamford, Conn.
Filed Sep. 22, 1980, Ser. No. 189,026
Int. Cl.³ C01B *17/00*
U.S. Cl. 423—242 **7 Claims**

1. In a process for removing sulfur dioxide from flue gas including the steps of feeding the sulfur dioxide-containing flue gas to a spray dryer, contacting the flue gas with an atomized solution of alkali reactant in a spray zone in a spray drying chamber to form sulfite and sulfate reaction products, spray drying the solution and formed materials in the spray drying chamber to obtain dry particles, conveying the flue gas and dry particles to a dry particle collector and removing the dry particles in the dry particle collector, the improvement therein comprising recycling a portion of the dry particles removed in the dry particle collector and contacting the sulfur dioxide containing-flue gas directly with the dry recycled portion of particles.

4,324,771
ALCOHOL & HYDROXYOXIME EXTRACTANT FOR BORON & CALCIUM FROM BRINES
Ernest W. Barlow, Stansbury Park, and Ramaswami Neelameggham, Salt Lake City, both of Utah, assignors to Amax Inc., Greenwich, Conn.
Filed Jun. 23, 1980, Ser. No. 162,335
Int. Cl.³ B01D *11/01;* C01B *35/10*
U.S. Cl. 423—283 **8 Claims**

1. A process for extracting boron from brines, comprising:
providing a brine containing boron, contacting the brine with a water-insoluble organic extractant consisting of from 0.8 to 15 volume percent of an α-hydroxy oxime extractant having the general formula:

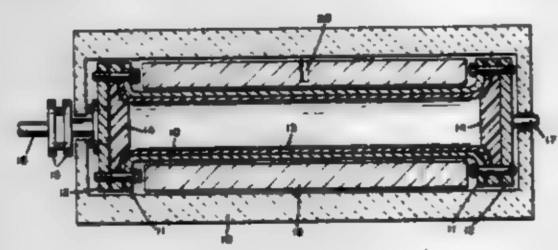


where R and R′ are hydrocarbon radicals and R″ is selected from the group consisting of hydrogen and organic hydrocarbon radicals, from 0 to 10 volume percent of a 7 to 12 carbon alcohol, balance essentially diluent to said brine to extract boron from the brine.

4,324,772
PROCESS FOR PRODUCING HYDROXYAPATITE
James F. Conn, and Leofwin A. Jessen, both of St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.
Filed Nov. 19, 1980, Ser. No. 208,224
Int. Cl.³ C01B *25/32*
U.S. Cl. 423—309 **10 Claims**

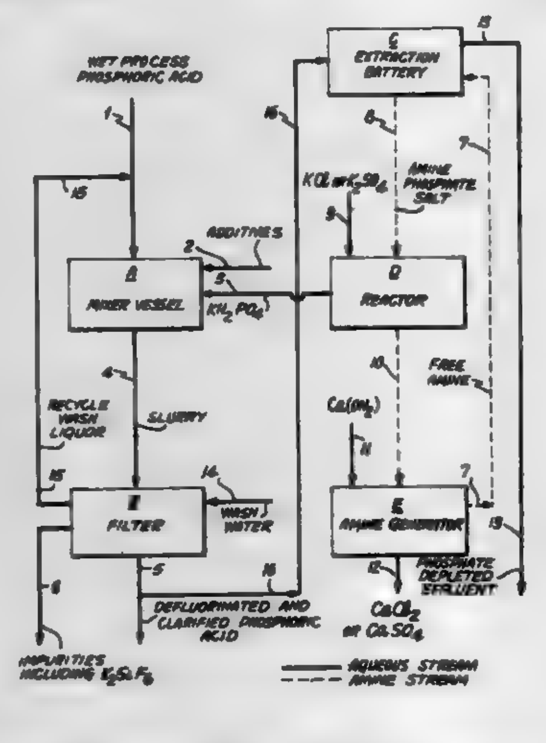
1. A process for producing hydroxyapatite comprising continuously charging to the first stage of a two-stage reactor a slurry of calcium oxide in water and a solution of phosphoric acid in water, allowing said slurry and said solution to react in said first stage under vigorous agitation at a pH such that the viscosity of the reaction mass is near minimum viscosity, continuing said reaction in the second stage of said reactor under vigorous agitation while continuously charging additional solution of aqueous phosphoric acid thereto in an amount sufficient to maintain the pH in said second stage at about 7.0 to about 7.4 and continuously removing a suspension of hydroxyapatite from said second stage.

4,324,773
HYDROTHERMAL PROCESS AND APPARATUS FOR SYNTHESIZING CRYSTALLINE POWDERS
Bruce H. Chai, Bridgewater; Ernest Buehler, Chatham, and John J. Flynn, Millington, all of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.
Filed Jan. 30, 1981, Ser. No. 230,077
Int. Cl.³ C01B *25/36*
U.S. Cl. 423—311 **12 Claims**



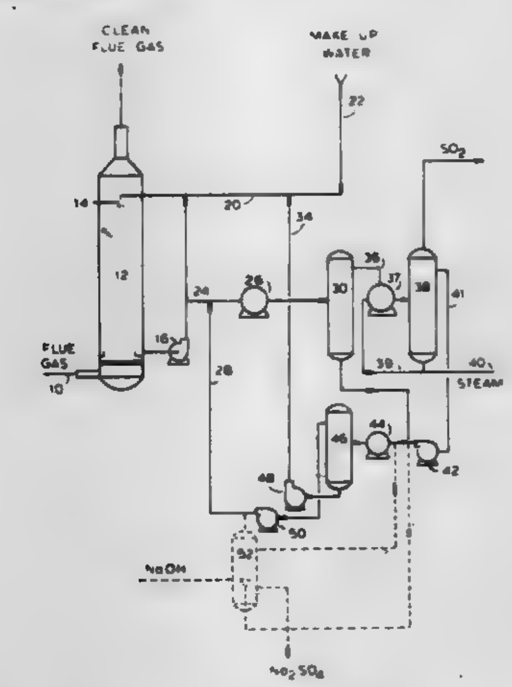
1. A process for preparing crystalline powders of alpha-aluminum orthophosphate or alpha-gallium orthophosphate comprising the sequential steps of:
(a) heating a sealed pressure vessel containing a mixture comprising a compound selected from the group consisting of aluminum hydroxide, aluminum oxide, and gallium sesquioxide and an excess of concentrated phosphoric acid to a first temperature between about 180° C. and about 235° C.,
(b) cooling the vessel to a second temperature between about 125° C. and about 150° C.,
(c) repeating steps (a) and (b) at least one more time,
(d) rapidly cooling the vessel from the first temperature, to near ambient temperature, and
(e) recovering the resultant crystalline powder.

4,324,774
METHOD FOR THE MANUFACTURE OF DEFLUORINATED PHOSPHATIC PRODUCTS
Avraham M. Baniel, Jerusalem, Israel, assignor to Fertilizer Development S.A., Switzerland
Filed Jul. 17, 1980, Ser. No. 169,765
Int. Cl.³ C01B *25/16*
U.S. Cl. 423—321 R **11 Claims**



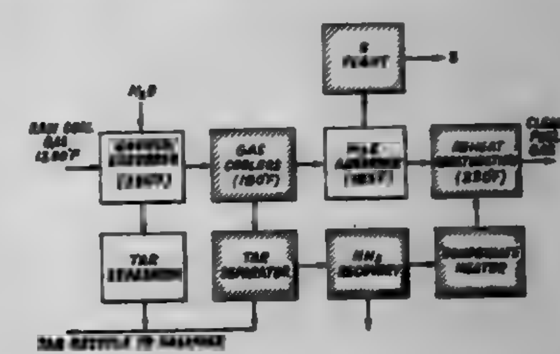
1. A method for removal of fluorine from wet-process phosphoric acid (WPA) prepared by acidulation of phosphate rock with sulfuric acid comprising reacting wet-process phosphoric acid with KH_2PO_4 in a first unit to precipitate fluorine present in said wet-process phosphoric acid as potassium fluosilicate and produce clarified and substantially fluorine-free phosphoric acid, wherein said KH_2PO_4 is formed in-situ by reacting in a second unit (i) an amine phosphate salt with (ii) a potassium salt selected from the group consisting of KCl and K_2SO_4, and wherein said amine phosphate salt is formed in a third unit by reaction of (i) an amine which is present in a water-immiscible liquid system comprised of members selected from the group consisting of a primary, secondary, tertiary aliphatic amine, a quaternary ammonium base or mixtures thereof, said amine and/or quaternary ammonium base comprising at least two aliphatic hydrophobic groups each containing at least 7 carbon atoms directly attached to the nitrogen thereof, with (ii) a stoichiometric equivalent amount of a portion of the clarified and substantially fluorine-free phosphoric acid produced in said first unit.

4,324,775
PROCESS FOR RECOVERING SULFUR BY REMOVAL OF SULFUR DIOXIDE FROM GASEOUS MIXTURES
Shao E. Tung, 91 Blake Rd., Brookline, Mass. 02146
Continuation-in-part of Ser. No. 838,913, Oct. 3, 1977, Pat. No. 4,211,761, which is a continuation-in-part of Ser. No. 728,174, Sep. 30, 1976, Pat. No. 4,101,643, which is a continuation-in-part of Ser. No. 499,582, Aug. 22, 1974, Pat. No. 3,084,529. This application Mar. 10, 1980, Ser. No. 129,079
The portion of the term of this patent subsequent to Oct. 5, 1993, has been disclaimed.
Int. Cl.³ C01B *17/48, 17/00, 17/04*
U.S. Cl. 423—539 **17 Claims**



1. A process for removing SO_2 from a gaseous mixture comprising:
contacting the gaseous mixture in a scrubbing zone with a scrubbing liquid comprising an aqueous solution of at least one alkali metal scrubbing salt having the formula M_2B, where M^+ is a monovalent alkali metal cation, and $B^=$ is a divalent anion, said salt being derived from a weak acid having pKa value which is at least 3.0 to yield a pregnant, spent aqueous scrubbing solution containing an alkali metal hydrosulfite salt and a second compound containing a proton and an anion derived from such scrubbing salt;
contacting, in a transfer reaction zone, the pregnant, spent scrubbing solution with an organic liquid phase which contains a transfer reactant, which phase and reactant do not form stable emulsions with water, said transfer reactant being an amine acid salt containing a cationic group derived from at least one amine functional group selected from the class —NH_2, >NH, >N— and —N—$^+$, and said cationic group further containing a hydrophobic subgroup containing from about 8 to about 45 carbon atoms, said amine salt further containing a monovalent, proton-containing acidic anion, —HB^-, having a monovalent cation moiety containing said amine functional group and hydrophobic subgroup attached thereto, said acidic anion being derived from another anion containing one less proton than said monovalent acidic anion, which other anion is derived from a weak acid having a pKa value greater than 3.0, said amine salt having a solubility in water of less than about 5 gms/100 gms of water at 25° C. to yield, by an ion transfer reaction, a post-transfer reaction organic liquid phase containing a sulfur containing amine acid salt yielded by the transfer reaction, and a post-transfer reaction aqueous phase containing either a compound containing the same anion, —HB^-, as said amine salt or said scrubbing salt;
heating the post-transfer reaction organic liquid phase to decompose the sulfur-containing amine salt to yield sulfur dioxide and to reduce the acidity of the amine phase; and
contacting the acidity-reduced amine phase with said post-transfer reaction aqueous phase to yield, by a regeneration reaction, an organic phase which contains regenerated amine acid salt transfer reactant and an aqueous phase containing regenerated alkali metal scrubbing salt.

4,324,776
MID-TEMPERATURE H_2S REMOVAL PROCESS
Bang M. Kim, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.
Filed Dec. 8, 1980, Ser. No. 214,161
Int. Cl.³ B01D *53/34;* C01C *1/242*
U.S. Cl. 423—550 **18 Claims**



1. A process for removing hydrogen sulfide from a gaseous stream comprising the steps of:
(a) providing an aqueous solution at a pH of between 2 and 12, said solution containing at least one reactive metal compound therein the metal of which is selected from the group consisting of nickel, iron and zinc;
(b) removing hydrogen sulfide from said gaseous stream by contacting the same with said aqueous solution at a temperature of between 300° and 400° F. in a closed vessel to form a resulting solution having a metal sulfide reaction product therein and a resulting gaseous stream depleted in hydrogen sulfide;
(c) removing said resulting gaseous stream from said contact;
(d) regenerating said reactive metal compound provided in the aqueous solution in step (a) from said metal sulfide reaction product by aerating at least a portion of said resulting solution with an oxygen-containing gas while maintaining the pH level of said resulting solution at between approximately 2 to 12.

4,324,777

MATERIAL AND METHOD TO DISSOCIATE WATER AT CONTROLLED RATES

Eugene R. Anderson, 601 Highland, Wills Point, Tex. 75169

Continuation-in-part of Ser. No. 68,749, Aug. 23, 1979, and a continuation-in-part of Ser. No. 902,705, May 4, 1978, Pat. No. 4,207,095, and a continuation-in-part of Ser. No. 902,708, May 4, 1978, Pat. No. 4,182,748. This application Oct. 16, 1979, Ser. No. 85,374

The portion of the term of this patent subsequent to Jan. 8, 1997, has been disclaimed.

Int. Cl.³ C01B *1/07, 13/02*

U.S. Cl. 423—579 29 Claims

1. A material for the generation of hydrogen and oxygen from water at controlled rates, comprising: an amalgam of an alkali metal, mercury and aluminum wherein the atomic weight ratio of alkali metal to mercury is from about 3:1 to about 1:1.5 and the atomic weight ratio of alkali metal to aluminum is from about 1:1 to about 3:1; a catalytic alloy of platinum and at least one element selected from the group consisting of germanium, antimony, gallium, thallium, indium, cadmium, bismuth, lead, zinc and tin; and an extender metal comprising at least one metal selected from the group consisting of silver, copper, thallium, titanium, magnesium, molybdenum, tungsten, cadmium, nickel, rhodium, iron, palladium, cobalt, chromium, tin, iridium, lead, gallium, vanadium, gold, antimony, zirconium and bismuth, said extender metal comprising from about 0.1 wt. % to about 97.3 wt. % of the total combination of amalgam, catalytic alloy and extender metal.

4,324,778

PHARMACEUTICAL COMPOSITION CONTAINING PARCETAMOL

Adrian F. Davis, Hounslow, England, assignor to Beecham Group Limited, England

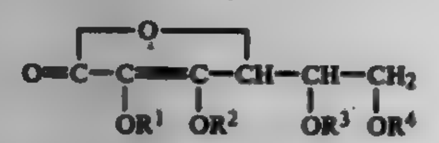
Filed Jan. 29, 1980, Ser. No. 116,538

Claims priority, application United Kingdom, Jan. 31, 1979, 03420/79

Int. Cl.³ A61U *31/165, 31/365*

U.S. Cl. 424—10 10 Claims

1. An analgesic and antipyretic pharmaceutical composition adapted for oral administration, which comprises paracetamol and an amount of ascorbate anion bioprecursor which ascorbate ion precursor is a derivative of ascorbic acid of the formula (II):



(II)

in which R^1, R^2, R^3 and R^4, which may be the same or different, are each hydrogen or an alkyl group of 10 to 20 carbon atoms, R^1, R^2, R^3 and R^4 not all being hydrogen simultaneously, sufficient, on oral administration of said composition, to reduce the potential liver toxicity effects of the paracetamol content of said composition, said ascorbate anion bioprecursor being absorbable from the gastro-intestinal tract to produce higher and/or more prolonged ascorbate anion concentrations in the liver after oral administration of mole equivalent amounts of ascorbic acid itself, the weight ratio of ascorbate bioprecursor to paracetamol calculated as ascorbic acid equivalents being from 1:4 to 3:1.

4,324,779

METHOD FOR TREATING HYPERTONIA WITH N-(2-FURFURYL)-4-CHLORO-5-SULFAMOYL-ANTHRANILIC ACID AND PREPARATIONS THEREOF

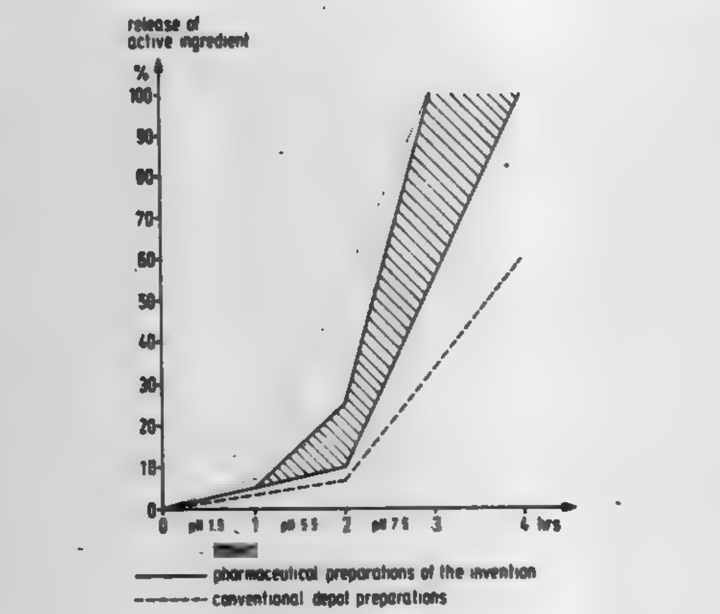
Gebhard Dahlhausen, Kronberg; Hans-Werner Dibbern; Füllerth, both of Kelkheim, and Gerhard Ross, Kriftel, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

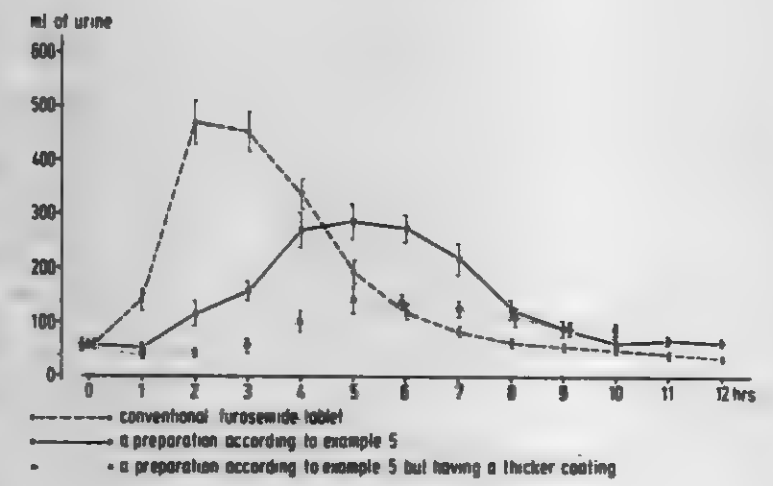
Continuation of Ser. No. 749,993, Dec. 13, 1976, abandoned, which is a continuation-in-part of Ser. No. 650,594, Jan. 20, 1976, abandoned, which is a continuation of Ser. No. 500,285, Aug. 26, 1974, abandoned. This application Sep. 20, 1979, Ser. No. 77,181

Claims priority, application Fed. Rep. of Germany, Aug. 28, 1973, 2343218

Int. Cl.³ A61K *9/22, 9/32*

U.S. Cl. 424—20 1 Claim





1. A furosemide-containing pellet for the oral administration of furosemide, said pellet consisting essentially of a core of furosemide having thereover a sustained-release coating which starts to dissolve in a weakly acid medium, which coating, when its release characteristics are measured in vitro in a flow-through-cell according to Dibbern,

(a) releases not more than 5 percent of said furosemide into a buffer solution having a pH of 1.5 during the first hour of measurement in said cell;

(b) releases about 10 to at most 25 percent of said furosemide into a buffer solution having a pH of 5.5 during the second hour of measurement in said cell; and

(c) releases the remainder of said furosemide substantially completely into a buffer solution having a pH of 7.5 during the third and fourth hours of measurement in said cell.

4,324,780

COPOLYMERS, PROCESS FOR PREPARING THE SAME AND COSMETIC COMPOSITIONS CONTAINING THE SAME

Bernard Jacquet, Antony; Claude Mahieu, Paris, and Christos Papantoniou, Montmorency, all of France, assignors to L'Oreal, Paris, France

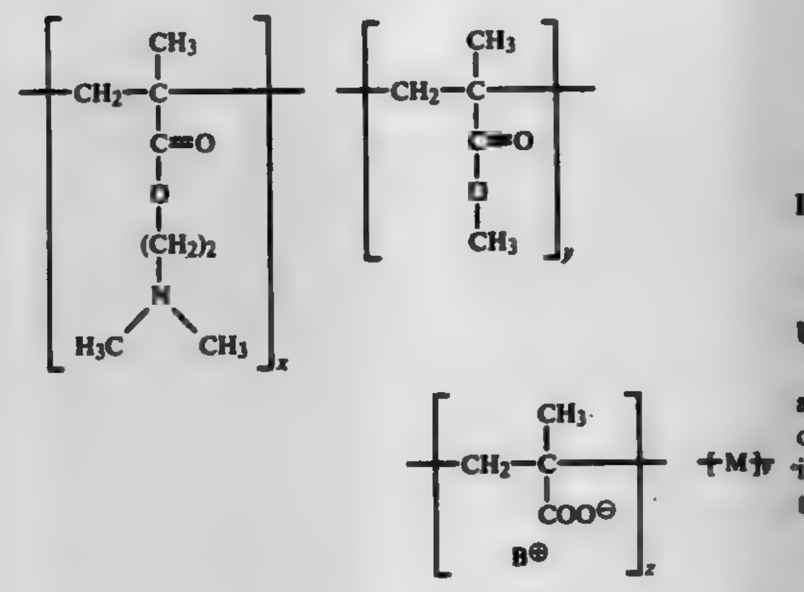
Division of Ser. No. 897,435, Apr. 18, 1978, Pat. No. 4,237,253. This application Jun. 25, 1980, Ser. No. 162,927

Claims priority, application France, Apr. 21, 1977, 77 12048; Mar. 14, 1978, 78 07308

Int. Cl.³ A61K *7/00, 7/06*

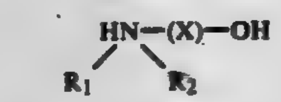
U.S. Cl. 424—47 7 Claims

1. A cosmetic composition comprising in an appropriate cosmetic vehicle from 0.5–10 percent by weight of at least one copolymer having the formula



wherein

B represents Na, K, NH_4,



or 2-amino-2-methyl propanol-1;

R_1 and R_2 each independently represent hydrogen or —X—OH;

X represents alkylene having 1–3 carbon atoms or alkylene substituted by at least one hydroxymethyl;

M represents at least one unsaturated monomer selected from the group consisting of acrylamide substituted on the nitrogen by alkyl, methacrylamide, substituted on the nitrogen by alkyl, acrylate or monoalkyl ether of ethylene glycol, acrylate of monoalkyl ether of polyethylene glycol, methacrylate of monoalkyl ether of ethylene glycol, methacrylate of monoalkyl ether of polyethylene glycol and N-vinyl pyrrolidone;

x is 22–64 mole percent;

y is 13–17 mole percent;

z is 6–23 mole percent;

v is 0–22 mole percent; and

x+y+z+v is equal to 100 mole percent.

4,324,781

PESTICIDAL AQUEOUS SUSPENSION

Yukikazu Okamoto, Ikeda, and Masabu Tagami, Takarazuka, both of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Sep. 10, 1979, Ser. No. 74,371

Claims priority, application Japan, Sep. 8, 1978, 53/110942

Int. Cl.³ A01N *37/00, 43/08, 47/10, 61/02*

U.S. Cl. 424—78 9 Claims

1. A pesticidal aqueous suspension having excellent dispersion stability, which comprises, based on the total weight of the suspension, (a) as a pesticidally active ingredient, about 10 to 50 wt% of an N-methyl- or N-phenylcarbamate which is solid and has a solubility in water of 10 to 10,000 ppm at room temperature suspended in water in a finely dispersed state; (b) about 0.5 to 5 wt% surfactant having a hydrophile-lipophile balance (HLB) less than 5; (c) about 0.5 to 5 wt% polyvinyl alcohol having a degree of hydrolysis of about 70 to 90 mol% and a degree of polymerization of about 300 to 2,600; (d) about 5 to 30 wt% ethylene glycol; and (e) about 5 to 30 wt% liquid paraffin.

4,324,782

DENTAL CARIES INHIBITING PRODUCT OF IMMUNIZED COW'S MILK HAVING ANTIBODIES SPECIFIC TO KILLED *STREPTOCOCCUS MUTANS* CELLS

Lee R. Beck, 2550 Dunmore Pl., Birmingham, Ala. 35226

Continuation-in-part of Ser. No. 436,946, Jan. 28, 1974, abandoned. This application Mar. 10, 1977, Ser. No. 776,249

Int. Cl.³ A61K *39/09*

U.S. Cl. 424—87 7 Claims

1. The method of reducing the incidence of dental caries in animals, which includes the steps of passing into the oral cavity of the host a bovine milk immunoglobulin comprising antibodies specific to killed *Streptococcus mutans* cells in a pharmaceutically accepted vehicle.

4,324,783

ANTIBACTERIAL COMPOSITION FOR MEDICAL USE

Isamu Saikawa; Takashi Yasuda; Masaru Tai; Yutaka Takashita, all of Toyama; Hiroshi Sakai, Takaoka; Michiko Mae, Toyama; Masahiro Takahata, Kosugimachi, and Susumu Mitsuhashi, Musashino, all of Japan, assignors to Toyama Chemical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 913,105, Jun. 6, 1978, Pat. No. 4,199,566. This application Jan. 17, 1980, Ser. No. 113,065

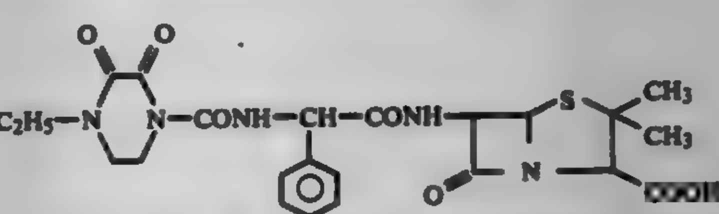
Claims priority, application Japan, Jun. 8, 1977, 52-66707

The portion of the term of this patent subsequent to Apr. 22, 1997, has been disclaimed.

Int. Cl.³ A61K *35/00*

U.S. Cl. 424—114 7 Claims

1. An antibacterial composition for administration to a host animal, comprising: as active ingredients 6-[D(-)-α-(4-ethyl-2,3-dioxo-1-piperazinylcarbonylamino)-phenylacetamido]-penicillanic acid represented by the formula:



or a pharmaceutically acceptable salt thereof and a β-lactamase-inhibiting penicillin selected from the group consisting of Cloxacillin, Dicloxacillin, Oxacillin, Methicillin, Flucloxacillin and a pharmaceutically acceptable salt thereof, said β-lactamase-inhibiting penicillin being mixed with said penicillanic acid in a ratio of 800/3200 to 3200/800.

4,324,784

PROCESS FOR PREVENTING GROWTH OF MARINE ORGANISMS ON A SUBSTANCE USING HYDROGEN PEROXIDE

Akira Naito, Kashiwa; Toru Hayakawa, Chiba; Masakatsu Nakanishi, Sakai; Sunao Ikuta, Tokorozawa; Shoichiro Kajiwara, Matsudo, and Hitoshi Yamaguchi, Yokkaichi, all of Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Mar. 19, 1980, Ser. No. 131,631

Int. Cl.³ A01N *59/00, 43/84, 43/40, 43/48*

U.S. Cl. 424—130 6 Claims

1. A process for preventing growth of shellfish, Polyzoa and Hydrozoa on a manufactured surface of an industrial plant in contact with sea water, characterized by adding a compound selected from the group consisting of hydrogen peroxide, an inorganic peroxo acid and an organic peroxo acid to the sea water in contact with said surface to provide a concentration of hydrogen peroxide in said sea water in an amount of from 0.01 to 500 ppm.

4,324,785

FOOT POWDER

Emma S. Stevens, Box 4969, Aspen, Colo. 81611, assignor to Emma S. Stevens and Stephen A. Holmes, both of Aspen, Colo.

Filed May 20, 1980, Ser. No. 151,650

Int. Cl.³ A61K *35/78, 7/035, 9/14*

U.S. Cl. 424—195 8 Claims

1. A powder composition for imparting warmth when applied to living, human skin, comprising:

about 30% to about 80%, by volume, powdered cayenne pepper;

about 10% to about 50% by volume, powdered ginger;

about 3% to about 40% by volume, powdered mustard; and

0 to about 20%, by volume, of at least one powdered aromatic substance selected from the group consisting of clove, spearmint and peppermint.

8. A method for imparting warmth to a living human foot comprising applying to said foot about 0.2 to about 2.0 grams of a powder according to claim 1.

4,324,786

PYRIDO[2,3-e]-AS-TRIAZINE DERIVATIVES AND PHARMACEUTICAL COMPOSITIONS

Andras Messmer; Pal Benko; György Hajos; Lajza Petocz; Ibolya Kosoczky, and Peter Görög, all of Budapest, Hungary, assignors to Egyt Gyogyszervegyeszeti Gyar, Budapest, Hungary

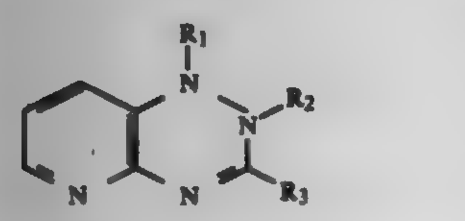
Filed Apr. 25, 1980, Ser. No. 143,778

Claims priority, application Hungary, Apr. 28, 1979, EE 2654

Int. Cl.³ A61K *31/535, 31/53;* C07O *471/04*

U.S. Cl. 424—248.54 5 Claims

1. A pyrido[2,3-e]-as-triazine derivative of the general formula (I),



(I)

wherein

R^1 and R^2 each stand for a C_{1-20} alkylcarbonyl, halogenated (C_{1-4} alkyl)-carbonyl, C_{1-4} alkoxycarbonyl, benzoyl, phenyl-(C_{1-4} alkyl)-carbonyl or phenyl-(C_{2-4} alkenyl)-carbonyl group or a 5–10 membered mono- or bicyclic nitrogen-containing heterocyclic acid residue (preferably a pyridylcarbonyl group) containing optionally one or more additional nitrogen, oxygen and/or sulfur atoms in the heterocyclic ring, and optionally one or more identical or different substituents selected from the group consisting of halogen, C_{1-4} alkoxy, nitro and hydroxy, are attached to the aromatic or heterocyclic rings, furthermore one of R^1 and R^2 may also stand for hydrogen atom, or

R^1 and R^2 form, together with the adjacent nitrogen atoms, a pyrazole-3,5-dione ring having optionally a C_{1-6} alkyl substituent in position 4, and

R^3 stands for hydrogen, halogen, C_{1-4} alkoxy, amino, mono-(C_{1-6} alkyl)-amino, di-(C_{1-6} alkyl)-amino, hydroxy, alkylated or acylated hydroxy, morpholino, piperazino, N-(C_{1-6} alkyl)-piperazino, N-benzylpiperazino or N-pyridylpiperazino group or C_{1-4} alkoxycarbonyloxy-group,

or a pharmaceutically acceptable acid addition salt thereof.

5. A pharmaceutical composition comprising as active ingredient an effective amount of at least one pyrido[2,3-e]-as-triazine derivative of the general formula (I), wherein R^1, R^2 and R^3 are as defined in claim 1, or a pharmaceutically acceptable acid addition salt thereof together with a pharmaceutical carrier.

4,324,787

2-OXO-1-PYRROLIDINEACETIC ACID COMPOUNDS AND THEIR MEDICINAL USE

Karl-Heinz Boltze; Hans-Dieter Dell, both of Berg. Gladbach, and Haireddin Jacobi, Leichlingen, all of Fed. Rep. of Germany, assignors to Troponwerke GmbH & Co., KG, Cologne, Fed. Rep. of Germany

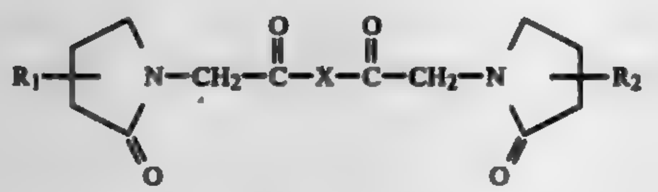
Filed Nov. 30, 1978, Ser. No. 965,374

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1977, 2757680

Int. Cl.³ A61K *31/40, 31/495;* C07D *207/12, 403/14*

U.S. Cl. 424—250 13 Claims

1. A 2-oxo-1-pyrrolidineacetic acid compound of the formula (I)



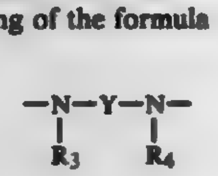
(I)

or its physiologically acceptable salts

in which

R_1 and R_2 are identical or different and in each case denote a hydrogen atom, one or two lower alkyl groups, one or two lower alkoxy groups, one trifluoromethyl group or one or two halogen atoms and

X denotes a grouping of the formula



in which

R_3 and R_4, including the two nitrogen atoms and Y, complete a piperazine or pyrazolidine ring which is unsubstituted or substituted by one or more C_1–C_3 alkyl or C_1–C_3 alkoxy groups or one or more halogen atoms, or

R_3 and R_4 in each case independently denote a hydrogen atom or a lower alkyl group and

Y denotes phenylene or pyridylene optionally substituted by lower alkyl, lower alkoxy, halogen atoms or a trifluoromethyl group; denotes an alkylenearylene-alkylene grouping in which arylene is phenylene or pyridylene and is optionally substituted by one or two lower alkyl or lower alkoxy groups, halogen atoms or trifluoromethyl groups; a cycloalkylene group with 4 to 6 ring members which is optionally substituted by one or two alkyl or alkoxy groups or halogen atoms or a trifluoromethyl group; or denotes a straight-chain or branched alkylene grouping which is optionally substituted by a lower alkoxycarbonyl group and in which one CH_2 group can be replaced by nitrogen, said nitrogen atom being unsubstituted or substituted by lower alkyl.

10. A method of combating disorders of the brain function in warm-blooded animals which comprises administering to the animals a nootropically effective amount of an active compound according to claim 1 either alone or in admixture with a diluent or in the form of a medicament.

4,324,788

ALKOXYALKYLIDENHYDRAZINOPRIDAZINES AND PROCESS FOR THEIR PREPARATION

Luciano Dorigotti, Milan; Giovanni Gaviraghi, Agrate Brianza; Giorgio Pifferi, Milan; Mario Pinza, Corsico, and Claudio Semeraro, Bresso, all of Italy, assignors to I.S.F. S.p.A., Milan, Italy

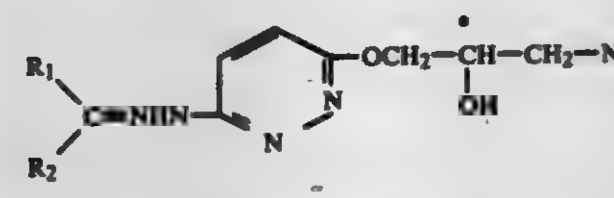
Filed Apr. 21, 1980, Ser. No. 142,457

Claims priority, application Italy, Apr. 23, 1979, 22035 A/79

Int. Cl.³ C07D *237/22, 405/12;* A61K *31/50*

U.S. Cl. 424—250 25 Claims

1. 3-Alkoxy-6-Alkylidenhydrazinopyridazines



wherein R is alkyl or cycloalkyl having up to 5 carbon atoms, optionally substituted with one of the following: unsubstituted phenyl, phenyl substituted by one, two or three C_1–C_3 alkoxy substituents or a methylene-dioxy group, or cycloalkyl, R_1 is hydrogen or alkyl having from 1 to 3 carbon atoms and R_2 is alkyl having from 1 to 3 carbon atoms, carboxyl or phenyl in the form of optically active isomers or a mixture of same and the corresponding pharmaceutically acceptable nontoxic acid addition salts.

25. A pharmaceutical composition containing an antihypertensively effective amount of a compound according to claim 1 in admixture with a pharmaceutically acceptable diluent.

4,324,789

1-BENZYL-5-NITRO-4-(PYRIDYL OR IMIDAZOLYL) ALKYLAMINO-1,2,3,6-TETRAHYDROPYRIMIDINES AND BLOCKING OF HISTAMINE H_2-RECEPTORS THEREWITH

Michael L. Roantree, Welwyn Garden City, and Rodney C. Young, Bengeo, both of England, assignors to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

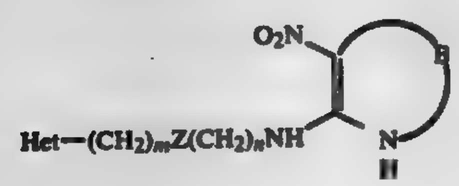
Division of Ser. No. 43,785, May 30, 1979, Pat. No. 4,238,493. This application Jun. 16, 1980, Ser. No. 159,525

Int. Cl.³ A61K *31/505;* C07D *239/06*

U.S. Cl. 424—251 8 Claims

1. A compound represented by Structure 1:

Structure 1



in which

Het is selected from the group consisting of imidazolyl or pyridyl rings, such rings optionally substituted by lower alkyl, trifluoromethyl, hydroxymethyl, chloro, bromo, hydroxy, lower alkoxy or amino;

Z is sulphur, methylene or oxygen;

m is 0, 1 or 2 and n is 2 or 3 provided that m+n is 3 or 4; and

B is a 2-aza-1,3-propanediyl group ($—CH_2NR^3CH_2—$ where R^3 is benzyl), or a pharmaceutically acceptable acid addition salt thereof.

8. A method of blocking histamine H_2-receptors which comprises administering an effective amount of a compound according to claim 1 to an animal in need of such treatment.

4,324,790

ANTIPSYCHOTIC TETRAHYDROPYRIDINYL-INDOLES, COMPOSITIONS AND METHOD OF USE

Jacques Guillaume, Sevran; Lucien Nedelec, Le Raincy, and Claude Dumont, Nogent-sur-Marne, all of France, assignors to Roussel Uclaf, Paris, France

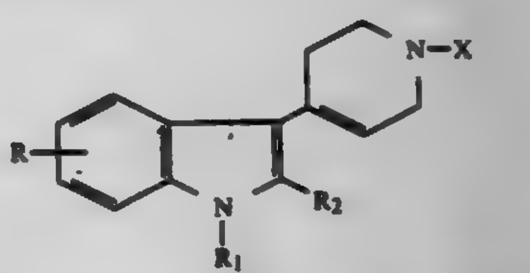
Filed Jun. 30, 1980, Ser. No. 163,966

Claims priority, application France, Jul. 13, 1979, 79 18217

Int. Cl.³ A61K *31/44;* C07D *401/04*

U.S. Cl. 424—263 15 Claims

1. A compound selected from the group consisting of an indole of the formula



wherein X is selected from the group consisting of alkyl of 1 to 6 carbon atoms, alkenyl of 2 to 5 carbon atoms, alkynyl of 3 to 5 carbon atoms, cycloalkyl of 5 to 6 carbon atoms, cycloalkylalkyl of 4 to 7 carbon atoms, aralkyl of 7 to 12 carbon atoms, hydroxyalkyl of 2 to 5 carbon atoms and phenoxyalkyl of 1 to 5 alkyl carbon atoms, R is selected from the group consisting of hydrogen, halogen, alkoxy of 1 to 3 carbon atoms, nitro, amino, trifluoromethyl and methylthio, R_1 and R_2 are individually selected from the group consisting of hydrogen and alkyl of 1 to 3 carbon atoms with the proviso that if R is hydrogen, halogen or alkoxy of 1 to 3 carbon atoms, X must be hydroxyalkyl or phenoxyalkyl and their non-toxic, pharmaceutically acceptable acid addition salts.

11. A method of inducing antipsychotic activity in a warm-blooded animal comprising administering to a warm-blooded animal an amount of at least one compound of claim 1 sufficient to induce antipsychotic activity.

4,324,791

HETEROCYCLIC ANTIDIARRHEAL COMPOSITIONS & METHODS OF USE

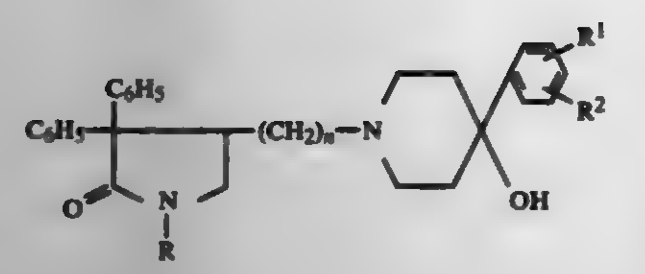
William J. Welstead, Jr., Richmond, Va., assignor to A. H. Robins Company, Inc., Richmond, Va.

Continuation-in-part of Ser. No. 796,264, May 12, 1977, Pat. No. 4,120,969, which is a continuation-in-part of Ser. No. 615,952, Sep. 23, 1975, abandoned, which is a continuation-in-part of Ser. No. 541,684, Jan. 16, 1975, abandoned. This application Aug. 1, 1978, Ser. No. 930,124

Int. Cl.³ A61K *31/445*

U.S. Cl. 424—267 6 Claims

1. A method for the treatment of a warm-blooded animal afflicted with diarrhea which comprises administering to said animal in an amount sufficient to relieve said diarrhea, a compound selected from the group consisting of 1-R-4-(omega-substituted alkyl)-3,3-diphenyl-2-pyrrolidinones of the formula:



wherein;

R is selected from the group consisting of hydrogen, lower alkyl, cyclohexyl and benzyl,

R^1 is selected from the group consisting of hydrogen, chloro, bromo, fluoro, trifluoromethyl and lower-alkoxy,

R^2 is selected from the group consisting of hydrogen, chloro, bromo and fluoro, and

n is 1, 2 or 3 and the pharmaceutically acceptable acid addition salts thereof.

4,324,792

ANTIHISTAMINIC IMIDAZOLES

John Bradshaw, Ware; Alexander W. Oxford, Royston, and David I. C. Scopes, Ware, all of England, assignors to Glaxo Group Limited, London, England

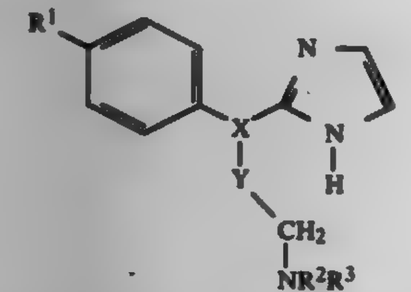
Filed Oct. 3, 1980, Ser. No. 193,846

Claims priority, application United Kingdom, Oct. 3, 1979, 34347/79

Int. Cl.³ A61K *31/445;* C07D *233/64*

U.S. Cl. 424—267 **11 Claims**

1. A compound of the formula (I)



(I)

or a physiologically acceptable salt thereof in which

X—Y— represents either CH—CH_2 or C=CH—; R^1 represents hydrogen, halogen, C_{1-4} alkoxy, hydroxy, C_{1-4} alkyl, R^4CH(OH)—, cyano or R^5CONH—; R^2 and R^3, which may be the same or different, each represents a C_{1-4} alkyl group or C_{3-6} alkenyl group or R^2 and R^3 form a saturated alkylene chain and together with the nitrogen atom to which they are attached form a saturated heterocyclic ring containing from 5 to 7 members;

R^4 represents hydrogen or C_{1-4} alkyl; and

R^5 represents hydrogen, C_{1-4} alkyl or C_{1-4} alkoxy.

11. A method of treating a condition mediated through histamine H_1-receptors which comprises administering to a patient an effective amount of a compound according to claim 1 to relieve said condition.

4,324,793

4-NITRO-2-TRICHLOROMETHYLPHENYL DISULFIDES

Helmut Hagen, Frankenthal; Wolfgang Reuther, Heidelberg-Ziegelhausen, and Ernst-Heinrich Pommer, Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

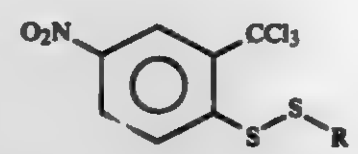
Filed Feb. 23, 1979, Ser. No. 14,892

Claims priority, application Fed. Rep. of Germany, Mar. 11, 1978, 2810698

Int. Cl.³ C07D *239/06, 239/02*

U.S. Cl. 424—270 **15 Claims**

1. A 4-nitro-2-trichloromethylphenyl disulfide of the formula



where R denotes a radical selected from Group I consisting of benzthiazole, benzimidazole, thiazole, imidazole, thiadiazole, oxazole, benzoxazole, oxdiazole, tetrazole and pyridyl, which Group I member may be substituted in the benzene ring 1 to 3 times by chloro, nitro and/or cyano, and/or in the heterocyclic ring by phenyl, or a radical selected from Group II consisting of thiazoline and imidazoline.

4,324,794

INHIBITION OF RESPIRATORY SYNCYTIAL VIRUS-INDUCED CELL FUSION BY AMIDINO COMPOUNDS

Richard R. Tidwell; Edward J. Dubovi, and Joachim D. Geratz, all of Chapel Hill, N.C., assignors to Research Triangle Institute, Research Triangle Park, N.C.

Filed Aug. 26, 1980, Ser. No. 181,341

Int. Cl.³ A61K *31/415, 31/155, 31/40*

U.S. Cl. 424—273 B **5 Claims**

1. A method for the treatment of respiratory syncytial virus-induced cell fusion which comprises administering to a host in need of said treatment an effective amount of an aromatic bis-amidine compound selected from the group consisting of bis(5-amidino-2-benzimidazolyl)methane and 1,2-bis(5-amidino-2benzimidazolyl)ethane.

4,324,795

ACARICIDAL AGENTS

Tetsuo Okauchi, Hirakata; Kentaro Hiraga, Nagaokakyo, and Yasuo Sato, Kyoto, all of Japan, assignors to Takeda Chemical Industries, Ltd., Japan

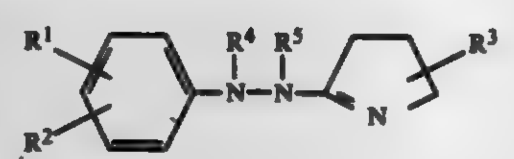
Filed Sep. 24, 1980, Ser. No. 190,412

Claims priority, application Japan, Sep. 25, 1979, 54-123432

Int. Cl.³ A01N *43/36*

U.S. Cl. 424—274 **11 Claims**

1. A method of eradicating ticks or mites which comprises bringing them into contact with an effective amount of a compound of the formula:



wherein

R^1 and R^2 are each hydrogen, halogen or lower alkyl;

R^3 is hydrogen or phenyl which may be substituted with halogen;

R^4 is hydrogen or lower alkanoyl and R^5 is hydrogen or phenyl or its acid addition salt.

4,324,796

SUBSTITUTED OXIRANECARBOXYLIC ACIDS, THEIR USE AND MEDICAMENTS CONTAINING THEM

Klaus Eistetter, Constance, and Erich Rapp, Radolfzell, both of Fed. Rep. of Germany, assignors to BYK Gulden Lomberg Chemische Fabrik Gesellschaft mit beschränkter Haftung, Constance, Fed. Rep. of Germany

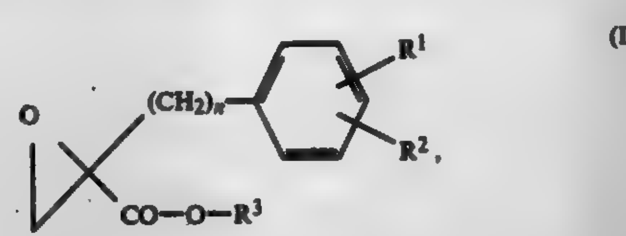
Filed Sep. 2, 1980, Ser. No. 182,934

Claims priority, application U.S.S.R., Sep. 7, 1979, 8068/79

Int. Cl.³ C07D *303/48;* A61K *31/335*

U.S. Cl. 424—278 **21 Claims**

1. A substituted oxiranecarboxylic acid of the formula



(I)

wherein

R^1 is —H, halo, hydroxyl, lower alkyl, lower alkoxy or trifluoromethyl,

R^2 has one of the meanings of R^1,

R^3 is —H or lower alkyl and

n is an integer from 1 to 8, inclusive,

or a salt of each carboxylic acid.

21. A method for the prophylaxis or treatment of a glucose or fat metabolism disorder which comprises administering an effective amount of a pharmacologically-acceptable compound according to one of claims 1 to 18 to a mammal subject to or afflicted with such disorder.

4,324,797

METAL SOAP COMPOSITIONS

Hiroshi Suzuki, Ibaraki, Japan, assignor to Seiichi Ishizaka, Director General of Agency of Industrial Science and Technology, Tokyo, Japan

Filed Jul. 30, 1980, Ser. No. 173,819

Claims priority, application Japan, Aug. 8, 1979, 54-100919

Int. Cl.³ A61K *31/28;* A61L *13/00;* B01F *17/00;* C09K *15/32*

U.S. Cl. 424—287 **6 Claims**

1. A water-soluble metal soap composition which consists essentialy of a metal soap selected from the group consisting of lithium stearate, calcium ricinoleate, lithium laurate, cobalt laurate, aluminum monooleate, stannous caprate, copper naphthenate, zinc linoleate, zirconium rosinate, vanadium caprylate, tungsten capronate, manganese ricinoleate, cobalt myristate, calcium salt of castor oil fatty acid, magnesium salt of castor oil fatty acid, and trialuminum octoate, and a chelating agent, said metal soap being present in said composition in an amount of 10 to 1/1000 part by weight based on one part of said chelating agent.

2. A water-soluble metal soap composition which consists essentially of a metal soap selected from the group consisting of lithium stearate, calcium ricinoleate, lithium laurate, cobalt laurate, aluminum monooleate, stannous caprate, copper naphthenate, zinc linoleate, zirconium rosinate, vandium caprylate, tungsten capronate, manganese ricinoleate, cobalt myristate, calcium salt of castor oil fatty acid, magnesium salt of castor oil fatty acid, and trialuminum octoate, a chelating agent and up to 50% by weight based on the total amount of said metal soap and said chelating agent of a surfactant, said metal soap being present in said composition in an amount of 10 to 1/1000 part by weight based on one part of said chelating agent.

4,324,798

FUNGICIDAL BIS(SUBSTITUTED PHENYL)ALKYLTIN COMPOUNDS

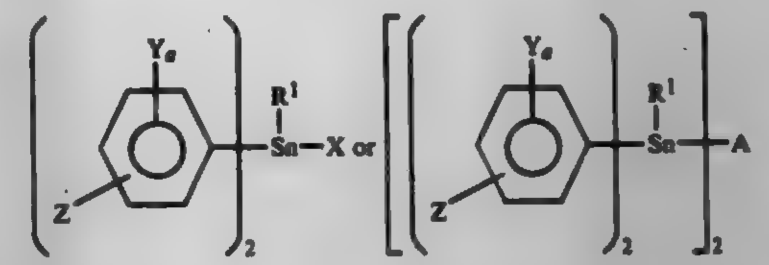
Melvin H. Gitlitz, and David A. Russo, both of Edison, N.J., assignors to M&T Chemicals Inc., Woodbridge, N.J.

Filed Oct. 8, 1980, Ser. No. 195,276

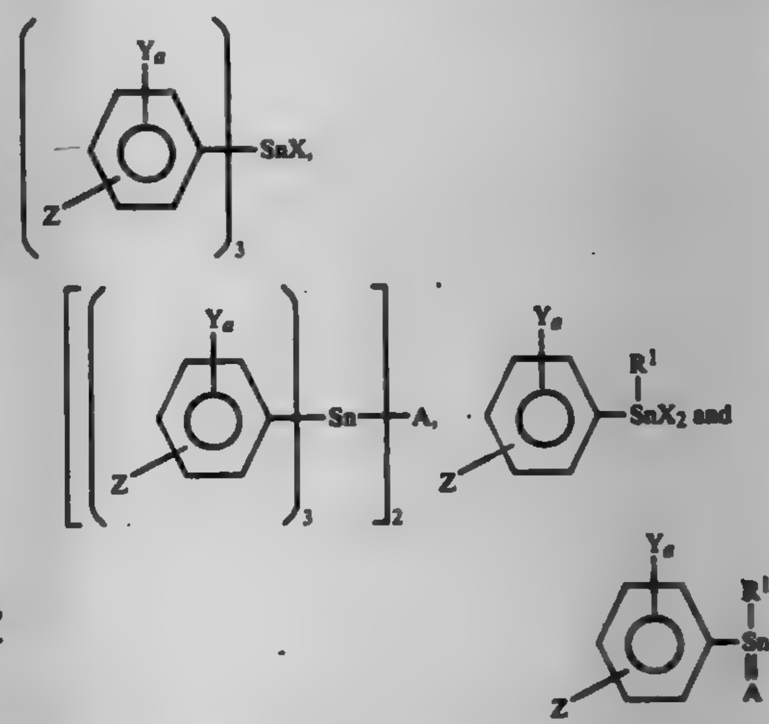
Int. Cl.³ A01N *55/04;* C07F *7/22*

U.S. Cl. 424—288 **13 Claims**

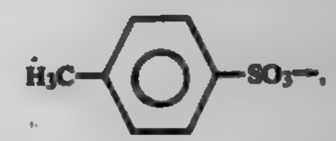
1. A composition comprising a triorganotin compound of the general formula



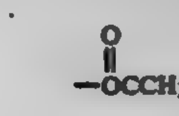
in the substantial absence of compounds of the general formulae



wherein R^1 is selected from the group consisting of hydrocarbyl and —R^2COOR^3 where R^2 is alkylene and R^3 is hydrocarbyl, A is oxygen or sulfur, X is selected from the group consisting of hydroxyl halogen, R^4COO—, —OR^4, —SR^4, —SR^5COOR^4 where R^4 is hydrocarbyl and R^5 is Alkylene, H_3C



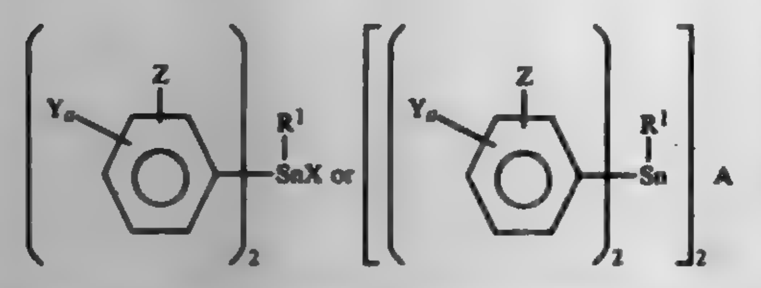
carbamate or dithiocarbamate, Y is halogen, Z is selected from the group consisting of halogen, linear alkyl, branched alkyl, aryl, trihalomethyl, alkoxy, thioalkoxy and methylsulfonyl, and a represents 0 or 1; with the proviso that R^1 is not ethyl when X is halogen and R^1 is not cyclohexyl when X is



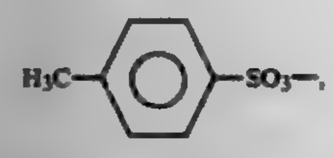
or halogen.

7. A composition for controlling the growth of fungi, said

composition comprising an inert carrier and a triorganotin compound of the general formula



wherein R^1 is selected from the group consisting of hydrocarbyl and $—R^2COOR^3$ where R^2 is alkylene and R^3 is hydrocarbyl, A is oxygen or sulfur, X is selected from the group consisting of hydroxyl, halogen, $R^4COO—$, $—OR^4$, $—SR^4$, $—SR^5COOR^4$ where R^4 is hydrocarbyl and R^5 is alkylene,



carbamate, dithiocarbamate, Y is halogen, Z is selected from the group consisting of halogen, linear alkyl, branched alkyl, aryl, trihalomethyl, alkoxy, thioalkoxy and methylsulfonyl, and a represents 0 or 1.

4,324,799

FUNGICIDAL THIOGLYCOLIC ACID ANILIDES, PROCESSES FOR THEIR MANUFACTURE AND PESTICIDAL COMPOSITIONS CONTAINING THEM

Manfred Koch, Eppstein; Hilmar Mildenberger, and Burkhard Sachse, both of Kelkheim, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

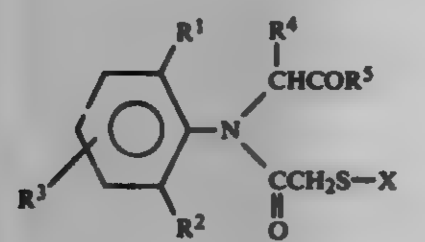
Filed Jul. 23, 1980, Ser. No. 171,346

Claims priority, application Fed. Rep. of Germany, Jul. 25, 1979, 2930145; Apr. 3, 1980, 3013104

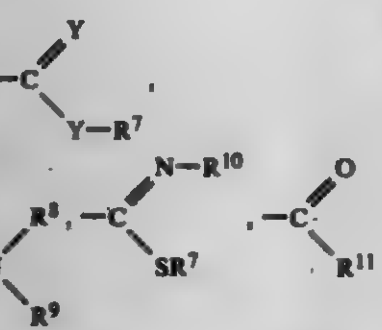
Int. Cl.³ A01N *37/14;* **C07C** *149/40, 154/00, 155/08*

U.S. Cl. 424—301 **6 Claims**

1. Compound of the formula



in which X is



or hydrogen; R^1 is $(C_1–C_4)$-alkyl, halogen, $(C_1–C_3)$-alkylthio, $(C_1–C_4)$-alkoxy or $(C_3–C_4)$-alkenyl; R^2 is hydrogen, $(C_1–C_4)$-alkyl or halogen; R^3 and R^4 are hydrogen or methyl; R^5 is hydroxyl, $(C_1–C_4)$-alkoxy, $(C_1–C_3)$-alkylthio, $(C_1–C_2)$-alkoxy-$(C_1–C_2)$-alkoxy, amino, $(C_1–C_2)$-alkylamino or di-$(C_1–C_2)$-alkylamino; Y is oxygen or sulfur; R^7 is $(C_1–C_6)$-alkyl, $(C_1–C_6)$-alkyl substituted by methoxy, ethoxy or halogen, or $(C_3–C_6)$-cycloalkyl, $(C_3–C_4)$-alkenyl or $(C_3–C_4)$-alkynyl; R^3 is hydrogen or $(C_1–C_4)$-alkyl and when Y is S is hydrogen, R^9 is $(C_1–C_4)$-alkyl, $(C_1–C_4)$-alkyl substituted by halogen or $(C_1–C_2)$-alkoxy, or $(C_3–C_4)$-alkenyl, furfuryl or tetrahydrofurfuryl; R^{10} is -CN, $(C_1–C_4)$-alkyl, $(C_1–C_4)$-alkyl, substituted by halogen or $(C_1–C_2)$-alkoxy, or allyl or furfuryl; and R^{11} is hydrogen, $(C_1–C_4)$-alkyl, $(C_1–C_4)$-alkyl substituted by one or three halogen atoms, $(C_1–C_2)$-alkoxy or $(C_1–C_2)$-alkylthio, or $(C_2–C_4)$-alkenyl.

3. Fungicidal composition containing, as an active component, a fungicidally effective amount of a compound defined in claim 1 and a suitable inert diluent.

4,324,800

NOVEL BENZYLALCOHOL DERIVATIVES AND PROCESSES FOR PREPARING SAME

Norihide Umino, Ageo; Tokuro Ohishi, Shakujii; Muneyoshi Ikezaki, Takarazuka; Masanori Sato, Kuki, and Taku Nagao, Tokyo, all of Japan, assignors to Tanabe Seiyaku Co., Ltd., Japan

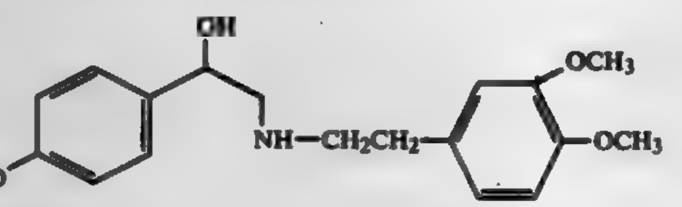
Filed Mar. 12, 1981, Ser. No. 243,246

Claims priority, application Japan, Mar. 28, 1980, 55-41091

Int. Cl.³ A61K *31/24;* **C07C** *69/017, 69/78*

U.S. Cl. 424—308 **9 Claims**

1. A compound of the formula:



(I)

wherein R is alkanoyl of one to 20 carbon atoms, benzoyl or lower alkyl-benzoyl, or a pharmaceutically acceptable acid addition salt thereof.

9. A cardiotonic composition comprising an effective amount of a compound of claim 1 or a pharmaceutically acceptable acid addition salt thereof and a pharmaceutically acceptable carrier.

4,324,801

PHENYLGUANIDINE ACETYLSALICYLATE COMPOUNDS, PROCESS FOR PRODUCTION THEREOF, AND PHARMACEUTICAL COMPOSITION THEREOF

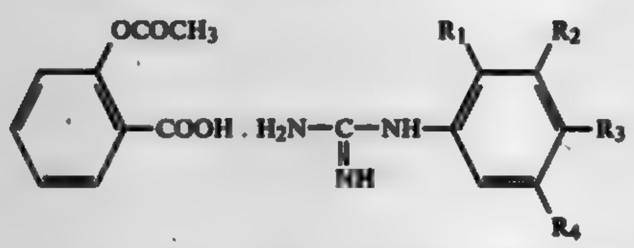
Meiki Matsuzaki, Hachioji; Hiroshi Okabe, Yokohama; Seishiro Tanaka, Sendai; Takao Takiguchi, Tokyo, and Kunikatsu Onodera, Chiba, all of Japan, assignors to Banyu Pharmaceutical Co. Ltd., Tokyo, Japan

Filed Apr. 21, 1981, Ser. No. 256,165

Int. Cl.³ C07C *101/00, 69/157, 51/02;* **A61K** *31/155, 31/19, 31/615*

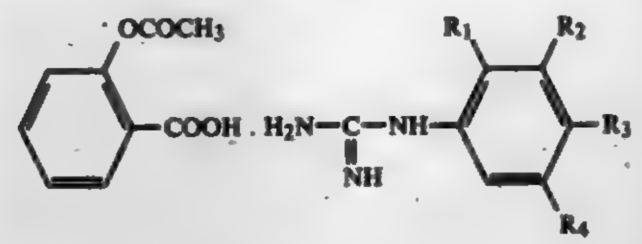
U.S. Cl. 424—311 **7 Claims**

1. A compound of the formula



wherein R_1 is a member selected from the group consisting of a hydrogen atom, lower alkyl groups and lower alkoxy groups, R_2 is a member selected from the group consisting of a hydrogen atom, halogen atoms, lower alkyl groups, a hydroxyl group and a trifluoromethyl group, R_3 is a member selected from the group consisting of a hydrogen atom, halogen atoms, lower alkyl groups, lower alkoxy groups, an acetyl group, a carbamoyl group and lower alkyl carboxylate groups, and R_4 represents a hydrogen atom or a halogen atom.

4. A pharmaceutical composition composed of an anti-inflammatorily effective amount or an antipyretically and analgesically effective amount of a compound of the formula



wherein R_1 is a member selected from the group consisting of a hydrogen atom, lower alkyl groups and lower alkoxy groups, R_2 is a member selected from the group consisting of a hydrogen atom, halogen atoms, lower alkyl groups, a hydroxyl group and a trifluoromethyl group, R_3 is a member selected from the group consisting of a hydrogen atom, halogen atoms, lower alkyl groups, lower alkoxy groups, an acetyl group, a carbamoyl group and lower alkyl carboxylate groups, and R_4 represents a hydrogen atom or a halogen atom; and a pharmaceutically acceptable carrier or diluent.

4,324,802

COSMETIC OIL AND COMPOSITION CONTAINING THE SAME

Constantin Koulbanis; Catherine Millet; Arlette Zabotto, all of Paris, and Alain Brun, Pavillons-sous-Bois, all of France, assignors to L'Oreal, Paris, France

Filed Dec. 1, 1980, Ser. No. 211,946

Claims priority, application France, Dec. 18, 1979, 79 30956; Aug. 13, 1980, 80 17899

Int. Cl.³ A61K *7/48, 7/44, 7/26, 7/021*

U.S. Cl. 424—364 **12 Claims**

1. A cosmetic oil for improving or maintaining the suppleness of the skin and being spreadable on the skin so as to leave thereon a hydrophobic film having a non-oily, unctuous feel or touch comprising a mixture of from 20 to 45 weight percent jojoba oil, 25 to 40 weight percent turnsole oil and 20 to 40 weight percent of a previously extracted non-saponifiable fraction of a vegetable oil selected from the group consisting of soybean oil, avocado oil, corn oil, turnsole oil and mixtures thereof.

4,324,803

PROCESS FOR DEPOSITING ON SUBSTRATES, BY CATHODE SPUTTERING, A SELF-LUBRICATING COATING OF METAL CHALCOGENIDES AND THE COATING OBTAINED BY THIS PROCESS

Erich Bergmann, Bienne, and Georges Melet, Meyrin, both of Switzerland, assignors to Battelle Memorial Institute, Carouge, Switzerland

PCT No. PCT/CH79/00132, § 371 Date Jun. 9, 1980, § 102(e) Date May 20, 1980, PCT Pub. No. WO80/00712, PCT Pub. Date Apr. 17, 1980

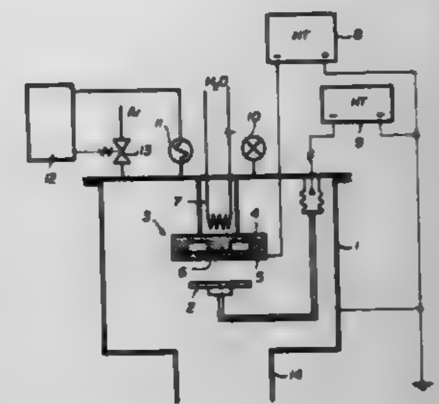
PCT Filed Oct. 8, 1979, Ser. No. 196,483

Claims priority, application Switzerland, Oct. 9, 1978, 10455/78

Int. Cl.³ B32B *9/00;* **C23C** *15/00*

U.S. Cl. 428—472 **12 Claims**

1. In a process for depositing, by cathode sputtering, a self-lubricating coating of a metal chalcogenide, according to which a target of the material to be sputtered, comprising a chalcogenide or a mixture of chalcogenides, is bombarded with ions formed by a cathode discharge produced in the immediate vicinity of the said target and in a rare gas atmosphere, the materials thus expelled from the target being deposited on a substrate placed opposite the said target, the improvement wherein the cathode space of the said target is subjected to a magnetic field, the distance between the target and the said substrate is adjusted so that it corresponds approximately to the mean free path of the molecules expelled from the target, and the sputtering current density is such that the rate of deposition of the surface of the substrate opposite the said target is at least 0.1 μm/minute, under conditions so as to form turbostratic deposits on the substrate.



10. An article comprising a substrate and a self-lubricating coating of a metal chalcogenide of turbostratic structure and long durability when subjected to dry friction.

4,324,804

PREPARATION OF A SOFT CREAM CHEESE PRODUCT

Loren L. Davis, Vernon Hills, Ill., assignor to Kraft, Inc., Glenview, Ill.

Filed Aug. 15, 1979, Ser. No. 66,613

Int. Cl.³ A23C *19/02, 19/12*

U.S. Cl. 426—36 **7 Claims**

1. A method for manufacturing a soft bodied cream cheese product which is spreadable at refrigeration temperature comprising the steps of providing a cream cheese dairy mix comprising at least about 30 percent by weight of substantially unhomogenized milkfat, at least about 40 percent by weight of total dairy solids and not more than 60 percent moisture based on the weight of said mix, pasteurizing said mix, culturing said mix to provide a cultured cream cheese dressing mix having a pH of about 5.2 or less, blending said cultured dressing mix with a firm bodied cream cheese curd component comprising at least about 30 percent by weight of homogenized milkfat, at least about 40 percent by weight total dairy solids and not more than about 60 percent moisture, based on the weight of said firm bodied cream cheese product, to provide a substantially uniform blend comprising at least about 33 weight percent milkfat and not more than about 55 weight percent moisture based on the weight of said blend, and packaging said blend at an elevated temperature of at least about 150° F. to provide a packaged, soft bodied cream cheese product having a spreadable consistency at refrigeration temperature.

4,324,805

METHOD OF PRODUCING SOY PROTEIN HYDROLYSATE FROM FAT-CONTAINING SOY MATERIAL, AND SOY PROTEIN HYDROLYSATE

Hans A. S. Olsen, Vaerloese, Denmark, assignor to Novo Industri A/S, Denmark

Filed Jul. 7, 1980, Ser. No. 166,405

Claims priority, application United Kingdom, Jul. 11, 1979, 24177/79

Int. Cl.³ A23J *3/00;* **A23L** *1/20*

U.S. Cl. 426—46 **13 Claims**

9. A method for production of soy protein hydrolysate and oil from soya material containing recoverable amounts of oil which comprises:

water washing such a soy material at pH 3.5–5.5, thereby partially defatting the soy material; and extracting water soluble substances therefrom; then

separating the wash water into an oil phase and an aqueous phase;

hydrolyzing the partially defatted soy material at pH 6–12 with effective amounts of a proteolytic enzyme in water to

a DH of 1-20; thereafter deactivating the proteolytic enzyme; and then

separating the hydrolysis mixture into a sludge phase, an aqueous phase and an oil phase,

the oil phases from the hydrolysis mixture and from the wash water being the oil product, and the aqueous phase from the hydrolysis mixture being the soy protein hydrolysate product.

4,324,806

METHOD FOR THE SOFTENING OF TOUGH MUSHROOMS

Helga Schmitz, Hofaekerstr. 1, 3575 Kirchhain 1, Fed. Rep. of Germany

PCT No. PCT/EP79/00043, § 371 Date Feb. 5, 1980, § 102(e) Date Feb. 5, 1980, PCT Pub. No. WO80/00001, PCT Pub. Date Jan. 10, 1980

PCT Filed Jun. 5, 1979, Ser. No. 192,111

Claims priority, application Fed. Rep. of Germany, Jun. 5, 1979, 2824553

Int. Cl.³ A23L *1/212*

U.S. Cl. 426—52 **4 Claims**

1. A method for treating tough mushrooms, comprising the steps of:

placing cleaned mushroom material within a container;

adding a solution to said mushroom material within said container, said solution comprising a liquid having a pH of from 3 to 5.5 and having a salt percentage of 0.02 to 0.5 molar; and

allowing said mushroom material and said solution to interact in the presence of an enzyme selected from the group consisting of glucanase and chitinase at a temperature of from 20° C. to 55° C. for a period ranging from 12 hours to 5 days said enzyme being added to said solution in an amount in excess of what is naturally in said mushroom material, said amount of enzyme being sufficient to increase the softening of said mushroom material.

4,324,807

SIMULATED ADIPOSE TISSUE

Myung K. Kim, Congers, and Joaquin C. Lugay, Thornwood, both of N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Filed Dec. 30, 1976, Ser. No. 755,538

Int. Cl.³ A23D *5/02*; A23J *3/00*

U.S. Cl. 426—104 **3 Claims**

1. A restructured natural meat product comprising natural meat and a simulated adipose tissue which comprises an at least two phase system wherein a 1st phase comprising from 30 to 60% fat is dispersed within a second phase matrix substantially enveloping the dispersed fat, wherein the fat in the first phase is separated into globules having an average diameter of from about 10 to about 120 microns; and the second phase matrix is a coagulated mixture comprising from 4 to 18% based on total system weight of a heat coagulable component and at least 2% based on total system weight of a water soluble, film forming component, the matrix having the ability to hold the fat globules within it, and yet due to the presence of the water soluble, film forming component will smoothly melt upon heating.

4,324,808

PROCESS FOR PREPARING FREEZE DRIED SOLUBLE COFFEE

John H. Wertheim, and Abraham R. Mishkin, both of Marysville, Ohio, assignors to Societe d'Assistance Technique pour Produits Nestle S.A., Lausanne, Switzerland

Continuation of Ser. No. 537,679, Mar. 28, 1966. This application Sep. 26, 1979, Ser. No. 79,056

Claims priority, application Switzerland, Apr. 2, 1965, 4606/65

Int. Cl.³ A23F *5/32, 5/38*

U.S. Cl. 426—385 **2 Claims**

1. Process for preparing freeze dried soluble coffee, which comprises adding sufficient inert gas to a concentrated aqueous extract of roast coffee to provide a foam having a density between 0.6 and 0.8 gm/cc, freezing the foamed extract to a solid mass, grinding the frozen foam to an average particle size of about 0.1 to 0.5 mm, freeze drying the ground particles to provide finely powdered soluble coffee, and agglomerating the finely powdered soluble coffee.

4,324,809

FLAVORING WITH α, β-UNSATURATED ALDEHYDES

Wilhelm Pickenhagen, Chavannes-Des-Bois, Switzerland, and Alain Velluz, Reignier, France, assignors to Firmenich SA, Geneva, Switzerland

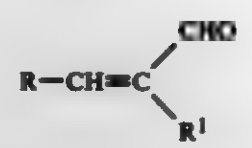
Filed Jun. 25, 1979, Ser. No. 51,506

Claims priority, application Switzerland, Jul. 6, 1978, 7360778

Int. Cl.³ A23L *1/226, 1/231*

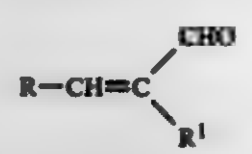
U.S. Cl. 426—534 **6 Claims**

1. A method for improving the organoleptic properties of foodstuffs and beverages having a meaty taste which comprises adding thereto from about 0.01 to 10 parts per million by weight based on the weight of said foodstuff or beverage of at least one of the α,β-unsaturated aldehydes of the formula



wherein symbol R represents a linear alkyl radical having 3 to 6 carbon atoms and R¹ represents a linear or branched alkyl radical having 1 to 7 carbon atoms.

5. A method to improve the oily-green gustative note of a foodstuff subjected to a frying process which method comprises adding thereto from about 0.01 to 10 parts per million by weight based on the weight of said foodstuff of at least one of the α,β-unsaturated aldehydes of the formula



wherein symbol R represents a linear alkyl radical having 3 to 6 carbon atoms and R¹ represents a linear or branched alkyl radical having 1 to 7 carbon atoms.

4,324,810

HOP EXTRACTS AND METHOD OF PREPARATION

Henry Goldstein, Brookfield; Walter Fly, Milwaukee; Patrick Ting, Brookfield, and Etzer Chicoye, Wauwatosa, all of Wis., assignors to Miller Brewing Company, Milwaukee, Wis.

Filed May 29, 1980, Ser. No. 154,577

Int. Cl.³ C12C *3/00, 9/02*

U.S. Cl. 426—600 **9 Claims**

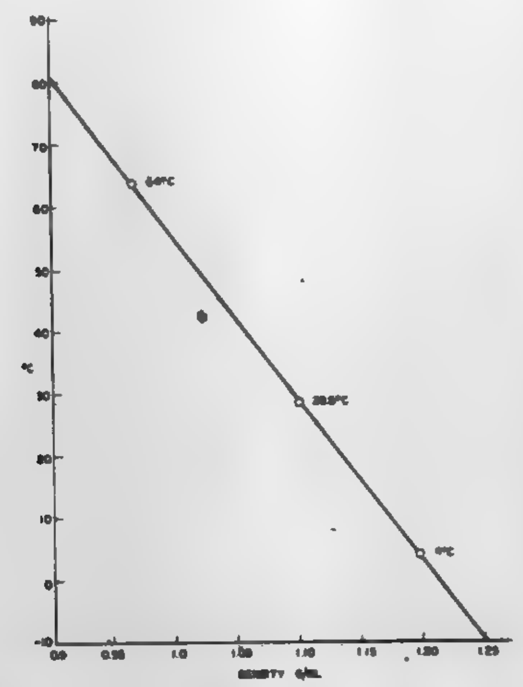
1. A method of preparing a hop preparation containing reduced isohumulone without using added organic solvents, said method consisting of:

a. adding an aqueous reducing solution to a crude extract of hops which is substantially free of hydrocarbon solvents and contains humulone;

b. heating the resulting mixture to isomerize and reduce the humulone;

c. acidifying the reaction mixture to cause an aqueous phase and an organic phase to form;

d. adjusting the temperature of the reaction mixture to facilitate the separation of the aqueous and the organic phases; and



e. then isolating the organic phase which contains the desired reduced isohumulone.

4,324,811

DOUGH-LIKE PRODUCTS EXHIBITING REDUCED WATER ACTIVITY CONTAINING DERIVED PROTEIN-CONTAINING COMPOSITIONS

Susan L. Eugley, Harrison, N.Y., assignor to Stauffer Chemical Company, Westport, Conn.

Continuation-in-part of Ser. No. 141,019, Apr. 17, 1980, abandoned. This application Dec. 23, 1980, Ser. No. 219,561

Int. Cl.³ A23C *21/08*; A23J *3/00*

U.S. Cl. 426—656 **13 Claims**

1. A product of dough-like consistency exhibiting reduced water activity comprising a blend of a first composition which comprises at least 65% of a low molecular weight protein-containing material derived from plant or animal sources wherein the molecular weight of said protein-containing material is less than 30,000, said material having a total Kjeldahl nitrogen content of from about 0.45% to about 2.1% of which at least 60% of the nitrogen is non-protein nitrogen, from about 0% to about 35% of a member selected from the group consisting of from about 1% to about 15% gelatin, from about 1% to 15% gelatin and from about 5% to about 25% water-soluble polyphosphate, the additive total of gelatin and phosphate not to exceed about 35%, from about 0.5% to about 5% of a gum, and mixtures thereof; and from about 0% to about 30% of a whipping aid, all percentages unless otherwise stated being by weight based on the total dry solids weight of the aforecited ingredients in said first composition, and from about 20% to about 75% by weight based on the dry weight of said blend of a starch having a viscosity within the range of from about 1,000 cps to about 200,000 cps in a 10% solution at 25° C. said product having a moisture content ranging from about 20% to about 50% by weight based on the total weight of said product of dough-like consistency.

4,324,812

METHOD FOR CONTROLLING THE FLOW OF COATING MATERIAL

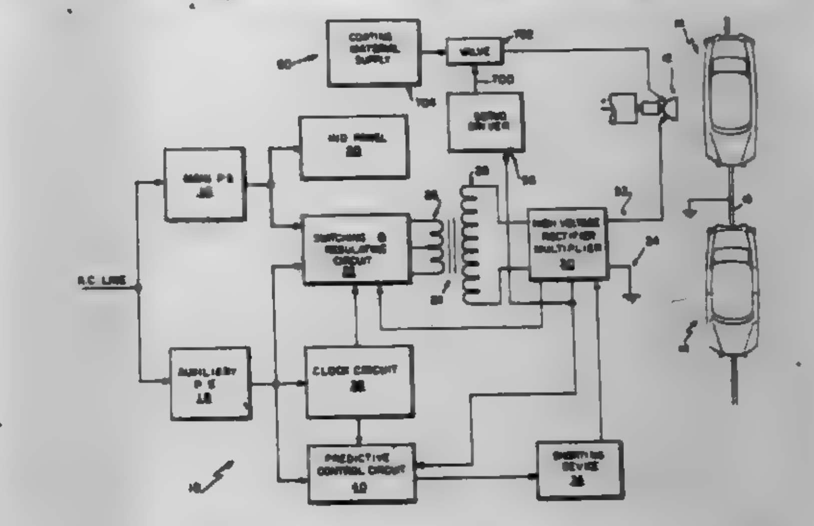
Stanley L. Bentley, Indianapolis, Ind., assignor to Ransburg Corporation, Indianapolis, Ind.

Filed May 29, 1980, Ser. No. 154,496

Int. Cl.³ B05D *1/04*

U.S. Cl. 427—8 **3 Claims**

1. A method for controlling the flow of coating material from a coating material dispensing device to a target to be coated with the coating material, including the steps of providing a source of the coating material, controlling the flow of coating material from the source through the device with control means having a control input, establishing a potential difference between the device and the target to maintain an electric field between the device and target, charging the particles of coating material dispensed from the device into the field so that the particles move through the field from the



device to the target to coat it, sensing the current flow, generating a signal related to the sensed current, and coupling the sensed current-related signal to the control input, a tendency of the sensed current to decrease causing an increase in the flow of coating material through the device, and a tendency of the sensed current to increase causing a decrease in the flow of coating material through the device.

4,324,813

METHOD AND APPARATUS FOR CURING LACQUER LAYERS WITH HIGH-ENERGY ELECTRONS

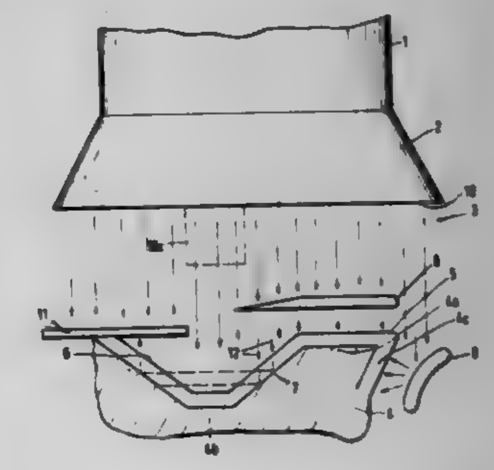
Karl-Heinz Sonnenberg, Weyhausen, Fed. Rep. of Germany, assignor to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Fed. Rep. of Germany

Filed May 21, 1980, Ser. No. 151,975

Claims priority, application Fed. Rep. of Germany, Jun. 1, 1979, 2922367

Int. Cl.³ B05D *3/06*

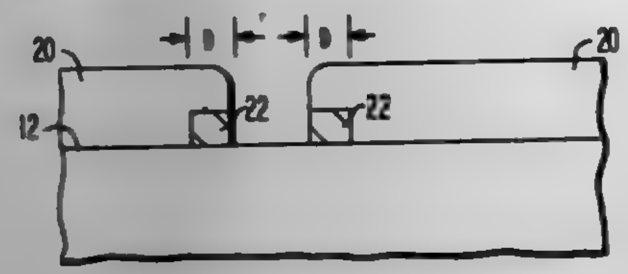
U.S. Cl. 427—44 **5 Claims**



1. In a method of curing a lacquer coating applied to an article of complex surface configuration, including the steps of generating and accelerating electrons, passing the electrons through an electron outlet window and directing the electrons onto the article for directly irradiating coated surfaces thereof; the article having a first surface portion inaccessible by direct electron irradiation; the improvement comprising the step of directing a part of the electrons to a second article surface portion which is directly accessible to electron irradiation and causing one part of the electrons to be reflected from said

second surface portion onto said first surface portion for curing the lacquer coating on said first surface portion.

4,324,814
METHOD FOR FORMING A NARROW THIN FILM LINE
Walter F. Reichert, E. Brunswick, N.J., assignor to RCA Corporation, New York, N.Y.
Filed Mar. 19, 1981, Ser. No. 245,589
Int. Cl.³ H01L *21/88*
U.S. Cl. 427—86 7 Claims

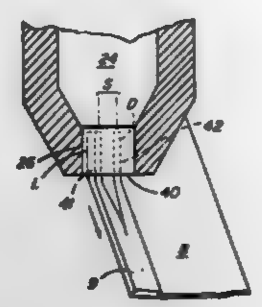


1. A method for forming a narrow thin film line, comprising:
providing a monocrystalline semiconductor substrate;
forming a thin film pattern on a surface of said substrate;
growing an epitaxial layer on said surface, said layer growing laterally, over the thin film pattern, a predetermined distance; and
removing that portion of the thin film not covered by the epitaxial layer.

4,324,815
SCREEN-PRINTING MASK AND METHOD
Minoru Mitani; Kiyoharu Hashimoto; Kenjiro Ninomiya; Tochikiyo Miyazaki; Otokama Hashimoto, and Hideki Mori, all of Fuchu, Japan, assignors to Mitani Electronics Industry Corp., Tokyo, Japan
Division of Ser. No. 957,187, Nov. 2, 1978, Pat. No. 4,242,401. This application Jul. 7, 1980, Ser. No. 166,338
Int. Cl.³ B05D *1/36*; H05K *3/12*
U.S. Cl. 427—96 10 Claims

1. A method of printing a thick film line element on a substrate, comprising:
(a) applying a relatively thin line of printing paste to substrate to form a line element;
(b) allowing said printing paste to dry so that its viscosity is greatly increased;
(c) filling an elongated printing pattern opening of a screen-printing mask with printing paste, said printing pattern having a size and shape corresponding to the size and shape of the previously applied line of printing paste;
(d) superimposing the printing pattern of said screen-printing mask on the previously applied line element, with the underside of the printing paste that fills said printing pattern contacting an exposed surface of said line element;
(e) moving said screen-printing mask away from said substrate while allowing said printing paste to remain in contact with the previously applied line element, thereby applying another line element to the previously applied line element; and
(f) repeating steps b-e as desired until a line element of printing paste having a predetermined thickness has been applied to said substrate.

4,324,816
METHOD FOR FORMING A STRIPE BY EXTRUSION COATING
Newton C. M. Landis, and Corrado Zollo, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Continuation of Ser. No. 580,083, May 22, 1975, abandoned. This application Jan. 10, 1977, Ser. No. 758,230
Int. Cl.³ B05D *5/12, 3/02*; B05C *3/02*
U.S. Cl. 427—128 10 Claims

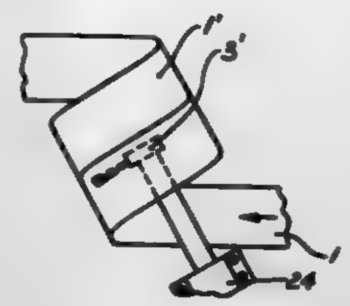


1. A method for extrusion coating on a web a magnetic dispersion striping material in a stripe which has a high width to thickness ratio and is of predetermined uniform cross-sectional dimensions, including substantially uniform thickness, which method comprises the steps of:
moving said web along a predetermined path;
extruding said magnetic dispersion striping material through a die located above the path of the web having at least two bores of predetermined dimensions positioned in a predetermined spaced relation with the path of the web to form columns of the extruded material which extend perpendicularly to the path of the web and are of sufficient stability to bridge the space between the die and the web; and
impinging the extruded columns of material on the moving web; the size and spacing of said bores, the space between said die and said web, and the speed at which said web is moved being so selected that said extruded columns of material coalesce after impinging on said web into a stripe of uniform cross-sectional dimensions, including substantially uniform thickness, having a high width to thickness ratio.

4,324,817
PROCESS FOR MAKING CARBONLESS COPYING PAPER
Manfred Dahm, Leverkusen; Gert Jabs, Odenthal, and Christian Wegner, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany
Filed Jul. 23, 1980, Ser. No. 171,306
Claims priority, application Fed. Rep. of Germany, Jul. 26, 1979, 2930408
Int. Cl.³ B41M *5/16*
U.S. Cl. 427—150 5 Claims

1. A process for producing a "one-component" carbonless copying paper, which comprises forming microcapsules by reacting a polyisocyanate with a polyamine in an aqueous medium in the presence of (1) a color former whereby the color former becomes encapsulated in the resulting microcapsules and (2) a basic inorganic salt which becomes converted in situ during the microcapsule formation into an insoluble polymer acid or oxide developer capable of reacting with the color former to form a dyestuff, said basic inorganic salt being added to the aqueous reaction mixture after the addition of the polyamine; and coating the resulting mixture of encapsulated color former and developer onto a paper support.

4,324,818
PRODUCTION OF HEAVY METAL COATINGS ON ONLY ONE FACE OF STEEL STRIPS
Tadeus Sendzimir, 269 Brookside Rd., Waterbury, Conn. 06720
Filed Feb. 21, 1980, Ser. No. 123,275
Int. Cl.³ B05D *1/12*
U.S. Cl. 427—174 1 Claim

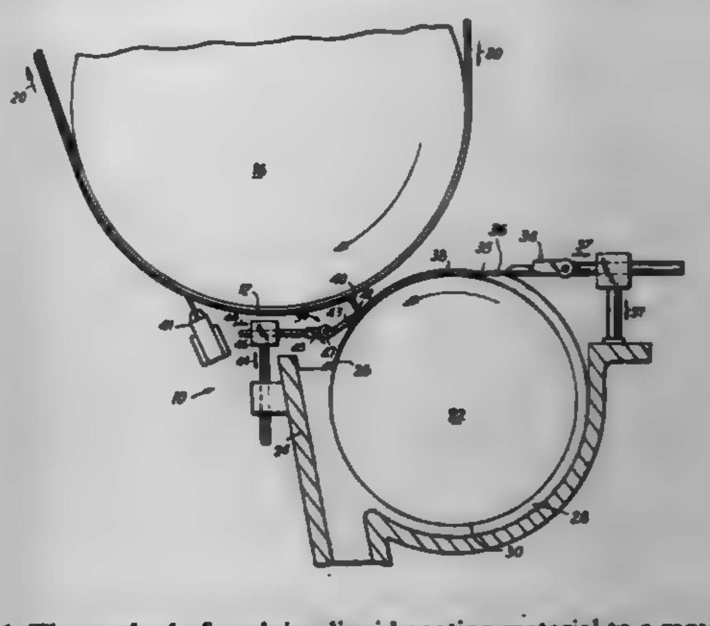


1. Process of continuously coating one face of a forwardly progressing ferrous strip with a main coating while preserving the opposite face clean and free from oxides, which comprises
(a) cleaning said strip and depositing on said first-mentioned face a thin primary metallic coating of a metal capable of fusion with the main coating metal, to completely cover said face to a depth of at least one molecule, followed by washing and drying of said strip,
(b) temporarily deflecting and guiding said strip into a substantially cylindrical outline with the precoated face innermost,
(c) spraying said last-mentioned face uniformly with a predetermined quantity of the main coating metal in fine particulate form from a rotatable source of supply which is coaxial with said cylindrical outline,
(d) pulling said coated strip under tension in a horizontal plane through a non-oxidizing atmosphere while applying heat thereto to melt said particles of said main coating metal and to effect the fusion of the latter with the metal of the underlying primary coating,
(e) immediately thereafter applying cooling means to said strip so as to quickly solidify said molten layer of the main coating metal,
(f) continuing to withdraw heat from said strip until it reaches a temperature below the oxidizing temperature for ferrous strips, and
(g) removing said strip from said non-oxidizing atmosphere.

4,324,819
CATALYST FOR HYDRAZINE DECOMPOSITION AND THE METHOD OF PRODUCING THE CATALYST
Philip J. Birbara, Windsor Locks, Conn., assignor to United Aircraft Corporation, Hartford, Conn.
Filed Oct. 20, 1970, Ser. No. 82,291
Int. Cl.³ B05D *5/00*
U.S. Cl. 427—283 25 Claims

1. A process for preparing a catalyst for decomposing hydrazine-base monopropellants, comprising:
(a) contacting a high surface area carrier with an alcohol solution of a salt of a precious metal selected from the group consisting of salts of iridium, ruthenium, and mixtures thereof, to deposit from about ½ to 8% by weight of the precious metal contained in the selected salt, based on the total weight of catalyst, on the exterior surface only of the carrier; and
(b) reducing the precious metal on the exterior surface to an active pure metal by contact with a fluid-reducing agent selected from the group consisting of hydrogen and hydrogen-inert gas mixtures.

4,324,820
METHOD AND APPARATUS FOR COATING A PAPER WEB
Scott B. Weldon, San Mateo, Calif., assignor to St. Regis Paper Company, New York, N.Y.
Filed Jul. 18, 1980, Ser. No. 170,050
Int. Cl.³ B05D *1/02*
U.S. Cl. 427—420 28 Claims



1. The method of applying liquid coating material to a moving web of substrate material which comprises:
(a) forming on a moving surface at a position subjacent the web of substrate material a moving sheet of liquid coating material of substantially uniform velocity across its leading edge; and
(b) positioning a bar in the path of the moving sheet of coating material and subjacent the web of substrate material to deflect the leading edge of coating material upwardly from its course of travel so as to move in the direction of the substrate material and to form a free standing jet curtain of sufficient height and width to impinge on and coat the substrate material.

4,324,821
ARTIFICIAL FLOWER AND METHOD FOR MAKING THE SAME
Samuel Heineman, III, 1400 Mill Creek Rd., Gladwyne, Pa. 19035
Filed Dec. 30, 1980, Ser. No. 221,518
Int. Cl.³ A41G *1/00*
U.S. Cl. 428—24 12 Claims

1. An artificial flower comprising a plurality of petals, each petal having a wire filament extending therefrom,
an elongated receptacle having a plurality of through passages extending axially thereof, the wire filament of said petals being received in said passages and having tip ends extending a distance beyond said receptacle remote from their associated petals, at least some of the passages in said receptacle being disposed in predetermined circular array

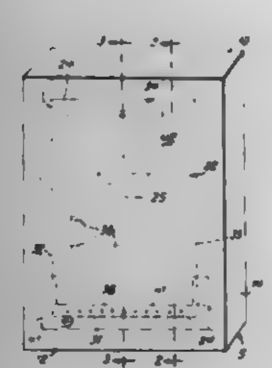
as viewed from an end of said receptacle to thereby hold the petal filament wires and their associated petals in corresponding order of array about a floral axis in the whorl semblance of a natural flower, and

a main stem wire received in and extending through one receptacle passage, the tip ends of said wire filaments being twisted in a convoluted course about said stem wire, and said convoluted course which said wire filaments follow initiating at locations laterally offset relatively of the floral axis thereby to define when so twisted with the receptacle an anchorage for preventing withdrawal of said filament wires from the receptacle passages.

4,324,822
METAL CAN PAINT PROVIDING COATING RETAINING HIGH ADHESION EVEN WITH LAPSE OF TIME
Seishichi Kobayashi, Yokohama; Tatsuo Mori, Kawasaki, and Akihiko Morofuji, Ohguchi Nakamachi, all of Japan, assignors to Toyo Seikan Kaisha Ltd., Tokyo, Japan
Filed Jul. 3, 1980, Ser. No. 165,658
Claims priority, application Japan, Jul. 6, 1979, 54/85016
Int. Cl.[3] C08G *59/14, 59/20, 59/24*
U.S. Cl. 428—35 7 Claims

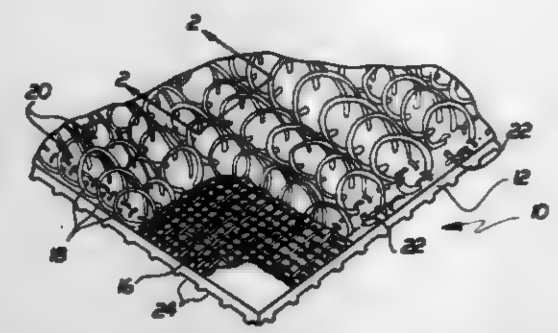
1. A paint for cans which comprises (1) an epoxy resin component formed by condensation of a dihydroxyl compound with an epihalohydrin and (2) a curing agent component, said epoxy resin component containing terminal α-glycol groups at a concentration of 0.05 to 0.60 equivalents per Kg of the resin, and terminal epoxy groups at a concentration of 0.20 to 1.80 equivalents per Kg of the resin.

4,324,823
SELECTIVE TAMPER RESISTANCE FOR ON-PACKAGE PEELABLE PREMIUMS
George C. Ray, III, Battle Creek, Mich., assignor to General Foods Corporation, White Plains, N.Y.
Filed Jan. 13, 1981, Ser. No. 224,720
Int. Cl.[3] G09F *3/00;* B32B *3/00, 27/14*
U.S. Cl. 428—43 12 Claims



1. In a container formed from laminated packaging material which comprises a relatively rigid substrate and a more pliable outer ply adhered thereto by a water soluble laminant and including a section manually removeable therefrom, said section having utility, per se, apart from said container and being defined by a tear outline comprising a series of cuts through said outer ply in a configuration having a starting edge for initiating peeling action and an oppositely disposed trailing edge interconnected with said starting edge by opposed side edges, a release coating applied between the underside of said section and said laminant in a pattern to render areas of said section non-adherent to said substrate, said pattern defining voids in said release coating spaced apart and extending along said starting edge enabling adherance of said section to said substrate at said voids, said voids being in shapes enabling selected degrees of bonding between said section and said substrate as peeling of said section progresses from said leading edge into the interior areas upon application of moisture to the exterior surface of said section at said leading edge.

4,324,824
TUFTED PILE FLOOR COVERING WITH PILING OF COATED FIBROUS MATERIAL
Daniel S. Narens, Massilon, and Harold Reuben, Akron, both of Ohio, assignors to The Akro Corporation, Canton, Ohio
Continuation-in-part of Ser. No. 936,370, Aug. 24, 1978, abandoned. This application May 29, 1980, Ser. No. 154,131
Int. Cl.[3] D03D *27/06;* D05C *17/02*
U.S. Cl. 428—92 14 Claims



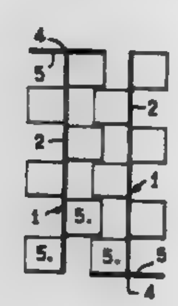
1. A floor covering composite having a base layer for contacting a floor and a pile portion adapted to be trod upon and comprising:

a fluid impermeable, flexible polymeric base layer adapted to contact a floor surface;

an intermediate woven primary pile backing supported on the upper surface of said base layer; and

a looped piling material tufted into said intermediate primary pile backing, the piling having exposed loops above said backing and piling portions projecting below said backing, the piling portions below said backing being embedded in said flexible polymeric base layer, said piling being formed from threads having a reinforcing inner fibrous core and an exterior poly(vinyl chloride) coating, said inner fibrous core having a tensile strength greater than the tensile strength of said exterior coating, said piling portions below said backing being mechanically locked with said base layer.

4,324,825
SEPARATING WALL
Charles Denkinger, 18, Rue Henri-Mussard, (P.O. Box 145) 1211, Geneva 17, Switzerland
Filed Oct. 17, 1979, Ser. No. 85,748
Claims priority, application Switzerland, Oct. 20, 1978, 10859/78
Int. Cl.[3] B32B *3/02, 3/30*
U.S. Cl. 428—99 7 Claims

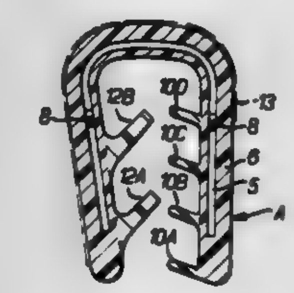


1. A partition for use in an interlocking relationship with a plurality of said partitions so as to be useful in the separation and classification of documents therebetween, said partition comprising:

a pair of opposed first and second surfaces separated by at least one transverse edge portion, said first and second surfaces being substantially uninterrupted and having a continuous surface substantially corresponding with the size of said documents; and

a plurality of tab members disposed along said transverse edge portion, said tab members having adjoining end portions alternately projecting from said transverse edge portion towards said first and second surfaces, respectively, said tab members projecting towards said first surface being located in a first common plane passing through said first surface and said tab members projecting towards said second surface being located in a second common plane passing through said second surface, said first and second planes being located in a common plane perpendicular to said first and second surfaces.

4,324,826
FINISHING AND SEALING STRIPS
Helmut Ginster, Viersen, Fed. Rep. of Germany, assignor to Draftex Development, A.G., Zug, Switzerland
Filed Dec. 23, 1980, Ser. No. 219,871
Claims priority, application United Kingdom, Feb. 22, 1980, 06100/80
Int. Cl.[3] E06B *7/16*
U.S. Cl. 428—122 3 Claims

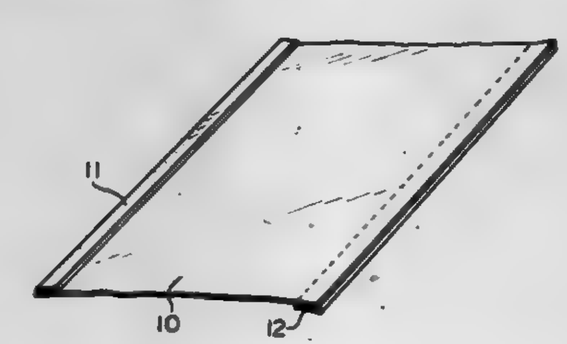


1. A channel-shaped finishing and sealing strip, comprising channel-shaped resilient material defining two opposite inside wall surfaces, a base and a mouth and having embedded within it a channel-shaped flexible reinforcing carrier, and

lips attached to and running longitudinally along the strip and projecting inwardly from both opposite inside wall surfaces and inclined therefrom towards the base, there being four substantially equidistantly spaced relatively small lips on one said wall surface and two substantially equidistantly spaced relatively larger said lips on the other wall surface,

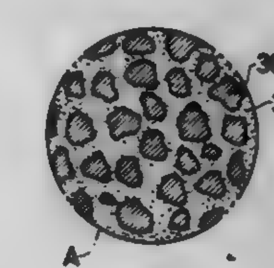
one of the relatively smaller lips on the other of the wall surfaces being positioned along the edge of that wall surface adjacent the said mouth.

4,324,827
WATER-PROOF, FUSE-BONDING FABRIC
Tsutomu Obayashi, Tokyo, and Hideyuki Hiraoka, Musashino, both of Japan, assignors to Hiraoka & Co., Ltd., Tokyo, Japan
Filed Jan. 3, 1980, Ser. No. 109,250
Claims priority, application Japan, Jan. 17, 1979, 54/4731[U]; Feb. 28, 1979, 54/25036[U]; Mar. 24, 1979, 54/34689[U]; Apr. 16, 1979, 54/46519[U]; Sep. 29, 1979, 54/126139[U]; Nov. 5, 1979, 54/ 142043[U]
Int. Cl.[3] B32B *23/02*
U.S. Cl. 428—192 21 Claims



1. A water-proof, fuse-bonding fabric which comprises a water-proof fabric including a fabric substrate and at least one coating layer which is formed on at least one surface of said fabric substrate and which comprises a water-proofing agent not capable of providing an adhering activity when a high frequency wave treatment or heating treatment is applied thereto, and which fabric is characterized by at least one fuse-bonding region formed on at least one surface of said water-proof fabric, in which region said surface is partially coated with a polymeric fuse-bonding agent capable of providing an adhering activity when a high frequency wave treatment or heating treatment is applied thereto, said fuse-bonding region forming a pattern which extends longitudinally along said water-proof fabric.

4,324,828
STRUCTURE OF POSITIVE PLATE OF ENCLOSED TYPE BATTERY
Noboru Ebato; Toshiki Kahara, and Kohki Tamura, all of Ibaraki, Japan, assignors to Hitachi, Ltd. and Hitachi Chemical Co., Ltd., both of Tokyo, Japan
Filed Jun. 6, 1980, Ser. No. 157,001
Claims priority, application Japan, Jun. 29, 1979, 54-81335
Int. Cl.[3] H01M *4/00*
U.S. Cl. 429—209 7 Claims



1. A structure for a positive plate of an enclosed type of battery comprising a combination of:

a plurality of compact particles made of a compactly aggregated composite agent containing an active material for the positive plate; and

a plurality of coarse particles, smaller and less dense than the compact particles, made of said composite agent which has been aggregated at a pressure lower than that used to prepare the compact particles;

the compact particles being disposed in the positive plate in such a fashion that passages between the compact particles are filled with the smaller, less dense coarse particles.

4,324,829
LAMINATE FILM STRUCTURES FROM CHLORINATED POLYETHYLENES
Ronald J. Hayes, Sarnia, Canada, assignor to The Dow Chemical Company, Midland, Mich.
Continuation-in-part of Ser. No. 946,246, Sep. 27, 1978, abandoned, which is a continuation of Ser. No. 822,130, Aug. 5, 1977, abandoned. This application Apr. 9, 1980, Ser. No. 138,613
Int. Cl.[3] B32B *7/02, 27/08*
U.S. Cl. 428—215 8 Claims

1. A laminate film structure comprising, in a planar coextensive relationship, (A) an amorphous first outer layer of linear chlorinated olefin polymer containing from about 25 to about 50 weight percent of chemically combined chlorine and having a thickness of from about 0.005 to about 0.05 of an inch; (B) a crystalline internal layer of linear chlorinated olefin polymer containing from about 5 to about 15 percent by weight of chemically combined chlorine and having a thickness of from about 0.005 to about 0.03 of an inch, said internal layer being a film formed from a linear chlorinated high density olefin polymer, said polymer, in particulate form, having a flowability, measured as angle of repose of from about 24° to about 28°, a bulk density in the range of from about 25 to about 35 pounds/cubic foot, a surface area in the range of from about 2 to about 4 square meters/gram, particles sizes predominantly in the

range of from about 300 to about 600 microns and a porosity sufficient to provide an average free volume within individual particles in the range of from about 20 to about 40 volume percent based on total particle volume, said polymer being chlorinated while in particulate form in a heterogeneous system at a temperature of less than about 90° C., said internal layer having a heat of fusion of from about 20 to about 40 calories/gram; and (C) an amorphous second outer layer of the nature of said first outer layer, said second outer layer being disposed ajacent to said internal layer and remote from said first outer layer.

4,324,830

DIETHYNYLBENZENE-ETHYLNYLPYRENE COPOLYMERS

Norman Bilow, Encino, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Nov. 17, 1980, Ser. No. 207,829

Int. Cl.³ B32B *7/00*

U.S. Cl. 428—257 4 Claims

1. In a carbon-carbon composite comprising a structure of interwoven graphite fibers impregnated with a matrix resinous precursor, the improvement wherein said resinous matrix material is a copolymerized mixture of a diethynylbenzene monomer and an ethynylpyrene monomer in a monomer weight ratio between about 1:9 to 9:1.

4,324,831

FORMED STRUCTURES BASED ON SYNTHETIC FIBERS AND HAVING SOUNDPROOFING PROPERTIES

Paolo Parrini; Vittorio Ciaccia; Guglielmo Corrieri, and Gian P. Righi, all of Ferrara, Italy, assignors to Montedison S.p.A., Milan, Italy

Continuation of Ser. No. 894,258, Apr. 7, 1978, abandoned, which is a continuation of Ser. No. 743,418, Nov. 19, 1976, abandoned, which is a continuation of Ser. No. 631,524, Nov. 13, 1975, abandoned. This application Mar. 30, 1979, Ser. No. 25,711

Claims priority, application Italy, Nov. 14, 1974, 29435 A74

Int. Cl.³ B32B *27/12;* D04H *1/58*

U.S. Cl. 428—288 7 Claims

1. Homogeneous agglomerates having anti-acoustical properties and an apparent density comprised between 0.04 and 0.5 g/cc, said agglomerates consisting essentially of mixtures of fibrils or fibrids of thermoplastic polymers having a surface area greater than 1 m^2/g, and in the range 4.5 m^2/g to 7.5 m^2/g and a binder therefor selected from the group consisting of animal or vegetable glues, synthetic resins and thermoplastic polymers which are compatible with the polymer of which the fibrils or fibrids of the agglomerate are formed and have a melting temperature lower than the melting temperature of the fibrils or fibrids, the weight ratio between the fibrils or fibrids and binder being comprised between about 95:5 and about 50:50.

4,324,832

METHOD OF IMPREGNATING WEB STRUCTURES WITH A SYNTHETIC RESIN

Helmut Moroff, Muehltal-Trautheim; Hanns Boessler, Darmstadt; Hans Hauser, Muehltal, and Gerhard Ladisich, Gernsheim, all of Fed. Rep. of Germany, assignors to Röhm GmbH, Darmstadt, Fed. Rep. of Germany

Filed Jan. 18, 1980, Ser. No. 113,219

Claims priority, application Fed. Rep. of Germany, Jan. 27, 1979, 2903172

Int. Cl.³ B44D *1/44;* B05D *3/02, 3/12;* B32B *27/00*

U.S. Cl. 428—289 12 Claims

1. A method for making a synthetic veneer, which method comprises impregnating a fibrous web structure with an agent consisting essentially of an aqueous dispersion of a finely divided synthetic resin free of self-crosslinking groups but comprising a plurality of groups capable of external crosslinking reactions with an aminoplast resin, said dispersion further having a water-soluble aminoplast resin dissolved therein, and then drying the impregnated web structure at a temperature from 60° C. to 200° C. out of contact with other objects in a single drying step directly to produce said synthetic veneer, said synthetic resin being thermoplastically deformable and in a non-crosslinked condition at the beginning of the drying step but entering into crosslinking reactions with said aminoplast resin during drying.

12. A synthetic veneer made by the method of claim 1.

4,324,833

WET PROCESS MAT BINDER

Ben J. Yau, Reynoldsburg, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Sep. 27, 1979, Ser. No. 79,397

Int. Cl.³ C08L *3/02;* D08N *5/00, 3/12*

U.S. Cl. 428—290 10 Claims

1. A wet process mat binder comprising an aqueous solution of a phenolic resin, a methylated melamine formaldehyde resin and a polyvinyl alcohol, said aqueous solution having a pH within the range of from about 3.5 to about 6.5.

4,324,834

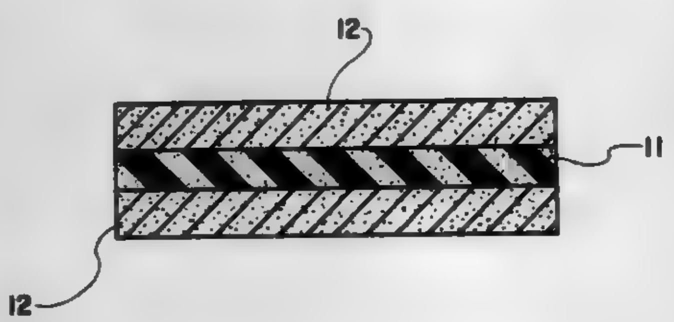
INSULATION MEANS AND METHOD

Edward J. Page, Hampton, and James E. Rock, Norfolk, both of Va., assignors to NRG Research Laboratories, Inc., Newport News, Va.

Filed Jun. 5, 1980, Ser. No. 156,864

Int. Cl.³ B32B *5/16, 5/18, 9/04*

U.S. Cl. 428—312.6 3 Claims



1. A composite insulation product having insulating qualities greater than the sum of the qualities of the individual portions comprising: at least two layers of sodium silicate coated expanded perlite type ceramic insulation; and at least one layer of urethane foam type insulation disposed adjacent to and between said ceramic insulation whereby an insulated product having superior insulating qualities is provided.

4,324,835

CELLULAR INTUMESCENT MATERIALS

Christopher V. Keen, Burntwood, England, assignor to Dunlop Limited, London, England

Filed Apr. 24, 1980, Ser. No. 143,522

Claims priority, application United Kingdom, Jun. 5, 1979, 19521/79

Int. Cl.³ B32B *3/02, 5/20, 7/02*

U.S. Cl. 521—54 13 Claims

1. A cellular, intumescent material obtained by treating an open-celled substrate selected from the class consisting of polyether-based urethane foams, latex foams, natural rubbers and synthetic rubbers with a flexible, intumescable polymeric material, said flexible, intumescable polymeric material being one which, on exposure to a flame, melts, foams and solidifies to a foamed carbonaceous char, whereby said open-celled substrate becomes surrounded with an intumescent foam layer, said intumescable polymeric material comprising (A) a binder and (B) an intumescent component, said intumescent component (B) comprising a carbonific element different from said binder (A) and a spumific element.

4,324,836

POLYMERS CHARACTERIZED BY 1,3-IMIDAZOLIDINE-1,3-DIYL RINGS PLASTICIZED WITH AROMATIC NITRILES

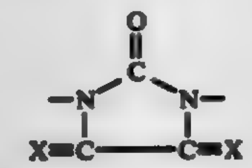
Tad L. Patton, Baytown, Tex., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Jun. 11, 1980, Ser. No. 158,193

Int. Cl.³ C08K *5/18;* B32B *27/04, 27/22, 27/28*

U.S. Cl. 428—336 25 Claims

1. A stable meltable composition comprising heterocyclic polymers characterized in the repeating units by the tri-substituted 1,3-imidazolidine-1,3-diyl ring:



wherein X=O or NH, provided at least one X is O and a plasticizing amount of aromatic nitrile.

4,324,837

SELF-BONDING MAGNET WIRE

Masayoshi Miyake, Nagoya, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Jun. 27, 1980, Ser. No. 163,458

Claims priority, application Japan, Jun. 27, 1979, 54-81952

Int. Cl.³ B32B *15/00, 27/00;* H01B *7/00*

U.S. Cl. 428—375 22 Claims

1. A self-bonding magnet wire, comprising:

an insulated conductor; and

a coating over said insulated conductor of an enamel composition consisting essentially of a thermoplastic linear polyurethane prepared by reacting a glycolic component comprising (a) polyoxyalkylene glycol, (b) alkylene glycol, and (c) aromatic diisocyanate, and baking the coated insulated conductor, wherein the molar ratio of components (a), (b) and (c) is such that $0.92 \leqq (c)/\{(a)+(b)\} \leqq 1.01$, and $0.1 \leqq (a)/\{(a)+(b)\} \leqq 1.0$, wherein (a) is the number of moles of polyoxyalkylene glycol represented by the formula $HO—(CH_2)_nO_mH$ and (b) is the number of moles of alkylene glycol represented by the formula $HO—CH_2)_lOH$, and the values of n, m, and l are such that the value of the equation $\{(mn+m-1)\times(a)+l\times(b)\}/\{(a)+(b)\}$ is in the range of from 4.0 to 8.5.

4,324,838

DRY POWDER COMPOSITIONS OF VERMICULITE LAMELLAE AND ADDITIVES

Denis G. Ballard, Littleton; Richard M. Charash, Thornaby; John F. Droughton, Tarvin, and Graham R. Rideal, Handbridge, all of England, assignors to Imperial Chemical Industries Limited, London, England

Filed Aug. 14, 1979, Ser. No. 66,766

Claims priority, application United Kingdom, Aug. 17, 1978, 33722/78

Int. Cl.³ B32B *5/16*

U.S. Cl. 428—402 19 Claims

1. A free-flowing essentially dry powder composition comprising at least 10% by weight vermiculite lamellae said vermiculite lamellae being obtained from vermiculite which has been swollen by the action of aqueous solutions of salts and delaminated by mechanical shearing of the swollen granules to yield platelets having a thickness of less than one tenth of a micrometer.

4,324,839

SILICONE RESIN COATING COMPOSITION

Robert B. Frye, Menands, N.Y., assignor to General Electric Company, Waterford, N.Y.

Division of Ser. No. 964,911, Nov. 30, 1978, Pat. No. 4,277,287. This application Mar. 9, 1981, Ser. No. 241,653

Int. Cl.³ B32B *27/36, 9/04*

U.S. Cl. 428—412 15 Claims

1. A solid substrate having at least one surface coated with an improved aqueous coating composition comprising a dispersion of colloidal silica in an aliphatic alcohol-water solution of the partial condensate of a silanol of the formula $RSi(OH)_3$ wherein R is selected from the group consisting of alkyl having from 1 to 3 carbon atoms and aryl, at least 70 weight percent of the silanol being $CH_3Si(OH)_3$, said composition containing 10 to 50 weight percent solids, said solids consisting essentially of 10 to 70 weight percent colloidal silica and 30 to 90 weight percent of the partial condensate, said composition having a pH of from 7.1 to about 7.8, wherein the improvement comprises the intimate admixture of a small amount effective to control flow of a polysiloxane polyether copolymer with said composition.

4,324,840

ADSORPTION DECAFFEINATION

Saul N. Katz, Monsey, N.Y., assignor to General Foods Corporation, White Plains, N.Y.

Filed Jun. 16, 1980, Ser. No. 159,725

Int. Cl.³ A23F *3/38, 5/22*

U.S. Cl. 426—422 10 Claims

1. An improved method for decaffeinating an aqueous caffeine-containing solution comprising the steps of:

(a) contacting an aqueous caffeine-containing solution with a solid caffeine adsorbent coated with a thin layer of a liquid, water-immiscible, caffeine-specific solvent;

(b) maintaining the aqueous caffeine-containing solution in contact with the solid caffeine adsorbent for a time sufficient for at least a portion of the caffeine to be extracted from the aqueous solution and adsorbed by the solid caffeine adsorbent; and

(c) separating the aqueous caffeine-containing solution from the solid caffeine adsorbent.

4,324,841

LITHOGRAPHIC SUBSTRATES

Jen-chi Huang, Ossining, N.Y., assignor to Polychrome Corporation, Yonkers, N.Y.

Continuation-in-part of Ser. No. 69,482, Aug. 24, 1979, Pat. No. 4,242,417, which is a continuation-in-part of Ser. No. 937,222, Aug. 28, 1978, Pat. No. 4,201,836. This application Aug. 15, 1980, Ser. No. 178,656

The portion of the term of this patent subsequent to May 6, 1997, has been disclaimed.

Int. Cl.³ B32B *15/04;* B05D *3/12;* G03C *1/94*

U.S. Cl. 428—457 22 Claims

1. An aluminum sheet provided with at least one surface suitable for lithography by a method which comprises the steps of:

a. mechanically graining said surface; and,

b. immersing said aluminum sheet in a saturated aqueous solution of an aluminum salt of a mineral acid for a period of time from about 5 seconds to about 5 minutes at about 25° C. to about 110° C.

4,324,842

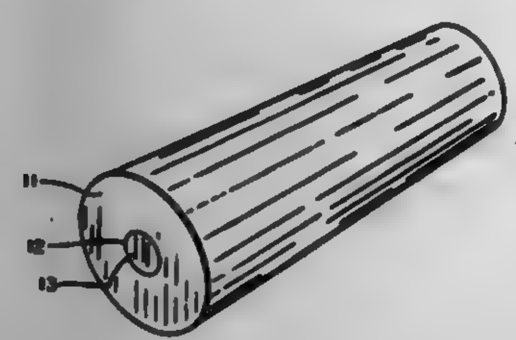
SUPERCONDUCTING WIRE WITH IMPROVED STRAIN CHARACTERISTICS

Thomas Luhman, Westhampton Beach; Carl J. Klamut, East Patchogue; Masaki Suenaga, Bellport, and David Welch, Stony Brook, all of N.Y., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Continuation-in-part of Ser. No. 966,709, Dec. 5, 1978, abandoned. This application Dec. 19, 1979, Ser. No. 105,439

Int. Cl.[3] B32B *15/04*

U.S. Cl. 428—614 **5 Claims**



1. A superconductor wire having improved resistance to loss of current-carrying capacity when subjected to strain, said superconductor wire comprising at least one filament of a material possessing superconducting properties, said filament being encased in a matrix consisting essentially of up to about 0.2 weight percent Be and bronze having a coefficient of thermal expansion greater than that of said filament, said matrix containing beryllium in an effective concentration sufficient to induce and maintain said filament under greater radial and axial compression than that provided by a bronze matrix without the beryllium addition.

4. A superconductor wire as described in claim 1, 2 or 3 in which said beryllium is present in said matrix in the range of 0.01 to 0.2 weight percent.

4,324,843

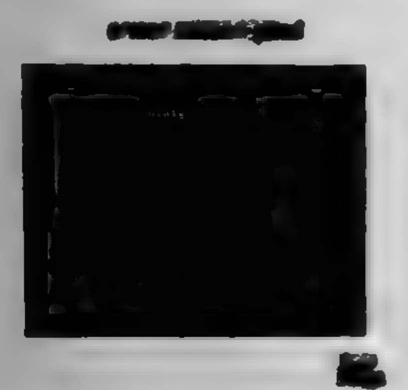
CONTINUOUS LENGTH SILICON CARBIDE FIBER REINFORCED CERAMIC COMPOSITES

John J. Brennan, Portland, and Karl M. Prewo, Vernon, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Feb. 13, 1980, Ser. No. 121,081

Int. Cl.[3] B32B *5/02, 5/08, 15/08*

U.S. Cl. 428—697 **8 Claims**



1. A multilayered fiber reinforced ceramic composite comprising a plurality of substantially titanium-free ceramic layers selected from the group consisting of (a) aluminosilicate, (b) lithium aluminosilicate, (c) magnesium aluminosilicate and (d) mixtures thereof, each layer reinforced with a plurality of unidirectional, continuous length silicon carbide fibers, each layer having an axial flexural strength greater than 70,000 psi (4.83×10^8 NT/M^2) and a high fracture toughness, exemplified by a critical stress intensity factor greater than 10×10^3 psi (inch)$^{\frac{1}{2}}$.

4,324,844

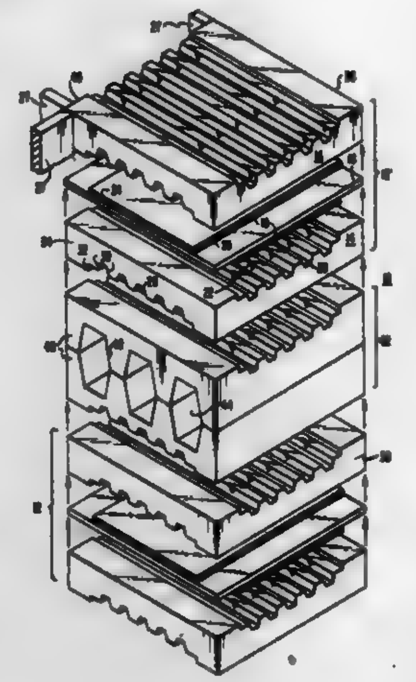
VARIABLE AREA FUEL CELL COOLING

Richard E. Kothmann, Churchill Borough, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 28, 1980, Ser. No. 144,090

Int. Cl.[3] H01M *8/04*

U.S. Cl. 429—26 **5 Claims**



1. An improved electrochemical cell system of the type wherein two process fuel cells connected electrically are separated by a cooling module and a fluid oxidant is fed in parallel through process channels in said fuel cells and through cooling passages in said cooling module, said cooling passages having an inlet and an outlet, the improvement comprising:

said cooling passages being of a variable surface area per unit length which generally increases from said inlet to said outlet.

4,324,845

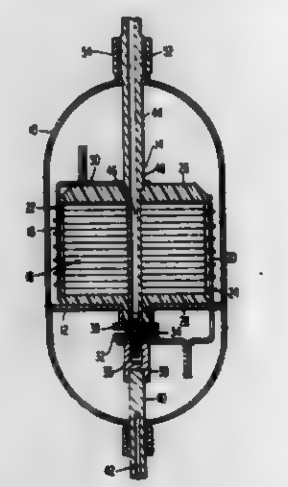
METAL-OXIDE-HYDROGEN CELL WITH VARIABLE CONDUCTANT HEAT PIPE

Joseph F. Stockel, Rockville, Md., assignor to Communications Satellite Corp., Washington, D.C.

Filed Jun. 30, 1980, Ser. No. 164,382

Int. Cl.[3] H01M *10/50*

U.S. Cl. 429—101 **11 Claims**



1. In a rechargable metal oxide-hydrogen cell having an outer shell, an electrode stack within said shell having positive and negative electrodes positioned on an alignment member, positive and negative bus bars coupling respective positive and negative electrodes to like conductive terminals, the improvement comprising a variable conductance heat pipe including at least a portion of said alignment member, said heat pipe coupling the interior of the electrode stack to a radiator outside said shell, and a working fluid within said heat pipe.

4,324,846

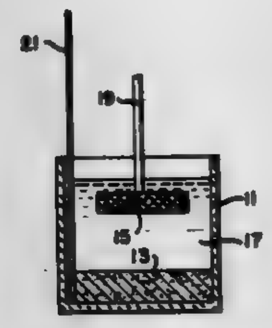
NEGATIVE ELECTRODE COMPOSITION

Thomas D. Kaun, New Lenox, and Albert A. Chilenskas, Western Springs, both of Ill., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Aug. 12, 1980, Ser. No. 177,323

Int. Cl.[3] H01M *4/40, 4/46*

U.S. Cl. 429—112 **19 Claims**



1. A negative electrode composition for use in a secondary electrochemical cell to provide overcharge protection comprising a lithium-aluminum alloy in combination with a mixture of ternary alloys sufficient to provide a discontinuity in the cell voltage when the cell is substantially fully charged, said mixture of ternary alloys comprising lithium-aluminum nickel and a second ternary alloy selected from the group consisting of lithium aluminum-iron alloy and lithium-aluminum-cobalt alloy wherein said lithium-aluminum-nickel alloy is present in an amount less than 50% by weight of said mixture of ternary alloys.

4,324,847

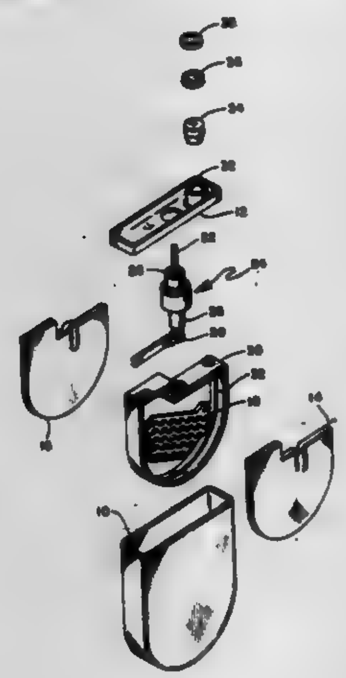
LITHIUM ANODE ASSEMBLIES AND CELL CONSTRUCTION

Lee F. Athearn, Fridley, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Sep. 18, 1980, Ser. No. 188,512

Int. Cl.[3] H01M *4/76*

U.S. Cl. 429—181 **19 Claims**



1. In a lithium anode assembly for electrochemical cells, the assembly comprising a lithium anode element having generally opposing sides and a peripheral contact surface area extending around the element between the opposing sides; a peripheral frame member comprised of a material non-reactive with the contents of the cell, the frame peripherally contacting and enclosing the anode element at the peripheral contact surface area thereof, the improvement comprising a metallized surface area on the surface of the frame member which contacts the anode element.

4,324,848

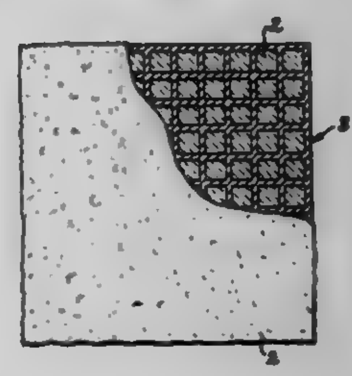
POSITIVE ELECTRODE FOR LEAD ACID BATTERY

Fritz G. Will, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jan. 26, 1981, Ser. No. 228,647

Int. Cl.[3] H01M *4/56*

U.S. Cl. 429—228 **10 Claims**



1. A positive electrode for use in a secondary lead-sulfuric acid electrolyte cell or battery comprised of a grid supporting an adherent external layer of PbO_2, said grid being comprised of an electrically conducting substrate having an adherent protective at least substantially pinhole-free shield of electrically conducting material, said shield being composed of a coating of semiconducting metal oxide, or a composite of at least a substantially pinhole-free external coating of semiconducting metal oxide and at least a substantially pinhole-free coating of metal intermediate to the substrate and semiconducting oxide coating, said sulfuric acid electrolyte having a substantially deleterious effect on said substrate, but having no significant deleterious effect on said shield.

4,324,849

IMAGEWISE ACCELERATING EQUILIBRATION IN ULTRASONOGRAPHIC RECORDING

Donald L. Kerr, Rochester, and Gary M. Russo, Churchville, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 56,499, Jul. 11, 1979, abandoned. This application Jun. 20, 1980, Ser. No. 161,521

Int. Cl.[3] G03C *5/26;* **G01N** *29/00*

U.S. Cl. 430—3 **19 Claims**

1. In a process of recording an ultrasonic exposure pattern employing an ultrasonographic element comprised of a support and a recording layer unit capable of producing an ultrasonographic record as a function of diffusion to a transport liquid, the recording layer unit being beneath the support and in contact with the transport liquid, said process comprising

imagewise ultrasonically exposing below 100 watt-sec/cm^2 the recording layer unit through the transport liquid to accelerate diffusion from the recording layer unit into the transport liquid in exposed areas, thereby producing in the recording layer unit an ultrasonographic record,

the improvement comprising

further accelerating diffusion in ultrasonically exposed areas by establishing a temperature differential within the transport liquid adjacent the recording layer unit so that the transport liquid remote from the recording layer unit is at

a relatively lower temperature than the transport liquid contacting the recording layer unit.

4,324,850

METHOD OF FORMING A FLUORESCENT SCREEN FOR A COLOR PICTURE TUBE

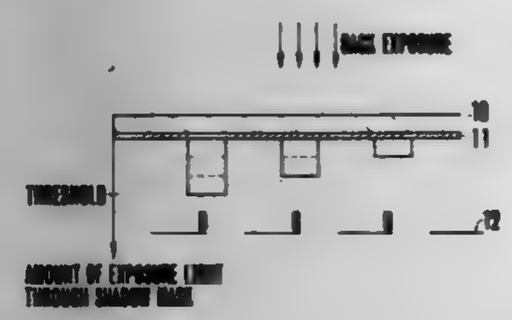
Yoshifumi Tomita; Masahiro Nishizawa; Hiroshi Yokomizo, and Hirosuke Nakai, all of Mobara, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 28, 1980, Ser. No. 125,694

Claims priority, application Japan, Apr. 18, 1979, 54-46649

Int. Cl.³ G03C *5/00*

U.S. Cl. 430—24 8 Claims



1. A method of forming a fluorescent screen for a color picture tube having triads of phosphor materials of three primary colors arranged in a predetermined pattern on the inner surface of a panel comprising the steps of:

forming on the inner surface of the panel a photosensitive film which exhibits stickiness when exposed to a threshold amount of light;

exposing to light at threshold from a light source first locations of the photosensitive film where a first color phosphor material of the primary three colors should occupy through a shadow mask mounted to the panel;

exposing to the light second locations of the photosensitive film where a second color phosphor material should occupy through the shadow mask with the amount of light which is below the threshold;

exposing to the light third locations of the photosensitive film where third color phosphor material should occupy through the shadow mask with the amount of light which is below the said threshold and below the amount of light exposed on the said second locations;

dismounting the shadow mask and depositing the first color phosphor material onto the photosensitive film;

subjecting the panel to a first back exposure which brings only the second locations of the photosensitive material to stickiness;

depositing the second color phosphor material onto the photosensitive film;

subjecting the panel to a second back exposure which brings the third locations of the photosensitive material to stickiness; and

depositing the third color phosphor material onto the photosensitive film.

4,324,851

POSITIVE COLOR TONERS

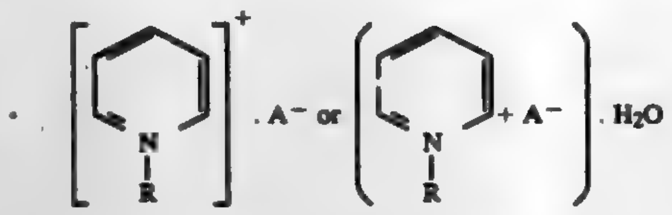
Chin H. Lu, Webster; Dominic F. Sherony, Fairport, and Peter F. Erhardt, Webster, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 20, 1979, Ser. No. 105,836

Int. Cl.³ G03G *9/10*

U.S. Cl. 430—106 6 Claims

1. A colored developing composition capable of being charged positively, the composition being comprised of a resin, colored cyan, yellow, and magenta pigments selected from copper tetra-4-(octadecylsulfonomido)phthalocyanine, yellow FGL, Color Index pigment yellow 97, and 2,9-dimethyl substituted quinacridone, a single common carrier consisting of an oxidized steel core coated with polyvinylidene fluoride, and from about 0.1 percent to about 10 percent of an alkyl pyridinium compound or its corresponding hydrate of the formula:



wherein R is a hydrocarbon radical containing from about 8 to about 22 carbon atoms, and A is an anion selected from halide, sulfate, sulfonate, nitrate, borate, or phosphate.

4,324,852

TRANSITION METAL PHOTOREDUCTION SYSTEMS AND PROCESSES

Anthony Adin, Rochester, and James C. Fleming, Webster, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 846,239, Oct. 27, 1977, abandoned, which is a continuation-in-part of Ser. No. 618,186, Sep. 30, 1975, which is a continuation-in-part of Ser. No. 461,057, Apr. 15, 1974. This application Jun. 7, 1979, Ser. No. 46,532

Int. Cl.³ G03C *1/52, 1/00, 1/72, 5/24*

U.S. Cl. 430—178 20 Claims

1. A radiation-sensitive element comprising

(A) a support, and

(B) on the support, a radiation-sensitive layer comprising, in admixture,

a reducible, radiation-sensitive inert cobalt(III) complex free of a sensitizable anion,

and a photoreductant capable of forming in the absence of a cobalt(III) complex, upon exposure to activating radiation longer than 300 nanometers in wavelength, a reducing agent which forms a redox couple when associated with the cobalt(III) complex, said photoreductant being selected from the group consisting of disulfides, diazoanthrones, diazophenanthrones, aromatic azides, carbazides, and diazosulfonates.

4,324,853

PHOTOGRAPHIC PROCESSING COMPOSITION CONTAINING POLYOL

Michael Berger, Chestnut Hill, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Jul. 18, 1979, Ser. No. 58,683

Int. Cl.³ G03C *5/54, 5/38, 5/30, 7/00*

U.S. Cl. 430—245 19 Claims

9. A photographic processing composition adapted for use with an additive color diffusion transfer film unit which comprises an aqueous sodium hydroxide solution, tetramethyl reductic acid, 2-methylthiomethyl-4,6-dihydroxypyrimidine, hydroxyethyl cellulose, glycerol and sodium tetraborate decahydrate.

10. The method which comprises contacting an exposed silver diffusion transfer film unit which comprises a support carrying on one surface, a layer comprising silver precipitating nuclei, and a silver halide layer; with a photographic processing composition adapted for use with a silver diffusion transfer film unit which comprises an aqueous alkaline solution, a silver halide developing agent, a silver halide solvent and glycerol,

wherein said glycerol is present at a level of about 0.1–1.0 g per 10 cc of said processing composition.

11. The method of claim 10 wherein said glycerol is present at a level of about 0.2 g per 10 cc of said processing composition.

4,324,854

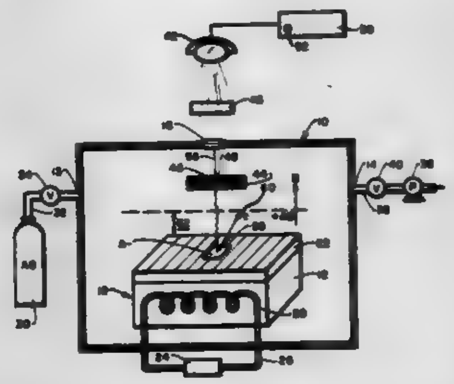
DEPOSITION OF METAL FILMS AND CLUSTERS BY REACTIONS OF COMPOUNDS WITH LOW ENERGY ELECTRONS ON SURFACES

Jesse L. Beauchamp, and Patricia M. George, both of Pasadena, Calif., assignors to California Institute of Technology, Pasadena, Calif.

Filed Mar. 3, 1980, Ser. No. 126,874

Int. Cl.³ B05D *3/06;* H05K *3/18*

U.S. Cl. 430—296 18 Claims



1. A method for depositing a thin film on the surface of a substrate comprising the steps of:

placing said substrate in a deposition zone;

introducing a first precursor gas containing a first compound capable of electron capture dissociation into said deposition zone;

generating low energy electrons at or near the surface of said substrate;

dissociatively capturing said electrons with said first compound resulting in dissociation of said first compound into a coordinately unsaturated negatively charged reactive first deposition species and a first dissociation species;

depositing said first deposition species on the surface of said substrate; and

removing said first dissociation species from said deposition zone.

4,324,855

PROCESS FOR DEVELOPING A SILVER HALIDE EMULSION

Yasushi Oishi, and Shigeo Hirano, both of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

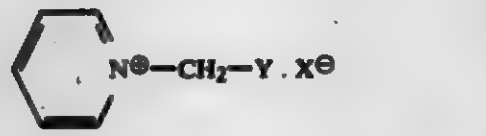
Filed Apr. 16, 1980, Ser. No. 140,923

Claims priority, application Japan, Apr. 17, 1979, 54-46949

Int. Cl.³ G03C *1/36, 5/24*

U.S. Cl. 430—378 25 Claims

21. A photographic light-sensitive material comprising a support having provided thereon at least one unfogged internal latent image-forming silver halide photographic emulsion layer for producing direct positive images associated with a compound of the formula II:



II

in an amount of about 1×10^{-4} to 6×10^{-3} mole per mole of silver halide wherein X represents an anion, Y represents an acyl group or a cyano group an the acyl group and the 3-, 4- or 5-position of the pyridinium ring may be optionally substituted, with the proviso that said acyl group does not comprise a sulfonyl group.

4,324,856

SILVER HALIDE PHOTOGRAPHIC MATERIAL

Satoshi Kawakatsu; Shigeto Hirabayashi; Hidetaka Ninomiya, and Yutaka Kaneko, all of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Japan

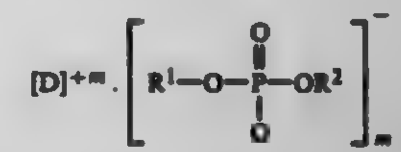
Filed Oct. 7, 1980, Ser. No. 194,799

Claims priority, application Japan, Oct. 11, 1979, 54-131376

Int. Cl.³ G03C *1/34, 1/06*

U.S. Cl. 430—566 5 Claims

1. A photographic material containing silver halide in at least one layer of structural layers coated on a support wherein at least one of the structural layers contains a compound represented by a following formula:



wherein D represents a nitrogen-containing organic base or a compound containing quaternary nitrogen atom, and R^1 and R^2 individually represent a hydrogen atom, a substituted or non-substituted alkyl group, alkenyl group, cycloalkyl group, phenyl group, or hetero ring group; or R^1 and R^2 may combine to form a ring, m is an integer from 1 to 5, and R^1 and R^2 are not both hydrogen at the same time.

4,324,857

Patent Not Issued For This Number

4,324,858

STABILIZATION OF CHOLINESTERASE, DETECTOR KIT USING STABILIZED CHOLINESTERASE, AND METHODS OF MAKING AND USING THE SAME

Louis H. Goodson, Kansas City, Mo., and Alan Goodman, Edgewood, Md., assignors to Midwest Research Institute, Kansas City, Mo.

Filed Jun. 16, 1980, Ser. No. 160,027

Int. Cl.³ C12Q *1/46*

U.S. Cl. 435—20 19 Claims

1. A method for providing a treated porous material impregnated with a substantially stabilized cholinesterase comprising the steps of:

(a) uniformly distributing the cholinesterase through an aqueous medium buffered to a pH greater than about 6 but less than about 9 with a buffering amount of a zwitterionic buffering agent,
(b) impregnating a porous material with the aqueous medium containing said cholinesterase, and
(c) drying the resulting impregnated porous material to remove substantially all of the physically bound water and thereby provide said treated porous material, having substantially no measurable water vapor pressure in a closed system.

4,324,859

APPARATUS AND ASSOCIATED METHODS FOR USE IN MICROBIOLOGICAL, SEROLOGICAL, IMMUNOLOGICAL, CLINICAL-CHEMICAL AND SIMILAR LABORATORY WORK

Rolf Saxholm, Box 3, 1362 Billingstad, Norway

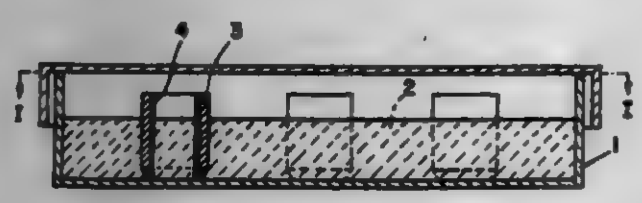
Continuation-in-part of Ser. No. 731,103, Oct. 8, 1976, Pat. No. 4,140,582, which is a continuation of Ser. No. 602,745, Aug. 7, 1975, Pat. No. 3,985,608, which is a continuation of Ser. No. 414,939, Nov. 12, 1973, abandoned, which is a division of Ser. No. 33,994, May 1, 1970, Pat. No. 3,791,930. This application Feb. 16, 1979, Ser. No. 12,905

Claims priority, application Norway, May 3, 1969, 691832

The portion of the term of this patent subsequent to Feb. 12, 1974, has been disclaimed.

Int. Cl.³ C12Q *1/20*

U.S. Cl. 435—33 **65 Claims**



1. Apparatus for carrying out biological and chemical diffusion tests in microbiological, serological, immunological, and clinical-chemical work, in which at least one active substance is contacted with a substrate containing an agent, the reactivity of the agent and active substance being the subject of investigation, said apparatus comprising a container containing the substrate, a divided carrying body with respective separated sections in sealed contact within the container such that the sections form separate regions with isolated substrate portions in each of said regions, said carrying body penetrating into said substrate in each of said regions and means supported by said carrying body for introducing said active substance into respective isolated substrate portions where the carrying body penetrates into the substrate by discharging said active substance into the penetrated substrate portions by diffusion whereby the action in said substrate is restricted to said separate regions.

4,324,860

LACTATE DEHYDROGENASE MUTANTS OF *STREPTOCOCCUS MUTANS*

Jeffrey D. Hillman, Jamaica Plain, Mass., assignor to Forsyth Dental Infirmary for Children, Boston, Mass.

Division of Ser. No. 880,499, Feb. 23, 1978, Pat. No. 4,133,875. This application Oct. 6, 1978, Ser. No. 949,371

Int. Cl.³ C12N *15/00*

U.S. Cl. 435—172 **15 Claims**

1. A method of manufacture of a mutant composition useful in the control of the incidence and severity of dental caries, which method comprises:
(a) culturing *Streptococcus mutans* in a suitable nutrient for growing cells of the culture; and
(b) isolating and purifying selected mutant strains, to provide a mutant-strain composition consisting essentially of a substantially biologically pure mutant strain characterized by bright red colonies, when grown on glucose tetrazolium medium spheroidal, gram-positive cells occurring in pairs and chains and having a mutation in the structural gene for the enzyme, lactate dehydrogenase.

7. A biologically pure culture of a mutant of *Streptococcus mutans* strain BHT-2 (str) having a single point mutation in the structural gene for lactate dehydrogenase, being gram positive, having spheroidal cells occurring in pairs and chains and producing on glucose tetrazolium medium bright red colonies of relatively larger size than those produced by the parent strain.

4,324,861

PREPARATION OF LIVE ATTENUATED MUMPS VIRUS FOR A VACCINE

Takayoshi Kan, Kanonji, Japan, assignor to Research Foundation for Microbial Diseases of Osaka University, Osaka, Japan

Filed Dec. 6, 1979, Ser. No. 100,957

Claims priority, application Japan, May 4, 1979, 54-055094

Int. Cl.³ C12N *7/08*

U.S. Cl. 435—237 **8 Claims**

1. A method of preparing a live attenuated mumps virus for a vaccine comprising:
incubating a wild mumps virus strain in a living cell selected from the group consisting of embryonated hen's egg chorio-allantoic membrane, chick embryo fibroblast and human diploid cell for 1–18 passages sufficient to attenuate the virus, and
subjecting the thus attenuated virus to successive cultivation in a living cell selected from the group consisting of embryonated hen's egg amnion, embryonated hen's egg chorio-allantoic membrane and human diploid cell to propagate the virus.

4,324,862

BASIC (MGO) NON-AQUEOUS PLASTIC REFRACTORY MIXTURE

Kenneth A. Gebler, Munster, Ind., assignor to Nalco Chemical Company, Oak Brook, Ill.

Filed Feb. 13, 1981, Ser. No. 234,062

Int. Cl.³ C04B *35/04*

U.S. Cl. 501—109 **3 Claims**

1. A substantially non-aqueous magnesium oxide refractory composition comprising:
(a) 50–90% particulate magnesium oxide
(b) 6–44% by weight refractory filler
(c) 3–12% by weight of a water miscible glycol
(d) 1–8% by weight molasses.

4,324,863

FIRE-PROOFED INSULATING MATERIAL FOR AN ELECTRIC CABLE

Jean P. Bonicel, Lyons; Christian Cottevielle, Montreuil; Michel Mascolot, Nozay, and Madeleine Prigent, Marcoussis, all of France, assignors to Societe Anonyme dite: Les Cables de Lyon, Lyons, France

Filed Sep. 5, 1979, Ser. No. 72,814

Claims priority, application France, Nov. 7, 1978, 78 31467

Int. Cl.³ C08V *9/00*

U.S. Cl. 521—85 **7 Claims**

1. A fire-proofed insulating material for an electric cable, said material including:
(a) a matrix made of a synthetic polymer selected from the group consisting of copolymers of propylene and ethylene, high-density polyethylene, polypropylene, and thermoplastic polyesters;
(b) a fire-proofing agent selected from the group consisting of 3,9-di(2,3-dibromopropoxy)-2,4,8,10-tetraoxa-3,9-diphosphaspiro(5,5)-undecane-3,9-dioxide, 3,9-di(2,2-[dibromomethyl]-3-chloropropoxy)-2,4,8,10-tetraoxa-3,9-diphosphaspiro(5,5)undecane-3,9-dioxide and hexabromocyclododecane;
(c) an inorganic antimony compound which is capable of reacting with the bromine of the fire-proofing agent during combustion and
(d) a generator of free radicals selected from the group consisting of branched aliphatic hydrocarbons containing four or six carbon atoms in the aliphatic chain thereof and containing phenyl substituents, decomposing only at a temperature higher than the extrusion temperature of said matrix, and being able to split in a homolytic way between two carbon atoms at said higher temperature.

4,324,864

PROCESS FOR THE PRODUCTION OF CELLULOSE-SILICATE PRODUCTS

David H. Blount, 5450 Lea St., San Diego, Calif. 92105

Division of Ser. No. 221,432, Dec. 30, 1980, which is a continuation-in-part of Ser. No. 169,973, Jul. 18, 1980, which is a continuation-in-part of Ser. No. 884,135, Mar. 7, 1978, which is a continuation-in-part of Ser. No. 663,924, Mar. 4, 1976, Pat. No. 4,097,424, which is a continuation-in-part of Ser. No. 599,000, Jul. 7, 1975, Pat. No. 4,072,637, which is a continuation-in-part of Ser. No. 262,485, Jun. 14, 1972, abandoned, which is a continuation-in-part of Ser. No. 71,628, Sep. 11, 1970, abandoned. This application Jun. 26, 1981, Ser. No. 277,994

Int. Cl.³ C08J *9/00*

U.S. Cl. 521—100 **20 Claims**

1. The process for the Production of polyurethane lignin-cellulose silicate foam by the following steps:
(a) mixing and reacting 1 to 100 parts by weight of an oxidized silicate compound, selected from the group consisting of oxidized alkali metal silicate, oxidized alkaline earth metal silicate, oxidized alkaline earth metal silicate, oxidized mono alkali metal silicic acid, oxidized silicic acid and mixtures thereof, 50 parts by weight of plant cellulose particles, selected from the group consisting of cotton, wood cellulose, regenerated cellulose, sulfate cellulose produced by the Kraft process, sulfite cellulose, mechanical pulp cellulose, vegetable cellulose, cellulose esters and semi-chemical cellulose, a salt-forming compound selected from the group consisting of hydrochloric acid and sulfuric acid and in an amount wherein the mixture of the components has a pH of 1.5 to 5 after the reaction is complete, thereby producing lignin-cellulose silicate product containing impregnated hydrated silica;
(b) mixing 50 parts by weight of an organic polyisocyanate or polyisothiocyanate, selected from the group consisting of aliphatic, cycloaliphatic, araliphatic, aromatic and heterocyclic polyisocyanates and mixtures thereof, up to 100% by weight of a curing agent, based on weight of the reactants, 1 to 100 parts by weight of the dried lignin-cellulose silicate product containing impregnated hydrated silica, up to 10% by weight of an activator, up to 50% by weight of a blowing agent consisting of a liquid boiling in the range of −25° C. to +80° C., up to 20% by weight of a foam stabilizer and up to 20% by weight of an emulsifying agent are mixed and reacted, thereby
(c) producing a polyurethane lignin-cellulose silicate foam.

4,324,865

POLYURETHANE FOAMS HAVING LOW DISCOLORATION

Michael J. Reale, Brewster, N.Y., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Apr. 17, 1981, Ser. No. 255,142

Int. Cl.³ C08G *18/14*

U.S. Cl. 521—107 **10 Claims**

1. A method of making flame retardant polyurethane foams having improved scorch and surface discoloration properties by reacting an organic polyol and an organic isocyanate in the presence of a halogenated phosphoric acid ester flame retardant and phenothiazine; wherein the improvement comprises; adding to the reaction 4,4'thio-bis-(6-tertiary butyl meta cresol) in an amount effective to reduce scorch and surface discoloration.

4,324,866

THERMOPLASTIC ELASTOMER COMPOSITION

Minoru Furuichi; Chikara Honme, and Noriaki Ando, all of Yokkaichi, Japan, assignors to Japan Synthetic Rubber Co., Ltd., Tokyo, Japan

Filed Aug. 22, 1980, Ser. No. 180,427

Claims priority, application Japan, Aug. 27, 1979, 54-108126

Int. Cl.³ C08L *9/00, 23/20*

U.S. Cl. 521—140 **7 Claims**

1. An uncrosslinked thermoplastic elastomer composition comprising:
(A) 35–95% by weight of a 1,2-polybutadiene having a 1,2-configuration content of at least 70%, a crystallinity of 5–40% by weight and of at least 0.7 dl/g as measured at 30° C. in toluene,
(B) 1–20% by weight of an isobutylene homopolymer or an isobutylene-isoprene copolymer,
(C) 5–40% by weight polybutadiene rubber having a 1,4-configuration content of at least 80%, and
(D) 0–30% by weight of at least one member selected from the group consisting of isoprene rubber, natural rubber, acrylonitrile-butadiene rubber, styrene-butadiene rubber and ethylene-propylene type rubbers.

4,324,867

PROCESS FOR THE PREPARATION OF MOLDED POLYURETHANE-POLYUREA ELASTOMERS AND MOLDED PARTS PREPARED THEREBY

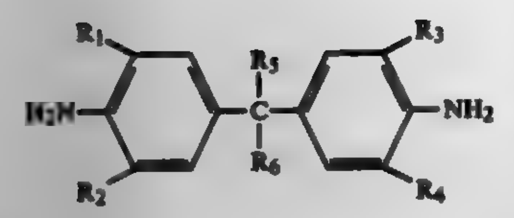
John T. Patton, Jr., Wyandotte, and John P. Rupert, Woodhaven, both of Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Oct. 6, 1980, Ser. No. 194,503

Int. Cl.³ C08G *18/14*

U.S. Cl. 521—159 **9 Claims**

1. A process for preparing molded polyurethane-polyurea elastomers comprising reacting an organic polyisocyanate and a reactive polyol composition by reaction injection molding techniques, said reactive polyol composition comprising
(a) a polyol having an equivalent weight of from 700 to 4,000 and a functionality from 2 to 6; and
(b) from 15 to 40 parts by weight, based upon 100 parts of (a) plus (b), of a reactive aromatic diamine which is soluble in said polyol at use temperatures and concentrations, has a pK_b value greater than 10, and has the following structural formula:



wherein R_1, R_2, R_3, and R_4 are individually selected from the group consisting of hydrogen and alkyl radicals of 1 to 4 carbon atoms, and at least one of the alkyl radicals in each ring is a non-linear alkyl radical selected from the group consisting of isopropyl, isobutyl, and tertiary butyl radicals, and wherein R_5 and R_6 are individually selected from the group consisting of hydrogen and alkyl radicals of 1 to 4 carbon atoms.

4,324,868

PROCESS AND APPARATUS FOR PREPARATION OF VINYL POLYMERS

Toru Maeda, Toyama, Japan, assignor to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

Filed Jun. 17, 1980, Ser. No. 160,194

Claims priority, application Japan, Jun. 19, 1979, 54-83727[U]; Jun. 25, 1979, 54-80000

Int. Cl.³ C08F *20/14*

U.S. Cl. 525—54 **5 Claims**

1. In a process for the preparation of vinyl polymers by bulk or solution polymerization comprising continuously introducing a polymerization starting material containing at least one vinyl monomer, at least one polymerization initiator and at least one polymerization regulator into a polymerization reactor of the complete mixing type, polymerizing the monomer while mixing the contents of the polymerization reactor whereby a reaction mixture containing polymer is formed, keeping the temperature of the reaction mixture at a constant level between 100° and 200° C. by removing the heat of polymerization with cooling means provided inside or outside of the reactor, maintaining the polymer content of said reaction mixture at 50 to 80% by weight, withdrawing a stream of reaction mixture containing polymer from the polymerization reactor, introducing the reaction mixture withdrawn from the polymerization reactor into a separation zone where volatiles are separated from the reaction mixture, said separated volatiles being recycled to be used as a part of the monomer for the polymerization starting material, the improvement which comprises dividing said stream of reaction mixture into a first stream and a second stream, feeding said first stream to said separation zone, continuously mixing fresh polymerization starting material with said second stream and recycling the resulting mixture to said polymerization reactor through an opening located at a position corresponding to ⅓ or less of the total height from the bottom to the top of said reactor.

4,324,869

POLYARYLATE BLENDS WITH ETHYLENE-ALKYL ACRYLATE COPOLYMERS

Lloyd M. Robeson, Whitehouse Station, N.J., assignor to Union Carbide Corporation, New York, N.Y.

Filed Nov. 18, 1980, Ser. No. 207,898

Int. Cl.³ C08L *33/08, 67/02, 73/00*

U.S. Cl. 525—68 **35 Claims**

1. A molding composition comprising a blend of:

(a) a polyarylate derived from a dihydric phenol and an aromatic dicarbocxylic acid, and

(b) an ethylene-ethyl acrylate copolymer.

4,324,870

SCORCH-SAFE ACCELERATION OF URETHANE VULCANIZATION OF UNSATURATED RUBBERS

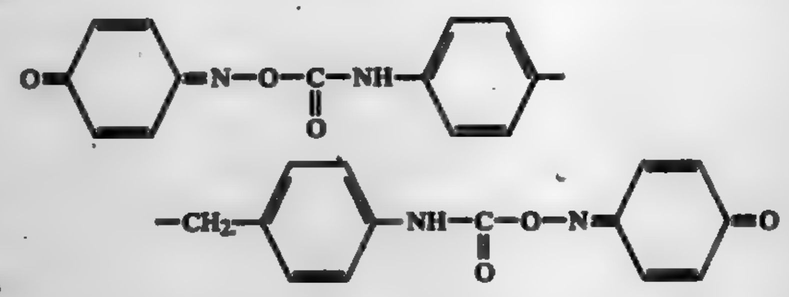
Yong S. Rim, Woodbridge; Walter Nudenberg, Newton, and Arnold N. Johnson, Southbury all of Conn., assignors to Uniroyal, Inc., New York, N.Y.

Filed Jun. 23, 1980, Ser. No. 161,950

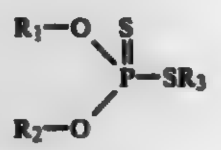
Int. Cl.³ C08F *8/34, 8/40*

U.S. Cl. 525—127 **8 Claims**

1. In a method of curing an unsaturated rubber which is a conjugated diene homopolymer or a copolymer containing at least 50% by weight of units derived from a conjugated diene by heating the rubber in admixture with an adduct of nitrosophenol and methylene bis(4-phenylisocyanate) of the formula



to form urethane cross-links, the improvement comprising adding to the rubber, prior to curing, as a scorch delay cure catalyst, a derivative of dithiophosphoric acid of the formula



wherein R_1 and R_2 are alkyl groups having at least 12 carbon atoms or are connected together and form an alkylene group having at least 2 carbon atoms, and R_3 is hydrogen or phenethyl.

4,324,871

HOT MELT ADHESIVE COMPOSITIONS CONTAINING A TERPENE-PHENOLIC RESIN, ETHYLENE COPOLYMER AND ALKENYL SUCCINIC ANHYDRIDE

Vikramkumar Acharya, and Pallavoor R. Lakshmanan, both of Houston, Tex., assignors to Gulf Oil Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 174,296, Jul. 31, 1980, abandoned. This application Jan. 28, 1981, Ser. No. 229,204

Int. Cl.³ C08L *23/08;* **C08K** *5/09*

U.S. Cl. 525—149 **9 Claims**

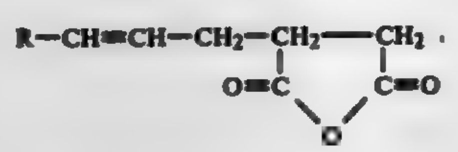
1. A hot melt adhesive composition consisting essentially of:

(a) 10–30 weight % of an alkenyl succinic anhydride,

(b) 20–60 weight % of an ethylene copolymer, and

(c) 10–40 weight % of a tackifying resin;

said alkenyl succinic anhydride having the structure:



where R is an alkyl group containing at least about 15 carbon atoms; said ethylene copolymer having polymerized therein at least 40 weight % polymerized ethylene and the balance one or more polymerized monomers from the group consisting of vinyl acetate, acrylic and methacrylic acid and alkyl esters of acrylic and methacrylic acid; and said tackifying resin being a terpene-phenolic resin having a Ring and Ball softening point of about 80°–135° C.

4,324,872

ALKALI SOLUBLE BLENDS OF AN IONOMER RESIN AND AN ALKENYL SUCCINIC ANHYDRIDE

Pallavoor R. Lakshmanan, Houston, Tex., assignor to Gulf Oil Corporation, Pittsburgh, Pa.

Filed Nov. 24, 1980, Ser. No. 209,812

Int. Cl.³ C08F *275/00*

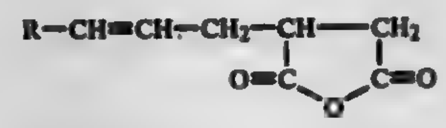
U.S. Cl. 525—274 **6 Claims**

1. An extrudable, alkali-soluble polymeric composition consisting essentially of an intimate fusion blend of;

(1) 100 parts by weight of an ionomer resin, and

(2) about 5 to 900 parts by weight of an alkenyl succinic anhydride;

said ionomer resin being a metal salt of an ethylene-acid copolymer which is a copolymer of ethylene and acrylic or methacrylic acid having an acid content of about 1–10 mol % and having a high load melt index of at least about 1.0 and a normal load melt index of up to about 50; and said alkenyl succinic anhydride having the structure:



where R is an alkyl group containing about 13 to 49 carbon atoms.

4,324,873

ORGANOSILICON-ORGANOMETAL COMPOSITIONS AS EPOXY CURING CATALYSTS

Moriyasu Wada, Kanagawa; Shuichi Suzuki, Yokohama; Shinichi Sanada, Yokohama, and Shuzi Hayase, Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jun. 11, 1980, Ser. No. 158,456

Claims priority, application Japan, Jun. 21, 1979, 54-77504

Int. Cl.³ C08G *59/68, 59/70*

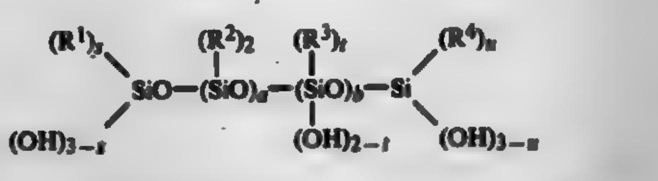
U.S. Cl. 525—507 **18 Claims**

1. An epoxy resin-based composition, comprising:

an epoxy resin; and

a catalytic amount of a curing catalyst comprising:

(A) at least one organosilicon compound selected from the group consisting of $R_lH_mSi(OH)_n$, wherein R is independently alkyl, phenyl, aralkyl, vinyl, or allyl, l is 1, 2 or 3, m is 0, 1 or 2 and n is 1, 2 or 3 provided the sum of l+m+n is 4 and



wherein R^1, R^2, R^3 and R^4 are each, independently, alkyl, phenyl, vinyl, aralkyl or allyl, at least one of the hydrocarbon radicals being present, s and u are each 0, 1 or 2; t is 0, 1 or 2; and a and b are each 0, 1 or an integer greater than 1; and

(B) at least one organometal compound selected from the group consisting of alkoxide, phenoxide, acyloxide, and chelate compounds of vanadium, aluminum, and iron, and mixtures thereof.

4,324,874

PRODUCTION OF VINYL HALIDE POLYMERS WITH DIALKYL, HYDROXY PHENYL ALKANOIC ESTER OF POLYHYDRIC ALCOHOLS

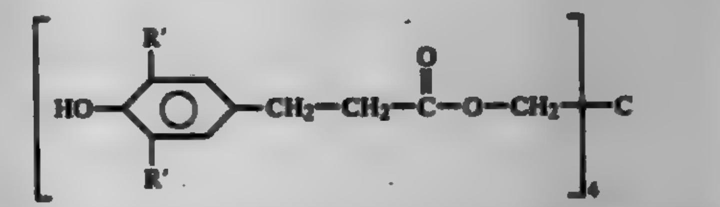
William F. Cordes, III, East Brunswick; Donald Goodman, Flemington, and Robert S. Miller, Bridgewater all of N.J., assignors to Tenneco Chemicals, Inc., Piscataway, N.J.

Filed Oct. 8, 1980, Ser. No. 195,275

Int. Cl.³ C08F *2/42, 2/20*

U.S. Cl. 526—84 **2 Claims**

1. In the process for the polymerization of a monomer component selected from the group consisting of vinyl halides and mixtures of a vinyl halide with at least one ethylenically-unsaturated monomer that is copolymerizable therewith, said mixtures containing at least 70% by weight of the vinyl halide, in an aqueous medium at a temperature in the range of 40° C. to 80° C. in the presence of a free radical generating polymerization initiator, the improvement that comprises adding to the polymerization reaction mixture when from about 75% to 90% of the monomer component has been polymerized from 0.02% to 0.05% by weight, based on the weight of the monomer component, of a chain-terminating agent having the structural formula



wherein each R′ represents an alkyl group having 1 to 6 carbon atoms.

4,324,875

METHOD FOR PRODUCING OLEFIN POLYMERS

Masato Harada, Kisarazushi; Sadahiko Yamada, Ichiharashi; Atsushi Suzuki, Ichiharashi, and Jun Masuda, Ichiharashi, all of Japan, assignors to Chisso Corporation, Osaka, Japan

Filed May 21, 1980, Ser. No. 151,795

Claims priority, application Japan, Jun. 1, 1979, 54/68294

The portion of the term of this patent subsequent to Apr. 7, 1998, has been disclaimed.

Int. Cl.³ C08F *4/02, 10/00*

U.S. Cl. 526—115 **2 Claims**

1. In a method for producing α-olefin polymers by homopolymerization or copolymerization of α-olefins in the presence of a catalyst obtained by combining a solid product (III) with an organoaluminum compound, the improvement which comprises employing as said solid product (III) a material obtained by

(a) obtaining a solid product (I) by reacting

(1) a trivalent metal halide selected from the group consisting of anhydrous aluminum chloride and anhydrous ferric chloride, with

(2) a divalent metal hydroxide, oxide, carbonate or a composite compound containing a divalent metal hydroxide, oxide or carbonate or a hydrate of a divalent metal compound, the atom ratio of the divalent metal to the trivalent metal being 0.1 to 20,

(b) obtaining a solid product (II) by reacting

(1) 100 g of said solid product (I) with

(2) 1 to 1000 g of a transition metal compound selected from the group consisting of halides, oxyhalides, alcoholates, alkoxyhalides and acetoxyhalides of a transition metal selected from the group consisting of titanium and vanadium

said reaction being carried out in the presence of 10 to 10,000 g of an electron donor selected from the group consisting of ethers, esters, aldehydes, ketones, carboxylic acids, acid anhydrides, acid amides, amines, nitriles, phosphines, phosphorus oxytrichloride and

thioethers, in a proportion of 2 to 2,000 g of said transition metal compound relative to 100 g of said electron donor to produce a solid product (II),

said reaction being carried out by mixing said solid product (I), said transition metal compound and said electron donor and then heating the mixture at 50° C. to 300° C.,

(c) reacting said solid product (II) with at least two kinds of transition metal compounds consisting of

(1) at least one halogen-containing transition metal compound selected from the group consisting of the halides, oxyhalides, alkoxyhalides and acetoxyhalides of titanium or vanadium and

(2) at least one halogen-free transition metal compound selected from the group consisting of tetraalkyl orthotitanates (tetraalkoxytitaniums), vanadyl trialcoholates and polytitanic acid esters expressed by by the general formula $RO\text{-}[Ti(OR)_2]_m R$ wherein m is an integer of 2 or more and the Rs are the same or different kinds of alkyl groups, aryl groups or aralkyl groups,

the ratio of the number of transition metal atoms of (c)(1) to the number of transition metal atoms of (c)(2) being between 10:1 and 1:10,

the total weight of (C)(1) and (C)(2) being between 1 and 1000 g for each 100 g of said solid product (II),

thereby producing a solid product (III).

4,324,876

PROCESS FOR THE PRODUCTION OF POLYOLEFINS

Kazuo Matsuura; Takeichi Shiraishi; Etsuo Kawamata, all of Kawasaki; Nobuyuki Kuroda, Yokohama, and Mitsuji Miyoshi, Kanagawa, all of Fed. Rep. of Germany, assignors to Nippon Oil Co., Ltd., Tokyo, Japan

Filed Nov. 24, 1980, Ser. No. 209,318

Claims priority, application Japan, Dec. 4, 1979, 54-157903

Int. Cl.³ C08F *4/02, 10/00*

U.S. Cl. 526—124 5 Claims

1. A process for the production of polyolefins which comprises polymerizing or copolymerizing olefins at a temperature of from 20° C. to 300° C. and a pressure of atmospheric to 70 kg/cm^2 in the presence of a catalyst system comprising a solid component and an organometallic compound, said solid component resulting from the mutual contact of

(i) an inorganic magnesium compound selected from the group consisting of MgO, $Mg(OH)_2$, $MgCO_3$, $MgSO_4$, $MgO.SiO_2$, $MgO.Al_2O_3$ and hydrotalcite of a spherical particle size of from 1 to 100 microns,

(ii) a compound represented by the formula $AlX_3.OR'R''$ where X represents a halogen atom; and R' and R'' represent a hydrocarbon residual group having 1 to 20 carbon atoms) and

(iii) a titanium compound represented by the formula $Ti(OR)_4$ (where R represents a hydrocarbon residual group having 1 to 20 carbon atoms), at a temperature of from 50° C. to 300° C., the ratio of inorganic magnesium compound (i) to compound (ii) being 1 gram to 0.05 to 10 milli-mols, and the amount of titanium compound in said solid component being from 0.5 to 20% by weight,

and said organometallic compound being a compound of a metal of the Groups I to IV of the Periodic Table.

4,324,877

METHOD FOR POLYMERIZING α-OLEFIN

Haruo Ueno, Chiba; Takefumi Yano, Ichihara; Tokuji Inoue, Ichihara; Shigeru Ikai, Ichihara; Masanori Tamura, Ichihara, and Sakae Yuasa, Ichihara, all of Japan, assignors to Ube Industries, Ltd., Yamaguchi, Japan

Filed Nov. 19, 1980, Ser. No. 208,302

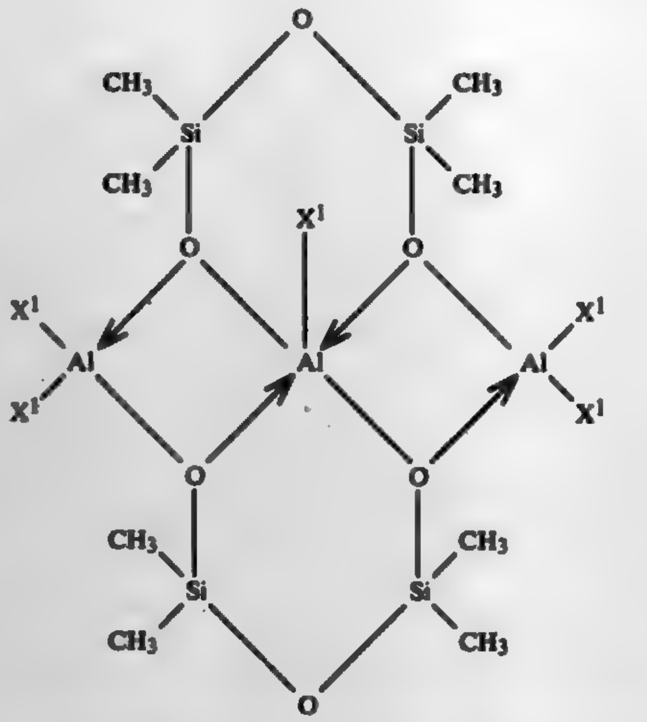
Claims priority, application Japan, Nov. 29, 1979, 54/153626

Int. Cl.³ C08F *4/02, 10/06*

U.S. Cl. 526—127 23 Claims

1. A method for polymerizing an α-olefin which comprises bringing, in the presence of an organic acid ester, a feed containing at least one α-olefin, having 3 or more carbon atoms, into contact with a catalyst composed of:

a solid catalytic ingredient which has been prepared in such a manner that an aluminosiloxy compound of the formula,



[I]

wherein X^1 represents a chlorine atom, a bromine atom or an iodine atom, is reacted with a Grignard compound of the formula R^1MgX^2[II] wherein R^1 represents an alkyl radical having 1 to 8 carbon atoms and X^2 represents a halogen atom, the resultant solid reaction product is brought into contact with a titanium tetrahalide, the resultant titanium-containing solid product is treated with an organic acid ester, and the treated solid product is brought into contact with a titanium tetrahalide; and

a trialkyl aluminum.

4,324,878

PRODUCTION OF VINYL CHLORIDE POLYMER

Roberto Biaggi, and Massimo Quintini, both of Bergamo, Italy, assignors to Sigma Italiana Prodotti Chimici S.p.A., Bergamo, Italy

Filed Dec. 13, 1979, Ser. No. 103,339

Claims priority, application Italy, Dec. 15, 1978, 30911 A/78

Int. Cl.³ C08F *2/20*

U.S. Cl. 526—200 6 Claims

1. A process for producing vinyl chloride polymer which comprises polymerizing vinyl chloride monomer in aqueous suspension, in the presence of a free radical catalyst, a primary suspending agent to control the granulometric distribution of the particles of vinyl chloride polymer obtained and selected from the group consisting of water-soluble polyvinyl alcohols, water-soluble modified celluloses, and water-soluble maleic anhydride/vinyl acetate copolymers, and a secondary suspending agent consisting of partially hydrolyzed polyvinyl acetate having a saponification number between 520 and 600 and a viscosity, measured in a 4% methanol solution at 20° C., between 0.5 and 2 cps wherein the ratio of the amount of said primary suspending agent to the amount of said secondary suspending agent is between 1:10 and 10:1.

4,324,879

PROCESS FOR THE PREPARATION OF POLYISOCYANATES CONTAINING ISOCYANURATE GROUPS AND THE USE THEREOF

Manfred Bock, Leverkusen; Josef Pedain, Cologne, and Walter Uerdingen, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 69,412, Aug. 24, 1979, abandoned. This application May 19, 1980, Ser. No. 151,005

Claims priority, application Fed. Rep. of Germany, Sep. 8, 1978, 2839133

Int. Cl.³ C08G *18/20; G08G 18/80;* C08G *18/79*

U.S. Cl. 528—45 9 Claims

1. A process for the preparation of clear and substantially colorless or slightly colored, solvent-free polyisocyanates containing isocyanurate groups, having a viscosity of less than about 10,000 mPas at 25° C. and a monomeric diisocyanate content of less than about 3% by weight, comprising partially trimerizing the isocyanate groups of hexamethylene diisocyanate in the presence of at least one quaternary ammonium hydroxide as catalyst and subsequently separating excess, unreacted diisocyanate and solvent which may be used, said process characterized in that an ammonium hydroxide which is hydroxyalkyl substituted at the nitrogen atom is used as the quaternary ammonium hydroxide.

4,324,880

β-HYDROXYBUTYRIC ACID POLYESTERS, A PROCESS FOR THEIR PRODUCTION AND THEIR USE AS STARTING MATERIALS FOR LACQUERS

Rolf Dhein; Knud Reuter; Hans Rudolph, all of Krefeld, and Jörg Pfitzner, Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 24, 1980, Ser. No. 209,392

Claims priority, application Fed. Rep. of Germany, Nov. 29, 1979, 2948023

Int. Cl.³ C08G *63/06, 63/60*

U.S. Cl. 528—80 7 Claims

1. Polyesters having a hydroxyl number of from 50 to 400 and containing co-condensed β-hydroxycarboxylic acid units, characterised in that the polyesters contain from 20 to 90% by weight of co-condensed units corresponding to the following formula

$$\left[O-\overset{\displaystyle CH_3}{\overset{|}{C}H}-CH_2-\overset{\displaystyle O}{\overset{\|}{C}}- \right]_n$$

in which n has an average value of from 1 to 15, and from 80 to 10% by weight of co-condensed residues of polyols and optionally monohydric alcohols, mono- or polycarboxylic acids and diisocyanates.

4,324,881

PREPARATION OF AMIDE-CONTAINING POLYETHERS

Gerd Blinne, Bobenheim; Rolf Wurmb, Heidelberg, and Franz Schmidt, Mannheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Sep. 9, 1980, Ser. No. 185,606

Claims priority, application Fed. Rep. of Germany, Oct. 4, 1979, 2940190

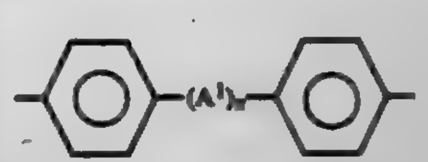
Int. Cl.³ C08G *65/40*

U.S. Cl. 528—173 6 Claims

1. A process for the preparation of an amidecontaining polyether by polycondensing one or more bisphenols with one or more dihalobenzene compounds in substantially equivalent amounts in the presence of an anhydrous alkali metal carbonate, wherein one or more amide-containing bisphenols of the formula I

$$HO-Ar^1-NHCO-Ar^2-CONH-Ar^1-OH \quad (I)$$

where Ar^1 is an aromatic radical of 6 to 12 carbon atoms and Ar^2 is an aromatic radical of 6 to 12 carbon atoms or has the formula II



(II)

where A^1 is $-SO_2-$, $-CO-$, $-C(CH_3)_2-$ or $-O-$ and n is 0 or 1; are used for the polycondensation.

4,324,882

METHOD FOR MAKING POLYIMIDES

Tohru Takekoshi, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Sep. 19, 1980, Ser. No. 188,755

Int. Cl.³ C08G *73/10*

U.S. Cl. 528—206 11 Claims

1. A method for making polyimides which comprises

(1) effecting reaction between a $C_{(6-30)}$ aromatic organic dianhydride and a $C_{(2-20)}$ organic diamine in the presence of an effective amount of an alkali metal salt of an oxygenated phosphorus compound, selected from the group consisting of orthophosphates, dihydrogen orthophosphates, hypophosphates, pyrophosphates, metaphosphates, orthophosphites, and arylphosphonates and

(2) recovering the resulting polyetherimide from the mixture of (1).

4,324,883

METHOD FOR MAKING POLYETHERIMIDE USING A PHENOLIC OR CARBOXYLIC ACID CATALYST

Dwain M. White, Schenectady, N.Y., and David G. Keyes, Minneapolis, Minn., assignors to General Electric Company, Schenectady, N.Y.

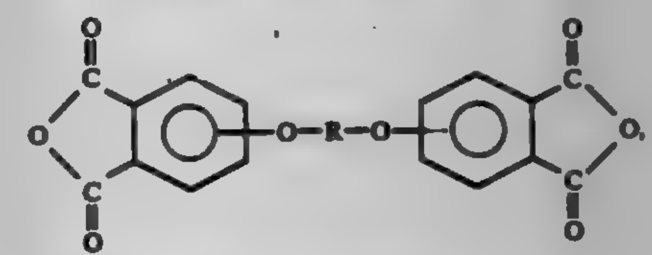
Filed Sep. 19, 1980, Ser. No. 188,754

Int. Cl.³ C08G *73/10*

U.S. Cl. 528—207 5 Claims

1. A method for enhancing the polymerization rate of polyetherimide polymerized under solution polymerization conditions which comprises

(A) effecting the removal of at least about 90% by weight of water of reaction from a reaction mixture comprising an organic dianhydride of the formula,



an organic diamine of the formula

$NH_2R^1NH_2$,

and a substantially inert organic solvent,

(B) adding to the resulting mixture of (A) an effective amount of a polymerization catalyst selected from an arylhydroxide of the formula,

R^2OH.

and a $C_{(1-20)}$ organic carboxylic acid, and

(C) recovering polyetherimide from the resulting mixture of (B),

where R is a divalent aromatic organic radical having from 6–30 carbon atoms, R^1 is a divalent organic radical selected from R radicals, alkylene radicals having from 2–20 carbon atoms, cycloalkylene radicals, and $C_{(2-8)}$ alkylene terminated polydiorganosiloxane radicals and R^2 is a $C_{(6-13)}$ monovalent aromatic organic radical.

4,324,884

ORGANIC AMINE CATALYZED METHOD FOR MAKING POLYETHERIMIDE

Dwain M. White, Schenectady, N.Y., and David G. Keyes, Minneapolis, Minn., assignors to General Electric Company, Schenectady, N.Y.

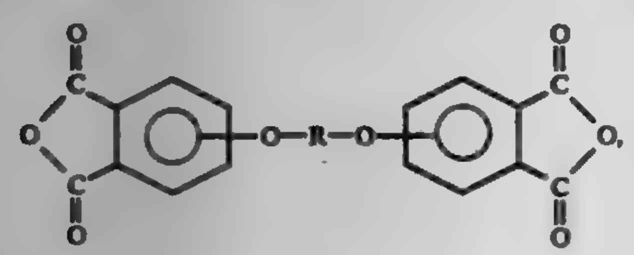
Filed Sep. 25, 1980, Ser. No. 190,613

Int. Cl.³ C08G *73/10*

U.S. Cl. 528—207 **15 Claims**

1. A method for making aromatic polyetherimide which comprises

(1) effecting reaction between a $C_{(6-30)}$ aromatic bis(ether anhydride) of the formula,



and a $C_{(3-20)}$ organic diamine of the formula,

$H_2NR^1NH_2$,

in the presence of an effective amount of an amine catalyst selected from the class consisting of N-aliphatic aminopyridines, aliphatic secondary diamines, aliphatic tertiary diamines, $C_{(8-20)}$ organic secondary monoamines and $C_{(8-20)}$ organic tertiary monoamines, and

(2) recovering the aromatic polyetherimide from the mixture of (1),

where R is a divalent aromatic organic radical having from 6–30 carbon atoms and R^1 is a divalent organic radical selected from R radicals, alkylene radicals having from 2–20 carbon radicals, cyclo alkylene radicals and $C_{(2-8)}$ alkylene terminated polydiorganosiloxane radicals.

4,324,885

QUATERNARY GROUP VA SALT CATALYZED METHOD FOR MAKING POLYETHERIMIDE

Dwain M. White, Schenectady, N.Y., and David G. Keyes, Minneapolis, Minn., assignors to General Electric Company, Schenectady, N.Y.

Filed Sep. 25, 1980, Ser. No. 190,594

Int. Cl.³ C08G *73/10*

U.S. Cl. 528—207 **6 Claims**

1. A method for making aromatic polyetherimide which comprises,

(1) effecting reaction between a $C_{(6-30)}$ aromatic bisanhydride and a $C_{(2-20)}$ aromatic diamine in the presence of an effective amount of a quaternary salt catalyst of a Group Va element selected from the class consisting of nitrogen and phosphorous, and

(2) recovering the aromatic polyetherimide from the mixture of (1).

4,324,886

ARYLENE SULFIDE POLYMER PREPARED FROM AMINOALKANOATE

James T. Edmonds, Jr., and Lacey E. Scoggins, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 6, 1980, Ser. No. 147,407

Int. Cl.³ C08G *75/14*

U.S. Cl. 528—387 **7 Claims**

1. A method for producing polymer comprising:

(a) contacting at polymerization conditions a reaction mixture comprising:

(1) at least one polyhalo-substituted aromatic compound,

(2) at least one organic amide as solvent,

(3) at least one alkali metal aminoalkanoate prepared by contacting in the presence of an alkali metal carboxylate a reaction mixture comprising:

(i) at least one alkali metal hydroxide;

(ii) water, and

(iii) at least one lactam; and

(4) H_2S, and

(b) maintaining said reaction mixture at polymerization conditions for a time sufficient to produce polymer.

4,324,887

TYPE II GROUP B *STREPTOCOCCI POLYSACCHARIDE*

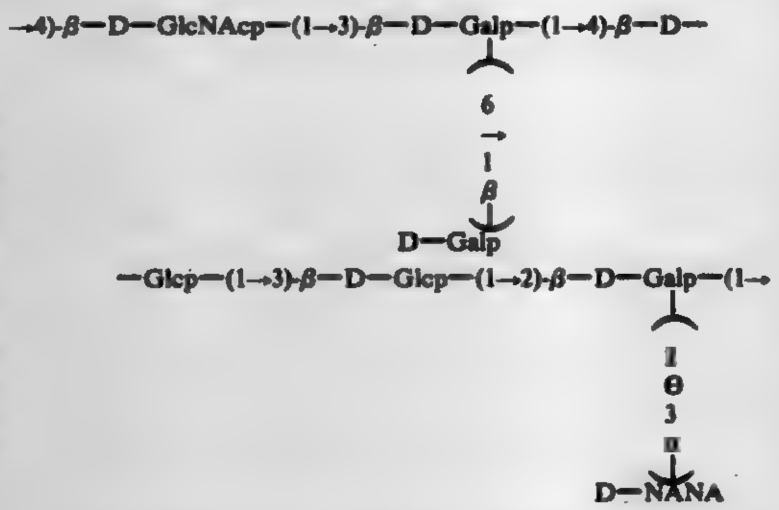
Dennis L. Kasper, Newton Center, Mass., assignor to President and Fellows of Harvard College, Cambridge, Mass.

Continuation-in-part of Ser. No. 934,214, Aug. 16, 1978, Pat. No. 4,207,414. This application Jun. 9, 1980, Ser. No. 157,859

Int. Cl.³ A61K *31/73;* C08B *37/00*

U.S. Cl. 536—53 **1 Claim**

1. A polysaccharide antigen in purified form specific to Type II Group B streptococci consisting essentially of repeating units having the following composition:



in which GlcNAcp stand for N-acetyl glucosamine (in the pyranose form), Galp stands for galactose (in the pyranose form), Glcp stands for glucose (in the pyranose form) and α-D-NANA stands for sialic acid, said polysaccharide having a molecular size from about 0.2×10^6 to 6×10^6d.

4,324,888

PROCESS FOR THE PREPARATION OF CHLORODEOXYSUGARS

Elner B. Rathbone, Wokingham, England, assignor to Talres Development (N.A.) N.V., Curacao, Netherlands Antilles

Filed Mar. 5, 1980, Ser. No. 127,307

Claims priority, application United Kingdom, Mar. 9, 1979, 08392/79

Int. Cl.³ C07H *5/02*

U.S. Cl. 536—122 **7 Claims**

1. A process for the preparation of a chlorodeoxy derivative of a reducing aldose having a primary hydroxy group in an exocyclic $—CH_2OH$ group, in which the said primary hy-

droxy group is replaced by a chlorine atom to give a chlorodeoxy reducing sugar with a free anomeric centre, characterised in that the free reducing sugar is reacted with a reagent comprising an N,N-dialkyl (methaniminium) chloride obtained by reacting an N,N-dialkyl formamide with a chlorinating agent and such chlorination is followed by a mild hydrolytic work up.

4,324,889

2,5-INTER-O-PHENYLENE-3,4-DINOR-6,9α-EPOXY-6β-5-IODO-PGF₁ AMIDES

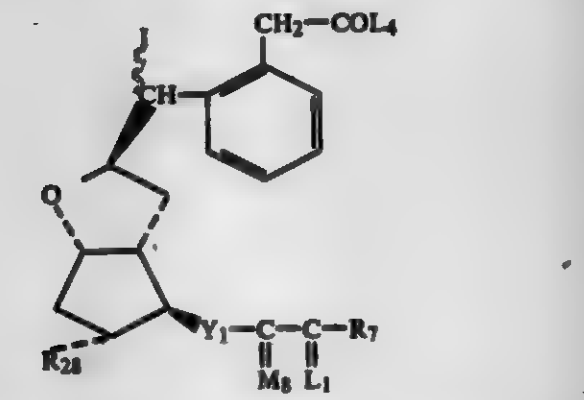
Udo F. Axen, Plainwell, and John C. Sih, Kalamazoo, both of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 62,443, Jul. 31, 1979, which is a continuation-in-part of Ser. No. 962,845, Nov. 22, 1978, abandoned. This application Jul. 3, 1980, Ser. No. 165,597

Int. Cl.³ C07D *307/935*

U.S. Cl. 542—426 **1 Claim**

1. A prostacyclin intermediate of formula VIII



wherein R_{28} is $—OR_{10}$, $—CH_2OR_{10}$, hydroxy, hydroxymethyl, or hydrogen, wherein R_{10} is a blocking group removable by mild acidic hydrolysis;

wherein Y_1 is

(1) trans—CH═CH—,

(2) cis—Ch═CH—,

(3) $—CH_2CH_2—$, or

(4) —C≡C—,

wherein M_8 is α-R_5:β-OR_{10} or α-OR_{10}:β-R_5, wherein R_5 is hydrogen or methyl and R_{10} is as defined above, or

α-R_5:β-OH or α-OH:β-R_5, wherein R_5 is as defined above;

wherein L_1 is α-R_3:β-R_4, α-R_4:β-R_3, or a mixture of α-R_3:β-R_4 and α-R_4:β-R_3, wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro;

wherein R_7 is

(1)—$(CH_2)_m$—CH_3, wherein m is an integer from one to 5, inclusive;

(2) phenoxy;

(3) phenoxy substituted by one, two or three chloro, fluoro, trifluoromethyl, alkyl of one to 3 carbon atoms, inclusive, or alkoxy of one to 3 carbon atoms, inclusive, with the proviso that not more than two substituents are other than alkyl;

(4) phenyl;

(5) phenyl substituted by one, two or three chloro, fluoro, trifluoromethyl, alkyl of one to 3 carbon atoms, inclusive, or alkoxy of one to 3 carbon atoms, inclusive, with the proviso that not more than two substituents are other than alkyl;

(6) phenylmethyl, phenylethyl, or phenylpropyl; or

(7) phenylmethyl, phenylethyl, or phenylpropyl substituted by one, two or three chloro, fluoro, trifluoromethyl, alkyl of one to 3 carbon atoms, inclusive, or alkoxy of one to 3 carbon atoms, inclusive, with the proviso that not more than two substituents are other than alkyl; with the proviso that R_7 is phenoxy or substituted phenoxy, only when R_3 and R_4 are hydrogen or methyl, being the same or different;

wherein L_4 is

(1) amino of the formula $—NR_{21}R_{22}$, wherein R_{21} and R_{22} are

(a) hydrogen;

(b) alkyl of one to 12 carbon atoms, inclusive;

(c) cycloalkyl of 3 to 10 carbon atoms, inclusive;

(d) aralkyl of 7 to 12 carbon atoms, inclusive;

(e) phenyl;

(f) phenyl substituted with one, 2, or 3 chloro, alkyl of one to 3 carbon atoms, inclusive, hydroxy, carboxy, alkoxycarbonyl of one to 4 carbon atoms, inclusive, or nitro;

(g) carboxyalkyl of 2 to 5 carbon atoms, inclusive;

(h) carbamoylalkyl of 2 to 5 carbon atoms, inclusive;

(i) cyanoalkyl of 2 to 5 carbon atoms, inclusive;

(j) acetylalkyl of 3 to 5 carbon atoms, inclusive;

(k) benzoylalkyl of 7 to 11 carbon atoms, inclusive;

(l) benzoylalkyl substituted by one, 2, or 3 chloro, alkyl of one to 3 carbon atoms, inclusive, hydroxy, alkoxy of one to 3 carbon atoms, inclusive, carboxy, alkoxycarbonyl of one to 4 carbon atoms, inclusive, or nitro;

(m) pyridyl;

(n) pyridyl substituted by one, 2, or 3 chloro, alkyl of one to 3 carbon atoms, inclusive, or alkoxy of one to 3 carbon atoms, inclusive;

(o) pyridylalkyl of 6 to 9 carbon atoms, inclusive;

(p) pyridylalkyl substituted by one, 2, or 3 chloro, alkyl of one to 3 carbon atoms, inclusive, hydroxy or alkoxy of one to 3 carbon atoms, inclusive;

(q) hydroxyalkyl of one to 4 carbon atoms, inclusive;

(r) dihydroxyalkyl of one to 4 carbon atoms, inclusive, or

(s) trihydroxyalkyl of one of 4 carbon atoms, inclusive; with the further proviso that not more than one of R_{21} and R_{22} is other than hydrogen or alkyl;

(2) cycloamino selected from the group consisting of

(a) pyrrolidino,

(b) piperidino,

(c) morpholino,

(d) piperazino,

(e) hexamethyleneimino,

(f) pyrrolino,

(g) 3,4-didehydropipridinyl, or

(h) pyrrolidino, piperidino, morpholino, piperazino, hexamethyleneimino, pyrrolino, or 3,4-didehydropiperidinyl substituted by one or two alkyl of one to 12 carbon atoms, inclusive;

(3) carbonylamino of the formula $—NR_{23}COR_{21}$, wherein R_{23} is hydrogen or alkyl of one to 4 carbon atoms, inclusive, and R_{21} is other than hydrogen, but otherwise as defined above; or

(4) sulfonylamino of the formula $—NR_{23}SO_2R_{21}$, wherein R_{21} and R_{23} are as defined in (3).

4,324,890

CEPHALOSPORIN INTERMEDIATES

Burton G. Christensen, Scotch Plains; Sandor Karady, Elizabeth; Lovji D. Cama, Edison; Meyer Sletzinger, North Plainfield, all of N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 149,364, Jun. 2, 1971, Pat. No. 4,297,488. This application Apr. 30, 1980, Ser. No. 145,069

Claims priority, application United Kingdom, Apr. 30, 1971, 29150/71

Int. Cl.³ C07D *501/18*

U.S. Cl. 544—021 **4 Claims**

1. The compound 3-A-7-X-7-azido-3-cephem-4-carboxylic acid wherein X is bromine, chlorine or iodine; A is methyl, hydroxymethyl, chloromethyl, bromomethyl, or fluoromethyl, mercaptomethyl, methoxymethyl, n-propoxymethyl, methylthiomethyl, acetoxymethyl, propionyloxymethyl, benzoyloxymethyl, (p-chlorobenzoyl)oxymethyl, (p-methylbenzoyl)oxymethyl, pivaloyloxymethyl, (1-adamantyl)carbox-

ymethyl, butanoyloxymethyl, carbamoyloxymethyl, (N-methylcarbamoyl)oxymethyl, (N-ethylcarbamoyl)oxymethyl, [N-(2-chloroethyl)carbamoyl]oxymethyl, (N-phenylcarbamoyl)oxymethyl, (N-p-sulfophenylcarbamoyl)oxymethyl, p-carboxymethylphenylcarbamoyloxymethyl, methoxycarbonyloxymethyl, isobutanoyloxymethyl, cyclobutylcarbonyloxymethyl, carbamoylthiomethyl, (ethoxythiocarbonyl)-thiomethyl, (n-propoxythiocarbonyl)thiomethyl, (cyclopentanoxythiocarbonyl)thiomethyl, N,N-diethylthiocarbamoyl-thiomethyl, N-methylpiperazinium-1-thiocarbonylthiomethyl, N,N-dimethylpiperzinium-1-thiocarbonylthiomethyl, 2-furoyl-thiomethyl, isothiouroniummethyl, (5-methyl-1,3,4-thiadiazol-2-yl)-thiomethyl, p-tolylsulfonylthiomethyl, mesyloxymethyl, 1-methyl-1,2,3,4-tetrazolyl-5-thiomethyl, tosyloxymethyl, sulfamoyloxymethyl, 1-naphthoyloxymethyl, 2-furylacetoxymethyl, cinnamoyloxymethyl, p-hydroxycinnamoyloxymethyl, p-sulfocinnamoyloxymethyl and 1R:2S-epoxypropylphosphonyloxymethyl, or pyridinium methyl; and the carboxylic acid protecting derivatives thereof wherein the derivative group is methyl, t-butyl, trichloroethyl, allyl, propargyl, benzyl, diphenylmethyl, o-nitrobenzyl, 3,5-dinitrobenzyl, p-methoxybenzyl, acetoxymethyl, pivaloyloxymethyl, phenacyl, trichloroethoxy carbonyl, trimethylsilyl or tributyltin.

4,324,891

PROCESS FOR THE PRODUCTION OF A 7-METHOXYCEPHALOSPORINE DERIVATIVE

Katsuyoshi Iwamatsu, Yokohama; Takashi Tsuruoka, Kawasaki; Kazuko Mizutani; Katsumi Kawaharajyo, both of Yokohama; Tadahiro Watanabe, Sagamihara, and Shigeharu Inouye, Yokohama, all of Japan, assignors to Meiji Seika Kaisha, Ltd., Tokyo, Japan

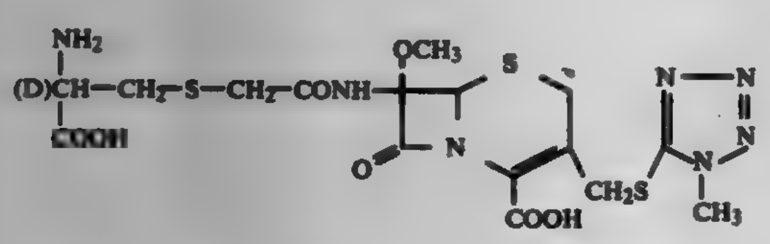
Filed Aug. 15, 1980, Ser. No. 178,604

Int. Cl.³ C07D *501/04*

U.S. Cl. 544—021 **1 Claim**

1. A process for the production of the compound of the formula (I)

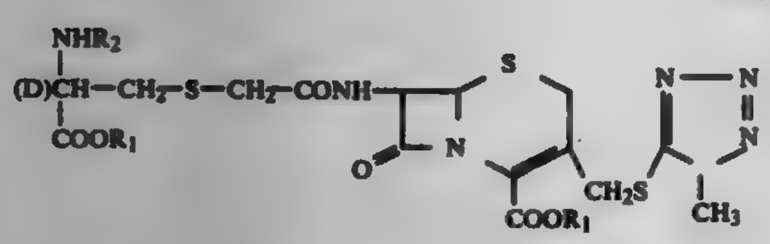
(I)



which comprises the steps of:

(a) reacting one molar equivalent of a protected cephem compound of the formula (II)

(II)



wherein R_1 is a known carboxyl-protecting group and R_2 is a known amino-protecting group, with 1 to 3 molar equivalents of t-butyl hypochlorite and 2 to 6 molar equivalents of lithium methoxide in, dry tetrahydrofuran at a temperature of −40° C. to −100° C.

(b) admixing the resulting reaction mixture containing the 7α-methoxylation product formed in the step (a) immediately after the 7α-methoxylation reaction is completed in step (a), with a tri-alkyl phosphite and acetic acid at least in such amounts sufficient to decompose the quantities of the t-butyl hypochlorite and lithium methoxide which are remaining unreacted in said reaction mixture, respectively, at the same temperature as the reaction temperature at which the 7α-methoxylation reaction was conducted in the step (a) and

(c) removing in a known manner the residual three protecting groups, namely the two residual carboxyl-protecting groups (R_1) and the residual amino-protecting group (R_2) from said 7α-methoxylation product to produce the compound of the formula (I).

4,324,892

7-(N-SUBSTITUTED-2-PHENYLGLYCINAMIDO)-3-SUBSTITUTED-3-CEPHEM-4-CARBOXYLIC ACID COMPOUNDS

Takashi Kamiya, Suita; Tsutomu Teraji, Toyonaka; Keiji Hemmi, Kyoto, and Jiro Goto, Mino, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

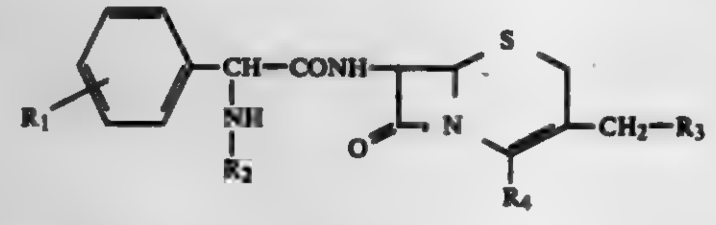
Division of Ser. No. 824,910, Aug. 15, 1977, Pat. No. 4,172,198. This application Jun. 4, 1979, Ser. No. 45,011

Claims priority, application United Kingdom, Aug. 17, 1976, 34302/76; Nov. 29, 1976, 49748/76

Int. Cl.³ C07D *501/46, 501/34*

U.S. Cl. 544—28 **5 Claims**

1. A compound of the formula:



wherein

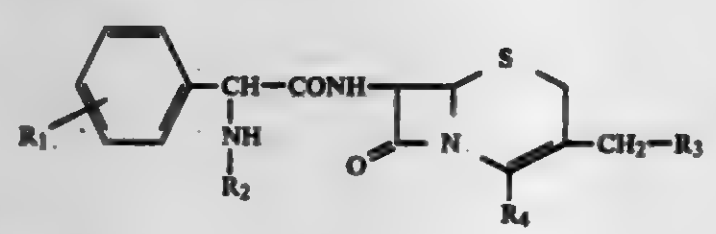
R_1 and R_3 are each hydrogen,

R_2 is alkanoyl (C_1–C_2) substituted with pyridyloxy, and

R_4 is carboxy

and pharmaceutically acceptable salts thereof.

3. A compound of the formula:



wherein

R_1 is hydroxy,

R_2 is alkanoyl (C_1–C_2) substituted with dihydropyridyloxy having oxo, halogen and alkyl (C_1–C_6),

R_3 is alkanoyloxy (C_1–C_6) or carbamoyloxy, and

R_4 is carboxy

and pharmaceutically acceptable salts thereof.

4,324,893

4-AMINO-3-CARBOXY OR CYANO-1,2-DIHYDRO-2-OXO-1,8-NAPHTHYRIDINE DERIVATIVES

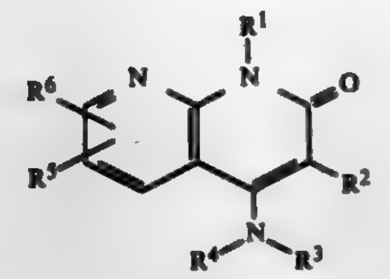
Anthony C. Scotese, King of Prussia, and Arthur A. Santilli, Havertown, both of Pa., assignors to American Home Products Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 31,255, Apr. 18, 1979, abandoned. This application Feb. 28, 1980, Ser. No. 125,600

Int. Cl.³ C07D *413/04*

U.S. Cl. 544—127 **42 Claims**

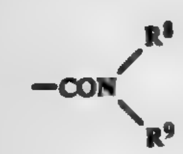
1. A compound of the formula:



in which

R^1 is hydrogen, alkyl of 1 to 6 carbon atoms, cycloalkyl of 5 to 6 carbon atoms, alken-(3,4,5 or 6)-yl of 3 to 6 carbon atoms or alkyn-(3,4,5 or 6)-yl of 3 to 6 carbon atoms;

R^2 is —CN, —CO_2H, —CO_2R^7 where R^7 is alkyl of 1 to 6 carbon atoms, —$CONHNH_2$ or



where R^8 and R^9 are independently hydrogen or alkyl of 1 to 6 carbon atoms;

R^3 and R^4 are independently hydrogen, alkyl of 1 to 6 carbon atoms, hydroxyalkyl of 1 to 6 carbon atoms, dialkylaminoalkyl of 4 to 8 carbon atoms, alkanoyl of 2 to 4 carbon atoms, haloalkanoyl of 2 to 4 carbon atoms, or when taken together with the nitrogen atom to which they are attached, R^3 and R^4 complete a heterocyclic group selected from aziridinyl, azetidinyl, pyrrolidinyl, piperidinyl, piperazinyl, 4-lower alkyl-piperazinyl, 4-phenylpiperazinyl, 4-[1-ethyl-1,2-dihydro-7-methyl-2-oxo-1,8-naphthyridine-4-yl-3-carboxylic acid ethyl ester]-piperazinyl, 4-carb(lower)alkoxy-piperazinyl, morpholinyl, thiomorpholinyl or a ring substituted lower alkyl analogue thereof;

R^5 and R^6 are independently hydrogen; alkyl of 1 to 4 carbon atoms, halo, alkylamino of 1 to 4 carbon atoms, or alkoxy of 1 to 6 carbon atoms;

or a pharmaceutically acceptable salt thereof.

4,324,894

AMINOISOQUINOLINE DERIVATIVES

Pal Benko; Andras Gelleri; Gyorgy Hajos; Andras Messmer; Laszlo Pallos; Lujza Petocz; Ibolya Kosoczky; Katalin Grasser; Peter Gorog, and Enikо Szirt nee Kiszelly, all of Budapest, Hungary, assignors to Egyt Gyogyszervegyeszeti Gyar, Budapest, Hungary

Filed Apr. 10, 1980, Ser. No. 138,843

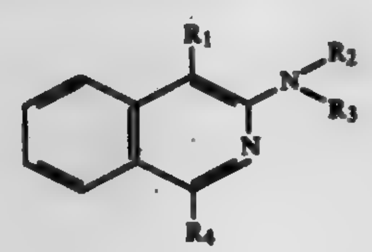
Claims priority, application Hungary, Apr. 11, 1979, EE 2647

Int. Cl.³ C07D *413/04, 403/14*

U.S. Cl. 544—128 **4 Claims**

1. A compound of the formula (I)

(I)



wherein

R_1 represents a hydrogen atom or a C_{1-4} alkyl group,

R_2 represents a hydrogen atom,

R_3 represents a hydrogen atom,

R_4 represents a morpholinyl group or a piperazinyl group substituted with a pyridyl group, and

pharmaceutically acceptable acid addition salts and quaternary ammonium derivatives thereof.

4,324,895

NOVEL PROCESS FOR PRODUCING PYRIMIDINE NUCLEOSIDES AND NOVEL PYRIMIDINE NUCLEOSIDES OBTAINED THEREBY

Masanao Matsui, Tokyo, and Tomoya Ogawa, Musashino, both of Japan, assignors to Rikagaku Kenkyusho, Wako, Japan

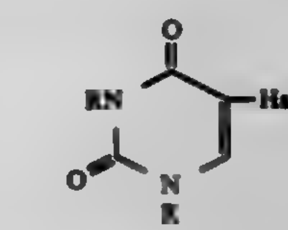
Filed Oct. 28, 1976, Ser. No. 735,777

Claims priority, application Japan, Dec. 4, 1975, 50/144637; Jan. 5, 1976, 51/180; Mar. 15, 1976, 51/27836; Mar. 15, 1976, 51/27837; May 11, 1976, 51/53463

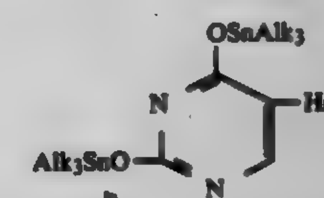
Int. Cl.³ C07D *405/04*

U.S. Cl. 544—313 **17 Claims**

1. A process for producing pyrimidine nucleoside represented by the following general formula:



wherein R stands for a hydrogen atom or a 2-tetrahydrofurane residue but both R's cannot simultaneously be hydrogen atoms, and Hal represents a fluorine atom, which comprises reacting bis(tri-lower alkylstannyl)-5-halogenouracil represented by the following general formula:



wherein Alk stands for a lower alkyl radical and Hal has the same meaning as above; with 2-substituted tetrahydrofurane represented by the following general formula:

wherein X stand for a halogen atom, a lower alkyloxy, lower aralkyloxy, lower alkylcarbonyloxy or arylcarbonyloxy radical; at a temperature within a range from −50° to 100° C.

4,324,896

6-(SUBSTITUTED PHENOXY)-2-DI-(SUBSTITUTED PHENOXY)METHYL PYRIDINES

Sudarshan K. Malhotra, Walnut Creek, Calif., assignor to The Dow Chemical Company, Midland, Mich.

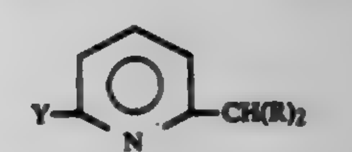
PCT No. PCT/US80/01226, § 371 Date Sep. 18, 1980, § 102(e) Date Sep. 18, 1980, PCT Pub. No. WO82/01003, PCT Pub. Date: Apr. 1, 1982

PCT Filed Sep. 18, 1980, Ser. No. 266,016

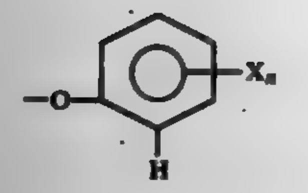
Int. Cl.³ C07D *213/46, 491/04, 491/14*

U.S. Cl. 546—301 **10 Claims**

1. A compound corresponding to the formula



wherein Y represents R'; R represents



wherein X independently represents alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, alkylthio of 1 to 4 carbon atoms, alkyl sulfonyl of 1 to 4 carbon atoms, trifluoromethyl, chloro, fluoro or bromo; n represents an integer of 0 to 2 or X_n represents 3,4-methylenedioxy and R′ represents R with the proviso that R and R′ can be the same or different.

4,324,897

1,2,3 OXADIAZOLIUM SALTS

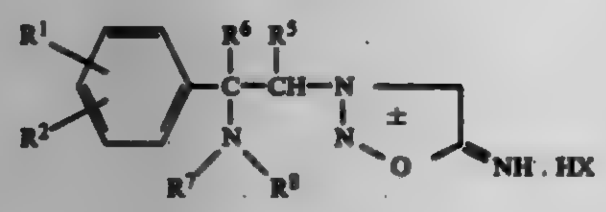
Reinhardt P. Stein, Audubon, Pa., assignor to American Home Products Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 193,043, Oct. 2, 1980, Pat. No. 4,289,885. This application May 18, 1981, Ser. No. 264,892

Int. Cl.[3] C07D *413/06, 271/04*

U.S. Cl. 548—125 **3 Claims**

1. A compound of the formula:



in which

R^1 and R^2 are, independently, hydrogen, alkyl of 1 to 6 carbon atoms, alkoxy of 1 to 6 carbon atoms, halo, perfluoroalkyl of 1 to 3 carbon atoms, nitro, alkanoyl of 2 to 4 carbon atoms, or alkoxycarbonyl of 2 to 4 carbon atoms;

R^5 and R^6 are, independently, hydrogen or methyl;

R^7 and R^8 are, independently, alkyl of 1 to 4 carbon atoms, or when taken with the nitrogen atom to which they are attached, form a piperidinyl, pyrolidinyl, morpholinyl, N-alkyl piperazinyl in which the alkyl group contains from 1 to 6 carbon atoms or N-phenylpiperazinyl group; and

X is the anion of a strong acid having a pKa below 2; or a pharmaceutically acceptable acid addition salt thereof.

4,324,898

HETEROCYCLIC COMPOUNDS USEFUL AS COLOR PHOTOGRAPHIC MATERIAL

Paul Tschopp, Düdingen, Switzerland, assignor to Ciba Geigy AG, Basel, Switzerland

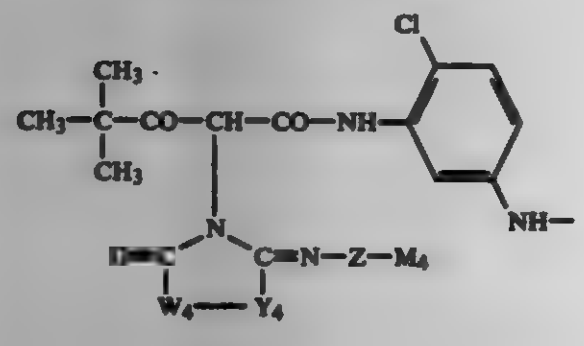
Division of Ser. No. 895,579, Apr. 12, 1978, Pat. No. 4,206,278. This application Aug. 30, 1979, Ser. No. 71,329

Claims priority, application Switzerland, Apr. 29, 1979, 5378/77

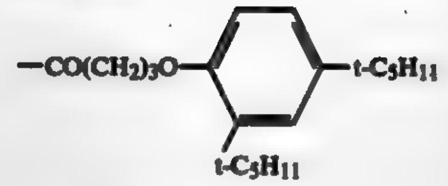
Int. Cl.[3] C07D *277/04*

U.S. Cl. 548—184 **3 Claims**

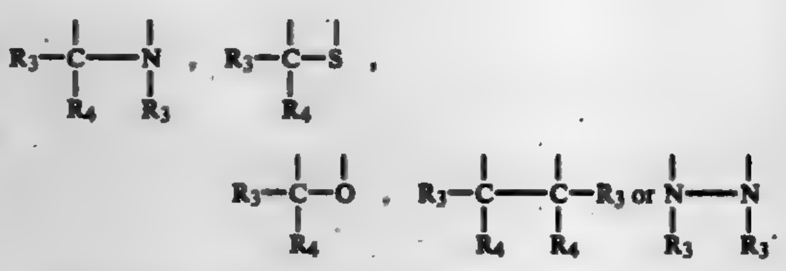
1. A yellow coupler of the formula



-continued



in which Z is —CO— or —SO_2— and M_4 is alkyl having 1 to 5 carbon atoms, benzyl, phenyl, which is unsubstituted or substituted by alkyl having 1 to 3 carbon atoms, chlorine and/or nitro, or, if Z is —CO—, alkoxy having 2 to 5 carbon atoms, monoalkylamino having 1 to 5 carbon atoms, carbalkoxy having 1 to 3 carbon atoms in the alkoxy moiety or carboxamido which is N-substituted or N,N-disubstituted by alkyl having 1 to 3 carbon atoms and/or by phenyl, and —W_4—Y_4— is the formulae



in which R_3 is hydrogen, alkyl having 1 to 5 carbon atoms, acyl having 2 to 5 carbon atoms or phenyl and R_4 is alkyl having 1 to 5 carbon atoms or phenyl.

4,324,899

2-AMINO-5-CYANOTHIAZOLES AND THEIR PREPARATION

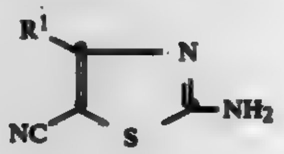
Mark D. Frishberg, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 55,092, Jul. 5, 1979, abandoned. This application Jun. 2, 1980, Ser. No. 155,812

Int. Cl.[3] C07D *277/20*

U.S. Cl. 548—190 **9 Claims**

1. A compound of the formula



wherein R^1 is selected from hydrogen; straight or branched alkyl of 1–20 carbons which may be substituted with 1–3 halogens; phenyl and phenyl substituted with 1–3 halogens, straight or branched alkyl of 1–20 carbons, straight or branched alkoxy of 1–20 carbons, cyano, nitro or trifluoromethyl; 2-thiophene; and α-pyridine.

4,324,900

3-AMINO-4-C-CARBOXY-2,3,4,6-TETRADEOXY-D-ARABINO-HEXOSE TRIMETHYLENE DITHIOACETAL

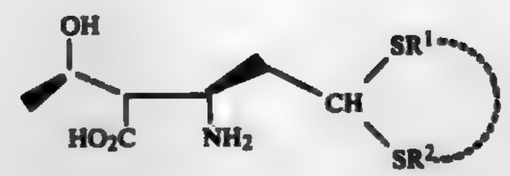
Philippe L. Durette, New Providence, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Mar. 30, 1981, Ser. No. 248,176

Int. Cl.[3] C07C *149/243;* **C07D** *339/00, 339/06, 339/08*

U.S. Cl. 549—11 **1 Claim**

1. A compound selected from:



wherein: R^1 and R^2 are independently selected from alkyl having 1–6 carbon atoms, phenylalkyl having 7–10 carbon atoms; or R^1 and R^2 may be jointed as indicated by the dotted line.

4,324,901

SOLUBLE POLYSILASTYRENE AND METHOD FOR PREPARATION

Robert C. West, and Lawrence D. David, both of Madison, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Apr. 29, 1981, Ser. No. 258,663

Int. Cl.[3] C07F *7/08*

U.S. Cl. 556—430 **11 Claims**

1. Process for making polysilastyrenes comprising reacting phenylmethyldichlorosilane and dimethyldichlorosilane in solvent solution in the presence of sodium in the ratio of 1 mole phenylmethyldichlorosilane to 0.25–2 moles dimethyldichlorosilane.

11. A polysilastyrene produced by the process of claim 1 having the general formula

$$[(Si—Me_2)_x\,(Si—Me—Ph)]_n$$

in which x equals 0.6–1.4 and n is a number up to 1200.

4,324,902

7-[5-OXO-3-HYDROXY-2-(3-SUBSTITUTED)-3-HYDROXYPROPYL)-1-CYCLOPENTENE]-HEPTANOIC ACIDS AND DERIVATIVES THEREOF

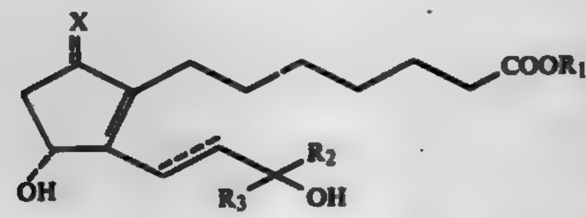
Masateru Miyano, Northbrook, and Clifford R. Dorn, Evanston, both of Ill., assignors to G. D. Searle & Co., Skokie, Ill.

Filed Apr. 16, 1981, Ser. No. 254,828

Int. Cl.[3] C07C *177/00*

U.S. Cl. 560—53 **21 Claims**

1. A compound of the formula



wherein X is oxygen or hydroxyl, R_1 and R_3 are independently hydrogen or methyl and R_2 is —(CH_2)n-Y where n is an integer from 0 through 4 inclusive, and Y is phenyl, or a cycloalkyl group having 4 to 6 carbon atoms, and the pharmacologically acceptable salts thereof.

4,324,903

MALONIC ESTERS

Magda Huhn; Eva Somfai; Gabor Szabo; Gabor Resovszki, and Livia Gneth nee Zalantai, all of Budapest, Hungary, assignors to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara RT., Budapest, Hungary

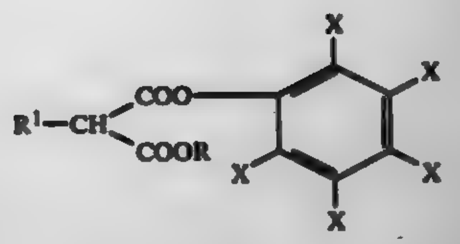
Filed Jun. 21, 1976, Ser. No. 698,063

Claims priority, application Hungary, Jun. 20, 1975, CI 1592

Int. Cl.[2] C07C *69/76, 79/46, 101/447*

U.S. Cl. 560—82 **5 Claims**

1. A compound of the formula:



wherein

R is an alkyl or halosubstituted alkyl of 1 to 6 carbon atoms wherein the halo is fluoro, chloro, bromo or iodo, or

R is unsubstituted aromatic, or

R is a fused homocyclic ring system;

R^1 is aryl or aralkyl, unsubstituted or substituted by fluoro, chloro, bromo or iodo, nitro, dialkylamino, alkoxy or trifluoromethyl, the alkyl being C_1 to C_6; and

X is a halogen atom selected from the group consisting of fluorine, chlorine, bromine or iodine.

4,324,904

PROCESSES FOR THE PREPARATION OF HYDRATROPIC ACIDS AND ESTERS

Thomas A. Hylton, Kalamazoo Township, Kalamazoo County, and Jerry A. Walker, Oshtemo Township, Kalamazoo County, both of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

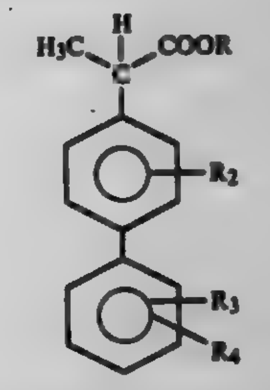
Filed Dec. 19, 1979, Ser. No. 105,166

Int. Cl.[3] C07C *69/76*

U.S. Cl. 560—102 **56 Claims**

1. A process for the preparation of a compound selected from the group consisting of

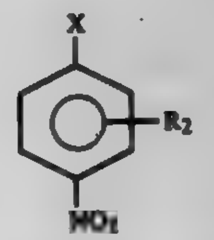
I



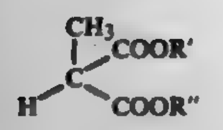
wherein R_2 is selected from the group consisting of hydrogen, halogen, alkoxy of from 1 to 6 carbon atoms, inclusive, alkyl of from 1 to 6 carbons, inclusive, cycloalkyl of from 4 to 7 carbons, inclusive, phenyl, and cyano; R_3 and R_4 are the same or different and are selected from the group consisting of hydrogen, hydroxyl, halogen, nitro, alkyl of from 1 to 6 carbons, inclusive, alkoxy of from 1 to 6 carbons, inclusive, phenyl, cyano, and cycloalkyl of from 4 to 7 carbons, inclusive, and R is selected from the group consisting of hydrogen and alkyl of from 1 to 6 carbons, inclusive, which comprises

(1) reacting a compound selected from the group consisting of

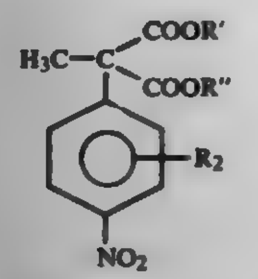
II



with a compound having the formula



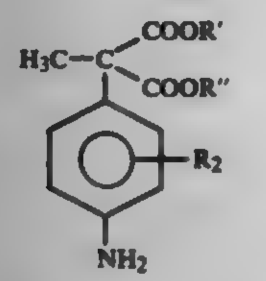
in the presence of a base comprising sodium hydride, sodium hydroxide, potassium hydroxide, or potassium carbonate to prepare a compound selected from the group consisting of



III

wherein X is halogen, R' and R'' are the same or different and are alkyl of from 1 to 6 carbons, inclusive, or R' and R'' taken together to form a cyclic diester comprising 2,2-dialkyl-1,3-dioxane-4,6-dione and R_2 is as defined above;

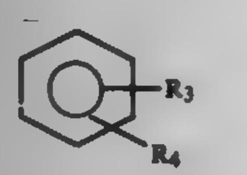
(2) reducing the nitro group of compound III from step 1 to produce a compound selected from the group consisting of



IV

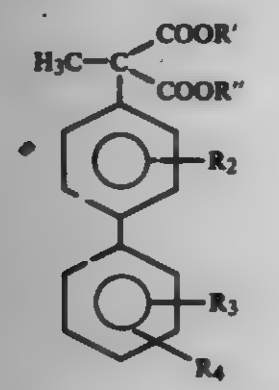
wherein R', R'' and R_2 are all defined as above;

(3) coupling the compound IV of step 2 with a compound having the formula



V

to produce a compound selected from the group consisting of



VI

wherein R', R'', R_2, R_3 and R_4 are defined as above; and

(4) treating the product VI of step 3 wherein treating the product VI is decarboxylation, decarboxylation and hydrolysis or hydrolysis and decarboxylation to obtain the compound selected from the group consisting of I above.

4,324,905

PHENACYL-TYPE ESTERS OF $PGF_{2\alpha}$ AND ITS 15-METHYL ANALOGS

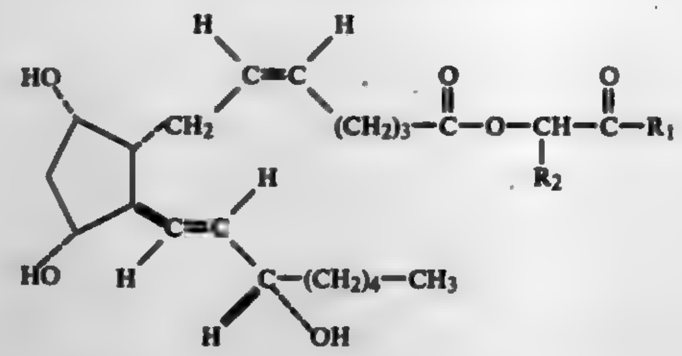
Walter Morozowich, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Aug. 14, 1974, Ser. No. 497,243

Int. Cl.³ C07C *177/00*

U.S. Cl. 560—121 **8 Claims**

1. An optically active compound of the formula



wherein R_1 is p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl; wherein R_2 is hydrogen or benzoyl and wherein R_1 is phenyl and R_2 is benzoyl.

4,324,906

CITRIC ACID ESTERS AND PROCESS FOR PRODUCING CITRIC ACID

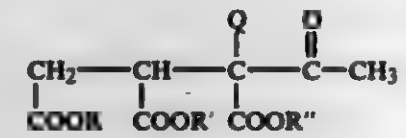
Eddie N. Gutierrez, Fort Lee, and Vincent Lamberti, Upper Saddle River, both of N.J., assignors to Lever Brothers Company, New York, N.Y.

Filed Aug. 20, 1979, Ser. No. 68,043

Int. Cl.³ C07C *69/716, 59/265*

U.S. Cl. 560—176 **18 Claims**

16. A compound of the formula



wherein

R is methyl, ethyl, or propyl;

R' is methyl, ethyl, propyl, H, Na, K, Li, $Mg_{\frac{1}{2}}$, $Ca_{\frac{1}{2}}$, $Ba_{\frac{1}{2}}$, or $Sr_{\frac{1}{2}}$;

R'' is methyl, ethyl, or propyl; and

Q is chlorine or bromine.

4,324,907

EXTRACTION PROCESS

Peter J. Senior, Middlesbrough; Leonard F. Wright, Stockton-on-Tees, and Barry Alderson, Billingham, all of England, assignors to Imperial Chemical Industries Limited, London, England

Filed Feb. 22, 1980, Ser. No. 125,483

Claims priority, application United Kingdom, May 8, 1979, 15858/79

Int. Cl.³ C07C *67/56, 69/675*

U.S. Cl. 560—185 **10 Claims**

1. A process for the extraction of poly(β-hydroxy butyric acid) (PHB) from an aqueous suspension of PHB-containing bacterial cells comprising:

introducing an aqueous suspension of PHB-containing bacterial cells in finely divided form into a current of gas heated to a temperature of at least 100° C. to evaporate the water from the suspension,

collecting the resultant dried bacterial cells,

extracting the PHB therefrom by contact with an extraction solvent which is a liquid that is a solvent for the PHB in the bacterial cells, and

separating the extraction solvent from the PHB dissolved therein from the bacterial cell residue.

4,324,908

PREPARATION OF UNSATURATED ACIDS AND ESTERS FROM SATURATED CARBOXYLIC ACID DERIVATIVES AND CARBONYL COMPOUNDS OVER PHOSPHATE CATALYSTS

Robert K. Grasselli, Chagrin Falls, and Andrew T. Guttmann, Maple Heights, both of Ohio, assignors to Standard Oil Company, Cleveland, Ohio

Filed Dec. 31, 1980, Ser. No. 221,583

Int. Cl.³ C07C *67/343*

U.S. Cl. 560—210 **23 Claims**

1. A process for producing unsaturated carboxylic acid and esters which comprises passing into a reaction zone, a vaporous mixture of a saturated monocarboyxlic acid or its ester with formaldehyde or a formaldehyde derivative, at a temperature of from 200° C. to about 450° C., in the presence of a catalyst having the empirical formula

A_aPO_x

wherein

A is Fe, Ni, Co, Mn, Cu, Ag or mixtures thereof;

a is 0.2–3.0; and

x is determined by the nature and oxidation state of the other elements.

4,324,909

PROCESS FOR PREPARING GLYCOLS AND GLYCOL ESTERS

David Horvitz, and Thomas S. Brima, both of Cincinnati, Ohio, assignors to National Distillers & Chemical Corp., New York, N.Y.

Filed Jul. 17, 1980, Ser. No. 169,535

Int. Cl.³ C07C *67/05, 29/03*

U.S. Cl. 560—246 **6 Claims**

1. In the process for catalytically reacting olefin and oxygen in the liquid phase to provide saturated glycol or a mixture of saturated glycol and saturated glycol ester, the improvement which comprises employing as catalyst, a composition consisting essentially of at least one oxide of antimony or bismuth in admixture with at least one member of the group consisting of hydriodic acid; molecular iodine; hydriodic acid and molecular iodine; molecular iodine and hydrobromic acid; and, hydriodic acid and hydrobromic acid in a water or water-carboxylic acid reaction medium.

4,324,910

SUBSTITUTED UREA COMPOUND CONTAINING 2,2,2-TRICHLORO-1-HYDROXYETHYL GROUP

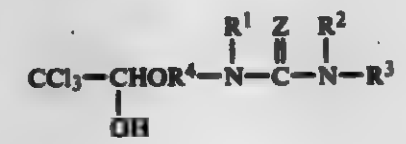
Stanley R. Sandler, Springfield, and Mabel M. Chen, Broomall, both of Pa., assignors to Pennwalt Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 118,298, Feb. 4, 1980, abandoned. This application Feb. 20, 1981, Ser. No. 236,374

Int. Cl.³ C07C *127/15;* A62D *1/00*

U.S. Cl. 564—60 **6 Claims**

1. A compound having the formula:

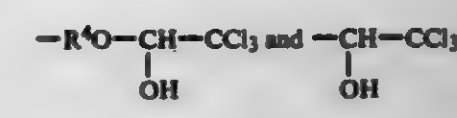


wherein:

(a) Z is selected from O or S;

(b) R^1 and R^2 are selected from the group consisting of H, alkyl of 1 to 6 carbons;

(c) R^3 is selected from H, alkyl of 1 to 6 carbons, hydroxyalkyl of 2 to 4 carbons;



and

(d) R^4 is an alkylene group of 2 to 6 carbon atoms.

4,324,911

PROCESS FOR THE CONTINUOUS PREPARATION OF DIACETYL ETHYLENE DIAMINE

Werner Wellbrock, Bad Soden am Taunus, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Oct. 7, 1980, Ser. No. 194,751

Claims priority, application Fed. Rep. of Germany, Oct. 10, 1979, 2941023

Int. Cl.³ C07C *102/04*

U.S. Cl. 564—141 **1 Claim**

1. A process for the continuous preparation of diacetyl ethylene diamine, which comprises allowing a mixture of ethylene diamine and acetic acid to react in a low-temperature zone at a temperature of about 80° to 140° C., completing the reaction of the mixture in a subsequent high-temperature zone of from about 160° to 215° C., discharging the diacetyl ethylene diamine obtained at the end of the high-temperature zone and stripping the reaction water in counter-current flow by an inert gas at a point located between the low-temperature and the high-temperature zone.

4,324,912

CARBOAMIDOALKYL NORBORNANES, ORGANOLEPTIC USES THEREOF AND PROCESS FOR PREPARING SAME

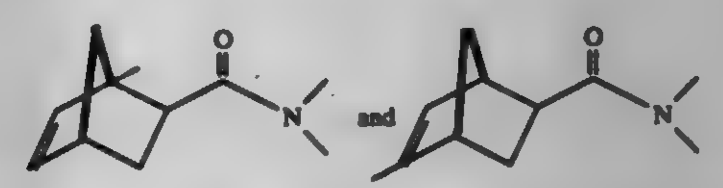
Philip T. Klemarczyk, Old Bridge; Frederick L. Schmitt, Holmdel; Edward J. Granda, Englishtown, and Domenick Luccarelli, Jr., Ocean, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Continuation-in-part of Ser. No. 152,188, Jul. 17, 1980, abandoned. This application Nov. 13, 1980, Ser. No. 206,632

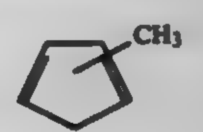
Int. Cl.³ C07C *103/19*

U.S. Cl. 564—188 **2 Claims**

1. A product containing a major proportion of isomers defined according to the structures:



produced according to the process of reacting methyl cyclopentadiene having the structure:



with N,N-dimethyl acrylamide in the presence of a catalyst defined according to the formula:

R'_nAlCl_m

wherein R' is C_1–C_3 alkyl and the sum, m+n=3 with m being 1 or 2 and n being 1 or 2 at a temperature in the range of from about 0° C. up to about 50° C.

4,324,913

PROCESS FOR THE PREPARATION OF 4-NITROSO-DIPHENYL-AMINE

Karlfried Wedemeyer, Cologne, and Lutz Kienitz, Bergisch-Gladbach, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Sep. 2, 1980, Ser. No. 183,202

Claims priority, application Fed. Rep. of Germany, Sep. 5, 1979, 2935775

Int. Cl.^{3} C07C *85/145, 85/00*

U.S. Cl. 564—410 7 Claims

1. In the process of preparing 4-nitroso-diphenylamine by the steps of rearraning N-nitroso-diphenylamine according to Fischer-Hepp in an inert solvent which is immiscible with water under the effect of alcoholic hydrochloric acid and working up the suspension of thusly produced 4-nitroso-diphenylamine-hydrochloride by extraction with aqueous alkali, the improvement wherein o-dichlorobenzene is used as the water-immiscible solvent.

4,324,914

PROCESS FOR PREPARATION OF ANILINES SUBSTITUTED BY CHLORINE IN THE META-POSITION

Georges Cordier, Francheville, France, assignor to Rhone-Poulenc Agrochimie, Lyons, France

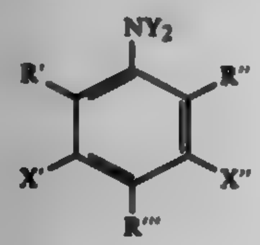
Filed Jan. 23, 1980, Ser. No. 114,651

Claims priority, application France, Feb. 15, 1979, 79 04483

Int. Cl.^{3} C07C *85/11, 85/24*

U.S. Cl. 564—412 20 Claims

1. A process for the preparation of anilines substituted in the meta-position by chlorine, by the catalytic hydrogenation of chlorine-substituted nitrogen-containing benzene derivatives, in the liquid phase, in an acid medium, under the action of heat, under pressure and in the presence of noble metals from group VIII of the periodic classification, in which process the benzene derivatives have the formula:



(I)

in which Y represents the hydrogen atom or the oxygen atom, X' and X'', which are identical or different from one another, each represent a chlorine atom or an optionally substituted alkyl, aryl, aralkyl, alkoxy or aralkoxy radical, it being furthermore possible for one of the symbols X' and X'' to be hydrogen, and R', R'' and R''', which are identical or different from one another, each represent a chlorine atom or an optionally substituted alkyl, aralkyl, alkoxy or aryloxy radical, at least one of these three symbols representing the chlorine atom and it being furthermore possible for at most two of the symbols R', R'' and R''' to be hydrogen, and the reaction is carried out in the presence of chloride ions in an amount which is such that the ratio of the concentrations $[Cl^-]/[H^+]$ is greater than 1.5.

4,324,915

KETOENAMINE PYRETHROID INTERMEDIATES

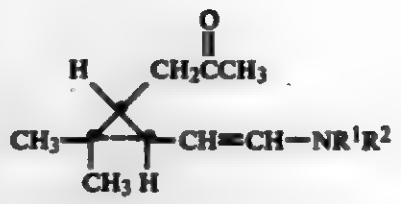
Steven A. Roman, Oakdale, Calif., assignor to Shell Oil Company, Houston, Tex.

Filed May 1, 1981, Ser. No. 259,725

Int. Cl.^{3} C07C *45/00, 83/00, 87/24*

U.S. Cl. 564—484 7 Claims

1. A compound of the formula



wherein R^1 and R^2 each independently is an alkyl group containing from 1 to 4 carbon atoms.

4,324,916

DECAPRENYLAMINE DERIVATIVES

Yoshiyuki Tahara, Ohi; Hiroyasu Koyama, Ageo; Yasuhiro Komatsu, Niiza; Reiko Kubota, Tokyo, and Toshihiro Takahashi, Ohi, all of Japan, assignors to Nisshin Flour Milling Co. Ltd., Tokyo, Japan

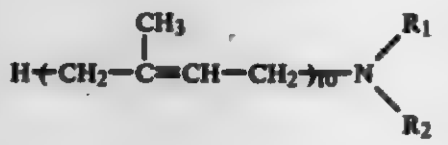
Filed Nov. 19, 1980, Ser. No. 208,325

The portion of the term of this patent subsequent to May 5, 1998, has been disclaimed.

Int. Cl.^{3} C07C *87/452, 91/06, 91/08, 91/12*

U.S. Cl. 564—462 8 Claims

1. A compound of the general formula



wherein R_1 represents a hydrogen atom, decaprenyl group, a lower alkyl group or a hydroxy-lower alkyl group, and R_2 represents a lower alkyl or alkenyl group optionally substituted with at least one hydroxy, amino or alkylamino group, or a cycloalkyl group, and acid addition salts thereof.

4,324,917

PREPARATION OF POLYALKYLENE POLYAMINES

Thomas T. McConnell, Austin, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Aug. 28, 1980, Ser. No. 182,206

Int. Cl.^{3} C07C *85/06*

U.S. Cl. 564—479 8 Claims

1. An improved process for selectively preparing a predominantly noncyclic polyalkylene polyamine compound comprising the steps of:

contacting an alkyleneamine compound having two primary amino groups with an alkanolamine compound having a primary amino group and a primary or secondary hydroxy group in the presence of a cation exchange resin containing active phosphorus sites acting as a catalyst at temperatures of from about 250° C. to about 400° C. under a pressure sufficient to maintain the mixture essentially in liquid phase; and

recovering said polyalkylene polyamine compound from the resultant reaction mixture.

4,324,918

N,N-DIMETHYL-N'-ISOBUTYL-N'-β-HYDROXYETHYL-PROPYLENEDIAMINE AND A PROCESS FOR ITS PREPARATION

Jürgen Weber, Oberhausen; Volker Falk, Voerde, and Claus Kniep, Oberhausen, all of Fed. Rep. of Germany, assignors to Ruhrchemie Aktiengesellschaft, Oberhausen, Fed. Rep. of Germany

Filed Oct. 3, 1980, Ser. No. 193,697

Claims priority, application Fed. Rep. of Germany, Oct. 4, 1979, 2940256

Int. Cl.^{3} C07C *91/08, 91/12*

U.S. Cl. 564—503 1 Claim

1. N,N-dimethyl-N'-isobutyl-N'-β-hydroxyethyl-propylenediamine.

4,324,919

PRODUCTION OF TERTIARY PHOSPHINES

Georg Elsner, Hürth; Hartfrid Vollmer, Erftstadt, and Ernst Reutel, Bonn, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Sep. 2, 1980, Ser. No. 183,057

Claims priority, application Fed. Rep. of Germany, Sep. 7, 1979, 2936210

Int. Cl.^{3} C07F *9/50*

U.S. Cl. 568—8 1 Claim

1. In the process for making tertiary phosphines of the general formula R_3P, in which R stands for a linear alkyl radical having 2 to 4 carbon atoms, by reacting hydrogen phosphide with linear monoolefins having 2 to 4 carbon atoms under pressures of 5 to 25 bars and temperatures of 50° to 200° C. in the presence of an agent yielding free radicals, the improvement which comprises: preparing a solution of the tertiary phosphine which is desired to be made, in an inert solvent, and performing the reaction of the PH_3 with the monoolefin in said solution, which is used in such amounts that the tertiary phosphine in the solution is applied in a proportion of 50 to 500 mol%, based on PH_3.

4,324,920

PROCESS FOR THE PREPARATION OF ORTHO-(HYDROCARBYLTHIO)-PHENOLS

Bonnie G. McKinnie, and Paul F. Ranken, both of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Filed Jul. 28, 1980, Ser. No. 172,977

Int. Cl.^{3} C07C *148/00*

U.S. Cl. 568—54 12 Claims

1. A process for the preparation of ortho-substituted phenols which comprises reacting a phenol having at least one hydrogen on a carbon atom ortho to a hydroxy group with a hydrocarbyl disulfide in the presence of an aluminum phenoxide catalyst so that an ortho-(hydrocarbylthio)-phenol is prepared, the molar ratio of said catalyst relative to said disulfide being between about 0.01 and 0.5.

4,324,921

PROCESS FOR THE MANUFACTURE OF ETHERS OF HYDROXY-PIVALALDEHYDE

Hans-Jürgen Arpe, Frankfurt am Main, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

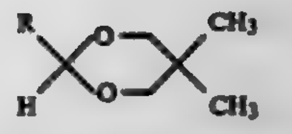
Filed May 29, 1980, Ser. No. 154,319

Claims priority, application Fed. Rep. of Germany, Jun. 2, 1979, 2922698

Int. Cl.^{3} C07C *45/60, 47/19*

U.S. Cl. 568—427 3 Claims

1. A process for the preparation of an ether of hydroxypivalaldehyde of the formula $RCH_2OCH_2—C(CH_3)_2CHO$ wherein R is hydrogen, linear or branched alkyl having from 1 to 7 carbon atoms, cyclohexyl or phenyl which comprises isomerizing a 5,5-dimethyl-1,3-dioxane compound having the structure:



at a temperature in the range of 250° C. to 500° C. in the presence of a catalyst containing silicon dioxide, 4 to 40 mmols per 100 grams SiO_2 of an oxide or hydroxide of didymium and 10 to 100 mmols per 100 grams of SiO_2 of an oxide or hydroxide of sodium or potassium, or both, said catalyst being formed by calcination at a temperature of from 600° C. to 1000° C. for 30 minutes to 8 hours.

4,324,922

REIMER-TIEMANN ALDEHYDE SYNTHESIS PROCESS

William E. Smith, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 53,130, Jun. 28, 1979, abandoned. This application Jun. 9, 1980, Ser. No. 157,727

Int. Cl.^{3} C07C *45/00*

U.S. Cl. 568—437 6 Claims

1. A process for preparing aromatic hydroxyaldehydes comprising reacting by contacting a phenolic compound, chloroform and aqueous alkali metal hydroxide at a temperature from about 70° C. to about 105° C. and at an elevated pressure less than about 100 atmospheres for a time sufficient to form substantial amounts of aromatic hydroxyaldehyde and subsequently recovering the aromatic hydroxyaldehyde formed.

4,324,923

CYCLOHEXYL PHENETHYLETHER DERIVATIVE

Jacob Kiwala, Brooklyn, N.Y.; Richard J. Tokarzewski, Keyport, N.J.; Frederick L. Schmitt, Holmdel, N.J., and Mark A. Sprecker, Sea Bright, N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

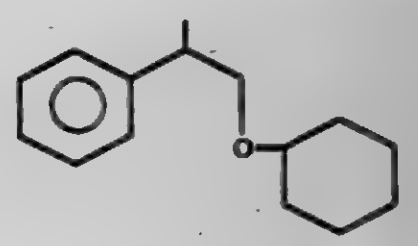
Continuation-in-part of Ser. No. 192,238, Sep. 30, 1980. This application Feb. 19, 1981, Ser. No. 235,844

The portion of the term of this patent subsequent to Dec. 15, 1998, has been disclaimed.

Int. Cl.^{3} C07C *43/184*

U.S. Cl. 568—659 1 Claim

1. The cyclohexyl phenethylether derivative wherein the structure of the cyclohexyl phenethylether is:



4,324,924

PROCESS FOR REMOVING ISOBUTENE FROM A C_4 CUT AND PRODUCING METHYL TERT-BUTYL ETHER

Bernard Torck, Boulogne sur Seine; Alain Convers; Didier Duee, both of Rueil Malmaison, and Paul Mikitenko, Noisy Le Roi, all of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Apr. 24, 1980, Ser. No. 143,242

Claims priority, application France, Apr. 24, 1979, 79 10399

Int. Cl.^{3} C07C *41/06, 7/00*

U.S. Cl. 568—697 11 Claims

1. A process for producing methyl tert-butyl ether and recovering a substantially isobutene- and methanol-free C_4 cut by reacting methanol with a hydrocarbon C_4 cut comprising from 10 to 60% by weight of isobutene, said process comprising the steps of:

(a) contacting a mixture of methanol, said C_4 cut, and a recycle stream as hereinafter defined, in a first reaction zone, with an acid catalyst, under conditions for etherification of isobutene with methanol, and converting from 93 to 98% of isobutene, the methanol/isobutene molar ratio being maintained higher than 1:1 at the inlet and at the outlet of said first reaction zone;

(b) fractionating the effluent from step (a) under a pressure of at least 10 bars, and separately recovering an overhead fraction having a methanol/isobutene molar ratio higher than 1:1 and a bottoms product fraction comprising methyl tert-butyl ether, and discharging said bottoms product fraction;

(c) contacting the overhead fraction from step (b) with an acid catalyst, in a second reaction zone, under conditions for etherification of isobutene with methanol such that an overall isobutene conversion of at least 99% is effected;

(d) fractionating the effluent from step (c) under a pressure of 1–9 bars, and separately recovering an overhead fraction consisting essentially of C_4 hydrocarbons and a minor proportion of methanol, and a bottoms fraction containing methanol, methyl tert-butyl ether and a minor proportion of C_4 hydrocarbons, and having a methanol/methyl tert-butyl ether molar ratio higher than 1:1, said bottoms fraction being recycled as said recycle stream to step (a); and

(e) washing at least a portion of the overhead fraction from step (d) with water, and separately recovering a substantially isobutene- and methanol-free C_4 cut, and a methanol-containing aqueous wash stream.

4,324,925

PROCESS FOR THE PREPARATION OF POLYHYDRIC PHENOLS

Christoph Jupe, Cologne; Helmut Waldmann, Leverkusen, and Hermann Seifert, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jun. 30, 1980, Ser. No. 164,444

Claims priority, application Fed. Rep. of Germany, Jul. 17, 1979, 2928743

Int. Cl.³ C07C *39/12, 79/24, 91/30, 149/36*

U.S. Cl. 568—719 **15 Claims**

1. A process for the preparation of a polyhydric phenol which comprises contacting a phenol containing one or more hydroxyl groups bonded to one or more aromatic nuclei which phenols can contain one or more other substituents in addition to the one or more hydroxyl groups on the aromatic ring which additional substituents are selected from the group consisting of C_1 to C_{10} alkyl, C_3 to C_{12} cycloalkyl, phenol, naphthyl, fluorine, chlorine, bromine, nitro, cyano, sulfonic acid, carboxyl, carbo-C_1–C_{10} alkoxy, C_1–C_3 alkoxy, or C_1–C_4 dialkylamino, it being possible for the alkyl and cycloalkyl radicals to be substituted by fluorine, chlorine, or bromine atoms, or C_1–C_3 alkoxy, C_1–C_4 dialkylamino, carboxyl, nitro, cyano, sulfonic acid or C_1–C_{10} carbalkoxy groups and for the phenol and naphthyl radicals to be substituted by fluorine, chlorine, bromine, C_1–C_{10} alkyl, C_3–C_{12} cycloalkyl or nitro, carboxyl, carbo-C_1–C_{10} alkoxy, C_1–C_3 alkoxy, cyano, sulfonic acid or C_1–C_4 dialkylamino groups with a cation exchanger containing SO_3— and/or COO— groups at a temperature of 0° to 200° C. employing 0.1 to 1000 parts by weight of phenol per hour, separating said phenol from said cation exchanger and thereafter hydroxylating said phenol by contacting the same with a peroxidic hydroxylating agent which contains 1 or more —O—O—groups.

4,324,926

PROCESS FOR THE PURIFICATION OF 4,4′ DIHYDROXYDIPHENYL

Walter R. Demler, Hamburg; Krishen L. Nagpal, Williamsville; Richard M. Dollard, West Seneca; Eugene Odin, Williamsville, and Donald T. Donahue, Kenmore, all of N.Y., assignors to Buffalo Color Corporation, West Paterson, N.J.

Filed Mar. 6, 1980, Ser. No. 127,774

Int. Cl.³ C07C *37/82, 39/21*

U.S. Cl. 568—730 **31 Claims**

1. A process for purifying 4,4′-dihydroxydiphenyl comprising contacting a solution of 4,4′-dihydroxydiphenyl containing 4-monohydroxydiphenyl alkali metal salt with activated carbon followed by removing the activated carbon from the solution and acidifying the solution with sufficient acid to convert essentially all of the 4,4′-dihydroxydiphenyl alkali metal salt to water insoluble 4,4′-dihydroxydiphenyl.

4,324,927

PROCESS FOR THE HOMOLOGIZATION OF METHANOL

Jean Gauthier-Lafaye, Lyons, and Robert Perron, Charly, both of France, assignors to Rhone-Poulenc Industries, Paris, France

Filed Jun. 3, 1980, Ser. No. 155,932

Claims priority, application France, Jun. 7, 1979, 79 15079

Int. Cl.³ C07C *29/32, 29/36*

U.S. Cl. 568—902 **18 Claims**

1. A process of hydrocarbonylating methanol to produce ethanol, which comprises reacting methanol with a mixture of carbon monoxide and hydrogen, at a temperature of at least about 180° C., under a total pressure of between about 50 and 400 bars, in the presence of cobalt and ruthenium, of at least one ionic halide, the cation of which is chosen from the group consisting of alkali-metal cations, alkaline earth metal cations, quaternary ammonium cations, and quaternary phosphonium cations, and of at least one alkyl halide, the molar ratio X^-/Co, X^- being the halide ion originating from the ionic halide, being at least about 5, the molar ratio X/Co, X being the halogen originating from the alkyl halide, being at least about 2, and the gram atom ratio of ruthenium to cobalt being at least about 2.

4,324,928

STABILIZED METHYLCHLOROFORM FORMULATION CONTAINING CYCLOPROPYL METHYL CARBINOL

Alvetta Pryor, Houston, and Nobuyuki Ishibe, Lake Jackson, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Dec. 3, 1980, Ser. No. 212,649

Int. Cl.³ C07C *17/42*

U.S. Cl. 570—118 **3 Claims**

1. In a stabilizer formulation useful in stabilizing methylchloroform used in vapor degreasing wherein said formulation contains an alkylene oxide as a component of said stabilizer, the improvement which comprises employing cyclopropyl methyl carbinol in place of the epoxide in said formulation.

4,324,929

PROCESS FOR PRODUCING MONO, BIS OR TRIS(3,3,3-TRIFLUOROPROPYL)BENZENE

Yoshiro Kobayashi, Tokyo; Itsumaro Kumadaki, Hachiohji; Masaaki Takahashi, Tokyo, and Takashi Yamauchi, Iwaki, all of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

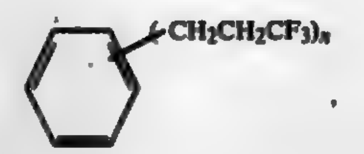
Filed Feb. 12, 1981, Ser. No. 234,062

Claims priority, application Japan, Feb. 22, 1980, 55-21094

Int. Cl.³ C07C *17/28, 25/14*

U.S. Cl. 570—127 **5 Claims**

1. A process for producing a 3,3,3-trifluoropropylated benzene derivative represented by the following formula



wherein n is an integer of 1, 2 or 3, which comprises bringing benzene into reaction with 3,3,3-trifluoropropylene in the presence of an acid catalyst selected from the group consisting of hydrogen fluoride, boron trifluoride and a mixture thereof.

5. Bis(3,3,3-trifluoropropyl)benzene.

4,324,930

2,3-DICHLORO-2-TRIFLUOROMETHYL-1,1,1,3,4,4,5,5,5-NONAFLUOROPENTANE AND PROCESS FOR ITS MANUFACTURE

Sigmar-Peter von Halasz, Kelkheim, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Mar. 26, 1981, Ser. No. 247,787

Claims priority, application Fed. Rep. of Germany, Mar. 28, 1980, 3012005

Int. Cl.³ B01J *19/08;* **C07C** *19/08*

U.S. Cl. 570—134 **1 Claim**

1. A 1-halo-4-decene represented by the general formula

$$CH_3\text{-}(CH_2)_4CH{=}CH\text{-}(CH_2)_3X,$$

in which X is a halogen atom.

4,324,931

1-HALO-4-DECENE COMPOUNDS

Toshinobu Ishihara; Kenichi Taguchi; Akira Yamamoto; Nobuo Takasaka; Hisashi Shimizu, and Mitsuyoshi Oshima, all of Joetsu, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Nov. 14, 1980, Ser. No. 206,991

Claims priority, application Japan, Nov. 19, 1979, 54-149767

Int. Cl.³ C07C *21/04*

U.S. Cl. 570—189 **2 Claims**

2. The 1-halo-4-decene as claimed in claim 1 wherein the halogen is chlorine or bromine.

4,324,932

PROCESS FOR THE MANUFACTURE OF VINYL CHLORIDE BY THE THERMAL CRACKING OF 1,2-DICHLOROETHANE

Gerhard Link, Jakob-Steffanstr. 14, 65 00 Mainz; Josef Riedl, Kantstr. 53, 8261 Burgkirchen; Walter Fröhlich, Kampenwandstr. 11, 8261 Burgkirchen, and Reinhard Krumböck, Lohnerstr. 40, 8261 Burgkirchen, all of Fed. Rep. of Germany

Filed Jul. 17, 1980, Ser. No. 169,789

Int. Cl.³ C07C *21/06*

U.S. Cl. 570—226 **10 Claims**

1. A process for the manufacture of vinyl chloride in a reaction furnace by thermal cracking of 1,2-dichloroethane, wherein reaction gas leaving the reaction furnace is cooled in two stages, in one of which stages the gas is cooled indirectly by a liquid or gaseous coolant for subsequent splitting by distillation, said process incorporating the improvement which comprises cooling the reaction gas mixture to a temperature within the range of 220° to 120° C. in the indirect stage at an average cooling rate, in degrees C. per second, of at least 1/10 of the temperature in degrees C. of the gas mixture entering the indirect stage, and the reaction gas mixture together with any condensate resulting from this mixture being further cooled directly or indirectly in at least one downstream stage.

4,324,933

ELECTRICAL INSULATING OIL COMPOSITIONS

Shoji Kimura, Chigasaki; Noboru Ishida, Sagamihara; Midori Masunaga, Tokyo, and Yoshiki Kohno, Kawasaki, all of Japan, assignors to Nippon Oil Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 863,189, Dec. 22, 1977, abandoned, which is a continuation-in-part of Ser. No. 791,280, Apr. 27, 1977, abandoned. This application Jun. 24, 1980, Ser. No. 162,583

Claims priority, application Japan, May 1, 1976, 51-49405

Int. Cl.³ H01B *3/22;* **C10G** *39/00*

U.S. Cl. 585—6.6 **14 Claims**

1. An electrical insulating oil composition consisting essentially of (I) 50–85 parts by weight of a mixed or paraffinic base crude oil-derived electrical insulating oil having a sulphur content of not higher than 0.35 wt.% and being obtained by the steps of:

refining with a solvent a distillate boiling within the range of 230° to 430° C. at atmospheric pressure, the distillate being obtained by distillation of a mixed or paraffinic base crude oil at atmospheric pressure or by distillation at a reduced pressure of a residual oil produced by distillation of the crude oil at atmospheric pressure, to obtain a raffinate,

hydrofining the thus obtained raffinate and solvent dewaxing the thus hydrofined raffinate,

(II) 50–15 parts by weight of a naphthenic base crude oil-derived insulating oil, and (III) of 0.001–1.0% by weight of a hydrocarbon derived pour point depressant, based on the total weight of the oils (I) and (II), selected from the group consisting of (1) copolymers of ethylene and α-olefin having the general formula $CH_2{=}CH{-}R$ wherein R is an alkyl group having at least one carbon atom, (2) polymers of α-olefin having the general formula $CH_2{=}CH{-}R$ wherein R is any one of C_{7-18} alkyl groups which are identical with, or different from, each other, the polymers containing $-CH_2-_n$ wherein n is at least 6, (3) styrene-butadiene copolymers in hydrogenated form, and (4) alkylated polystyrenes obtained by the reaction of a polystyrene having a number average molecular weight of 10,000–150,000 with an alkyl halide of the formula RX wherein R is an alkyl group having 6–20 carbon atoms and X is a halogen atom.

4,324,934

HYDROCARBON, A PROCESS FOR ITS PRODUCTION AND ITS USE AS A REACTIVE THINNER FOR AIR-DRYING LACQUERS

Erich Eimers, and Rolf Dhein, both of Krefeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jan. 9, 1981, Ser. No. 223,567

Claims priority, application Fed. Rep. of Germany, Jan. 18, 1980, 3001729

Int. Cl.³ C09D *7/06;* **C07C** *2/52, 13/605;* **C08K** *5/01*

U.S. Cl. 585—21 **8 Claims**

1. 1:1-codimers of dicyclopentadiene and 1,3-butadiene having a molecular weight of 186.

2. A process for producing the 1:1-codimers claimed in claim 1 wherein gaseous 1,3-butadiene is reacted with dicyclopentadiene in the presence of an organo-cobalt complex compound at a temperature of 40°–100° C. while introducing the major portion of the 1,3-butadiene into the reaction at a rate which does not exceed its reaction velocity.

4,324,935

SPECIAL CONDITIONS FOR THE HYDROGENATION OF HEAVY HYDROCARBONS

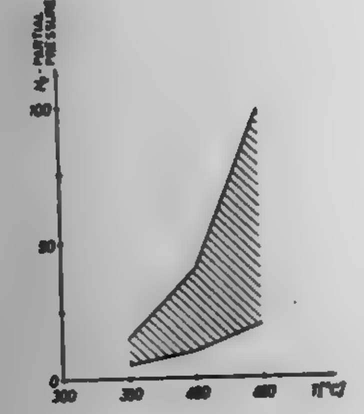
Hans J. Wernicke, Wolfratshausen, and Claus Schliebener, Strasslach, both of Fed. Rep. of Germany, assignors to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany

Filed Oct. 16, 1980, Ser. No. 197,719

Claims priority, application Fed. Rep. of Germany, Oct. 16, 1979, 2941851

Int. Cl.³ C10G 47/00, 67/00

U.S. Cl. 585—314 11 Claims



1. In a process for the cracking of heavy liquid hydrocarbons comprising monoaromatics and polyaromatics, said process comprising a catalytic hydrogenating pretreatment of said heavy hydrocarbons, separating hydrogenation product into a lighter fraction containing the major portion of the monoaromatics and a heavier fraction; passing the heavier fraction at least in part to a thermal cracking step to produce normally gaseous olefins; and withdrawing the lighter fraction, the improvement wherein hydrogenation is conducted within the shaded area of FIG. 2, wherein at temperatures of between 350° and 450° C., the hydrogen partial pressure and the hydrogenation temperature are selected so that their values in a hydrogen partial pressure-temperature diagram lie within the area bounded by the curve having the corner coordinates 350° C./5 bar; 350° C./15 bar; 400° C./40 bar; 450° C./100 bar; 450° C./20 bar; and 400° C./10 bar, whereby said lighter fraction has a higher octane number.

4,324,936

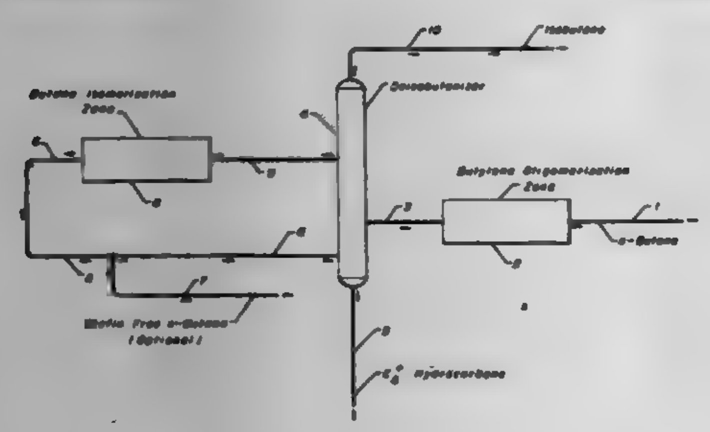
BUTANE ISOMERIZATION PROCESS

Michael Z. Mikulicz, Palatine, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Dec. 29, 1980, Ser. No. 220,498

Int. Cl.³ C07C 2/58

U.S. Cl. 585—315 6 Claims



1. In a process for the isomerization of normal butanes wherein a recycle stream which is rich in normal butane is withdrawn from a deisobutanizer column and is then passed into a butane isomerization zone, a butane isomerization zone effluent stream which comprises isobutane and normal butane is passed into the deisobutanizer column, and a product stream which is rich in isobutane is withdrawn from the deisobutanizer column; the improvement which comprises passing a fresh feed stream to the butane isomerization zone, which comprises isobutylene and is rich in normal butane, through an oligomerization zone and thereby producing an oligomerization zone effluent stream which is rich in normal butane and comprises C_8 hydrocarbons, passing the oligomerization zone effluent stream into the deisobutanizer column, and removing a net bottoms stream comprising C_8 hydrocarbons from the deisobutanizer column.

4,324,937

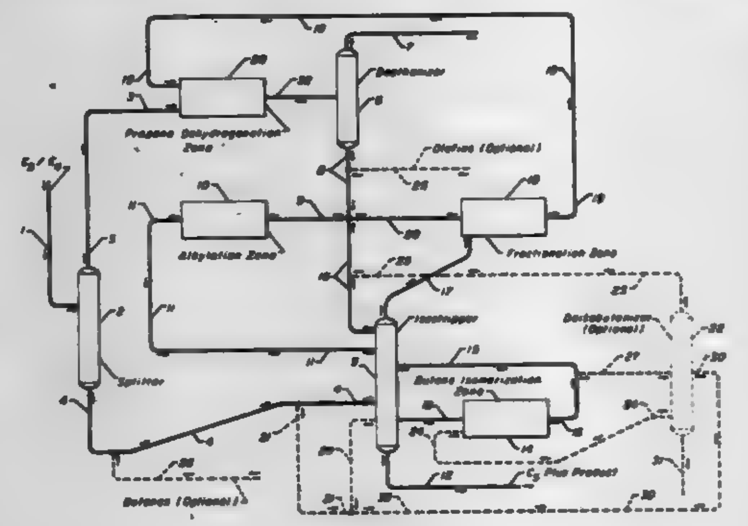
CONVERSION OF PROPANE AND BUTANE INTO GASOLINE

Bipin V. Vora, Elk Grove Village, Ill., assignor to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 112,484, Jan. 16, 1980, Pat. No. 4,275,255. This application Dec. 29, 1980, Ser. No. 220,546

Int. Cl.³ C07C 2/58

U.S. Cl. 585—315 15 Claims



1. A hydrocarbon conversion process which comprises the steps of:

(a) passing a first feed stream which is rich in propane and a recycle stream which also is rich in propane into a dehydrogenation zone operated at dehydrogenation conditions and producing a dehydrogenation zone effluent stream which comprises propane and propylene;

(b) passing a second feed stream, which is rich in butanes into a first fractionation zone;

(c) withdrawing a first process stream, which is rich in normal butane, from the first fractionation zone and passing said first process stream into a butane isomerization zone operated at isomerization conditions and producing an isomerization zone effluent stream which comprises isobutane and normal butane;

(d) passing the isomerization zone effluent stream into the first fractionation zone;

(e) transferring a net overhead stream which comprises propane and isobutane from the first fractionation zone to a second fractionation zone wherein the net overhead stream is separated into the previously referred to propane-rich recycle stream and a second process stream, which is rich in isobutane;

(f) passing the dehydrogenation zone effluent stream, the second process stream and a third process stream, which is rich in isobutane and is withdrawn from the first fractionation zone, into an alkylation zone operated at alkylation conditions and thereby producing an alkylation zone effluent stream which comprises normal butane, propane and C_7–C_8 aliphatic hydrocarbons;

(g) passing the alkylation zone effluent stream into the first fractionation zone; and,

(h) withdrawing a product stream comprising C_5-plus aliphatic hydrocarbons from the first fractionation zone.

4,324,938

PROCESS FOR UPGRADING C_4 OLEFINIC CUTS

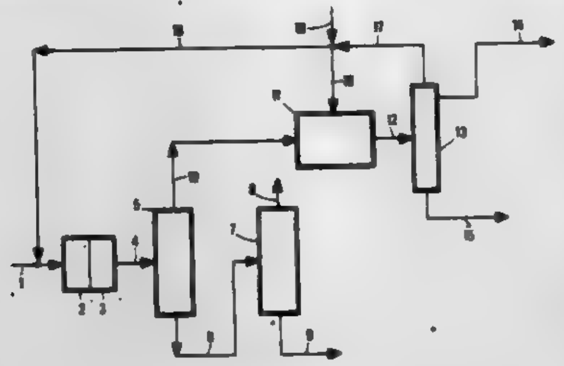
Jean Cosyns, Maule; Bernard Juguin; Jean-Francois Le Page, both of Rueil-Malmaison, and Jean Miquel, Paris, all of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Aug. 21, 1980, Ser. No. 180,203

Claims priority, application France, Aug. 21, 1979, 79 21208

Int. Cl.³ C07C 1/00

U.S. Cl. 585—332 13 Claims



1. A process for upgrading an olefinic C_4 hydrocarbon cracking or steam cracking cut, comprising the steps of:

(a) feeding the olefinic cut to a hydro-isomerization zone where the cut is treated in the presence of hydrogen and an isomerization catalyst containing at least one group VIII metal, deposited on a carrier, under such conditions that at least 80% of the 1-butene in said cut is isomerized to 2-butenes, the percentages of the other components of the cut being essentially unchanged, and such that, at the end of the isomerization reaction, the normal butenes contained in the hydro-isomerization effluent comprise at least 85% by weight of 2-butenes and less than 15% by weight of 1-butene;

(b) feeding the entire effluent from the hydro-isomerization zone, without any intermediary fractionation, to a catalytic polymerization zone containing a catalyst different from the hydro-isomerization catalyst, the polymerization catalyst being a fluorinated alumina, a boron alumina, or a silica-alumina, and converting at least 90% of the isobutene contained in the hydroisomerization effluent mainly to isobutene dimers and trimers, the aggregate conversion of the normal butenes contained in the cut being kept lower than or at most equal to 10% by weight, the butene and isobutane contained in the effluent of the hydro-isomerization zone being substantially unconverted;

(c) fractionating the effluent from the polymerization zone in a fractionation zone and recovering therefrom a first fraction comprising in major part isobutene dimers and trimers, and a second fraction comprising in major part isobutane, butane and butenes; and feeding said second fraction to an alkylation zone, fractionating the alkylation effluent in a fractionation zone, and recovering therefrom (i) an alkylate, (ii) LPG having a high content of saturated C_4 hydrocarbons, and (iii) a fraction comprising mainly isobutane.

4,324,939

PROCESS FOR PREPARING REACTION PRODUCTS OF CONJUGATED DIOLEFINS AND AROMATIC HYDROCARBONS

Karl Hahn, Marl, and Wolfgang Kampf, Haltern, both of Fed. Rep. of Germany, assignors to Chemische Werke Huels, AG, Marl, Fed. Rep. of Germany

Filed Jan. 9, 1981, Ser. No. 223,618

Claims priority, application Fed. Rep. of Germany, Jan. 10, 1980, 3000708

Int. Cl.³ C07C 3/00

U.S. Cl. 585—438 12 Claims

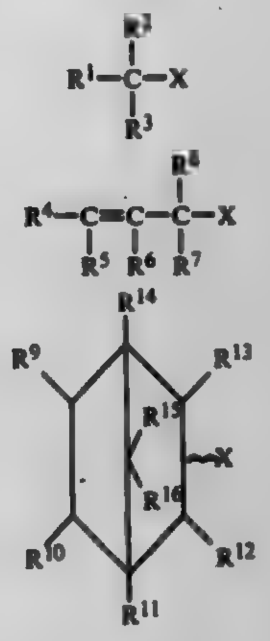
1. A process for preparing a reaction product of a conjugated diolefin and an aromatic hydrocarbon comprising contacting these reactants with a catalyst comprising

(1) a phosphorous modified cobalt compound comprising a cobalt compound which is soluble in the aromatic hydrocarbon, and a phosphorus compound of the formula

wherein R^{17}, R^{18} and R^{19} each, independently, is C_{1-14}-alkyl, C_{2-14}-alkenyl or C_{6-14}-aryl;

(2) a halogen-containing organoaluminum compound; and

(3) a modifier of the formula



I

II

III

wherein

X is chlorine, bromine, or iodine, and

R^1 through R^{16}, independently are

straight-chain or branched, saturated or unsaturated, aliphatic or cycloaliphatic hydrocarbon radicals of 1-20 carbon atoms, optionally substituted by 1-41 halogen atoms, or

hydrocarbon aryl radicals of 6-14 carbon atoms optionally substituted by (a) 1-5 straight-chain or branched, saturated or unsaturated, aliphatic or cycloaliphatic hydrocarbon radicals each of 1-10 carbon atoms, each optionally halogen-substituted, or (b) 1-9 halogen atoms

and wherein R^4 through R^{16} can also be hydrogen, and R^2 and R^3 can also be hydrogen only when R^1 is optionally substituted hydrocarbon aryl as defined above.

4,324,940

SHAPE SELECTIVE ACID CATALYZED REACTIONS OF OLEFINS OVER CRYSTALLINE ZEOLITES

Ralph M. Dessau, Edison, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Apr. 9, 1980, Ser. No. 138,638

Int. Cl.³ C07C 5/23

U.S. Cl. 585—466 17 Claims

1. In a process for effecting reaction involving olefins in a stream containing olefins of various sizes which comprises contacting said stream at a temperature of from about 450° F. to about 1000° F., a pressure of from about 0 psig to about 500 psig, a weight hourly space velocity of from about 0.1 hr^{-1} to about 200 hr^{-1} and a hydrogen/olefin mole ratio of from about 0.1 to about 100 with a catalyst comprising one or more members of a class of crystalline zeolites characterized by a silica/alumina mole ratio of at least 12 and a Constraint Index within the approximate range of greater than about 2 to about 12, the improvement which comprises (1) said stream contain-

ing smaller olefins of an effective critical dimension of 6.8 Angstroms or less and larger olefins of an effective critical dimension of greater than 6.8 Angstroms and (2) said catalyst being acidic, whereby said reaction is preferentially selective toward said smaller olefins.

2. In a process for effecting reaction involving olefins in a stream containing olefins of various shapes which comprises contacting said stream at a temperature of from about 450° F. to about 1000° F., a pressure of from about 0 psig to about 500 psig, a weight hourly space velocity of from about 0.1 hr^{-1} to about 200 hr^{-1} and a hydrogen/olefin mole ratio of from about 0.1 to about 100 with a catalyst comprising one or more members of a class of crystalline zeolites characterized by a silica/alumina mole ratio of at least 12 and a Constraint Index within the approximate range of greater than about 2 to about 12, the improvement which comprises (1) said stream containing both linear and branched olefins having effective critical dimensions of 6.8 Angstroms or less and (2) said catalyst being acidic, whereby said reaction is preferentially selective toward said linear olefins.

4,324,941

PROCESS FOR THE PRODUCTION OF CUMENE

Marcello Ghirga, Bresso; Luigi Valtorta, Desio, and Benedetto Calcagno, Milan, all of Italy, assignors to Euteco Impianti S.p.A., Milan, Italy

Filed Jan. 15, 1981, Ser. No. 225,220

Int. Cl.³ C07C *2/68*

U.S. Cl. 585—466 **10 Claims**

1. A process for producing cumene by alkylation of benzene with propylene in the presence of a solid phosphoric acid catalyst, which comprises:

continuously delivering liquid benzene and liquid propylene in a benzene/propylene molar ratio lower than 6:1, to a liquid reaction medium consisting essentially of benzene and cumene and containing the solid phosphoric acid catalyst, the temperature and composition of said medium being maintained substantially uniform in each point by means of an efficient agitation;

operating at a temperature of from 170° to 280° C., under a pressure such as to maintain propylene in the liquid phase, with a contact time higher than about 0.4 hours, expressed as the ratio between volume of catalyst and hourly volume of benzene and propylene fed in, and with a propylene conversion of at least about 60%; and

discharging continuously a stream of liquid reaction medium and recovering cumene present in said stream.

ELECTRICAL

4,324,942

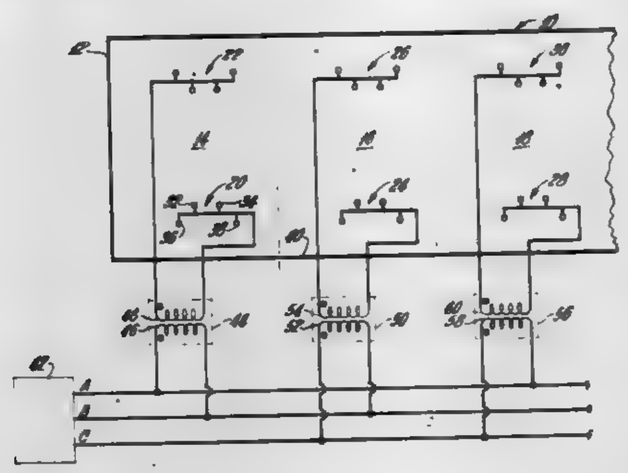
ELECTRIC GLASS MELTING FURNACE

Michael Williamson, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Dec. 22, 1980, Ser. No. 218,882

Int. Cl.³ C03B *5/02*

U.S. Cl. 373—39 **10 Claims**



8. An electric furnace for heating glass by the Joule effect, said furnace comprising: a chamber adapted for holding a body of molten glass; a plurality of electrodes positioned in said chamber such that said electrodes form three zones with two clusters of said electrodes in each of said zones, said clusters in said zones being located on opposite sides of said chamber, each of said clusters comprising a first set of two electrodes being located in a first row and positioned a first predetermined distance from the other cluster in the respective zone and a second predetermined distance from each other and a second set of two electrodes being located in a second row and positioned a third predetermined distance from said other cluster in said respective zone and a fourth predetermined distance from each other, said third predetermined distance being greater than said first predetermined distance and said fourth predetermined distance being greater than said second predetermined distance, said first and second sets being positioned such that said second set of electrodes carries at least 60% of the current carried by said first set of electrodes and said first and second rows being parallel to each other; and first, second and third sources of power, each of said power sources being connected to the clusters of a separate zone and being phase related and connected to produce a phase angle relationship between adjacent zones.

4,324,943

DC ARC FURNACE HEARTH CONSTRUCTION

Sven-Einar Stenkvist, and Bo Rappinger, both of Västerås, Sweden, assignors to ASEA Aktiebolag, Västerås, Sweden

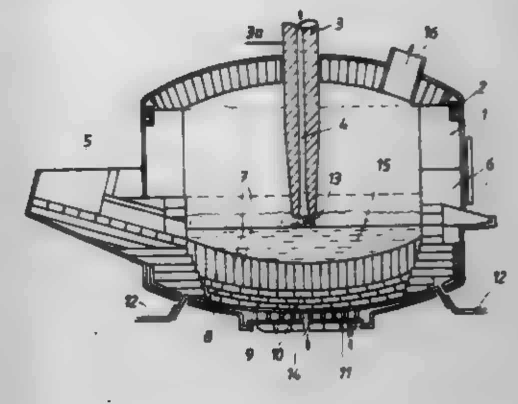
Filed Jun. 23, 1980, Ser. No. 162,392

Claims priority, application Switzerland, Jun. 26, 1979, 7905584

Int. Cl.³ H05B *7/00*

U.S. Cl. 373—72 **7 Claims**

1. A DC arc furnace comprising an electrically conductive hearth adapted to containing a melt, at least one arcing electrode positioned above the hearth and adapted to form an arc with the melt, and means for connecting said hearth and electrode with DC power; wherein the improvement comprises said conductive hearth being formed by bricks layed so as to build a wall adapted to contain the melt and to be directly contacted by the melt, an electrically conductive layer on which the bricks are layed and is adapted to be connected with a DC power circuit including the arcing electrode, and electric conductors installed in said wall so as to extend from said layer



upwardly to the wall's top surface so as to be contacted by the melt.

4,324,944

ARRANGEMENT FOR CONTROLLING THE ELECTRODES OF AN ARC FURNACE

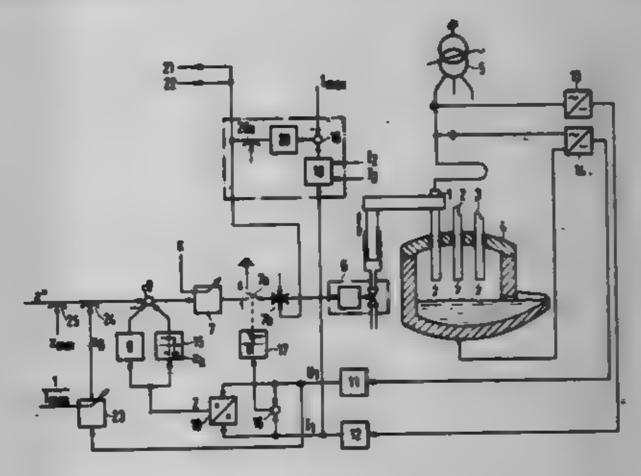
Georg Weihrich, Uttenreuth; Wilfried Grunert, and Hans-Jörg Nüssla, both of Erlangen, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Dec. 2, 1980, Ser. No. 212,216

Claims priority, application Fed. Rep. of Germany, Dec. 4, 1979, 2948787

Int. Cl.³ H05B *7/148*

U.S. Cl. 373—105 **6 Claims**



1. In an arrangement for controlling arc furnace electrode means comprising at least one melting electrode fed from an output winding of a transformer, and including an impedance controller for each electrode, associated positioning means to adjust the height of each electrode, measuring means to furnish a first measured quantity proportional to the electrode voltage between the output winding of the transformer and the furnace jacket and a second measured quantity proportional to the electrode current, the invention comprising:

a divider connected to the measuring means to produce an actual impedance value proportional to the ratio of the first measured quantity to the second measured quality;

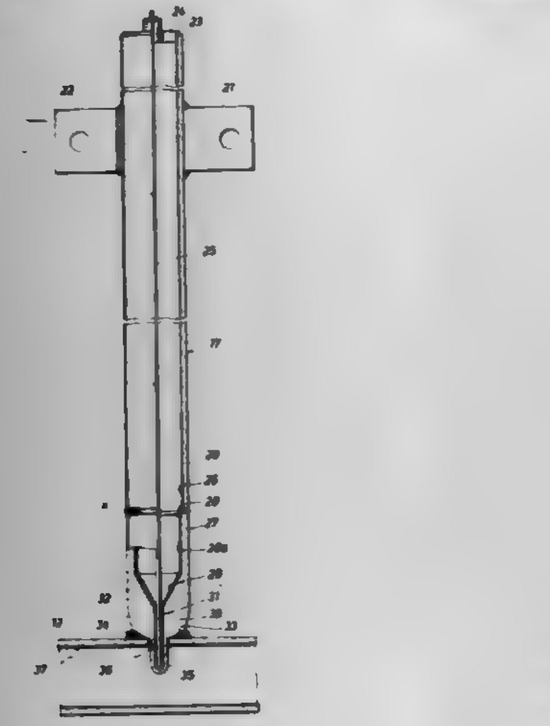
means to form a control deviation as the difference between a preset desired impedance value and the actual impedance value;

a lowpass filter connected to the output of the divider;

a first switching element connected in parallel to the filter, the output of the filter being connected to drive the impedance controller to the full in the event of a short circuit; and

a second switching element connected to the output of the impedance controller to cut off signals therefrom at the instant the sum of the first and second measured quantities becomes zero.

4,324,945
THERMOWELL APPARATUS FOR PETROCHEMICAL APPLICATIONS
Robert B. Sivyer, P.O. Box 40471, 1314 Beutel, Houston, Tex. 77035
Filed Apr. 18, 1980, Ser. No. 141,397
Int. Cl.³ G01K *1/08, 1/14*
U.S. Cl. 136—242 4 Claims



1. A thermowell apparatus for use in sensing temperature and supporting piping in a cracker furnace including,

a one piece tubular assembly comprised of an upper tubular support member and a lower tubular sensor member with hollow interiors, said members being constructed of like materials and having a welded end-to-end interconnection, said welded interconnection being spaced from a tip of said sensor member a sufficient distance to dispose said welded connection and said tubular support member on the exterior of the outer wall of a cracker furnace when said tubular sensor member is attached to a furnace pipe,

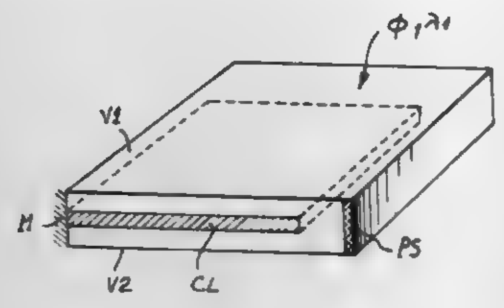
said tubular support member having a wall thickness sufficient to provide a supporting function for a furnace pipe under temperature conditions which exist exterior to the outer wall of a cracker furnace,

said tubular sensor member having a wall thickness sufficient to provide a weight supporting function for a furnace pipe within a cracker furnace at temperature conditions up to 2000 degrees F.

the tip of said tubular sensor member having an elongated, hollow tip portion for insertion into an opening in the upper surface of a furnace pipe for temperature measuring purposes and having a radially enlarged solid metal portion adjacent said tip portion, said metal portion having a 30 degree welding bevel for permitting a welding attachment of said enlarged metal portion to a furnace pipe, said hollow tip portion having an opening sized to receive a thermocouple member.

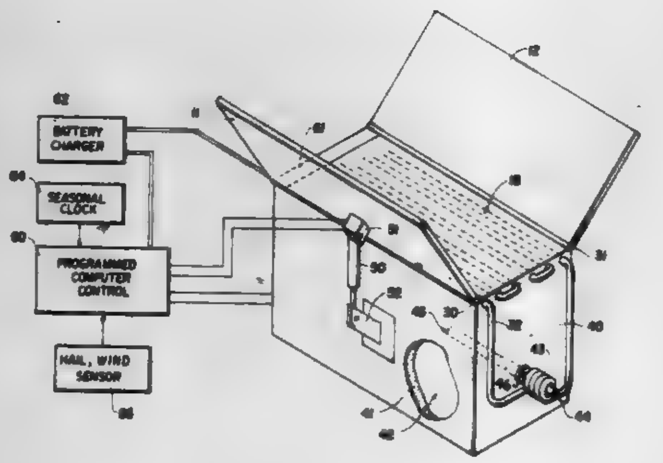
4,324,946
SOLAR RADIATION CONCENTRATOR
Philippe Gravisse, 18-20, rue de Presles, 75015 Paris, France
PCT No. PCT/FR79/00023, § 371 Date Nov. 9, 1979, § 102(e) Date Nov. 9, 1979, PCT Pub. No. WO79/00731, PCT Pub. Date Oct. 4, 1979
PCT Filed Mar. 9, 1978, Ser. No. 177,748
Claims priority, application France, Mar. 9, 1978, 78 06850
Int. Cl.³ H01L *31/04*
U.S. Cl. 136—247 10 Claims

1. Combined solar radiation concentrator and photovoltaic converter, where incident radiation (intensity $\phi 1$, wavelength $\lambda 1$) traverses a solid matrix before arriving under the form (intensity $\phi 2$, wavelength $\lambda 2$) on at least one planar solar photovoltaic cell, said matrix being disposed at the interior of an enclosure at least a part of which, where said radiation penetrates before traversing the said matrix, is formed of a substance having a first index of refraction (n_1) on the exterior side of the enclosure, and a second index of refraction (n_2) on the interior side of the enclosure closest said matrix, said second index being substantially higher than said first index, the remainder of the said enclosure being opaque to radiation



arriving said at least one photovoltaic cell also located in or forming part of said enclosure, characterized in that a plurality of substances functioning in cascade are distributed in an homogeneous manner in said matrix, the said substances absorbing and reemitting radiation the wavelength of which increases after re-emission by each one of the said substances, and the wavelength of the final radiation $\lambda 2$ corresponding to the optimum range of spectral sensitivity of the solar photovoltaic cells.

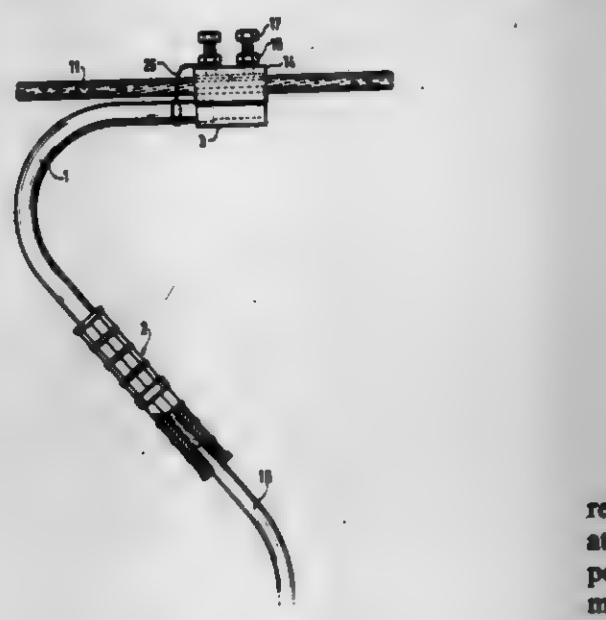
4,324,947
SOLAR ENERGY COLLECTOR SYSTEM
Robert F. Dumbeck, P.O. Box 548, Elgin, Tex. 78621
Continuation-in-part of Ser. No. 39,551, May 16, 1979, Pat. No. 4,275,711. This application Oct. 22, 1980, Ser. No. 199,591
Int. Cl.³ F24J *3/02;* H01L *31/00*
U.S. Cl. 136—248 13 Claims



1. A solar energy collection system comprising in combination two substantially flat pivotably movable energy directing plates with reflector surfaces adapted to change position for maximizing solar ray energy collection therewith, a reservoir tank for heat storage liquid, means mounting said plates on said reservoir; means for heating the liquid in the reservoir with solar energy directed by said plates; and further including tubing means heating a circulating oil medium with solar energy reflected from said plate, and an interchange unit for heating water in said reservoir tank from the circulating oil comprising a heat exchange conductor element, a fitting for extending the element from the exterior into the tank, and a heat exchange fitting coupled to a portion of the element exterior to the tank comprising a wrap of tubings containing the circulating oil.

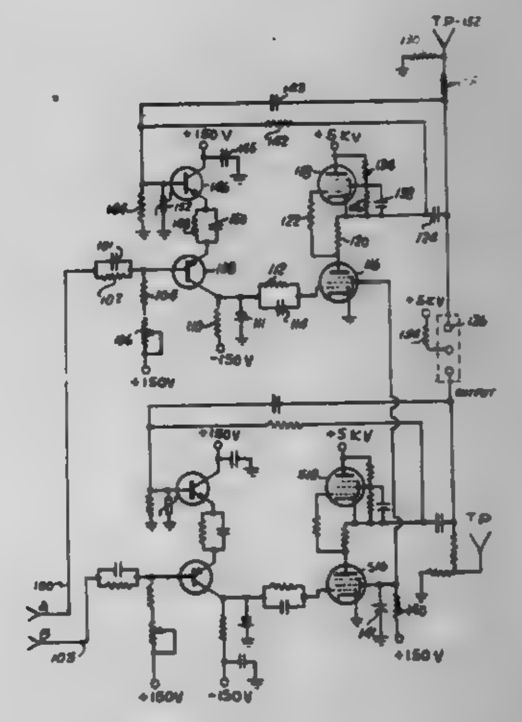
4,324,948
Patent Not Issued For This Number

4,324,949
CONNECTOR FOR CONNECTING ELECTRIC CONDUCTORS TOGETHER
Rene Grandjean, Blagny, France, assignor to Mars-Actel, Paris, France
Filed Apr. 23, 1980, Ser. No. 142,955
Claims priority, application France, Apr. 26, 1979, 79 10658
Int. Cl.³ H01R *4/20*
U.S. Cl. 174—71 R 6 Claims



5. A connector assembly for connecting an insulated drop wire conductor to a bare overhead cable, said connector assembly comprising a sealed connector for connecting insulated electric conductors together, said connector also providing dielectric continuity of the conductor insulation in addition to electric continuity of the conductors, said connector comprising: a connector sleeve having a conductive portion made of malleable material bearing a cavity including a small diameter part remote from the end of the sleeve for accommodating a bared portion of a conductor to be connected and a larger diameter part axially outwardly thereof for accommodating an insulated portion of said conductor, and an insulating covering which completely surrounds the conductive portion and which is folded back inside the large diameter part of the cavity which accommodates the insulated portion of each conductor to be connected, and said insulated portion of said conductor and said folded back portion of said covering being commonly crimped in the connector and a conductive end fitting sealably crimped to the other end of said drop wire link conductor and encompassing in part the conductor insulation, said conductive end fitting being inserted in a U bar placed around the overhead cable so as to form a direct contact between the conductive end fitting and the overhead cable, said U bar comprising at least two independent shoes pressing the cable on the end fitting so as to insure direct contact between the overhead cable and the end fitting.

4,324,950
AMPLIFIER FOR DRIVING ELECTROSTATIC LOUDSPEAKERS
James C. Strickland, 3101 SW. 1st Ter., Ft. Lauderdale, Fla. 33315
Continuation-in-part of Ser. No. 803,931, Jun. 6, 1977. This application Jun. 25, 1979, Ser. No. 51,735
Int. Cl.³ H03F *5/00, 3/20;* H03G *1/04*
U.S. Cl. 179—1 A 9 Claims



1. An amplifier for driving a capacitive load and adapted to receive a signal in the audio frequency range from an associated preamplifier source, the amplifier comprising: at least one power output tube arrangement including a driving tube with mean connected to drive a driven tube; and an output section connected to cooperate with said power output tube arrangement, said output section including:

(a) a feedback network;

(b) a difference amplifier, said difference amplifier including a pair of complementary drive transistors, the first of said pair of drive transistors having a collector output connected to an input of said driving tube of said power output tube arrangement, the second of said pair of drive transistors having a base input connected to an output of said driven tube of said power output tube arrangement through said feedback network, and,

wherein said feedback network includes a first resistor connected in series between said base of second transistor and said output tube arrangement, a second resistor connected between said base of said second transistor and ground to form a bleeder network with said first resistor, a third resistor connected in parallel with a capacitor disposed between the emitters of said first and second transistors to adjust gain and phase for stability, and a guard device connected to the base of said second transistor to protect said second transistor from high voltage spikes, and a compensation capacitor connected between the output of said output tube arrangement and the base of second transistor to achieve flat frequency response at said audio frequency range in said feedback network, and

the phase of said first transistor is connected to receive said audio range signals, and

whereby said power output tube arrangement in cooperation with said transistorized difference amplifier provide low distortion, positive self-centering and high order stability power amplification of said audio range signals.

4,324,951

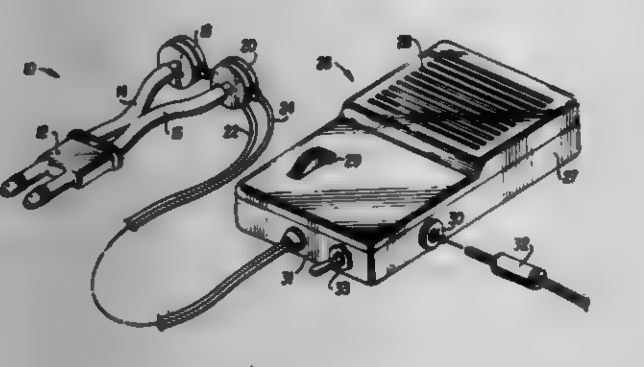
ACOUSTIC COUPLING SYSTEM

Bruce J. Brown, 4801 Kenmore Ave., #1022, Alexandria, Va. 22304

Filed Apr. 28, 1980, Ser. No. 144,552

Int. Cl.³ H04H *1/02*

U.S. Cl. 179—1 B 10 Claims



1. In an audio entertainment system for a commercial vehicle, said system including acoustic piping means for transmitting a first acoustic signal from an audio source to at least one passenger position, said passenger position having an acoustic signal outlet means for connection normally with acoustic headset means for insertion in the ears of a passenger for listening to said first acoustic signal, the improvement comprising audio system means for connection with said acoustic signal outlet means for generating a second acoustic signal audible to the passenger at said passenger position so that the use of said acoustic headset means is unnecessary, said audio system means comprising acoustic coupling means for receiving said first acoustic signal, transducer means connected to said acoustic coupling means for converting said first acoustic signal into an electrical signal, amplifier means for amplifying said electrical signal, and means connected to said amplifier means for receiving said amplified electrical signal and for converting said amplifier electrical signal into said second audible acoustic signal.

4,324,952

DIRECT FUNCTION RECEIVERS AND TRANSMITTERS FOR MULTICHANNEL COMMUNICATIONS SYSTEM

Charles F. Smiley, Quincy, Ill., assignor to Harris Corporation, Cleveland, Ohio

Continuation of Ser. No. 935,142, Aug. 21, 1978, abandoned. This application Jun. 26, 1980, Ser. No. 163,396

Int. Cl.³ H04H *5/00*

U.S. Cl. 179—1 GS 22 Claims

1. Apparatus for asynchronously demodulating a modulated signal having at least two common frequency, differently phased components, each of which components is modulated by a corresponding modulating signal, comprising:

envelope detector means responsive to said modulated signal to provide an envelope signal corresponding generally to the envelope of said modulated signal;

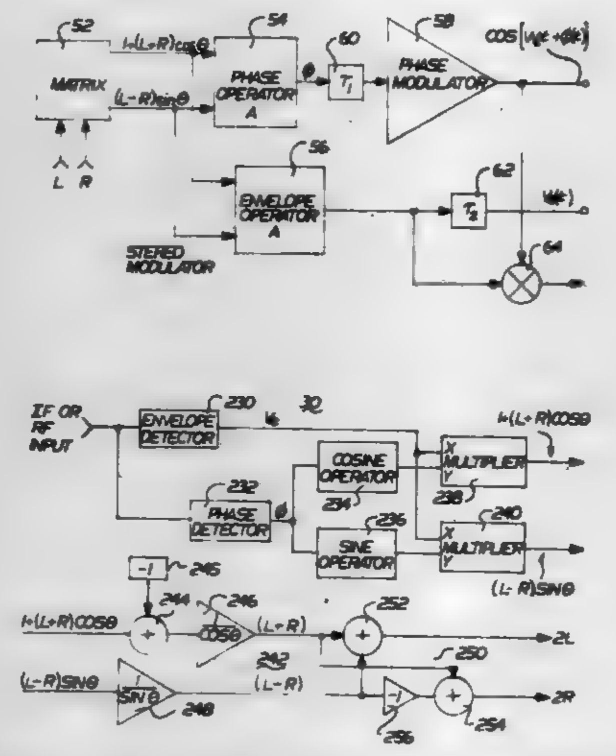
phase detector means responsive to said modulated signal to provide a phase signal corresponding generally to the phase of said modulated signal;

sinusoidal operator means responsive to said phase signal for providing an output signal which is related to said phase signal in accordance with a selected sinusoidal relationship; and

combiner means for combining said output signal and said envelope signal so as to thereby provide a demodulated output signal.

7. Apparatus for generating a composite modulated signal including a carrier component and two common frequency, differently phased components phased at equal and opposite angles on either side of said carrier component, each of said components being amplitude modulated by a corresponding source signal, comprising:

means for providing said first and second source signals;



means responsive to said first and second signals for deriving an envelope signal having an amplitude which varies as the envelope of said composite modulated signal is to vary, and for deriving a phase signal having an amplitude which varies as the phase of said composite modulated signal is to vary, with said envelope and phase signals being derived directly from said first and second source signals without intermediately modulating an RF signal therewith;

means responsive to said phase signal for providing a carrier signal whose phase varies in accordance with the amplitude of said phase signal; and

modulating means for modulating the amplitude of said carrier signal in accordance with the amplitude of said envelope signal so as to thereby provide said composite modulated signal.

4,324,953

FOUR-PARTY AUTOMATIC NUMBER IDENTIFICATION CIRCUIT ARRANGEMENTS

Frank L. Simokat, Babylon, N.Y., assignor to TII Industries Inc., Copiague, N.Y.

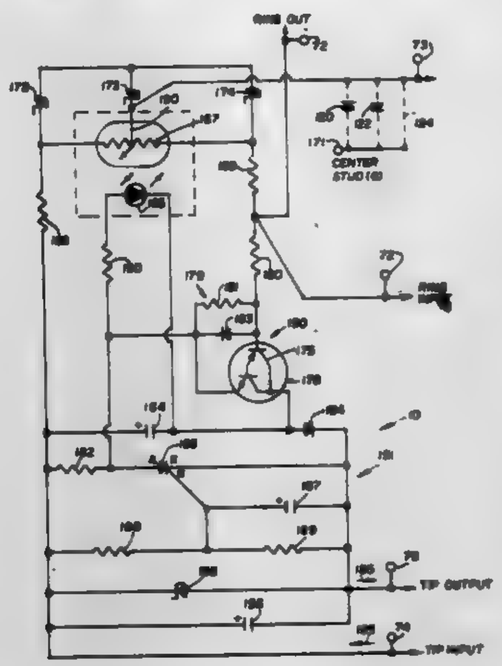
Filed May 19, 1980, Ser. No. 151,407

Int. Cl.³ H04M *13/00*

U.S. Cl. 179—17 A 15 Claims

1. A station identification circuit arrangement for central office identification of a preselected one of four parties on a four-party line having tip and ring conductors when a call is initiated from the preselected party's telephone, comprising:

(a) first means for providing a ground mark to at least said tip conductor, said ground mark being normally disconnected from said conductor when said preselected party's telephone is on-hook, said ground mark being connected in response to a DC voltage applied by said central office to sense the presence of said mark, said first means including a light dependent resistor connected between at least said tip conductor and a reference ground and a cooperating light emitting means; and



(b) second means, responsive to a momentary interruption of loop current that occurs after the flow of loop current is established by lifting the preselected party's telephone off-hook and the application of said DC voltage on said line, for causing said first means to apply said ground mark to at least the tip conductor of said line by activating said light emitting means.

4,324,954

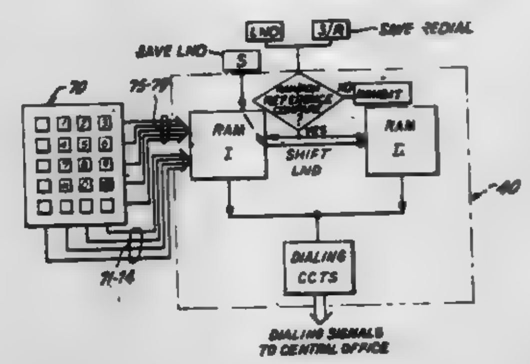
DIALING CIRCUITS AND METHODS FOR ELECTRONIC TELEPHONE SETS

Raymond G. Taylor, Shreveport, La., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed May 30, 1980, Ser. No. 154,677

Int. Cl.³ H04M *1/274*

U.S. Cl. 179—90 B 7 Claims



1. A dialing circuit for an electronic telephone set which comprises:

a RAM having two memory sections (I and II), each capable of storing data signals representing a telephone number;

dialing means for generating data signals representing called numbers and for storing each number as it is dialed in section I of the RAM;

means for shifting a first LND from section I of the RAM to section II, so that the dialing means stores a second LND in RAM section I; the shifting means being automatically operable in response to dialing of each successive number to shift the previous LND to RAM section II each time a new number is dialed, so that the user at his or her option can redial either the last number dialed or the second last number by operation of a corresponding redial key associated with the dialing means and being one of the keys hereinafter recited in this claim;

a first LND redial key;

means responsive to operation of the first redial key for automatically redialing the first LND stored in RAM section II;

a second LND redial key; and

means responsive to operation of the second redial key for automatically redialing the second LND stored in RAM section I.

4,324,955

PUSHBUTTON SWITCH ARRANGEMENT

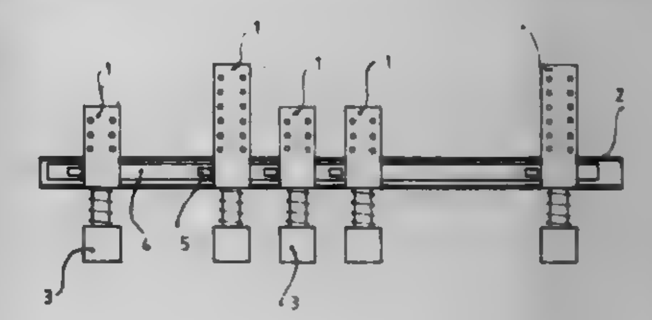
Klaus Hinze, Berlin, and Klaus D. Wiskirchen, Eppstein, both of Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Filed Jul. 3, 1980, Ser. No. 165,614

Claims priority, application Fed. Rep. of Germany, Jul. 14, 1979, 2928559

Int. Cl.³ H01H *9/20*

U.S. Cl. 200—5 E 3 Claims

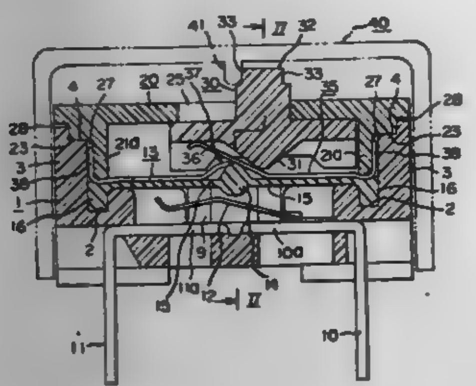


1. A pushbutton switch assembly in which a plurality of switches are mounted parallel to one another on a U-shaped mounting bar the legs of which extend perpendicular to the axes of the switches and wherein a locking device is mounted for longitudinal movement in said U-shaped mounting bar and is provided with cam surfaces for engaging movable portions of said switches, said assembly comprising:

a longitudinally extending and generally rectangular continuous metallic locking bar slidably mounted in said U-shaped bar for translation therein and said locking bar having a plurality of longitudinally spaced holes therein corresponding to the longitudinal spacing between respective ones of said switches; and,

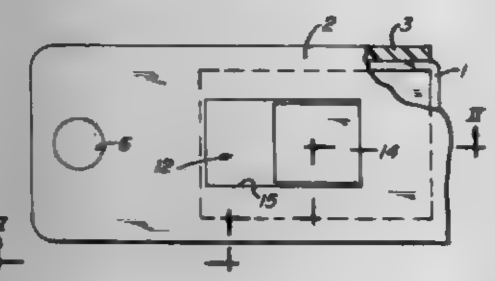
a plurality of plastic locking members respectively mounted in selected ones of said holes of said locking bar, each of said locking members comprising a base portion engaging the upper surface of said locking bar and having a depending attachment portion extending through at least one of said holes in said locking bar to locate the locking member at a fixed position relative to said locking bar, and each of said locking members including a cam portion extending upwardly from said base portion for engaging the movable portion of one of said switches, and wherein said base portion of each of said locking members is U-shaped and wherein the legs of said locking members extend downwardly for engaging edge portions of said locking bar.

4,324,956
FLUID-PROOF SLIDE SWITCH
Takahiro Sakakino, Nagaokakyo, and Hiroyoshi Yamada, Tottori, both of Japan, assignors to Omron Tateisi Electronics Co., Kyoto, Japan
Filed May 15, 1980, Ser. No. 149,920
Claims priority, application Japan, May 24, 1979, 54-64758
Int. Cl.^{3} H01H *15/00*
U.S. Cl. 200—16 R 10 Claims



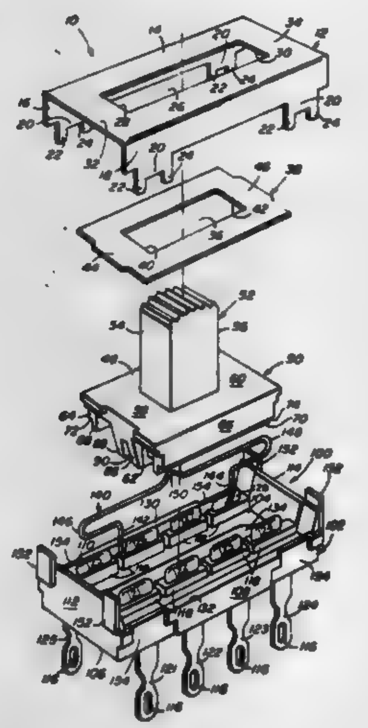
1. A fluid-proof slide switch comprising:
a box-like housing of insulating material;
a cover of insulating material attached to said housing and having a plurality of apertures;
a plurality of sliders positioned beneath of said cover, each slider having a knob projecting upwardly through said aperture and being horizontally movable;
a plurality of intermediate actuating leaf spring members positioned correspondingly to said sliders and fixed with respect to said housing and said cover;
a plurality of pairs of metal terminals aligned in said housing correspondingly with said actuating leaf spring members, one terminal in each of said pairs of said terminals having a movable member; and
a deformable sealing member of insulating material disposed between said actuating members and said terminals which, taken together with said housing, forms a fluid-proof chamber containing said terminals so that an electrical connection or disconnection of each of said pairs of terminals is accomplished individually upon the application of a downward force from the corresponding intermediate actuating leaf spring members to said sealing member in response to the horizontal movement of said corresponding sliders.

4,324,957
SLIDE SWITCH
Leo J. M. Josemans, Farmville, Va., assignor to Stackpole Components Company, Raleigh, N.C.
Filed Aug. 18, 1980, Ser. No. 178,771
Int. Cl.^{3} H01H *15/00*
U.S. Cl. 200—16 C 6 Claims



1. An electric switch comprising a housing having a top provided with a slot, an actuating member extending through said slot and provided with a bore opening downwardly inside the housing, a plunger slidably mounted in said bore and projecting from its lower end, a movable contact in the housing beneath said plunger, stationary contacts in the housing below said movable contact and engageable thereby, and a coil spring in said bore pressing the plunger down against the movable contact, the plunger and movable contact being interconnected for movement of the contact by said actuating member, the actuating member and plunger being provided with interengaging means for limiting downward movement of the plunger in said bore in the absence of said movable contact, whereby the plunger cannot escape from the actuating member.

4,324,958
TACTILE SWITCH DEVICE
Robert L. Valleau, Des Plaines, Ill., assignor to Switchcraft, Inc., Chicago, Ill.
Filed Aug. 18, 1980, Ser. No. 179,189
Int. Cl.^{3} H01H *15/02*
U.S. Cl. 200—16 F 11 Claims

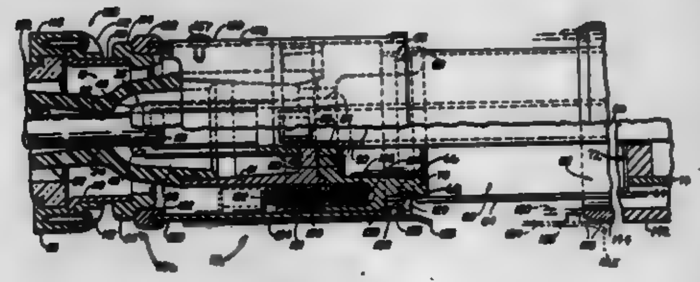


1. An electrical switch device comprising:
a base;
electrical conductor means insulatingly secured to said base and extended therefrom;
actuator means supported for relative movement with respect to said base and having electrical contact means disposed for electrical engagement with said electrical conductor means, the actuator means including an elongated channel disposed in the direction of said relative movement and having a detent portion; and
spring means coupled to said base and having a compressible portion extended into said channel for releaseably engaging said detent portion and providing tactile indication of the position of the electrical conductor relative to the position of the electrical contact means, the compressible portion including a pair of opposing reentrant loops disposed between said base and said actuator means for enhancing the compressive resiliency of said spring means.

4,324,959
PRE-INSERTION RESISTOR MECHANISM FOR A CIRCUIT INTERRUPTING DEVICE
Walter J. Hall, Evanston, and John C. Opfer, Deerfield, both of Ill., assignors to S&C Electric Company, Chicago, Ill.
Filed Oct. 16, 1978, Ser. No. 951,685
Int. Cl.^{3} H01H *33/16*
U.S. Cl. 200—144 AP 13 Claims

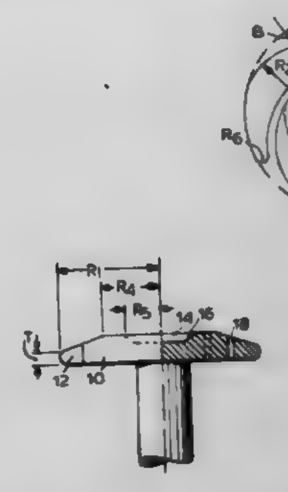
1. An improved circuit interrupting device of the type having a pair of normally engaged contacts, at least one of which is relatively movable along a first path, the contacts being

selectively disengageable and engageable by such movement to open and close a gap therebetween, each contact being continuously, electrically connected to respective, opposed, circuit-connectable terminals on the device; wherein the improvement comprises:
a pre-insertion resistor mechanism, which includes:
a resistor continuously, electrically connected at one end to one of the terminals, the other end of the resistor carrying a stationary electrode;
a movable electrode continuously, electrically connected to the other terminal and movable along a second path parallel to the first path into and out of engagement with the stationary electrode;
first means, responsive to disengagement of the contacts due to movement of the one contact in a first direction along the first path, for simultaneously moving the movable electrode in the first direction along the second path out of engagement with the stationary electrode so that the resistor is not in electrical parallel with the gap during such movements in the first direction; and
second means, responsive to a predetermined amount of movement of the one contact in the first direction, for moving the movable electrode along the second path in a second direction toward the stationary electrode, so that the electrodes engage prior to engagement of the contacts due to the one contact moving toward the other contact in the second direction.



7. A pre-insertion resistor mechanism for a circuit interrupting device, the device having a pair of elongated, normally engaged contacts, one of which is stationary, the other of which is axially relatively movable for separation of the contacts to open a gap therebetween, the contacts being continuously, electrically connected to respective, opposed circuit-connectable terminals on the device; and an elongated, insulative housing containing an arc-extinguishing gas, the housing coaxially surrounding the contacts and coaxially mounting the terminals; the mechanism comprising:
an elongated resistor within the housing positioned radially away from and parallel to the axis thereof, the resistor having one end continuously, electrically connected to the one contact;
a stationary electrode on the other end of, and on the axis of, the resistor;
a conductive sleeve axially movable along the axis of the housing and coaxially surrounding the other contact while being continuously, electrically connected thereto;
an electrode movable along the axis of the housing and carried by the sleeve for selective engagement with, and disengagement from, the stationary electrode upon movement of the sleeve; and
means, partially on the sleeve and positioned radially away from the axis of the housing, for
engaging the electrodes when the contacts are engaged,
disengaging the electrodes no later than the separation of the contacts, and
re-engaging the electrodes prior to re-engagement of the contacts.

4,324,960
WINDMILL-SHAPED ELECTRODE FOR VACUUM CIRCUIT INTERRUPTER
Shin-Ichi Aoki, and Yasushi Takeya, both of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 20, 1979, Ser. No. 68,102
Claims priority, application Japan, Aug. 25, 1978, 53-104013
Int. Cl.^{3} H01H *33/66*
U.S. Cl. 200—144 B 6 Claims

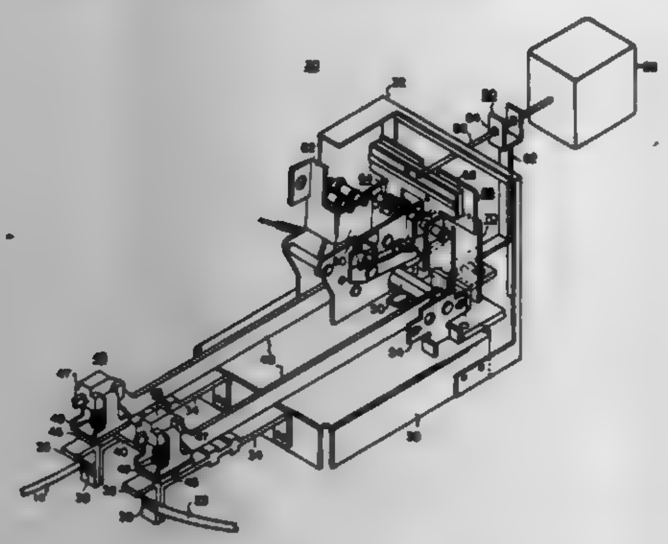


1. A windmill-shaped electrode for use with a vacuum circuit interrupter, comprising:
a circular central flat portion for receiving the arc of the interrupted current and having a central axis of rotation, and a tapered portion around the central flat portion and integral therewith for interrupting the current, the flat and tapered portions being of a common material,
said electrode having a plurality of circular arc-shaped slots extending through the electrode in the direction parallel to the axis of rotation and curving inwardly from the periphery of the tapered portion and terminating in the central flat portion for magnetically driving an electric arc, the flat portion having a radius no smaller than 0.4 times and no larger than 0.7 times the maximum radius of the windmill-shaped electrode, each of the circular arc-shaped slots being in the shape of a simple circular arc having a single radius of curvature no smaller than the radius of the flat portion.

4,324,961
DISTRIBUTION TRANSFORMER HAVING A PRIMARY DISCONNECT SWITCH
Donald J. Ristuccia, and John F. Cotton, both of Athens, Ga., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.
Continuation of Ser. No. 687,479, May 18, 1976, abandoned.
This application Feb. 16, 1979, Ser. No. 12,918
Int. Cl.^{3} H01H *33/68, 75/00;* H02H *7/04*
U.S. Cl. 200—150 R 10 Claims

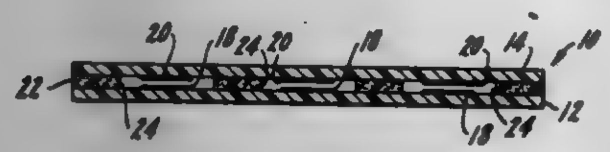
4. An oil-filled distribution transformer, comprising:
a housing;
primary and secondary coils supported within said housing;
a high voltage disconnect switch disposed within said housing and connected to said primary coil, said disconnect switch being operable between a closed position permitting current flow through said primary coil and an open position preventing current flow through said primary coil, said switch comprising a metal base, two pairs of stationary contacts, one contact of each pair being interconnected, insulating means extending outward from said base in a plane parallel to said base and supporting said stationary contacts, two bridging contacts each movable between a closed position connecting the contacts of each stationary contact pair and an open position spaced away from said stationary contact pairs, two metal contact arms, each arm supporting one of said bridging contacts,

means for insulating said bridging contacts from said contact arms, and an operating mechanism operable to



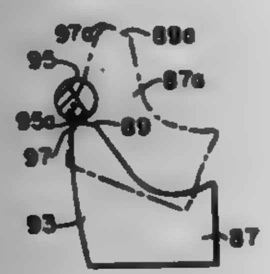
move said contact arms and operate said bridging contact between open and closed positions.

4,324,962
MEMBRANE SWITCH HAVING A PUFF INK SPACER
Edwina K. Dulea, Fox Lake, Ill., assignor to Oak Industries Inc., Rancho Bernardo, Calif.
Filed Oct. 14, 1980, Ser. No. 196,446
Int. Cl.³ H01H *3/12*
U.S. Cl. 200—159 B 15 Claims



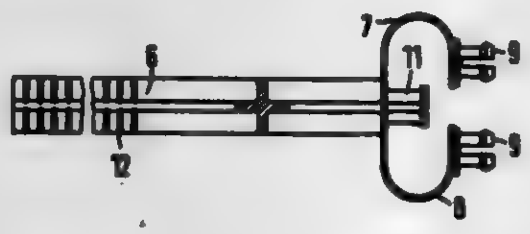
1. In a membrane switch of the type having a substrate and a flexible membrane, each having a set of conductors formed thereon, the conductors being in facing relation, and a spacer disposed between the sets of conductors to normally hold them in spaced, non-contacting relation, the spacer having openings which allow contact between the conductor sets in response to actuating pressure exerted on the switch, the improvement comprising a spacer formed of puff ink.

4,324,963
BEVELED LATCH FOR CIRCUIT BREAKER CROSS-REFERENCE TO RELATED APPLICATIONS
Alfred E. Maier, and Louis N. Ricci, both of Chippewa Township, Allegheny County, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed May 21, 1980, Ser. No. 151,860
Int. Cl.³ H01H *9/20*
U.S. Cl. 200—318 9 Claims



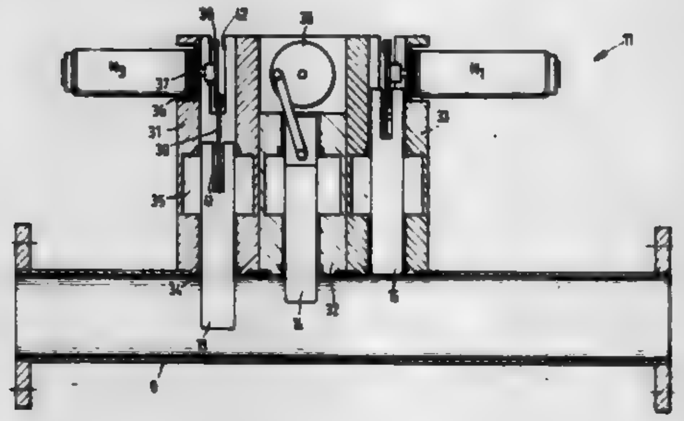
1. A circuit breaker, comprising:
(a) a support base;
(b) movable electrical contact means movably disposed upon said support base for controlling the electrical current conducting status of an electrical conductor;
(c) chargeable force supplying means disposed upon said support base for engaging in a discharging operation from a charged state to thus supply the force necessary to move said movable contact means;
(d) operating mechanism means disposed upon said support base and mechanically interconnected with said force supplying means and said electrical contact means for transferring said force from said discharging operation to said movable contact means to move said movable contact means, said operating mechanism means including a plurality of latch members which are also movable under the influence of said discharging operation and which when captured in a latched position maintain said force supplying means in the charged state and which when generally simultaneously released within time limits to an unlatched position allow said discharging operation to begin; and
(e) movable latching rod means including a rotatable latching rod having a surface notch movably disposed upon said support base for latching said latch members when in a first latching rod position and for releasing said latch members when moved to a second latching rod position, the initiation of said later movement being provided from a stimulus which is independent of said latch members, latch members having an urging surface thereon which maintains a position of sliding mechanical contact with the surface of said rod after said independent initiation of said later movement and consequent release of said one latch member has begun, said position of sliding mechanical contact between said urging surface and said surface notch operating to complete the movement of said rod to said second latching rod position under the influence of said discharging force supply means, said latter movement thus completing the generally simultaneous release of other latch members within said time limits.

4,324,964
DEVICE FOR EXTENDING PLUNGER DRIVES
Georg Edenharter, Vilshofen, and Friedrich Ebnet, Köfering, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany
Filed Mar. 28, 1980, Ser. No. 135,123
Claims priority, application Fed. Rep. of Germany, Apr. 11, 1979, 2914783
Int. Cl.³ H01H *3/12*
U.S. Cl. 200—331 4 Claims



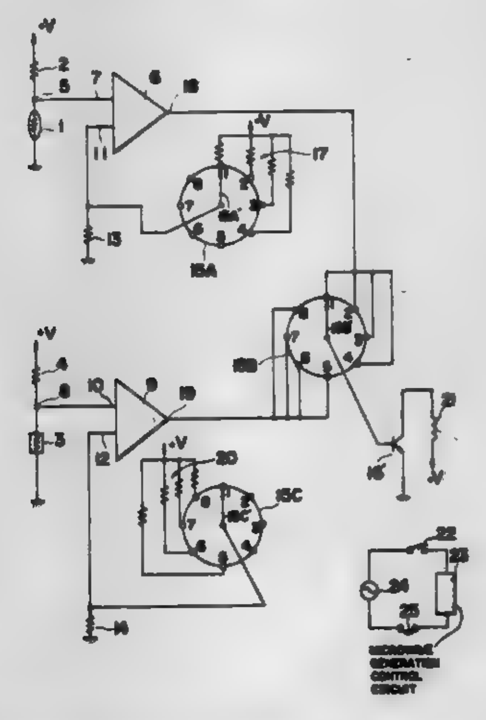
1. In a device for extending the point of actuation of an electric switch gear by means of an extension element which can be inserted between a point of actuation and a pushbutton of the switchgear, the improvement in which:
the switchgear is provided with at least two fastening openings, and
the extension element terminates at one end in elastically resilient arms forming a C with the open side of the C extending over the pushbutton of the switchgear, and further comprising:
an elastically resilient detent projection carried on each arm, each projection adapted to snap into one of the fastening openings.

4,324,965
MICROWAVE HEATING METHOD AND APPARATUS INCLUDING ADJUSTABLE TUNING MEMBERS
Gerd Naumann, and Bernd Treine, both of Hannover, Fed. Rep. of Germany, assignors to Hermann Berstorff Maschinenbau GmbH, An der Breiten Wiese, Fed. Rep. of Germany
Continuation-in-part of Ser. No. 60,365, Jul. 25, 1979, abandoned. This application Nov. 27, 1979, Ser. No. 97,656
Int. Cl.³ H05B *6/70*
U.S. Cl. 219—10.55 F 4 Claims



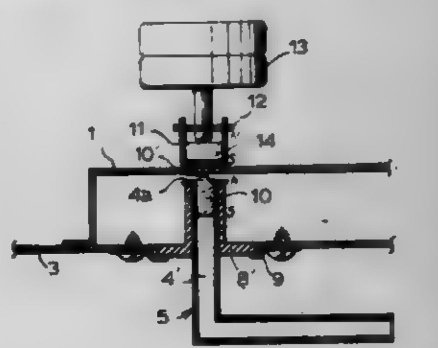
1. A method of matching a microwave heater, for the purpose of reducing microwave energy reflected by the load wherein microwave energy is supplied to a treatment chamber from a microwave energy source by way of a hollow waveguide of substantially rectangular cross-section and matching is effected by means of adjustable tuning members which are disposed in said hollow waveguide, the method comprising measuring the microwave energy reflected by the load and, when a given level of reflected microwave energy is exceeded, adjusting two tuning members with one of the tuning members having a higher adjustment speed than the other.

4,324,966
MENU RESPONSIBLE AUTOMATIC SENSOR SELECTION IN A COOKING UTENSIL
Takeshi Tanabe, Higashiosaka, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Jan. 4, 1980, Ser. No. 109,501
Claims priority, application Japan, Jan. 17, 1979, 54-4642
Int. Cl.³ H05B *9/06*
U.S. Cl. 219—10.55 B 10 Claims



1. A cooking utensil comprising:
cooking heat source means;
at least two sensor means for detecting a cooking condition performed by said cooking utensil and developing output signals in response thereto;
menu selection means for selecting a desired cooking menu to be conducted by said cooking utensil, said menu selection means selecting one of said sensor means in accordance with the selected desired cooking menu and establishing a reference level preset; and
control circuit means responsive to said reference level preset and to the output signal from the selected sensor means for controlling the operation of said cooking heat source means in response thereto, said menu selection means further comprising:
correlation means for correlating the selection of one of said sensor means with the selection of said desired cooking menu.

4,324,967
MICROWAVE HEATING APPARATUS HAVING MAGNETIC COUPLING FOR DRIVING THE ANTENNA
Nobuo Ikeda, and Hirofumi Yoshimura, both of Nara, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Continuation of Ser. No. 57,676, Jul. 16, 1979, abandoned. This application Sep. 5, 1980, Ser. No. 184,322
Claims priority, application Japan, Jul. 18, 1978, 53-88194
Int. Cl.³ H05B *6/72*
U.S. Cl. 219—10.55 F 2 Claims



1. A microwave heating apparatus comprising:
a heating chamber; a high frequency oscillator; a wave guide between said oscillator and said chamber for leading electric radiation from said oscillator to said chamber and having a wall which is on the side of said wave guide closest to said chamber; a rotatable antenna electromagnetically coupling said wave guide with said heating chamber for distributing high frequency radiation in said chamber, said wave guide being made of a non-magnetic material and said rotatable antenna being made of a non-magnetic hollow tubular material, a sleeve bearing member having a flange portion attached to said wall and a sleeve portion integral with said flange and extending into said wave guide perpendicular to said wall, said rotatable antenna having an inner end portion extending into said sleeve portion of said wave guide and rotatably mounted therein and having an outwardly extending flange on the inner end of said inner end portion rotatably bearing against the inner end of said sleeve portion; a first magnet mounted within the hollow inner end portion of said rotatable antenna; and an antenna drive means outside said wave guide and in spaced opposed relation to said first magnet and forming a magnetic coupling therewith for rotating said antenna when said antenna drive means is operated.

4,324,968

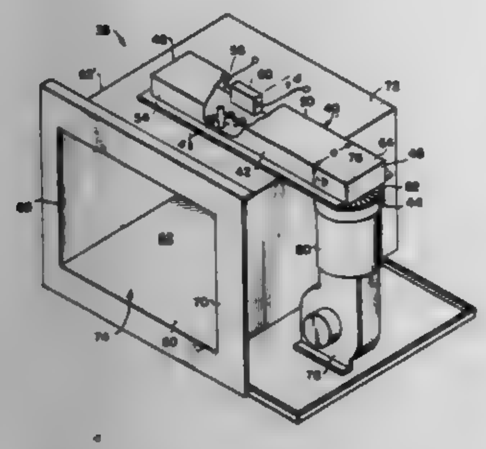
MICROWAVE OVEN CAVITY EXCITATION SYSTEM PROVIDING CONTROLLED ELECTRIC FIELD SHAPE FOR UNIFORMITY OF ENERGY DISTRIBUTION

Peter H. Smith, Anchorage, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Nov. 3, 1980, Ser. No. 203,091

Int. Cl.[3] H05B *6/74*

U.S. Cl. 219—10.55 F **7 Claims**



1. An excitation system for a microwave oven cooking cavity having electrically conductive walls, said excitation system promoting time-averaged uniformity of energy distribution and comprising:

a rectangular feed waveguide extending along the outer surface of one of the cooking cavity walls, one wall of said waveguide being common with at least a portion of said one wall of the cooking cavity;

a microwave energy generator coupled to said feed waveguide to establish a mode therein;

a coupling aperture in said common wall for feeding microwave energy into the cooking cavity, said coupling aperture electrically located laterally within said feed waveguide so as to radiate microwave energy polarized in a first sense into the cooking cavity; and

a device for varying the electrical position of said coupling aperture with respect to said feed waveguide centerline as a function of time, whereby the microwave energy radiated into the cooking cavity is periodically changed to a second polarization sense.

4,324,969

ELECTRICAL DISCHARGE MACHINING SYSTEM WITH OPTICAL ISOLATION OF A GAP MONITOR FROM REMOTE CONTROL CIRCUIT

Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Yokohama, Japan

Filed Feb. 5, 1980, Ser. No. 118,791

Int. Cl.[3] B23P *1/02*

U.S. Cl. 219—69 C **1 Claim**

1. An electrical discharge machining (EDM) system comprising:

mechanical components including a tool electrode forming an EDM gap with a workpiece and assembled together to form an EDM machine tool;

power supply means connected to said EDM gap for providing a succession of machining pulses controlledly across said gap between said tool electrode and said workpiece in said EDM machine tool;

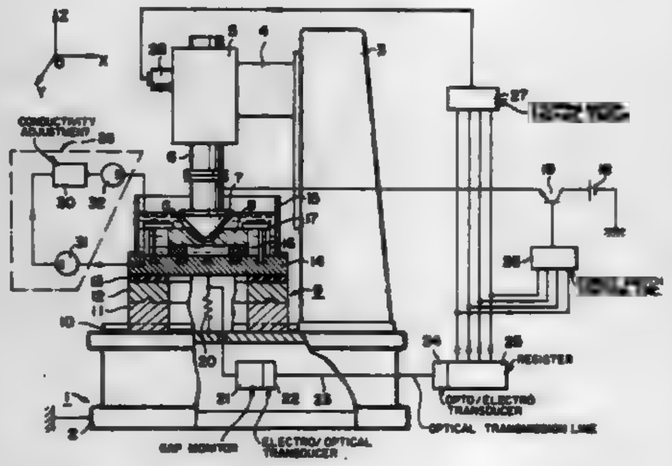
machining fluid supply means connected with said EDM machine tool for delivering a machining fluid controlledly to said gap;

drive means operatively connected to at least one of said mechanical components for relatively displacing said tool electrode and said workpiece;

a electrical control circuit unit disposed remote from said gap for controlling at least one of said means;

a gap-monitoring electrical circuit unit disposed remote from and spaced from said electrical control circuit unit and installed in a chamber at a portion of said mechanical components located in the vicinity of said EDM gap for providing a plurality of electrical monitoring signals representing different classes of gap discharge conditions, said gap monitoring circuit unit having an output provided with a plurality of electro-optical transducers assigned to said different classes of gap discharge conditions for converting said electrical monitoring signals to corresponding optical signals respectively; and

an optical transmission line comprising a plurality of optical conductors bundled together, each of said conductors being coupled to a respective one of said electro-optical transducers in said gap monitoring electrical circuit unit,



said optical conductors leading out of said chamber and across a space between said chamber and said electrical control circuit unit, into said electrical control circuit unit for transmitting across said space and between said electrical control circuit unit and said gap monitoring electrical circuit unit, said optical signals individually, said control circuit unit having an input provided with a plurality of opto-electrical transducers each coupled to a predetermined one of said optical conductors for reconverting said optical signals to respective electrical monitoring signals, said control circuit unit having logic circuit means responsive to said reconverted electrical monitoring signals for producing control signals for controlling said at least one of said means.

4,324,970

WIRE CUT METHOD OF SHAPING WORKPIECE BY ELECTRIC DISCHARGE

Yoshifumi Nanasawa, and Kazuhiko Kobayashi, both of Nagoya, Japan, assignors to Mitsubushiki Denki Kabushiki Kaisha, Tokyo, Japan

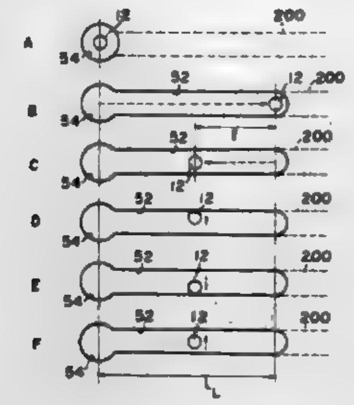
Filed Jun. 11, 1980, Ser. No. 158,457

Claims priority, application Japan, Jun. 26, 1979, 54-80530; Jun. 26, 1979, 54-80531

Int. Cl.[3] B23P *1/08*

U.S. Cl. 219—69 W **9 Claims**

1. In a wire cut method of shaping a workpiece by electric discharge in a desired work configuration by relative movements of said workpiece and a wire electride, an improvement characterized in that an electro-discharge machining of the workpiece in a waste portion of said workpiece is stopped and said wire electrode is backwardly shifted without being energized for a predetermined distance along the machine portion from said stopped position in said waste work and said wire electrode is shifted in a direction perpendicular to the direction of the machined portion at said shifted position so as to measure a discharge gap by contacting said wire electrode with a wall of said workpiece whereby an offset is calculated.



4,324,971

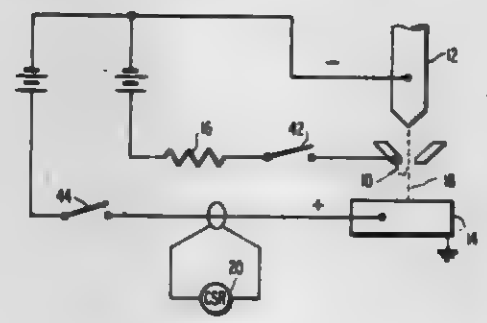
TORCH HEIGHT ACQUISITION USING ARC TRANSFER

Michael B. Frappier, West Lebanon, N.H., assignor to Thermal Dynamics Corporation, West Lebanon, N.H.

Filed Jul. 9, 1980, Ser. No. 167,095

Int. Cl.[3] B23K *9/06*

U.S. Cl. 219—121 PV **15 Claims**



1. A plasma torch system of the type wherein a non-transferred arc is generated between a torch cathode and a torch tip, said system further being of the type wherein a torch main arc operating height is initially acquired and is then maintained during a cutting or welding operation, said system comprising a means for lowering said torch toward a workpiece while said non-transferred arc is being generated to establish a main arc between said torch and workpiece, the improvement comprising:

means for sensing establishment of said main arc, said sensing means producing an electrical indicating signal upon establishment of said main arc;

means for stopping the downward movement of said torch in response to said electrical indicating signal, the height at which said torch is stopped constituting said main arc operating height.

4,324,972

PROCESS AND DEVICE FOR LASER-BEAM MELTING AND FLAME CUTTING

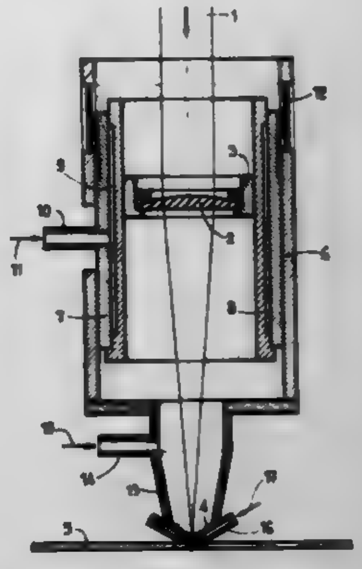
Alfred Furrer, and Hans Wehrli, both of Winterthur, Switzerland, assignors to Laser-Work A.G., Winterthur, Switzerland

Filed Nov. 18, 1980, Ser. No. 207,926

Int. Cl.[3] B23K *27/00*

U.S. Cl. 219—121 FS **6 Claims**

1. A laser beam device for melting and flame cutting, welding, sublimate cutting, drilling or marking, as well as finish-machining of materials, comprising a focussing lens for the laser beam and a nozzle for a gas feed, wherein the focussing lens is mounted in a swing-free manner for adjustment in the direction of the optical axis coaxial with the laser beam by means of an adjusting ring by which it is positively located on its longitudinal axis, the lens mounting comprising an adjustable shell structure in screw-threaded engagement with the adjusting ring and positioned with an accurate fit in a housing the internal section of which corresponds to the outer section



of the shell, and wherein the adjustable shell and the housing are each of hollow cylindrical section and the shell has a continuous internal screw thread for the purpose of extracting a lens mount in which the lens is supported.

4,324,973

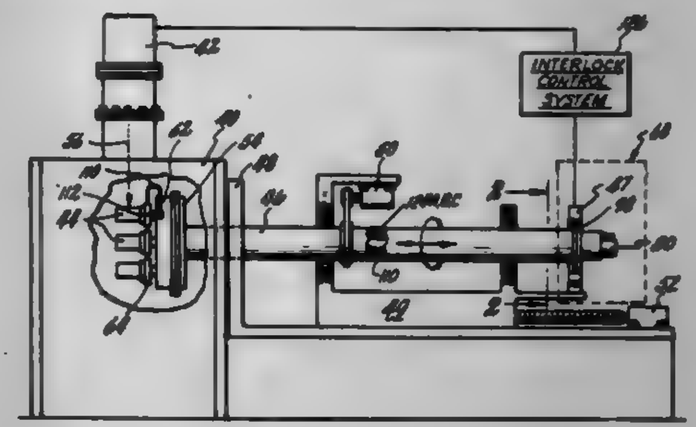
ENERGY BEAM DRILLING APPARATUS HAVING OPTICAL FIBER LINK POSITION SENSOR

David F. Kirwan, West Simsbury, and John R. Neumec, Willimantic, both of Conn., assignors to United Technologies Corp., Hartford, Conn.

Filed Nov. 21, 1980, Ser. No. 208,901

Int. Cl.[3] B23K *15/00, 26/04;* **G01D** *5/34;* **G08B** *5/00*

U.S. Cl. 219—121 EA **3 Claims**

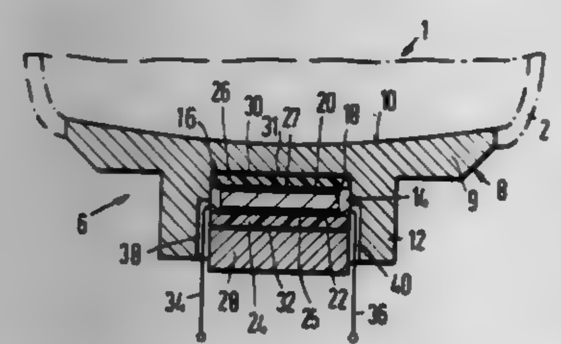


1. Apparatus for drilling and welding using beam energy, comprising a controlled environment chamber; a source of beam energy, the output of which is responsive to a beam signal, connected to the chamber; movable fixtures mounted on a rotatable housing within the chamber; an optical fiber link operating in combination with the fixtures comprising, a light source; a detector for generating the beam signal upon incidence of light from the source, the detector and source being mounted on parts of the apparatus located external to the chamber; a segmented optical fiber serially connecting the source and the detector, the fiber having a junction located in proximity to each of the fixtures, each junction formed by two segments of the fiber, at least one of each of said segments of the fiber being movable in response to movement of a fixture, each junction making a couple which is selectively transmittive of light through a portion of the link upon desired positioning of the fixture; and, seals along the fiber where it enters and leaves the chamber, to preserve the chamber environment; the fiber link being light transmittive when all the fixtures are

moved on the housing to their respective desired positions, to thereby generate the beam signal which enables output from the beam energy source.

4,324,974
HEATING ELEMENT ASSEMBLY WITH A PTC ELECTRIC HEATING ELEMENT

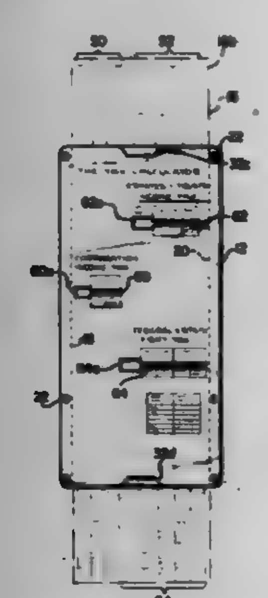
Herbert Steiner, Traunstorf, and Johann Magg, St. Georgen, both of Fed. Rep. of Germany, assignors to Bosch-Siemens Hausgeräte GmbH, Stuttgart, Fed. Rep. of Germany
Filed Aug. 14, 1979, Ser. No. 66,339
Claims priority, application Fed. Rep. of Germany, Aug. 16, 1978, 2835742
Int. Cl.³ H05B *3/10*
U.S. Cl. 219—553 7 Claims



1. A heating element assembly for insertion in a recess in a highly heat conducting material to thereby transfer heat from the inserted heating element assembly through the heat-conducting surfaces of the recess into the heat conducting material, which comprises an electric heating element of a material with positive temperature coefficient having planar opposite sides, planar electrodes which are electrically and thermally conductive contacting the two opposite sides, planar sheets of thermally conductive and electrically non-conductive insulating material covering the two opposite sides, the combination therewith of said sheets of insulating material coated on their side facing the heating element over a large area with a solder and soldered to the electrodes, said solder being electrically and thermally conductive and having electric leads and said planar sheets of insulating material extending beyond the edges of said heating element.

4,324,975
TAX CALCULATOR

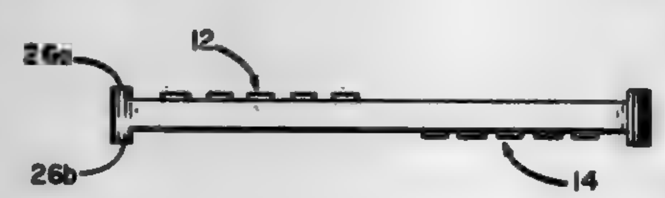
Robert L. Rees, 233 N. Michigan Ave., Chicago, Ill. 60601
Filed Feb. 19, 1980, Ser. No. 122,279
Int. Cl.³ G06G *1/02*; G06C *3/00*
U.S. Cl. 235—70 A 10 Claims



1. A tax calculator apparatus comprising: a substantially flat front cover member of predetermined width and of predetermined length substantially greater than said predetermined width, a substantially flat rear cover member of substantially the same length and width of said front cover member, a pair of relatively narrow, elongate spacer members interposed between said front and rear cover members and at opposing lateral sides thereof so as to form a relatively thin pocket having enclosed lateral side portions and open top and bottom portions, a plurality of fasteners for engaging said front and rear cover members with said spacer members to define said pocket, an insert card of substantial similar length to said front and rear cover members and substantially filling said pocket and slidably mounted therein, a plurality of vertical columns each comprising a plurality of horizontal lines on both front and rear sides of said insert card, a first window in said front cover member for simultaneously exposing horizontally aligned lines in first, second and third adjacent ones of said columns, a second window and a third window in said front cover member positioned respectively for simultaneously exposing horizontally aligned lines in said first column and in fourth, fifth, sixth and seventh ones of said plurality of columns, and a fourth window in said front cover member positioned for simultaneously exposing horizontally aligned lines in eighth and ninth ones of said plurality of columns, a fifth window in said rear cover member for simultaneously exposing horizontally aligned lines in first, second and third ones of said plurality of columns formed on the rear side of said insert card, a sixth window formed in said rear cover member for simultaneously exposing horizontally aligned lines in fourth, fifth, sixth, seventh and eighth ones of said plurality of columns on said rear side of said insert card and a seventh window formed in said rear cover member for simultaneously exposing a horizontally aligned lines in ninth, tenth and eleventh ones of said columns on the rear side of said insert card, said first and fourth windows being positioned for exposing horizontally aligned columns of the front side of the insert card, and said second window being vertically offset from said first and fourth windows.

4,324,976
HAND-HELD CALCULATOR OR SIMILAR KEYBOARD DEVICE

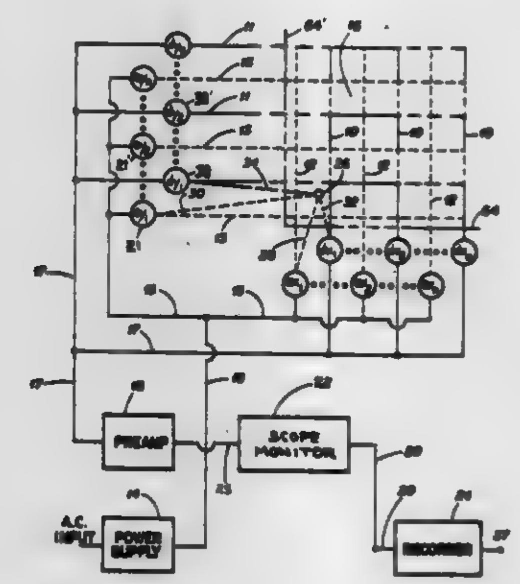
James M. Lapeyre, New Orleans, La., assignor to The Laitram Corporation, New Orleans, La.
Filed Feb. 8, 1980, Ser. No. 120,005
Int. Cl.³ G06C *7/02*
U.S. Cl. 235—145 R 6 Claims



1. A hand-held keyboard device comprising a housing, a first keyboard on the front housing face, a second keyboard on the rear housing face, the housing being adapted to be held in a user's hand, such that in one hand position the first keyboard is in position for use, and upon rotation of the user's wrist, the second keyboard is in position for use without repositioning of the housing in the hand.

4,324,977
SYNTHESIZED TARGET SYSTEM

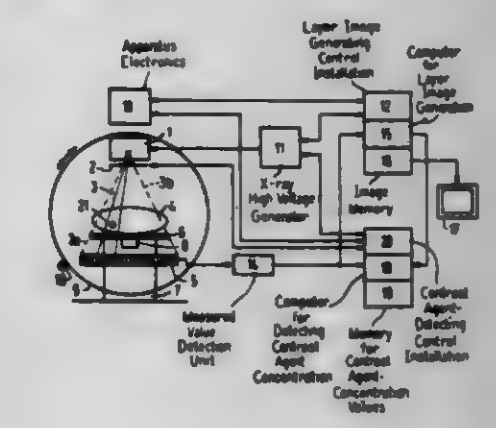
Malcolm M. Brauer, 3830 Tanglefoot Ct., Bettendorf, Scott County, Iowa 52722
Continuation-in-part of Ser. No. 18,534, Mar. 8, 1979, abandoned. This application Jan. 16, 1981, Ser. No. 225,568
Int. Cl.³ G01V *9/04*
U.S. Cl. 250—222 R 10 Claims



1. A synthesized target system comprising:
a power supply means for providing electrical energy to said target system;
overlapping emitter means for generating a target plane in the form of an electromagnetic energy curtain;
overlapping zone detector means operatively disposed in said target plane for detecting reflections from a plurality of projectiles, for simultaneously detecting the positions of said projectiles within said target plane, for determining the order in which said projectiles penetrate said target plane, and for generating electrical output signals in response to said reflections;
monitoring means electrically connected to said amplifying means for instaneously observing the position of said projectiles in said energy curtain which includes;
trigger means for monitoring a separate output signal for each projectile reflection, for discriminating between said projectiles and background noise, and for blocking spurious signals;
and
pulse shaping means for broadening the width of said amplified detector output signals;
recording means for generating real-time archival records for storage and retrieval of the data output of said pulse shaping means; and
rails means for protecting and holding said emitter means and said detector means operatively disposed about said target plane which includes;
a portable first optical rail member disposed along an x-axis of said target plane;
a portable second optical rail member disposed along a y-axis of said target plane; and
disconnect joint means for providing easy and accurate erection and optical alignment of said first and second portable rail members.

4,324,978
TOMOGRAPHIC X-RAY APPARATUS FOR THE PRODUCTION OF TRANSVERSE LAYER IMAGES

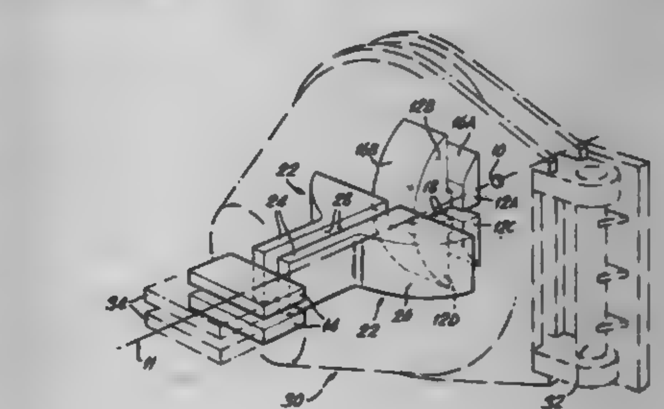
Willi Kalender; Gerhard Linke, and Manfred Pfeiler, all of Erlangen, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany
Filed Jun. 4, 1980, Ser. No. 156,407
Claims priority, application Fed. Rep. of Germany, Jul. 17, 1979, 2928825
Int. Cl.³ A61B *6/00*
U.S. Cl. 250—445 T 2 Claims



1. Tomographic x-ray apparatus for the production of transverse layer images of a radiography subject, comprising a patient support, a radiation measuring arrangement including a radiation source which generates a beam of rays penetrating the radiography subject, whose cross sectional extent perpendicular to the layer plane is equal to the layer thickness, and a radiation receiver which determines the radiation intensity behind the subject, comprising a drive device for the measuring arrangement for producing rotational movement of the radiation measuring arrangement, and comprising a measured value converter for the conversion of the signals supplied by the radiation receiver into a tomographic image, means (10) for locking the measuring arrangement against rotation during the processing of the measuring signals supplied by the radiation receiver, means (8) for locking the patient support (6) against longitudinal movement during the processing of the measuring signals, and an adjustable diaphragm (2) for restricting the beam of rays (3) to a selected portion of the layer plane.

4,324,979
VARIABLE NEUTRON COLLIMATOR

David K. Bewley, London, and Kenneth Finding, Camberley, both of England, assignors to National Research Development Corporation, London, England
Filed Jun. 21, 1979, Ser. No. 50,743
Int. Cl.³ G21F *5/04*
U.S. Cl. 250—505 1 Claim



1. A variable neutron collimator comprising two pairs of neutron-absorbing blocks spaced from the position of a source of neutrons,
the first pair of blocks being of two-component form, each

component having a surface remote from the position of the neutron source which is curved and concentric with said position, each component of each block having a beam-defining face adjacent the direction of the required beam, the faces together defining first opposite sides of a quadrilateral aperture divergent from the position of the source, and a pair of associated extensions of the block spaced from the first pair of blocks in the direction of the beam, the extensions each having a beam-defining face which together also define the same two opposite sides of the divergent aperture; the total thickness of each two-component block and associated extension immediately adjacent the beam-defining face and in the general direction of the beam being sufficient to absorb substantially all neutrons emitted by the source in that direction; the first pair of blocks and the associated extensions being rotatable in a first plane orthogonal to the axis of the divergent aperture so as to vary the angle of divergence of the aperture;

the second pair of blocks each having a surface remote from the position of the neutron source which is curved and concentric with said position, each block having an integral extension beyond the curved surface, each block and integral extension having a continuous beam-defining face adjacent the direction of the required beam, the faces together defining second opposite sides of a quadrilateral aperture divergent from the position of the source; the thickness of the block and extension immediately adjacent the beam-defining face and in the general direction of the beam being sufficient to absorb substantially all neutrons emitted by the source in that direction; the second pair of blocks and integral extensions being rotatable in a second plane orthogonal to the first plane and to the axis of the divergent aperture so as to vary the angle of divergence of the aperture; the second pair of blocks being between the first pair of blocks and the associated extensions;

and a fixed shield of neutron-absorbing material arranged to absorb neutrons travelling in directions radial from the neutron source which pass through only the curved surfaces of any block, the sum of the thicknesses of the block and the shield in directions radial from the source being sufficient to absorb all neutrons emitted by the source in that direction.

4,324,980

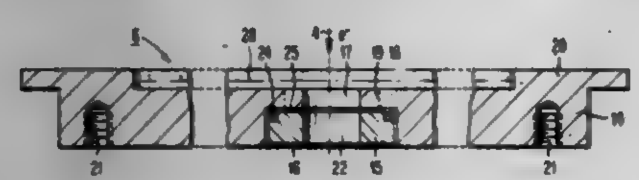
ELECTRON EXIT WINDOW ASSEMBLY FOR A LINEAR ACCELERATOR

Edgar D. Symmons, Walnut Creek, Calif., assignor to Siemens Medical Laboratories, Inc., Walnut Creek, Calif.

Filed Jul. 21, 1980, Ser. No. 170,607

Int. Cl.³ G02B *5/00*; H01J *7/26*

U.S. Cl. 250—505 **14 Claims**



1. An electron exit window assembly for a linear accelerator, comprising in combination:

(a) a cover plate for sealing the interior of said linear accelerator in a vacuum-tight manner, said cover plate having a first opening therethrough for passing a beam of electrons;

(b) an insert piece of titanium inserted into said first opening in a vacuum-tight manner, said insert piece having a second opening therethrough; and

(c) an electron exit window made of a thin titanium foil and connected across said second opening in a vacuum-tight manner.

4,324,981

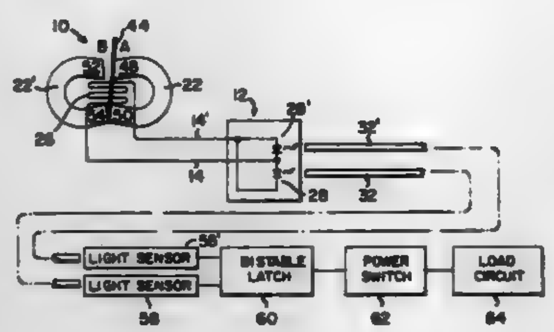
LIGHT TRANSMISSION LOAD CONTROL SYSTEM

Glen E. Miller, Redondo, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed May 21, 1980, Ser. No. 152,265

Int. Cl.³ G02B *27/00*

U.S. Cl. 250—551 **13 Claims**



1. Apparatus for controlling an electrical load settable in at least two states, comprising: optically responsive load control means for setting the load in a first state responsive to presentation of a first optical impulse and setting the load in a second state responsive to presentation of a second optical impulse; and optical impulse generator means operatively associated with said load control means for presenting said first optical impulse and said second optical impulse to said load control means in alternate sequence, and including means for controlling the occurrences of said first and second optical impulses and for indicating which of said optical impulses is presented to indicate the state in which the load is set.

4,324,982

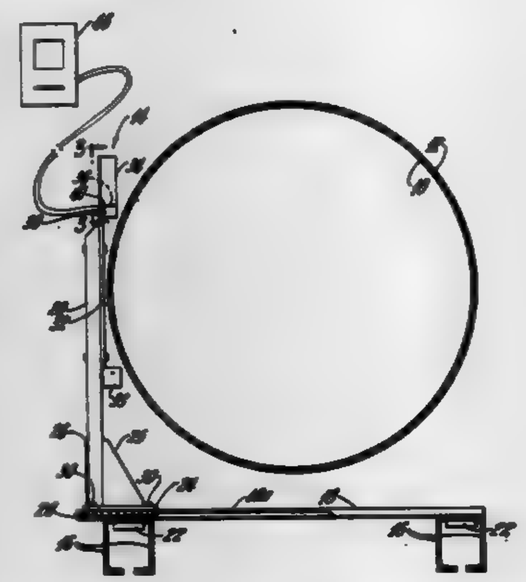
PIPE WALL THICKNESS MONITORING APPARATUS

Peder U. Poulsen, Fredensborg, Denmark, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Continuation-in-part of Ser. No. 861,783, Dec. 19, 1977, abandoned. This application Aug. 2, 1979, Ser. No. 63,296

Int. Cl.³ G01N *21/86*

U.S. Cl. 250—560 **7 Claims**



1. A wall thickness monitoring apparatus for use with a rotatable mandrel having a cylindrical surface for receiving liquid resin hardenable to form a tubular body, the apparatus comprising a source of light mounted adjacent the cylindrical surface of the mandrel substantially along a tangent to a cross section thereof and on one side of a reference plane perpendicular to the tangent and containing the axis of rotation of the mandrel, a sensing and indicating means mounted adjacent the cylindrical surface of the mandrel substantially along the tangent but on the opposite side of the reference plane, the source of light and the sensing and indicating means being disposed entirely on one side of a plane perpendicular to the reference plane and containing the axis of rotation of the mandrel, and means for adjusting the source of light and the sensing and indicating means in a direction parallel to the reference plane toward or away from the mandrel surface to enable the reading on the sensing and indicating means, determined by the position of the shadow line of the mandrel surface on the sensing and indicating means caused by the intrusion of the mandrel surface into the rays of light emanating from the source of light, to be set at a zero point on the sensing and indicating means before the tubular body is formed on the mandrel, whereby the wall thickness of a tubular body formed on the mandrel may be indicated by the change, caused by the presence of the tubular body, in the position of the shadow line from the zero point on the sensing and indicating means.

4,324,983

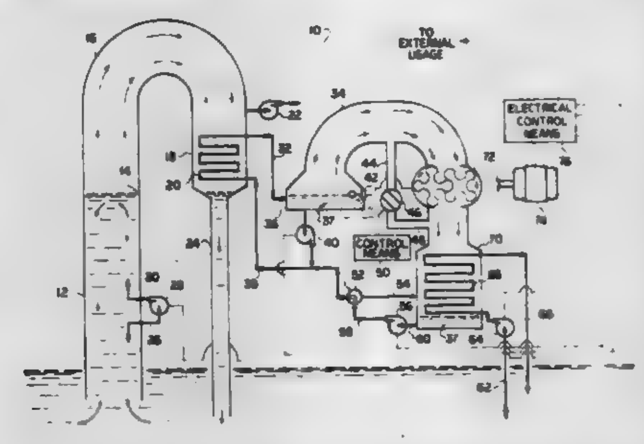
BINARY VAPOR CYCLE METHOD OF ELECTRICAL POWER GENERATION

Gerald F. Humiston, Apartment E 202, 2909 Gulf to Bay Blvd., Clearwater, Fla. 33519

Filed Sep. 15, 1977, Ser. No. 833,663

Int. Cl.³ F01K *25/06*

U.S. Cl. 290—1 R **12 Claims**



1. A heat pump system for producing electrical power, comprising in combination:

a first and a second heat pump for a first and a second fluid, respectively;

said first heat pump comprising a first evaporator and a first condenser interconnected by a first conduit;

said second heat pump comprising a second evaporator and a second condenser interconnected by a second conduit;

said first heat pump being independent from said second heat pump enabling said first and second heat pumps to operate without intermingling the first and second fluids;

means for introducing warm first fluid into said first evaporator;

a closed first heat exchanger disposed in said first condenser for absorbing heat from the condensing first fluid;

condenser return conduit means connecting said second condenser to said second evaporator and extending through said closed first heat exchanger for heating the condensed second fluid prior to introduction into said second evaporator;

a prime mover interposed in said second conduit for providing mechanical energy from the mass flow of vapor from said second evaporator to said second condenser;

an electrical generator coupled to said prime mover to convert said mechanical energy into an electrical power output; and

electrical control means connected to said electrical generator for directing the electrical power output thereof to operate the heat pump system and for directing any excess electrical power output for external usage.

4,324,984

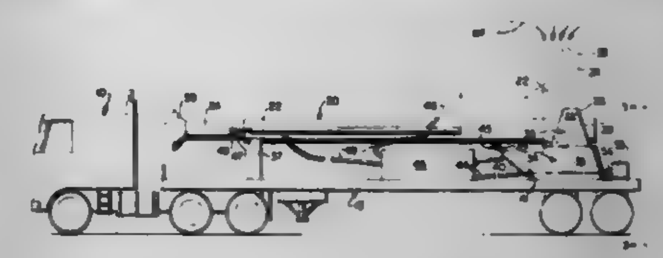
PORTABLE HYDROGENERATING APPARATUS

Peter M. Borgren, Duluth, Minn., assignor to Hydrodynamic Energy Systems Corp., Superior, Wis.

Filed Feb. 3, 1981, Ser. No. 231,055

Int. Cl.³ F03B *13/10*

U.S. Cl. 290—54 **16 Claims**



1. Portable hydrogenerating apparatus comprising:

(a) a transportable support vehicle,

(b) portable tube means mounted on said support vehicle and adapted to be transported to and from a site having a potential energy water source,

(c) means for moving and supporting said portable tube means so as to position the upper end thereof in the path of water flow from said water source, the water flowing gravitationally through said tube means thereby providing a pressure head, and

(d) transportable turbine generator means associated with the discharge end of said tube means and receiving water under head pressure from said tube means, whereby electrical energy can be produced.

4,324,985

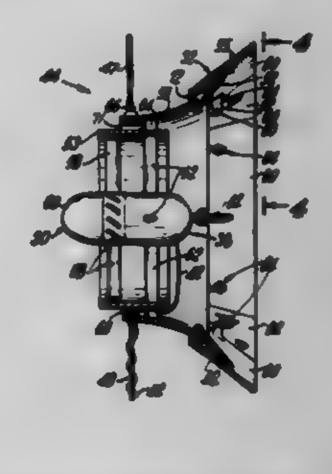
PORTABLE WIND TURBINE FOR CHARGING BATTERIES

Richard A. Oman, Huntington, N.Y., assignor to Grumman Aerospace Corp., Bethpage, N.Y.

Filed Jul. 9, 1980, Ser. No. 167,170

Int. Cl.³ F03D *7/04*, *1/04*

U.S. Cl. 290—55 **26 Claims**



25. A wind turbine assembly comprising:

a wind turbine;

a set of ducts enclosing an axis of said turbine, said ducts being of progressively larger diameter to provide a plurality of slots therebetween to control the flow of wind past blades of said turbine, one of said ducts being articulated for varying the cross sectional area thereof to further control the flow of wind past said blades; and

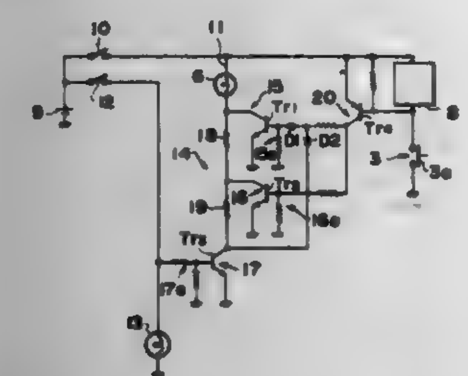
deployment means coupled to said articulated duct for alternatively opening said articulated duct to a deployed state upon a manual triggering of said opening, and closing said articulated duct to a stowed state, upon a triggering by said wind.

4,324,986

SWITCH POSITION INDICATING MEANS FOR AUTOMOBILES

Takanori Hara; Makoto Yoshinaga; Haruto Yano, and Noriyasu Matsumura, all of Hiroshima, Japan, assignors to Toyo Kogyo Co., Ltd., Hiroshima, Japan

Filed Sep. 29, 1980, Ser. No. 191,848
Claims priority, application Japan, Sep. 29, 1979, 54-135499[U]
Int. Cl.³ B60Q 3/04
U.S. Cl. 307—10 LS 5 Claims



1. An electric system for automobiles comprising electric power source means, electrically operated means providing a load on the power source means, control switch means disposed between the power source means and the electrically operated means for controlling an electric power supply from the power source means to the electrically operated means, said switch means having an unactuated position and at least one actuated position and provided with manually actuatable means, switch illuminating means disposed in the vicinity of the manually actuatable means to illuminate the same, electric circuit means for energizing the illumination means, automobile light means adapted for use in dark conditions, light switch means provided between the power source means and the automobile light means for controlling an electric power supply from the power source means to the light means, first switch means connected with the switch illuminating means and being adapted to close the electric circuit means only when the control switch means is in the actuated position and the light switch means is not actuated, so as to energize the switch illuminating means, second switch means connected through a first resistance means with the switch illuminating means in parallel with the first switch means and being adapted to close the electric circuit means when the control switch means and the light switch means are actuated, so as to energize the switch illuminating means through the first resistance means, third switch means connected through a second resistance means which is of a resistance higher than that of the first resistance means with the switch illuminating means in parallel with the first and second switch means and being adapted to close the electric circuit means when the light switch means is actuated and the control switch means is not actuated so that the switch illuminating means is energized through the second resistance means.

4,324,987

SYSTEM AND METHOD FOR OPTIMIZING SHED/RESTORE OPERATIONS FOR ELECTRICAL LOADS

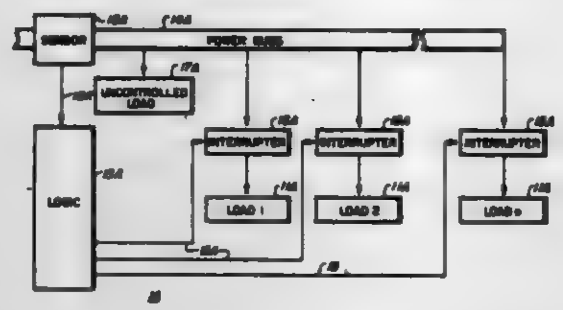
C. Gardner Sullivan, II, Phoenix, and Walter P. Hedges, Laveen, both of Ariz., assignors to Cyborex Laboratories, Inc., Phoenix, Ariz.

Continuation-in-part of Ser. No. 154,775, May 30, 1980, which is a continuation of Ser. No. 909,850, May 26, 1978, Pat. No. 4,211,933. This application Sep. 26, 1980, Ser. No. 191,424
Int. Cl.³ H02J 3/14
U.S. Cl. 307—35 30 Claims

1. A method for controlling delivery of electrical energy from a power line to an establishment having a plurality of electrical loads in order to maintain the total power delivered to the electrical loads below a selected power limit, the electrical loads including a plurality of controlled loads which can be electrically connected to and disconnected from the power line in accordance with priorities of the controlled loads by means of a control system, the control system including a plurality of load switching means for controllably connecting the controlled loads to and disconnecting the controlled loads from the power line the control system also including power measuring means for measuring power delivered from the power line to the electrical loads, said method comprising operating a processor to effect the steps of:

(a) computing and storing a power consumption number for any one of the controlled loads when that controlled load is electrically disconnected from the power line;

(b) comparing the selected power limit to the total power consumed by the electrical loads and, if the total power consumed by the electrical loads exceeds the selected power limit, electrically disconnecting a sufficient number of the controlled loads, in order of increasing priority, to



reduce the total power consumed by the electrical loads to a level which is lower than the selected power limit;

(c) computing a first power availability number representing an amount of power which additionally can be consumed by the electrical loads without causing the selected power limit to be exceeded;

(d) comparing a stored power consumption number of a first highest-priority one of the controlled loads not presently electrically connected to the power line with said first power availability number and electrically connecting said first controlled load to the power line of said electrical connecting of said first controlled load will not cause the selected power limit to be exceeded; and

(e) electrically disconnecting a second, lowest-priority one of the controlled loads presently electrically connected to the power line from the power line if said stored power consumption number of said first controlled load is greater than said first power available number and the priority of said second controlled load is lower than the priority of said first controlled load.

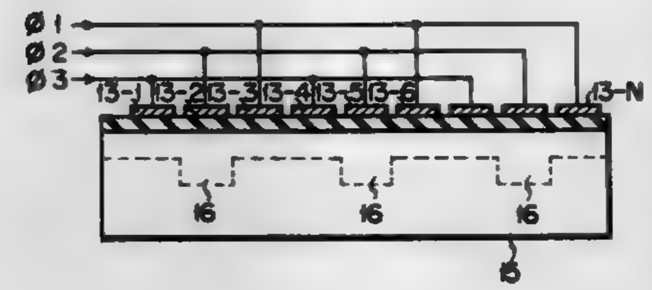
4,324,988

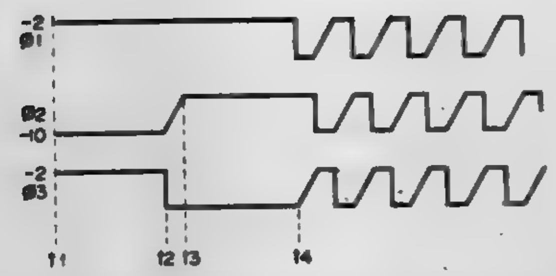
SOLID-STATE IMAGING DEVICE DRIVING SYSTEM

Yasuo Takemura, Kawasaki, and Yoshitaka Katayama, Yokohama, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Continuation of Ser. No. 949,136, Oct. 6, 1978, abandoned. This application Jul. 29, 1980, Ser. No. 173,420
Claims priority, application Japan, Oct. 6, 1977, 52-119451
Int. Cl.³ G11C 19/28; H03K 3/42; H01L 29/78, 27/14
U.S. Cl. 307—221 D 12 Claims

1. A system for driving a solid-state imaging device such that a storage mode and a transfer mode are alternated, wherein said imaging device comprises a charge transfer device including a semiconductor substrate, an insulating film formed on said semiconductor substrate and a plurality of electrode groups, each of which includes at least first and second electrodes and forms one picture element, wherein said storage mode includes at least one integration and shifting, and in which in the storage mode a first level signal and a second level signal are supplied respectively to the first and second electrodes during a first period of time, thereby forming a first potential well in which first charges corresponding to an optical image are integrated and then applying said first and second level signals respectively to the second and first electrodes during a second period of time following the first period of time, thereby forming a second potential well to which the first charges integrated are shifted from the first potential well by at least one of the electrodes corresponding to one element and in





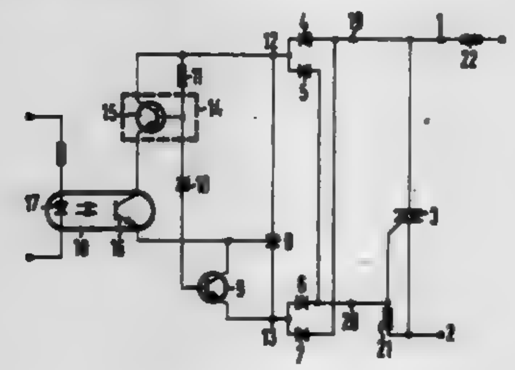
which second charges corresponding to the optical image are integrated to be added to the first charges, and in the transfer mode high frequency pulse signals in different phases are supplied to the first and second electrodes, thereby transferring the charges integrated from the second potential well to an output circuit; wherein the first and second time periods have a substantially greater time duration than a period of said high frequency pulse signals supplied to said first and second electrodes in the transfer mode.

4,324,989

SOLID-STATE RELAY

Hans Stut, Gröbenzell, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jul. 18, 1979, Ser. No. 58,466
Claims priority, application Fed. Rep. of Germany, Jul. 21, 1978, 2832193
Int. Cl.³ H03K 17/72
U.S. Cl. 307—252 J 4 Claims



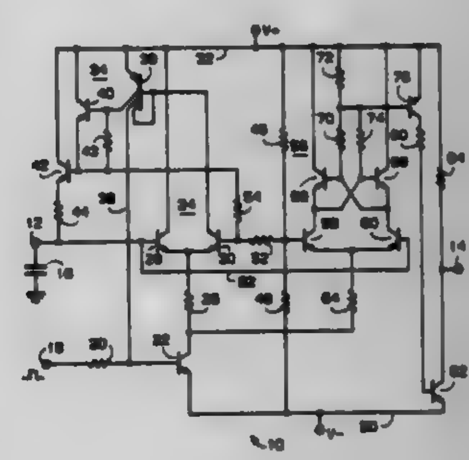
1. Solid-state relay, comprising a full-wave rectifier bridge having a first and a second d-c terminal, a thyristor having the anode thereof connected to said first terminal and the cathode thereof connected to said second terminal, a first transistor having a load circuit and a control terminal, the load circuit of said first transistor being connected to the gate and the cathode of the thyristor, a second transistor having means for supplying a control current thereto and having a load circuit, a Zener diode, a resistor, and a current amplifier having an input and two input terminals, one input terminal being connected through said Zener diode to the control terminal of said first transistor and through said resistor to said first terminal, and the other input terminal being connected to the first terminal, said current amplifier having an output and two output terminals, one output terminal being connected to said first terminal, and the other output terminal being connected through the load circuit of said second transistor to the gate of the thyristor.

4,324,990

COMPARISON CIRCUIT ADAPTABLE FOR UTILIZATION IN A TELEVISION RECEIVER OR THE LIKE

Michael J. Gay, Geneva, Switzerland, assignor to Motorola, Inc., Schaumburg, Ill.

Filed May 9, 1980, Ser. No. 148,346
Int. Cl.³ H03K 5/153
U.S. Cl. 307—350 8 Claims



1. A comparison circuit comprising a trigger stage having an input and output, the input of said trigger stage being adapted to receive an input signal, and a feedback circuit interposed between said output and said input of said trigger stage; said trigger stage being rendered active in response to a gating pulse applied thereto such that said trigger stage being caused to switch from a first state to a second state when activated if the magnitude of said input signal is below a first threshold level wherein the magnitude of said input signal is increased to a second threshold level by said feedback circuit; and a pulse generating circuit coupled to said trigger stage having an output coupled to an output of the comparison circuit to produce an output pulse thereat when said trigger stage is in said second state and the magnitude of the input signal traverses a third threshold level, said third threshold level having a value between said first and second threshold levels.

4,324,991

VOLTAGE SELECTOR CIRCUIT

Nobuo Tamaki, Murayama, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Dec. 12, 1979, Ser. No. 102,773
Int. Cl.³ H03K 19/003, 19/094, 17/30, 17/693
U.S. Cl. 307—443 4 Claims

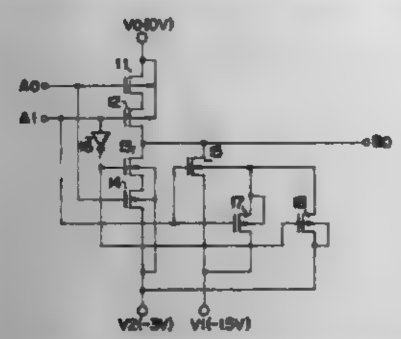
1. A voltage selector circuit comprising:

a first switching circuit (11, 12) including at least one MOS transistor having a source, drain, gate and substrate and adapted to be operated in ON-OFF fashion by a control signal inputted to the gate thereof, a voltage (V_0) of a first voltage level being inputted to the source of said at least one MOS transistor of said first switching circuit;

a second switching circuit (13, 14) including at least one MOS transistor having a source, drain, gate and substrate

and adapted to be operated in ON-OFF fashion by a control signal inputted to the gate thereof, a voltage (V_2) of a second voltage level different from said first voltage level being inputted to the source of said at least one MOS transistor of said second switching circuit;

a third switching circuit (15) including at least one MOS transistor (15) having a source, drain, gate and substrate and adapted to be operated in ON-OFF fashion by a control signal inputted to the gate thereof, a voltage (V_1) of a third voltage level being inputted to the source of said at least one MOS transistor of said third switching circuit,



said third voltage level being between said first and second voltage levels;

an output terminal (B_0) connected to at least said first to third switching circuits and to which a voltage inputted to the source of an On-operated switching circuit is delivered as an output; and

a fourth switching circuit (17, 18) connected to the substrate of said at least one MOS transistor (15) of said third switching circuit for causing a voltage supplied to said substrate of said at least one MOS transistor of said third switching circuit to be switched according to the voltage which is outputted from said output terminal (B_0).

4,324,992

ELECTROMAGNETIC MOTOR

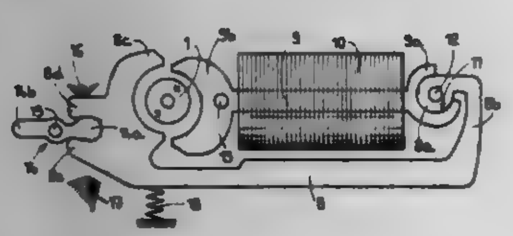
Daniel Paratte, Neuchatel, Switzerland, assignor to Fabrique d'Horlogerie de Fontainemelon, Neuchatel, Switzerland

Filed May 1, 1980, Ser. No. 145,680

Claims priority, application Switzerland, May 11, 1979, 4400/79

Int. Cl.³ H02K *37/00*

U.S. Cl. 310—49 R 5 Claims



1. An electromagnetic stepping motor, comprising a stepping rotor, and a stator which is made of at least two pieces assembled each to the other, one of said pieces presenting a protrusion of a general cylindrical shape and the other of said pieces presenting a recess of a shape corresponding to that of said protrusion, with said protrusion being engaged in said recess to maintain the assembly of said pieces, the two pieces being dimensioned to provide for rotation of the two pieces around the central axis of the protrusion.

4,324,993

COOLING MEDIUM BAFFLING DEVICE IN ROTARY ELECTRIC MACHINE

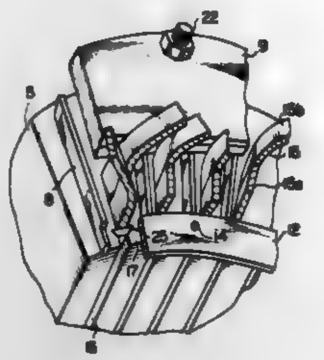
Masaki Sato; Hironori Okuda; Motoya Ito, and Yuji Makino, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 31, 1977, Ser. No. 847,157

Claims priority, application Japan, Nov. 5, 1976, 51/132855

Int. Cl.³ H02K *9/00*

U.S. Cl. 310—58 4 Claims



1. In a rotary electric machine including a stator core and a stator winding received in slots of said stator core, a cooling medium baffling device comprising a cooling medium baffle plate fixed to the inner peripheral edge of one end of said stator core by mounting means protruding axially from the end of said stator core, said mounting means being located only at circumferential positions other than positions defining a boundary between the different modes of phase currents flowing through the coils constituting said stator winding.

4,324,994

DRIVE UNIT WITH A MOTOR

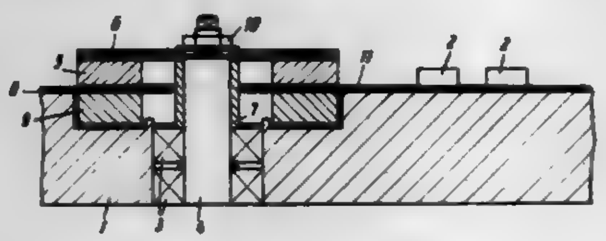
Horst Hager, Paderborn, Fed. Rep. of Germany, assignor to Hightrack Computer Technik GmbH, Berlin, Fed. Rep. of Germany

Filed Mar. 28, 1980, Ser. No. 134,923

Claims priority, application Fed. Rep. of Germany, Apr. 2, 1979, 2913602

Int. Cl.³ H02K *11/00*

U.S. Cl. 310—68 R 8 Claims



1. A direct-current motor unit, comprising a direct current motor including a stationary armature winding and a ring-shaped multipolar permanent magnet rotatable relative to said stationary winding so that a magnetic field extends through the latter; a plurality of elements arranged to electrically cooperate with said motor and spaced from the latter; a plurality of conductors connecting said elements to said electric motor; and a stationary plate member on which said armature winding and said connecting conductors are arranged and together formed as a common printed circuit, said stationary plate member having a first portion which is located substantially in the region of said magnet and on which said armature winding is arranged, and a second portion which extends outwardly of the region of said magnet and on which said connecting conductors are arranged.

4,324,995

THRUST PREVENTIVE DEVICE FOR THE OUTPUT SHAFT OF AN ELECTRIC MOTOR

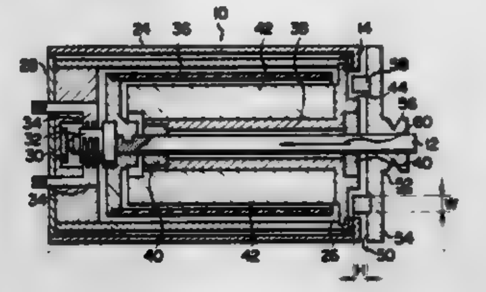
Noboru Sakai, Tachikawa, and Tokuo Shimizu, Hachioji, both of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Mar. 4, 1980, Ser. No. 127,249

Claims priority, application Japan, Mar. 12, 1979, 54-31417[U]

Int. Cl.³ H02K *21/22*

U.S. Cl. 310—153 8 Claims



1. A thrust preventive device for the output shaft of an electric motor, comprising:

an electric motor having an end face on one end thereof from which an elongated rotatable output shaft of the motor is projecting;

a recess provided on said end face of the motor;

a rotating force transmitting member secured to a portion of the output shaft which is projected from said end face of the motor, said rotating force transmitting member being outside the motor and having one end face opposing said end face of the motor, said rotating force transmitting member including a fly-wheel portion and a rotating force transmitting portion directly coupled to the fly-wheel portion for transmitting the rotating force of the output shaft, said one end face of said rotating force transmitting member being on said fly-wheel portion;

a projection of magnetizable material provided on said one end face of said rotating force transmitting member and projecting into said recess so as to bias said rotating force transmitting member when magnetized, jointly with the output shaft, by magnetic lines of force produced by the electric motor in one direction along the axis of said output shaft; and

a position maintaining means located inside an other end of said motor for preventing said output shaft from biasing said rotating force transmitting member, thus keeping said output shaft at a predetermined position.

4,324,996

INTERIOR ROTOR FOR AN ELECTRIC MACHINE

Hans-Joachim Adelski, Selz, and Wolfgang Volkrodt, Bad Neustadt, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jul. 9, 1980, Ser. No. 167,118

Claims priority, application Fed. Rep. of Germany, Jul. 11, 1979, 2928011

Int. Cl.³ H02K *21/12*

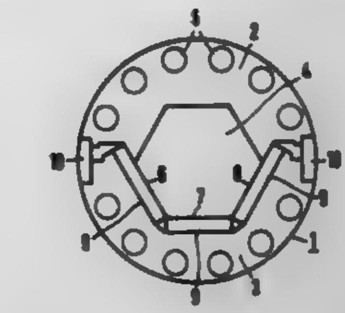
U.S. Cl. 310—156 7 Claims

1. A bipolar permanent field interior rotor for an electric machine, comprising in combination:

(a) a shaft having an axis of rotation and at least one multi-sided section;

(b) a sheet metal disk for forming magnetic poles of said rotor, said disk having central edges and at least two segments and being disposed on said multi-sided section of said shaft; and

(c) a number of permanent magnet slabs each having an axis of magnetization, said number being less than the number of shaft sides, said magnet slabs being inserted between a number of central edges of said disk and said shaft such that said magnet slabs directly abut respectively a number of shaft sides and said central edges directly abut said magnet slabs and the remainder of said shaft sides,



whereby said axes of magnetization are arranged radially with respect to said axis of rotation.

4,324,997

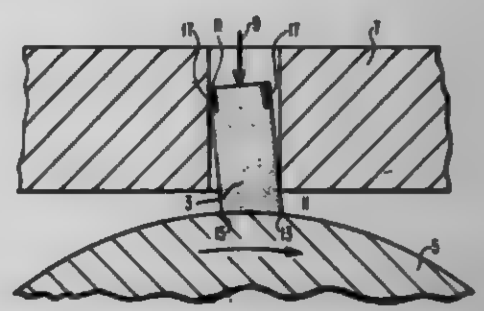
DAMPENED BRUSH SYSTEM

Owen S. Taylor, Penn Township, Westmoreland County, and Czeslaw A. Brozlarek, Penn of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 8, 1980, Ser. No. 119,690

Int. Cl.³ H02K *13/00*

U.S. Cl. 310—248 2 Claims



1. A monolithic brush for a dynamoelectric machine having an elastomer insert on the edge of the brush diagonally opposite the leading edge of the contact surface and extending along the side of the brush containing the trailing edge of the contact surface, the length of the insert extending along the side of the brush containing the trailing edge of the contact surface being substantially greater than the thickness of the insert.

4,324,998

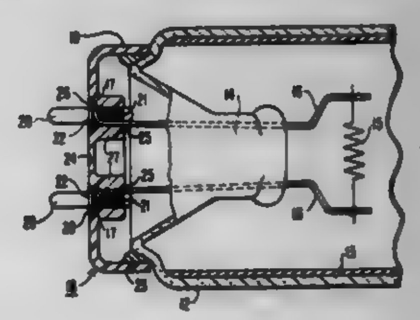
BASE AND TERMINAL-PIN ASSEMBLY FOR AN ELECTRIC LAMP

John F. Gilmore, Verona, and Stanley A. Lopenski, Pompton Plains, both of N.J., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 2, 1980, Ser. No. 136,648

Int. Cl.³ H01J *5/48, 5/50*

U.S. Cl. 313—318 10 Claims



1. In an electric lamp having a vitreous envelope with an end portion that has a protruding lead-in conductor and is secured to a base structure, the improvement comprising the combination of;

an insulator component of plastic resin material that constitutes an end wall portion of the base structure and has an aperture therein, said lead-in conductor being of such length and being so arranged that it extends into and through the aperture in the plastic insulator component and is terminated by an end portion of predetermined length that is located beyond the insulator aperture,

a rigid metal pin of predetermined length having an end segment in force-fitted frictional engagement with the apertured portion of said plastic insulator component and mechanically locked thereby in positive electrical contact with the part of the lead-in conductor that is disposed in said aperture,

the terminating end portion of said lead-in conductor being wrapped around a medial part of said metal pin and pressed against the outer face of the plastic insulator component by a laterally protruding portion of said pin which is located on the said medial part thereof,

the free end segment of said pin extending outwardly from the base structure and plastic insulator component a distance such that the pin constitutes an exposed elongated terminal of controlled size and configuration for the electric lamp.

4,324,999

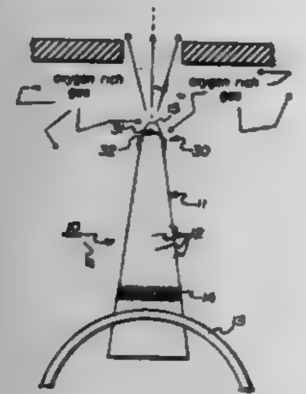
ELECTRON-BEAM CATHODE HAVING A UNIFORM EMISSION PATTERN

John E. Wolfe, Julian, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Apr. 30, 1980, Ser. No. 145,043

Int. Cl.³ H01J *1/16, 19/10*

U.S. Cl. 313—336 9 Claims



1. A method of making an electron-beam cathode which emits electrons in a cone-shaped pattern whose electron density is substantially uniform throughout the cone; said method including the steps of:

providing a needle-shaped piece of single crystal tungsten having dopant atoms of zirconium and oxygen in the bulk thereof, and having a plurality of concentric ring-shaped (100) surfaces on the needle's tip; and

heating said needle in an atmosphere of oxygen to diffuse atoms from said ring-shaped surfaces toward the needle's base until said ring-shaped surfaces are eliminated and only a single (100) planar surface exists on said needle's tip.

4,325,000

LOW WORK FUNCTION CATHODE

John E. Wolfe, Julian, Calif., and Lynwood W. Swanson, McMinnville, Oreg., assignors to Burroughs Corporation, Detroit, Mich.

Filed Apr. 20, 1980, Ser. No. 145,042

Int. Cl.³ H01J *1/16, 19/10*

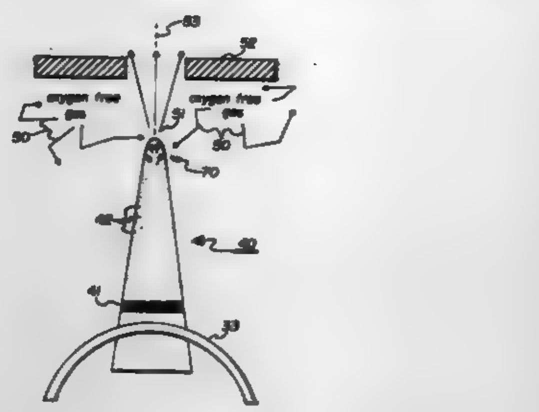
U.S. Cl. 313—336 9 Claims

1. A method of making an electron-beam cathode having a tip which emits electrons with a low work function over a relatively wide range of temperature and pressure in an oxygen free atmosphere; said method including the steps of:

attaching zirconium in multiple atomic layers to a portion of the surface of single crystal tungsten; and

heating said single crystal tungsten with said zirconium attached thereto in an oxygen rich atmosphere to diffuse said zirconium and said oxygen into the bulk of said tungsten;

said bulk of said tungsten with said zirconium and said oxygen diffused therein forming said low work function cath-



ode, which operates by dispensing a single atomic layer of said zirconium and oxygen from said bulk to said tip when heated in said oxygen free atmosphere.

7. An electron-beam cathode which emits electrons with a low work function over a relatively wide range of temperature and pressure; said cathode being comprised of single crystal tungsten with zirconium and oxygen dopant atoms within the bulk of said tungsten; said single crystal tungsten also including a tip to which a single atomic layer of said zirconium and oxygen dopant atoms diffuse from said bulk when said cathode is heated in oxygen free atmosphere.

4,325,001

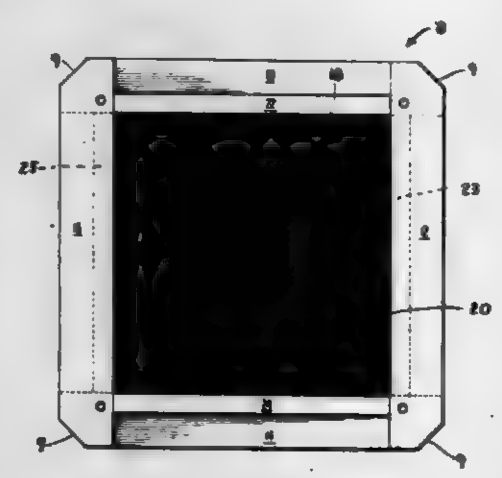
INORGANIC SPARK CHAMBER FRAME AND METHOD OF MAKING THE SAME

Thomas M. Heslin, New Carrollton, Md., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Mar. 7, 1980, Ser. No. 128,229

Int. Cl.³ H01J *1/46, 17/04, 19/38, 19/40*

U.S. Cl. 313—348 20 Claims



1. A method of manufacturing spark chamber frames, comprising the steps of:

forming a plurality of beams from inorganic material;

applying an inorganic bonding material to each end of said beams, said inorganic bonding material having substantially the same thermal expansion as said beam material;

forming said beams in a jig so that said ends of adjacent beams overlap;

firing said beams and said jig to bond said overlapping ends of said beams;

wrapping a wire between opposed beams, said wires being formed from an inorganic composition and uniformly spaced forming a grid;

covering said wires on said beams with an inorganic bonding material, said inorganic bonding material being substantially chemically and thermally compatible with said beam material;

covering said inorganic bonding material and said wires with a plurality of hold-down straps formed from inorganic material; and

firing said hold-down straps and said jig for bonding said wires to said beams.

8. A spark chamber frame, comprising:

a plurality of beams formed of inorganic material;

a first inorganic bonding material having substantially the same coefficient of thermal expansion as said beam material coupling the ends of said beams together;

a plurality of wires formed from an inorganic alloy and coupled between opposed beams, said wires being uniformly spaced and forming a grid;

a plurality of hold-down straps formed of inorganic material and having substantially the same chemical and thermal properties as said beam material, said hold-down straps overlying said wires and said beams; and

a second inorganic bonding material joining said hold-down straps, said wires and said beams.

4,325,002

LUMINESCENT SCREEN FOR FLAT IMAGE DISPLAY DEVICES

Manfred Kobale, Faistenhaar; Hans P. Lorenz, Schwarzenbruck; Kaspar Weingand, Gmund, and Rolf Wengert, Munich, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Dec. 11, 1979, Ser. No. 102,541

Claims priority, application Fed. Rep. of Germany, Dec. 20, 1978, 2855142

Int. Cl.³ H01J *61/35, 29/30*

U.S. Cl. 313—485 8 Claims

1. In a luminescent screen for flat image display devices having a glass screen plate with a pattern of luminescent points thereon with the surfaces of such luminescent points being separated from one another by a contrasting border layer, the improvement comprising wherein:

said glass screen plate is provided with a pattern of recesses on an inner surface thereof corresponding to said pattern of luminescent points;

a luminescent material layer is positioned in each of said recesses along the bottom thereof as well as on the upwardly extending walls thereof; and

a contrasting border layer is positioned on land areas between each of said recesses, said border layer at a surface layer thereof adjacent said glass surface plate being substantially pure dielectric material and at an outermost surface thereof being substantially pure metal, with a gradually increasing amount of metal between such surfaces.

4,325,003

MAGNETRON

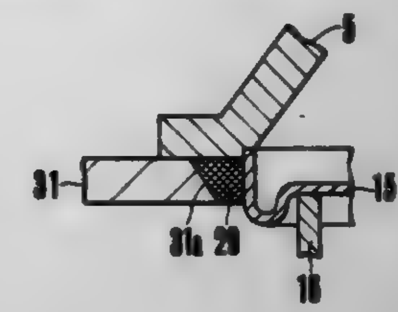
Suichi Hatayama, Mobara, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 28, 1980, Ser. No. 125,695

Claims priority, application Japan, May 11, 1979, 54-62044[U]

Int. Cl.³ H01J *25/50*

U.S. Cl. 315—39.51 4 Claims



1. In a magnetron comprising an anode having a plurality of vanes provided radially around a cathode, a magnetic pole piece provided at an output terminal portion of the anode to guide flux of a permanent magnet to the center of the anode, whereby high frequency wave is generated in an interaction space between the anode and the vanes, metal means for vacuum sealing arranged in alignment with the center of the magnetic pole piece, a yoke being contiguous to the end surface of the magnetic pole piece and having a central hole which faces the outer circumference of the vacuum sealing metal means to form a magnetic path of the permanent magnet, and a metal gasket surrounding the vacuum sealing metal means for preventing leakage of the high frequency wave, the improvement wherein said yoke has a retainer provided on a portion of said yoke which is in contact with said gasket, and the retainer, magnetic pole piece and vacuum sealing means substantially wrap said gasket to constrain movement in the axial direction thereby, preventing said gasket from falling off.

4,325,004

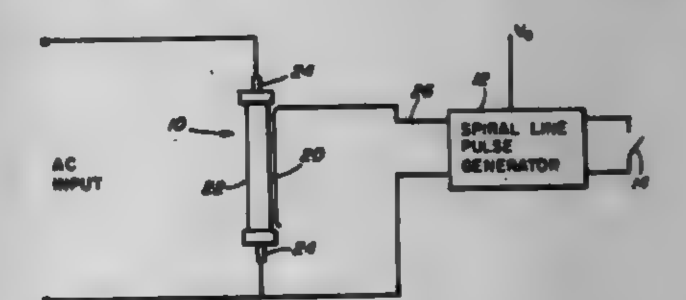
METHOD AND APPARATUS FOR STARTING HIGH INTENSITY DISCHARGE LAMPS

Joseph M. Proud, Wellesley; Leslie A. Riseberg, Sudbury, and Charles N. Fallier, Jr., Westford, all of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Oct. 2, 1980, Ser. No. 193,787

Int. Cl.³ H01J *7/44, 17/34, 29/96;* H01K *1/62*

U.S. Cl. 315—45 19 Claims



1. A light source comprising:

a high pressure discharge lamp including a discharge tube having electrodes sealed therein at opposite ends for receiving operating power and enclosing a fill material which emits light during discharge;

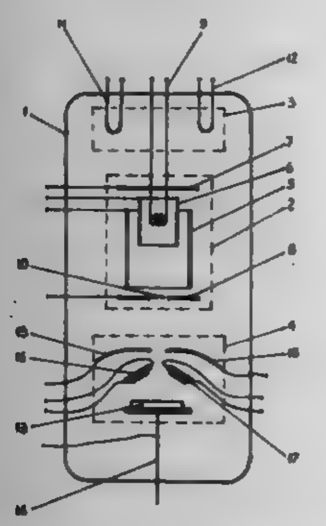
pulse generating means including

a spiral line pulse generator including two conductors and two insulators, each in the form of an elongated sheet, in an alternating and overlapping arrangement which is rolled together in a spiral configuration having a plurality of turns, said spiral line pulse generator further

including an output taken between an innermost turn and an outermost turn of said spiral configuration and
means for switching said conductors from a first predetermined low voltage therebetween to a second predetermined low voltage therebetween in a time interval which is much shorter than the transit time of electromagnetic waves between said innermost turn and said outermost turn of said spiral line pulse generator; and
means for coupling the output of said spiral line pulse generator to said discharge lamp,
whereby said spiral line pulse generator, after operation of said switching means, provides at said output a high voltage, short duration pulse of sufficient energy to initiate discharge in said high pressure discharge lamp.

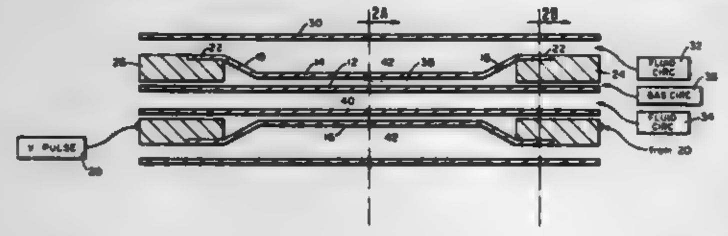
15. A method for starting a high pressure discharge lamp of the type including a discharge tube having electrodes sealed therein at opposite ends for receiving ac power from a lamp ballast and enclosing a fill material which emits light during discharge, said method comprising the steps of:
applying a first predetermined low voltage between two conductors of a spiral line pulse generator including said two conductors and two insulators, each in the form of an elongated sheet, in an alternating and overlapping arrangement which is rolled together in a spiral configuration having a plurality of turns, said spiral line pulse generator further including an output taken between an innermost turn and an outermost turn of said spiral configuration;
switching said conductors from said first low voltage therebetween to a second predetermined low voltage therebetween in a time interval which is much shorter than the transit time of electromagnetic waves between said innermost turn and said outermost turn of said spiral line pulse generator; and
coupling to said discharge lamp a high voltage, short duration pulse appearing at said output of said spiral line pulse generator after said step of switching said spiral line pulse generator,
whereby said high voltage pulse initiates discharge in said high pressure discharge lamp.

4,325,005
ION ACCELERATOR AND A METHOD FOR INCREASING ITS EFFICIENCY
Emil A. Ab, 1Emil Ab, 16/3 Ramot, Jerusalem, Israel
Filed Jul. 16, 1979, Ser. No. 57,894
Int. Cl.³ H01J *27/02*
U.S. Cl. 315—111.81 25 Claims



1. An ion accelerator comprising the following units enclosed in a common casing:
an ion source;
an arrangement of regulation of gas composition and pressure control
in a space closed by the ion accelerator casing;
a target unit;
wherein the said ion source contains
a main and an additional anode;
three cathodes one of which is a hot cathode;
wherein the said arrangement for regulation of gas composition and pressure control contains
a getter evaporation pump and a getter storage for ionized gas; and, wherein the said target unit contains
a target fastened on a holder;
an antidynatron electrode and an arrangement for target renovation.

4,325,006
HIGH PULSE REPETITION RATE COAXIAL FLASHLAMP
Richard G. Morton, Richland, Wash., assignor to Jersey Nuclear-AVCO Isotopes, Inc., Bellevue, Wash.
Filed Aug. 1, 1979, Ser. No. 62,635
Int. Cl.³ H05B *41/34;* H01J *61/52*
U.S. Cl. 315—112 9 Claims

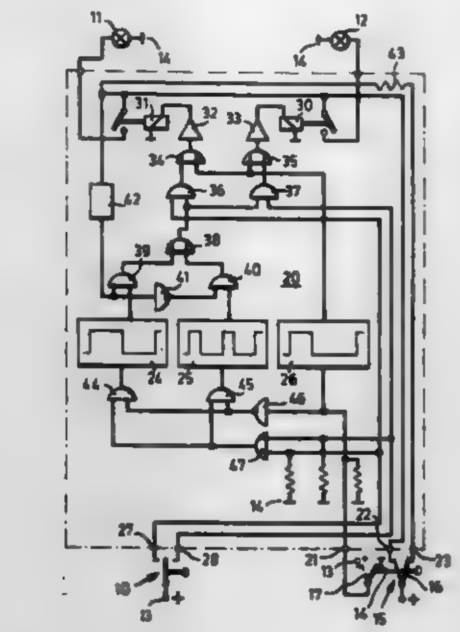


1. A flashlamp for pulsed operation at high repetition rates comprising:
a hollow, optically transparent outer tube;
a hollow, optically transparent central tube, coaxial with and within said outer tube and defining between said outer and central tubes a cylindrical discharge path having inner and outer surfaces coextensive with the inner and outer surfaces of said outer and central tubes;
a gas along said discharge path and capable of electrical energization to a light emitting condition;
means for energizing said gas to emit pulses of light at a rate above 200 Hz, and
an optically transparent envelope surrounding said outer tube and providing a conduit for coolant between itself and said outer tube.
means for cooling substantially the whole of at least said inner and outer surfaces by flowing a coolant through said central tube and between said envelope and outer tube thereby to shorten the fall time of the emitted light pulses.

4,325,007
HAZARD WARNING CIRCUIT
Hans Prohaska, Bietigheim-Bissingen, and Wolf Seitter, Marbach, both of Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.
Filed May 5, 1980, Ser. No. 146,410
Claims priority, application Fed. Rep. of Germany, May 21, 1979, 2920602
Int. Cl.³ B60Q *1/52, 1/38*
U.S. Cl. 315—200 A 2 Claims

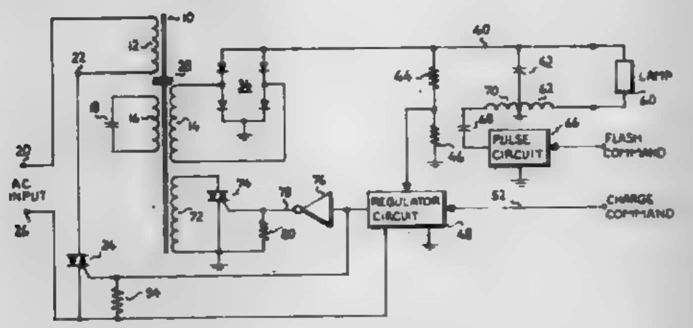
1. A turn-signal flasher circuit for automotive vehicles wherein a turn-signal switch controls one of two turn-signal lamp circuits, and in which a hazard warning switch controls both lamp circuits simultaneously, comprising a pulse generator for controlling the frequency of the flashing light output of the lamps during the turn-signal operation of the flasher circuit, and a second pulse generator having a mark-to-space ratio which is substantially less than the mark-to-space ratio of the

first generator and responsive to the hazard warning switch for controlling the frequency of the simultaneous flashing of both



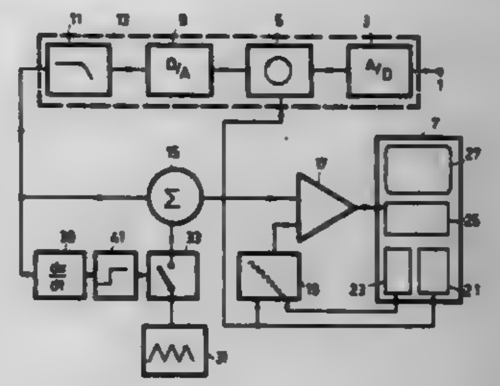
lamp circuits during the hazard warning operation of the flasher circuit.

4,325,008
CLAMP ASSISTED CYCLE CONTROL REGULATING SYSTEM
Walter G. Borland, and Robert F. Brehse, both of Fort Wayne, Ind., assignors to General Electric Company, Salem, Va.
Filed Jun. 9, 1980, Ser. No. 157,629
Int. Cl.³ H05B *41/34*
U.S. Cl. 315—241 R 5 Claims



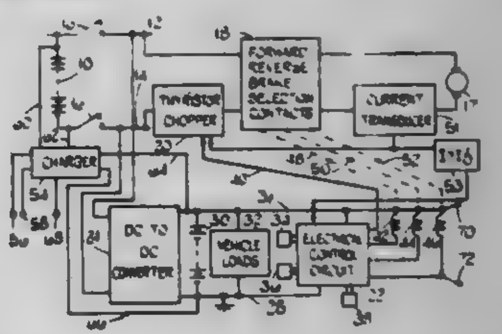
1. In a regulated power supply circuit of the type for providing a predetermined magnitude of DC voltage across an output capacitor from a primary AC power source including a power transformer having a primary winding interruptably connected to the AC source by a gated triac, a first secondary winding for producing an AC output voltage, rectifying means interconnecting the first secondary winding and the output capacitor for converting the AC output voltage to a DC voltage on the capacitor and regulating means connected for sensing the voltage on the capacitor and for interrupting the connection between the AC source and the transformer primary winding by terminating a gate signal to the triac when the capacitor voltage reaches a predetermined magnitude, the improvement comprising:
(a) a control winding wound on the power transformer, said control winding having a pair of output terminals;
(b) controllable switch means connected between said pair of control winding output terminals for selectively short-circuiting said control winding; and,
(c) means responsive to the termination of the gate signal to the triac for energizing said switch means whereby said control winding is short circuited and further enhancement of the voltage on the output capacitor is inhibited.

4,325,009
DEVICE FOR DISPLAYING AN ANALOG SIGNAL ON A DISPLAY SCREEN
Henning H. Andersen, Albertlund, Denmark, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Jun. 5, 1980, Ser. No. 156,895
Claims priority, application Netherlands, Jun. 6, 1979, 7904430
Int. Cl.³ H01J *29/52*
U.S. Cl. 315—386 4 Claims



1. A device for displaying an analog signal on the display screen of a cathode ray tube, comprising a line deflection generator and a frame deflection generator for scanning the display screen in a line raster pattern, a signal processing device which is arranged to form a processed signal by repeating the analog signal at the frequency of the line deflection generator, a reference voltage generator for generating a reference voltage whose value is dependent on the output voltage of the frame deflection generator, a comparator for comparing the processed signal with the reference voltage, the output voltage thereof being applied as a control signal to a beam intensity control device for the selective brightening of the scanned display screen, characterized in that the device comprises means (31, 15) for adding a periodically varying auxiliary signal to the processed signal, the frequency of said auxiliary signal amounting to at least ten times the frequency of the line deflection generator (21).

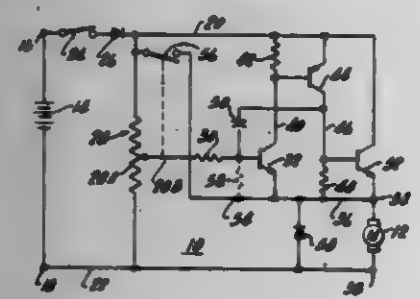
4,325,010
BATTERY STATE OF CHARGE INDICATOR DEVICE
Michael W. Lowndes, Birmingham, England, assignor to Lucas Industries Limited, Birmingham, England
Division of Ser. No. 146,900, May 5, 1980, which is a continuation of Ser. No. 918,539, Jun. 23, 1978, abandoned. This application Jul. 18, 1980, Ser. No. 171,937
Claims priority, application United Kingdom, Jul. 1, 1977, 27716/77; Apr. 12, 1978, 14288/78
Int. Cl.³ H02P *5/28*
U.S. Cl. 318—139 5 Claims



1. An electric vehicle including an electric storage battery; an electric traction motor mechanically connected to at least one ground wheel of the vehicle; motor current control means electrically connecting the motor to the battery, said control means including driver operable means and motor current sensing means and operating to control the supply of current to

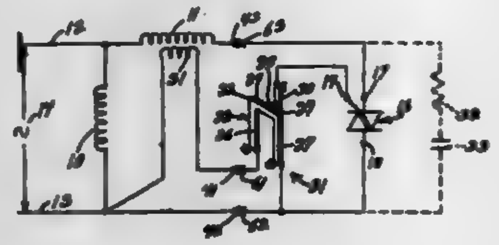
the motor in accordance with the setting of the driver operable means; and a battery state-of-charge monitoring means comprising a battery voltage sensing circuit connected to the battery and providing an output signal representing the battery voltage, a signal storage device, a switch device connecting the output of the voltage sensing means to the signal storage device, said switch device having a control input at which a predetermined signal causes the output of the voltage sensing means to be applied to the signal storage device, a unidirectional current flow device in series with said switch device connected to prevent the signal stored on the signal storage device being increased in normal operation, triggering means connected to the current sensing means and operating when the output of the current sensing means indicates that the motor current falls below a predetermined level, timing means connected to said triggering means and to said control input of the switching device and operating so as to render the switching device conductive briefly after a predetermined delay following each operation of the triggering means, and indicating means connected to the signal storage device and providing a continuous indication of the signal stored on said storage device.

4,325,011
PULSE WIDTH MODULATION CONTROL CIRCUIT
Donovan F. Peterson, 655 Meadow La., Elm Grove, Wis. 53122
Filed Jan. 31, 1980, Ser. No. 117,257
Int. Cl.³ H02P *5/16*
U.S. Cl. 318—345 B 33 Claims



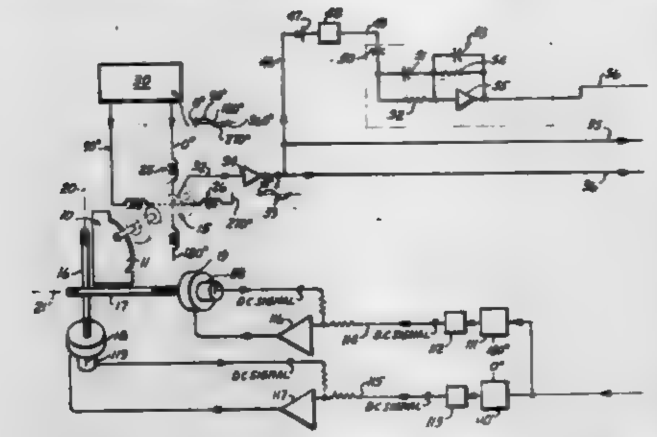
1. A control circuit providing pulse width modulated energization to a load from a d.c. power source comprising:
a pair of input terminals connectable to the d.c. source;
a pair of output terminals connectable to the load;
control means providing a control signal;
a first controllable semiconductor current conduction means having a pair of power terminals and a control terminal arranged in a first polarity configuration, said control terminal controlling the flow of current through said power terminals, one of said power terminals being connected through a first bias means to one of said input terminals, the other of said power terminals being connected to one of said output terminals, said control terminal being coupled to said control means;
a second controllable semiconductor current conduction means having a pair of power terminals and a control terminal arranged in a second polarity configuration complementary to said first configuration, said control terminal controlling the flow of current through said power terminals, one of said power terminals being connected to said one of said input terminals, the other of said power terminals being connected through a second bias means to said one of said output terminals, said second bias means providing a voltage responsive to the current through it, said control terminal being connected intermediate said first bias means and said one of said power terminals of said first controllable current conduction means for rendering said second current conduction means conductive when said first current conduction means is conductive;
a third controllable semiconductor current conduction means having a pair of power terminals and a control terminal arranged in said first polarity configuration, said control terminal controlling the flow of current through said power terminals, one of said power terminals being connected to said one of said input terminals, the other of said power terminals being connected to said one of said output terminals, said control terminal being connected intermediate said second bias means and said other power terminal of said second controllable current conduction means for rendering said third current conduction means conductive when said second current conduction means is conductive, said second bias means being connected in parallel between said control terminal and said other power terminal of said third controllable current conduction means so that the voltage across said second bias means is limited by the voltage drop across said control and other power terminal;
coupling means extending from the common connection of said other power terminal of said second current conduction means and said second bias means to the control terminal of said first current conduction means for providing a feedback signal determined by the limited voltage drop across said second bias means to said first current conduction means for driving said current conduction means into saturation for a period determined by the magnitude of the control signal; and
means connecting the other of said input and output terminals together.

4,325,012
START WINDING CUT-OUT CIRCUIT FOR AN ELECTRIC MOTOR
Edward J. Schaefer, Bluffton, Ind., assignor to Franklin Electric Co., Inc., Bluffton, Ind.
Continuation-in-part of Ser. No. 3,357, Jan. 15, 1979, which is a continuation of Ser. No. 770,110, Feb. 18, 1977, abandoned, which is a continuation-in-part of Ser. No. 618,359, Oct. 1, 1975, abandoned. This application Mar. 15, 1979, Ser. No. 21,268
Int. Cl.³ H02P *1/44*
U.S. Cl. 318—786 39 Claims



1. A start winding cut-out circuit for an AC electric motor including a stator, a main winding and a start winding, said main winding being adapted to be connected across AC power supply lines, said circuit comprising an electronic switch having a pair of power terminals and a gate which closes said switch in response to triggering current appearing thereon, said power terminals and said start winding being connected in series and connected across said main winding, timing means operating through a timing interval during current flow therethrough, said timing means being connected to said gate and forming a source of trigger current to said gate, and an auxiliary coil wound on said stator and adapted to have a voltage induced therein, said auxiliary coil being connected to provide said current flow through said timing means to provide said trigger current for said time interval after initial energization of said motor.

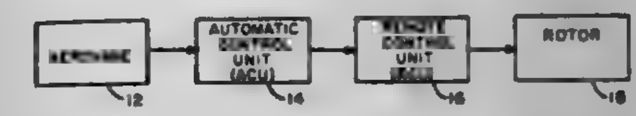
4,325,013
ELECTRICAL TRACER CONTROL SYSTEM UTILIZING SINE WAVE RESOLUTION
Robert H. Wenzel, 3426 E. Ruth Pl., Orange, Calif. 92667
Filed Mar. 28, 1980, Ser. No. 134,766
Int. Cl.³ G05B *19/33*
U.S. Cl. 318—578 18 Claims



1. A control for a profiling machine tool of the type which includes means mounting a cutting tool, and is adapted to cause relative motion between said cutting tool and a workpiece along at least two orthogonally-related axes so the said cutting tool can traverse a path relative to the workpiece which is geometrically similar to the contour of a template or pattern, motor means respective to each of said axes for causing relative motion along each respective axis, a sensing head of the type having a deflectible stylus and, coupled to said stylus, a pair of stylus position transducers each respective to one of said axes and adapted to produce a signal with a magnitude indicative of stylus defection in the respective axis, said control comprising:
a source of excitation voltage to excite each of said transducers with a sinusoidal voltage to produce a signal from both of said transducers, the excitation voltages applied to said transducers being 90° out of phase with one another;
means combining said signals from said transducers to provide a single sinusoidal transducer output signal;
voltage regulator means receiving said single signal and producing a regulated signal whose time of zero voltage crossing is in time phase with the same zero crossing of said single signal and having a constant and pre-determined sinusoidal voltage;
adjustable stylus deflection control means providing a direct current command signal proportional to a desired stylus deflection;
multiplier means multiplying one of said regulated signal and said single signal by said direct current command signal to produce a multiplied signal;
inverting means inverting one of said single signal, regulated signal or multiplied signal;
means receiving and combining said multiplied signal, and whichever of said regulated signal and single signal that was not multiplied by said direct current command to produce a sinusoidal error signal; and
resolution means receiving said error signal and producing motor control signals respective to stylus error on respective axes, which enable power to be supplied to drive respective motors in such directions as to reduce the error signal as the consequence of changing the relative position of the sensing head and template or pattern by operation of said motors.

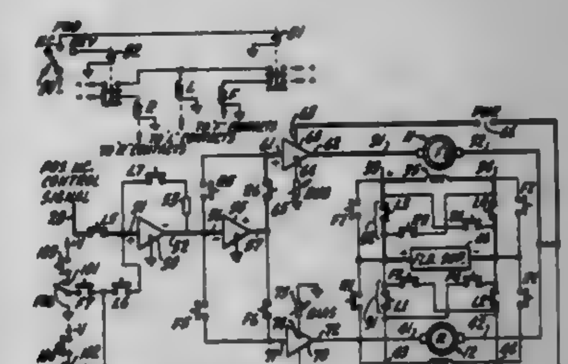
4,325,014
AUTOMATIC CONTROL UNIT FOR A WIND-FOLLOWING ROTOR
Richard K. Jeck, 23700 Eli La., Gaithersburg, Md. 20760
Filed Jan. 14, 1980, Ser. No. 111,592
Int. Cl.³ G05B *5/01*
U.S. Cl. 318—614 12 Claims

1. Control apparatus for automatically controlling the angle and direction of rotation of the output shaft of a reversible motor as a function of a sensed fluid flow, said apparatus comprising:
means for receiving a flow direction signal responsive to the direction of said fluid flow, said signal representing a function of the angular displacement of said fluid flow from a pre-determined flow direction;
reference direction signal means for providing a direction reference signal representing a predetermined minimum angular displacement of said fluid flow from said predetermined flow direction;



directional threshold detection means responsive to said flow direction signal and direction reference signal for providing a control signal only when said flow direction signal is at least as large as said reference direction signal;
reversing means responsive to a predetermined rotation of said motor shaft relative to said predetermined direction for automatically reversing the rotation direction of said motor; and
control means responsive to said control signal for actuating the motor.

4,325,015
DUAL MOTOR DRIVE FOR MACHINE TOOL
Francis E. Helberger, Elmhurst, Ill., assignor to Danly Machine Corporation, Chicago, Ill.
Filed May 21, 1980, Ser. No. 151,899
Int. Cl.³ G05B *11/32*
U.S. Cl. 318—625 6 Claims



1. In a dual motor drive for a turntable of a machine tool capable of operating in a numerically controlled mode and a lathe mode, the combination comprising a circular rack on the turntable, a forward drive motor having a pinion, a reverse drive motor having a pinion, the pinions both being constantly coupled to the rack, a source of normal control signal variable in polarity and magnitude incident to operation in the numerically controlled mode, circuitry including amplifiers interposed between the source of normal control signal and the motors for drivingly energizing the motors alternatively depending upon the polarity of the normal control signal and at a speed which depends upon the magnitude of such signal, a source of auxiliary control signal of first polarity, means including a first set of auxiliary switches for reversing the direction of the reverse drive motor so that when the auxiliary signal of first polarity is applied both motors serve additively to drive the turntable in the forward direction in the lathe mode, a source of auxiliary control signal of second polarity, means including a second set of auxiliary switches for reversing the direction of the forward drive motor so that when the auxiliary signal of second polarity is applied both motors serve additively to drive the turntable in the reverse direction in the

lathe mode, manual selector means for (a) actuating the first set of switches while applying the auxiliary control signal of first polarity and for (b) actuating the second set of switches while applying the auxiliary control signal of second polarity, and means for disabling the normal control signal while one of the auxiliary control signals is being applied.

4,325,016

DEVICE FOR CONTROLLING PICKUP ARM MOVEMENT IN LINEAR TRACKING PICKUP ARM APPARATUS

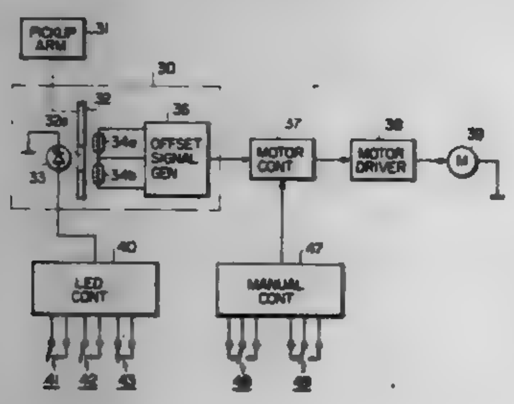
Atsushi Takeuchi, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Jun. 13, 1980, Ser. No. 159,383

Claims priority, application Japan, Jun. 15, 1979, 54-75397; Jun. 15, 1979, 54-75398; Jun. 21, 1979, 54-78369

Int. Cl.³ G05B *1/06*

U.S. Cl. 318—640 **26 Claims**



1. A device for controlling movements of a pickup arm in a linear tracking pickup arm apparatus, comprising:
a pickup arm;
means for supporting said pickup arm for vertical and horizontal movements;
carriage means for carrying said pickup arm and said supporting means and being movable in direction perpendicular to the longitudinal axis of said pickup arm;
means for driving said carriage means; and
means of photo-electricity converting type for detecting a horizontal offset angle of said pickup arm and comprising a light-emitting element and a light-receiving element which receives a light beam of an amount corresponding to said offset angle,
the improvement comprising:
offset angle signal generating means connected to said offset angle detecting means for generating an offset angle signal of a value and a polarity corresponding to a magnitude and a direction of a detected offset angle of the pickup arm;
means for controlling the movement of said carriage means and being responsive to the offset angle signal to drive said carriage means to move said pickup arm so as to reduce said offset angle;
light-emitting element controlling means including means for detecting a position of said pickup arm for turning out a light-emission of said light-emitting element of said offset angle detecting means when the pickup arm is at one of its predetermined positions to thereby disable offset angle detecting means; and
manual controlling means including manually operable switch means for delivering to said carriage controlling means a carriage dirving signal in accordance with a manual operation of said switch means when said off-set angle detecting means is disabled.

4,325,017

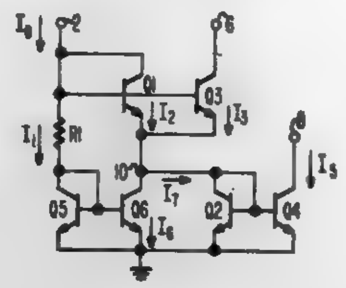
TEMPERATURE-CORRECTION NETWORK FOR EXTRAPOLATED BAND-GAP VOLTAGE REFERENCE CIRCUIT

Otto H. Schade, Jr., North Caldwell, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 14, 1980, Ser. No. 177,913

Int. Cl.³ G05F *1/58*

U.S. Cl. 323—313 **21 Claims**



1. A circuit for generating temperature dependent current for reducing the temperature dependence of a temperature dependent signal in an electrical circuit comprising:
resistance means having first and second ends for providing a resistance therebetween that exhibits a temperature coefficient;
semiconductor junction means having first and second ends for exhibiting a conduction potential responsive to current flow therethrough, which conduction potential exhibits a temperature coefficient of different value than that of said resistance;
means for maintaining related potentials across said resistance means and said semiconductor junction means;
current supplying means for supplying current to said resistance means and said semiconductor junction means so that the respective current through each is substantially equal to the difference between said supply current and the current in the other of said resistance means and said semiconductor junction means, whereby the current in each varies at a different rate with temperature;
means connected to one of said resistance means and said semiconductor junction means for receiving a substantial portion of the current therethrough and for developing said temperature dependent current in response to said substantial portion of the current; and
means for applying said temperature dependent current to said electrical circuit to effect said reduction.

4,325,018

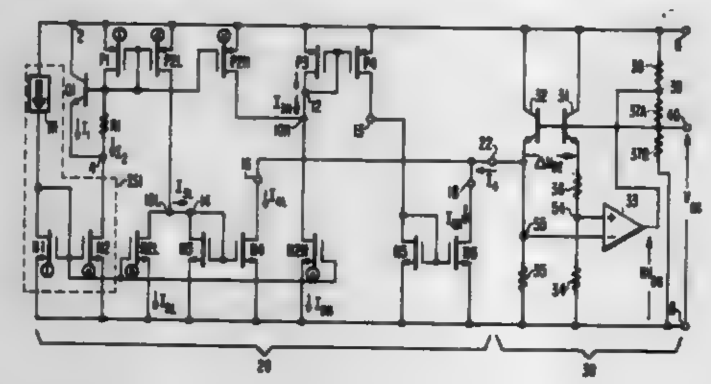
TEMPERATURE-CORRECTION NETWORK WITH MULTIPLE CORRECTIONS AS FOR EXTRAPOLATED BAND-GAP VOLTAGE REFERENCE CIRCUITS

Otto H. Schade, Jr., North Caldwell, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 14, 1980, Ser. No. 177,915

Int. Cl.³ G05F *3/20*

U.S. Cl. 323—313 **29 Claims**



1. A circuit for generating a current responsive to the difference between a threshold temperature and a temperature removed therefrom comprising:

resistance means, having first and second ends, for providing a resistance therebetween that exhibits a temperature coefficient;
semiconductor junction means having first and second electrodes, said semiconductor junction means having a conduction potential that exhibits a temperature coefficient of value different than that of said resistance;
means connected to said resistance means and to said semiconductor junction means for maintaining the potentials thereacross in predetermined relationship;
means connected to the first electrode of said semiconductor junction means for applying a current thereto to condition said semiconductor junction means for conduction;
constant current generating means for supplying a reference current of magnitude proportional to that of the current flow in one of said resistance means and said semiconductor junction means at said threshold temperature; and
means for subtractively combining said reference current and a current responsive to the current flow in said one of said resistance means and said semiconductor junction means when said temperature departs from said threshold temperature in a predetermined direction to generate said current responsive to the difference between a threshold temperature and a temperature removed therefrom.

4,325,019

CURRENT STABILIZER

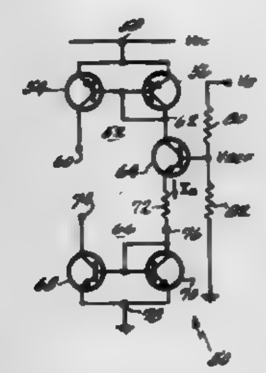
Hideharu Tezuka, Yokosukashi, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Sep. 19, 1980, Ser. No. 188,661

Claims priority, application Japan, Oct. 3, 1979, 54-127792

Int. Cl.³ G05F *3/20*

U.S. Cl. 323—315 **4 Claims**



1. A current stabilizing circuit comprising:
a current source including first and second terminals, the current flowing through said first terminal controlling the current that may flow through said second terminal;
a transistor circuit including a resistor and a transistor having a base and current conducting terminals, said resistor being connected in series with said current conducting terminals, said transistor circuit being connected to said first terminal; and
means for controlling the current flowing through said base in relation to the temperature coefficients of said resistor and said transistor to cause the current that may flow through said second terminal to be constant and temperature independent.

4,325,020

REGULATING TRANSFORMER

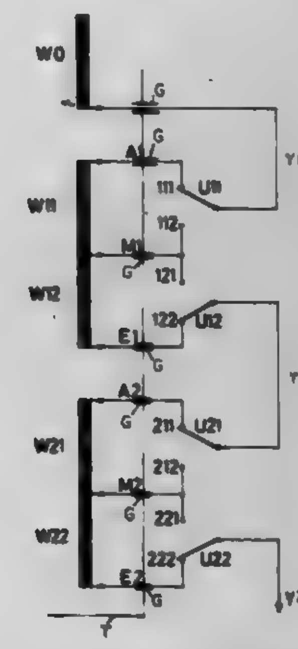
Franz Wein, Regensburg, Fed. Rep. of Germany, assignor to Machinenfabrik Reinhausen Gebruder Scheubeck GmbH & Co KG, Regensburg, Fed. Rep. of Germany

Filed Aug. 25, 1980, Ser. No. 181,020

Claims priority, application Fed. Rep. of Germany, Sep. 11, 1979, 2936680

Int. Cl.³ H01F *29/02*

U.S. Cl. 323—340 **1 Claim**



1. A regulating transformer comprising
(a) a base winding;
(b) a plurality of aligned auxiliary windings adapted to be serially connected in whole or in part to said base winding;
(c) each of said auxiliary windings having two ends and a tap between said two ends;
(d) a plurality of pairs of aligned change-over switches, the number of said pairs of change-over switches being equal to the number of said auxiliary windings;
(e) each pair of change-over switches including a first and a second fixed contact and a first movable contact adapted to engage selectively said first and said second fixed contact, and each pair of change-over switches further including a third and a fourth fixed contact and a second movable contact adapted to engage selectively each of said third and fourth fixed contacts;
(f) said first fixed contact of each pair of change-over switches being conductively connected to one end of one of said auxiliary windings, said second and said third fixed contacts of each of said pair of change-over switches being conductively connected to said tap of one of said auxiliary windings, and said fourth fixed contact of each pair of said change-over switches being conductively connected to the other end of one of said auxiliary windings;
(g) a point of said base winding being conductively connected to said first movable contact in the line of said pairs of change-over switches; and
(h) conductive connections interconnecting the movable contacts of said change-over switches according to their alignment.

4,325,021

REGULATED SWITCHING APPARATUS

John B. McMackin, Easington, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Sep. 26, 1980, Ser. No. 190,987

Int. Cl.³ G05F *1/56*

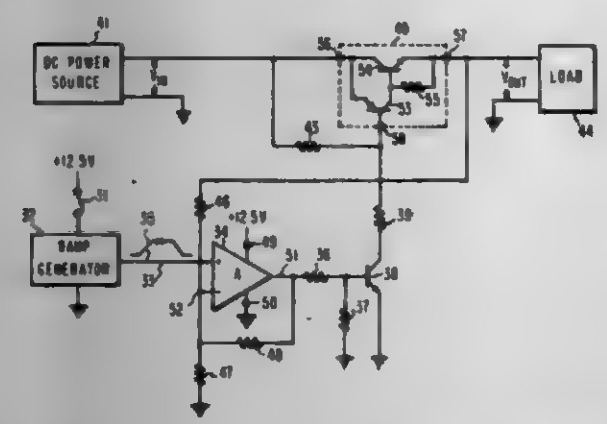
U.S. Cl. 323—351 **3 Claims**

1. An apparatus for providing linear switching of DC power

from a source to a load in which the switching transitions have linearly regulated rise and fall times responsive to an input control signal, said apparatus comprising:

a symmetrical ramp generator responsive to said control signal in one state for generating a rising ramp signal and in another state of said control signal for generating a falling ramp signal;

switch means including input and output terminals for coupling said source and said load, respectively, and having a switch control terminal, said switch means providing DC power from said source to said load according to the signal level at said switch control terminal, said switch



means being of the type to provide essentially constant potential drop between said input and output terminals when said signal level is above that certain threshold that provides coupling of power from said source to said load;

controllable limiter means including first and second limiter control terminals, said first limiter control terminal responsive to said ramp signal for providing a ramp control signal to said switch control terminal for thereby controlling the DC power from said source to said load; and

means coupled between the output terminal of said switch means and said second limiter control terminal for limiting the slope of said ramp control signal to always linearly regulate the rise and fall times of said power to said load.

4,325,022

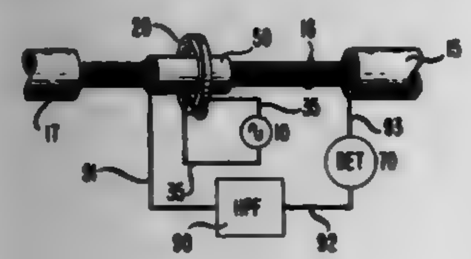
CABLE SHIELD FAULT LOCATION USING A CAPACITIVE-INDUCTIVE COUPLER

James A. Pelletier, Dover, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 17, 1979, Ser. No. 104,158

Int. Cl.³ G01R *31/11*

U.S. Cl. 324—52 **3 Claims**



1. Apparatus for detecting an open shield or bond along a cable route from a test location wherein each cable comprising the route has a multiplicity of wires surrounded by a conductive sheath, the shield formed by bonding the individual sheaths of juxtaposed cables, said apparatus

CHARACTERIZED BY

a capacitive coupler adapted for encompassing a plurality of said wires at said test location while maintaining the electrical and mechanical integrity of said wires,

a detector, connected between said coupler and said shield, for sensing signals propagated along a transmission line having said plurality as one conductor and said shield as the other conductor of said line,

said plurality, said coupler, said detector and the input impedance of said transmission line forming a series electrical path,

a high-frequency, time-limited source, and

a drive transformer, collocated with said coupler, comprising a split core for encircling said plurality and thereby magnetically coupling to said path, and a drive winding connected to said source,

wherein said detector provides an indication of the relative time displacement between the signal coupled to said line by said source and the return signal propagated along said line by reflection from said open.

4,325,023

DEVICE FOR INSPECTING AN INDIVIDUAL HIGH FREQUENCY SIGNAL SELECTED ACCORDING TO FREQUENCY FROM A BROAD FREQUENCY BAND

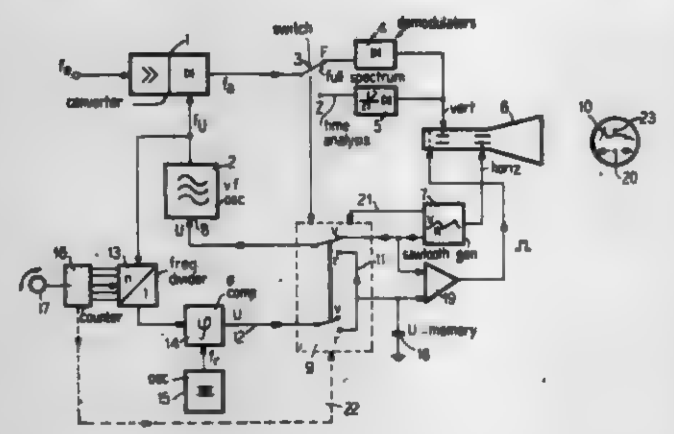
Kurt Zirwick, Greifenberg, Fed. Rep. of Germany, assignor to Rohde & Schwarz GmbH & Co KG, Fed. Rep. of Germany

Filed Apr. 7, 1980, Ser. No. 137,895

Claims priority, application Fed. Rep. of Germany, Apr. 7, 1979, 2914143

Int. Cl.³ G01R *23/16*

U.S. Cl. 324—77 B **10 Claims**



1. A device for inspecting an individual high frequency signal selected according to frequency from a broad frequency band, comprising:

a cathode ray tube including a beam generating system, first and second beam deflection systems and a picture screen;

input means including a converter for converting input signals to different frequency positions;

demodulator means connecting said input means to said first beam deflection system;

a sweep generator connected to said second deflection system for generating a periodic sweep voltage including a leading edge and a trailing edge;

a local oscillator, including a phase controlled oscillator connected to and swept across a frequency range by said sweep generator to cause a display of all signals occurring in the frequency band in a spectrum on said picture screen;

an adjustable frequency mark generator connected to said oscillator for generating a frequency mark voltage including a phase comparator, said frequency mark generator connected to said beam generating system to produce a mark which is adjustable on said picture screen to indicate a selected frequency;

storage means connected to said frequency mark generator; and

switching means connected between said sweep generator and said oscillator, and between said frequency mark generator and said oscillator and said storage means,

said switching means operable in a first mode to disconnect said sweep generator from said oscillator so that the instantaneous tuning voltage generated by said mark generator is stored in said storage means, and operable in a second mode to connect said sweep voltage to said local oscillator and to connect said storage means to said phase comparator to compare the sweep voltage of the generator with the tuning stored voltage,

said switching means being maintained in the first mode during inspection of the selected frequency.

4,325,024

SYSTEM FOR MEASURING SIGNAL LEVELS

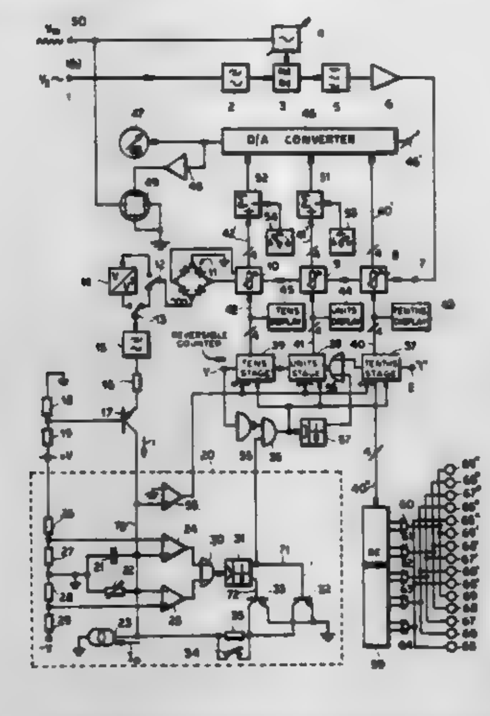
Karl-Heinz Heidenreich, Riederich, Fed. Rep. of Germany, and Helmut Wachtelborn, Parsippany, N.J., assignors to Wandel & Goltermann GmbH & Co., Eningen, Fed. Rep. of Germany

Filed Jul. 11, 1980, Ser. No. 168,751

Claims priority, application Fed. Rep. of Germany, Jul. 14, 1979, 2928517

Int. Cl.³ G01R *17/06, 15/10*

U.S. Cl. 324—99 D **15 Claims**



1. A system for measuring the level of an incoming signal, comprising:

input means for receiving said incoming signal;

circuitry including digitally adjustable attenuation means connected to said input means for converting said incoming signal into a calibration current in an output circuit thereof;

reversible pulse-counting means connected to said attenuation means for adjusting same;

a source of constant reference current connected in bucking relationship with said attenuation means to said output circuit for producing a bipolar resulting current corresponding to the difference between said calibration and reference currents;

capacitive means connected to said output circuit for charging by said resulting current with a polarity depending upon the relative magnitudes of said calibration and reference currents;

threshold-sensing means connected to said capacitive means for unblocking a discharge path for said capacitive means upon the charge thereon attaining an absolute magnitude surpassing a predetermined limit, thereby generating a train of switching pulses with a recurrence period varying inversely with the absolute magnitude of said resulting current;

polarity-discriminating means connected across said capacitive means, said pulse-counting means being connected to said threshold-sensing means for stepping by said switching pulses in a direction determined by an output of said polarity-discriminating means with consequent adjustment of said attenuation means to reduce the difference between said calibration and reference currents to substantially zero; and

indicator means connected to said pulse-counting means for reading out the amount of attenuation required for substantial equalization of said calibration and reference currents.

4,325,025

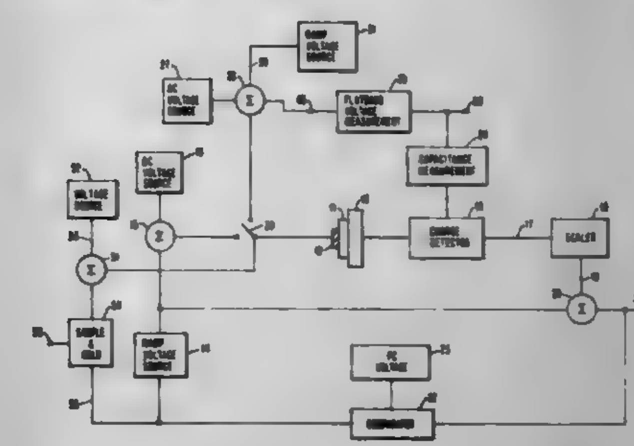
AUTOMATED CHANNEL DOPING MEASURING CIRCUIT

Richard A. Corcoran, Colchester; William A. Keenan, Montpelier; Demetrios Michaelides, South Burlington, all of Vt., and Bob H. Yun, Hopewell Jct., N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 22, 1980, Ser. No. 152,226

Int. Cl.³ G01R *31/26, 27/26*

U.S. Cl. 324—158 R **7 Claims**



1. An apparatus for measuring, in a metal insulator semiconductor structure, the surface potential and the impurity concentration in the semiconductor comprising:

means for measuring the flat band voltage of the structure,

means for measuring the capacitance of the insulator of the structure,

ramp voltage means for selectively biasing the semiconductor above the flat band voltage of the structure to deplete the semiconductor of mobile charges and effect a change in surface potential on the semiconductor,

integrator means coupled to the semiconductor for monitoring the impurity concentration in the semiconductor, and

summing means coupled to the output of the integrator means and to the ramp voltage of impurity concentration in the semiconductor into a measurement of the surface potential in the semiconductor.

4,325,026

PLURAL COIL EDDY CURRENT MAPPING PROBE

Frank W. Cooper, Jr., Monroeville, and Leonard R. Golick, Trafford, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 19, 1979, Ser. No. 21,652

Int. Cl.³ G01R *33/12*; G01N *27/90*

U.S. Cl. 324—232 **9 Claims**

1. An eddy current probe for mapping holes which extend into and at least partially through a magnetic material comprising:

a probe housing sized to be slidably inserted into the holes to be mapped in a direction parallel to a given axis of the probe;

a first eddy current coil affixed at one end of the probe having its axis of revolution parallel to the given axis of the probe;

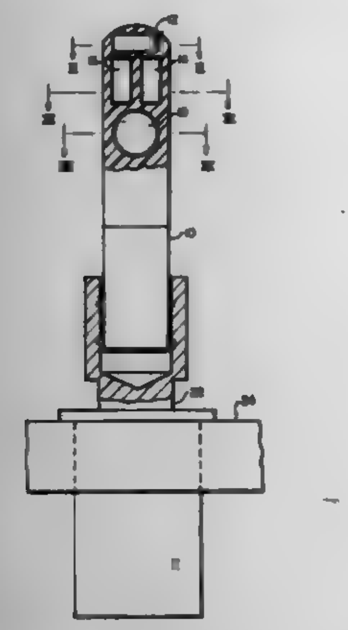
a second eddy current coil positioned on one side of and having its axis of revolution perpendicular to the given axis of the probe;

a third eddy current coil situated in juxtaposition to and along a common axis of revolution with the second eddy current coil on the opposite side of the given axis of the probe;

a fourth eddy current coil positioned on one side of and having its axis of revolution perpendicular to the given

axis of the probe and perpendicular to the axis of revolution of the second and third eddy current coils;

a fifth eddy current coil positioned in juxtaposition to and along a common axis of revolution with the fourth eddy current coil on the opposite side of the given axis of the probe;



means for communicating an alternating current to excite the respective coils; and

means for providing an electrical output representative of the relative impedance of the respective coils.

4,325,027

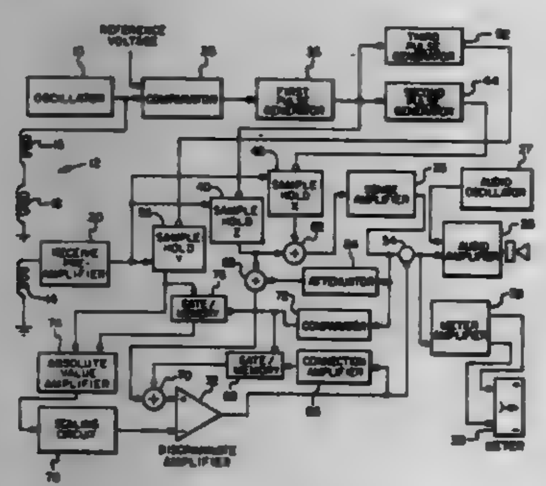
METAL DETECTOR FOR LOCATING OBJECTS WITH FULL SENSITIVITY IN THE PRESENCE OF DISTRIBUTED MINERAL MATERIAL

Donald W. Dykstra, and Samuel E. Calvin, both of Forest Grove, Oreg., assignors to Compass Electronics, Forest Grove, Oreg.

Filed Nov. 28, 1979, Ser. No. 98,233

Int. Cl.[3] G01V *3/11, 3/165*

U.S. Cl. 324—329 10 Claims



1. A metal detector apparatus, comprising:

(a) a signal source circuit for producing a periodic transmit signal;

(b) a transmit coil, connected to said signal source circuit, for producing a changing magnetic field in response to said transmit signal;

(c) a receive coil, magnetically coupled to said transmit coil, for producing a receive signal in response to the proximity of material which distorts said magnetic field;

(d) first sampling means, synchronized with said transmit signal, for producing a first sample signal representative of the amplitude of said receive signal at a first predetermined phase relationship with said transmit signal;

(e) second sampling means, synchronized with said transmit signal, for producing a second sample signal representative of the amplitude of said receive signal at a second predetermined phase relationship with said transmit signal;

(f) discriminate amplifier means, having a first input connected to said first sampling means, and a second input connected to said second sampling means, and an output, for producing a discriminate signal representative of the proximity of a field-distorting material, said discriminate signal being proportional to the difference in amplitude between signals applied to said first and second inputs;

(g) feedback means, connected to said output of said discriminate amplifier means, for applying a correction signal to a selected input of said discriminate amplifier and thereby maintaining said discriminate signal at a predetermined amplitude; and

(h) interrupt means, connected to said feedback means and said selected input of said discriminate amplifier, and responsive to said receive signal, for fixing said correction signal in response to the proximity of a metallic material, such that said discriminate signal may vary in a predetermined relationship with the difference in amplitude between said first and second sample signals.

4,325,028

EXAMINATION APPARATUS FOR MILK DRAWN FROM QUARTER MAMMAE OF A MILK COW

Toshio Takahashi, Honjo, Japan, assignor to Eisai Co., Ltd., Tokyo, Japan

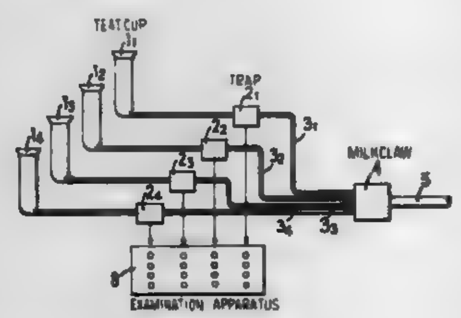
PCT No. PCT/JP79/00187, § 371 Date Mar. 14, 1980, § 102(e) Date Mar. 5, 1980, PCT Pub. No. WO80/00274, PCT Pub. Date Feb. 21, 1980

PCT Filed Jul. 13, 1979, Ser. No. 191,213

Claims priority, application Japan, Jul. 14, 1978, 53-085951

Int. Cl.[3] G01N *27/42*

U.S. Cl. 324—442 10 Claims



1. An examination apparatus for milk drawn from the quarter mamma of a cow, comprising a flow passage for the milk drawn from each quarter mamma, a trap provided in each said flow passage, electrodes provided in each said trap, an electric conductivity measuring circuit connected to said electrodes in each said trap for measuring the electric conductivity of the milk therein, a minimum value selecting circuit connected to said electric conductivity measuring circuit for selecting the minimum conductivity value measured, a subtracting circuit connected to said electric conductivity measuring circuit and the minimum value selecting circuit for outputting the difference in electric conductivity of the milk from at least two of the quarter mammae, comparator circuit means for comparing the output of said subtracting circuit with at least one predetermined reference value, grouping circuit means for grouping corresponding outputs of said comparator circuit means and an indication means responsive to the output of said grouping circuit means for indicating the extent of the quality of the milk.

4,325,029

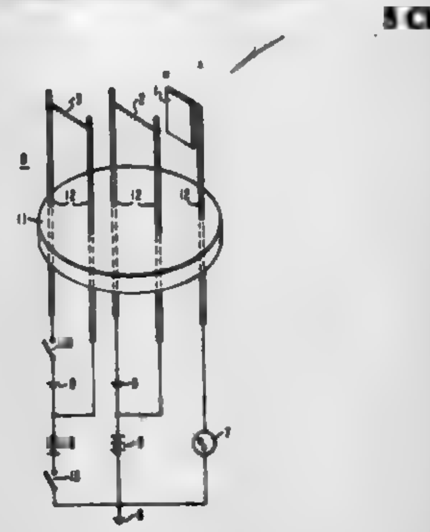
ALKALI IONIZATION DETECTOR

John Hrizo, Monroeville; James E. Bauerle, Plum Borough, and Robert E. Witkowski, West Mifflin, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 10, 1979, Ser. No. 73,827

Int. Cl.[3] G01N *27/62;* G01R *35/00*

U.S. Cl. 324—468 5 Claims



1. In an alkali metal ionization detector having a heated filament electrode for thermally ionizing alkali metal atoms or alkali metal-containing particles in a monitored gas environment to form positive ions, and a source of electrical potential connected to a collector electrode to attract the positive ions and establish an ion current flow which is indicative of the concentration of the alkali metal atoms or alkali metal-containing particles, the improvement for providing the in-situ calibration of the detector, the improvement comprising,

a calibration filament element including the alkali metal of interest, said element being positioned adjacent to said heated filament electrode, and

a calibration electrical excitation means connected to said calibration filament element to cause said calibration filament element to generate alkali metal atoms,

said heated filament electrode responding to said alkali metal atoms by producing positive ions by positive surface ionization, said positive ions being attracted to said collector electrode and establishing a calibration ion current flow in said detector.

4,325,030

FREQUENCY DISCRIMINATOR FOR SIGNAL RECEIVER OF TELECOMMUNICATION SYSTEM

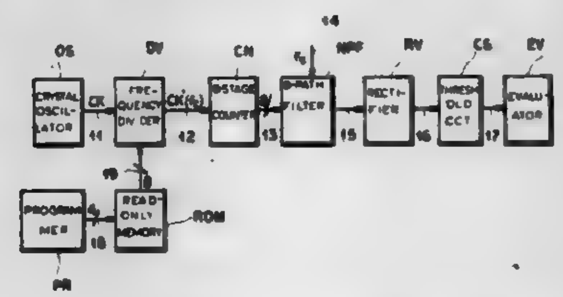
Armando Colamonico, Milan, Italy, assignor to Societa Italiana Telecomunicazioni Siemens S.p.A., Milan, Italy

Filed Mar. 19, 1980, Ser. No. 131,704

Claims priority, application Italy, Mar. 20, 1979, 21129 A/79

Int. Cl.[3] H03K *5/00;* H03B *1/00;* H03L *7/00*

U.S. Cl. 328—140 5 Claims



1. A frequency discriminator for a signal receiver of a telecommunication system, comprising:

oscillator means for producing an original pulse sequence of stable clock frequency;

adjustable frequency-divider means connected to said oscillator means for generating a square wave of a reduced frequency related to said clock frequency by a variable step-down factor;

pulse-distributing means connected to said frequency-divider means for converting said square wave into a set of N relatively staggered pulse trains of a cadence equal to 1/N times said reduced frequency;

an N-path filter with driving inputs connected to said pulse-distributing means for energization by said pulse trains and with a data input connected to receive incoming signals;

detection means connected to said N-path filter for determining the reception of an incoming signal whose frequency substantially matches said cadence; and

frequency-selecting means connected to a control input of said frequency-divider means for modifying said step-down factor according to a desired signal frequency to be recognized.

4,325,031

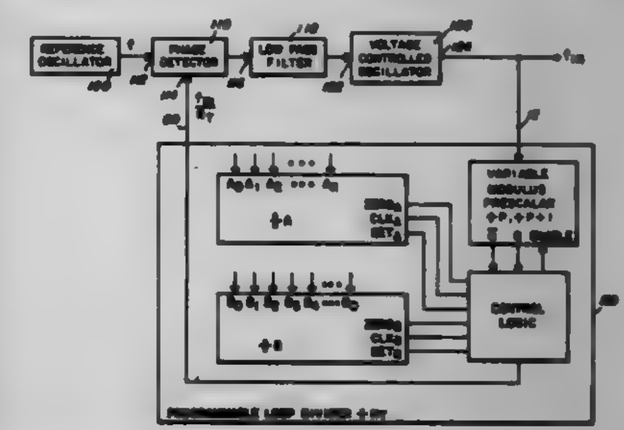
DIVIDER WITH DUAL MODULUS PRESCALER FOR PHASE LOCKED LOOP FREQUENCY SYNTHESIZER

William J. Ooms, Hazelcrest, and Richard E. Barnett, Palatine, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 13, 1980, Ser. No. 121,207

Int. Cl.[3] H03K *21/36;* H03L *7/18*

U.S. Cl. 331—1 A 8 Claims



1. A high speed frequency divider, suitable for use in a phase locked loop, comprising:

dual modulus prescaler means, having an input and an output, for frequency dividing an input signal by one of two predetermined divisors P and P', and applying the divided signal to the output;

first means for frequency dividing the signal at the output of the prescaler means by the divisor A;

second means for frequency dividing the signal at the output of the prescaler means by the divisor B;

logic means for controlling the prescaler means and dividing means so that the signal at the output of the prescaler means is alternately frequency divided by A and B, and such that the first dividing means is reset while the division by B is occurring and the second dividing means is reset while the division by A is occurring, said logic means including means for actuating the prescaler means from its P' divisor to its P divisor upon transition from the A divisor to the B divisor and from its P divisor to its P' divisor upon transition from the B divisor to the A divisor, and including means for coupling to an output a divided signal having a transition for each actuation of the prescaler;

whereby the overall divide ratio N_T is given by $N_T = PB + P'A$.

4,325,032

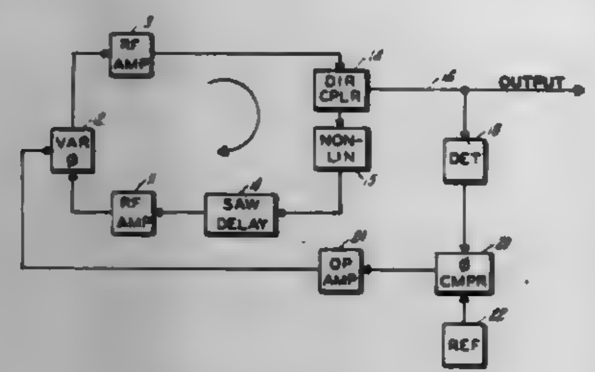
PRF STABILIZED SURFACE ACOUSTIC WAVE OSCILLATOR

Meyer Gilden, West Hartford, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Mar. 11, 1980, Ser. No. 129,430

Int. Cl.³ H03L *7/08, 7/18*

U.S. Cl. 331—25 **3 Claims**



1. A stabilized surface acoustic wave comb spectrum generator comprising:

an oscillatory loop having variable delay means including a surface acoustic wave delay line, said variable delay means having a control signal input thereto to adjust the phase of signals circulating in the oscillatory loop as a function of control signal applied thereto, amplification means to provide loop gain, a nonlinear means for permitting only pulsed RF signals in excess of a threshold magnitude to circulate through said loop, and means for coupling out of said loop a fraction of the energy of signals circulating in the loop;

an output circuit connected to said means for coupling for providing output signals at the frequencies of oscillations within said loop;

feedback means connected to said output circuit for providing a signal indication of the actual pulse repetition frequency of signals circulating in said oscillatory loop;

reference means for providing reference signals at a frequency related to a desired pulse repetition frequency of signals circulating in said oscillatory loop;

a phase comparator responsive to said feedback means and to said reference means for providing an error signal representative of the deviation of said actual pulse repetition frequency from said desired pulse repetition frequency, said error signal being connected to said control signal input of said variable delay means, thereby to stabilize the pulse repetition frequency of signals circulating in said oscillatory loop.

4,325,033

PNEUMATICALLY DITHERED LASER GYRO

Sidney G. Shutt, Brea, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Jul. 2, 1979, Ser. No. 54,331

Int. Cl.³ H01S *3/098*

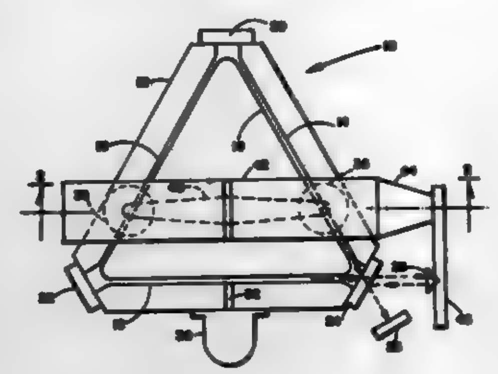
U.S. Cl. 372—94 **10 Claims**

1. A ring laser gyro, comprising

an envelope for an optical resonant cavity, wherein said envelope contains an active gas medium;

electrically energizable electrode means for establishing an electrical discharge in said active gas medium thereby exciting a pair of light beams counterpropagating in said optical resonant cavity, wherein said light beams tend to exhibit mode locking;

mechanical means for inducing an oscillatory flow of said active gas medium in said optical resonant cavity whereby mode locking effects are reduced; and



means for generating an output signal for said gyro by measuring a difference in the frequencies of said light beams.

4,325,034

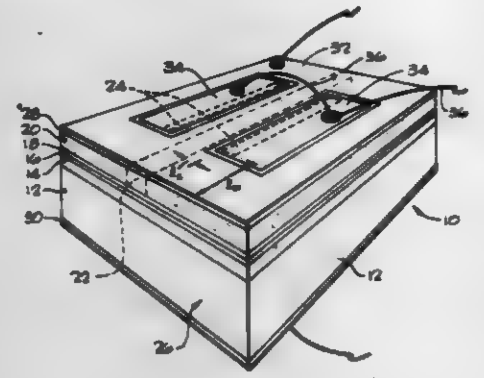
SEMICONDUCTOR LASERS WITH INTEGRALLY FORMED LIGHT EMITTING DIODES

John C. Dyment, Kanata; Christopher M. Look, Nepean, and Kiu-Chi D. Chik, Ottawa, all of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Feb. 13, 1980, Ser. No. 121,172

Int. Cl.³ H01S *3/19*

U.S. Cl. 372—50 **5 Claims**



1. A semiconductor device comprising a laser and a light emitting diode having a common pn junction, the laser and the light emitting diode having top and bottom contacts for directing current across the pn junction, to generate light at respective active regions thereof, the device having opposed planar reflecting facets defining a resonant cavity of the laser, the laser activity region extending to the opposed facets, the light emitting diode active region being spaced from the facets but located close to the laser resonant cavity whereby spontaneous emission generated at the light emitting diode active region and directed towards the facets is absorbed by the chip material and spontaneous emission generated at the light emitting diode active region and directed towards the resonant cavity penetrates thereto.

4,325,035

OSCILLATOR USING DIELECTRIC RESONATOR

Toshio Nishikawa, Nagaokakyo; Yoji Ito, Takatsuki; Youhei Ishikawa, and Sadahiro Tamura, both of Kyoto, all of Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Filed Feb. 20, 1980, Ser. No. 123,061

Claims priority, application Japan, Mar. 1, 1979, 54/24751

Int. Cl.³ H03B *5/18*

U.S. Cl. 331—96 **30 Claims**

1. An oscillator using a dielectric resonator, comprising:

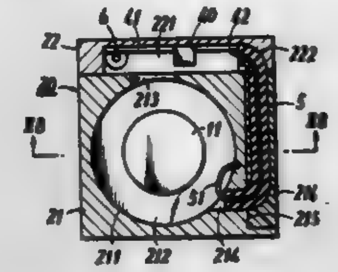
a casing made of an electrically conductive material and having a wall defining a space therein;

a dielectric resonator disposed within said space;

amplifying means disposed outside said wall and including an input circuit and an output circuit;

input coupling means associated with said input circuit for coupling said input circuit and said dielectric resonator through said wall; and

output coupling means associated with said output circuit



for coupling said output circuit and said dielectric resonator through said wall, said output coupling means comprising an output coupling window formed in said wall and positioned with respect to said output circuit at a location which permits propagation of a predetermined amount of an electromagnetic wave from said output circuit to said dielectric resonator.

4,325,036

TEMPERATURE COMPENSATING CIRCUIT

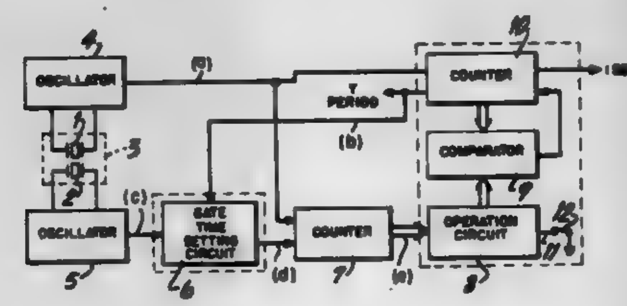
Tsuneo Kuwabara, Tokyo, Japan, assignor to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan

Filed May 23, 1980, Ser. No. 152,606

Claims priority, application Japan, Jun. 1, 1979, 54/068247

Int. Cl.³ H03L *1/00*

U.S. Cl. 331—176 **1 Claim**



1. A temperature compensating circuit comprising: two piezo electric resonators having different frequency-temperature characteristics, a major resonator having smaller frequency variation rate in temperature variation and a subsidiary resonator having larger frequency variation rate in temperature variation; an oscillator for oscillating said two resonators independently; a gate time setting circuit for setting a gate time using one of outputs of said oscillator; a counter for counting the other output of the oscillator by a gate time set by the gate time setting circuit; an operation circuit for operating an oscillation frequency of the resonator using coefficients of each term of high degree polynominal approximately concluded when a counting value is a variable against an oscillating frequency of the major resonator; a counter for counting the oscillator output of the major resonator; and a comparator for comparing the counting value of the counter with the counting value of the operation circuit and for generating a reset signal when the counting values coincide with each other.

4,325,037

ACOUSTIC WAVE FILTER

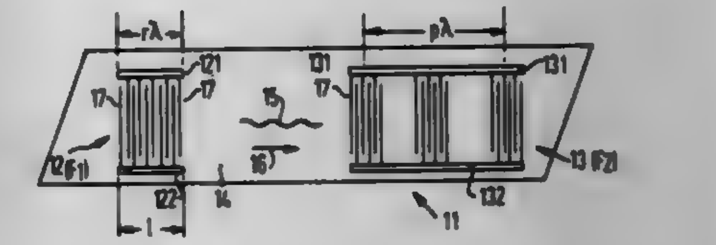
Wolf E. Bulst, Vaterstetten, and Hans Eschler, Berlin, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Mar. 6, 1980, Ser. No. 127,814

Claims priority, application Fed. Rep. of Germany, Mar. 12, 1979, 2909705

Int. Cl.³ H03H *9/64, 9/25*

U.S. Cl. 333—194 **12 Claims**



1. A piezoelectric substrate, a first interdigital structure (12) formed on a first surface of said substrate, having a mean frequency of f_1 and frequency band width of F_1, a second interdigital structure formed on a first surface of said substrate and longitudinally offset from said first interdigital structure and having a mean frequency of f_2 and a frequency band width F_2 which is narrower than the frequency band width of F_1 of said first interdigital structure, said mean frequency f_2 of said second interdigital structure offset by a frequency displacement Δf from the mean frequency of said first interdigital structure so that the amplitude characteristic F_2 of said second interdigital structure has a mean frequency f_2 which occurs at one half the distance from f_1 to a zero of the amplitude characteristic of F_1.

4,325,038

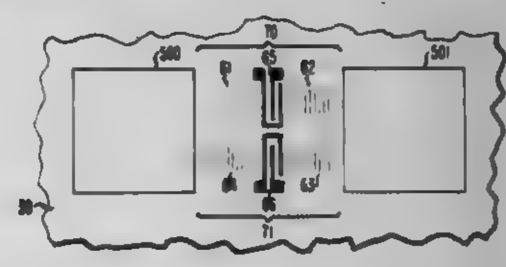
SAW RESONATOR FILTERS WITH IMPROVED TEMPERATURE STABILITY

Larry A. Coldren, Holmdel Township, Monmouth County, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sep. 26, 1980, Ser. No. 191,155

Int. Cl.³ H03H *9/25, 9/64, 9/145*

U.S. Cl. 333—195 **11 Claims**



1. A temperature stable coupled resonator which comprises:

a medium (39) on which surface waves propagate;

grating means (61, 62, 63, 64) disposed on said medium for forming first and second grating resonators for said surface waves; and

first means (500) for coupling resonant wave energy from each resonator into the other resonator;

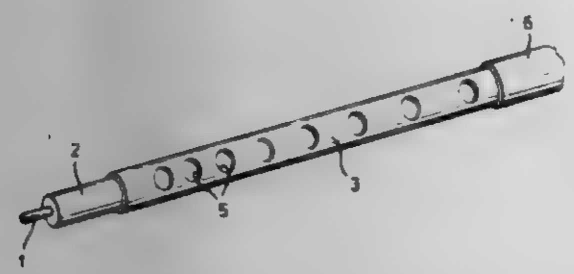
means (65) for introducing energy into said coupled resonator; and

means (66) for extracting energy from said coupled resonator

characterized in that said coupled resonator further includes second means (501) for coupling resonant wave energy in each resonator out of that resonator along its axis and into the other resonator along its axis, the phase of the wave

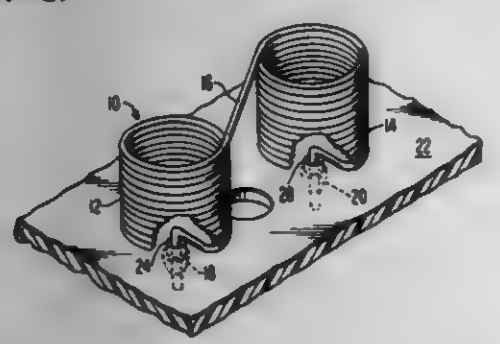
energy out of said second means being substantially in quadrature to the phase of the wave energy out of said first means.

4,325,039
LEAKY COAXIAL CABLE WHEREIN APERTURE SPACINGS DECREASE ALONG THE LENGTH OF THE CABLE
Brian H. Allebone, Chester, England, assignor to BICC Limited, London, England
Filed Oct. 28, 1980, Ser. No. 201,567
Claims priority, application United Kingdom, Oct. 31, 1979, 37616/79
Int. Cl.³ H01P 3/06
U.S. Cl. 333—237 8 Claims



1. A high frequency coaxial cable comprising an inner conductor and, insulated from and surrounding the inner conductor throughout the length of the cable, an outer conductor of metal or metal alloy having extending longitudinally throughout at least a finite part of its length at least one row of apertures that are mutually spaced along the outer conductor, each aperture being of such a size and the mutual spacing between adjacent apertures being such that high frequency signals can be received by or transmitted from the cable, wherein the mutual spacing between adjacent apertures of said row decreases along the length of the row, being a maximum value at the end of the row and a minimum value at the other end of the row.

4,325,040
APPARATUS FOR AUTOMATIC ADJUSTMENT OF AN INDUCTOR IN A TUNED CIRCUIT
George J. Whitley, Philadelphia, Pa., assignor to RCA Corporation, New York, N.Y.
Filed Nov. 26, 1980, Ser. No. 210,789
Int. Cl.³ H03J 3/00
U.S. Cl. 334—17 6 Claims



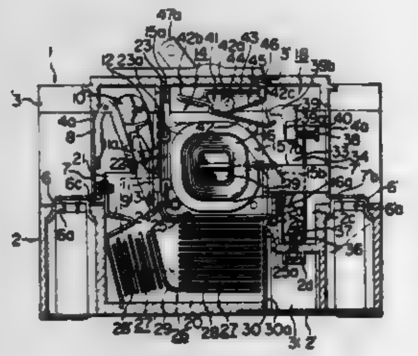
1. In a tuned circuit of the type including an inductor mounted on a circuit board, wherein said inductor comprises a conductor having respective first and second ends connected to respective first and second points on said circuit board, said conductor having first, second and third portions, said first portion including a section in the shape of an extensible coil extending from said circuit board, said third portion including an extensible section extending from said circuit board, said second portion being connected between said first and second portions, and wherein said circuit board is formed with an opening therethrough located below said second portion, an apparatus for adjusting said inductor comprising:

first means extending through said opening in said circuit board for exerting mechanical force against said second portion of said inductor;

second means for exerting mechanical force against said second portion extending in a direction opposite to that of said first means; and

control means connected to said first and second means for controlling said first and second means to simultaneously extend or compress said first and third portions.

4,325,041
CIRCUIT INTERRUPTER
Wasaburo Murai, Osaka, Japan, assignor to Terasaki Denki Sangyo Kabushiki Kaisha, Osaka, Japan
Filed Nov. 6, 1980, Ser. No. 206,857
Claims priority, application Japan, Nov. 10, 1979, 54-144939
Int. Cl.³ H01H 75/00, 77/00, 83/00
U.S. Cl. 335—35 3 Claims



1. A circuit interrupter comprising in an insulating housing:

an electromagnetic means including a magnetic core, at least two separate magnetic yokes magnetically coupled to said magnetic core and defining a magnetic gap therebetween, and a primary and a secondary coil wound on said magnetic core, said electromagnetic means forming a current transformer;

a pair of separable contacts connected in series with said primary coil, one of said contacts being carried by a movable contact arm extending within said magnetic gap in a direction enabling electromagnetic separation by an overcurrent, and said contacts and said primary coil being connectable to an external circuit to be protected;

an operating mechanism for opening and closing said separable contacts;

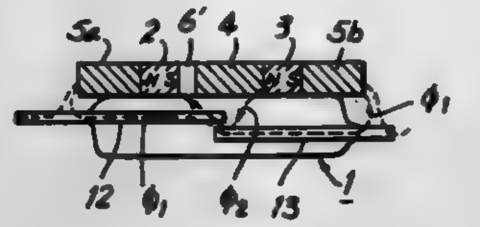
a thermally responsive trip means including a bimetal element serially connected to said secondary coil of said electromagnetic means for actuating said operating mechanism to open said contacts upon the occurrence of an overcurrent;

an instantaneous trip means including a magnetic armature disposed in the vicinity of said electromagnetic means for magnetically actuating said operating mechanism to separate said contacts upon the occurrence of a short-circuit current;

an arc extinguishing means disposed within said magnetic gap of said electromagnetic means for extinguishing an electric arc; and

means including portions of said magnetic yokes of said electromagnetic means for magnetically driving an electric arc established between separated contacts into said arc extinguishing means.

4,325,042
THERMO-MAGNETICALLY OPERATED SWITCHES HAVING TWO DIFFERENT OPERATING TEMPERATURES
Masanori Endo, Yokohama, and Kentaro Horiuchi, Sendai, both of Japan, assignors to Tohoku Metal Industries, Ltd., Sendai, Japan
Filed May 13, 1980, Ser. No. 149,321
Claims priority, application Japan, May 14, 1979, 54-57981
Int. Cl.³ H01H 36/00
U.S. Cl. 335—208 4 Claims



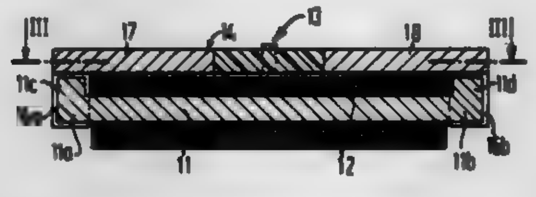
1. A thermo-magnetically operated switch having two different and predetermined lower and higher operating points on a temperature scale so that it may be maintained open below the lower operating point and above the higher operating point and be maintained closed between the two different operating points, which comprises:

an elongated reed switch having an envelope and a pair of ferromagnetic reeds hermeticaly sealed in said envelope with free ends thereof overlapped for opening and closing movements relative to one another;

two first magnetic members formed of first ferromagnetic substances having a first Curie point corresponding to said higher operating point, said first magnetic members being disposed alongside, and at axial opposite ends of, said reed switch with an axial space therebetween;

two permanent magnets having a Curie point higher than an operating temperature range of the switch and disposed alongside said reed switch within said axial space between said first magnetic members and in contact with said first magnetic members respectively, so that a magnetic pole of one of said permanent magnets is opposite a different magnetic pole of the other permanent magnet with an axial space therebetween, respective permanent magnets being disposed over the respective reeds but spaced from the overlapped ends of the reeds; and at least one magnetic member of second ferromagnetic substance having a second Curie point corresponding to said lower operating point and disposed in said axial space between said permanent magnets with at least one axial magnetic gap.

4,325,043
POLARIZED MAGNET SYSTEM
Rolf-Dieter Kimpel, Unterschweinbach, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany
Filed Jan. 23, 1981, Ser. No. 227,961
Claims priority, application Fed. Rep. of Germany, Feb. 25, 1980, 3006948
Int. Cl.³ H01F 7/08
U.S. Cl. 335—229 8 Claims



1. A polarized magnet system comprising:

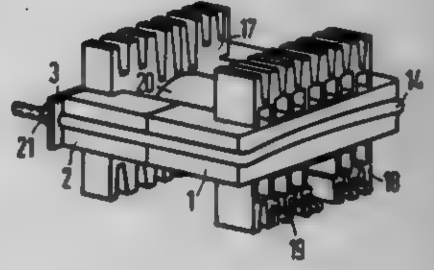
a coil having a ferromagnetic core having a longitudinal axis;

an elongated rotary armature having a permanent magnet means thereon, said rotary armature being disposed substantially parallel to said coil axis and approximately above a center of said coil, said armature having opposite ends each terminating in a pair of spaced tabs depending substantially perpendicular to said coil axis in the direction of said coil core;

said coil having opposite ends respectively extending between and surrounded on opposite sides by respective pairs of said tabs to form a working air gap; and

said permanent magnet means extending to said ends of said armature legs and terminating therewith.

4,325,044
MOUNT FOR AN ELECTROMAGNETIC COIL
Roland Ehrgott, Munich, and Gerhard Meindl, Alling, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany
Filed Mar. 6, 1980, Ser. No. 127,811
Claims priority, application Fed. Rep. of Germany, Mar. 30, 1979, 7909134[U]
Int. Cl.³ H01F 27/26
U.S. Cl. 336—67 8 Claims



1. In an electromagnetic coil assembly consisting of opposed abutting E core halves each having an end face and each further having a centrally disposed leg and two outer legs, and a hollow coil bobbin carrying a winding which receives said central legs and is disposed between said halves, a mount for said assembly comprising:

a retainer which surrounds an end face of a first E core half and each of said outer legs and which terminates in two threaded ends;

a means in said legs for receiving and aligning said retainer;

a plate having a pair of spaced bores therein for receiving said ends of said retainer for applying equalized retaining pressure against the end face of a second E core half,

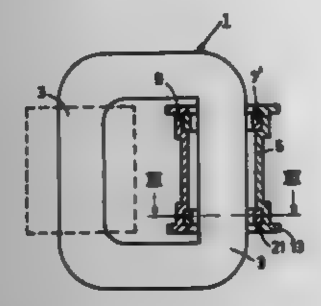
said plate further having a pair of longitudinal slots therein extending from each of said bores to an exterior edge of said plate, said slots forceably closeable for rigidly affixing said plate a fixed distance from said end face of said first E core half; and

a pair of bolts respectively received on said threaded ends to maintain said plate in pressure applying relation to said end face.

4,325,045
DEVICE FOR PROVIDING WINDINGS ON CLOSED RING CORES
Siegfried Mehl, Wetzlar-Hermannstein, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Jul. 28, 1980, Ser. No. 173,222
Claims priority, application Fed. Rep. of Germany, Aug. 2, 1979, 2931362
Int. Cl.³ H01F 27/30
U.S. Cl. 336—197 11 Claims

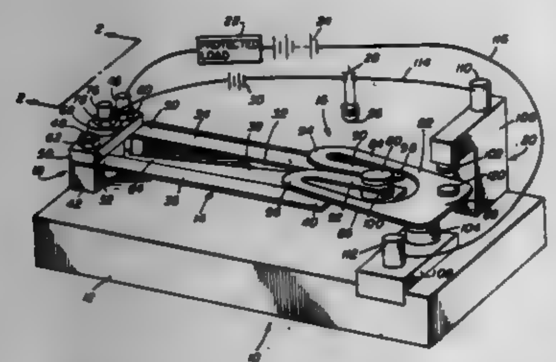
1. An induction device comprising, a closed ring magnetic core having at least one core leg, a guide member secured to said core leg and having guide paths on an exposed surface

thereof, a coil former rotatably arranged on said core leg in cooperative relationship with the guide paths on said guide member, a coil formed on said coil former by rotation of the



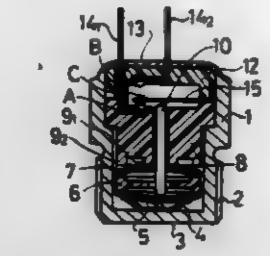
coil former in said guide paths, and means for securing the coil former in a fixed position subsequent to winding the coil thereon.

4,325,046
CIRCUIT BREAKER
Hadley K. Burch, Pittsfield, Vt., assignor to B/K Patent Development, Inc., Highland Park, Ill.
Filed Apr. 4, 1980, Ser. No. 137,399
Int. Cl.³ H01H *71/16*
U.S. Cl. 337—56 **5 Claims**



1. An ambient-compensated remotely-resettable circuit breaker comprising:
a base,
a metal strip member having first and second divergent legs, said legs being joined at an upper portion, said legs having lower portions spaced apart and fixed to said base,
said upper portion being movable from a first to a second position in response to current in excess of a selected value through said first leg, and movable from the second back to the first position in response to current in excess of a selected second value through said second leg,
a contact assembly having fixed, spaced apart first and second contacts for electrically contacting said upper portion, and first contact engaging the upper portion in its said first position and said second contact engaging the upper portion in its said second position,
a first electrical connection electrically connected to said first leg, and
a second electrical connection electrically connected to said second leg,
said first electrical connection being connectable through an electrical load to said first contact, and
said second electrical connection being connectable through a reset switch to said second contact.

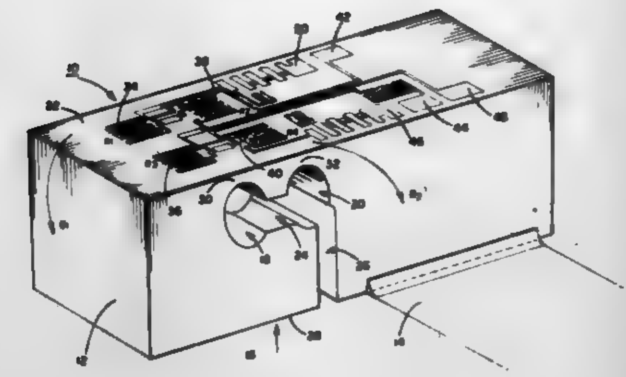
4,325,047
TEMPERATURE RESPONSIVE SWITCH
Masami Inada, Kariya; Nobuyuki Hashimoto, and Atsushi Satomoto, both of Toyota, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan
Filed Mar. 27, 1981, Ser. No. 248,117
Claims priority, application Japan, Apr. 9, 1980, 55-47419; Apr. 9, 1980, 55-47420
Int. Cl.³ H01H *37/52*
U.S. Cl. 337—370 **16 Claims**



1. A temperature responsive switch comprising
a hollow casing member which is open at its one end;
a cover member which closes the opening;
a guide member for dividing an internal space defined by the casing and the cover member into a first and a second internal space, the guide member being centally formed with a guide opening for an actuator;
a first bimetal disc disposed in the first internal space;
a second bimetal disc disposed in the first internal space and having an opening centrally formed therein to pass an actuator;
a spacer interposed between the first and the second bimetal disc and having an opening formed therein to pass an actuator;
spring means disposed in the first inner space for supporting the first bimetal disc;
an actuator member extending through the guide opening and the openings formed in the second bimetal disc and the spacer;
resilient switching arm disposed in the second internal space and extending to traverse the axis of the guide opening;
and a plurality of electrical contact members disposed on the path of movement of the switching arm and spaced from each other.

4,325,048
DEFORMABLE FLEXURE ELEMENT FOR STRAIN GAGE TRANSDUCER AND METHOD OF MANUFACTURE
Hooshmand Zaghi, Oxnard, and Thomas C. Tisone, Thousand Oaks, both of Calif., assignors to Gould Inc., Rolling Meadows, Ill.
Filed Feb. 29, 1980, Ser. No. 125,833
Int. Cl.³ G01L *1/22*
U.S. Cl. 338—3 **18 Claims**

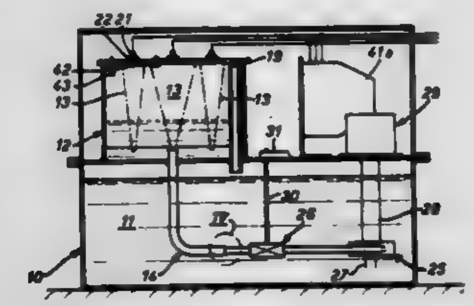
1. An improved deformable flexure element for use in a strain gage transducer, comprising:
a deformable body having at least one flat surface, a first portion of said body beneath said surface being subjected to tension during deformation of said body and a second portion of said body beneath said surface being subjected to compression during said deformation;
at least one pair of resistances deposited on said surface, with one resistance of the pair above each of said first and second portions, the arrangement of the body and resistances being such that heat flows asymmetrically from said resistances;
said body and said resistances being made of materials such that



$$[TCR_f]\frac{d(\Delta T)}{dT} + \Delta TCR\frac{dT_2}{dT}$$

substantially equals zero, where TCR_f is the thermal resistance coefficient of the resistances; ΔT is the temperature gradient between the resistances on said first and second portions; T is the ambient temperature; ΔTCR is the gradient of the thermal resistance coefficient between the resistances on said first and second portion; and T_2 is the temperature of said second portion whereby thermal conditions of the transducer are effectively prevented from providing spurious strain indications.

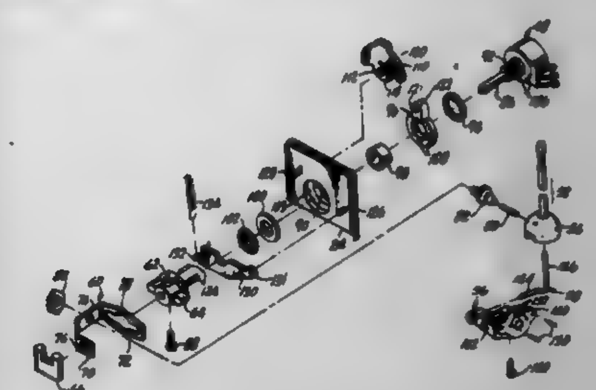
4,325,049
ELECTRODE FOR A LIQUID RHEOSTAT, AND A LIQUID RHEOSTAT INCLUDING SUCH AN ELECTRODE
Michel Bensadoun, 13 Avenue de Limoges, 87270 Couzeix, France
Filed Sep. 10, 1979, Ser. No. 73,748
Claims priority, application France, Sep. 13, 1978, 78 26267
Int. Cl.³ H01C *10/02*
U.S. Cl. 338—86 **14 Claims**



1. An electrode for a liquid rheostat, said electrode comprising a plurality of generally annular elements, consecutive elements being electrically connected in series, and connecting bridge members arranged transversely of and connecting transversely adjacent like parts of said annular elements together.

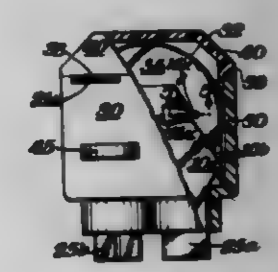
4,325,050
CONTROL STICK ASSEMBLY
Edward D. Suszynski, Vista, Calif., assignor to Kraft Systems, Inc., Vista, Calif.
Filed Dec. 8, 1980, Ser. No. 214,439
Int. Cl.³ H01C *10/16*
U.S. Cl. 338—128 **10 Claims**

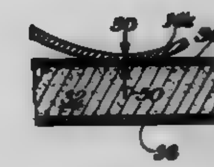
1. A control stick assembly comprising:
a first potentiometer having a first rotatable input shaft;
a second potentiometer having a second rotatable input shaft;
a control stick;
a crank connecting the control stick to the first input shaft to rotate same responsive to movement of the control stick along one axis; and



a bail connecting the control stick to the second input shaft to rotate same responsive to movement of the control stick along an axis transverse to the one axis.

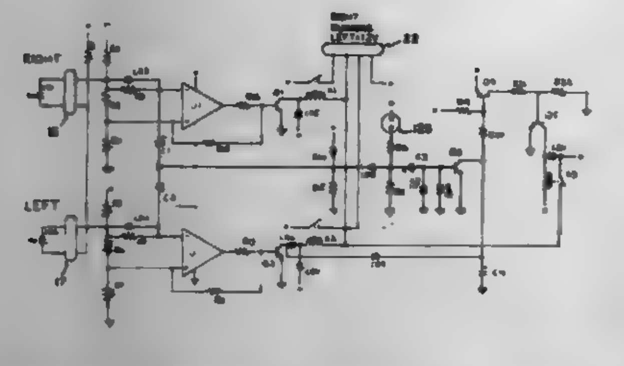
4,325,051
PTCR PACKAGE
George H. Rodrigues, Williamstown, Mass., assignor to Sprague Electric Company, North Adams, Mass.
Filed Aug. 29, 1980, Ser. No. 182,565
Int. Cl.³ H01C *13/00, 7/02*
U.S. Cl. 338—220 **10 Claims**





1. A positive temperature coefficient resistor (PTCR) package comprising:
(a) a PTCR ceramic slug having two major opposing faces;
(b) two glass bonded aluminum electrodes being bonded to said two opposing faces, respectively;
(c) a first group of at least two contact pads being in pressure contact with one of said electrodes and a second group of an equal number of contact pads being in pressure contact with the other of said electrodes; and
(d) means for spring loading each of said metal contact pads against the corresponding contacted of said electrodes, each of said pads having a slightly curved convex surface toward said contacted electrode, the thickness of said glass bonded aluminum electrodes being greater than 0.002 inch to prevent said pads from completely pushing through said electrodes during the service life of said PTCR package.

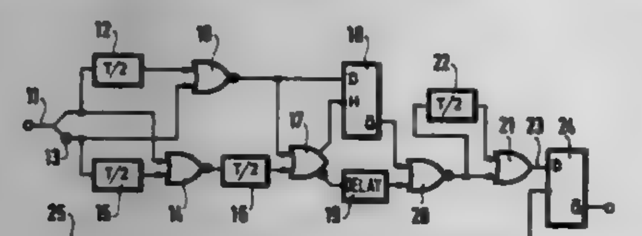
4,325,052
TRAILER LIGHT CONNECTION SYSTEM
Steve J. Koerner, 2168 Sargent St., Simi Valley, Calif. 93063
Filed Feb. 11, 1980, Ser. No. 120,118
Int. Cl.³ B60Q *1/00*
U.S. Cl. 340—67 14 Claims



1. Electronic light sensing apparatus for coupling trailer taillight circuits to the taillights of a towing vehicle, said apparatus comprising:

A. light sensing means for detecting the light output from the towing vehicle taillights and converting said output to an electrical signal;
B. circuit means for responding to said electrical signal, including switching means to control said trailer taillight circuits; and
C. means in said circuit means for discriminating normal operation of towing vehicle turn or brake indications from various ambient lighting conditions including continuous reflected sunlight and continuously illuminated running light filaments within the same taillight structure as associated with said turn or brake indications.

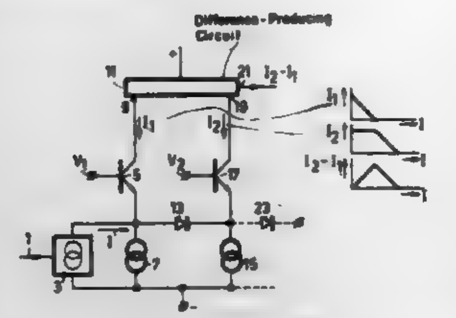
4,325,053
METHOD AND A CIRCUIT FOR DECODING A C.M.I. ENCODED BINARY SIGNAL
Pierre Le Brozec, Perros-Guirec; Francois Ferret, Palaiseau, and Pierre Doussoux, Paris, all of France, assignors to Compagnie Industrielle des Telecommunications, Paris, France
Filed Jul. 19, 1979, Ser. No. 58,650
Claims priority, application France, Jul. 26, 1978, 78 22153
Int. Cl.³ H03K *13/24*
U.S. Cl. 340—347 DD 3 Claims



1. An apparatus for decoding a coded mark inversion (C.M.I.) encoded binary received signal representing a sequence of binary data bits, with each bit occupying a binary bit period, said apparatus comprising:

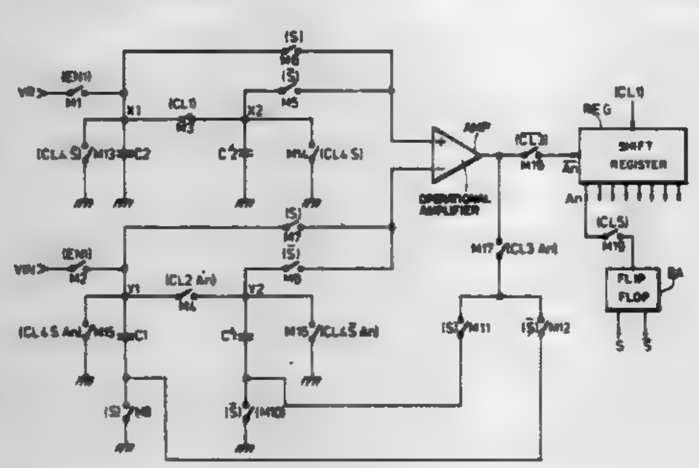
means for detecting zero-to-one transitions in said received signal;
means for detecting one-to-zero transitions in said received signal; and
signal generating means for generating from said received signal a further signal comprising a sequence of pulses each of one bit period duration and synchronized to all zero-to-one transitions in said received signal except any zero-to-one transition which occurs one binary bit period after the immediately preceding one-to-zero transition in said received signal, said further signal comprising an inverted, NRZ-L signal representation of the binary data contained in said received signal.

4,325,054
FOLDING CIRCUIT FOR AN ANALOG-TO-DIGITAL CONVERTER
Rudy J. van de Plassche, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Jul. 30, 1979, Ser. No. 62,253
Claims priority, application Netherlands, Aug. 29, 1978, 7808871
Int. Cl.³ H03K *13/02*
U.S. Cl. 340—347 AD 1 Claim



1. A folding circuit for an analog-to-digital converter for converting an input signal monotonously changing in a first direction, up to a certain value, into an output signal monotonously changing in said first direction and, above said certain value, into an output signal monotonously changing in a second direction, said second direction being opposite to said first direction, the folding circuit comprising a first and a second transistor to which the input signal is applied, a first and a second current source connected respectively to the emitters of said first and second transistors, and a difference-producing circuit connected to the collectors of said first and second transistors from which said output signals are obtained, characterized in that said folding circuit further comprises an input current source coupled to the emitter of said first transistor, to which said input signal is applied, for supplying a current proportional to the instantaneous value of said input signal, a threshold element coupled between the emitters of said first and second transistors, and means for applying a first and a second d.c. voltage respectively to the bases of said first and second transistors, whereby the voltage difference between said first and second d.c. voltages is smaller than the threshold voltage of said threshold element.

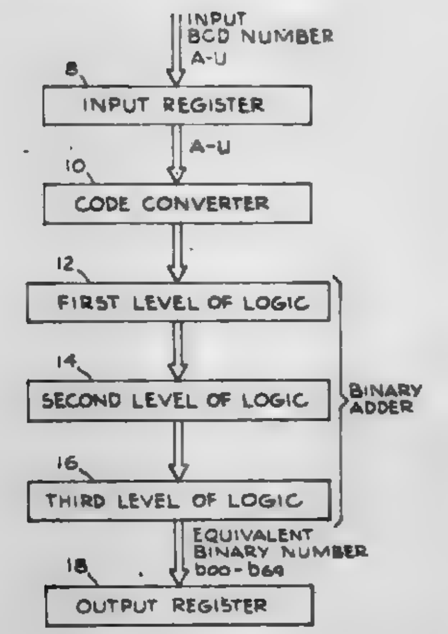
4,325,055
ANALOG-TO-DIGITAL CONVERTER
Joël S. Colardelle, Les Ulis; Pierre Girard, Septeuil, and Jean-Pierre M. Pillou, Saint-Egreve, all of France, assignors to International Standard Electric Corporation, New York, N.Y.
Filed Oct. 26, 1979, Ser. No. 88,670
Claims priority, application France, Oct. 27, 1978, 78 30541
Int. Cl.³ H03K *13/09*
U.S. Cl. 340—347 AD 5 Claims



1. An analog-to-digital converter to provide in N iterations an N-bit digital value for an analog input voltage from a reference voltage, where N is an integer greater than one, comprising:

a single stage used for each of said N iterations including
a first pair of capacitors each having identical capacity,
a second pair of capacitors each having identical capacity and equal to the capacity of each of said first pair of capacitors,
first means coupled to said first pair of capacitors for charging one of said first pair of capacitors to said reference voltage,
second means coupled between said first pair of capacitors for selectively dividing said charge on said one of said first pair of capacitors between both capacitors of said first pair of capacitors,
third means coupled to said second pair of capacitors for charging one of said second pair of capacitors to said analog input voltage,
fourth means coupled between said second pair of capacitors for selectively dividing said charge on said one of said second pair of capacitors between both capacitors of said second pair of capacitors,
fifth means coupled to said first and second pairs of capacitors for comparing the voltage at the terminals of a selected one of said first pair of capacitors with the voltage at the terminals of a selected one of said second pair of capacitors, and
sixth means selectively coupled to said fifth means and to a selected one of said second pair of capacitors to charge said selected one of said second pair of capacitors with a voltage equal to the difference between the voltage present on the other of said second pair of capacitors and the voltage present on said selected one of said first pair of capacitors; and
a seventh means coupled to said fifth means to store a binary result of each comparison performed by said fifth means.

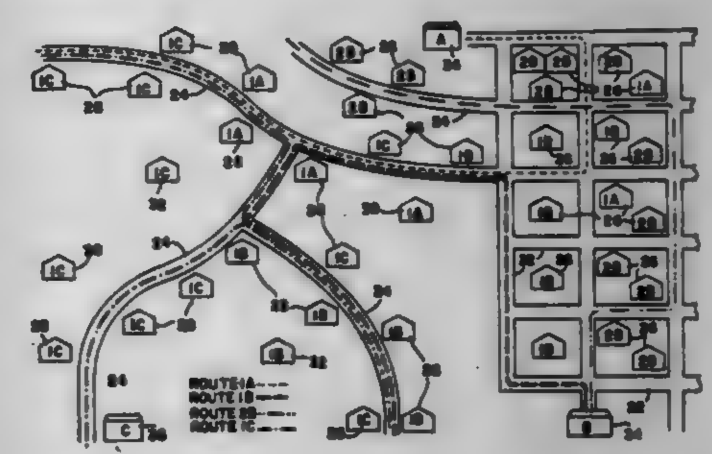
4,325,056
BCD TO BINARY CONVERTER
Daniel P. Wiener, Glendale, Calif., assignor to Burroughs Corporation, Detroit, Mich.
Continuation of Ser. No. 26,176, Apr. 2, 1979. This application Aug. 22, 1980, Ser. No. 180,255
Int. Cl.³ G06F *5/02;* H03K *13/24*
U.S. Cl. 340—347 DD 7 Claims



1. Apparatus for converting an input binary coded decimal (BCD) number into an equivalent output binary number comprising:

input means for providing input binary signals representing the digits of said input BCD number;
conversion means responsive to said input binary signals for producing first binary signals representing the binary values of the least significant BCD digit of said input BCD number and second binary signals representing the significant binary digits of the equivalent binary numbers obtained by the separate conversion of different successive pairs of the remaining BCD digits of said input BCD number into true binary form taking into account the order of significance of each pair in said input BCD number;
each of said equivalent binary numbers being representable in the form $a_0a_1a_2 \ldots a_m$ times 2^n, wherein $a_0a_1a_2 \ldots a_m$ are the significant digits of the equivalent binary number, m is the number of significant digits, and n has a value which provides the proper magnitude of the equivalent number; and
binary adder means for adding said first and second binary signals in columns formed by taking into account their order of significance as indicated by their 2^n values for producing output binary signals representing said output binary number.

4,325,057
SCHOOL BUS APPROACH NOTIFICATION METHOD AND APPARATUS
Michael K. Bishop, Fort Wayne, Ind., assignor to Bishop-Hall, Inc., Geneva, Ind.
Filed Jun. 30, 1980, Ser. No. 164,014
Int. Cl.³ G08G *1/12*
U.S. Cl. 340—539 17 Claims



1. A school bus approach notification system employed in a geographical area having a school, a plurality of residences, a bus route extending in close proximity to said residences, and a school bus, said system comprising:

a radio wave transmitter mounted in said bus and having first means for transmitting at least one radio frequency signal, said signal having an identifying characteristic,
a plurality of radio receivers located, respectively, in said plurality of residences, each receiver having second means for tuning said receiver to receive said transmitted signal and for producing an output signal in response to said transmitted signal having said predetermined characteristic,
said receiver having third means for determining the distance of reception of said transmitted signal between said transmitter and receiver at which said receiver first responds to said transmitted signal to produce said output signal, and
fourth means coupled to said second means and responsive to said output signal for producing at least one of visual and audio approach notice signals whereby said fourth means will produce a notice signal only when said transmitter is at or less than said distance from said receiver to provide advance notice at the respective residences of the approach of said bus.

4,325,058

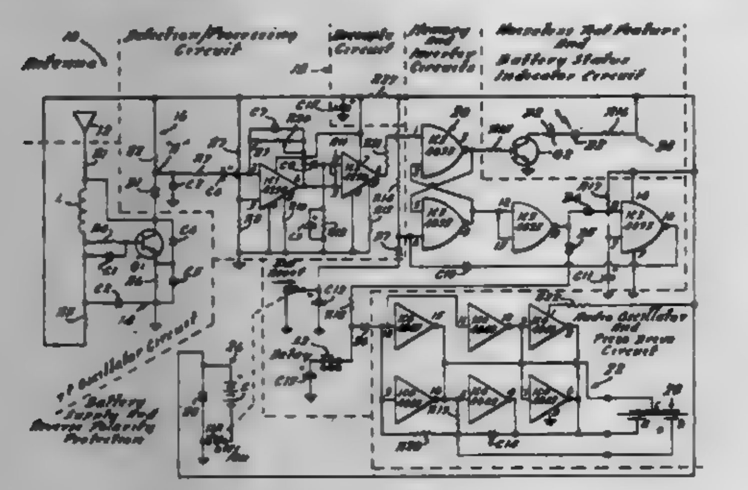
PRE-INTRUSION DETECTION AND ALARM SYSTEM

William E. Wagner, Holland, and Ivan Zacher, Muskegon, both of Mich., assignors to Gentex Corporation, Zeeland, Mich.

Filed Jun. 11, 1980, Ser. No. 158,619

Int. Cl.³ G08B *13/26*

U.S. Cl. 340—562 9 Claims



1. In a detection and alarm system, the combination including an antenna; a DC power source; a first resistor; a tank circuit including said antenna, an inductor, and first and second capacitors; an rf oscillator circuit; said rf oscillator circuit including said tank circuit, a transistor having an emitter, a collector and a base, third and fourth capacitors, and second, third and fourth resistors; said inductor being connected to said antenna through said first resistor; said first capacitor being connected across said emitter and said collector; said second capacitor being connected between said emitter and ground; said first and second capacitors also being connected in parallel with said inductor; said second and third resistors being connected in series between said DC power source and said base; said fourth resistor being connected in parallel with said second capacitor; said third capacitor being connected across said second resistor; said fourth capacitor being connected across the series combination of said third resistor and said DC power source; detection and processing means connected to said collector and effective to detect and amplify a change in the voltage at said collector of said transistor; audio oscillator means; a memory and inverter circuit including time delay means connected between said detection and processing means and said audio oscillator means and controlling the energization of said audio oscillator means; and an audio transducer electrically connected to and controlled by said audio oscillator means.

4,325,059

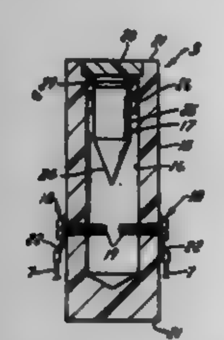
SENSOR FOR DETECTING DELETERIOUS CONDITIONS

Richard C. Jaye, 12 Brian Ct., Watertown, Wis. 53094

Filed Dec. 8, 1980, Ser. No. 214,198

Int. Cl.³ G08B *21/00*; H01H *37/75*

U.S. Cl. 340—585 7 Claims



1. A sensor for connecting an electrically operated alarm signaling device in an energizing circuit in response to existence of a deleterious condition, characterized by:

A. a body in which there is a well that has top and bottom ends and which can be supported with the axis of said well extending substantially vertically;

B. a pair of contact elements fixed to said body, normally insulated from one another and connectable in an electrical energizing circuit, said contact elements comprising a pair of opposing contacts exposed in said well at a location spaced from both of said ends thereof, said contacts being at opposite sides of the axis of the well and spaced apart by a distance less than the diameter of the well at said location;

C. a gravity actuated slider having
   (1) a substantially cylindrical body portion that is guided by the well for up and down motion therein relative to the body and comprises a substantial portion of the mass of the slider, and
   (2) a substantially concentric contact portion which, in a normal position of the slider, is spaced from said contacts in the direction towards the top end of the well, said contact portion tapering in the opposite direction to wedgingly engage said contacts and provide a good electrical connection between them when the slider falls from its normal position towards the bottom end of the well; and

D. said body and said slider being arranged for cooperation with a quantity of material which is normally solid and which engages the slider to support it in its normal position, said material being capable of disintegrating in the presence of said deleterious condition to release the slider for fall from its normal position.

4,325,060

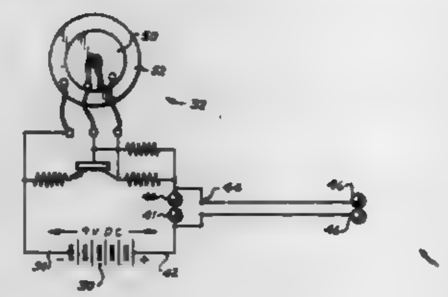
FLOATING WATER DETECTOR

Jack L. Purtell, and Rufus J. Purtell, both of P.O. Box 1152, Brownfield, Tex. 79316

Filed Dec. 17, 1979, Ser. No. 104,146

Int. Cl.³ G08B *21/00, 3/10*

U.S. Cl. 340—604 1 Claim



1. A water detector comprising:
a. an enclosure in the form of a shell,
b. said shell including a top and a hull having a flat bottom forming a base of the shell and thus a base of the water detector,
c. a pair of spaced electrodes extending through and exposed on the bottom of the hull, so that the water detector is adapted to rest upon the base of the shell and thus the electrodes,
d. a sonic housing mounted in the shell,
e. an alarm including
   i. a piezoelectric transducer driven by
   ii. an oscillator, and having
   iii. two power supply terminals,
f. said alarm in said sonic housing,
g. a battery having two battery terminals in said shell, and
h. circuit connectors consisting of:
   i. one of the battery terminals solely connected to one of the electrodes,
   ii. the other electrodes solely connected to one of the power supply terminals on the alarm, and
   iii. the other power supply terminal solely connected to the other battery terminal,
j. so that the alarm is activated upon bridging the space between the electrodes by moisture.

4,325,061

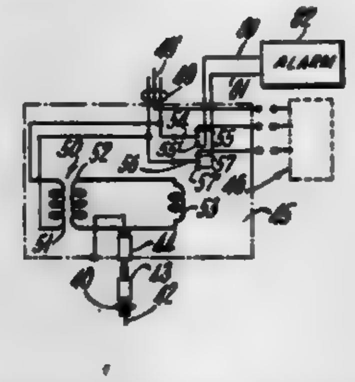
PROTECTIVE MEANS FOR ATTACHMENTS AFFIXED TO ELECTRICALLY OPERATED BEDS

William Wolar, 59 Fremont Rd., North Tarrytown, N.Y. 10591

Filed Oct. 27, 1980, Ser. No. 200,990

Int. Cl.³ G08B *21/00*

U.S. Cl. 340—679 13 Claims



1. A protective device for use with an attachment affixed to a bed having electrically operated elevating means to interrupt continued elevation of the bed should the attachment encounter an obstacle adjoining the bed comprising switch means carried by said attachment, switch actuating means on said attachment and positioned to engage an obstacle in advance of said attachment, electric control means interconnected with said electrically operated elevating means and said switch means whereupon operation of said switch means by said actuating means will interrupt continued elevation of said bed.

4,325,062

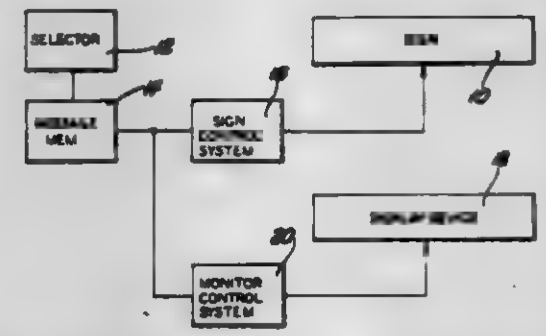
MONITOR FOR BUS DESTINATION SIGNS

Thomas A. Devlin, Waterford, Mich., assignor to Vultron, Incorporated, Waterford, Mich.

Filed Dec. 6, 1979, Ser. No. 101,395

Int. Cl.³ G09G *3/00*

U.S. Cl. 340—717 3 Claims



1. A bus destination sign of the type comprising a changeable alphanumeric display device, said device being electromechanically actuated to change from one display to another, the display being persistent until re-actuated, a message memory for storing multiple messages in a binary digit code, manually controlled selector means coupled with the memory for accessing the memory to continuously produce a coded signal corresponding to a selected one of the messages, and sign control means coupled with the memory and responsive to said coded signal for changing the alphanumeric display device to display a message corresponding to the coded signal produced by said memory, the improvement comprising a message monitor including an electronic alphanumeric display device having electronic display elements, and monitor control means coupled between said memory and said display device and being responsive to the output of said memory for causing the electronic display device to display a message corresponding to the coded signal produced by said memory whereby the message displayed by the electronic display device may be compared with the selected message.

4,325,063

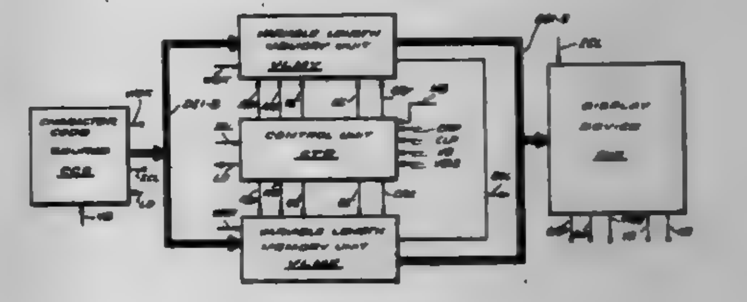
DISPLAY DEVICE WITH VARIABLE CAPACITY BUFFER MEMORY

Morton B. Herman, Queens Village, N.Y., assignor to Redactron Corporation, Hauppauge, N.Y.

Continuation of Ser. No. 851,818, Nov. 16, 1977, abandoned. This application Jun. 11, 1979, Ser. No. 47,625

Int. Cl.³ G09G *1/14*

U.S. Cl. 340—750 6 Claims



DISPLAY SYSTEM

1. A display system comprising: a character code source of coded combinations of bits representing characters; a first source of incrementing signals occurring each time a coded combination of bits is emitted by said character code source; a display means for visually displaying the characters represented by the coded combinations of bits; a second source of incrementing signals occurring each time said display means requires one of said coded combinations of bits; a first buffer memory means connecting said character code source to said display means and comprising an addressed memory array having a plurality of addressed storage registers, each of said storage registers being capable of storing one of said coded combinations of bits, and address counter means for generating the addresses of said addressed register, incrementing means for incrementing the count in said address counter means each time an incrementing signal is received from said first or second source, writing means responsive to each incrementing signal from said first source for writing a coded combination of bits from said character code source into an addressed register indicated by said address counter means, and reading means responsive to each incrementing signal from said second source for reading the coded combination bits stored in an addressed register indicated by said address counter means and transferring said coded combination of bits to said display means; second buffer memory means connecting said character code source to said display means and comprising an addressed memory array having a plurality of addressed storage registers, each of said storage registers being capable of storing one of said coded combinations of bits, and address counter means for generating the addresses of said addressed registers, incrementing means for incrementing the count in said address counter means each time an incrementing signal is received from said first or second source, writing means responsive to each incrementing signal from said first source for writing a coded combination of bits from said character code source into an addressed register indicated by said address counter means, and reading means responsive to each incrementing signal from said second source for reading the coded combination bits stored in an addressed register indicated by said address counter means and transferring said coded combination of bits to said display means; controlled initializing means for clearing said address counter means each time a set of coded combination of bits is to be transferred to said buffer memory means and each time said set is to be transferred from said buffer memory means to said display means; means for controlling said initializing means to clear the address counter means of each of said buffer memory means; connecting means for alternately, first, operatively connecting said addressed memory array of said first buffer memory means to said character code source and operatively connecting said addressed memory

array of said second buffer memory means to said display means, and, second, operatively connected said addressed memory array of second buffer memory means to said character code source and operatively connecting said addressed memory array of said first memory means to said display means; and means for feeding said first incrementing signals to the incrementing means and the writing means of the buffer memory means whose addressed memory array is operatively connected to said character code source and for feeding said second incrementing signals to the incrementing means and the reading means of the buffer memory means whose addressed memory array is operatively connected to said display means.

4,325,064

DRIVING CIRCUIT FOR A FLUORESCENT DISPLAY APPARATUS HAVING FEWER LEADS

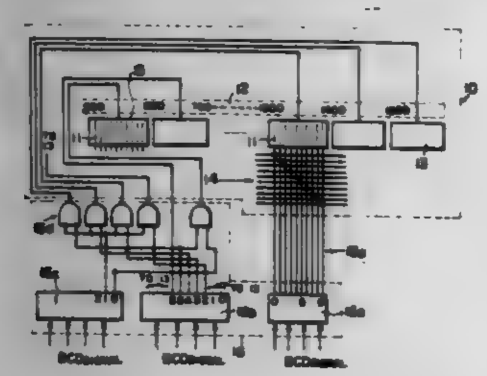
Takao Kishino; Toshihiro Yamaguchi, and Kazunori Tanaka, all of Mobara, Japan, assignors to Futaba Denshi Kogyo K.K., Mobara, Japan

Filed Nov. 29, 1979, Ser. No. 98,690

Claims priority, application Japan, Nov. 30, 1978, 53-163756[U]

Int. Cl.³ G09G 3/00

U.S. Cl. 340—753 3 Claims



1. A fluorescent display apparatus comprising:

a vacuum casing made up of a substrate and a front cover airtightly bonded together;

a plurality of anodes each coated with a phosphor layer on the upper surfaces thereof and disposed on said substrate;

said anodes being divided into consecutive several groups so as to include a certain number of anodes in each of said anode groups;

each of said anodes disposed in corresponding positions of said respective anode groups being connected together in parallel;

a plurality of control electrodes each provided in an opposite relationship with respect to said respective anode groups;

a filamentary cathode stretched above said control electrodes for emitting thermions when energized and heated;

a first decoder means for decoding the least significant digit of an input signal and thereby selecting a plurality of anodes having corresponding positions in said respective anode groups; and

a second decoder means for decoding at least two more significant digits of said input signal and, thereby selecting one of said control electrodes whereby one of said anodes selected by said first and second decoders representing the value of said input signal is illuminated;

wherein said second decoder means includes a first decoder and a second decoder for receiving said at least two more significant digits and a plurality of AND gates said AND gates each having a first input connected to one output of said first decoder and a second input connected to the output of said second decoder.

4,325,065

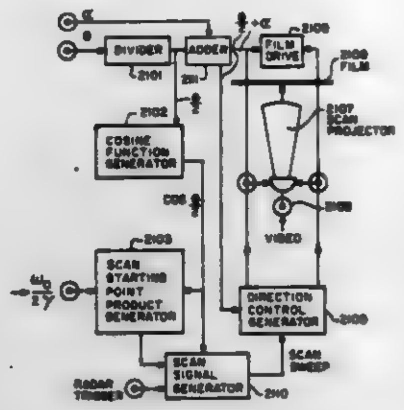
BISTATIC IMAGING RADAR PROCESSING FOR INDEPENDENT TRANSMITTER AND RECEIVER FLIGHTPATHS

William J. Caputi, Jr., Centerport, N.Y., assignor to Eaton Corporation, Cleveland, Ohio

Filed Aug. 9, 1979, Ser. No. 65,213

Int. Cl.³ G01S 13/90

U.S. Cl. 343—5 CM 4 Claims



1. Apparatus for correcting data from a bistatic synthetic aperture radar, of the type employing Stretch and Spotlight techniques to eliminate distortions due to the relative positions and motions of the radar transmitter and receiver with respect to a target, said apparatus accepting signals representing the bistatic angle, the receiver angle, the transmitter start frequency divided by the slope of the transmitted FM signal, the radar trigger and the received radar video, comprising:

(a) a divider means, having an input port and an output port, said divider means accepting at its input port the signal representing the bistatic angle, and producing at its output port a signal representing one-half the bistatic angle,

(b) an adder means having two input ports and an output port, said adder means accepting at one input port, the receiver angle and at its other input port the signal representing one-half the bistatic angle from said divider means, and producing at its output a signal representing one-half the bistatic angle plus the receiver angle,

(c) a cosine function generator means having an input port and an output port, said cosine function generator means accepting at its input port the signal representing one-half the bistatic angle from said divider means and producing at its output port a signal representing the cosine of one-half the bistatic angle,

(d) a scan starting point product generator means with two input ports and one output port for accepting at the first input port the signal representing the transmitter start frequency divided by the slope of the transmitted FM signal and at the second input port the cosine of half of the bistatic angle for producing at the output port a signal representing the product of the two input signals,

(e) a scan signal generator means with three input ports and one output port for accepting at its input ports signals representing said product, the cosine of one-half the bistatic angle and the radar trigger to produce at its output a scan sweep signal where the scan is initiated at a starting point which is at a distance away from the origin that is proportional to said product, the scan is compressed by an amount proportional to the cosine of one-half the bistatic angle and the scan is initiated from the starting point in synchronism with the radar trigger,

(f) a direction control means having two input ports and an output port for accepting at its input ports a signal representing one-half the bistatic angle plus the receiver angle from the adder means and the output signal of the scan signal generator means to produce an output control signal which sets the scan direction at an angle equal to one-half the bistatic angle plus the receiver angle from an arbitrary reference angle, and

(g) a scan projector means having two input ports and an output port, said scan projector accepting at its input ports the output signals of the direction control generator means and the video signal of the radar receiver to project a scan at an angle which is equal to one-half the bistatic angle plus the receiver angle from an arbitrary angular reference, beginning at a starting point a distance from the origin proportional to the starting frequency of the transmitter divided by the slope of the transmitted FM signal, said scan being compressed proportional to the cosine of the bistatic angle after initiation.

4,325,066

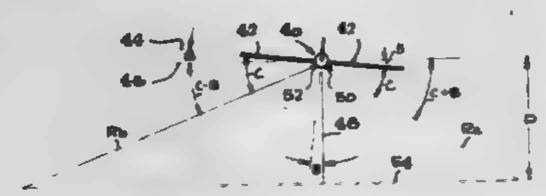
OVERWATER RADAR NAVIGATION SYSTEM

Thomas L. Grettenberg, 2943 Briarwood Dr., Torrance, Calif. 90505

Filed Sep. 15, 1980, Ser. No. 187,351

Int. Cl.³ G02S 13/08

U.S. Cl. 343—7 ED 12 Claims



1. A method for correcting the assumed orientation of an inertial navigation system on an aircraft flying over water, to more closely correspond with the actual local horizontal or vertical, comprising:

directing an electromagnetic beam from the aircraft along a boresight which is at a precisely known downward angle from the inertial horizontal and along a compass direction that is precisely known with respect to the inertial system, detecting the reflection to determine the range to the earth's surface along that boresight, and generating a real distance signal representing the actual range;

generating data representing the expected range along said boresight to the earth's surface based upon the assumed orientation of the inertial navigation system; and

comparing said real signal and said data, and correcting the assumed orientation of the inertial navigation system in accordance with the relative values of said real signal representing the actual range and said data representing the expected range.

4,325,067

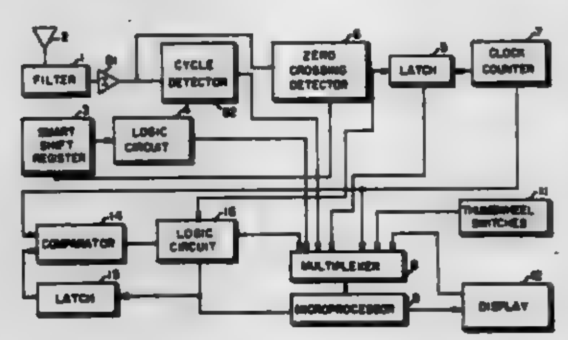
METHOD AND APPARATUS FOR REMOVING NOISE IN A LORAN-C NAVIGATION RECEIVER

Lester R. Brodeur, Nashua, N.H., assignor to Sanders Associates, Inc., Nashua, N.H.

Division of Ser. No. 937,615, Aug. 28, 1978. This application Apr. 9, 1979, Ser. No. 28,142

Int. Cl.³ G01S 1/24

U.S. Cl. 343—103 7 Claims



1. Apparatus for removing the effects of noise generated internal to a navigation receiver-indicator that provides navigation information comprising

means for periodically generating a first signal,

first means responsive to said first signal for periodically inverting the phase of said received navigation signals in the front end of said receiver to cause noise generated in said front end of said receiver to average out and thereby be effectively removed, and

second means responsive to said first signal for reinverting the phase of said navigation signals to remove the phase inversion introduced by said first means, said phase reinversion of said navigation signals being accomplished at a point within said receiver whereat internally generated noise is not a significant problem and before phase reinversion introduces problems deriving said navigation information.

4,325,068

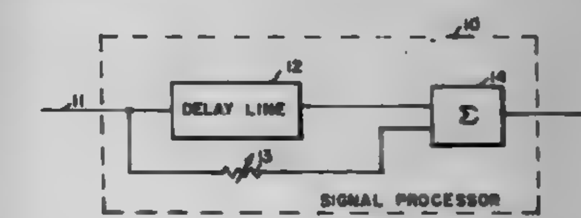
LORAN-C SIGNAL PROCESSOR

William R. Mercer, Belmont, Mass., assignor to Sanders Associates, Inc., Nashua, N.H.

Filed Jun. 26, 1978, Ser. No. 918,750

Int. Cl.³ G01S 1/24

U.S. Cl. 343—103 11 Claims



1. A signal processor processing amplitude modulated radio frequency signals of known carrier frequency to improve the signal-to-noise ratio in portions thereof having rapid rate of modulating envelope change comprising:

a first transmission means to which said radio frequency signals are applied and are scaled in amplitude by a known scaling factor before being output therefrom;

a second transmission means to which said radio frequency signals are also applied to be delayed in time by an integral multiple of one-half periods of the carrier frequency of said radio frequency signal with relationship to said first transmission means before being output therefrom; and

means for algebraically combining the radio frequency signals output from both said first and second transmission means when their differential delay is an odd integral multiple of one-half carrier periods, to produce a new signal having an improved signal-to-noise ratio in the portions thereof having rapid rate of modulating envelope change.

4,325,069

CONVERTIBLE TELESCOPIC ANTENNA

Joseph F. Hills, Scottsdale, Ariz., assignor to Jimmy's Radio & Televison Corp., Phoenix, Ariz.

Filed Feb. 7, 1980, Ser. No. 119,634

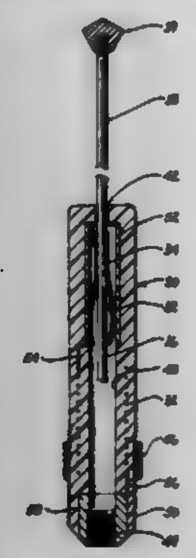
Int. Cl.³ H01Q 1/10, 9/36

U.S. Cl. 343—750 8 Claims

1. A method for converting a power driven cable actuated retractable multi-segment AM/FM broadcast band antenna to an antenna for use with AM/FM broadcast band receivers and a citizens band two-way communications unit, which antenna prior to conversion includes a top segment attached to an end of the cable which top segment draws out the remaining segments on extension of the cable and nests the remaining segments on retraction of the cable, a cap attached to an adjacent segment for precluding disengagement of the top segment from the adjacent segment on extension of the cable while accommodating nesting of the segments in response to the

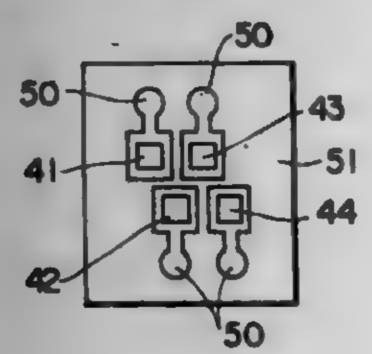
cable induced force exerted by a tip element secured to the free end of the top segment bearing against the cap on retraction of the cable, said method comprising the steps of:

(a) removing the cap from the adjacent segment;
(b) disengaging the tip element from the top segment;
(c) penetrably mounting a loading coil for altering the electrical parameters of the antenna upon the top segment, which loading coil includes a passageway extending therethrough and having one end of sufficient diameter to



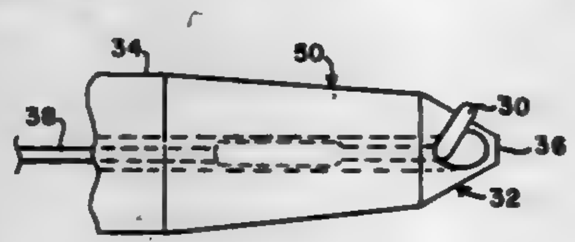
receive an end portion of the adjacent segment and another end of a size sufficient to interfere with translation of the cable through the passageway on extension of the cable and of the tip element into the passageway on retraction of the cable;
(d) attaching the loading coil upon the upper end of the adjacent segment in substitution of the cap; and
(e) re-engaging the tip element to the top segment to form a shoulder bearing against the loading coil to cause nesting of the segments on retraction of the cable.

4,325,070
RECORDING HEAD FOR FACSIMILE RECEIVERS
Isamu Akasaki; Masaaki Ohsima; Nobuhide Matsuda; Michio Matsuki, all of Kawasaki; Yoshio Tsukamoto, Tokyo; Hiromichi Kagi, Tokyo, and Hideharu Fukazawa, Tokyo, all of Japan, assignors to Matsushita Electric Ind. Co., Ltd. and Matsushita Graphic Communication Systems, Inc., both of Tokyo, Japan
Filed Nov. 2, 1979, Ser. No. 90,685
Claims priority, application Japan, Nov. 7, 1978, 53-137570
Int. Cl.³ G01D *9/42*
U.S. Cl. 346—108 **1 Claim**



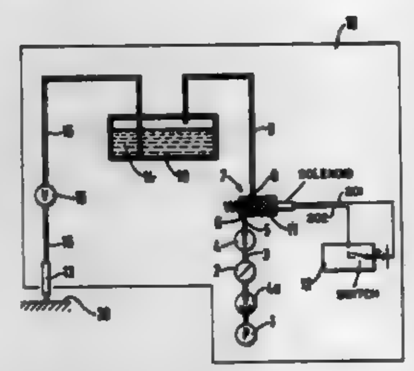
1. A recording head for use in a facsimile communication system having a recording medium on which an image is produced in response to said recording head upon activation and means for moving said recording head relative to the surface of said recording medium in a first direction to scan along each of a plurality of lines across said medium and in succession between the lines in a second direction perpendicular to said first direction, comprising a plurality of light emitting diodes arranged in first and second rows, said diodes being spaced apart from each other in said first direction, each of said diodes having a quadralateral light emitting area and an electrode surrounding said quadralateral area, the electrode of each of said light emitting diodes being spaced apart from the electrodes of adjacent light emitting diodes, the light emitting areas of the diodes of said second row being offset from each other by a distance equal to the length of a side of each light emitting area in said second direction and staggered in position relative to those of the light emitting areas of the diodes of said first row so that edges of said light emitting areas of said first row are aligned in said first direction with edges of said light emitting areas of said second row.

4,325,071
THERMAL RECORDING STYLUS
Raghuvir Rai, Los Angeles, Calif., assignor to Telautograph Corporation, Los Angeles, Calif.
Filed Sep. 15, 1980, Ser. No. 187,193
Int. Cl.³ G01D *15/16, 15/10*
U.S. Cl. 346—139 C **4 Claims**



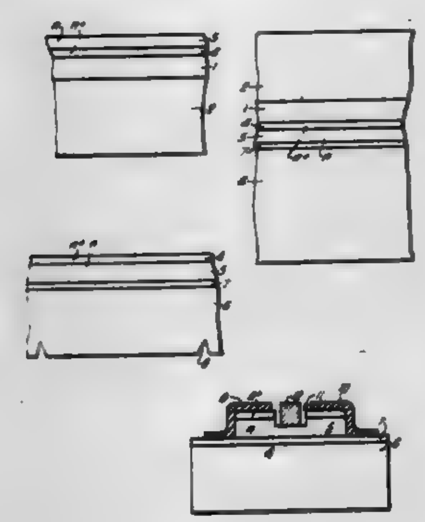
1. A thermal recording stylus comprised of a ceramic tip with a frustum-shaped end, and an electrical heating element wrapped around said frustum-shaped end over a substantial part of the curved surface thereof to heat said tip for the purpose of thermal recording with the flat surface thereof, and electrical leads for applying electrical power to said element.

4,325,072
WRITING DEVICE CONTROL APPARATUS
Hans-Dieter Rösel, Altdorf, Fed. Rep. of Germany, assignor to Firma J. S. Staedtler, Nuremberg, Fed. Rep. of Germany
Filed Jun. 13, 1979, Ser. No. 48,246
Claims priority, application Fed. Rep. of Germany, Jun. 23, 1978, 2827718
Int. Cl.³ G01D *15/16;* B41J *27/00*
U.S. Cl. 346—140 R **6 Claims**



1. In an apparatus for controlling the feed of writing fluid to a writing device comprising a writing fluid supply container, a source of compressed air, a first conduit between said source of compressed air and said supply container, a first valve means in said first conduit, said first valve means being an electromechanically actuated stop valve and having a first position corresponding to a writing position which provides communication between said source of compressed air and said supply container and a second position corresponding to a non-writing position which terminates communication between said source of compressed air and said supply container, a writing device, a second conduit between said supply container and said writing device, and a second valve means in said second conduit, said second valve means having an open position allowing writing fluid to pass therethrough when said first valve means is in said first position and said supply container is pressurized by said source of compressed air and having a closed position preventing writing fluid from passing therethrough when said first valve means is in said second position and said communication between said source of compressed air and said supply container is terminated, whereby when said first valve means is in said first position, said writing fluid flows through said second valve means to said writing device and when said first valve means is in said second position, said writing fluid is prevented from flowing to said writing device, said second valve means being an escape valve comprised of a valve body having a cylindrical valve chamber in which a spherical valve member is moveable, said spherical valve member having substantially the same diameter as the diameter of said cylindrical valve chamber to thereby provide a close fit and liquid-closure relationship between said spherical valve member and said cylindrical valve member, and a biasing means biasing said spherical valve member toward a closed direction in said cylindrical valve chamber, said spherical valve member providing said close fit and liquid-closure relationship with said cylindrical valve chamber during at least a part of the movement of said spherical valve member toward said closed direction to thereby create a slight sucking back of the writing fluid within said writing device during said movement of said spherical valve member toward said closed direction.

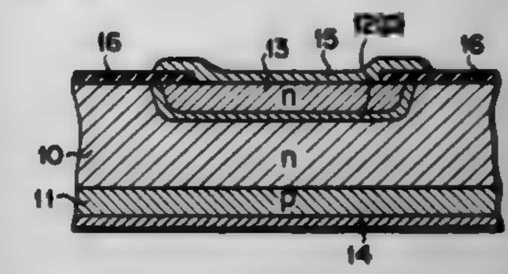
4,325,073
FIELD EFFECT DEVICES AND THEIR FABRICATION
Brian T. Hughes, Sandy; Reuben Redstone, Letchworth; John C. Vokes, Harpenden, and David R. Wight, Hitchen, all of England, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England
Filed May 31, 1979, Ser. No. 44,274
Claims priority, application United Kingdom, May 31, 1978, 25553/78
Int. Cl.³ H01L *29/80, 21/208*
U.S. Cl. 357—22 **20 Claims**



1. A method of fabricating a field effect transistor comprising the steps of forming a high quality buffer layer of semiconductor material on the surface of a first substrate of semiconductor material, thereafter forming an active layer of semiconductor material over said buffer layer and over said surface of said first substrate, applying a second substrate of insulating material to the surface of the structure comprising the first substrate, buffer layer, and active layer so that the active layer lies between the two substrates, removing the first substrate and buffer layer, and forming source, drain and gate electrodes over the surface of the active layer opposite the second substrate.

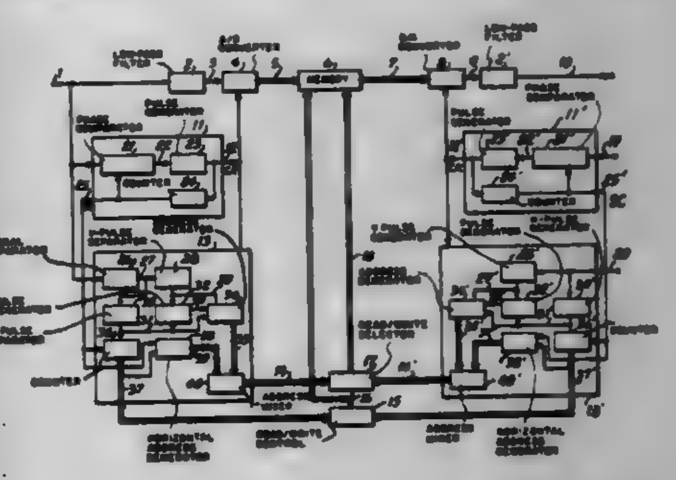
2. A field effect transistor fabricated by the method of claim 1.

4,325,074
SEMICONDUCTOR SWITCHING DEVICE
Yoshihide Osada, and Syuji Sugioka, both of Yokohama, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Japan
Continuation-in-part of Ser. No. 837,271, Sep. 27, 1977, abandoned. This application Nov. 9, 1979, Ser. No. 92,727
Claims priority, application Japan, Sep. 28, 1976, 51-115406
Int. Cl.³ H01L *29/74*
U.S. Cl. 357—37 **4 Claims**



1. A semiconductor switching device comprising:
a substrate of one conductivity type;
a first semiconductor region of the opposite conductivity type formed in a first surface region of said substrate to provide a planar structure, said first semiconductor region having a depth of not more than 10 microns and a surface concentration of 10^{20};
a second semiconductor region of said one conductivity type formed in said first semiconductor region to provide a planar structure, said second semiconductor region having a depth of not more than 5 microns and a surface concentration greater than said surface concentration of said first semiconductor region; and
a third semiconductor region of said opposite conductivity type provided on a second surface region of said substrate.

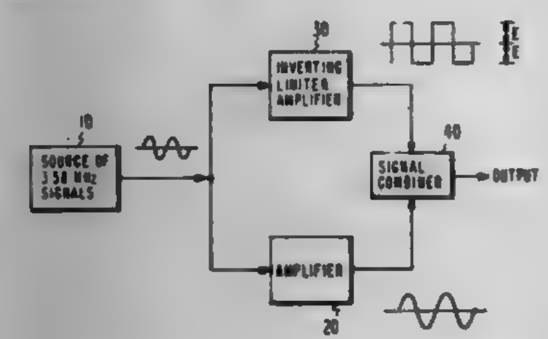
4,325,075
DIGITAL TELEVISION VIDEO SIGNAL STORAGE SYSTEM
Kazuo Kashigi, and Toshitake Kouyama, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan
Filed Sep. 11, 1980, Ser. No. 186,209
Claims priority, application Japan, Sep. 11, 1979, 54-116490
Int. Cl.³ H04N *9/02, 9/491*
U.S. Cl. 358—13 **5 Claims**



1. A storage system for a color television signal, said color television signal including horizontal and vertical synchronizing signals and a color subcarrier, said system comprising:
memory means responsive to write-in address data for storing said color television signal, said memory means including a plurality of memory blocks;
means responsive to said horizontal and vertical synchronizing signals and said color subcarrier for producing said write-in address data; and
means for producing read-out address data, the stored television signal being read out in response to said read-out address data;
said write-in address data producing means including:

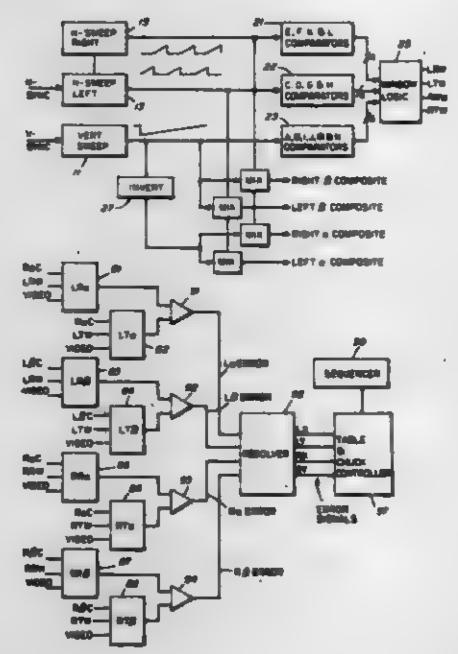
means responsive to said vertical synchronizing signal for producing write-in vertical address data:
means for multiplying said write-in vertical address data by a predetermined amount;
memory-block selecting counter means for producing memory-block selecting data, said television signal being written into a particular memory block selected by said memory-block selecting data; and
memory address counter means for loading output data from said multiplying means at a rate equal to a period of said horizontal synchronizing signal and for counting memory addresses at a rate equal to a period of said memory-block selecting counter.

4,325,076
ELECTRONIC FILTER FOR GENERATING A THIRD HARMONIC SIGNAL
Leopold A. Harwood, Bridgewater, and Erwin J. Wittmann, North Plainfield, both of N.J., assignors to RCA Corporation, New York, N.Y.
Filed May 8, 1980, Ser. No. 147,580
Int. Cl.³ H04N *9/535*
U.S. Cl. 358—31 **5 Claims**



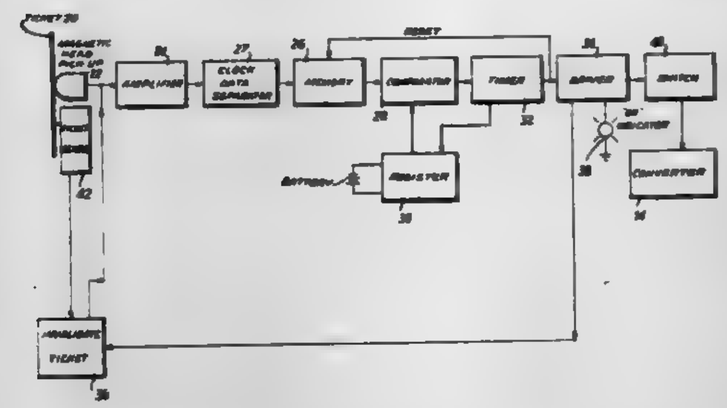
5. In a color television receiver for processing a color television signal with a luminance component frequency interleaved with a chrominance component including a color subcarrier, said receiver including a source of sinusoidal reference signals at the frequency of said color subcarrier; means for processing said chrominance component; a charge transfer device comb filter responsive to a timing signal and to said television signal for providing an output combed chrominance component and an output combed luminance component; and a source of timing signals for said comb filter; wherein:
said comb filter is realized in integrated circuit form in a first monolithic integrated circuit device with a common substrate;
said chrominance processing means, said source of reference signals and said source of timing signals are realized in integrated circuit form in a second monolithic integrated circuit device with a common substrate, said source of timing signals comprising
limiting amplifier means responsive to said sinusoidal reference signal for providing a substantially square wave output signal comprising a fundamental component at the frequency of said reference signal and higher order harmonics including a third harmonic component;
linear amplifier means responsive to said sinusoidal reference signal for providing a sinusoidal output signal with a magnitude substantially equal to the magnitude of said fundamental component of said square wave output signal; and
means for combining output signals from said limiting and linear amplifier means with a sense for substantially cancelling said fundamental component so as to produce a signal at an output of said combining means comprising said desired third harmonic component and higher order harmonics of lesser magnitude relative to said third harmonic component to the substantial exclusion of said fundamental component; and wherein
said receiver further includes
means external to said first and second integrated circuits for coupling said combed chrominance component from said first integrated circuit to said chrominance processing means in said second integrated circuit; and
means external to said first and second integrated circuits for coupling said output signal from said combining means in said second integrated circuit to said comb filter in said first integrated circuit as said comb filter timing signal.

4,325,077
AUTOMATIC WAFER ALIGNMENT SYSTEM
Richard M. Dunham, Merrimack, N.H., assignor to GCA Corporation, Bedford, Mass.
Filed May 19, 1980, Ser. No. 151,296
Int. Cl.³ H04N *7/18*
U.S. Cl. 358—107 **15 Claims**



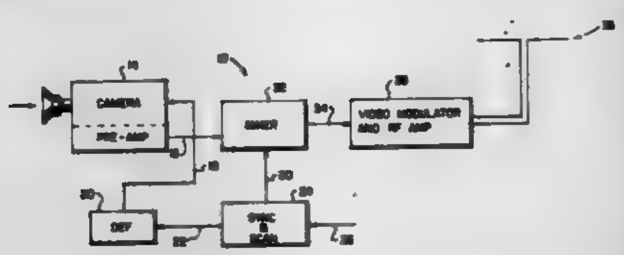
1. Apparatus for locating a diagonal feature in a video signal representing an image, said apparatus comprising:
signal sampling means;
timing means for operating said sampling means to sample portions of the video signal representing a first diagonal section through said image, and to sample portions of the video signal representing a second diagonal section through said image portion which second section is parallel to and closely adjacent said first section, and for providing a first signal responsive to the relative amplitudes of said samples, said timing means being also operative to operate said sampling means to sample portions of the video signal representing third and fourth diagonal sections of said image, which third and fourth sections are parallel to and generally adjacent said first and second sections respectively, and for providing a second signal which is responsive to the relative amplitudes of said third and fourth sections, said timing means being responsive to a control signal for positioning said four sections collectively within said image;
logic means responsive to said first and second signals, said logic means including means for scanning said control signal to sweep said sections collectively across the image in the absence of a parallel feature in the portion of the image traversed by said first and second sections, and including also servo means for varying said control signal in response to said first signal in a sense causing said first and second image sections to bracket a parallel feature in said image when said second signal indicates a feature is traversed by said sections.

4,325,078
PAY PER VIEW TELEVISION CONTROL DEVICE
John C. Seaton, Norwalk, Conn., and Leonard Cohen, Pearl River, N.Y., assignors to The TeleMine Company, Inc., New York, N.Y.
Continuation of Ser. No. 969,458, Dec. 14, 1978, abandoned. This application Nov. 20, 1979, Ser. No. 95,973
Int. Cl.³ H04N *7/16*
U.S. Cl. 358—117 **7 Claims**



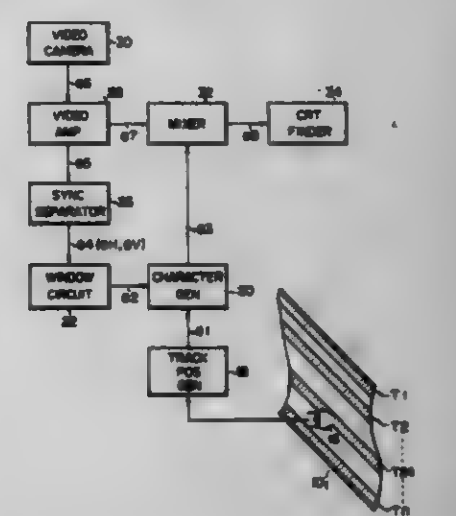
1. Apparatus for providing limited access to television programs comprising
a reader having an input for receiving a record medium on which there is recorded data including representations of a pre-determined period of time for said access and an output at which there are generated electrical signals corresponding to the data recorded on said medium,
a reference signal generator having an output at which there are generated pre-determined electrical signals corresponding to a reference data record, said reference signal generator including timing means for continuously generating signals indicative of elapsed time from a pre-determined reference time, said output comprising said elapsed time signals,
a comparator for comparing the output signals of said reader with the output signals of said signal generator and having an output at which there is generated a validity signal indicative of a correspondence between said reader and reference signal generator output signals, and
a switching device having an "On" state and an "Off" state and being responsive to said comparator for being in said "On" state only during the occurrence of said validity signal, said switch means enabling access to said television programs when in said "On" state and preventing access when in said "Off" state.

4,325,079
SECURE VIDEO TRANSMISSION SYSTEM
William D. Little, 3548 Townsend Dr., Dallas, Tex. 75229
Filed Jun. 9, 1980, Ser. No. 157,790
Int. Cl.³ H04N *7/16*
U.S. Cl. 358—120 **4 Claims**



1. A method for securing information carried by a composit video signal against unauthorized interception, the composit video signal including horizontal and vertical synchronizing pulses and equalizing pulses as well as a video component, said method comprising the step of transmitting the synchronizing and equalizing pulses in the form of a composite pulse train during recurring video blanking intervals, wherein said composite pulse train is characterized by a train of horizontal synchronizing pulses preceded by a group of vertical synchronizing pulses and first and second groups of equalizing pulses occurring immediately prior to and following the vertical pulse group, the pulses of the equalizing and vertical synchronizing groups each occurring at a plural multiple of the frequency of the horizontal pulses, the pulses of the vertical synchronizing group being relatively greater in amplitude as compared with the amplitudes of the horizontal synchronizing and equalization pulses, respectively, and the pulse width of each vertical synchronizing pulse being substantially less than the interval between successive vertical synchronizing pulses.

4,325,080
APPARATUS FOR DISPLAYING VIDEO TRACK NUMBER IN VIEWFINDER OF VIDEO CAMERA
Ken Satoh, Akigawa, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan
Filed Apr. 7, 1980, Ser. No. 137,774
Claims priority, application Japan, Apr. 24, 1979, 54-50684; Apr. 24, 1979, 54-50685
Int. Cl.³ H04N *5/26, 5/78*
U.S. Cl. 358—127 **9 Claims**

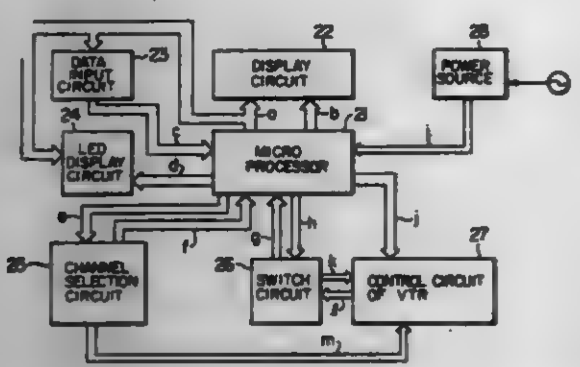


6. A video track display apparatus for a multitrack (VTR) video tape recorder and coupled to a viewfinder arranged in a video camera for displaying frames of a video signal in the viewfinder of the video camera, said video track display apparatus comprising:
first means coupled to said video tape recorder for providing a track position signal representing the position of a track being used for video recording or playback;
second means coupled to said first means for providing a character signal corresponding to said track position signal; and
a third means located within said viewfinder of each video camera and coupled to said second means for displaying at least one character representing said track position according to said character signal.

4,325,081
PROGRAMMED TIMER FOR VTR
Yuuhei Abe, Yokohama, and Katsuo Mohri, Yokosuka, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Jan. 26, 1980, Ser. No. 163,297
Claims priority, application Japan, Aug. 10, 1979, 54-101272
Int. Cl.³ H04N *5/76*
U.S. Cl. 358—127 **10 Claims**

1. A programmed timer for presetting a controlling device for a plurality of time when the device starts and ends, comprising clock means, means for entering reservation data, means for processing the entered data, display means for displaying the current time data from said clock means and the

entered data, and means for sequentially displaying a procedure to be next entered according to the predetermined proce-



dure order thereof, each time data is entered through said reservation data entering means.

4,325,082

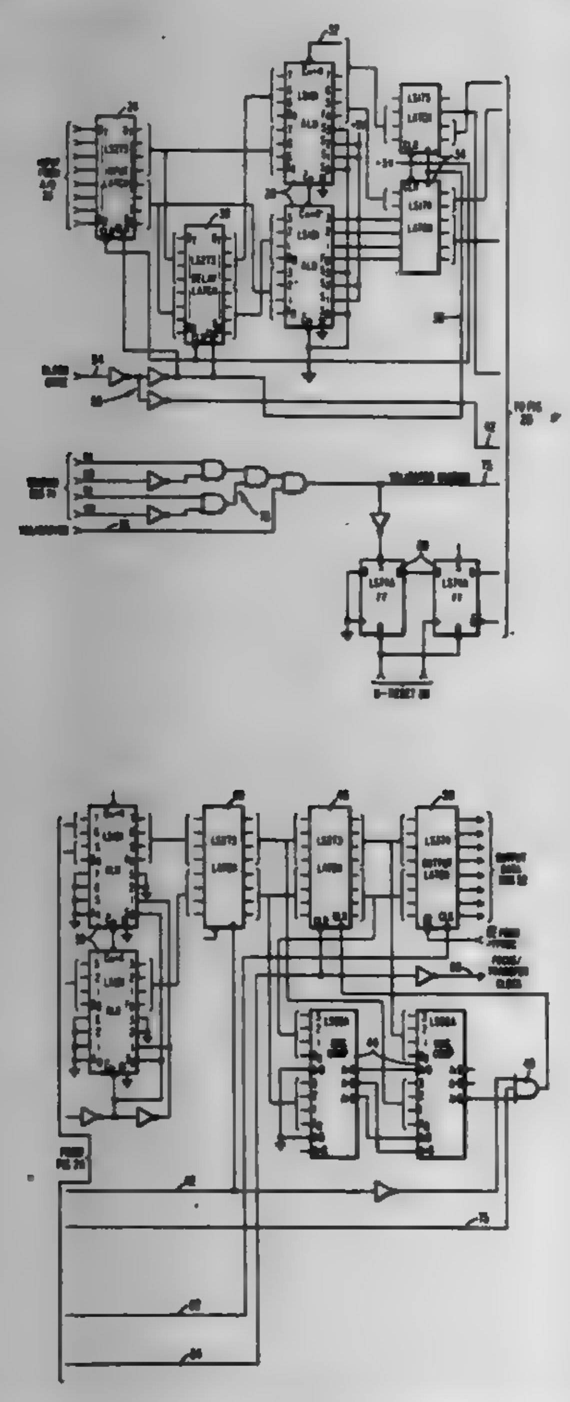
DIGITAL MEASUREMENT SYSTEM FOR AUTOMATICALLY FOCUSING A TELEVISION CAMERA

Karl H. Griesshaber, San Jose, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed Aug. 11, 1980, Ser. No. 176,737

Int. Cl.³ H04N *5/34*

U.S. Cl. 358—218 9 Claims



1. A system for measuring, during a television camera setup mode, the optimum focus condition for an electron beam in a pickup tube, wherein the tube generates a waveform of abrupt transitions corresponding to transitions in a black/white checkered test pattern, comprising:
   means for supplying successive digital data samples indicative of the waveform transitions;
   latch means for delaying alternate digital data samples by one sample interval;
   means coupled to receive the delayed and undelayed digital data samples and for generating the digital difference therebetween corresponding to the maximum rate of risetime of a waveform transition while indicating the polarity of the digital difference;
   means coupled to the means for generating for detecting the largest digital differences corresponding to the maximum rate of risetime of the waveform transition; and
   means for holding the largest digital differences corresponding to the optimum focus condition in response to the means for detecting.

4,325,083

HIGH DYNAMICS MULTISPECTRAL OPTO-ELECTRICAL RECEIVER SYSTEM

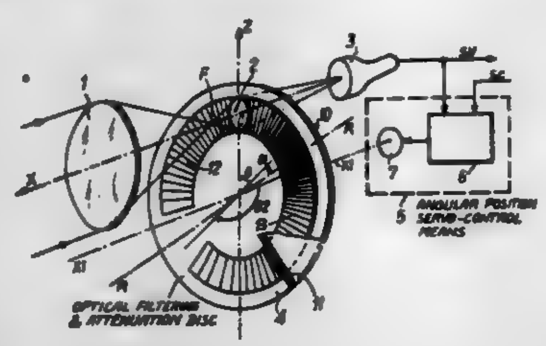
Jean M. Rouchon, and Jean P. Lepeytre, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Apr. 30, 1980, Ser. No. 144,972

Claims priority, application France, May 2, 1979, 79 11021

Int. Cl.³ H04N *5/26, 5/33*

U.S. Cl. 358—228 4 Claims



1. A high dynamics multispectral opto-electrical receiver system incorporating optical means for the reception and focusing of light radiation to form the image of the field observed on an opto-electrical transducer for video signal detection, said optical means being provided with attenuation and optical filtering means for the selection of two different spectral bands of operation and for providing a variable light transmission, said attenuation and optical filtering means comprising a transparent disc support, layers deposited on the said support along two sectors of a circular ring to provide filtering in the said two bands respectively and attenuation variation as a function of the angular position of the disc, said layers comprising two graded angular attenuators symetrically produced with respect to a reference diameter, said sectors being joined at one end by a high density area to seal the light transmission, and separated at the other end by a minimum density area to produce substantially no attenuation, and a servo-control device to rotate said disc and to control its angular position as a function of the video signal value.

4,325,084

SEMICONDUCTOR DEVICE AND METHOD OF MANUFACTURING SAME, AS WELL AS A PICK-UP DEVICE AND A DISPLAY DEVICE HAVING SUCH A SEMICONDUCTOR DEVICE

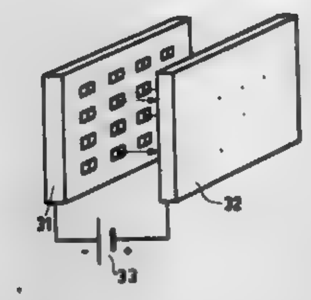
Gerardus G. P. van Gorkom, and Arthur M. E. Hoeberechts, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Division of Ser. No. 971,767, Dec. 21, 1978, Pat. No. 4,259,678. This application Jul. 21, 1980, Ser. No. 170,363

Claims priority, application Netherlands, Jan. 27, 1978, 7800987

Int. Cl.³ H04N *3/14, 3/16*; H01L *29/90*; H01J *19/02*

U.S. Cl. 358—241 10 Claims



1. A method of manufacturing a semiconductor device comprising the steps of forming a semiconductor body having a p-n junction with a depletion zone at least locally adjoining a surface of said semiconductor body, providing an electrically insulating layer on said surface, providing an electrically conductive layer on said insulating layer, and forming an aperture through both said conductive layer and said insulating layer to at least a portion of said depletion zone at said surface exposed through said aperture.

4,325,085

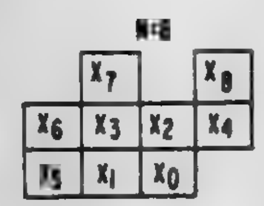
METHOD AND APPARATUS FOR ADAPTIVE FACSIMILE COMPRESSION USING A TWO DIMENSIONAL MAXIMUM LIKELIHOOD PREDICTOR

Robert P. Gooch, Gaithersburg, Md., assignor to Digital Communications Corporation, Germantown, Md.

Filed Jun. 9, 1980, Ser. No. 157,609

Int. Cl.³ H04N *1/40*

U.S. Cl. 358—261 25 Claims



1. A data compression device for information scanned in two dimension and represented by a serial stream of pixel representations, comprising:
   first buffer means for storing at least some of said pixel representations sufficient to represent a portion of said information extending in both said dimensions;
   predictor means coupled to said first buffer means for generating, from at least three pixel representations, a predicted pixel representation for a further pixel, said pixels forming a pixel set extending in both said dimensions,
   selection means responsive to said at least three pixel representations for selecting, or not selecting, said further pixel for compression encoding,
   comparing means for comparing said predicted representation of a selected pixel with an actual representation of said pixel from said first buffer means, to determine if said prediction is or is not correct,
   run length encoding means responsive to said comparing means for encoding successive correct predictions and a following incorrect prediction as at least one multibit word, and second buffer means responsive to said run length encoding means and said predictor means for storing said at least one multibit word and at least one unencoded pixel representation corresponding to an unselected pixel.

4,325,086

RECORDING DEVICE

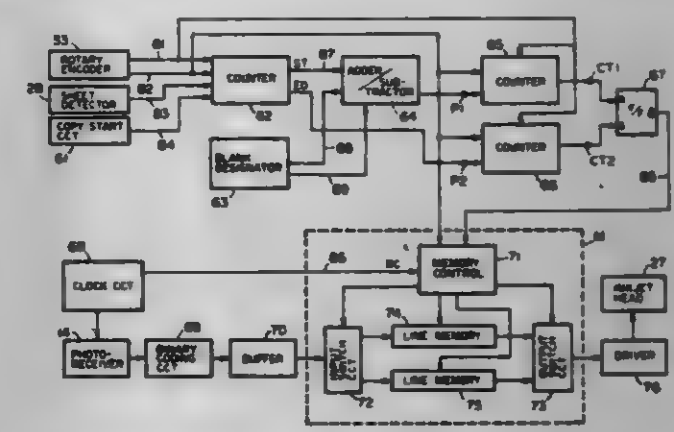
Yasushi Sato, Kawasaki; Seiji Saito, and Naoki Ayata, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 14, 1980, Ser. No. 139,762

Claims priority, application Japan, Apr. 20, 1979, 54-48656; Jun. 14, 1979, 54-74797; Jun. 20, 1979, 54-77801; Jul. 13, 1979, 54-89111; Jul. 16, 1979, 54-91153

Int. Cl.³ H04N *1/22*

U.S. Cl. 358—296 20 Claims



1. A recording device, comprising:
(a) image original mounting means for mounting an image original to be reproduced;
(b) information reading means to read image original information by scanning the image original on said image original mounting means by a moving member which moves relative to said image original mounting means;
(c) recording means to record the image original information read by said information reading means onto a recording medium;
(d) detecting means to detect a forward end position of the image original relative to the scanning direction of the image original by said information reading means, and to form a detection signal; and
(e) control means to control, in response to the detection signal formed by said detecting means, commencement of recording of said image original information onto said recording medium by said recording means.

4,325,087

MAGNETIC MARKER FOR LOCATING A SPLICE WITHIN MAGNETIC TAPE

Alfred H. Moris, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

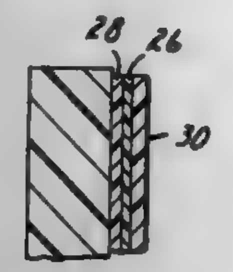
Filed Feb. 29, 1980, Ser. No. 125,966

Int. Cl.³ G11B *27/02, 5/02, 5/78*

U.S. Cl. 360—13 10 Claims

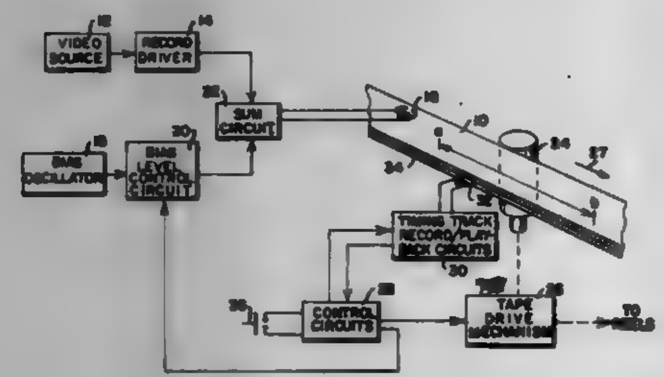
1. A marker adapted for locating a splice within an endless loop of magnetic tape said marker comprising
   a magnetic layer having a residual flux density of at least 0.05 line of flux per centimeter of width, a thickness of not greater than 60 microns, and a coercivity of at least 1000 oersteds, such that said magnetic layer is capable of having recorded thereon a detectable magnetic pattern and the high coercivity of said magnetic layer enables said

pattern to resist erasure during conventional magnetic recording operations,



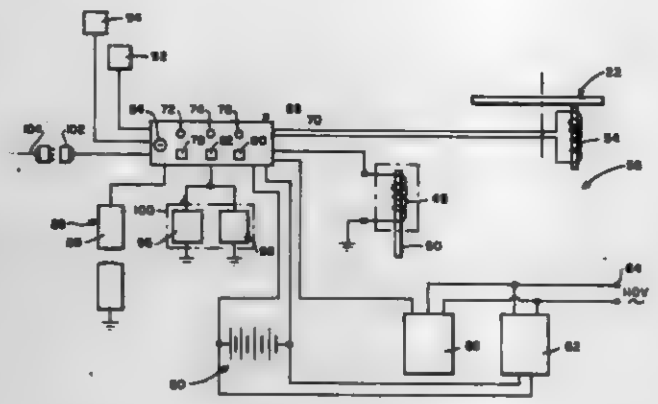
means for attaching said magnetic layer to the endless loop of magnetic tape at a predetermined position with respect to said splice.

4,325,088
LAP AND DISSOLVE IN VIDEO CAMERAS WITH VTR
Charles E. Wright, Escondido, Calif., assignor to Eastman Technology, Inc., Rochester, N.Y.
Filed Mar. 24, 1980, Ser. No. 132,967
Int. Cl.³ H04N *5/79*
U.S. Cl. 360—14 14 Claims



1. A video camera comprising:
(a) reversible drive means for advancing a magnetic record member in either first or second directions along a predetermined path;
(b) record means for magnetically recording successive multi-picture scenes on a moving record member as such member advances past a recording position in a first direction, said record means comprising magnetic head means, means for producing video signals representing scene information, a source of AC bias; means for combining said video signals and said AC bias and for applying the combined signal to said magnetic head means; and
(c) means for producing a lap and dissolve effect between successive scenes as recorded, said lap and dissolve producing means comprising:
(1) means operatively coupled to said source of AC bias for gradually reducing the level of AC bias applied to said magnetic head means while recording the end portion of a first scene, thereby gradually reducing the sensible level of the recorded pictures comprising said end portion while the recording member advances a predetermined distance in said first direction past said recording position;
(2) control circuit means operatively coupled to said drive means for advancing the recording member said predetermined distance in said second direction to position the magnetic record member so that said end portion is located at a position upstream of said recording position; and
(3) means operatively coupled to said source of AC bias for gradually increasing the level of AC bias applied to said magnetic head means while said record member is again advanced in said first direction from its upstream position to record the beginning portion of a second scene, thereby gradually increasing the sensible level of the recorded pictures of the second scene while the sensible level of the recorded pictures of the first scene is gradually reduced.

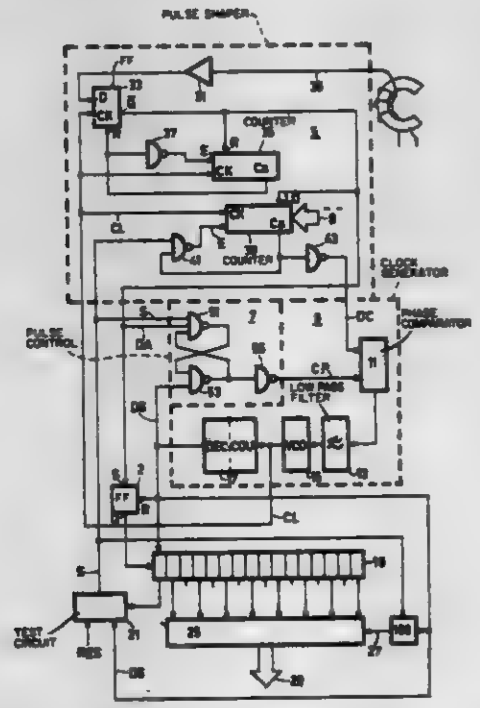
4,325,089
SYSTEM FOR SAFEGUARDING MAGNETICALLY RECORDED DATA
Da L. Hsu, 2203 Glen Ave., Berkeley, Calif. 94709
Filed Dec. 10, 1979, Ser. No. 102,231
Int. Cl.³ G11B *5/86, 15/04*
U.S. Cl. 360—15 2 Claims



1. A system for safeguarding data which is magnetically stored on a medium including the combination of a housing, a support for holding the medium within the housing, magnetic means for establishing an electromagnetic field across at least a portion of the medium, means for producing a destruct signal responsive to unauthorized entry into or a given condition of the housing, and control means for energizing the magnetic means responsive to the destruct signal and for magnetically erasing the data on the medium, said support means including means for causing relative movement between the medium and the electromagnetic field, said support means comprising a turntable mounted for rotation about an axis in a plane extending through the field when the magnetic means is energized, said medium being mounted on the turntable for rotation therewith through the field including spring means for applying a force when stressed to the turntable for rotating the same about the axis, and operating means for releasing or holding the turntable against rotation in a stand-by mode while the spring means is stressed and for releasing the turntable in an operating mode responsive to the destruct signal for enabling the spring means to rotate the turntable.

4,325,090
DEVICE FOR SYNCHRONIZING A CLOCK PULSE GENERATOR WITH A SERIAL DATA SIGNAL
Miloslav Janak, Sunnyvale, Calif.; Martin Ginsberg, Daaden, and Albrecht Reiners, Siegen, both of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Apr. 18, 1980, Ser. No. 141,715
Claims priority, application Fed. Rep. of Germany, Feb. 17, 1979, 2906200
Int. Cl.³ G11B *5/09*
U.S. Cl. 360—51 5 Claims

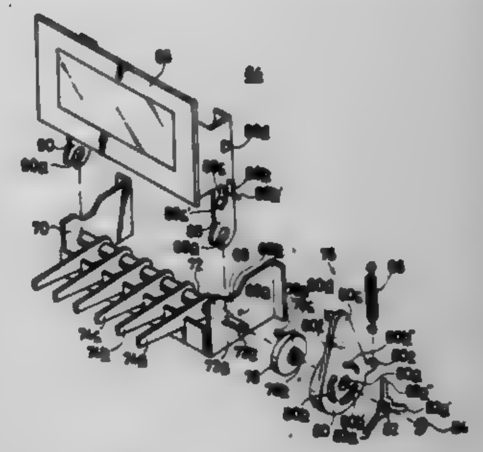
1. In a device for synchronizing a clock pulse generator with a serial bivalent signal received from an external medium, which signal comprises a number of successive bit cells of nominally equal duration and has at least one transition in each series of a predetermined, fixed number of directly successive bit cells comprising:
oscillator means, having a control input and a control clock output, for producing a control clock pulse train under the influence of a signal on the control input;
clock extraction means, having a read clock output, for producing a read clock pulse train from the received signal;
phase comparator means, having a first input and a second input, connected for receiving said control clock pulse train and said read clock pulse train, and an output for supplying a phase difference signal which characterizes the phase difference between said pulse trains; and
a low pass filter connected for receiving said phase difference signal and for forming therefrom a control signal which is connected to the control input of the oscillator means;
the improvement wherein said device further comprises:
test circuit means for determining whether or not the control clock pulse train is nominally synchronized with the received signal and for supplying a synchronization signal indicative thereof; and
switching means which place the device in a first state by (1) causing the clock extraction means to produce a read clock pulse train which undergoes transitions at one-half bit cell intervals and connecting said read clock pulse train to the first input of the phase comparator means, causing the oscillator means to produce a control clock pulse train



having twice the nominal bit cell frequency and connecting said control clock pulse train to the second input of the phase comparator means, and adjusting the low pass filter to a first cut-off frequency, when the synchronization signal indicates a lack of nominal synchronization between the control clock pulse train and the received signal; and which place the device in a second state by (2) causing the clock extraction means to produce a read clock pulse train which undergoes transitions at one bit cell intervals and connecting said read clock pulse train to the first input of the phase comparator means, causing the oscillator means to produce a control clock pulse train at the nominal bit cell frequency and connecting said control clock pulse train to the second input of the phase comparator means, and adjusting the low pass filter to a second cut-off frequency, which is lower than the first cut-off frequency, when the synchronization signal indicates that the control clock pulse train and the received signal are nominally synchronized.

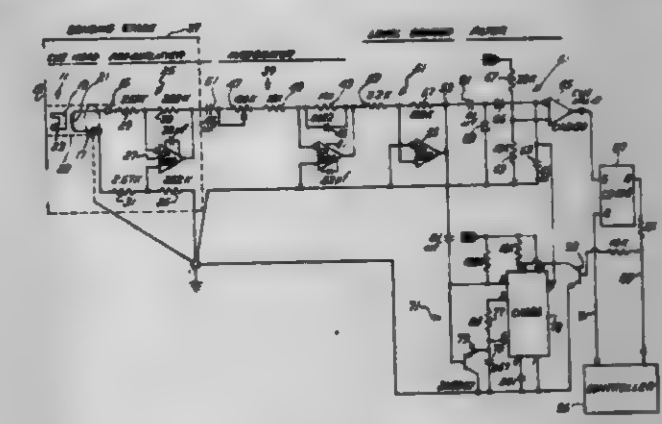
4,325,091
CASSETTE TAPE RECORDER
Yoshitsugu Uchida, Yokohama, Japan, assignor to Victor Company of Japan, Limited, Yokohama, Japan
Filed Jan. 30, 1980, Ser. No. 116,864
Claims priority, application Japan, Jan. 31, 1979, 54-11197[U]
Int. Cl.³ G11B *15/00*
U.S. Cl. 360—96.6 12 Claims

1. A cassette tape recorder having a housing with an opening therein, and including:
a shaft extending between spaced parallel brackets mounted on said housing adjacent to said opening;
a cassette holder for holding therein a tape cassette and having a pair of arms pivotally mounted on said shaft to rotate thereabout between a loading position in which said holder is outside said opening for loading and unloading of said cassette, and an operative position in which said holder is inside said opening;
a slip-friction member axially slidably mounted on said shaft and engaged loosely with one said holder arm for unitary



rotation therewith and having a surface for making contact with a stationary surface when said slip-friction member axially slides toward said stationary surface;
first biasing means for urging said holder toward said loading position; and
second biasing means for urging said slip-friction member toward said stationary surface to produce slip friction between said contacting surfaces when said holder is rotated from said operative position to said loading position by the action of said first biasing means.

4,325,092
APPARATUS FOR DETECTION OF CUE DATA CARRIED BY A RECORDING MEDIUM MOVING AT GREATLY VARYING SPEEDS
David O. Neathery, Wheaton, and Edward J. Riggs, West Chicago, both of Ill., assignors to King Instrument Corporation, Westboro, Mass.
Filed Jul. 18, 1980, Ser. No. 170,016
Int. Cl.³ G11B *5/25, 5/02*
U.S. Cl. 360—119 26 Claims



1. A cue detector for sensing cue data recorded together with other informational data on a recording medium where the cue data has a fixed wavelength lambda longer than the wavelength of the other informational data and the recording medium is moved at varying speeds, said cue detector comprising:
sensing means positioned in sensing relation to said recording medium and tuned for providing an output signal

having the greatest amplitude when reading data of lambda wavelengths;

integrator means for receiving said output signal and responsively generating an integral signal representative of the integral of said output signal; and

level sensor means for comparing the amplitude of the integral signal with respect to a reference amplitude and responsively generating a cue detection signal for indicating detection of said cue data by said sensing means.

4,325,093

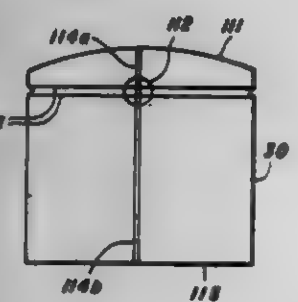
MAGNETIC HEAD TRANSDUCER HAVING ENHANCED SIGNAL OUTPUT AND MANUFACTURING METHOD THEREFOR

Kaoru Ishii, Garland, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jun. 4, 1979, Ser. No. 45,352

Int. Cl.[3] G11B *5/12, 5/251, 5/42*

U.S. Cl. 360—120 14 Claims



1. A method of manufacturing a magnetic head transducer having a transducing gap of predetermined width along the entire length thereof, comprising the steps of:

(a) providing a pair of transducer members comprised of a magnetic material and each member having an opposing major surface, at least a portion of each major surface defining first and second gap faces forming first and second gaps;

(b) disposing non-magnetic material on at least one of said first gap faces at a thickness equal to the predetermined gap width, a first portion of said gap being formed when said transducer members are placed in abutting relationship;

(c) disposing on at least one of said second gap faces a brazing alloy at a thickness of at least five percent greater than the thickness of said non-magnetic material, a second portion of said gap being formed when said transducer members are placed in abutting relationship; and

(d) holding said transducer members together so that said opposing major surfaces are in abutment and heating said transducer members to the melting point of said brazing alloy to secure said second gap faces of transducer members together, a portion of said brazing alloy escaping from said second portion of said gap so that said gap has a uniform width along the entire length thereof.

4,325,094

TAPE RECORDER HAVING INTERLOCKED TAPE SPEED AND TONE CONTROL ADJUSTMENT

Hiroki Ichikawa, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Feb. 19, 1980, Ser. No. 122,435

Claims priority, application Japan, Feb. 26, 1980, 55-21537

Int. Cl.[3] G11B *5/00, 19/00*

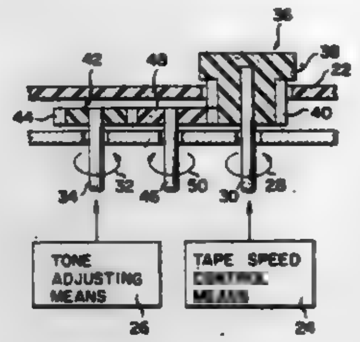
U.S. Cl. 360—137 8 Claims

1. In a tape recorder having a knob operated tape speed control means for changing the running speed of a magnetic tape during a recording and/or reproducing operation by the movement of said knob,

the improvement comprising the combination of:

a tone adjusting means having control means for changing the high frequency response of sound reproduced from the magnetic tape during a reproducing operation by the movement of said control means of said tone adjusting means; and

a control mechanism mechanically coupled to said knob of said tape speed control means and to said control means of said tone adjusting means, said control mechanism being responsive to operation of said knob of said tape speed



control means for simultaneously operating said control means of said tone adjusting means for causing said tone adjusting means to (i) lower the high frequency response during a reproducing operation when said knob of said tape speed control means is operated to increase the running speed of the magnetic tape, and to (ii) elevate the high frequency response during a reproducing operation when said knob of said tape speed control means is operated to decrease the running speed of the magnetic tape.

4,325,095

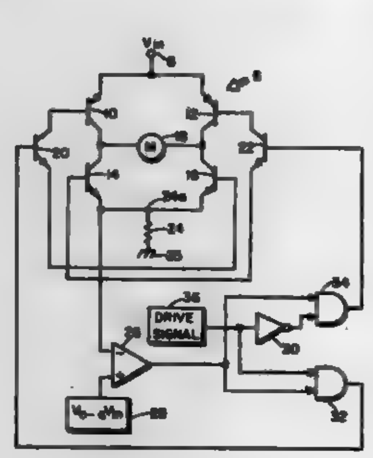
MEANS FOR LIMITING POWER DISSIPATED IN AN A.C. MOTOR

Russell F. Hart, Blue Grass, Iowa, assignor to The Bendix Corporation, Southfield, Mich.

Filed Oct. 8, 1980, Ser. No. 195,029

Int. Cl.[3] H02H *7/08;* H02P *13/20*

U.S. Cl. 361—23 8 Claims



1. In an inverter circuit responsive to a varying D.C. voltage for delivering current in alternating half cycles to an A.C. motor, means for limiting the power delivered to said motor comprising:

means for generating a first voltage level related to the current through said motor,

a voltage source for impressing a D.C. voltage across said inverter circuit;

means for generating a second voltage level equal to a constant voltage minus fixed percentage of said D.C. voltage; and,

means comparing said first voltage level with said second voltage level for limiting the current delivered to said A.C. motor.

4,325,096

ZERO-PHASE CURRENT TRANSFORMER

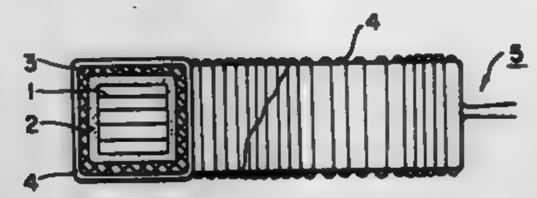
Mineo Sunohara; Yasuhiko Okubo, both of Sagamihara; Mitsugu Taketa, Itami; Yoshiyuki Nakai, Itami, and Yukio Miyazaki, Itami, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 27, 1979, Ser. No. 108,245

Claims priority, application Japan, Dec. 29, 1978, 53/164282

Int. Cl.[3] H02H *3/28;* H01F *40/06*

U.S. Cl. 361—45 2 Claims



1. A zero-phase current transformer comprising:

a magnetic core comprising a first magnetic material having a high magnetic permeability;

a damper member for protecting said magnetic core from an impact directly applied thereto;

a secondary winding wound around the peripheral surface of said damper member, said secondary winding being coupled to a relay means operable in response to an output of said secondary winding above a predetermined level;

casing means for protecting said magnetic core from an inward pressure caused by said secondary winding, at least a portion of said casing means comprising a second magnetic material having a magnetic permeability lower than that of said first magnetic material; and

a load lead wire magnetically coupled to said magnetic core for supplying an electric current to a load.

4,325,097

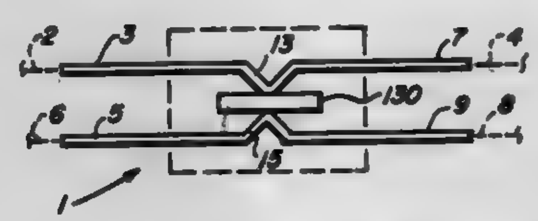
FOUR TERMINAL PULSE SUPPRESSOR

O. Melville Clark, Tempe, Ariz., assignor to General Semiconductor Industries, Inc., Tempe, Ariz.

Filed Sep. 17, 1979, Ser. No. 75,961

Int. Cl.[3] H02H *9/04*

U.S. Cl. 361—56 3 Claims



1. A surge suppressor for limiting high-speed, high voltage power surges conducted between first and second electrical lines, said surge suppressor comprising in combination:

a. a package, said package having a cavity therein;

b. a semiconductor junction device that operates in a junction avalanche mode, said semiconductor junction device being disposed in said package, said semiconductor junction device having first and second electrodes;

c. first and second terminals located outside of said package;

d. a first conductor for conducting substantially all line current through said first line, said first conductor extending through the interior of said package, said first conductor having a first substantially V-shaped intermediate portion disposed inside said package, said first substantially V-shaped intermediate portion having a central tip portion attached to and electrically connected to said first electrode of said semiconductor junction device, said first substantially V-shaped intermediate portion having two opposed end portions electrically connected to said first and second terminals, respectively;

e. third and fourth terminals located outside of said package; and

f. a second conductor for conducting substantially all line current flowing through said second conductor, said second conductor extending through the interior of said package, said second conductor having a second intermediate portion disposed inside said package and attached to and electrically connected to said second electrode of said semiconductor junction device, said second conductor having two opposed end portions electrically connected to said third and fourth terminals, respectively.

4,325,098

DETECTION OF THE POSITION OF A FAULT ON AN ELECTRIC LINK

Isabelle Heller, Meudon, France, assignor to Enertec, Montrouge, France

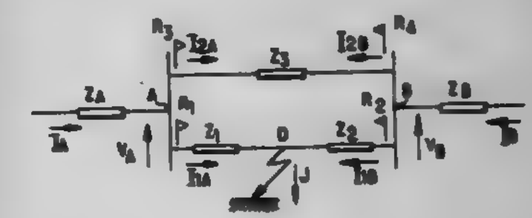
PCT No. PCT/FR79/00015, § 371 Date Oct. 23, 1979, § 102(e) Date Oct. 22, 1979, PCT Pub. No. WO79/00657, PCT Pub. Date Sep. 6, 1979

PCT Filed Feb. 19, 1979, Ser. No. 165,403

Claims priority, application France, Feb. 23, 1978, 78 05205

Int. Cl.[3] H02H 7/26

U.S. Cl. 361—82 8 Claims



1. A method for detecting the location of a fault occurring on an electric link, the link comprising two parallel lines each having respective ends extending between a first and a second point of this link, and each line including a compensating capacitor in series between its ends, said method comprising the steps of:

(a) detecting at each end of each line the apparent forward or backward direction of a fault on the electric link;

(b) generating, at each end of each line, a first signal indicative of a detected forward fault and a second signal indicative of a detected backward fault; and

(c) generating a signal indicative of the presence of a fault on a first of the two lines when a forward fault signal is generated at both ends of said first line, and wherein:

(d) said signal indicative of a fault on said first of the two lines is also generated when a forward fault signal is generated at the first end of said first line and a backward fault signal is generated at the second end of this first line, provided that a backward fault signal is generated at the first end of said second line.

4,325,099

DETECTOR CIRCUIT FOR THYRISTORS

James E. Morehouse, and Richard A. Pedersen, both of New Tripoli, Pa., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 9, 1980, Ser. No. 195,334

Int. Cl.[3] G01R *19/165*

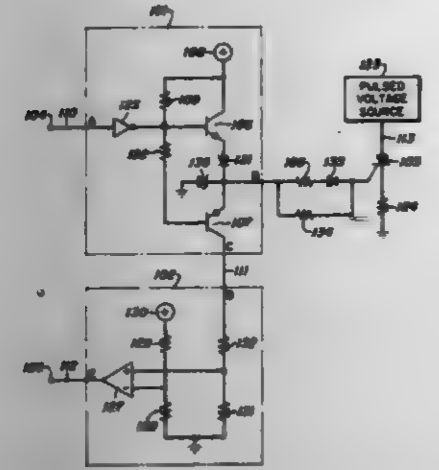
U.S. Cl. 361—93 10 Claims

1. An electrical circuit comprising

a thyristor (103) having an anode, a cathode, and a gate terminal and being switchable to a low impedance state in response to a control signal in a first state applied to said gate terminal, wherein a first and a second current are permitted to flow simultaneously out of said gate and said cathode terminals, respectively, when said thyristor is in said low impedance state,

characterized in that said electrical circuit further comprises

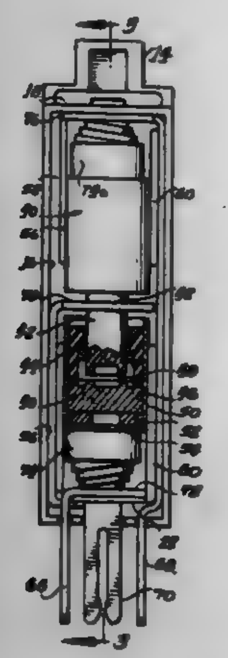
detector circuit means (102) coupled to said gate terminal for detecting said first current and for generating an out-



put signal indicating the presence of said second current, when said first current is greater than a predetermined magnitude.

4,325,100
LINE PROTECTOR FOR A COMMUNICATIONS CIRCUIT

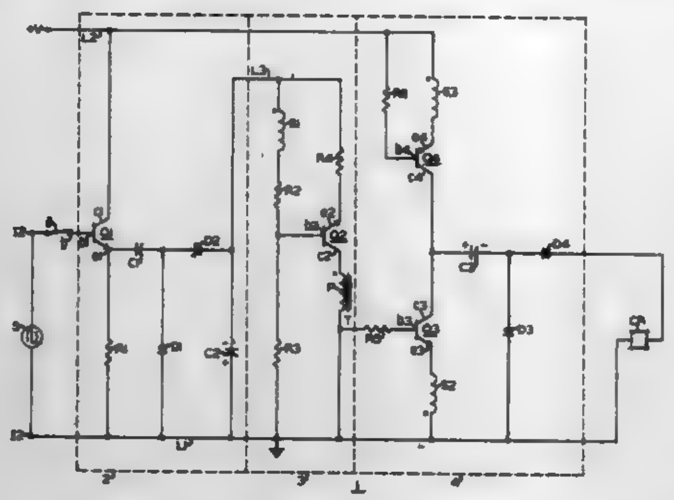
Bertram W. Baumbach, Arlington Heights, Ill., assignor to Reliable Electric Company, Franklin Park, Ill.
Filed Jun. 12, 1980, Ser. No. 158,913
Int. Cl.³ H02H *9/06*
U.S. Cl. 361—119 9 Claims



1. A line protector for a communications circuit comprising a dielectric elongated housing open at one side for receiving the components of the protector, said housing having means interior thereof for supporting first and second surge voltage arresters in substantially coaxial relationship with the longitudinal axis of the housing, a first line terminal electrically connected to one arrester, a second line terminal electrically connected to the other arrester, the first line terminal extending from one end of the housing the full length of both arresters and to the other end of the housing, the second line terminal being substantially at said other end of the housing, a ground terminal connected to both arresters intermediate the ends of the housing and extending along only one of the two arresters to said other end of the housing, pins on each of said terminals projecting from said other housing end through slots thereat, and a cover over said opening and having means to retain said components in said housing.

4,325,101
VITAL ELECTRONIC TIME DELAY CIRCUIT

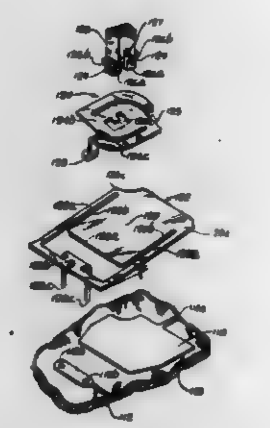
Reed H. Grundy, Murrysville, Pa., assignor to American Standard Inc., Swissvale, Pa.
Filed Dec. 26, 1979, Ser. No. 106,971
Int. Cl.³ H01H *47/00;* B61L *21/06*
U.S. Cl. 361—195 10 Claims



1. A vital electronic time delay circuit comprising, a source of periodic signals, a switch connected between said source of periodic signals and an input amplifier, said input amplifier amplifies said periodic input signals when said switch is closed, a rectifier for rectifying the amplified periodic input signals and for charging a potential storage means, an oscillator powered by the potential charge on said storage means for producing a.c. oscillations, a pair of switching transistors alternately rendered conductive by opposite alternations of said a.c. oscillations, a capacitor-diode network coupled to said pair of switching transistors for normally causing the energization of a vital relay and for causing the de-energization of said vital relay a predetermined period of time after the source of the periodic signals is disconnected from the circuit by the opening of said switch.

4,325,102
VARIABLE CAPACITOR FOR USE IN A KEYBOARD

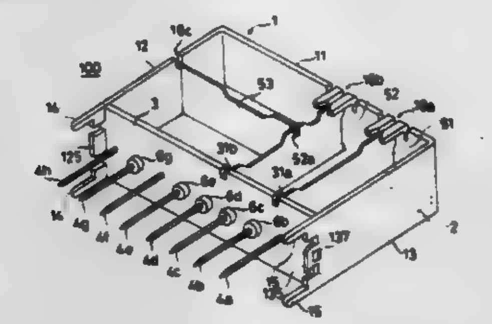
George P. English, Hayden Lake, Id., assignor to General Instrument Corporation, Clifton, N.J.
Filed Oct. 10, 1980, Ser. No. 195,743
Int. Cl.³ H01G *5/16*
U.S. Cl. 361—288 11 Claims



1. A variable capacitor for use in a keyboard, comprising:
a stationary capacitor plate of thin conductive sheet material on an insulative substrate and having a substantially planar face;
a movable member formed from a piece of thin, conductive, sheet material and including a movable capacitor plate having a substantially planar continuous face in overlying, spaced apart relation to said face of said stationary capacitor plate;
said movable plate being struck from the body of said sheet material to provide a pair of free side edges and an outer free edge transverse thereto, a portion opposite said outer free edge projecting laterally outward of said free side edges and integral with a pair of supporting spring-like deflectable legs disposed on opposite sides of said free side edges and sloping downwardly toward said substrate to join an integral base strip spaced below and parallel of said outer free edge and adapted for mounting on said substrate to support said movable plate above said stationary plate for movement toward and away from the same to vary the capacity therebetween;
a plunger mounted for movement toward and away from said movable plate supporting said element and biased away from said movable plate, and
a separate, spring washer-like element attached to a plunger and engagable with said movable plate and movable in a direction normal to said substrate forcing said movable plate toward said stationary plate into a maximum capacity position wherein said plates are fully engaged, said spring washer-like element having means providing a substantially linear force characteristic on said plunger during continued movement thereof toward said fixed plate after said maximum capacity position is obtained.

4,325,103
PROVISIONAL FIXING STRUCTURE OF ELECTRONIC TUNER

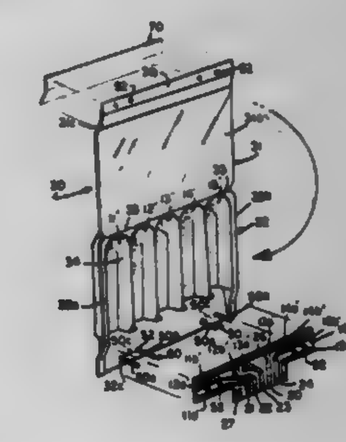
Katsuo Ito, Kanazawa, and Kazunori Yoshimura, Nonoichi, both of Japan, assignors to Murata Manufacturing Co., Ltd., Japan
Filed Dec. 13, 1979, Ser. No. 103,168
Claims priority, application Japan, Dec. 28, 1978, 53-182913[U]
Int. Cl.³ H05K *7/14, 1/08*
U.S. Cl. 361—424 10 Claims



1. An electronic tuner, comprising:
a frame made of an electrically conductive material and having an elongated flat plate portion extending in a horizontal direction and side plate portions extending from both ends of said flat plate portion at substantially right angles and parallel to each other;
a main base plate fixed to said frame and having opposite main surfaces, one main surface of said main base plate having a printed pattern for a predetermined electronic circuit on said main base plate, said main base plate having a first plurality of apertures formed therein near one side edge of said main base plate;
an auxiliary base plate connected to the distal end of each of said side plate portions of said frame such that said auxiliary base plate is adjacent said one side edge of said main base plate and said frame, said main base plate and said auxiliary base plate cooperate to define an interior space therebetween, said auxiliary base plate having opposite main surfaces, one main surface of said auxiliary base plate facing said space, the opposite main surface of said auxiliary base plate having an electrically conductive film formed on substantially the whole surface thereof, said auxiliary base plate being provided with a second plurality of apertures equal in number to the number of said first plurality of apertures, each of said apertures of said second plurality of apertures corresponding to a different said aperture of said first plurality of apertures in said main base plate such that each aperture of said first set of apertures forms a set with its corresponding aperture of said second set of apertures;
a plurality of connection terminals equal in number of the number of said first and second pluralities of apertures, each of said connection terminals corresponding to a different said set of apertures, a first end terminal of each of said connection terminals extending through its corresponding one of said first plurality of apertures in said main base plate, a second end terminal of each of said connection terminals extending through the corresponding one of said second plurality of apertures of said auxiliary base plate to said opposite main surface side of said auxiliary base plate;
a shield plate having opposite ends supported by said frame and said auxiliary base plate, respectively, for shielding said electronic circuit formed on said main base plate;
first provisional fixing means for provisionally fixing said main base plate in such a position that said main surface of said main base plate which is opposed to said main surface of said main base plate having said electronic circuit formed thereon faces said space;
second provisional fixing means for provisionally fixing said auxiliary base plate to said distal end of said side plate portions of said frame with said first end terminal of each of said connection terminals being inserted into the corresponding one of said first plurality of apertures of said main base plate and said second end terminal of each of said connection terminals being inserted into the corresponding one of said second plurality of apertures of said auxiliary base plate;
said second provisional fixing means comprising first engagement means formed at the respective distal ends of said side plate portions of said frame, and second engagement means formed at opposite ends of said auxiliary base plate and engaged with corresponding ones of said first engagement means formed on said side plate portions;
said side plate portions of said frame cooperating with said flat plate portion of said frame such that said side plate portions are elastic in a direction parallel to said flat plate portion such that said side plate portions hold said second engagement means, thereby to provisionally fix said frame, said main base plate, said auxiliary base plate, said plurality of connection terminals and said shield plate in a united state; and
solder means for permanently affixing said auxiliary base plate to said frame.

4,325,104
MULTILAMP PHOTOFLASH UNIT WITH FUNCTIONAL LABEL

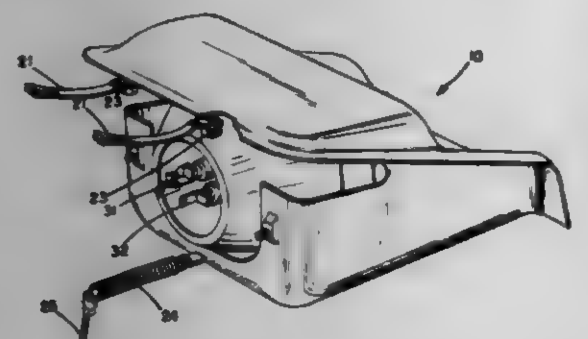
David R. Broadt, Lewisburg, Pa., and Emergy G. Audesse, Beverly, Mass., assignors to GTE Products Corporation, Stamford, Conn.
Filed Aug. 27, 1980, Ser. No. 181,932
Int. Cl.³ G03B *15/02*
U.S. Cl. 362—11 15 Claims



1. A multilamp photoflash unit comprising, in combination, a housing means having a light-transmitting front portion, a plurality of flashlamps enclosed in said housing means, termi-

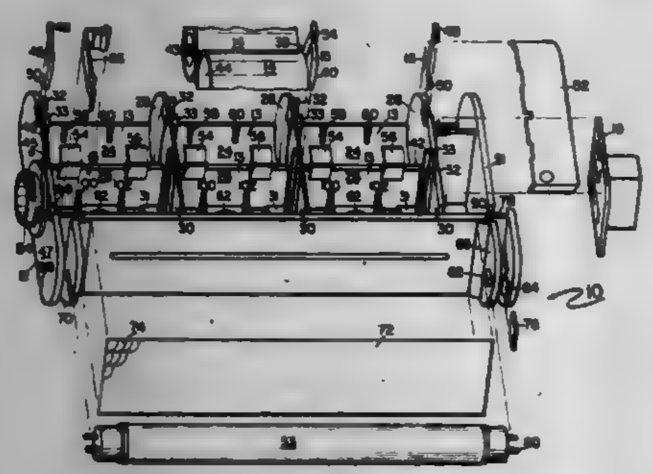
nal means joined to said housing means and coupled to said lamps for enabling flashing of the lamps in response to flash actuation signals applied to said terminal means, and a label comprising an adhesive backed sheet of substantially opaque material affixed to the exterior of said housing means and disposed to cover a section of said light-transmitting front portion of the housing means for providing selective shielding of the light radiated from said flashing lamps.

4,325,105
HEADLIGHT ASSEMBLY
Don R. Scimonelli, 14363 Saguaro Pl., Centreville, Va. 22020
Filed Aug. 24, 1979, Ser. No. 69,530
Int. Cl.³ B60Q *1/00*
U.S. Cl. 362—80 7 Claims



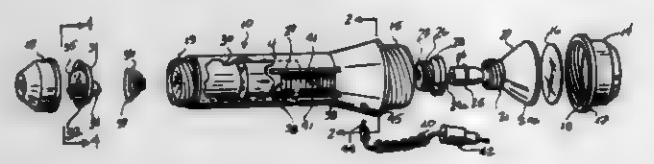
1. A headlight assembly for replacement of a conventional flip-up type headlight assembly for an automobile comprising:
a housing including a recessed entry portion and a bucket portion;
said bucket portion being adapted to adjustably position a headlight; and
a flange member extending around a peripheral surface of said recessed entry portion and said bucket portion;
said flange member being shaped to be contiguous with said automobile frame.

4,325,106
ONE PIECE BATTERY HOLDER
William Bartunek, Yonkers; Gordon E. Kaye, Garrison, both of N.Y., and Henry R. Mallory, Greenwich, Conn., assignors to Duracell International Inc., Bethel, Conn.
Filed Sep. 10, 1979, Ser. No. 74,219
Int. Cl.³ F21L *7/00*
U.S. Cl. 362—157 12 Claims



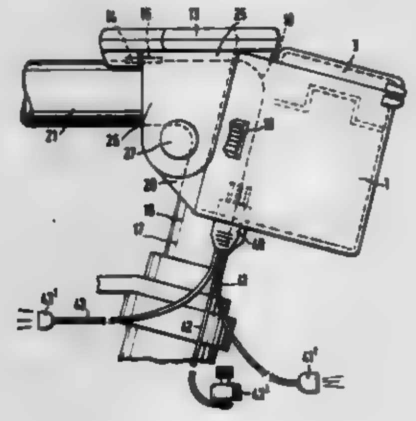
1. A battery holder comprising a drawer having a plurality of abutting compartments, each compartment being separated from the others by walls which isolate each compartment from each next adjacent compartment, and each compartment being sized to accommodate a single battery therewithin, whereby said walls maintain the battery in each compartment in out-of-contact relationship with the batteries in the other compartments, and each compartment being polarized so that a battery can be placed therein only in a predetermined position; means for electrically interconnecting the battery compartments; and means for connecting a user circuit to the battery holder.

4,325,107
RECHARGEABLE FLASHLIGHT
Richard H. MacLeod, 15919 State Rte. 2, Waseon, Ohio 43567
Filed Jan. 29, 1980, Ser. No. 116,620
Int. Cl.³ F21L *9/00, 7/00*
U.S. Cl. 362—183 13 Claims



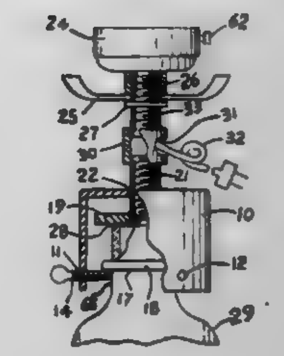
1. A rechargeable flashlight comprising in combination a tubular casing of dielectric material for receiving therein at least one rechargeable battery,
said casing having a rear end portion threaded for screw engagement with an end cap and a forward end portion threaded for screw engagement to a light bulb and reflector cap assembly,
a metal sleeve attached to the inner surface of the casing adjacent to said first mentioned threaded portion,
said sleeve having a flange overlapping the end of the casing and an inwardly formed indentation providing a slot between the sleeve and the inner surface of the casing for receiving and making electrical contact with one end of a current carrying bus bar,
a cross member of rigid material attached to the inner wall of the casing between the foremost battery in the casing and the light bulb reflector cap assembly,
said cross member having an electrical terminal therethrough in alignment with the post terminal of the foremost battery in the casing and a cut-out adjacent to the inner wall of the casing for entry of a bus bar,
a metal spring attached to the terminal on said cross member in such manner that the free end of the spring makes electrical contact with the central terminal in the base of a light bulb,
a rear end cap of dielectric material having interior threads engageable with the threaded rear end section of the casing and an interior annular shoulder,
a cup positioned in said rear end cap and having an exterior rim flange bearing against the annular shoulder of the rear end cap,
a conical metal spring having its base nestled in said cup with a terminal bend in the end of the outermost coil for making contact with said metal sleeve flange and its apex positioned against the bottom terminal of the rearmost battery in the casing,
a current carrying bus bar positioned against the interior surface of the casing and extending from the indentation in the metal sleeve, through the cut-out in the casing's cross member and to a threaded metal cup bulb retainer in a light bulb reflector cap assembly,
means exterior of the casing for moving said bus bar fore and aft to respectively make and break electrical contact with said bulb retainer,
a light bulb and reflector cap assembly comprising an internally threaded bezel of dielectric material, a lens, a reflector having an externally threaded tubular neck extension and an interior shoulder in said neck extension, a flanged light bulb and a metal cup bulb retainer with internal threads for engagement with the threads on the reflector's neck extension for screwing the flange surface of the light bulb against the interior shoulder in said neck extension,
said threaded metal cup having a central aperture in its base whereby the central terminal and its surrounding dielectric insulation at the base of the light bulb protrudes therethrough to make electrical contact with the metal spring attached to the terminal in the cross member, and
a phono-jack affixed to the tubular casing for accepting a phono plug attached to a D.C. charging source for recharging the batteries in the casing, said phono-jack having one electrical lead therefrom attached to the metal bus bar and its other electrical lead attached to the electrical terminal on the cross member of the tubular casing.

4,325,108
RECHARGEABLE BATTERY UNIT FOR BICYCLE ILLUMINATION
Werner Spingler, Badenweiler, Fed. Rep. of Germany, assignor to ESGE-Marby GmbH & Co., Bielefeld, Fed. Rep. of Germany
Filed May 2, 1980, Ser. No. 146,026
Claims priority, application Fed. Rep. of Germany, May 12, 1979, 2919211
Int. Cl.³ F21V *33/00*
U.S. Cl. 362—183 16 Claims



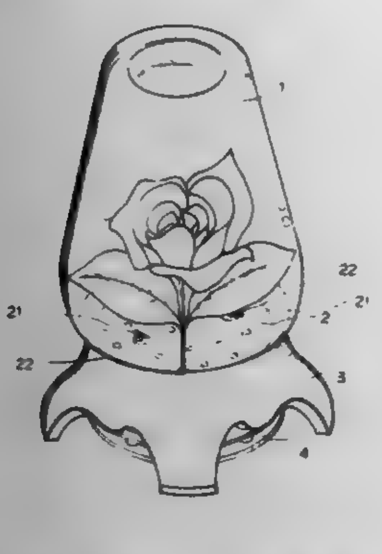
1. For attachment to a bicycle having a generator (42) and electrical illuminating means (41, 43), a selectively removable re-chargeable battery unit (4), having
a transfer switch (10) for selective connection of the illuminating means to the generator (42) or to the battery unit (4);
a housing (1);
means to attach the housing on the frame of the bicycle in a predetermined position, said housing having a wall (3) which, upon such attachment, becomes a top wall,
wherein
the housing (1) is a unitary element and defines a battery chamber (2);
the battery (4) is retained in the chamber in the housing;
the transfer switch (10) is secured to the housing and externally accessible therefrom;
a battery-charge indicator (11) is provided, connectable to said battery and providing an indication of the charge state thereof;
and a lamp circuit indicator (12) is provided, connected to the illuminating means and providing an indication of proper functioning thereof,
said indicators (11, 12) being arranged on the housing to be visible by the user when looking towards said top wall, whereby the releasable attachable housing forms a unitary support for the indicators;
and the attachment means comprise
means for attachment of the housing engageable with the handle bar post or stem (17) of the bicycle.

4,325,109
LAMP CONVERSION UNIT
Bakari Mwanyoha, New Bedford, Mass., assignor to NU Industries, Inc., New Bedford, Mass.
Filed Jun. 27, 1975, Ser. No. 591,001
Int. Cl.³ F21V *19/00*
U.S. Cl. 362—412 3 Claims



1. A lamp conversion unit for converting a standard such as a bottle or a vase into a lamp, said standard having a neck with a spaced shoulder, and said lamp conversion unit mounted on the outside of said neck of the standard, said lamp conversion unit comprising,
(a) a lamp socket;
(b) a threaded lamp pipe for supporting said lamp socket at the upper end of said lamp pipe;
(c) a harp base mounted below said lamp socket and said harp base being secured against said lamp socket by a retaining nut;
(d) an inverted cup over said neck of the standard, said cup having a threaded opening in the center of its upper base portion for receiving the lower end portion of said supporting lamp pipe, said cup having at least three threaded openings at its bottom portion, said threaded openings being equidistant from each other around the circumference of said cup, and said threaded openings receiving engaging screws for engagement on the bottom of said spaced shoulder on the neck of the standard for preventing removal of said inverted cup from said neck of the standard;
(e) a press-plate having a threaded opening in its central portion for receiving the lower end portion of said supporting lamp pipe and said press-plate having a smaller unthreaded opening of a smaller diameter below said threaded opening, said smaller opening providing a locking position between said supporting lamp pipe and said threaded opening on the press-plate said press-plate resting on top of said neck of the standard,
whereby said press-plate applying a downward engagement force against the top of said neck, said engagement force provided by relative rotation between said supporting lamp pipe and said inverted cup thus driving said supporting lamp pipe axially downward and said relative rotation simultaneously forcing said engaging screws upward, said screws applying engagement force against the bottom of said spaced shoulder on the neck of the standard, said engagement force between said press-plate and said engaging screws increasing as said supporting lamp pipe is driven further downward through the base of said inverted cup for providing the required engagement force between said inverted cup and the standard.

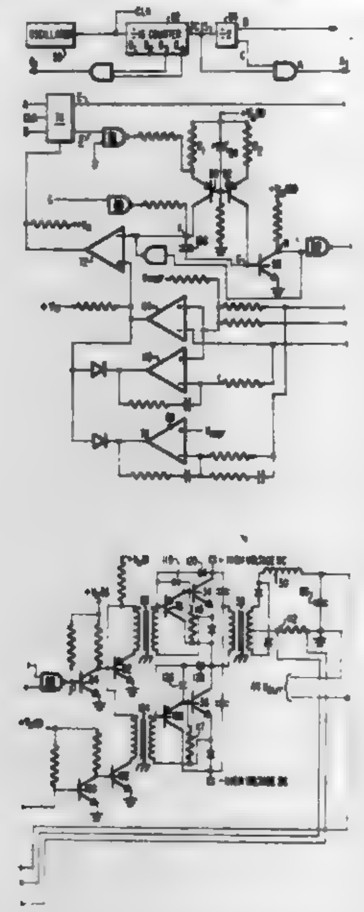
4,325,110
VASE-TYPE ILLUMINATIVE DEVICE
Woei S. Tang, 2F1., No. 1-1, Lane 129, Sec. 2 Chang-An East Rd., Taipei, Taiwan
Filed Mar. 13, 1980, Ser. No. 130,008
Int. Cl.³ F21P *1/02*
U.S. Cl. 362—806 15 Claims



1. One kind of improved vase-type illuminative device comprising such component parts as transparent container, transparent base board, supporting stand and illuminating mechanism, and is characterized by that both the said transparent container and the transparent base board thereunder can be either fixed or movably mounted together, while the transparent base board is provided with a single or a plurality of holding holes for securing flowers and ornaments, and water inlets equipped with stoppers or threaded covers to close the opening of water inlet.

4,325,111
SWITCHED MODE REGULATED DC TO DC CONVERTER
Virgilio Quiogue, Northville, Mich., assignor to Burroughs Corporation, Detroit, Mich.
Filed Apr. 2, 1980, Ser. No. 136,744
Int. Cl.³ H02M *3/335*
U.S. Cl. 363—17 1 Claim

1. A switched mode regulated DC to DC converter for supplying a regulated voltage to a load comprising:
a switching frequency generator for generating a switching cycle having positive and negative portions;
means, responsive to the output of the switching frequency generator, for accumulating a voltage during the positive and negative portions of the switching cycle;
means for sensing load voltage demand;
means for generating a first and second trigger output during the respective positive and negative portion of the switching cycle when the accumulated voltage equals the sensed load voltage demand, the time required to generate the second trigger output being equal to the time required to generate the first trigger output;
transformer means, coupled to the means for accumulating, for generating currents of positive and negative polarity during the positive and negative portions of the switching cycle;
a load voltage source;
first switching means, responsive to the generated currents of positive polarity, for driving the transformer means during the positive portion of the switching cycle; and
second switching means, responsive to the generated currents of negative polarity, for driving the transformer means during the negative portion of the switching cycle;
wherein the means for generating a first and second trigger output during the positive portion of the switching cycle when the accumulated voltage equals the sensed load voltage demand, the time required to generate the second trigger output being equal to the time required to generate the first trigger output comprises:
a supply voltage source;
a pair of matched transistors biased by the supply voltage source;
a capacitor electrically connected to the supply voltage source through the matched transistors to store voltage during the positive and negative portions of the switching cycle, a third transistor, responsive to outputs from the matched transistors, for coupling the capacitor between a first of the matched transistors and ground during the positive portion of the switching cycle, the third transistor

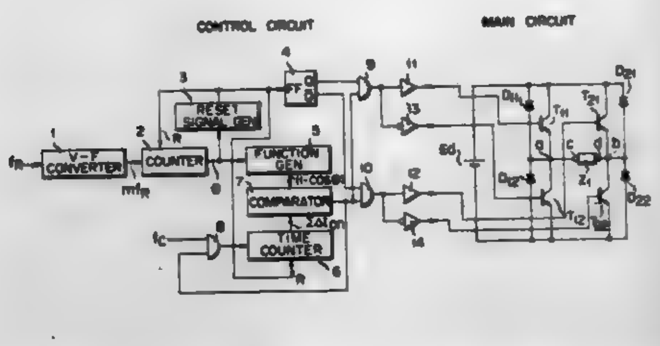


coupling the capacitor to a second of the matched transistors during the negative portion of the switching cycle;
means, responsive to the switching frequency generator, for directing current to the capacitor during the positive portion of the switching cycle, the means, responsive to the switching frequency generator, for directing current from the capacitor to ground during the negative portion of the switching cycle;
an operational amplifier to transmit the sensed load voltage demand; and
a comparator to compare the stored accumulated voltage on the capacitor and the transmitted portion of the load from the operational amplifier.

4,325,112
COUNTER CONTROLLED PULSE WIDTH MODULATED INVERTER
Kenichi Otsuka, Kodaira, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan
Filed Jan. 5, 1981, Ser. No. 222,626
Claims priority, application Japan, Jan. 25, 1980, 55-7517
Int. Cl.³ H02M *7/537*
U.S. Cl. 363—42 7 Claims

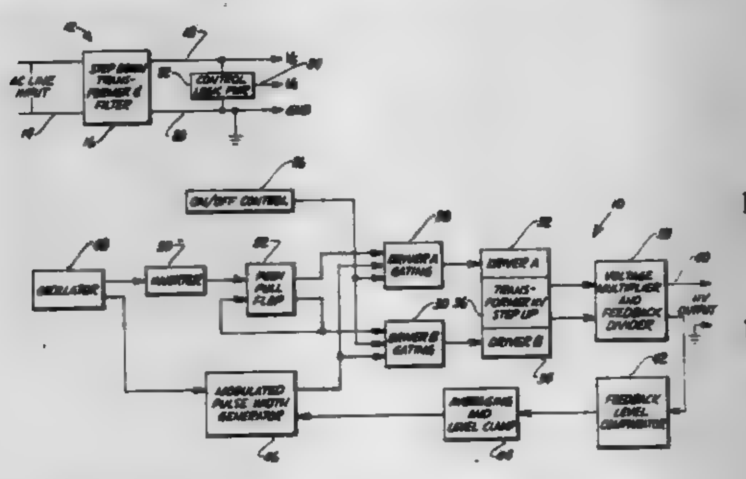
1. A voltage source inverter having a main circuit with switching means connected through a load between buses of a DC power source, and a control circuit controlling the on-off operation of said switching means for outputting, by pulse width modulation, an AC voltage having a desired frequency and a desired waveform between said load terminals, wherein said control circuit comprises:

a function generator for outputting a first signal proportional to the voltage-time-integration value of said AC voltage waveform in correspondence with the electrical angle of said AC voltage waveform;
a time counter for outputting a second signal representative of the integrated time of the ON period of said switching means;



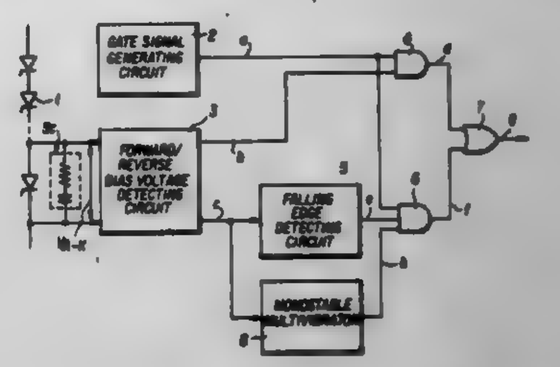
a comparator for comparing said first signal with said second signal at each predetermined time; and
a logic circuit for controlling the on-off operation of said switching means in response to the output of said comparator.

4,325,113
HIGH VOLTAGE POWER SUPPLY
Robert J. Tomlie, Jr., Brookfield Center, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.
Filed Oct. 27, 1980, Ser. No. 200,663
Int. Cl.³ H02M *3/18*
U.S. Cl. 363—60 6 Claims



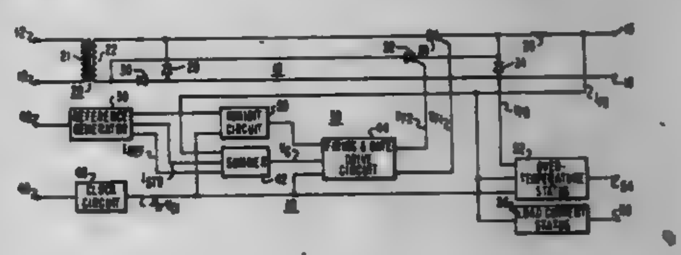
1. A high voltage power supply for supplying voltage to a load, comprising:
means for receiving a line voltage;
means for converting the line voltage to a square wave form;
a step-up transformer having primary and secondary windings;
means for supplying the square wave form to the primary winding of said transformer;
means for receiving and multiplying the voltage from said secondary winding;
means for dividing the voltage from said voltage multiplying means into first and second portions;
means for supplying said first portion to the load;
means for comparing the voltage level of said second portion to a fixed voltage, including means for adjusting the voltage level of said second portion in response to said comparison; and
means for providing said compared voltage of said second portion to said converting means to control the voltage level of the square wave form being supplied to the primary of the transformer.

4,325,114
GATE CONTROLLING CIRCUIT FOR A THYRISTOR CONVERTER
Sumio Kobayashi, Yokohama; Tadashi Takahashi, Kawasaki, and Hidetoshi Ino, Kunitachi, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan
Filed Mar. 19, 1980, Ser. No. 131,661
Claims priority, application Japan, Apr. 24, 1979, 54/50656
Int. Cl.³ H02M *7/00*; H03K *17/72*
U.S. Cl. 363—68 6 Claims



1. A gate controlling circuit for a thyristor converter having a plurality of thyristor arms, each thyristor arm including a plurality of thyristors in series, said circuit comprising:
first generating means for generating a gate pulse in response to a signal which is generated when a forward bias voltage is detected in one of said thyristor arms during a conductive period of the thyristor arm;
second generating means for generating a gate pulse in response to an output which is generated when a reverse bias voltage detected in the thyristor arm drops during a conductive period of the thyristor arm; and
means for inhibiting the output of the second generating means when the period of the reverse bias voltage in the thyristor arm exceeds a predetermined time period.

4,325,115
REGULATED DC POWER SUPPLY
Frederick O. Johnson, Monroeville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Jul. 23, 1980, Ser. No. 171,588
Int. Cl.³ H02M *7/155*
U.S. Cl. 363—81 17 Claims



1. A regulated DC power supply producing adjustable levels of a DC load current, comprising:
a pair of input terminals adapted for connection to a source of AC current;
a pair of output terminals adapted for connection to a load;
a converter connected between said input and said output terminals, said converter having a plurality of switches rectifying said AC current, said converter producing a current feedback signal;
means producing a plurality of adjustable reference signals each representative of one value of the load current, said means producing a predetermined standby reference signal representative of a standby load current;
means for adding said predetermined standby reference signal, one of said adjustable reference signals, and said current feedback signal, said adding means producing a control signal responsive to said addition;

firing means producing firing signals regulating the conduction of said swtiches, said firing signals responsive to said control signal; and

means inhibiting said firing signals from regulating the conduction of said switches when all of said adjustable reference signals have a value of zero for a predetermined period of time.

4,325,116

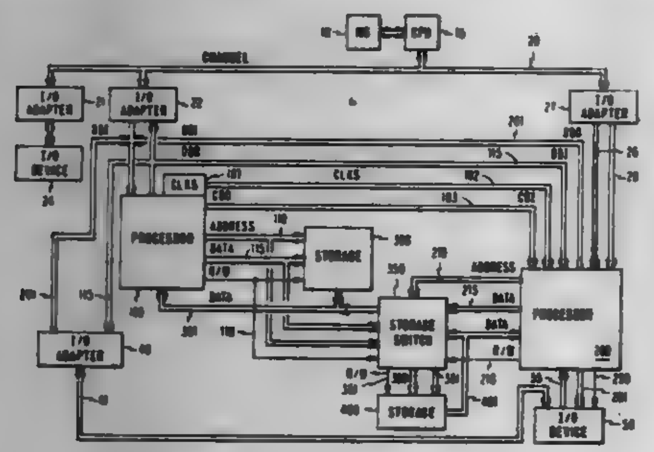
PARALLEL STORAGE ACCESS BY MULTIPROCESSORS

Roger H. Kranz; Edwin J. de Araujo Pinheiro, both of Rochester, Minn., and James A. Tuttle, Marietta, Ga., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 21, 1979, Ser. No. 68,372

Int. Cl.[3] G06F *13/00;* G11C *8/00, 9/00*

U.S. Cl. 364—200 5 Claims



1. The combination of a first processor, a second processor and a storage having first and second segments where said first and second processors and said storage operate at the same cycle rate, and where the first processor can address said first and second segments and said second processor can address only said second segment of storage, said first processor having priority over said second processor for addressing said second segment of storage, the improvement comprising:

means connected to receive addresses from said first processor and apply said received addresses to said first segment of storage,

address selection means connected to receive addresses from said first and second processors and having an output for addressing said second segment of storage;

said address selection means being selectively operable in response to a first selection signal to pass an address presented by said first and not said second processor to said second segment of storage, and operable in response to a second selection signal to pass an address presented by said second processor to said second segment storage;

data selection means connected to receive data from said first and second processors, said data selection means being selectively operable in response to a first selection signal to pass data presented by said first processor to said second segment of storage and operable in response to a second selection signal to pass data presented by said second processor to said second segment of storage;

address decode means connected to receive an address from said first processor and generate a first selection signal when said address from said first processor is in a range to address said second segment of storage, and generate a second selection signal when said address from said first processor is outside the range to address said second segment of storage; and

means for applying said first and second selection signals to said address selection and data selection means to render the same operable whereby said second processor with the presence of said second selection signal is able to address said second segment of storage simultaneously with the addressing of said first segment of storage by said first processor.

4,325,117

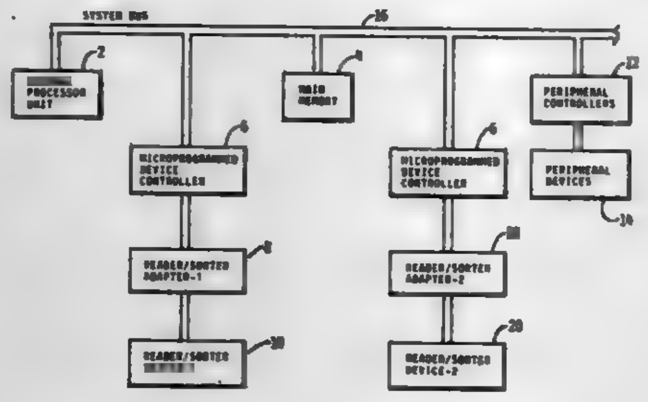
APPARATUS FOR CALCULATING A CHECK DIGIT FOR A STREAM OF DATA READ FROM A DOCUMENT

Arthur A. Parmet, Burlington, and Charles W. Dawson, East Bridgewater, both of Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Dec. 31, 1979, Ser. No. 108,603

Int. Cl.[3] G06F *11/08*

U.S. Cl. 364—200 8 Claims



1. A document processing system comprising:

a reader sorter for reading characters sequentially from a document and generating character signals indicative of a starting character of a field, a closing character of said field, and a plurality of numeric characters within said field, said plurality of numeric characters including a check digit character and a plurality of decimal digit characters;

an adapter coupled to said reader sorter and responsive to said character signals representative of said plurality of decimal digit characters for generating a plurality of position count signals indicative of a position of each of said plurality of decimal digit characters in said field, said adapter including a memory unit responsive to said character signals indicative of said plurality of decimal digit signals and a corresponding one of said plurality of position count signals for generating a plurality of product signals, each representative of the units position of the result of the multiplication of said one of said plurality of decimal digit characters by one of a plurality of predetermined numbers as indicated by said corresponding one of said plurality of position count signals; and,

a microprogrammed controller coupled to said reader sorter and to said adapter and including a control store responsive to said character signals indicative of said starting and said ending characters for generating a first and a second plurality of control signals, said adapter being responsive to said first plurality of control signals for generating said plurality of product signals,

said controller including an arithmetic logic unit responsive to said second plurality of control signals and said plurality of product signals for generating signals indicative of said calculated check digit characters, and being further responsive to said character signals indicative of said check digit character for comparison with said calculated check digit characters.

4,325,118

INSTRUCTION FETCH CIRCUITRY FOR COMPUTERS

Joseph DeVita, Laguna Hills, and Brian Pirzadeh, Costa Mesa, both of Calif., assignors to Western Digital Corporation, Irvine, Calif.

Filed Mar. 3, 1980, Ser. No. 126,313

Int. Cl.[3] G06F *7/00, 9/00*

U.S. Cl. 364—200 14 Claims

6. In a computer system which includes bus means for parallel transfer of data words of two bytes between modules coupled to it, memory means coupled to the bus means for retrieval of a program word specified by an address, and instruction processing logic means for generating a fetch request signal requesting a program byte for execution, an instruction fetch logic comprising:

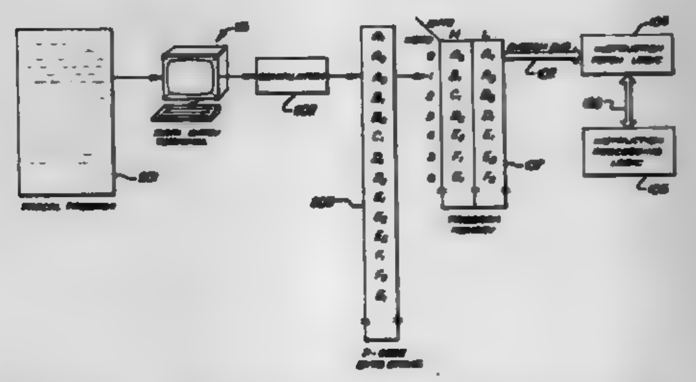
an instruction register coupled to the bus means for holding a program word retrieved from the memory means;

an address register coupled to the bus means for storing the address of the program word being retrieved from the memory means for the instruction register;

a multiplexer coupled to the instruction register and responsive to a selection signal for providing the contents of a selected byte of the instruction register to the instruction processing logic means, in accordance with the selection signal;

a translation state register for storing information specifying which program byte being held in the instruction register should be transferred to the instruction processing logic means upon its next fetch request;

control logic including (1) means for inspecting the information in the translation state register upon receiving the fetch signal from the instruction processing logic means to determine the next program byte to be transferred to the



instruction processing logic means, (2) means for altering the contents of the address register to correspond to the address in the memory means of the program word containing the byte to be next transferred to the instruction processing logic means, and supplying via the bus means the address register contents to the memory means to cause retrieval of the addressed program word, and transferring the retrieved program word to the instruction register, (3) means responsive to the translation state register for generating the selection signal to the multiplexer to select for transfer to the instruction processing logic means the program byte in the instruction register specified by the translation state register, and (4) means responsive to the instruction processing logic means and the previous information stored in the translation state register for setting the contents of the translation state register to specify the next program byte to be transferred to the instruction processing logic means, thereby providing a sequence of successively different bytes of the program to the instruction processing logic means upon successive fetch signals from the instruction processing logic means.

4,325,119

PROCESS AND APPARATUS EMPLOYING MICROPROGRAMMED CONTROL COMMANDS FOR TRANSFERRING INFORMATION BETWEEN A CONTROL PROCESSOR AND COMMUNICATIONS CHANNELS

John P. Grandmaison, Hampton, N.H.; Robert E. Huettner, Acton, Mass.; John H. Vernon, Milford, Mass., and Kin C. Yu, Burlington, Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Jan. 19, 1977, Ser. No. 760,783

Int. Cl.[3] G06F *9/46, 9/22*

U.S. Cl. 364—200 14 Claims

1. In a data processing system including a main memory and a plurality of communication channels, said system having a central processing unit and a microprogrammed communication processor including a control element having a program memory storing microprogram instructions to enable said processor to control the transfer of data between said main memory and the other elements of said system, including said central processing unit and said communication channels, a machine implemented process in which said processor is controlled by said stored microprogram instructions to perform the method steps of:

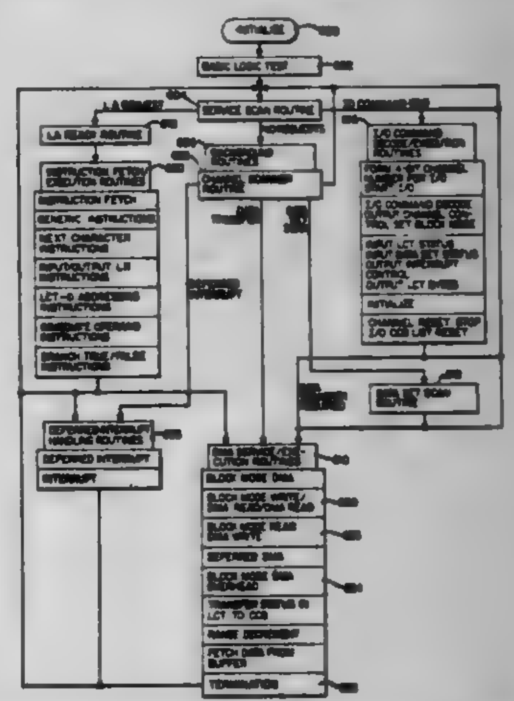
A. determining whether said central processing unit has issued a control instruction to said processor;

B. executing said control instruction if said step of determining indicates that said control instruction has been issued;

C. repeating said steps of determining and executing until said step of determining indicates that said control instruction is not presently issued;

D. determining, if no control instruction is detected during step A, whether one of said channels requires servicing;

E. servicing a said channel requiring servicing if said last-



mentioned step of determining indicates such service requirement;

F. repeating said steps of determining, executing, repeating, determining, and servicing until a determination is made that a said channel does not require servicing;

G. accessing control commands associated with a first said communication channel if there is no indication that a channel requires servicing;

H. servicing said first channel if its said control commands indicate that the execution of said control commands is required;

I. repeating said first step of determining and the further steps following said first step of determining until said step of accessing is entered again;

J. repeating said step of accessing for a second said channel;

K. repeating said second mentioned step of servicing for said second said channel; and

L. reentering said first step of determining.

4,325,120

DATA PROCESSING SYSTEM

Stephen R. Colley, Aloha; George W. Cox, Portland; Justin R. Rattner, Aloha, and Roger C. Swanson, Portland, all of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Filed Dec. 21, 1978, Ser. No. 971,661

Int. Cl.[3] G06F *13/00*

U.S. Cl. 364—200 56 Claims

1. For use in a data processing system including at least one processor capable of executing an operation by means of an operator specified in an instruction, said operator including a class field specifying the operator class to which said operator belongs, said system having instruction objects defining an

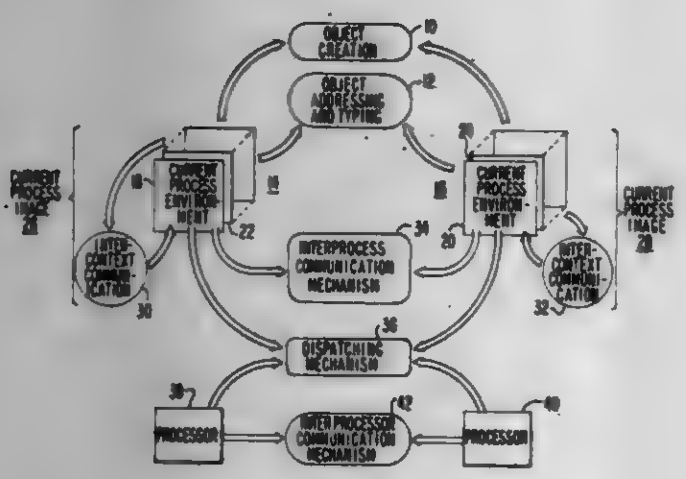
operation, and data objects, said objects stored in a memory which can be shared by a number of processors, an object-based access mechanism comprising:

means for decoding said instruction, said decoding means including means for decoding said class field specifying the operator class to which said operator belongs;

first means for registering first access information, said first access information providing information for locating a description (a first segment descriptor) of a first object (a data segment) stored in said memory, said first object being of a first basic type, said first object being a representation of related first information maintained in a contiguously-addressed set of memory locations;

second means for registering second access information, said second access information providing information for locating a description (a second segment descriptor) of a second object (an access list) stored in said memory, said second object being of a second basic type, said second object being a representation of related second information maintained in a contiguously-addressed set of memory locations;

said first type of object (said data segment) containing data scalar values;



said second type of object (said access list) containing access descriptors, at least one of said access descriptors providing information for locating said description of an object (said segment descriptor) and information for defining the extent of access to an object accessible through the use of said access descriptor and said segment descriptor;

each of said segment descriptors including a type field for indicating that the segment of said first or second type of object from which operands are obtainable for execution by said operator correspond to a particular one of said first or second types;

means for registering said segment decriptor type fields; and

third means connected to said instruction decoding means, to said first and said second means and to said segment descriptor type field registering means, responsive to said operator specified in said instruction, for accessing said memory, said third means including means for invoking said first means or said second means, to access said memory, upon the condition that said class field in said operator for specifying the operator class to which said operator belongs and said segment descriptor type field each indicate that the content of the segment accessible by said first or second means corresponds to said first type of object or said second type of object, respectively.

4,325,121

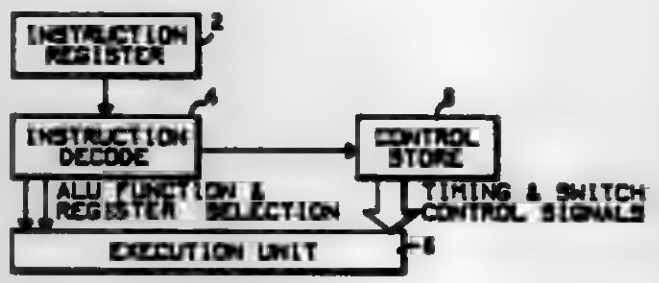
TWO-LEVEL CONTROL STORE FOR MICROPROGRAMMED DATA PROCESSOR

Thomas G. Gunter, and Harry L. Tredennick, both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation-in-part of Ser. No. 961,796, Nov. 17, 1978. This application May 21, 1979, Ser. No. 41,135

Int. Cl.[3] G06F *9/22*

U.S. Cl. 364—200 **5 Claims**



1. A data processor adapted for microprogrammed operation and including an execution unit for executing sequentially a plurality of macroinstructions provided to the data processor from a macroinstruction memory, the data processor having a control unit for controlling the operation of the execution unit, the control unit comprising:

a. a first control store having an input for receiving a selected address during a first interval, and an output for providing first address information;

b. a second control store having an input for receiving the selected address, and an output for providing execution unit control information during the first interval;

c. means for storing a macroinstruction provided by the macroinstruction memory,

d. decoding means coupled to the means for storing a macroinstruction and responsive to a field of the macroinstruction for providing as an output a plurality of addresses,

e. address selection means coupled to the decoding means for receiving the plurality of addresses, and responsive to the address information from the output of the first control store for providing the selected address from one of said plurality of addresses for presentation to the first and second control stores during a subsequent interval

f. whereby the execution unit control information is sequenced by the first control store and provided to the execution unit by the second control store.

4,325,122

METHOD AND APPARATUS FOR EVENT RATE PROSPECTING AND APPLICATION TO WIND PROSPECTING

Bennett A. Parks, 3230 St. Matthews Dr., Sacramento, Calif. 95821, and Stephen I. Parks, 19616 Meredith Dr., Derwood, Md. 20855

Filed Jan. 10, 1980, Ser. No. 110,951

Int. Cl.[3] G06F *15/54*

U.S. Cl. 364—420 **12 Claims**

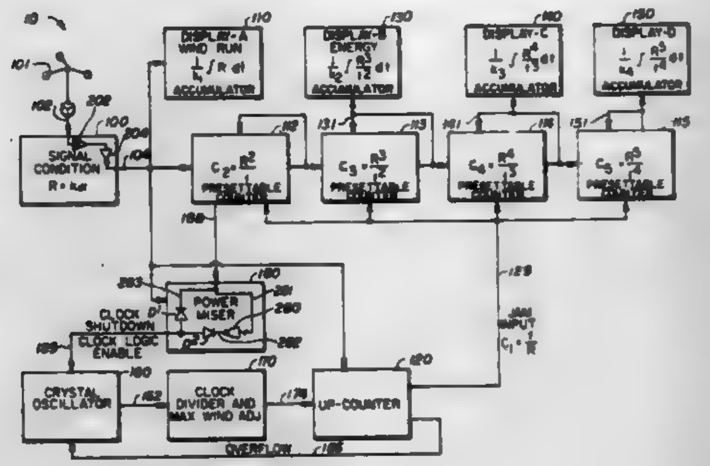
1. A method for assaying behavior of interrelated variables for a predetermined period as a plurality of numerical values at remote locations in response to the output of an event counting sensor having an output signal as a digital pulse stream whose rate is proportional to an increment of events per unit time to be measured per unit time said method comprising the steps of:

accumulating a value representative of accumulating events for said predetermined period by applying said pulse stream signal to a first counter for said predetermined period;

digitally integrating the square of said pulse stream signal by a first constant signal for said predetermined period;

accumulating a value representative of real energy for said predetermined period by digitally integrating the cube of said pulse stream signal divided by the square of said first constant signal only as said constant signal is applied;

accumulating a value representative of a first energy density function for said predetermined period by integrating the fourth power of said pulse stream signal divided by the cube of said first constant signal simultaneously with the



integrating of said cube of said pulse stream signal only as said constant signal is applied; and

registering said accumulating events value, said real energy value and said first energy density function value.

4,325,123

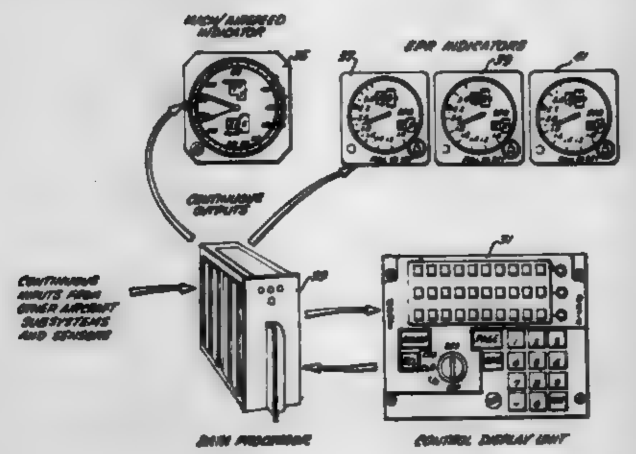
ECONOMY PERFORMANCE DATA AVIONIC SYSTEM

Donald A. Graham, Redmond; Delwin R. Hoffman, Kirkland, and Peter M. Morton, Redmond, all of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Jul. 28, 1978, Ser. No. 929,011

Int. Cl.[3] G06F *15/50*

U.S. Cl. 364—431.07 **64 Claims**



1. An economy performance data avionic system for a jet aircraft for producing the most economical engine thrust and speed information for the various phases of a flight, said jet aircraft including at least one jet engine and sensors and subsystems for producing an actual thurst signal for each jet engine, an actual speed signal representing the speed of said aircraft, and an altitude signal representing the altitude of said aircraft, said economy performance data avionic system comprising:

speed indicator means including a first display means connected to the appropriate one of said sensors and subsystems of said aircraft for receiving said actual speed signal and producing a display of said actual speed of said aircraft, said speed indicator means including a second display means for displaying the most economical speed of said aircraft;

thrust indicator means including thrust indicators equal in number to the number of jet engines of said jet aircraft, each of said thrust indicators including a first display means connected to the appropriate one of said sensors and subsystems of said aircraft for receiving said actual thrust signal related to one of said jet engines and producing a first display displaying the actual thrust of said one of said jet engines, each of said thrust indicators including a second display means for displaying the most economical thrust for the related one of said jet engines;

a control display unit for receiving manually inserted mode of operation and parameter information and producing, in accordance therewith, mode of operation and parameter data signals, said parameter information including a dimensionless INDEX number that represents a chosen relationship between fuel costs and trip time costs; and,

a data processor connected to said control display unit for receiving said mode of operation and said parameter data signals and connected to said sensors and subsystems of said aircraft for receiving said actual thrust signals, said actual speed signal and said altitude signal, said data processor including a memory having stored therein, in tabular form, data related to said aircraft, said data processor determining the most economical thrust and speed of said aircraft for the various phases of a flight based on said mode of operation, parameter data, actual thrust, actual speed and altitude signals and on said data stored in tabular form in said memory and, in accordance therewith, produce economy thrust and economy speed control signals related to said most economical thrust and speed, said economy thrust control signals being applied to said thrust indicators for controlling the second displays of said thrust indicators and said economy speed control signal being applied to said speed indicator means for controlling the second display of said speed indicator means.

4,325,124

SYSTEM FOR CONTROLLING THE DIRECTION OF THE MOMENTUM VECTOR OF A GEOSYNCHRONOUS SATELLITE

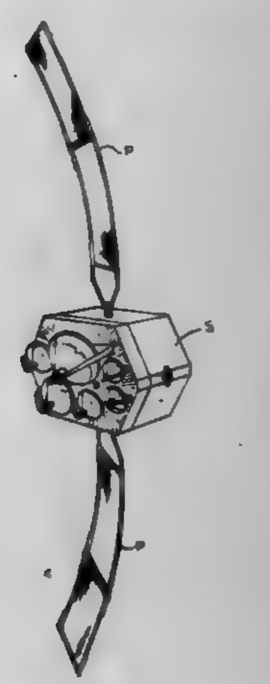
Udo Renner, Leiden, Netherlands, assignor to Organisation Europeenne de Recherches Spatiales, Noordwijk, Netherlands

Filed Feb. 5, 1980, Ser. No. 118,847

Claims priority, application Belgium, Feb. 28, 1979, 193756

Int. Cl.[3] G06F *15/50*; B64G *1/44*

U.S. Cl. 364—459 **4 Claims**

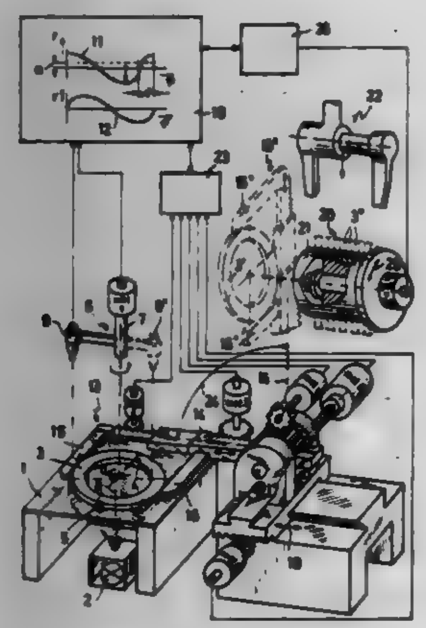


1. Method for controlling the direction of the momentum vector of a satellite in a geosynchronous orbit, the satellite having at least a pair of solar panel arrays driven to track the sun when deployed in orbital configuration, the method comprising the steps of:

reading the value of the roll angle of the satellite and comparing it to a predetermined threshold value; generating a deviation signal when the roll angle value exceeds the threshold value at predetermined times;

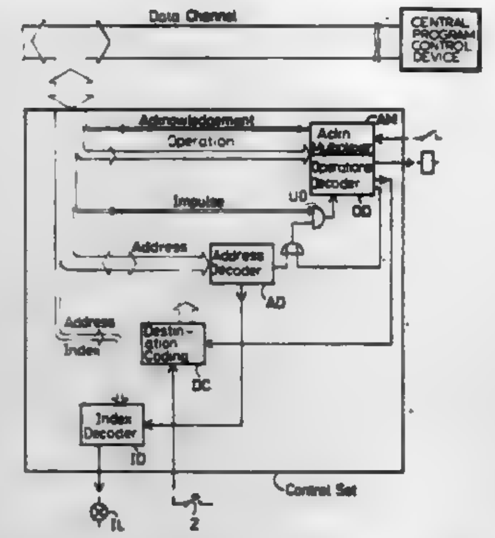
inhibiting one solar panel array drive in response to the deviation signal, and re-enabling said solar panel array drive after a predetermined time interval has elapsed.

4,325,125
APPARATUS FOR ORIENTING OUT-OF-ROUND WORKPIECES
Jürgen Buchfeld, North Muskegon, Mich., assignor to Goetze AG, Burscheid, Fed. Rep. of Germany
Continuation-in-part of Ser. No. 1,911, Jan. 8, 1979, abandoned. This application Sep. 30, 1980, Ser. No. 192,255
Claims priority, application Fed. Rep. of Germany, Dec. 21, 1979, 2951605
Int. Cl.[3] G06F *15/46*; G05B *15/02*
U.S. Cl. 364—474 7 Claims



1. An apparatus for orienting an out-of-round workpiece into desired angular and lateral positions for a machining operation, comprising in combination:
(a) a scanning device including a scanner supported for orbital travel about an axis;
(b) a planar support situated in the vicinity of said scanner and being traversed by said axis; said planar support receiving the workpiece thereon in an at least approximately coaxial relationship with said axis for determining the actual angular and lateral positions of the workpiece on said planar support by scanning the workpiece with said scanner during orbital travel of said scanner relative to the workpiece about said axis;
(c) transporting means for conveying the workpiece from said planar support to a location spaced therefrom; said transporting means including
(1) a gripper means for grasping the workpiece at said planar support and for releasing the workpiece at said location; said gripper means having a gripper axis; and
(2) moving means for displacing said gripper means parallel to and about said gripper axis;
(d) correcting means for reorienting the workpiece, at a location remote from said planar support, from said actual angular and lateral positions into said desired angular and lateral positions; and
(e) computer means for storing data on the desired angular and lateral positions of the workpiece; said scanning means being connected to said computer means for applying thereto data on the actual angular and lateral positions of the workpiece; said computer means being connected to said correcting means for applying lateral and angular correcting signals to said correcting means; said lateral and angular correcting signals being derived by said computer means from a comparison between data on said actual and said desired lateral and angular positions.

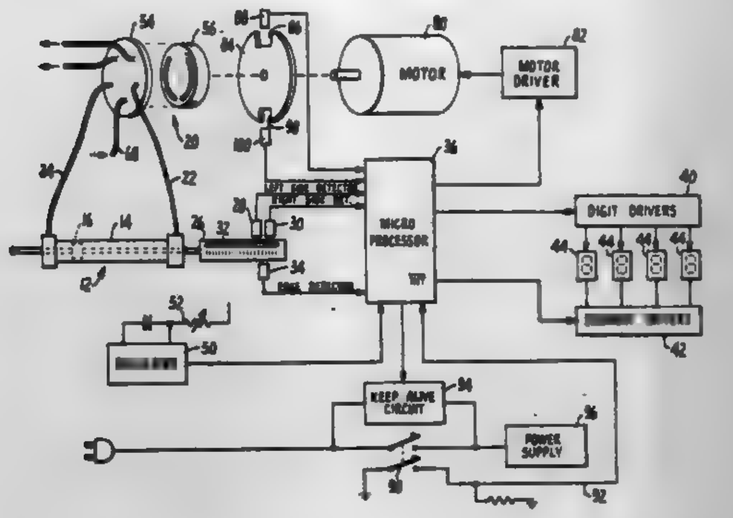
4,325,126
CENTRALLY CONTROLLED CONVEYOR SYSTEM
Ferdinand Thoma, Berlin, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany
Continuation-in-part of Ser. No. 949,874, Oct. 10, 1978, Pat. No. 4,240,148. This application May 12, 1980, Ser. No. 148,807
Int. Cl.[3] G06F *15/46*; B65G *43/00*
U.S. Cl. 364—478 10 Claims



1. A conveyor system with dispatching and receiver stations having station-individual control sets, which are coupled to control and signal devices for the station, said control sets being connected in parallel to a multiconductor address line for coupling to a central program control device, the dispatching stations each having a destination selection device, and dispatching stations ready for dispatching being activated by applying station-individual address information to the address line by means of the program control device, and the dispatching stations each having an assigned address decoder for responding to the applied address information when coincidence is present for enabling communication with the program control device via an acknowledgement line jointly assigned to all stations, characterized in that all control sets have an operation decoder (OpD) which can be switched ready for operation by means of an actuation signal of the assigned address decoder (Dh, Dz), a multiconductor control line (sl 1 through sl 4) for coupling the switched operation decoder (OpD) to the program control device such that the switched operation decoder (OpD) of an activated dispatching station responds after the output of operation information from the program control device to the control line (sl 1 . . . sl 4) to effect a destination information transfer operation, the destination selection device (Z0 through Z9) of each dispatching station being connected to the address line (al 1 . . . al 12) in parallel with the assigned address decoder (Dh, Dz) for the transmission of destination information identifying a desired receiver station to the central program control device via the address line, and each receiver station being responsive to address information produced by the program control device in accordance with such transmitted destination information, and said operation decoders of the dispatching and receiver stations being responsive to operation information for introducing and concluding the conveyor process.

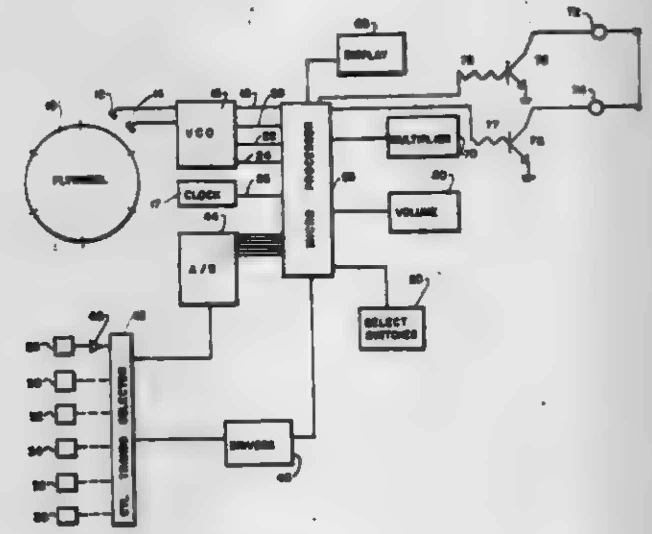
4,325,127
FLOW METER SYSTEM
Emery Major, 17 Skylark Dr. #1, Larkspur, Calif. 94939
Filed Nov. 30, 1979, Ser. No. 98,739
Int. Cl.[3] F01L *25/08*
U.S. Cl. 364—510 20 Claims

1. A selectively energizable flowmeter system comprising, in combination:
valve means defining at least one fluid inlet port for receiving fluid under pressure and a plurality of fluid distribution ports, said valve means including a valve element selectively movable to direct said liquid to predetermined fluid distribution ports;
metering means; and
valve element positioning means connected to said valve element operable upon energization of said system to



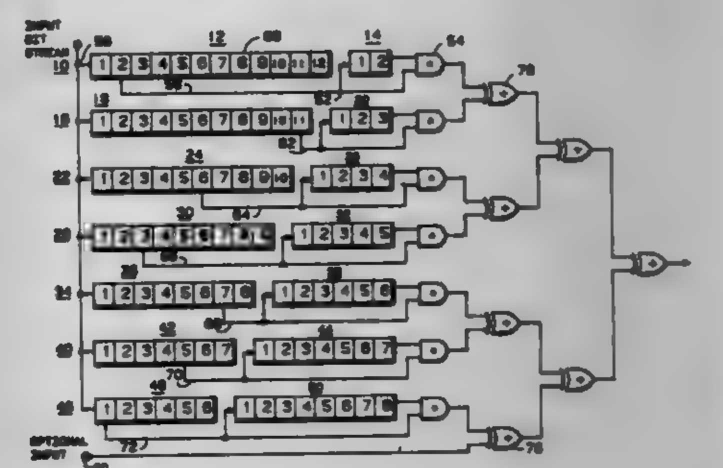
establish fluid flow communication between said metering means and at least one valve means fluid distribution port and responsive to de-energization of said system to direct pressurized fluid entering said valve means fluid inlet port to a valve means fluid distribution port bypassing said metering means.

4,325,128
CIRCUIT FOR MEASURING THE HORSEPOWER PER CYLINDER FOR AN ENGINE
Albert C. Abnett, 104 Kimothy Dr., Westerville, Ohio 43081, and Mark E. Towns, 1420 Inglis Ave., Columbus, Ohio 43212
Filed Apr. 27, 1979, Ser. No. 33,881
Int. Cl.[3] G06F *15/20*; G01M *15/00*
U.S. Cl. 364—511 8 Claims



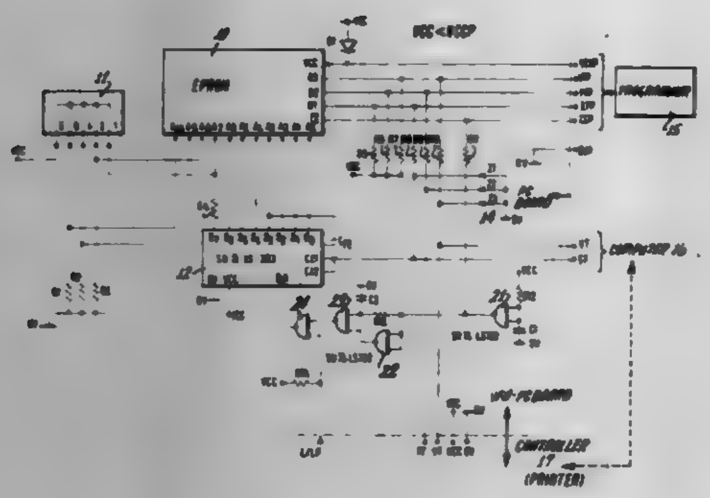
1. A circuit for measuring the horsepower per cylinder of a reciprocating engine comprising:
a pair of sensors positioned adjacent the flywheel of said engine, the first of said sensors responding once per revolution of said cylinder, and said second of said sensors responding once for each cylinder in one revolution;
a pulse forming generator having the outputs of said sensors connected thereto and operative to provide 360 pulses for each degree per revolution, six pulses each representing one revolution per cylinder, one pulse per revolution representing dead center, and 60 pulses per revolution,
a clock operative to provide time period pulses, and means for utilizing said time period with said 60 pulses per revolution for deriving a signal representative of the r.p.m. of said engine;
a pressure transducer mechanically connected to each of said cylinders of said engine;
a selector switch for selecting the cylinder pressure transducer to be measured,
said transducers together with said six pulses operative to provide a voltage signal representing that particular cylinder;
a volume signal and means for multiplying said pressure measurement against said volume signal for each degree of rotation of said cylinder and for summing the resultants thereof, and
means for multiplying said summed resultants with said r.p.m. signal;
display means for displaying the horse power for each cylinder.

4,325,129
NON-LINEAR LOGIC MODULE FOR INCREASING COMPLEXITY OF BIT SEQUENCES
Edward J. Groth, Jr., Scottsdale, Ariz., assignor to Motorola Inc., Schaumburg, Ill.
Filed May 1, 1980, Ser. No. 145,418
Int. Cl.[3] H03K *3/84*
U.S. Cl. 364—717 2 Claims



1. A non-linear digital generator circuit for producing controllably complex bit sequences comprising in combination:
a plurality of shift registers each being of predetermined bit length, each of said plurality of shift registers comprising:
a first segmented portion being controllable as to a bit delay length between an input thereto and an output thereof; and
a second segmented portion having a fixed bit length for implementing a predetermined span between an input thereto and an output thereof, said input being derived from said output of said first segmented portion;
means for controlling said bit length of each of said plurality of first segmented portions of said plurality of shift registers;
a plurality of means for combining said inputs and outputs of each of said second segmented portions, each of said combining means having an output thereof; and
means for modulo-two adding said outputs of said plurality of said combining means.

4,325,130
REPROGRAMMABLE CONTROL APPARATUS
Gerald Tiltscher, Burlafingen, Fed. Rep. of Germany, assignor to Mannesmann Aktiengesellschaft, Duesseldorf, Fed. Rep. of Germany
Filed Mar. 10, 1980, Ser. No. 128,482
Claims priority, application Fed. Rep. of Germany, Mar. 16, 1979, 2910891
Int. Cl.[3] G06F *9/00*
U.S. Cl. 364—900 4 Claims



1. In a control apparatus which includes an electrically programmable ROM, addressing means connected to addressing inputs of the ROM, and an output circuitry connected to output terminals of the ROM, the output circuitry, the addressing means, and the ROM operating at a particular voltage level for addressing and ROM content readout operation, there being a voltage supply bus for connection to a source of regular voltage supply and connected for feeding power to the output circuit and the addressing means, the combination comprising:

a plurality of particular terminals not being used for regular readout and being electrically connected to the ROM in addition to said output circuitry;

a protective circuit for protection of the ROM and being connected to the said output circuit to limit the voltage level thereof for voltages applied via some of said particular terminals to the output terminals of the ROM;

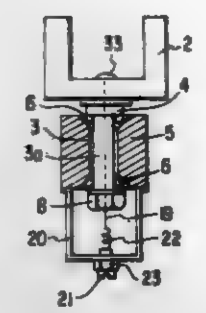
one of the particular terminals provided for receiving a relatively high supply voltage, higher than the particular voltage level for purposes of reprogramming the ROM; and

a Schottky diode connected to said one particular terminal to a voltage supply terminal of said ROM, and to said voltage supply bus for feeding the regular supply voltage as applied to the ROM via the diode and, thereby, to bias the diode in forward direction, the high supply voltage, upon being applied being appied to said one particular terminal, biasing the diode in the reverse.

4,325,131
TONE ARM BEARING SYSTEM
Tamio Takeda, Tokyo, Japan, assignor to Trio Kabushiki Kaisha, Tokyo, Japan
Filed Jul. 30, 1979, Ser. No. 61,914
Claims priority, application Japan, Aug. 15, 1978, 53-111883[U]; Aug. 15, 1978, 53-111884[U]
Int. Cl.[3] G11B *3/18*
U.S. Cl. 369—255 19 Claims

1. In a bearing system for a tone arm for use with a phonograph record player or the like where the bearing system includes a bracket for supporting said tone arm, a rotatable, tubular shaft connected to said bracket for permitting horizontal rotation of said tone arm, and support means for bearing said shaft including ball bearings or the like, the improvement comprising

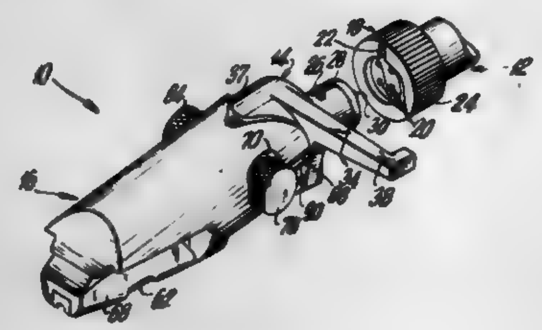
a suspension wire attached to said bracket at the upper end



thereof and extending through said rotatable, tubular shaft; and

means for applying tension to said suspension wire to lessen undesirable movement of said shaft.

4,325,132
UNITARY PHONOGRAPH CARTRIDGE AND HEAD ASSEMBLY
John P. Kuehn, Danbury, Conn., assignor to Audio Dynamics Corporation, New Milford, Conn.
Filed Mar. 5, 1980, Ser. No. 127,524
Int. Cl.[3] G11B *21/24*
U.S. Cl. 369—256 4 Claims



1. A unitary phonograph cartridge and headshell assembly for attachment to a tone arm, said assembly comprising:

a fixed part adapted to be coupled to the tone arm, said fixed part including a pair of forwardly extending arms, each of said arms including an elongated slot disposed at an acute angle with respect to the longitudinal axis of said fixed part;

indicia means disposed on said fixed part, said indicia means on said fixed part being parallel to and aligned with said elongated slot in said arm;

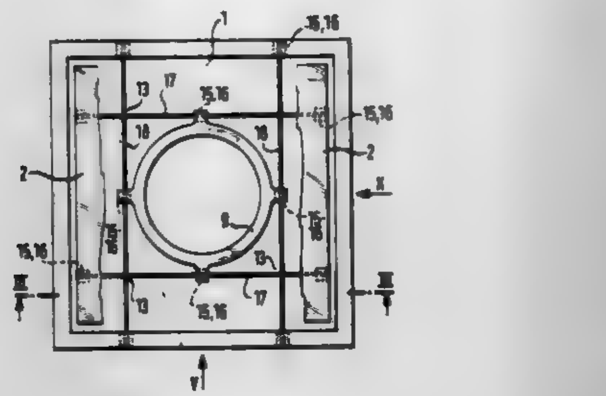
a movable part movably joined to said fixed part, said movable part abutting said arms and including a pair of openings disposed proximate to said slots in said arms;

stylus/transducer means fixedly joined to said movable part;

indicia means disposed on said movable part, said indicia means on said movable part being aligned with said indicia means on said fixed part when said stylus/transducer means is parallel to the record to be played;

locking means extending through said openings in said movable part and said elongated slot means in said arms, said locking means defining a pivotal axis for said movable part and permitting said movable part to slide along said elongated slot to thereby permit said movable part to be displaced both along said elongated slot and pivoted with respect to said fixed part and to facilitate the user in maintaining parallelism between said stylus/transducer means and the record to be played.

4,325,133
DISC PLAYER APPARATUS
Gustav Reitmayer, Turmstrasse 27, 7630 Lahr 1, Fed. Rep. of Germany
Filed Mar. 11, 1980, Ser. No. 129,227
Claims priority, application Fed. Rep. of Germany, Mar. 12, 1979, 2909564
Int. Cl.[3] G11B *3/60*
U.S. Cl. 369—263 15 Claims



1. In an apparatus for the reduction of vibrations in a disc player comprising means for forming a base (1), an oscillating chassis (2) carrying a sound pick-up system, a turn-table, and a motor driving the turn-table; and means for resiliently supporting the oscillating chassis on the base, the improvement wherein:

first and second mutually normal pairs of spring bars (10, 11 and 17, 18, respectively), each with two parallel spring bars (10 and 11, and 17 and 18, respectively), that cooperate to resiliently support the oscillating chassis (2);

means for mounting first ends of the first pair of spring bars (10 and 18, respectively) on the base (1);

means for mounting first ends of the second pair of spring bars (11 and 17, respectively) on the oscillating chassis (2);

frame means for interconnecting portions of the two pairs of spring bars disposed between the base and chassis; and

the spring bars (10, 11 and 17, 18, respectively,) and the frame means (9) form an oscillating system having a center of inertia that coincides with the center of inertia of the oscillating chassis (2), motor, and turntable.

4,325,134
VIDEO DISC DEFECT DETECTOR
Howard M. Langley, Mooresville, and Joseph W. Stephens, Plainfield, both of Ind., assignors to RCA Corporation, New York, N.Y.
Filed Oct. 15, 1980, Ser. No. 197,287
Int. Cl.[3] G11B *27/36*; H04N *5/80*
U.S. Cl. 369—58 10 Claims

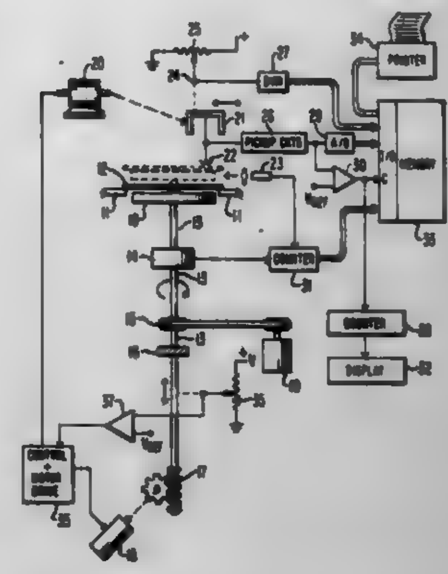
1. A capacitive video disc defect test apparatus comprising:

a base for rotatably supporting a disc record;

a dielectric stylus having a face generally normal to the plane of the disc record and normal to information tracks on the surface of the disc record when in its operable position; said face having a thin electrically conductive electrode thereon, an edge of said electrode extending over a plurality of said information tracks, and the electrode and the disc forming a substantially constant capacitance therebetween substantially unaffected by record information;

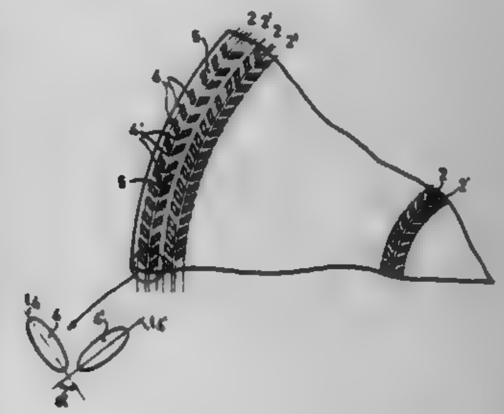
a carriage for translating said stylus radially across the disc record in coordination with the disc rotation so that the entirety of the recorded disc area is swept by the stylus electrode;

means for compliantly mounting said stylus in the carriage so that the stylus engages the disc and is free to disengage the disc upon striking a convex disc defect;



means coupling with said electrode for measuring a decrease in the value of the electrode-disc capacitance indicative of the stylus electrode disengaging the disc record.

4,325,135
OPTICAL RECORD CARRIER AND APPARATUS FOR READING IT
Jan G. Dil, and Jacobus P. J. Heemskerk, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Oct. 22, 1979, Ser. No. 87,276
Claims priority, application Netherlands, Sep. 3, 1979, 7906576
Int. Cl.[3] G11B *7/00*
U.S. Cl. 369—110 41 Claims



1. A record carrier containing information in a form readable by a read beam of polarized radiation, said carrier comprising an information structure having a first plurality of spaced apart, elongated information areas which define a first track portion and wich have a width at most of the order of magnitude of the effective wavelength of the radiation and a geometry such that said information areas of said first plurality produce maximum modulation of the read beam when the radiation is polarized in a first direction parallel to the longitudinal direction of said information areas of said first plurality and produce minimum modulation of the read beam when the radiation is polarized in a second direction transverse to said longitudinal direction thereof, and a second plurality of spaced apart, elongated information areas which define a second track portion adjacent said first track portion and which have a geometry such that said information areas of said second plurality produce maximum modulation of the read beam when the radiation is polarized in a direction perpendicular to said first direction and produce minimum modulation of the read beam when the direction of polarization of the radiation is parallel to said first direction.

4,325,136

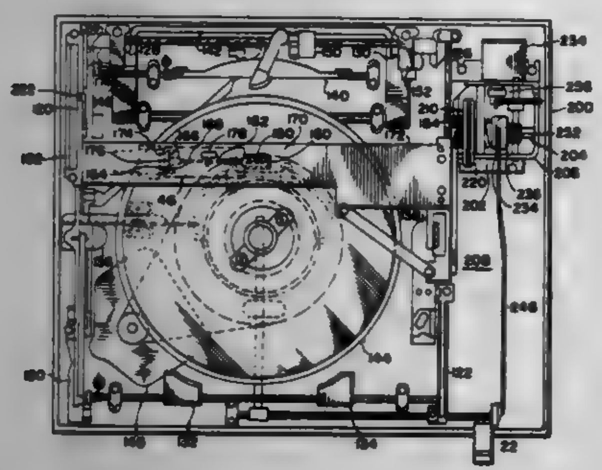
VIDEO DISC PLAYER HAVING CARRIAGE DRIVE APPARATUS

Philip E. O'Connell; Larry M. Hughes, and James D. Fletcher, all of Indianapolis, Ind., assignors to RCA Corporation, New York, N.Y.

Filed Oct. 2, 1980, Ser. No. 193,060

Int. Cl.³ G11B *25/04*

U.S. Cl. 369—219 **4 Claims**



1. In a player for recovering prerecorded signals from a turntable-supported disc record by means of a signal pickup when pickup/record relative motion is established during playback; said signal pickup being disposed in a translatable carriage; a carriage drive apparatus comprising:
(a) an input shaft rotatably mounted in said player;
(b) a first member loosely mounted on said having a first clutch portion; said first member being coupled to said carriage;
(c) a second member consisting of a second clutch portion disposed at one end of a sleeve portion; said second member being loosely mounted on said shaft such that said clutch portions are juxtaposed; said sleeve portion having an elongated slot disposed in a direction parallel to said shaft;
(d) a pin fixedly secured to said shaft and extending through said elongated slot in said sleeve portion for coupling the rotational motion of said shaft to said second member without interfering with the axial location of said second member relative to said shaft;
(e) a spring disposed between said pin secured to said shaft and said second member rotatably coupled to said shaft for biasing said clutch portions in engagement with each other;
(f) means for rotating said input shaft at a speed such that said carriage, coupled to said first member, follows the motion of said signal pickup across said record; and
(g) means for selectively displacing said second member in a direction causing said clutch portions to disengage to permit motion of said carriage with freedom from hindrance by said carriage drive apparatus.

4,325,137

POWER SUPPLY SYSTEM TO TERMINAL EQUIPMENT THROUGH AN OPTICAL FIBER CABLE

Ikeda Yoshikazu, Tama, Japan, assignor to Kokusai Denshin Denwa Co., Ltd., Tokyo, Japan

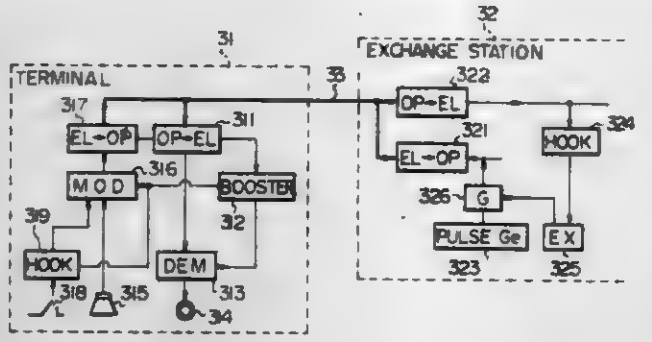
Filed Jun. 19, 1980, Ser. No. 160,943

Claims priority, application Japan, Jun. 26, 1979, 54-79713

Int. Cl.³ H04J *3/02;* H04B *9/00*

U.S. Cl. 370—4 **6 Claims**

3. A power supply system from an exchange station to terminal equipment through an optical fiber cable for operating said terminal equipment comprising;
(a) a single optical fiber cable connecting the exchange station to terminal equipment for transmitting signals in both directions from the exchange station to terminal equipment and from the terminal equipment to the exchange station, and for transmitting an optical energy in the form of an optical pulse from the exchange station to the terminal equipment, all of said transmissions being on time divisional basis,
(b) terminal equipment having at least a microphone and a receiver connected to said optical fiber cable through conversion means between an electrical form and an optical form, a generator means for generating an electrical signal upon detection of the change of the status of the terminal equipment from an inactive status to an active



status, and the output of said generator means being forwarded to said exchange station through said optical fiber cable, and
(c) said exchange station having at least an exchange control system connected to the optical fiber cable through conversion means between an optical form and an electrical form, a power pulse generator, a gate circuit for passing the power pulse of the power pulse generator to the optical fiber cable, said control system controlling said gate circuit so that when the terminal equipment is inactive the gate circuit is closed and when the terminal equipment is active the gate circuit is almost always opened.

4,325,138

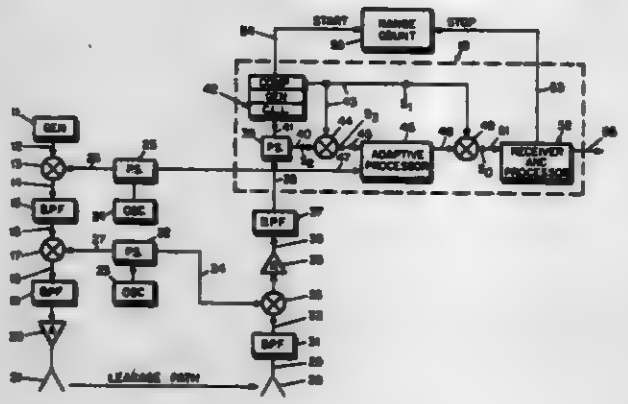
CONTINUOUS WAVE ADAPTIVE SIGNAL PROCESSOR SYSTEM

John W. Zscheile, Jr., Murray, Utah, assignor to Sperry Corporation, New York, N.Y.

Filed Sep. 29, 1980, Ser. No. 191,871

Int. Cl.³ H04K *1/04*

U.S. Cl. 375—1 **8 Claims**



1. A spread spectrum carrier wave apparatus of the type having a transmitter in close proximity to its receiver, which couples undesirable leakage signals from the transmitter into the receiver path with the desired received signals, the combination comprising:
a random code generator for generating a plurality of carrier frequency random code modulated signals,
a first processing path for processing said signals from said generator to provide random code generated modulated signals,

a transmitting antenna for transmitting the processed random code generated modulated signals,
a receiving antenna for receiving desired delayed and attenuated replicas of said transmitted processed random code generated modulated signals,
a second processing path for processing said desired delayed and attenuated replicas of said random code generated modulated signals,
said second processing path being electromagnetically coupled to said first processing path and containing an undesired leakage signal which is a weakened version of said processed random code modulated signals,
first code lock loop means connected to said second processing path for generating a tracking signal locked on to said undesired random code modulated signals for generating an output reference signal in phase with said random code,
a first multiplier-mixer coupled to said output reference signal and to said second processing path containing said desired and said undesired random code signals,
an adaptive processor coupled to the output of said first multiplier-mixer and said first signal path for eliminating said undesired random code signal, and
a second multiplier-mixer coupled to the output of said adaptive processor for eliminating said output reference signal, thereby leaving said desired delayed and attenuated carrier frequency random code modulated signals.

4,325,139

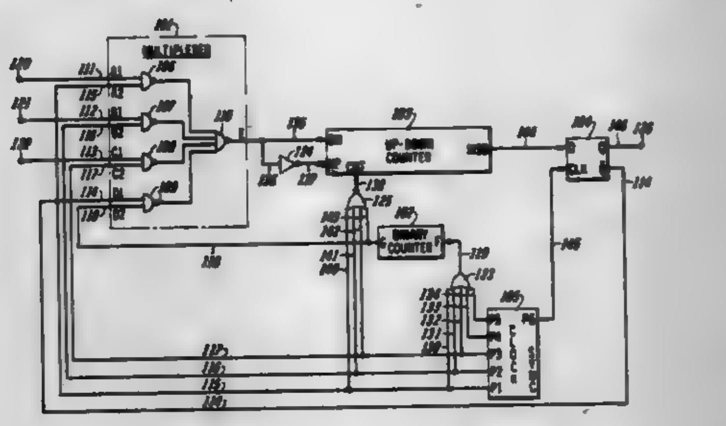
CIRCUIT FOR COMBINING DELTA MODULATED SIGNALS

Gilbert A. Van Dine, Winfield Township, DuPage County, Ill., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 28, 1980, Ser. No. 181,983

Int. Cl.³ H04M *3/56*

U.S. Cl. 375—28 **8 Claims**



1. An electrical circuit for combining a plurality of streams of input bits representing delta modulated analog signals in digital form, each input bit having a first and a second state, characterized in that said circuit comprises:
counter means (103) responsive to increment and decrement signals to increment or decrement, respectively, a count contained therein and having a most significant bit position;
clock means (105) for generating signals defining clock cycles;
circuit means (104) connected to said counter means and said clock means for generating an output signal representative of the state of said most significant bit position in each clock cycle and a feedback bit, having said first and said second state, representative of the state of said most significant bit position in a first clock cycle; and
multiplexer means (101, 124) for sampling an input bit from each of said streams and said feedback bit and applying to said counter means an increment signal for each sampled bit in said first state and a decrement signal for each sampled bit in said second state, in a second subsequent clock cycle, whereby a plurality of said output signals generated in a plurality of successive clock cycles represents the approximate linear sum of said delta modulated analog signals in digital form.

4,325,140

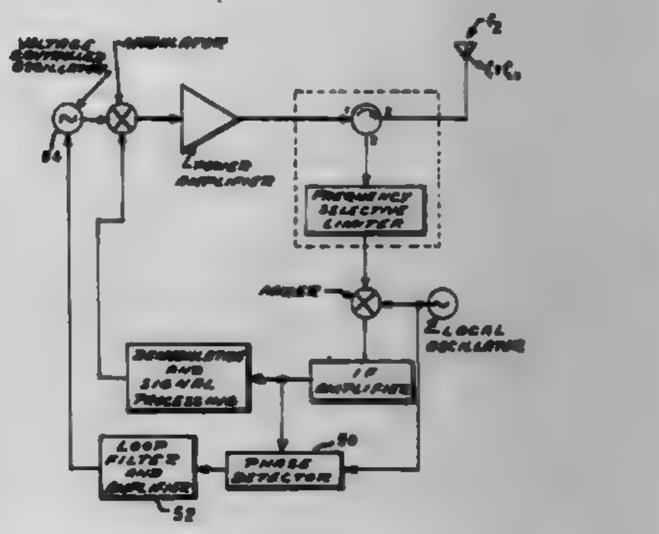
FULL DUPLEX COMMUNICATION SYSTEM APPARATUS USING FREQUENCY SELECTIVE LIMITERS

Steven N. Stitzer, Ellicott City, Md., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Continuation of Ser. No. 949,367, Oct. 6, 1978, abandoned. This application Mar. 13, 1980, Ser. No. 129,860

Int. Cl.³ H04B *1/50*

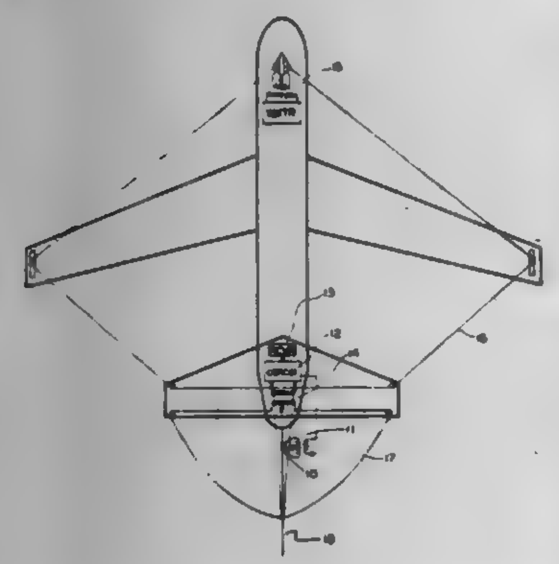
U.S. Cl. 455—19 **6 Claims**



1. In a microwave duplexer communications system, a frequency tracking repeater apparatus comprising in combination:
a transmit/receive antenna, said transmit/receive antenna receiving a carrier frequency f_2,
a carrier frequency signal generator to provide a carrier frequency signal, said carrier frequency signal generator generating a carrier frequency f_1,
a first mixer connected to said carrier frequency signal generator to receive said carrier frequency signal f_1 and a modulation signal, said first mixer mixing said carrier frequency signal and said modulation signal to provide a modulated carrier frequency signal for transmission by said transmit/receiver antenna,
a microwave circulator having first, second and third ports, said first port receiving said modulated carrier frequency signal from said first mixer, and said second port being connected to said transmit/receive antenna and passing transmitted and received signals therethrough,
a frequency selective limiter unit connected to said third port of said microwave circulator, said frequency selective limiter unit attenuating signals that exceed a predetermined threshold level and providing low loss transmission of signals below said predetermined threshold, said frequency selective limiter unit operating over a predetermined band of frequencies and allowing transmission of output signals therethrough that comprise a plurality of frequencies having a level lower than said predetermined threshold level,
a local oscillator generating a local oscillator signal,
a second mixer connected to said frequency selective limiter unit to receive the output signals therefrom, said second mixer mixing said output signals from said frequency selective limiter unit with said local oscillator signal to provide an IF signal, and
an IF amplifier/demodulator unit connected to said second mixer unit to receive said IF signal, said IF amplifier/-demodulator unit amplifying and demodulating said IF signal to extract the intelligence thereon, and

a phase lock circuit for locking said carrier frequency signal generator frequency f_1 to said received carrier signal frequency f_2, said phase lock circuit comprising,
a phase detector receiving the outputs of said local oscillator and said second mixer and controlling said carrier frequency signal generator in response thereto, and
a feedback circuit from said IF amplifier/demodulator unit to said first mixer to provide a modulation signal.

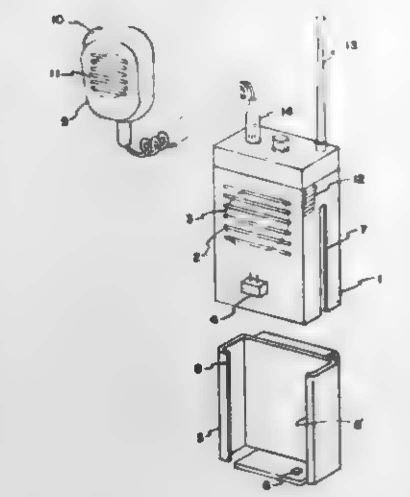
4,325,141
INTERCONTINENTAL AIR TO AIR COMMUNICATIONS BY AN OPTIMUM MODE
Rabindra N. Ghose, 8167 Mulholland Ter., Los Angeles, Calif. 90046
Filed Sep. 22, 1977, Ser. No. 835,513
Int. Cl.[3] H04B *1/12*
U.S. Cl. 455—63 7 Claims



6. The method of communicating at low frequency and very low frequencies comprising;
the steps of positioning first and second aircraft at an altitude of at least one quarter of a wavelength of the desired low or very low frequency of operation above the earth's surface;
transmitting from said first aircraft a low frequency or very low frequency communication on a transmitter antenna adapted to transmit in the TE mode;
receiving this transmission at the second aircraft on a horizontal antenna adapted to receive TE mode transmissions;
receiving at said second aircraft ambient noise signals on a vertical antenna adapted to receive TE mode signals;
varying the amplitude and phase of said ambient noise signal to match the noise received at said horizontal antenna;
subtracting the varied noise signal from the received transmission; and
using said subtracted signal as the received signal at said second aircraft.

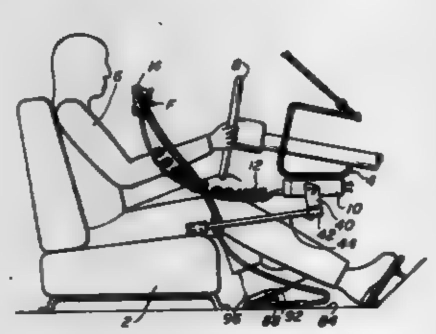
4,325,142
PORTABLE RADIO SET WITH A CARRYING HOLDER
Kunihiro Nakazawa, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan
Filed Jul. 25, 1980, Ser. No. 172,377
Int. Cl.[3] H04B *1/40, 1/20*
U.S. Cl. 455—89 10 Claims

1. A combination of a portable radio unit and a carrying holder for said portable radio unit, said portable radio unit having a grilled front face, first speaker means mounted so that audible sound from said first speaker means is radiated through said grilled front face, speaker circuit means for supplying said first speaker means with an audible sound signal, and first switch means for connecting and disconnecting said first speaker means to and from said speaker circuit means, said carrying holder having a switch member mounted thereon for activating said first switch means, wherein said first switch means and said switch member are respectively arranged, on said portable radio unit and said carrying holder in positions which are such that said first switch means is operated only when said portable radio unit is inserted into said carrying



holder with said grilled front face oriented to be covered by said carrying holder, said first switch means being unoperated when said portable radio unit is inserted into said carrying holder with said grilled front face directed to be visible from outside.

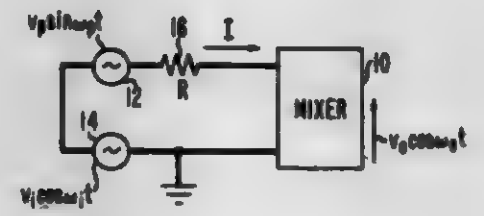
4,325,143
MICROPHONE HOLDER ATTACHMENT AND SWITCH CONTROL THEREFOR
Leslie I. Kerr, 16 Polk Rd., Hingham, Mass. 02043
Filed Aug. 18, 1980, Ser. No. 178,695
Int. Cl.[3] H04B *1/38*
U.S. Cl. 455—89 2 Claims



1. In a motor vehicle having a Citizens Band transceiver, a microphone connected to the transceiver and a control switch located externally of the microphone, a driver operated apparatus for actuating the said control switch, said apparatus characterized by a U-shaped bracket attachable to the transceiver member, said bracket being formed with a channelled portion and having a rearwardly extending arm secured in the channelled portion, an opposite end of the rearwardly extending arm being engageable with the seat of the said motor vehicle, a microphone holder frame for receiving the microphone therein, flexible tubular support means for the holder frame, said support means being located through the said arm and extending upwardly, an upper end of the support means secured in one side of the holder frame to position the holder frame and microphone in a speaking mode for a driver of the said motor vehicle, elongated switch actuating means slideably disposed through the flexible support means, said switch actuating means presenting at one extremity a switch button moveable into contact with the microphone control switch, a hinging foot pedal mechanism connected to the lower extremity of the switch acutating means and responsibe to foot pressure of a driver of the vehicle to advance and retract the actuator button, said hinging foot pedal mechanism including a base

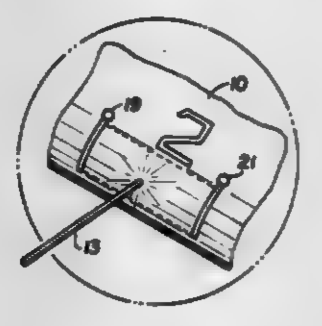
plate fastened to the floor of the vehicle, a foot pedal element pivotally attached to the base plate, a hinge part pivotally secured to an under side of the foot pedal and having a lower extremity of the switch actuating means fixed therein, a displaceable hinge part hinged to the said pivotally secured hinge part and slideable on the base plate, and spring means for resliently holding the said pivotally secured hinge part in a retracted position.

4,325,144
HYSTERETIC SIS JUNCTION MIXER
Susan E. G. Slusky, East Brunswick, and Ralph F. Trambarulo, Red Bank, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Sep. 22, 1980, Ser. No. 189,720
Int. Cl.[3] H04B *1/26;* H03F *7/00*
U.S. Cl. 455—324 5 Claims



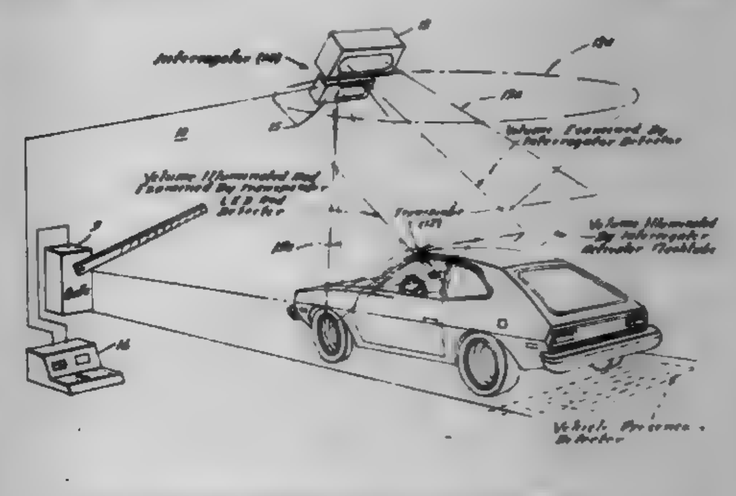
1. A mixer comprising:
a first source (12) producing a pump signal at a first frequency (ω_p);
a second source (14) producing an input signal at a second frequency (ω_i); and
a superconductor-insulator-superconductor (SIS) junction being responsive to said first and second sources and producing an output signal at a third frequency (ω_o), said output signal including regions of positive and negative value
characterized in that
the SIS junction possesses a hysteretic current-voltage chacteristic defined by predetermined positive and negative extreme critical current values ($\pm I_c$), said junction operating in a switching mode so that it is responsive to the pump and input signals such that the third frequency (ω_o) of the output signal produced by said junction is equal to the absolute value of the difference of twice the first frequency (ωp) of said pump signal and the second frequency (ω_i) of said input signal.

4,325,145
THERMAL DETECTION SYSTEM
Marshall J. Corbett, 15 Elberta Dr., Northport, N.Y. 11731, and Arnold London, 30 Julliard Dr., Plainview, N.Y. 11803
Filed Apr. 6, 1978, Ser. No. 894,178
Int. Cl.[3] H04B *9/00*
U.S. Cl. 455—600 21 Claims



1. A thermal detection system for indicating the irradiation of a vehicle surface by means of a laser energy beam, the system comprising: a variable conductive heat detector including a plurality of Boron filaments encased in an insulating base forming an integral portion of the outer surface of the vehicle, a system power source electrically connected to said heat detector, temperature indication means connected to said heat detector to detect a change in resistance of said heat detector due to a variation in the temperature of the vehicle's outer surface, a signal generating means to produce an electrical signal responsive to said change in resistance, and, display means activated by said electrical signal to indicate an impingement of a beam of laser energy upon the outer surface of the vehicle.

4,325,146
NON-SYNCHRONOUS OBJECT IDENTIFICATION SYSTEM
John W. Lennington, 2491 Oakdale Dr., Ann Arbor, Mich. 48104
Filed Dec. 20, 1979, Ser. No. 105,651
Int. Cl.[3] H04B 9/00
U.S. Cl. 455—604 10 Claims



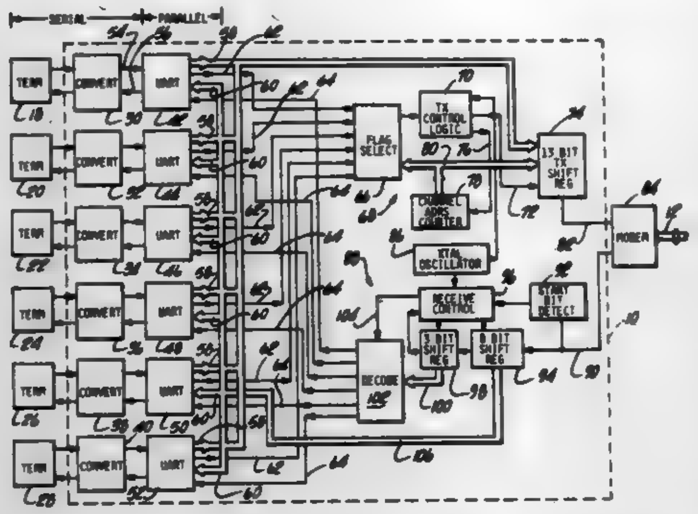
1. An object indentification system comprising:
a transponder associated with the object to be identified including switching means responsive to a remote activation signal for producing a switching signal, memory means containing a coded data word identifying said object, and data transmission means responsive to said switching signal for optically transmitting a transponder signal representative of said coded data word at a frequency independent of the frequency of said switching signal, said data transmission means beginning transmission of said coded data word from a random point in said memory means; and
an interrogator for identifying said object including remote activation means for generating said remote activation signal, receiver means for receiving said transponder signal, and processing means for determining the identity of said object from said received transponder signal including decoding means for determining the start of said coded data word and decoding said word.

4,325,147
ASYNCHRONOUS MULTIPLEX SYSTEM
Alan P. Rothlauf, Ypsilanti, Mich., assignor to Minnesota Mining & Manufacturing Co., St. Paul, Minn.
Filed Jun. 16, 1980, Ser. No. 159,571
Int. Cl.[3] H04J *3/00, 4/00*
U.S. Cl. 370—91 11 Claims

1. An asynchronous multiplex system, comprising:
a plurality of first data storage means each adapted to receive a data word into storage therein from a corresponding data source;
means coupled with each of said plurality of data storage means for detecting the presence of a data word in any of said data storage means;
means for generating a multi-bit data code identifiable with that first data storage means in which the presence of a data word has been detected by said detecting means;

second data storage means connected with said generating means and with each of said first data storage means, and adapted to be coupled with a multichannel communication line for storing said data word and data code as single data message therein; and

control means coupled with said detecting means, each of said first data storage means, said generating means and said second data storage means, for causing said data word and said data code to be delivered into storage in said second data storage means, and for causing said data message to be delivered from said second data storage means to said communication line for transmission thereon.



DESIGN PATENTS

GRANTED APR. 13, 1982

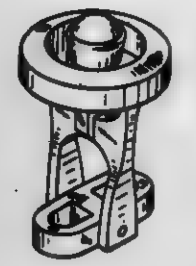
ERRATA

For CLASS	See PATENT NO.
D32–066	263,781
D34–023	263,820
D32–023	263,842
D92–026	263,881

DESIGNS

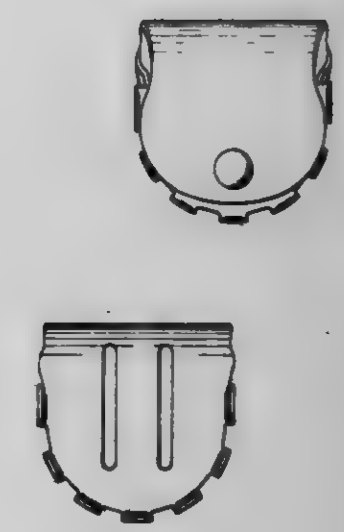
APRIL 13, 1982

263,765
CUFF LINK WITH CENTERPIECE
Philip L. Engelhardt, New York, N.Y., assignor to S. Engelhardt & Co., New York, N.Y.
Filed May 21, 1979, Ser. No. 41,200
Term of patent 14 years
Int. Cl. D2—*07*
U.S. Cl. D2—422

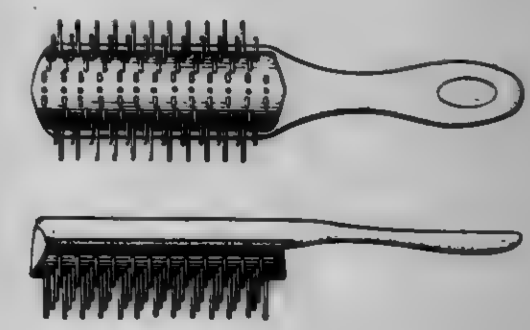


263,766
POCKET FOR JEANS OR THE LIKE
Martin Heinfling, Bayside, N.Y., assignor to Englishtown Sportswear Ltd., New York, N.Y.
Filed Jul. 17, 1979, Ser. No. 58,997
Term of patent 14 years
Int. Cl. D2—*02*
U.S. Cl. D2—28

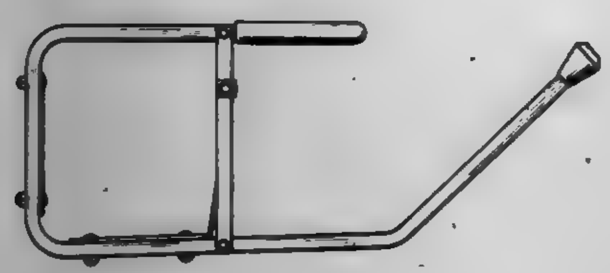
263,767
HOLDER FOR A CHEWING TOBACCO POUCH OR THE LIKE
Tig Sogoian, 2521 K St., and Marc B. Blake, 2192 Yosemite Pkwy., both of Merced, Calif. 95340
Filed Nov. 26, 1979, Ser. No. 80,258
Term of patent 14 years
Int. Cl. D02—*99*
U.S. Cl. D2—400



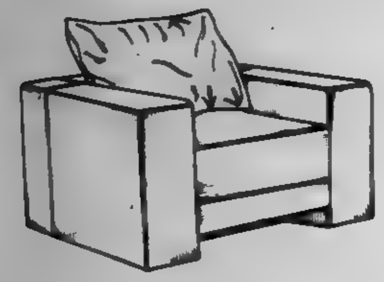
263,768
HAIRBRUSH
Walter F. Birch, Bangor, Northern Ireland, assignor to Denroy Plastics Limited
Filed Oct. 24, 1979, Ser. No. 87,806
Claims priority, application United Kingdom, Apr. 25, 1979, [illegible]/79
Term of patent 14 years
Int. Cl. D4—*01*
U.S. Cl. D4—35



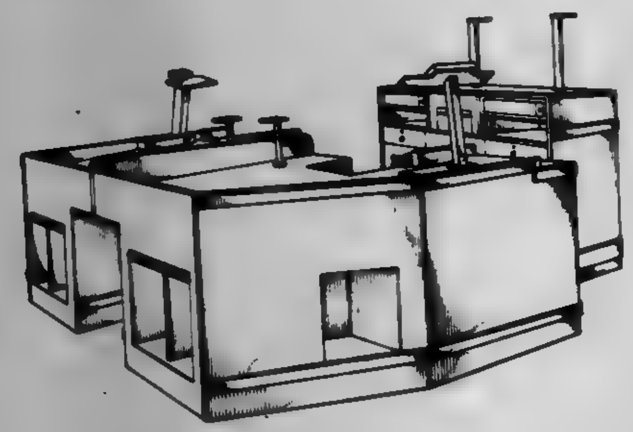
263,769
TABLE ATTACHABLE SEAT FOR A CHILD
George J. Euwema, 1880 NW. 40th Ct., and George W. Euwema, 1920 NW. 40th Ct., both of Fort Lauderdale, Fla. 33309
Filed Oct. 16, 1978, Ser. No. 951,473
The portion of the term of this patent subsequent to Jan. 29, 1994, has been disclaimed.
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—9



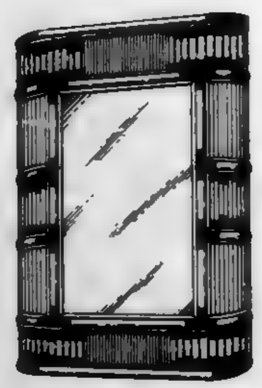
263,770
SEAT
Merle C. Melchior, Venice, Calif., assignor to Pacific Furniture Manufacturing Co., Compton, Calif.
Filed Jan. 18, 1979, Ser. No. 4,502
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—71



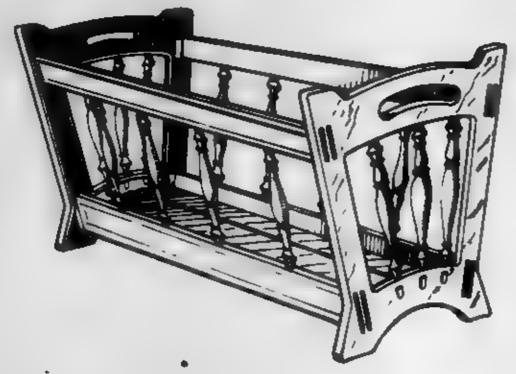
263,771
COMBINED MULTIPLE POSITION CHECKSTAND AND CONTROL CABINET ASSEMBLY
Robert T. Richins, Boise, Id., assignor to Waremart, Inc., Boise, Id.
Filed Apr. 9, 1979, Ser. No. 28,070
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—143



263,772
MIRROR
Alan Alpert, New York, N.Y., assignor to Tree Time, Inc., Newark, N.J.
Filed May 21, 1979, Ser. No. 40,744
Term of patent 14 years
Int. Cl. D6—*07*
U.S. Cl. D6—244



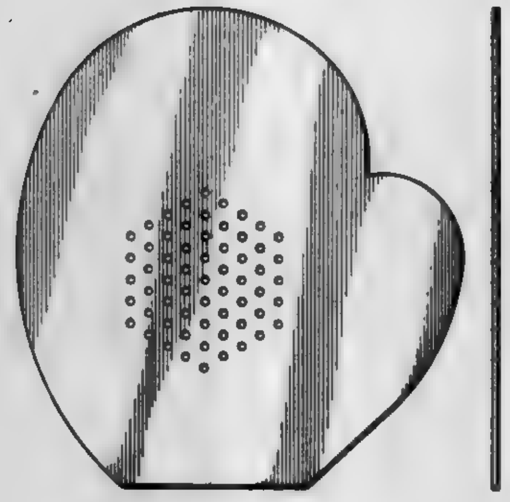
263,773
MAGAZINE RACK
Nicholas W. Keller, Lower Burrell, Pa., assignor to Action Industries, Inc., Cheswick, Pa.
Filed Aug. 2, 1979, Ser. No. 63,197
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—153



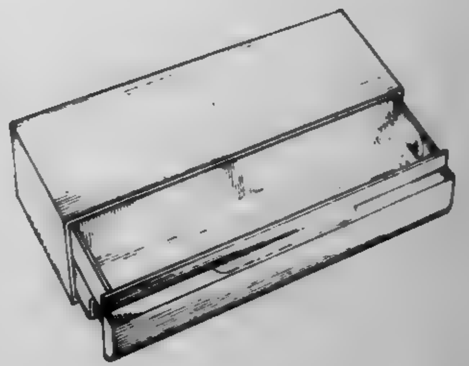
263,774
TABLE OR SIMILAR ARTICLE
Didier Deconinck, Seyssins, France, assignor to Allibert Exploitation, Grenoble, France
Filed Aug. 13, 1979, Ser. No. 65,850
Claims priority, application France, Feb. 15, 1979, 2511
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—146

263,775
SHOWER STOOL
Glenn A. Hopper, 2188 Oakmont St., Sacramento, Calif. 95815
Filed Aug. 28, 1979, Ser. No. 70,449
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—32

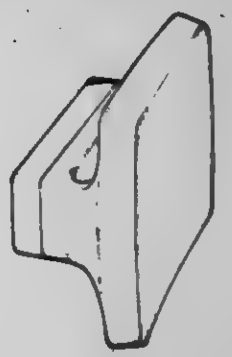
263,776
PERFORATED DRAIN COVER
Ward R. Ashley, Wilmington, Del., assignor to The Vision Group, Wilmington, Del.
Filed Sep. 24, 1979, Ser. No. 78,042
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—86



263,777
DRAWER UNIT
Bruce R. Thompson, Tranmere, Australia, assignor to UPL Group Limited, Brisbane, Australia
Filed Feb. 13, 1980, Ser. No. 121,239
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—129

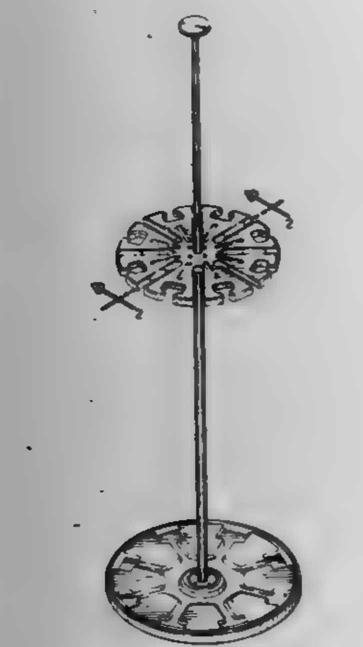


263,778
BATHROOM HOOK
Bruce R. Thompson, Tranmere, Australia, assignor to UPL Group Limited, Brisbane, Australia
Filed Feb. 13, 1980, Ser. No. 121,246
Term of patent 14 years
Int. Cl. D8—*08*; D23—*02*
U.S. Cl. D6—120

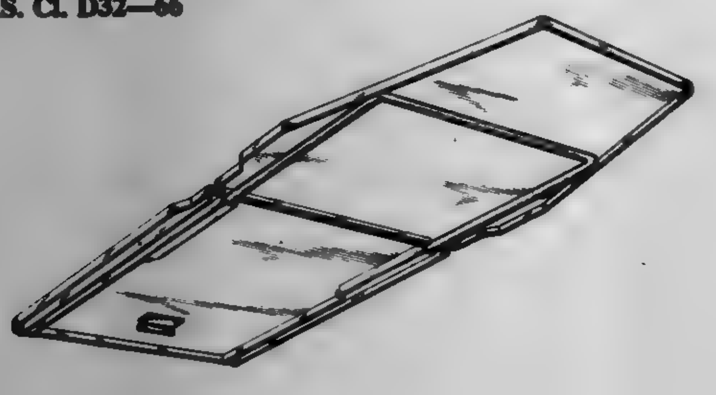


263,779
COATHOOK
Pasquale Valli, Renate, Italy, assignor to Valli & Colombo S.p.A., Italy
Filed Feb. 27, 1980, Ser. No. 125,765
Claims priority, application Italy, Sep. 4, 1979, 22438 B/79
Term of patent 14 years
Int. Cl. D6—*06*; D8—*08*
U.S. Cl. D6—120

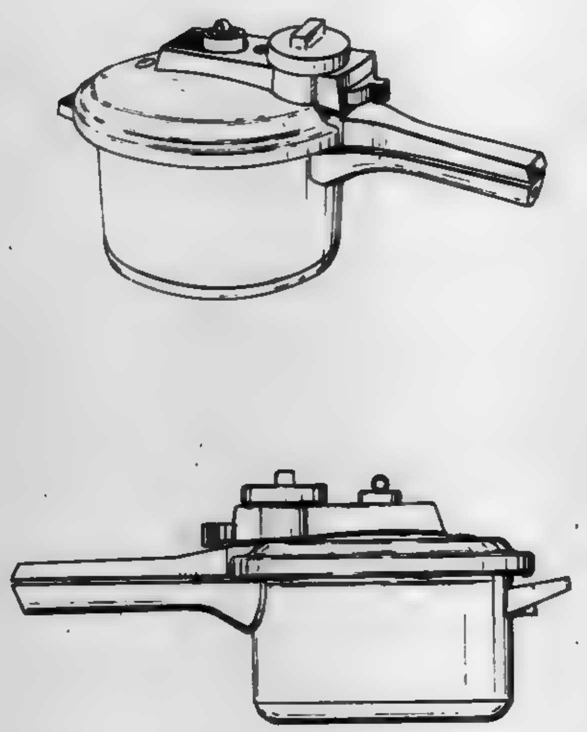
263,780
STAND FOR SUPPORTING SKIS AND POLES
Robert A. Hildebrand, 2290 Willow La., and David R. Cole, 3050 Quail St., both of Lakewood, Colo. 80215
Filed Jun. 10, 1980, Ser. No. 158,233
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D6—24



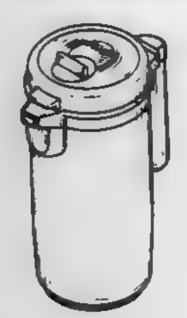
263,781
FOLDABLE IRONING-BOARD
Dan A. B. Pettersson, Hillerstorp, Sweden, assignor to AB Jarnarmatur, Hillerstorp, Sweden
Filed May 4, 1978, Ser. No. 903,033
Claims priority, application Sweden, Nov. 8, 1977, 2274
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D32—66



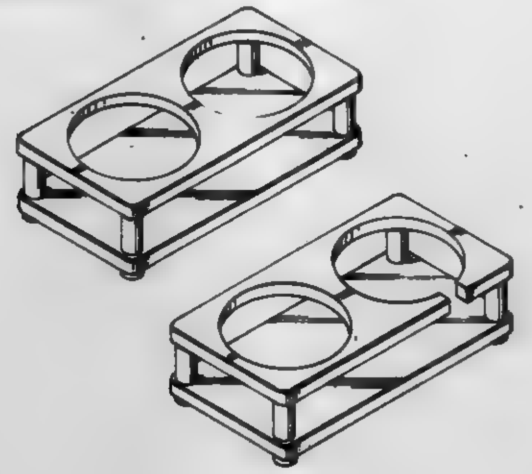
263,782
PRESSURE COOKER
Frederick P. Jackson, Barrowfield, and Brian Newell, Brierfield, both of England, assignors to The Prestige Group Limited, London, England
Filed Aug. 9, 1978, Ser. No. 932,414
Claims priority, application United Kingdom, Apr. 19, 1978, 984256
Term of patent 14 years
Int. Cl. D07—*02*
U.S. Cl. D7—86



263,783
ELECTRIC BEVERAGE MAKER
Yasukichi Okazaki, and Tatsuo Okazaki, both of Kamifukuoka, Japan, assignors to Kabushikigaisha OMCO, Saitama, Japan
Filed Nov. 28, 1978, Ser. No. 964,422
Claims priority, application Japan, Aug. 23, 1978, 53-35653
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—62



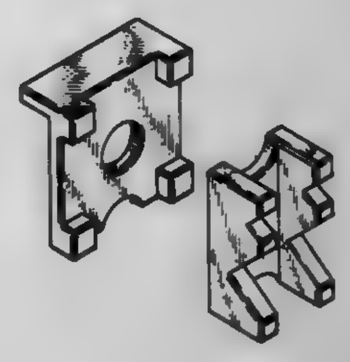
263,784
COMBINED COASTER AND ASH TRAY HOLDER
Lawrence G. Butler, 13221 Cordary St., Hawthorne, and Dorthea Means, 741 Eucalypus St., Apt. 1, Inglewood, both of Calif.
Filed Aug. 24, 1979, Ser. No. 69,288
Term of patent 14 years
Int. Cl. D07—*06*
U.S. Cl. D7—71



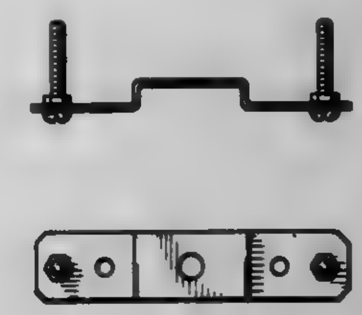
263,785
SOLAR COOKING APPARATUS
Gary J. Phillips, 3 Elsthorpe Ave., Gisborne, New Zealand
Filed Dec. 10, 1979, Ser. No. 101,413
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—107

263,786
TACO SHELL HOLDER
Vivian J. Kohan, 210 Plainfield Ave., Pen Argyl, Pa. 18072
Filed Apr. 21, 1980, Ser. No. 142,214
Term of patent 14 years
Int. Cl. D07—*04, 99*
U.S. Cl. D7—105

263,787
PIPE-HOLDING VISE JAW APPLIANCE
Mario Testa, 612 Cambridge Ave., Menlo Park, Calif. 94025, and Arnold M. Testa, 384 Arboleda Dr., Los Altos, Calif. 94022
Filed May 1, 1978, Ser. No. 901,756
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—74



263,788
UNIVERSAL MOUNTING BRACKET
Eugene T. McKinnon, 16536 Chattanooga Pl., Pacific Palisades, Calif. 90272, and Alvin S. Drutz, 11613 Clover Ave., Los Angeles, Calif. 90066
Filed Jul. 20, 1978, Ser. No. 926,549
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—394

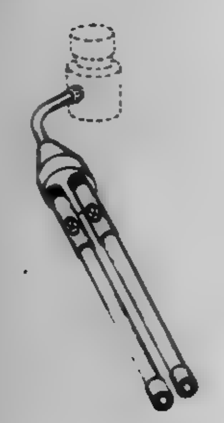


263,789
COMBINED WRENCH AND ANVIL
Ray A. Hatchell, 2310 Hampstead Ave., Richmond, Va. 23230
Filed Dec. 17, 1979, Ser. No. 104,618
Term of patent 14 years
Int. Cl. D8—*05*

U.S. Cl. D8—26

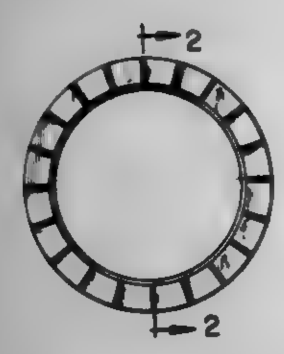
263,790
DOUBLE-BARREL GAS TORCH
Frank Baranowski, Jr., 7 Pine St., Lynnfield Center, Mass. 01174
Filed Dec. 28, 1979, Ser. No. 108,003
Term of patent 14 years
Int. Cl. D8—*05*

U.S. Cl. D8—30



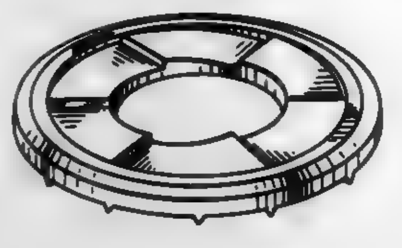
263,791
LOCK WASHER
Bengt O. Frieberg, 869 Picacho, La Habra Heights, Calif. 90631
Filed Jan. 28, 1980, Ser. No. 116,105
Term of patent 14 years
Int. Cl. D8—*08*

U.S. Cl. D8—399



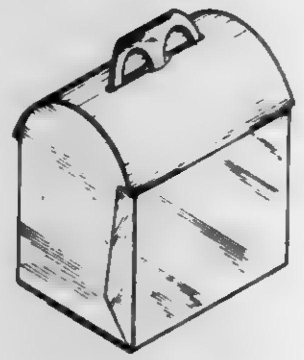
263,792
LOCK WASHER
Bengt O. Frieberg, 869 Picacho, La Habra Heights, Calif. 90631
Filed Mar. 21, 1980, Ser. No. 131,938
Term of patent 14 years
Int. Cl. D8—*08*

U.S. Cl. D8—399



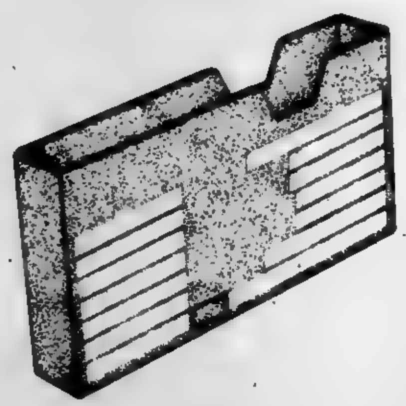
263,793
FOOD CARTON
Guion C. Magee, Gladstone, Mo., assignor to Alton Box Board Company, Alton, Ill.
Filed Oct. 25, 1978, Ser. No. 954,583
Term of patent 14 years
Int. Cl. D9—*03*

U.S. Cl. D9—433



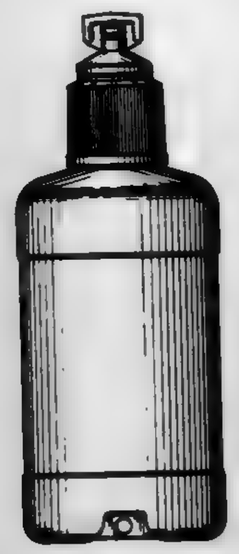
263,794
CASE FOR A MAGNETIC TAPE MAGAZINE
Keiichi Yoshizawa, Tokyo, Japan, assignor to TDK Electronics Co., Ltd., Tokyo, Japan
Filed Dec. 27, 1978, Ser. No. 974,134
Claims priority, application Japan, Jun. 30, 1978, 53-27796
Term of patent 14 years
Int. Cl. D9—*03*

U.S. Cl. D9—432



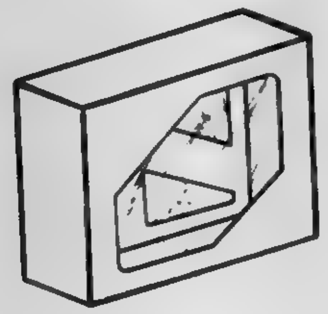
263,795
BOTTLE
Louis T. Pagels, Hanover Park, Ill., assignor to Automatic Liquid Packaging, Inc., Arlington Heights, Ill.
Filed May 3, 1979, Ser. No. 35,625
Term of patent 14 years
Int. Cl. D9—*01*

U.S. Cl. D9—370



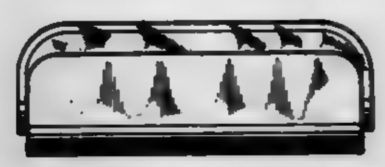
263,796
COMBINED PACKAGING AND DISPLAY BOX
Simon C. Fireman, Quincy, Mass., assignor to Aqua-Leisure Industries, Inc., Avon, Mass.
Filed May 31, 1979, Ser. No. 44,356
Term of patent 14 years
Int. Cl. D9—*03*

U.S. Cl. D9—418



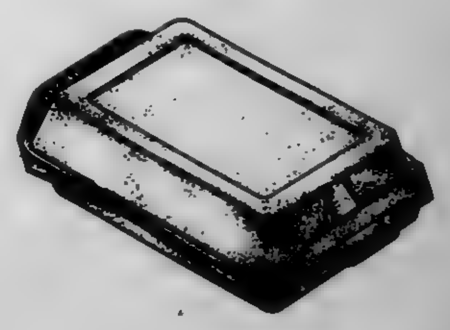
263,797
DISPLAY BOX
Roger P. Beauchamp, Harrisville, R.I., assignor to International Packaging Corp., Pawtucket, R.I.
Filed Jun. 4, 1979, Ser. No. 45,296
Term of patent 14 years
Int. Cl. D9—*03*

U.S. Cl. D9—424



263,798
FOOD CONTAINER
Richard T. Edwards, Middletown, N.Y., assignor to Genpak Corporation, Middletown, N.Y.
Division of Ser. No. 808,249, Jun. 20, 1977. This application Jun. 11, 1979, Ser. No. 47,101
Term of patent 14 years
Int. Cl. D9—*03*

U.S. Cl. D9—426



263,799
CAP FOR CONTAINER OR SIMILAR ARTICLE
Erling I. Nilsson, Akarp, Sweden, assignor to Tetra Pak Developpement SA, Lund, Sweden
Filed Aug. 27, 1979, Ser. No. 70,104
Claims priority, application Sweden, Mar. 2, 1979, 79000535
Term of patent 14 years
Int. Cl. D09—*07*

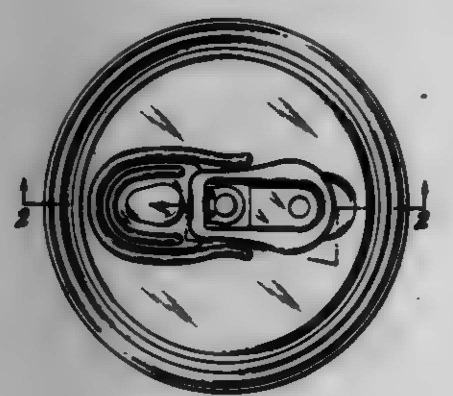
U.S. Cl. D9—439

263,800
PACKAGING CONTAINER
John D. Angioman, Brookside, N.J., and Doris du Cret, New York, N.Y., assignors to Bristol-Myers Company, New York, N.Y.
Filed Oct. 1, 1979, Ser. No. 80,860
Term of patent 14 years
Int. Cl. D9—*03*

U.S. Cl. D9—332

263,801
PACKING INSERT OR SIMILAR ARTICLE
David Lemberger, 129 Fair St., Palisades Park, N.J. 07650
Filed Oct. 25, 1979, Ser. No. 87,990
Term of patent 14 years
Int. Cl. D9—*99*
U.S. Cl. D9—436

263,802
END CLOSURE FOR A CONTAINER
Ermal C. Fraze, 618 Greenmount Blvd., Dayton, Ohio 45419
Filed Nov. 5, 1979, Ser. No. 91,071
Term of patent 14 years
Int. Cl. D09—*07*
U.S. Cl. D9—438

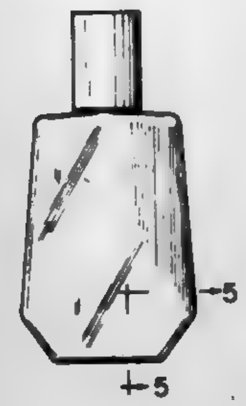


263,803
END CLOSURE FOR A CONTAINER
Ermal C. Fraze, 618 Greenmount Blvd., Dayton, Ohio 45419
Filed Nov. 5, 1979, Ser. No. 91,110
Term of patent 14 years
Int. Cl. D09—*07*
U.S. Cl. D9—438

263,804
BOTTLE
Yukio Kondo, Yokohama, and Kurima Numata, Tokyo, both of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan
Filed Nov. 28, 1979, Ser. No. 98,365
Claims priority, application Japan, Jun. 1, 1979, 54-22530
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—413

263,805
DISPENSING CLOSURE FOR A CONTAINER
Richard H. Seager, Mystic, Conn., assignor to King Seeley Thermos Co., Prospect Heights, Ill.
Filed Jan. 21, 1980, Ser. No. 113,530
Term of patent 14 years
Int. Cl. D09—*07*
U.S. Cl. D9—430

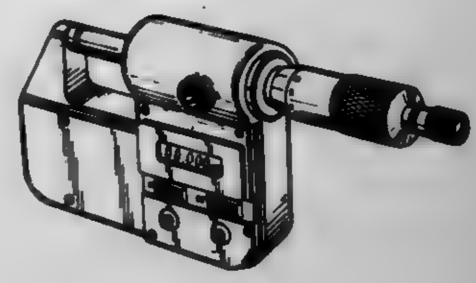
263,806
COMBINED BOTTLE AND CAP
John A. Grip, Wayne, N.J., assignor to American Cyanamid Company, Stamford, Conn.
Filed Feb. 13, 1980, Ser. No. 121,193
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—370



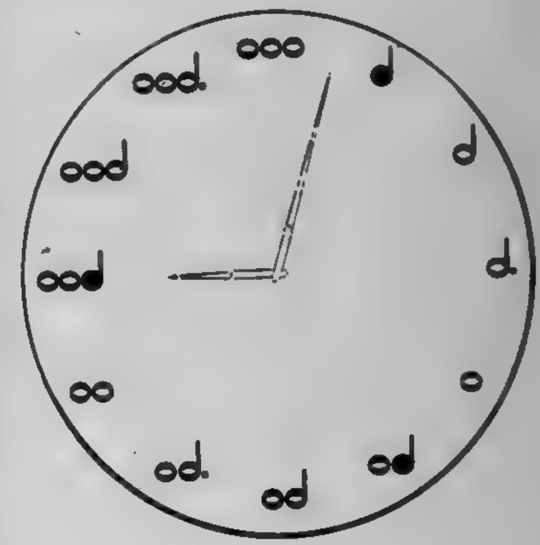
263,807
COSMETIC CONTAINER
Ted I. Kingsford, Memphis, Tenn., assignor to Plough, Inc., Memphis, Tenn.
Filed Mar. 10, 1980, Ser. No. 128,699
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—353

263,808
DISPLAY PANEL FOR A DIGITAL TIMEPIECE
Kiyoaki Tanaka, Shiojiri, Japan, assignor to Shinshu Seiki Kabushiki Kaisha, Nagano and Kabushiki Kaisha Suwa Seikosha, Tokyo, both of, Japan
Filed May 11, 1979, Ser. No. 38,159
Claims priority, application Japan, Nov. 13, 1979, 53-48300
Term of patent 14 years
Int. Cl. D10—*07*
U.S. Cl. D10—124

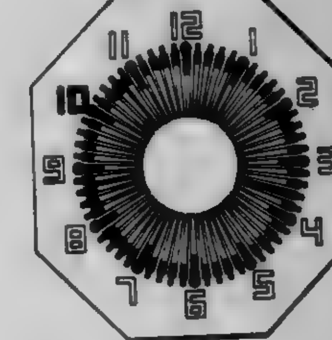
263,809
MICROMETER
Hiroaki Sawa, and Kiyohiro Nakata, both of Hiromachi, Japan, assignors to Mitutoyo Mfg. Co., Ltd., Tokyo, Japan
Filed Oct. 11, 1979, Ser. No. 83,626
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—73



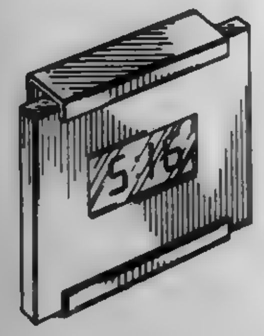
263,810
TIMEPIECE FACE
Tamara L. Snyder, R.D. #12, Hellam, York, Pa. 17406
Filed Feb. 25, 1980, Ser. No. 124,555
Term of patent 14 years
Int. Cl. D10—*07*
U.S. Cl. D10—124



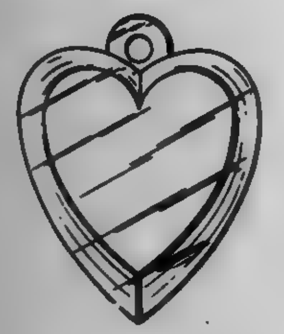
263,811
ELECTROOPTIC TIMEPIECE FACE DESIGN
Paul Hochstrate, Bristol, and Anthony D'Onofrio, West Hartford, both of Conn., assignors to Timex Corporation, Waterbury, Conn.
Filed Apr. 7, 1980, Ser. No. 137,656
Term of patent 14 years
Int. Cl. D10—*07*
U.S. Cl. D10—123



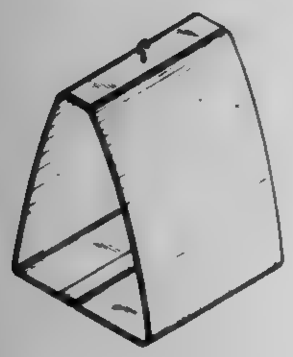
263,812
ADHESIVELY MOUNTED TIMEPIECE
Thomas J. Fuerneisen, Carefree, Ariz., assignor to Microtime, Incorporated, Scottsdale, Ariz.
Filed Apr. 25, 1980, Ser. No. 143,822
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D10—15



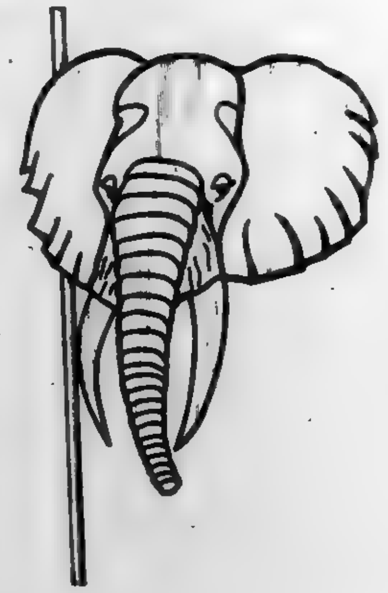
263,813
ARTIFACT HOLDING LOCKET
Sylvester Buschmann, Vienna, Mo. 65582
Filed Feb. 5, 1979, Ser. No. 9,302
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—83



263,814
MOBILE
Paul E. Bechtold, 26 Kaywood Rd., Port Washington, N.Y. 11050
Filed Nov. 30, 1979, Ser. No, 92,231
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—141

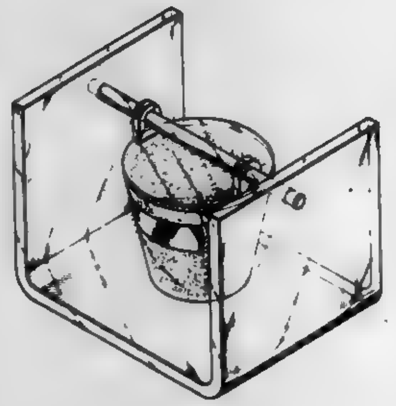


263,815
PENNANT
Larry B. Ornatek, 100 - 14th St., North Chicago, Ill. 60064
Filed Mar. 13, 1980, Ser. No. 116,046
Term of patent 14 years
Int. Cl. D11—*05*
U.S. Cl. D11—166

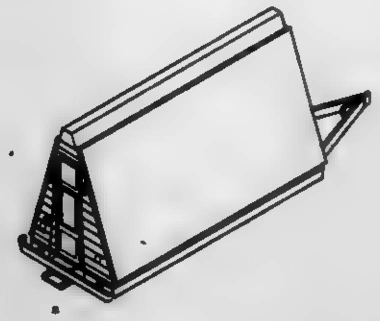


263,816
JEWELRY PENDANT
Sion Dahan, P.O. Box 36917, Los Angeles, Calif. 90036
Filed Mar. 7, 1980, Ser. No. 128,042
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—81

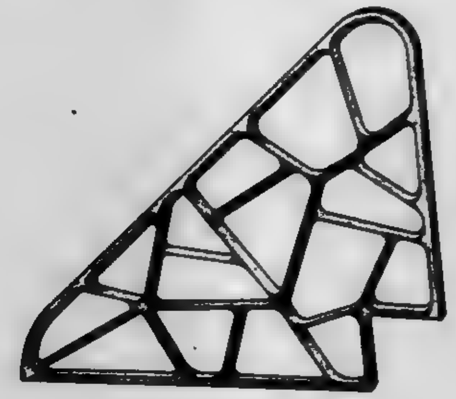
263,817
NOVELTY STATUETTE
Peter Scarpias, 6086 Via Reglia, San Diego, Calif. 92122
Filed Apr. 10, 1980, Ser. No. 139,000
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—157



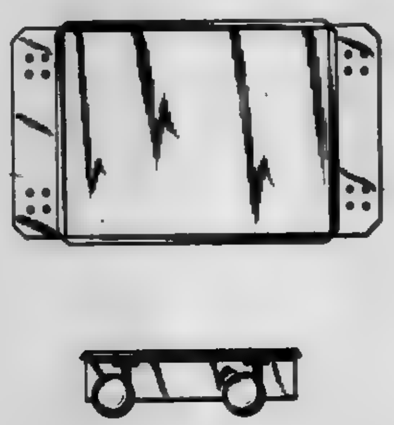
263,818
MOBILE HOME
Charles L. Porter, 302 Maple Island Rd., Burnsville, Minn. 55337
Filed Jul. 13, 1978, Ser. No. 924,459
Term of patent 14 years
Int. Cl. D12—*10*
U.S. Cl. D12—103



263,819
NOTCHED GRILL FOR A VAN WINDOW
Robert J. Kaplus, 4 Pewter La., New Providence, N.J. 07974, and Vincent Marchetti, 12 William St., Kearny, N.J. 07032
Filed Dec. 22, 1978, Ser. No. 972,413
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—183

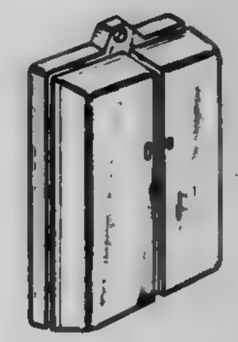


263,820
BUSINESS FORMS DOLLY
Alvin T. Levenberg, Baldwin, N.Y., assignor to Jefstael Business Equipment Corp., Brooklyn, N.Y.
Filed Feb. 20, 1980, Ser. No. 122,830
Term of patent 14 years
Int. Cl. D12—*01*
U.S. Cl. D34—23

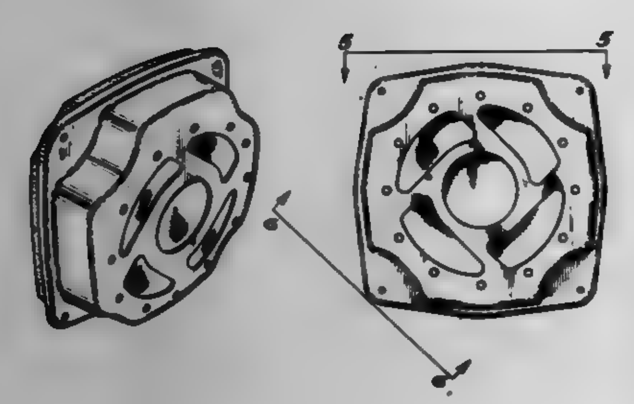


263,821
POWER LINE PROTECTOR OR THE LIKE
Thomas J. Smith, Bayshore, N.Y., assignor to TII Industries, Inc., Copiague, N.Y.
Filed Jul. 9, 1979, Ser. No. 55,596
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—41

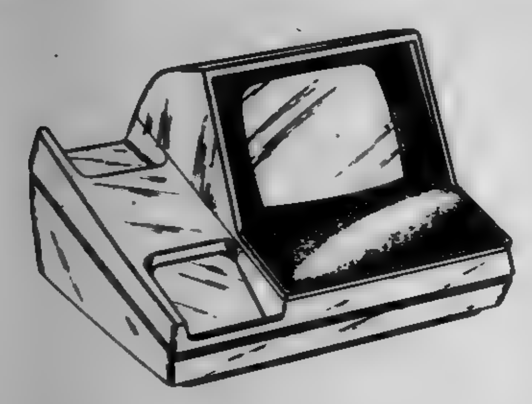
263,822
POWER LINE PROTECTOR OR THE LIKE
Thomas J. Smith, Bayshore, N.Y., assignor to TII Industries, Inc., Copiague, N.Y.
Filed Jul. 9, 1979, Ser. No. 55,597
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—41



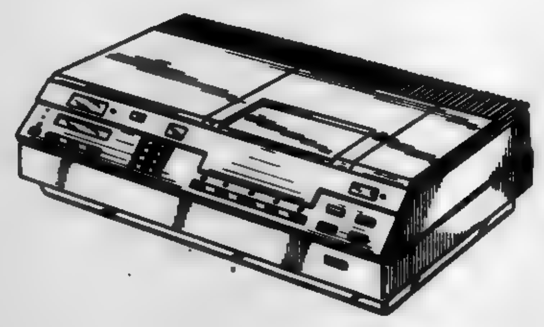
263,823
LOUDSPEAKER HOUSING OR SIMILAR ARTICLE
Robert B. Chapman, 12822 3rd Ave. S., Seattle, Wash. 98168
Filed Mar. 12, 1979, Ser. No. 19,487
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—34



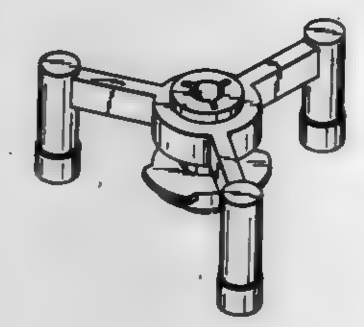
263,824
GENERAL-PURPOSE ELECTRONIC TELEPHONE SET BASE
David W. Hagelbarger, Morris Township, Morris County, and Peter S. Kubik, South Plainfield, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Jun. 28, 1979, Ser. No. 52,985
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—54



263,825
VIDEO CASSETTE RECORDER
John C. Speakman, Neterael, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Aug. 30, 1979, Ser. No. 71,221
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—02

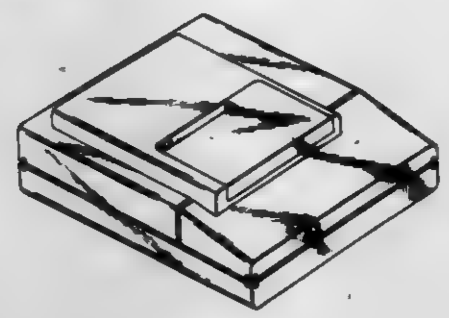


263,826
RECORD CLAMP
Brian D. Thurston, 285 W. 39th Ave., Vancouver, British Columbia, Canada V5Y 2P4
Filed Sep. 10, 1979, Ser. No. 73,951
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—25

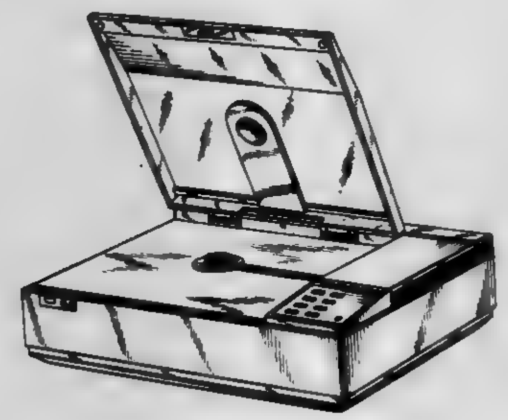


263,827
COMPUTER KEYBOARD
John H. Pemberton, 9 Park View, Needingworth, Cambridge PE17 3TJ, England
Filed Oct. 11, 1979, Ser. No. 83,685
Claims priority, application United Kingdom, Apr. 12, 1979, 989490
Term of patent 14 years
Int. Cl. D14—*02*; D18—*01*
U.S. Cl. D14—100

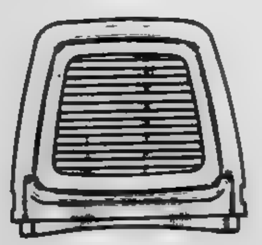
263,828
PRINTOUT TERMINAL FOR COMPUTER
John H. Pemberton, 9 Park View, Needingworth, Cambridge PE17 3TJ, England
Filed Oct. 11, 1979, Ser. No. 83,686
Claims priority, application United Kingdom, Apr. 12, 1979, 989.493
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D14—111



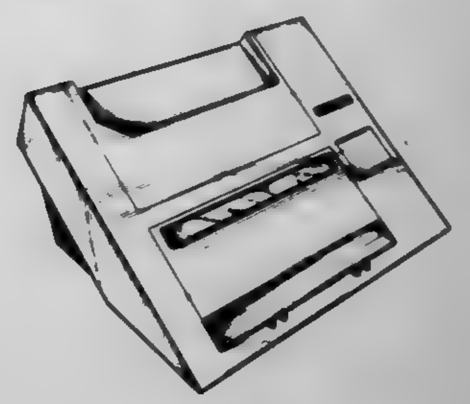
263,829
VIDEO DISK PLAYER
Hiroshi Honjo, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Nov. 5, 1979, Ser. No. 90,910
Claims priority, application Japan, May 4, 1979, 54-018212
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—1



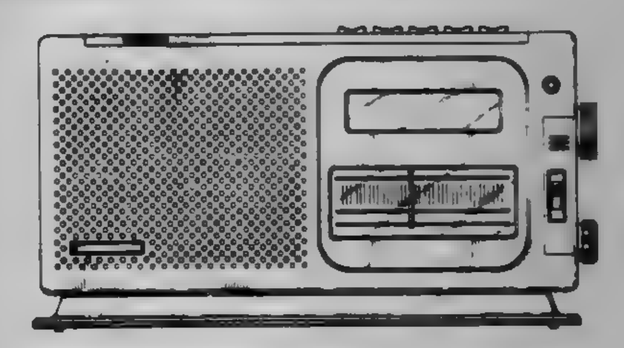
263,830
MICROPHONE FOR A VEHICULAR TELEPHONE SET OR SIMILAR ARTICLE
Hisao Fukushima, and Junji Hirooka, both of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan
Filed Dec. 17, 1979, Ser. No. 104,051
Claims priority, application Japan, Jun. 26, 1979, 54-026387
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—12



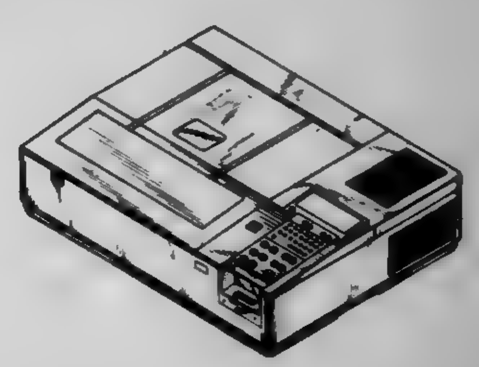
263,831
FACSIMILE TRANSCEIVER OR SIMILAR ARTICLE
Lawrence E. Barbera, San Francisco, Calif.; John L. Connis, Longwood, Fla.; Michael E. Lawing, Columbus, and Dean W. Richardson, Worthington, both of Ohio, assignors to Exxon Research & Engineering Co., Florham Park, N.J.
Filed Feb. 11, 1980, Ser. No. 120,303
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—94



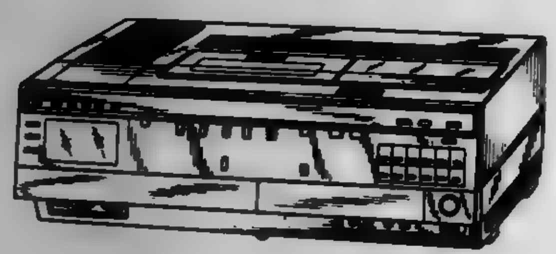
263,832
CLOCK RADIO
Kwong C. Lee, North Point, Hong Kong, assignor to Edwah Electronics Limited, Shaukiwan, Hong Kong
Filed Mar. 31, 1980, Ser. No. 136,453
Claims priority, application United Kingdom, Oct. 3, 1979, 991813
Term of patent 3½ years
Int. Cl. D14—*03*; D10—*01*
U.S. Cl. D14—73



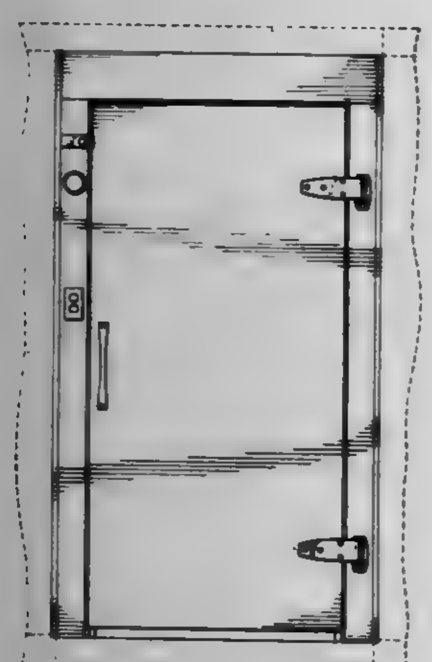
263,833
VIDEO DISK PLAYER
Hiroshi Honjo, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Sep. 10, 1980, Ser. No. 185,783
Claims priority, application Japan, Mar. 19, 1980, 55-10911
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—1



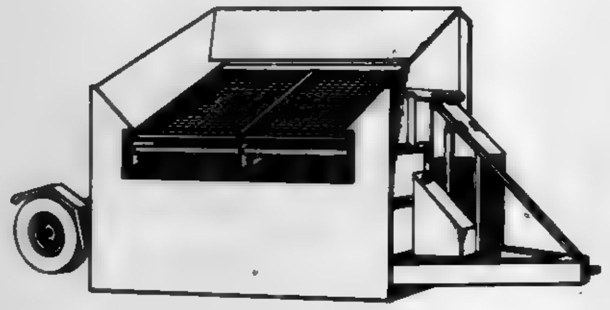
263,834
VIDEO TAPE RECORDER
Juhei Hayashi, Yokohama, and Koichi Tabata, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan
Filed Sep. 10, 1980, Ser. No. 185,784
Claims priority, application Japan, Mar. 13, 1980, 55-9803
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—2



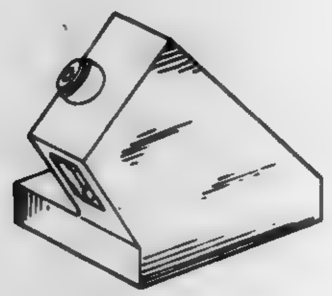
263,835
COMBINED REFRIGERATOR DOOR AND FRAME UNIT
John E. Ahrens, Cincinnati, Ohio, assignor to The C. Schmidt Company, Cincinnati, Ohio
Filed Feb. 21, 1978, Ser. No. 879,691
Term of patent 14 years
Int. Cl. D15—*07*
U.S. Cl. D15—91



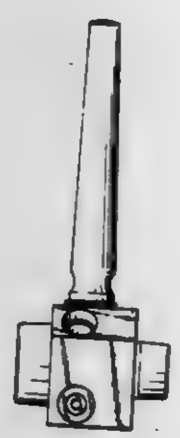
263,836
PORTABLE SCREENING PLANT
James L. Read, Halifax, Mass., assignor to F. T. Read & Sons, Inc., Rockland, Mass.
Filed Oct. 11, 1979, Ser. No. 83,971
Term of patent 14 years
Int. Cl. D15—*04*
U.S. Cl. D15—147



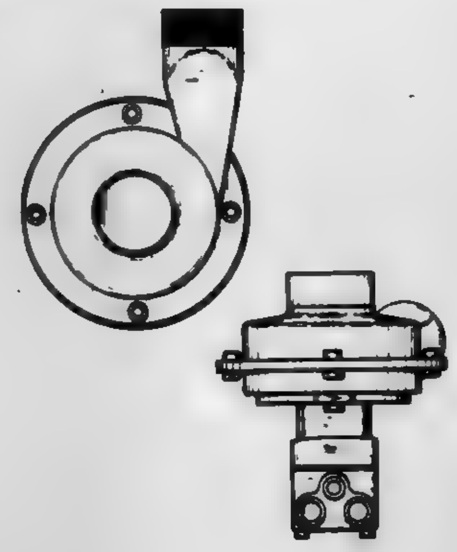
263,837
LATHE TOOL HOLDER
Howard A. Treloar, P.O. Box 86, Clarence Gardens, Australia (5039)
Filed Oct. 17, 1979, Ser. No. 85,517
Claims priority, application Australia, Apr. 23, 1979, 77677
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D15—140



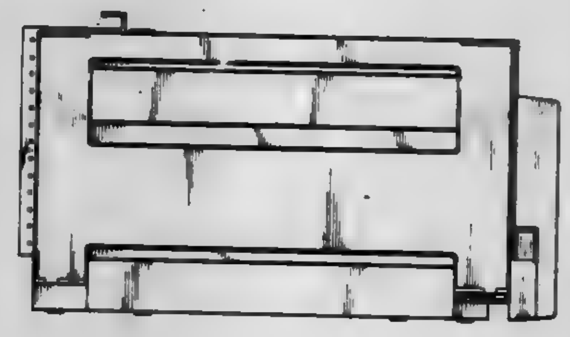
263,838
PLASTIC PIPE HEAT FUSION TOOL
Charles S. Villyard, 8 NW. 8th St., Oklahoma City, Okla. 73102
Filed Nov. 19, 1979, Ser. No. 95,220
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D15—144



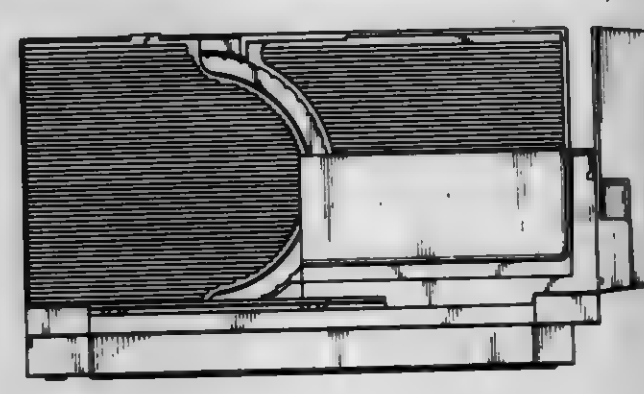
263,839
PUMP
Sigurd M. Somme, N Hjellestad, 5066 Hjellestad, Norway
Filed Nov. 19, 1979, Ser. No. 95,314
Claims priority, application Norway, Oct. 22, 1979, 60548
Term of patent 14 years
Int. Cl. D15—*02*
U.S. Cl. D15—7



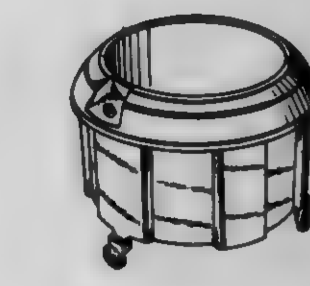
263,840
FOOD SLICER IN THE STORAGE POSITION
Joseph A. Rinaldi, Bergen County, N.J., assignor to Rival Manufacturing Company, Kansas City, Mo.
Filed Dec. 3, 1979, Ser. No. 99,325
Term of patent 14 years
Int. Cl. D15—*08*
U.S. Cl. D15—97



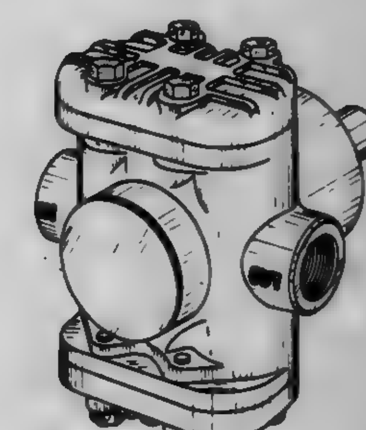
263,841
FOOD SLICER IN THE OPERATIONAL POSITION
Joseph A. Rinaldi, 651 Lake Ave., Oradell, N.J. 07649
Filed Dec. 3, 1979, Ser. No. 99,326
Term of patent 14 years
Int. Cl. D15—*08*
U.S. Cl. D15—97



263,842
SUPPLY TANK FOR USE WITH A CARPET CLEANING MACHINE
Fred E. Pearman, Jr., Anderson, S.C., assignor to The Singer Company, Stamford, Conn.
Division of Ser. No. 870,954, Jan. 19, 1978, Pat. No. Des. 258,064. This application Dec. 10, 1979, Ser. No. 101,958
Term of patent 14 years
Int. Cl. D15—*05*
U.S. Cl. D32—23

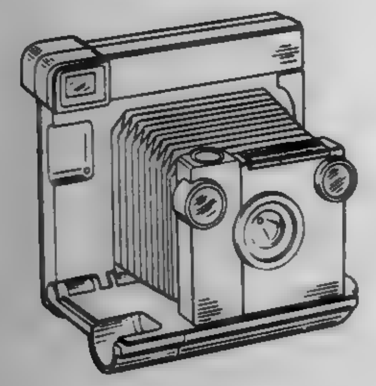


263,843
PISTON PUMP
Ramon Pareja, Edina, Minn., assignor to Lear Siegler, Inc., Santa Monica, Calif.
Filed Dec. 26, 1979, Ser. No. 106,450
Term of patent 14 years
Int. Cl. D15—*02*
U.S. Cl. D15—7

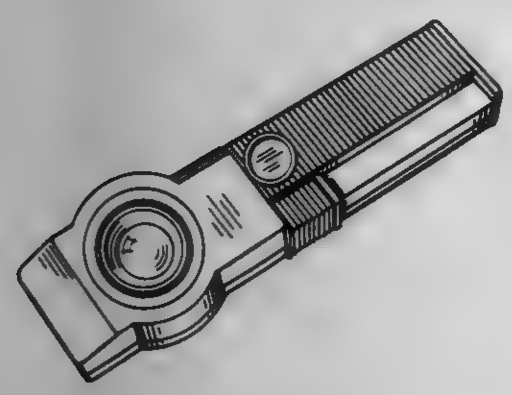


263,844
ELECTROPHOTOGRAPHIC APPARATUS
Mitsuru Sakurai, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 10, 1979, Ser. No. 28,877
Claims priority, application Japan, Oct. 12, 1978, 53-43330
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D16—30

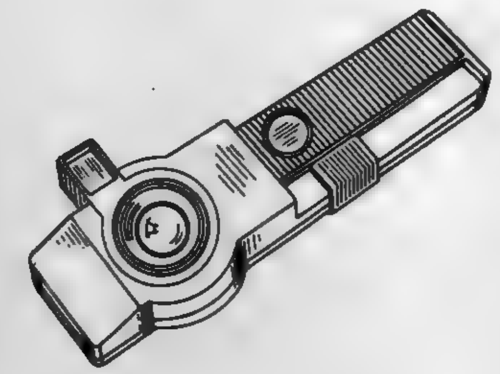
263,845
PHOTOGRAPHIC CAMERA
Norbert Schlagheck; Herbert Schultes, both of Fuerstenfeldbruck, and Karlheinz Rubner, Munich, all of Fed. Rep. of Germany, assignors to AGFA-Gevaert AG, Leverkusen, Fed. Rep. of Germany
Filed Nov. 1, 1979, Ser. No. 90,441
Claims priority, application Fed. Rep. of Germany, May 19, 1979, G162/79
Term of patent 14 years
Int. Cl. D16—*01*
U.S. Cl. D16—5



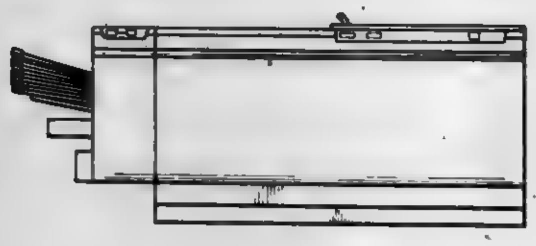
263,846
PHOTOGRAPHIC CAMERA
Norbert Schlagheck; Herbert Schultes, both of Fuerstenfeldbruck, and Karlheinz Rubner, Munich, all of Fed. Rep. of Germany, assignors to AGFA-Gevaert AG, Leverkusen, Fed. Rep. of Germany
Filed Dec. 10, 1979, Ser. No. 102,320
Claims priority, application Fed. Rep. of Germany, Jun. 9, 1979, G163/79
Term of patent 14 years
Int. Cl. D16—*01*
U.S. Cl. D16—1



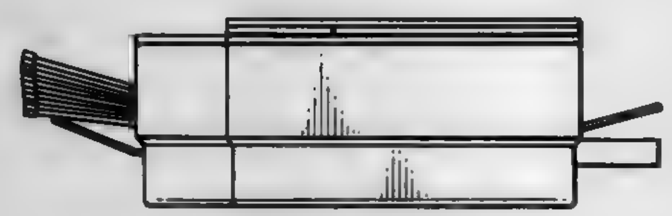
263,847
PHOTOGRAPHIC CAMERA
Norbert Schlagheck; Herbert Schultes, both of Fuerstenfeldbruck, and Karlheinz Rubner, Munich, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert AG, Leverkusen, Fed. Rep. of Germany
Filed Dec. 10, 1979, Ser. No. 102,321
Claims priority, application Fed, Rep. of Germany, Sep. 6, 1979, G163/79
Term of patent 14 years
Int. Cl. D16—*01*
U.S. Cl. D16—1



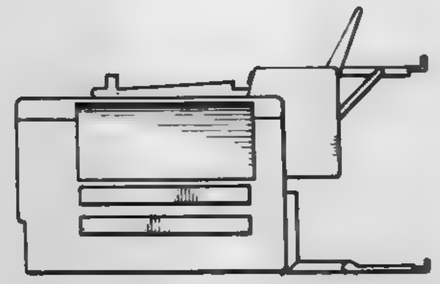
263,848
COPYING AND SORTING APPARATUS
R. Clark DuBois, Fairfield, and John C. Hamma, Milford, both of Conn., assignors to Gradco/Dendoki, Inc., Newport Beach, Calif.
Filed Jun. 27, 1980, Ser. No. 163,473
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D16—31



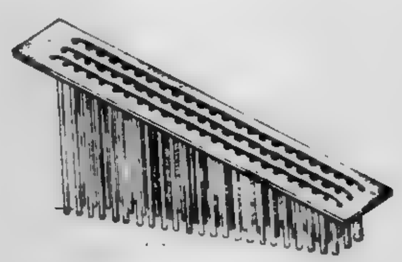
263,849
COPYING AND SORTING APPARATUS
Frederick J. Lawrence, Tustin, Calif., assignor to Gradco/Dendoki, Inc., Newport Beach, Calif.
Filed Jul. 14, 1980, Ser. No. 168,585
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D16—31



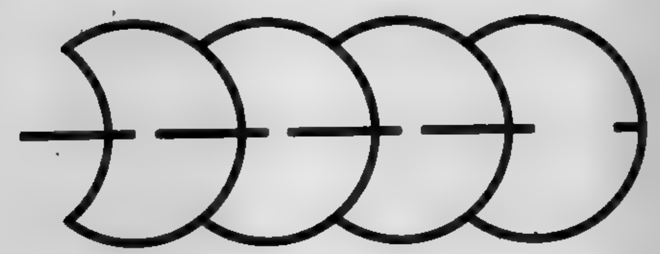
263,850
CONTINUOUS FORM FEEDING AND COPYING APPARATUS
R. Clark DuBois, Fairfield, and John C. Hamma, Milford, both of Conn., assignors to Gradco/Dendoki, Inc., Newport Beach, Calif.
Filed Jul. 16, 1980, Ser. No. 169,355
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D16—31



263,851
CHIME TYPE MUSICAL INSTRUMENT OR THE LIKE
Brian T. Trimmer, 915 McKimmon Rd., Fayetteville, N.C. 28303
Filed Nov. 20, 1978, Ser. No. 962,313
Term of patent 14 years
Int. Cl. D17—*04*
U.S. Cl. D17—22



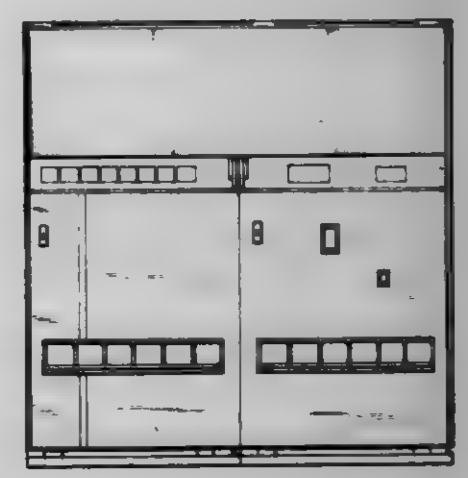
263,852
POSITION MARKER
Thomas M. Gallub, Lindenhurst, N.Y., assignor to Fleit & Jacobson, Washington, D.C.
Filed Jun. 26, 1978, Ser. No. 919,219
Term of patent 14 years
Int. Cl. D18—*03*
U.S. Cl. D18—24



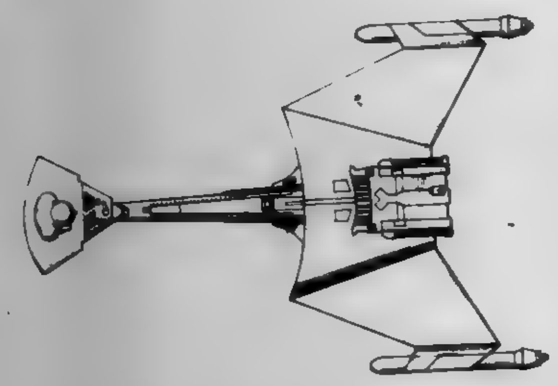
263,853
ELECTRONIC TRANSLATOR
Shigeru Kurozumi, Osaka, Japan, assignor to Sharp Corporation, Osaka, Japan
Filed Feb. 27, 1980, Ser. No. 125,129
Claims priority, application Japan, Sep. 12, 1979, 54-38541
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D18—7

263,854
DECAL
James T. Calvert, 234 Valleyview Dr., R.R. #1, Churchill, Ontario, Canada L0L 1K0
Filed Dec. 4, 1978, Ser. No. 967,161
Term of patent 14 years
Int. Cl. D11—*99*
U.S. Cl. D20—11

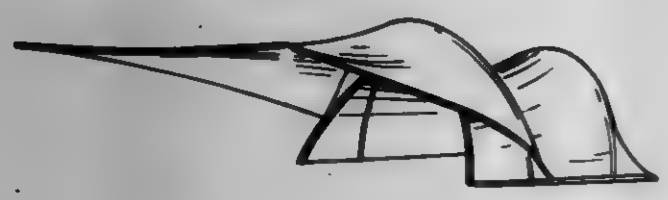
263,855
DISPLAY PANEL FOR A VENDING MACHINE
G. Merle Bachmann, Stone Mountain; Homer C. Burrous, Atlanta, and Walter L. Shelton, Marietta, all of Ga., assignors to The Coca-Cola Company, Atlanta, Ga.
Filed Jun. 12, 1979, Ser. No. 47,706
Term of patent 14 years
Int. Cl. D20—*01*
U.S. Cl. D20—8



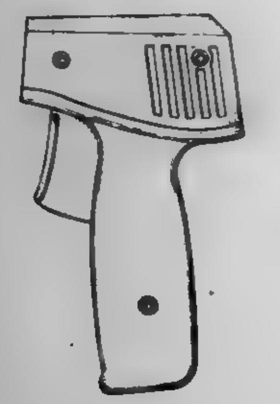
263,856
TOY SPACESHIP
Andrew G. Probert, El Segundo, Calif., assignor to Paramount Pictures Corporation, Los Angeles, Calif.
Filed May 7, 1979, Ser. No. 36,535
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—87



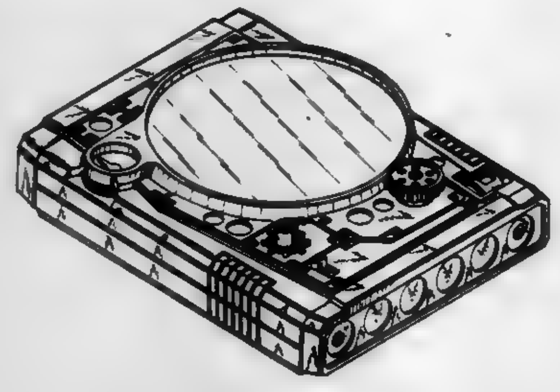
263,857
TENT FOR USE WITH TRUCK OR THE LIKE
Charles W. Moss, Moss Tent Works, Mt. Battle St., Camden, Me. 04843
Filed Jun. 25, 1979, Ser. No. 51,495
Term of patent 14 years
Int. Cl. D21—*04*
U.S. Cl. D21—253



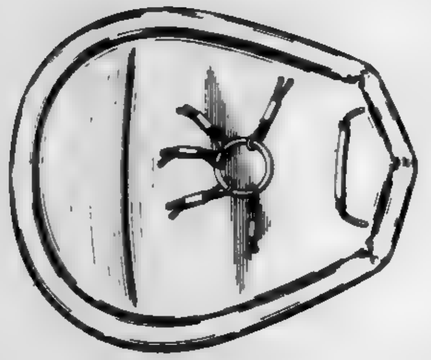
263,858
SPEED CONTROLLER FOR TOY CAR OR THE LIKE
Mun H. Ngai, 130-132 Argyle St., 3rd Floor, Flat C, Kowloon, Hong Kong
Filed Aug. 22, 1979, Ser. No. 68,542
Claims priority, application United Kingdom, May 29, 1979, 990086/79
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—141



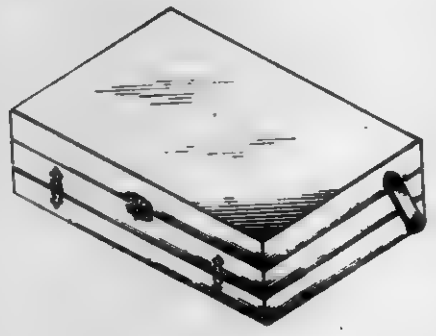
263,859
ELECTRONIC MISSILE GAME HOUSING
Hitoshi Itakura, Tokyo, Japan, assignor to Tomy Kogyo Co., Inc., Tokyo, Japan
Filed Sep. 27, 1979, Ser. No. 79,302
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—13



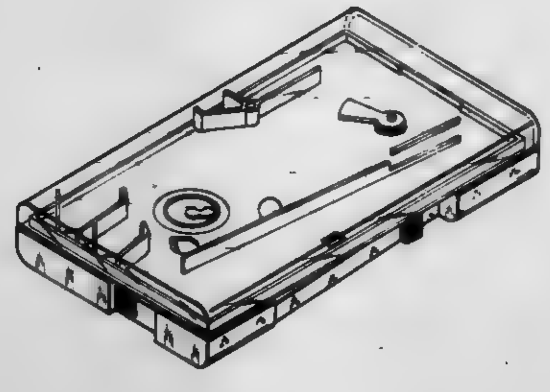
263,860
HAND SURF BOARD
Russell P. Cole, Rte. 1, Box 138A, Emory, Tex. 75440
Filed Oct. 9, 1979, Ser. No. 83,478
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—228



263,861
CONTAINER FOR ENCLOSING A BOARD GAME
Herbert L. Barber, 124 Riverdale Rd., Liverpool, N.Y. 13088
Filed Jan. 11, 1980, Ser. No. 109,889
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—15

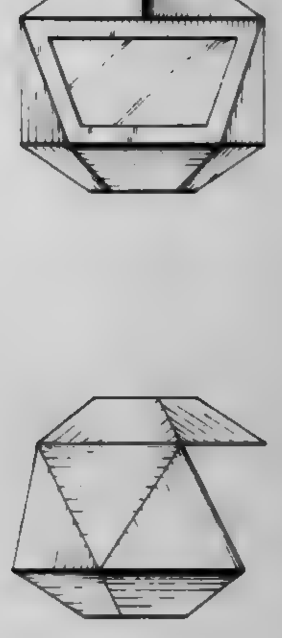


263,862
POCKET SIZE GAME BOX HAVING ROTATING STRIKING MEMBER
Masaki Mayuzumi, Tokyo, Japan, assignor to Tomy Kogyo Co., Inc., Tokyo, Japan
Filed Jan. 29, 1980, Ser. No. 116,487
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—9

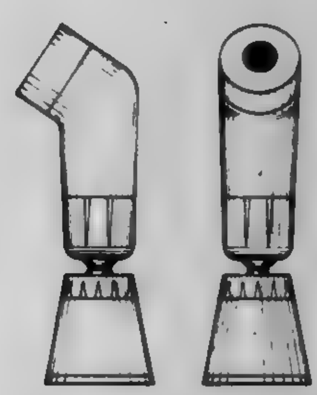


263,863
GAME BAT
Richard J. Golab, 7308 Balboa, Orlando, Fla. 32808
Filed Mar. 10, 1980, Ser. No. 128,722
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—211

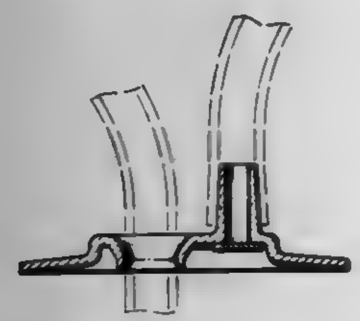
263,864
STOVE
Richard L. Dillon, 13500 High Point Dr., Traverse City, Mich. 49684
Filed Nov. 19, 1979, Ser. No. 95,256
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—97



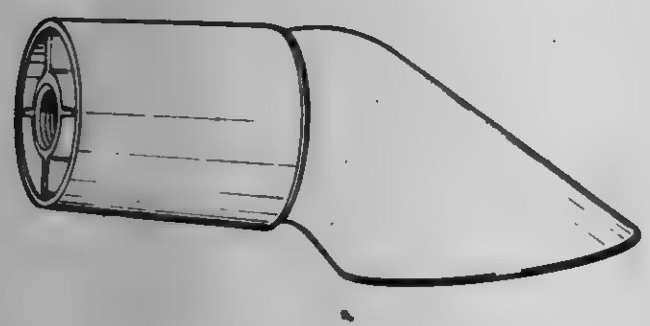
263,865
SHOWER HEAD
Amilcar F. Yamin, Rodovia Presidente Dutra Km. 380 (trevo Bonsucesso), Guarulhos Estado de Sao Paulo, Brazil
Filed Nov. 23, 1979, Ser. No. 97,113
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—35



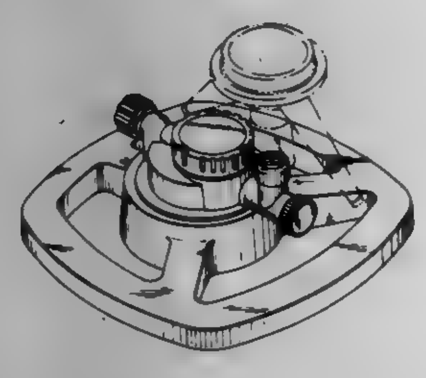
263,866
FITTING FOR SYPHONING FUEL
Ronald L. Messenger, 10747 Mount Vernon Rd., Auburn, Calif. 95603
Filed Jan. 29, 1980, Ser. No. 116,441
Term of patent 14 years
Int. Cl. D23—*99*
U.S. Cl. D23—27



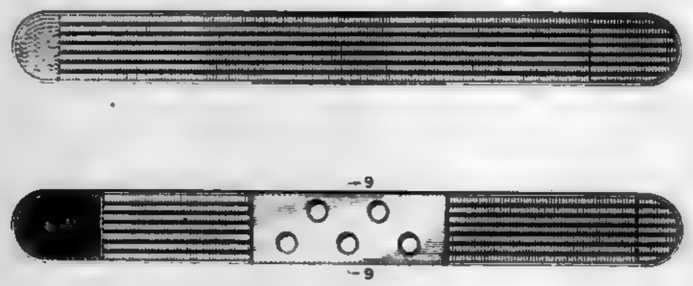
263,867
SHOWER HEAD
Bruce R. Thompson, Tranmere, Australia, assignor to UPL Group Limited, Brisbane, Australia
Filed Feb. 22, 1980, Ser. No. 123,746
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—35



263,868
WATER SPRINKLER BASE
Ho Chow, River Edge, N.J., and Tim M. Uyeda, South San Gabriel, Calif., assignors to Beatrice Foods Co., Moonachie, N.J.
Filed May 1, 1980, Ser. No. 145,797
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—7

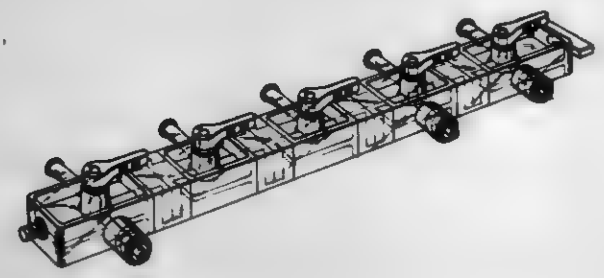


263,869
MEDICAL MAGNETIC BAND
Noriaki Sumiyasu, Tokyo, Japan, assignor to IDR Electronics Co., Ltd., Tokyo, Japan
Filed Nov. 3, 1978, Ser. No. 957,282
Claims priority, application Japan, May 10, 1978, 53-18999
Term of patent 14 years
Int. Cl. D24—*02*; D28—*03*
U.S. Cl. D24—99

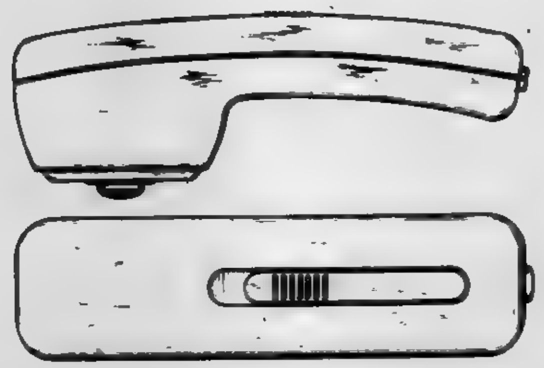


263,870
FLEXIBLE CONTAINER FOR BARIUM RADIOLOGICAL EXAMINATIONS
Franklin R. Greene, Flushing, N.Y., assignor to E-Z-EM Company, Inc., Westbury, N.Y.
Filed Dec. 11, 1978, Ser. No. 968,475
Term of patent 14 years
Int. Cl. D24—*99*
U.S. Cl. D24—56

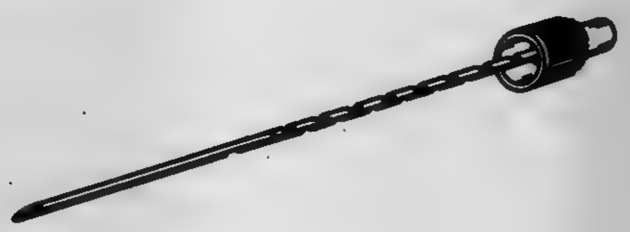
263,871
MEDICAL MULTIPORT VALVE COCK
Iwao Matsuura, Osaka, Japan, assignor to Nissho Corporation, Osaka, Japan
Filed Apr. 16, 1979, Ser. No. 30,640
Term of patent 14 years
Int. Cl. D23—*01*; D24—*02*
U.S. Cl. D24—53



263,872
HOUSING FOR A MASSAGER/VIBRATOR
William J. Rakocy, Nutley, N.J., and Howard L. Rauch, Brooklyn, N.Y., assignors to North American Philips Corp., New York, N.Y.
Filed Apr. 30, 1979, Ser. No. 34,707
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D24—41

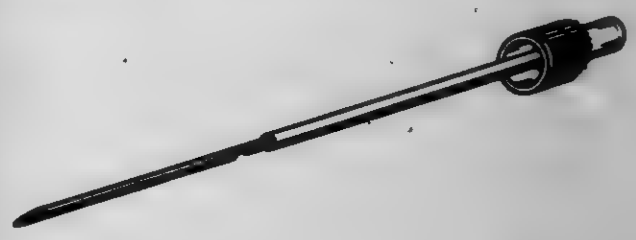


263,873
FLEXIBLE STYLET
Joseph N. Genese, Waukegan, Ill., assignor to Abbott Laboratories, North Chicago, Ill.
Filed May 3, 1979, Ser. No. 35,567
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—54



263,874
FLEXIBLE STYLET
Joseph N. Genese, Waukegan, Ill., assignor to Abbott Laboratories, North Chicago, Ill.
Filed May 3, 1979, Ser. No. 35,568
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—54

263,875
FLEXIBLE STYLET
Joseph N. Genese, Waukegan, Ill., assignor to Abbott Laboratories, North Chicago, Ill.
Filed May 3, 1979, Ser. No. 35,748
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—54

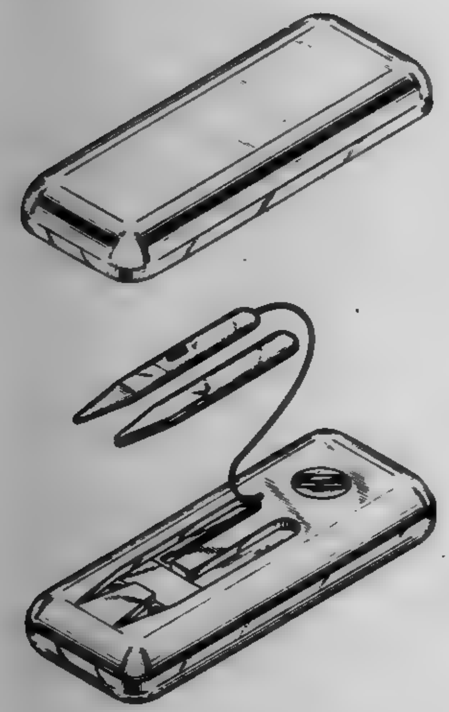


263,876
REAGENT CASSETTE
Glenn S. Beidler, Vicksburg; Leighton C. Johnson, Edwardsburg, both of Mich., and Mohammad A. Kheiri, Elkhart, Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.
Filed Jun. 18, 1979, Ser. No. 49,445
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—29

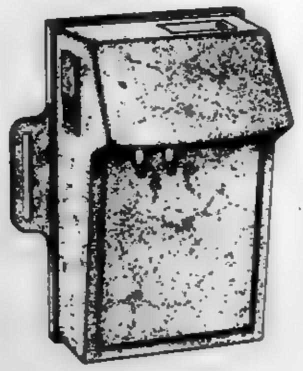
263,877
DENTAL HANDPIECE OR SIMILAR ARTICLE
Werner Podszus, Weissenohe, and Peter Schoeller, Erlangen, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany
Filed Jun. 19, 1979, Ser. No. 49,894
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—12

263,878
ROOT CANAL SCREW
Svante R. Edwardson, Solna, Sweden, assignor to AB Dentatus, Hagersten, Sweden
Filed Jul. 24, 1979, Ser. No. 60,404
Term of patent 14 years
Int. Cl. D24—*02*; D8—*02*
U.S. Cl. D24—16

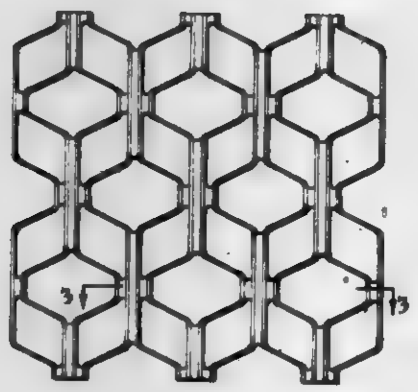
263,879
ELECTROLYSIS HAIR REMOVAL KIT
Samuel J. Mann, Englewood, N.J., assignor to Inverness International, Englewood, N.J.
Filed Aug. 30, 1979, Ser. No. 70,767
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—26



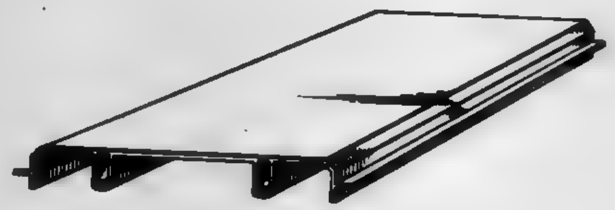
263,880
OBSTETRICAL TELEMETRY INSTRUMENT ENCLOSURE
Stephen A. Francis, Meriden, Conn., assignor to American Home Products Corporation, New York, N.Y.
Filed Sep. 13, 1979, Ser. No. 75,382
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—17



263,881
EXPANDED PANEL OF EXTRUDED METAL
William L. Jury, Royal Park, Australia, assignor to John McIlwraith Industries Ltd., Royal Park, Australia
Filed Mar. 28, 1980, Ser. No. 134,791
Claims priority, application Australia, Oct. 2, 1979, 79,142
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D92—26

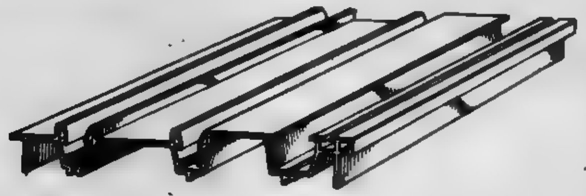


263,882
WINDOW COMPONENT EXTRUSION
Raymond Dallaire, P.O. Box 220, Levis, P.Q., Canada
Filed Apr. 30, 1980, Ser. No. 145,137
Claims priority, application France, Nov. 14, 1979, 79 78029
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—74



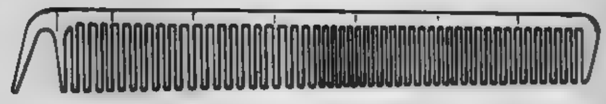
263,883
WINDOW COMPONENT EXTRUSION
Raymond Dallaire, P.O. Box 220, Levis, Quebec, Canada
Filed Apr. 30, 1980, Ser. No. 145,256
Claims priority, application France, Nov. 14, 1979, 79 78029
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—74

263,884
WINDOW COMPONENT EXTRUSION
Raymond Dallaire, P.O. Box 220, Levis, Quebec, Canada
Filed Apr. 30, 1980, Ser. No. 145,257
Claims priority, application France, Nov. 14, 1979, 79 78029
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—74

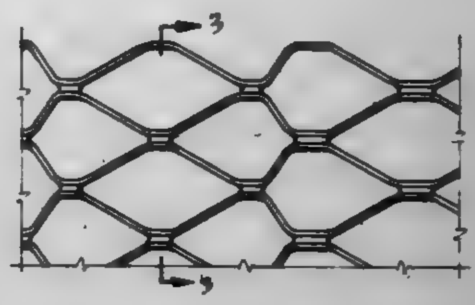


263,885
COMBINED SOAP BAR AND HOLDER
Henry Blaszkowski, P.O. Box 114, Southfield, Mich. 48034
Filed Jul. 25, 1979, Ser. No. 60,279
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—8.1

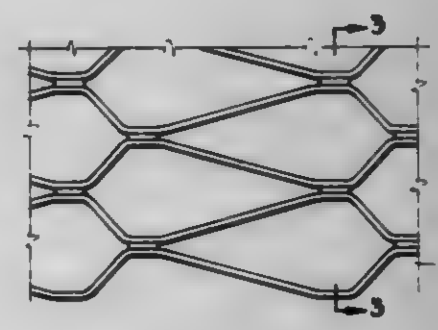
263,886
STYLING COMB
John E. Soltsick, Jr., 929 Joann St., Costa Mesa, Calif. 92627
Filed Mar. 31, 1980, Ser. No. 135,472
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—21



263,887
EXPANDED PANEL OF EXTRUDED METAL
William L. Jury, Royal Park, Australia, assignor to John McIlwraith Industries Ltd., Royal Park, Australia
Filed Mar. 28, 1980, Ser. No. 134,754
Claims priority, application Australia, Oct. 16, 1979, 79279
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D92—26



263,888
EXPANDED PANEL OF EXTRUDED METAL
William L. Jury, Royal Park, Australia, assignor to John McIlwraith Industries Ltd., Royal Park, Australia
Filed Mar. 28, 1980, Ser. No. 134,894
Claims priority, application Australia, Oct. 16, 1979, 79,281
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D92—26



263,889
CUSTOMER FINANCIAL TRANSACTION TERMINAL FOR DRIVE-UP BANKING AND THE LIKE
George G. Lippisch, Cedar Rapids, Iowa, assignor to Kidde, Inc., Clifton, N.J.
Filed Aug. 20, 1979, Ser. No. 67,729
Term of patent 14 years
Int. Cl. D99—*00*
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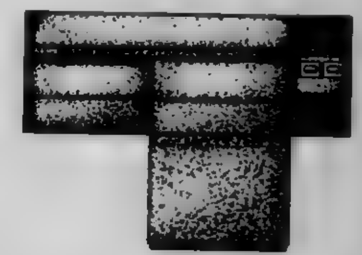

LIST OF PATENTEES

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PATENTS WERE ISSUED ON THE 13TH DAY OF APRIL, 1982

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

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BBC Brown, Bovari & Company, Limited: *See*—
  Berchtold, Max; and Jenny, Ernst, 4,324,526, Cl. 415-48.000.
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Beach, Earl; and Matle, Calvin, to Ross Operating Valve Company. Muffler. 4,324,314, Cl. 181-230.000.
Beall, Robert. Compartmented container. 4,324,338, Cl. 215-6.000.
Beauchamp, Jesse L.; and George, Patricia M., to California Institute of Technology. Deposition of metal films and clusters by reactions of compounds with low energy electrons on surfaces. 4,324,854, Cl. 430-296.000.
Becherer, Walter, to AGFA-Gevaert AG. Developing machine for radiation-sensitive material. 4,324,481, Cl. 354-324.000.
Beck, James A. Solar energy apparatus. 4,324,226, Cl. 126-429.000.
Beck, Lee R. Dental caries inhibiting product of immunized cow's milk having antibodies specific to killed *Streptococcus mutans* cells. 4,324,782, Cl. 424-87.000.
Becker, Kunibert: *See*—
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  Louderback, Allan L., 4,324,685, Cl. 252-408.000.
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  Davis, Adrian F., 4,324,778, Cl. 424-10.000.
Beede, Charles H.; and Zirnite, Richard N., to Johnson & Johnson. Modifying agents for ion-leachable cement compositions. 4,324,591, Cl. 106-85.000.
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  Sepehri-Nik, Hossein K., 4,324,577, Cl. 71-33.000.
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  Johnson, Delmar R., 4,324,484, Cl. 355-5.000.
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  Kraemer, Edward J.; Therien, Robert D.; Rudy, Michael W.; Walsh, Frederick E.; Lee, Han J.; Bell, Ronald; and Horning, Thomas D., 4,324,474, Cl. 355-65.000.
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  Coldren, Larry A., 4,325,038, Cl. 333-195.000.
  Levy, Nicha, 4,324,575, Cl. 65-3.110.
  Morehouse, James E.; and Pedersen, Richard A., 4,325,099, Cl. 361-93.000.
  Pelletier, James A., 4,325,022, Cl. 324-52.000.
  Slusky, Susan E. G.; and Trambarulo, Ralph F., 4,325,144, Cl. 455-324.000.
  Van Dine, Gilbert A., 4,325,139, Cl. 375-28.000.
Belokin, Paul, Jr. Aluminum can with collapsible sidewall. 4,324,340, Cl. 220-1.00R.
Belthle, Heinz, to Fortuna-Werke Maschinenfabrik GmbH. Process for automatic feed of steady jaws. 4,324,073, Cl. 51-281.00R.
Bendefy nee Dobay, Erzsebet: *See*—
  Feuer, Laszlo; Furka, Arpad; Sebestyen, Ferenc; Hercsel nee Szepespataky, Jolan; and Bendefy nee Dobay, Erzsebet, 4,324,743, Cl. 260-513.00N.
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  Hart, Russell F., 4,325,095, Cl. 361-23.000.
  Sano, Frank M.; Sliwa, Robert A.; and Golden, Edward J., 4,324,168, Cl. 89-1.814.
Benkmann, Christian, to Linde Aktiengesellschaft. Removal of lubricant mists and lubricant vapors from a gaseous stream. 4,324,565, Cl. 55-23.000.
Benko, Pal; Gelleri, Andras; Hajos, Gyorgy; Messmer, Andras; Pallos, Laszlo; Petocz, Lujza; Kosoczky, Ibolya; Grasser, Katalin; Gorog, Peter; and Szirt nee Kiszelly, Eniko, to Egyt Gyogyszervegyeszeti Gyar. Aminoisoquinoline derivatives. 4,324,894, Cl. 544-128.000.
Benko, Pal: *See*—
  Messmer, Andras; Benko, Pal; Hajos, Gyorgy; Petocz, Lujza; Kosoczky, Ibolya; and Gorog, Peter, 4,324,786, Cl. 424-248.540.
Bensadoun, Michel. Electrode for a liquid rheostat, and a liquid rheostat including such an electrode. 4,325,049, Cl. 338-86.000.
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  Bensette, Leonard E.; and Bensette, Joann, 4,324,408, Cl. 280-7.130.
  Bensette, Leonard E.; and Bensette, Joann, 4,324,413, Cl. 280-205.000.
Bensette, Leonard E.; and Bensette, Joann. Ice to roller skate converter. 4,324,408, Cl. 280-7.130.
Bensette, Leonard E.; and Bensette, Joann. Unicycle with water balance. 4,324,413, Cl. 280-205.000.
Bentley, Stanley L., to Ransburg Corporation. Method for controlling the flow of coating material. 4,324,812, Cl. 427-8.000.
Beran, Anthony V. Endotracheal tube. 4,324,235, Cl. 128-207.150.
Berchem, Antoine: *See*—
  Sudan, Krishan K.; and Berchem, Antoine, 4,324,747, Cl. 164-11.000.
Berchtold, Max; and Jenny, Ernst, to BBC Brown, Bovari & Company, Limited. Apparatus for regulating a turbo-supercharger. 4,324,526, Cl. 415-48.000.
Berger, Michael, to Polaroid Corporation. Photographic processing composition containing polyol. 4,324,853, Cl. 430-243.000.
Bergmann, Erich; and Melet, Georges, to Battelle Memorial Institute. Process for depositing on substrates, by cathode sputtering, a self-lubricating coating of metal chalcogenides and the coating obtained by this process. 4,324,803, Cl. 428-472.000.
Bergmann, Horst: *See*—
  Erdmannsdorfer, Hans; Bergmann, Horst; and Daedel, Helmut, 4,324,572, Cl. 55-385.00R.
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Berry, Grant E.; Becker, Wayne A.; Bahr, Karl E.; Scagnelli, George J.; Molnar, Frank J.; McDonald, Ronald K.; and Manning, Harry F., to Talon, Inc. Method and apparatus for gapping and reinforcing slide fastener stringers. 4,324,034, Cl. 29-410.000.
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  Roberts, John S.; Bertus, Brent J.; McKay, Dwight L.; and Mark, H. Wayne, 4,324,648, Cl. 208-114.000.
Bethea, James R., to Noble Manufacturing Company. Tiling arrangement and method. 4,324,605, Cl. 156-247.000.
Bettencourt, Pierre A.; and Cleveland, Charles H., to North Pacific Products, Inc. Toy aircraft. 4,324,064, Cl. 46-81.000.

Betz Laboratories, Inc.: *See*—
Geiger, Gary E.; and May, Roger C., 4,324,684, Cl. 252-389.00A.
Snyder, William R.; and Feuerstein, Diane, 4,324,664, Cl. 210-701.000.
Beukema, Duane M.; and Knoblauch, Jack R., to Steelcase Inc. Height adjustable chair base. 4,324,382, Cl. 248-406.000.
Bewley, David K.; and Finding, Kenneth, to National Research Development Corporation. Variable neutron collimator. 4,324,979, Cl. 250-505.000.
Beyer, Karl-Heinz: *See*—
Mueller, Hans; Wulz, Klaus; Beyer, Karl-Heinz; and Streit, Werner, 4,324,724, Cl. 260-239.00E.
Biaggi, Roberto; and Quintini, Massimo, to Sigma Italiana Prodotti Chimici S.p.A. Production of vinyl chloride polymer. 4,324,878, Cl. 526-200.000.
BICC Limited: *See*—
Allebone, Brian H., 4,325,039, Cl. 333-237.000.
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Bidwell, Robert E.: *See*—
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Billett, Ronald J.; and Viitanen, Veikko K., to FMC Corporation. Apparatus for freezing confection material. 4,324,108, Cl. 62-345.000.
Bilow, Norman, to United States of America, Air Force. Diethynylbenzene-ethylnylpyrene copolymers. 4,324,830, Cl. 428-257.000.
Biotrine Corporation: *See*—
Gazzara, Peter; Burke, John W., Jr.; and Edwards, Rodney, Jr., 4,324,127, Cl. 73-3.000.
Birbara, Philip J., to United Aircraft Corporation. Catalyst for hydrazine decomposition and the method of producing the catalyst. 4,324,819, Cl. 427-283.000.
Bishop-Hall, Inc.: *See*—
Bishop, Michael K., 4,325,057, Cl. 340-539.000.
Bishop, Michael K., to Bishop-Hall, Inc. School bus approach notification method and apparatus. 4,325,057, Cl. 340-539.000.
Blair, Howard D.; and Milberg, Morton E., to Ford Motor Company. Process for joining silicon nitride based ceramic bodies. 4,324,356, Cl. 228-193.000.
Blake, John H., to FMC Corporation. Process and system for drying coal in a fluidized bed by partial combustion. 4,324,544, Cl. 432-14.000.
Blaser, Lawrence M.: *See*—
Johnson, Nicky M.; and Blaser, Lawrence M., 4,324,216, Cl. 123-413.000.
Blechschmitt, Kurt: *See*—
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Blinne, Gerd; Wurmb, Rolf; and Schmidt, Franz, to BASF Aktiengesellschaft. Preparation of amide-containing polyethers. 4,324,881, Cl. 528-173.000.
Bloch, Heinz, to BBC Brown, Boveri & Company Limited. Method and apparatus for regulating a steam turbine. 4,324,103, Cl. 60-663.000.
Bloch, Pierre G.: *See*—
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Blount, David H. Process for the production of cellulose-silicate products. 4,324,864, Cl. 521-100.000.
Bock, Manfred; Pedain, Josef; and Uerdingen, Walter, to Bayer Aktiengesellschaft. Process for the preparation of polyisocyanates containing isocyanurate groups and the use thereof. 4,324,879, Cl. 528-45.000.
Boehmke, Gunther: *See*—
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Boeing Company, The: *See*—
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Miller, Glen E., 4,324,981, Cl. 250-551.000.
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Bogoroditskaya, Irina V.: *See*—
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Boltze, Karl-Heinz; Dell, Hans-Dieter; and Jacobi, Haireddin, to Troponwerke GmbH & Co., KG. 2-Oxo-1-pyrrolidineacetic acid compounds and their medicinal use. 4,324,787, Cl. 424-250.000.
Bom, Cornelis J. G.: *See*—
van der Lely, Ary; and Bom, Cornelis J. G., 4,324,093, Cl. 56-377.000.
Bommer, Raymond, to Cabinet Patco. Process for putting a lip on a thick-walled tube of flexible material, and apparatus for practicing same. 4,324,755, Cl. 264-312.000.
Bonicel, Jean P.; Cottevielle, Christian; Maucolot, Michel; and Prigent, Madeleine, to Societe Anonyme dite: Les Cables de Lyon. Fireproofed insulating material for an electric cable. 4,324,863, Cl. 521-83.000.
Boozalis, Ted S.: *See*—
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Borgren, Peter M., to Hydrodynamic Energy Systems Corp. Portable hydrogenerating apparatus. 4,324,984, Cl. 290-54.000.
Borland, Walter G.; and Brehse, Robert F., to General Electric Company. Clamp assisted cycle control regulating system. 4,325,008, Cl. 315-241.00R.
Born, John W., to B. F. Goodrich Company, The. Sampling apparatus and process. 4,324,146, Cl. 73-863.120.
Borst, Roger L., to Phillips Petroleum Company. Uranium exploration. 4,324,555, Cl. 23-230.0EP.
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Bosch, Warren E.: *See*—
Kruger, Frederick W., Jr.; and Bosch, Warren E., 4,324,405, Cl. 273-231.000.
Bosher, John L. Solvent and heat recovery system for drying oven. 4,324,052, Cl. 34-27.000.
Boushek, Sidney J., Jr.; and Unterzuber, Travis B., to Deere & Company. Belt drive system with clutch. 4,324,552, Cl. 474-118.000.
Bowling, Joseph E.; Carpenter, James H.; and Rowe, Russell L., to Kennecott Corporation. Sand lump crushing device. 4,324,367, Cl. 241-60.000.
BP Chemicals Limited: *See*—
Johnstone, Alexander, 4,324,692, Cl. 252-429.00B.
Bradshaw, John; Oxford, Alexander W.; and Scopes, David I. C., to Glaxo Group Limited. Antihistaminic imidazoles. 4,324,792, Cl. 424-257.000.
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Hippensteel, John H.; and Brady, Rupert J., 4,324,055, Cl. 37-42.0VL.
Branson International Plasma Corporation: *See*—
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Brantley, Zachry G.; and Goode, Sidney H., to Hoechst Fibers Industries, Div. of American Hoechst Corp. Apparatus for handling textile filamentary material. 4,324,353, Cl. 226-118.000.
Brauer, Malcolm M. Synthesized target system. 4,324,977, Cl. 250-222.00R.
Braun, Beatrice: *See*—
Braun, Sam M.; and Braun, Beatrice, 4,324,250, Cl. 128-395.000.
Braun, Sam M.; and Braun, Beatrice. Body slenderizing method. 4,324,250, Cl. 128-395.000.
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Borland, Walter G.; and Brehse, Robert F., 4,325,008, Cl. 315-241.00R.
Brennan, John J.; and Prewo, Karl M., to United Technologies Corporation. Continuous length silicon carbide fiber reinforced ceramic composites. 4,324,843, Cl. 428-697.000.
Brett, William C., to Trane Company, The. Control for vehicle temperature conditioning system. 4,324,286, Cl. 165-2.000.
Brima, Thomas S.: *See*—
Horvitz, David; and Brima, Thomas S., 4,324,909, Cl. 560-246.000.
Broadt, David R., to GTE Products Corporation. Photoflash array with selective pairing of lamps and switching of common circuit. 4,324,543, Cl. 431-359.000.
Broadt, David R.; and Audesse, Emergy G., to GTE Products Corporation. Multilamp photoflash unit with functional label. 4,325,104, Cl. 362-11.000.
Brockway Glass Company, Inc.: *See*—
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Brodeur, Lester R., to Sanders Associates, Inc. Method and apparatus for removing noise in a LORAN-C navigation receiver. 4,325,067, Cl. 343-103.000.
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Bromley, Emily I.: *See*—
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Broniarek, Czeslaw A.: *See*—
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Bronner, Jurgen, to Akzona Incorporated. Three-dimensional exchange element for liquid guidance in liquid-gas contact systems. 4,324,749, Cl. 261-112.000.
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Eisentraut, Kent J.; Ross, William D.; Hillan, William J.; Brooks, Joseph J.; and Duffy, Thomas G., 4,324,758, Cl. 422-61.000.
Brown, Arthur E., to Ingersoll-Rand Company. Rotary positive displacement machine with specific lobed rotor profiles. 4,324,538, Cl. 418-191.00R.
Brown, Bruce J. Acoustic coupling system. 4,324,951, Cl. 179-1.00B.
Brown, Jack, to Singer Company, The. Auxiliary sewing machine motor braking. 4,324,191, Cl. 112-277.000.
Brown, Peter W.: *See*—
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Brown & Williamson Tobacco Corporation: *See*—
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Bruggi, Mario. Machine for roughing a peripheral vamp edge of a shoe. 4,324,118, Cl. 69-6.500.
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Bruno, Salvatore A., to Du Pont de Nemours, E. I., and Company. 1-(4-Alkylaminonaphthylazo)-4-nitrobenzene disperse dyes. 4,324,721, Cl. 260-196.000.
Buccicone, Velio S., to Bucciconi Engineering Co., Inc. Metal sheet handling machine. 4,324,522, Cl. 414-51.000.
Bucciconi Engineering Co., Inc.: *See*—
Buccicone, Velio S., 4,324,522, Cl. 414-51.000.
Buchfeld, Jurgen, to Goetze AG. Apparatus for orienting out-of-round workpieces. 4,325,125, Cl. 364-474.000.
Buck Chemisch-Technische Werke GmbH & Co.: *See*—
Prahauser, Georg; Schmidlin, Robert; and Trede, Wolfgang, 4,324,183, Cl. 102-334.000.
Buczynski, Neal J.; and Kern, Edward W., Jr., to TRW Inc. Snap-in bearing retainer and bearing. 4,324,444, Cl. 308-201.000.
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Bugaut, Andree; and Junino, Alex, to L'Oreal. Hair dyeing compositions containing at least one 2,4-diamino-alkylbenzene as coupler. 4,324,553, Cl. 8-407.000.
Bulst, Wolf E.; and Eschler, Hans, to Siemens Aktiengesellschaft. Acoustic wave filter. 4,325,037, Cl. 333-194.000.
Burch, Hadley K., to B/K Patent Development, Inc. Circuit breaker. 4,325,046, Cl. 337-56.000.
Bureau de Recherches Geologiques et Minieres: *See*—
Henchiri, Amar; Cecile, Jean-Luc; Baudet, Gerard; Barbery, Gilles; and Bloise, Rene, 4,324,653, Cl. 209-167.000.
Burke, John W., Jr.: *See*—
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Burkhardt, Friedrich; and Staiger, Hans. Machine including a clamping device for locating a workpiece in a given processing position. 4,324,027, Cl. 29-33.00P.
Burnham, Paul W., to Xerox Corporation. Development system. 4,324,490, Cl. 355-3.0DD.
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Quiogue, Virgilio, 4,325,111, Cl. 363-17.000.
Wiener, Daniel P., 4,325,056, Cl. 340-347.0DD.
Wolfe, John E., 4,324,999, Cl. 313-336.000.
Wolfe, John E.; and Swanson, Lynwood W., 4,325,000, Cl. 313-336.000.
Burston, Jonathan D.; and Henley, Robert G., to Barrett Burston (Australia) Limited. Dust retention device. 4,324,524, Cl. 414-291.000.
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Buttaravoli, Philip M., to E-Med Corporation. Intravenous catheter and tubing securement and dressing device with a window over the puncture or wound site. 4,324,237, Cl. 128-214.00R.
Buzzi, Gunther; and Faisst, Magdalena, to Hans Grohe GmbH & Co. KG. Adjustable shower head. 4,324,364, Cl. 239-383.000.
Byers, Thomas L. Apparatus for modifying images on photographic film. 4,324,489, Cl. 355-84.000.
BYK Gulden Lomberg Chemische Fabrik Gesellschaft mit beschrankter Haftung: *See*—
Eistetter, Klaus; and Rapp, Erich, 4,324,796, Cl. 424-278.000.
Byrt, Graham A.; and Graves, Bernard A., to Masson Scott Thrissell Engineering Limited. Stacking devices and platforms therefor. 4,324,397, Cl. 271-217.000.
C-D Marketing Ltd.: *See*—
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Beauchamp, Jesse L.; and George, Patricia M., 4,324,854, Cl. 430-296.000.
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Campagnolo, Tullio. Freewheel device for bicycles. 4,324,323, Cl. 192-64.000.
Cann, Peter L., to Carrier Corporation. Series compressor refrigeration circuit with liquid quench and compressor by-pass. 4,324,105, Cl. 62-196.00A.
Cannaday, Sheridan S. Cushioning devices. 4,324,012, Cl. 5-432.000.
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Sato, Yasushi; Saito, Seiji; and Ayata, Naoki, 4,325,086, Cl. 358-296.000.
Caputi, William J., Jr., to Eaton Corporation. Bistatic imaging radar processing for independent transmitter and receiver flightpaths. 4,325,065, Cl. 343-5.0CM.
Carl Freudenberg, Firma: *See*—
Schmitt, Wilhelm; and Taniguchi, Toyotake, 4,324,097, Cl. 60-293.000.
Carlson, David H. J., to UOP Inc. Catalytic composite and process for use. 4,324,650, Cl. 208-206.000.
Carlson, Robert C., to Minnesota Mining and Manufacturing Company. Controlling odor in photopolymerization. 4,324,679, Cl. 252-182.000.
Carlsson, Kurt I., to Jonsereds Aktiebolag. Motor test stand. 4,324,134, Cl. 73-117.100.
Carpenter, James H.: *See*—
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Carpenter, Rodney W., to Clayton & Lambert Manufacturing Co. Anti-pollution rotary-sweep grain drier. 4,324,053, Cl. 34-236.000.
Carr, John W. Disposable sitz bath. 4,324,008, Cl. 4-445.000.
Carrera, Angelo. Device for disposing a card roving in a fixed box. 4,324,021, Cl. 19-159.00R.
Carrier Corporation: *See*—
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Carson Products Company: *See*—
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Carter, Barry E.: *See*—
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Cartwright, David, to Imperial Chemical Industries Limited. Process for preparing 2-chloro-5-trichloromethylpyridine. 4,324,627, Cl. [illegible]
Casio Computer Co., Ltd.: *See*—
Tamaki, Nobuo, 4,324,991, Cl. 307-443.000.
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Balzer, David J.; and Kessinger, Orville E., 4,324,303, Cl. 180-9.500.
Clarke, John M., 4,324,535, Cl. 418-51.000.
Dorris, Robert D., 4,324,155, Cl. 74-834.000.
Durham, Donald F., 4,324,114, Cl. 64-17.00A.
Fischer, Robert L., 4,324,435, Cl. 299-37.000.
Golan, Kenneth F.; Goloff, Charles N.; and Schmitt, James L., 4,324,274, Cl. 137-625.680.
Shank, Dane G., 4,324,536, Cl. 418-53.000.
Wulff, Bernard J., 4,324,412, Cl. 280-163.000.
Cavaler, Paul. Furniture spring assembly. 4,324,011, Cl. 5-248.000.
Cazals, Claude O. E.; and Ducoin, Jacques H. C., to Centre de Diffusion de la Methode Champenoise. Apparatus for treating wine by the champagne method. 4,324,172, Cl. 99-277.100.
Cecile, Jean-Luc: *See*—
Henchiri, Amar; Cecile, Jean-Luc; Baudet, Gerard; Barbery, Gilles; and Bloise, Rene, 4,324,653, Cl. 209-167.000.
Celtite, Inc.: *See*—
Patel, Natvarial K.; and Plaisted, Anthony C., 4,324,592, Cl. 106-85.000.
Centre de Diffusion de la Methode Champenoise: *See*—
Cazals, Claude O. E.; and Ducoin, Jacques H. C., 4,324,172, Cl. 99-277.100.
Chafetz, Harry: *See*—
Levine, Stephen A.; Schlicht, Raymond C.; and Chafetz, Harry, 4,324,672, Cl. 252-49.700.
Chai, Bruce H.; Buehler, Ernest; and Flynn, John J., to Allied Corporation. Hydrothermal process and apparatus for synthesizing crystalline powders. 4,324,773, Cl. 423-311.000.
Challet, Jacques, to Constructions Electriques. Electronic safety device for a fluid, particularly gaseous, fuel burner. 4,324,542, Cl. 431-78.000.
Champlin, Charles L., to Packaging Corporation of America. Carrier for a plurality of articles. 4,324,328, Cl. 206-194.000.
Chan, Yat S.: *See*—
Tantram, Anthony D. S.; and Chan, Yat S., 4,324,632, Cl. 204-195.00R.
Chang, Chuan C.; Cooper, James A., Jr.; Kahng, Dawon; and Murarka, Shyam P., to Bell Telephone Laboratories, Incorporated. Method of fabricating MOS field effect transistors. 4,324,038, Cl. 29-571.000.
Charles Stark Draper Laboratory, Inc., The: *See*—
Gustavson, Richard E.; Selvage, Craig C.; and Whitney, Daniel E., 4,324,032, Cl. 29-407.000.
Charlton, Webster T., to Stone and Webster Eng. Cor. Apparatus for lubricating electrical cable. 4,324,315, Cl. 184-15.00R.
Charnah, Richard M.: *See*—
Ballard, Denis G.; Charnah, Richard M.; Droughton, John F.; and Rideal, Graham R., 4,324,838, Cl. 428-402.000.
Charnley, John, to Charnley Surgical Inventions Limited. Blank for acetabuler prosthesis. 4,324,006, Cl. 3-1.912.
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Charnley, John, 4,324,006, Cl. 3-1.912.
Chasteen, Jack W., to University of Dayton. Method for cleaning metal parts. 4,324,594, Cl. 134-2.000.
Chattem, Inc.: *See*—
Pratt, Charles E., 4,324,670, Cl. 252-37.700.
Chausse, Leon C., to Inland Manufacturing Company. Heavy duty radiator bench and hoist. 4,324,393, Cl. 269-46.000.

Chemetron Railway Products, Inc.: *See*—
  Frost, Ralph S., 4,324,048, Cl. 33-180.00R.
Chemische Werke Huels, AG: *See*—
  Hahn, Karl; and Kampf, Wolfgang, 4,324,939, Cl. 585-438.000.
Chen, Mabel M.: *See*—
  Sandler, Stanley R.; and Chen, Mabel M., 4,324,910, Cl. 564-60.000.
Chermenskay, Taisia S.: *See*—
  Redikultsev, Jury V.; Litvinenko, Leonid A.; Petrikevich, Svetlana B.; Chermenskay, Taisia S.; Vershkov, David S.; Nesterov, Boris F.; and Bogoroditskaya, Irina V., 4,324,762, Cl. 422-106.000.
Chevron Research Company: *See*—
  MacKinnon, Hugh S., 4,324,674, Cl. 252-78.500.
Chiappetti, Arthur B., to Kleinke, Bernard L., a part interest. Animal feeding apparatus. 4,324,203, Cl. 119-51.110.
Chicha, George. Wall construction. 4,324,081, Cl. 52-432.000.
Chicoye, Etzer: *See*—
  Goldstein, Henry; Fly, Walter; Ting, Patrick; and Chicoye, Etzer, 4,324,810, Cl. 426-600.000.
Chik, Kiu-Chi D.: *See*—
  Dyment, John C.; Look, Christopher M.; and Chik, Kiu-Chi D., 4,325,034, Cl. 372-50.000.
Chilenskas, Albert A.: *See*—
  Kaun, Thomas D.; and Chilenskas, Albert A., 4,324,846, Cl. 429-112.000.
Chinoin Gyogyszer es Vegyeszeti Termekek Gyara Rt.: *See*—
  Feuer, Laszlo; Furka, Arpad; Sebestyen, Ferenc; Hercsel nee Szepespataky, Jolan; and Bendefy nee Dobay, Erzsebet, 4,324,743, Cl. 260-513.00N.
  Huhn, Magda; Somfai, Eva; Szabo, Gabor; Resovszki, Gabor; and Gneth nee Zalantai, Livia, 4,324,903, Cl. 560-82.000.
Chisso Corporation: *See*—
  Hamada, Masami; Yamada, Sadahiko; Suzuki, Atsushi; and Masuda, Jun, 4,324,875, Cl. 526-115.000.
Chouteau, Henri; and Lagros, Gilbert. Method and apparatus for cleaning conveyor belts by means of a vibrating cable or group of cables. 4,324,327, Cl. 198-497.000.
Christian, John B.; and Tamborski, Christ, to United States of America, Air Force. Grease compositions based on fluorinated polysiloxanes. 4,324,671, Cl. 252-49.600.
Christian, John B.; and Tamborski, Christ, to United States of America, Air Force. Grease compositions based on polyfluoroalkylethers. 4,324,673, Cl. 252-51.50R.
Ciaccia, Vittorio: *See*—
  Parrini, Paolo; Ciaccia, Vittorio; Corrieri, Guglielmo; and Righi, Gian P., 4,324,831, Cl. 428-288.000.
Ciba Geigy AG: *See*—
  Tschopp, Paul, 4,324,898, Cl. 548-184.000.
Ciba-Geigy Corporation: *See*—
  Kosche, Horst, 4,324,420, Cl. 282-27.500.
  Vogel, Christian; and Aebi, Rudolf, 4,324,580, Cl. 71-118.000.
  Zondler, Helmut; and Moser, Roland, 4,324,739, Cl. 260-465.400.
Cicerone, Aurelio, to Officine Savio S.p.A. Semiautomatic device for doffing spools from a spindle bench. 4,324,094, Cl. 57-267.000.
Cilderman, Janis J.: *See*—
  Sun, Lu; and Cilderman, Janis J., 4,324,360, Cl. 238-349.000.
Ciongwa, Joachim: *See*—
  Kruger, Roland; Ciongwa, Joachim; Smusch, Gunther; and Ehrlinger, Klaus, 4,324,264, Cl. 134-68.000.
City Technology Limited: *See*—
  Tantram, Anthony D. S.; and Chan, Yat S., 4,324,632, Cl. 204-195.00P.
Clark Equipment Company: *See*—
  Gaylord, Richard P.; and Miller, Wendell E., 4,324,171, Cl. 92-189.000.
Clark, O. Melville, to General Semiconductor Industries, Inc. Four terminal pulse suppressor. 4,325,097, Cl. 361-56.000.
Clarke, John M., to Caterpillar Tractor Co. Slant axis rotary piston mechanism with fixed sinuous partition in grooved rotor. 4,324,535, Cl. 418-51.000.
Clayton & Lambert Manufacturing Co.: *See*—
  Carpenter, Rodney W., 4,324,053, Cl. 34-236.000.
Clayton Manufacturing Company: *See*—
  Stevenson, David J., 4,324,133, Cl. 73-117.000.
Clement, Donald R.; and Nikirk, Roger G., to Motorola, Inc. Method for the controlled melting of semiconductor bodies. 4,324,610, Cl. 156-601.000.
Clendenen, Dorothy. Aid for starting motor vehicles. 4,324,308, Cl. 180-115.000.
Cleveland, Charles H.: *See*—
  Bettencourt, Pierre A.; and Cleveland, Charles H., 4,324,064, Cl. 46-41.000.
Coates, Clarence A., Jr.: *See*—
  Weaver, Max A.; and Coates, Clarence A., Jr., 4,324,719, Cl. 260-152.000.
Cocron, Istvan: *See*—
  Lermann, Peter; Cocron, Istvan; and Fauth, Gunter, 4,324,463, Cl. 354-25.000.
Cohen, Leonard: *See*—
  Seaton, John C.; and Cohen, Leonard, 4,325,078, Cl. 358-117.000.
Cojean, Maurice; and Colin, Jean-Paul, to Ateliers et Chantiers de Bretagne ACB. Device for removing and depositing loads between two supports in repeated relative vertical movement. 4,324,385, Cl. 254-270.000.
Colamonico, Armando, to Societa Italiana Telecomunicazioni Siemens S.p.A. Frequency discriminator for signal receiver of telecommunication system. 4,325,030, Cl. 328-140.000.
Colardelle, Joel S.; Girard, Pierre; and Pillou, Jean-Pierre M., to International Standard Electric Corporation. Analog-to-digital converter. 4,325,055, Cl. 340-347.0AD.
Coldren, Larry A., to Bell Telephone Laboratories, Incorporated. SAW Resonator filters with improved temperature stability. 4,325,038, Cl. 333-195.000.
Colin, Jean-Paul: *See*—
  Cojean, Maurice; and Colin, Jean-Paul, 4,324,385, Cl. 254-270.000.
Colley, Stephen R.; Cox, George W.; Rattner, Justin R.; and Swanson, Roger C., to Intel Corporation. Data processing system. 4,325,120, Cl. 364-200.000.
Collombin, Andre M.: *See*—
  Curetti, Ennio G.; and Collombin, Andre M., 4,324,541, Cl. 425-562.000.
Colombo, Roberto, to Lavorazione Materie Plastiche L.M.P-S.p.A. Mixer-cooler device for the extrusion of thermoplastic foams. 4,324,493, Cl. 366-79.000.
Coloroll Limited: *See*—
  Griffin, Gerald J. L., 4,324,709, Cl. 523-210.000.
Combustion Engineering, Inc.: *See*—
  Rehm, Stephen J.; and Lee, Young R., 4,324,734, Cl. 260-403.000.
Cominco Ltd.: *See*—
  Kerby, Robert C., 4,324,621, Cl. 204-1.00T.
Communications Satellite Corp.: *See*—
  Stockel, Joseph F., 4,324,845, Cl. 429-101.000.
Compagnie Industrielle des Telecommunications: *See*—
  Le Brozec, Pierre; Ferret, Francois; and Dousseux, Pierre, 4,325,053, Cl. 340-347.0DD.
Compass Electronics: *See*—
  Dykstra, Donald W.; and Calvin, Samuel E., 4,325,027, Cl. 324-329.000.
Conn, James F.; and Jensen, Leofwin A., to Monsanto Company. Process for producing hydroxyapatite. 4,324,772, Cl. 423-309.000.
Connor, Thomas J.: *See*—
  Robertson, Robert F.; Connor, Thomas J.; and Rodkey, F. Lee, 4,324,556, Cl. 23-230.00B.
Conoco Inc.: *See*—
  Fonseca, Anthony G., 4,324,560, Cl. 44-1.0SR.
Conradt, James C. Apparatus for the preparation of shish kabobs. 4,324,174, Cl. 99-421.00H.
Constructions Electriques: *See*—
  Challet, Jacques, 4,324,542, Cl. 431-78.000.
Conti, Joseph A.: *See*—
  Albright, David B.; and Conti, Joseph A., 4,324,396, Cl. 271-125.000.
Continental Group, Inc., The: *See*—
  Hewitt, Norman S., 4,324,190, Cl. 108-51.100.
  Moller, Jens L., 4,324,343, Cl. 220-270.000.
  Murkowski, Rita J., 4,324,357, Cl. 229-37.00E.
Convers, Alaio: *See*—
  Torck, Bernard; Convers, Alaio; Duee, Didier; and Mikitenko, Paul, 4,324,924, Cl. 568-697.000.
Conway, Tim D.; and Paddock, Paul F., to Sunkist Growers, Inc. Method and apparatus for measuring the surface size of an article. 4,324,335, Cl. 209-586.000.
Cooper, Frank W., Jr.; and Golick, Leonard R., to Westinghouse Electric Corp. Plural coil eddy current mapping probe. 4,325,026, Cl. 324-[illegible]
Cooper, James A., Jr.: *See*—
  Chang, Chuan C.; Cooper, James A., Jr.; Kahng, Dawon; and Murarka, Shyam P., 4,324,038, Cl. 29-571.000.
Cooper, Julius, to Ideal Toy Corporation. Balance operated game. 4,324,065, Cl. 46-120.000.
Corbett, Marshall J.; and London, Arnold. Thermal detection system. 4,325,145, Cl. 455-600.000.
Corcoran, Richard A.; Keenan, William A.; Michaelides, Demetrios; and Yun, Bob H., to International Business Machines Corporation. Automated channel doping measuring circuit. 4,325,025, Cl. 324-158.00R.
Cordes, William F., III; Goodman, Donald; and Miller, Robert S., to Tenneco Chemicals, Inc. Production of vinyl halide polymers with dialkyl, hydroxy phenyl alkanoic ester of polyhydric alcohols. 4,324,874, Cl. 526-84.000.
Cordier, Georges, to Rhone-Poulenc Agrochimie. Process for preparation of anilines substituted by chlorine in the meta-position. 4,324,914, Cl. 564-412.000.
Corradi, Gabriel, to Sarl dite: Astin-France-Assistance Technique Industrielle. Humidifier arrangement for a travelling hydrophilic web. 4,324,609, Cl. 156-470.000.
Corrieri, Guglielmo: *See*—
  Parrini, Paolo; Ciaccia, Vittorio; Corrieri, Guglielmo; and Righi, Gian P., 4,324,831, Cl. 428-288.000.
Cosyns, Jean; Juguin, Bernard; Le Page, Jean-Francois; and Miquel, Jean, to Institut Francais du Petrole. Process for upgrading C_4 olefinic cuts. 4,324,938, Cl. 585-332.000.
Cosyns, Jean: *See*—
  Le Page, Jean-Francois; Cosyns, Jean; Miquel, Jean; and Juguin, Bernard, 4,324,646, Cl. 208-71.000.
Cottevielle, Christian: *See*—
  Bonicel, Jean P.; Cottevielle, Christian; Maucolot, Michel; and Prigent, Madeleine, 4,324,863, Cl. 521-85.000.
Cottingham, Richard L.; Thorpe, David J.; and Bickerstaff, Eric, to Thormack Sealants Limited. Method of sealing bridge deck joints. 4,324,504, Cl. 404-74.000.

Cotton, John F.: *See*—
  Ristuccia, Donald J.; and Cotton, John F., 4,324,961, Cl. 200-150.00R.
Coughlan, Edward H., to Polaroid Corporation. SX-70 Film pack with battery hold down structure. 4,324,473, Cl. 354-276.000.
Cowdery, James R.: *See*—
  Khoylian, Rouzas R.; Cowdery, James R.; and Park, David B., 4,324,326, Cl. 198-461.000.
Cox, George W.: *See*—
  Colley, Stephen R.; Cox, George W.; Rattner, Justin R.; and Swanson, Roger C., 4,325,120, Cl. 364-200.000.
Cox, Howard E.; and Rush, Dale L. Temperature control system. 4,324,224, Cl. 126-422.000.
Craft, William K., to Batesville Casket Company, Inc. Cremation urn with readily accessible memorabilia compartment. 4,324,026, Cl. 27-1.000.
Crandall, Janice L.; and Crandall, Richard W. Hosiery repair kit. 4,324,603, Cl. 156-584.000.
Crandall, Richard W.: *See*—
  Crandall, Janice L.; and Crandall, Richard W., 4,324,603, Cl. 156-584.000.
Craven, Mark. Router guide apparatus for cutting printing plates. 4,324,514, Cl. 409-179.000.
Crawford, Russell C., III. Variable cross section V-belt. 4,324,147, Cl. 74-37.000.
Creek, Ronald B.: *See*—
  Sowers, Michael G.; Creek, Ronald B.; and DeFur, Donovan D., 4,324,617, Cl. 376-405.000.
Crescent Engineering Company: *See*—
  Hack, Albert G., 4,324,652, Cl. 209-3.000.
Crompton Parkinson Limited: *See*—
  Stephenson, Edward G.; and Taylor, Tom, 4,324,754, Cl. 264-268.000.
Cross, Marvin G., to Abbott Laboratories. Feminine syringe. 4,324,242, Cl. 128-232.000.
Cumbo, Charles C., to Du Pont de Nemours, E. I., and Company. Process for preparing alkanediols by electrochemical coupling of halohydrins. 4,324,625, Cl. 204-72.000.
Cummins Engine Company, Inc.: *See*—
  Kasting, Edward W.; Glasson, Richard E.; and Primus, Roy J., 4,324,213, Cl. 123-196.00A.
Cunningham, Frank D.; Witt, Michael A.; and Hill, Robert M., to Perry Oceanographics, Inc. Tender for submarine cable. 4,324,195, Cl. 114-312.000.
Curetti, Ennio G.; and Collombin, Andre M., to Motosacoche S.A. Apparatus for manufacturing an object in plastics material. 4,324,541, Cl. 425-562.000.
Cutler, Christopher R., to Exxon Production Research Company. Method for snubbing or restraining a cable. 4,324,193, Cl. 114-199.000.
Cyborex Laboratories, Inc.: *See*—
  Sullivan, C. Gardner, II; and Hedges, Walter P., 4,324,987, Cl. 307-35.000.
Dagiel, Richard T., to Aetna Bearing Company. Sealed thrust bearing assembly. 4,324,443, Cl. 308-187.100.
Dahlhausen, Gebhard; Dibbern, Hans-Werner; Fulberth; and Ross, Gerhard, to Hoechst Aktiengesellschaft. Method for treating hypertonia with N-(2-furfuryl)-4-chloro-5-sulfamoyl-anthranilic acid and preparations thereof. 4,324,779, Cl. 424-20.000.
Dahm, Manfred; Jabs, Gert; and Wegner, Christian, to Bayer Aktiengesellschaft. Process for making carbonless copying paper. 4,324,817, Cl. 427-150.000.
Dai Nippon Insatsu Kabushiki Kaisha: *See*—
  Nagano, Katsusuke, 4,324,179, Cl. 101-170.000.
Daimler-Benz Aktiengesellschaft: *See*—
  Erdmannsdorfer, Hans; Bergmann, Horst; and Daudel, Helmut, 4,324,572, Cl. 55-385.00R.
Dainippon Screen Seizo Kabushiki Kaisha: *See*—
  Nishihama, Takamichi, 4,324,487, Cl. 355-73.000.
  Nomura, Norimasa; and Yoshida, Atsushi, 4,324,480, Cl. 354-320.000.
Daley, Michael L. Method and apparatus for testing flicker fusion frequency. 4,324,460, Cl. 351-36.000.
Dalisa, Andrew L., to U.S. Philips Corporation. Electrophoretic projection display systems. 4,324,456, Cl. 350-362.000.
Damico, Frank M.: *See*—
  Houlberg, Don M.; Anderson, Larry D.; and Damico, Frank M., 4,324,010, Cl. 5-68.000.
Damon Corporation: *See*—
  Lim, Franklin; and Moss, Richard D., 4,324,683, Cl. 252-316.000.
Danckert, Hermann; and Leptien, Helmut, to Volkswagenwerk Aktiengesellschaft. Internal combustion engine with a sound insulating casing. 4,324,208, Cl. 123-195.00C.
Danfoss A/S: *See*—
  Molgaard, Aage, 4,324,196, Cl. 116-277.000.
Dankese, Joseph P. Ion exchange membranes. 4,324,636, Cl. 204-296.000.
Danly Machine Corporation: *See*—
  Heiberger, Francis E., 4,325,015, Cl. 318-625.000.
Daudel, Helmut: *See*—
  Erdmannsdorfer, Hans; Bergmann, Horst; and Daudel, Helmut, 4,324,572, Cl. 55-385.00R.
David, Lawrence D.: *See*—
  West, Robert C.; and David, Lawrence D., 4,324,901, Cl. 556-430.000.
Davis, Adrian F., to Beecham Group Limited. Pharmaceutical composition containing parcetamol. 4,324,778, Cl. 424-10.000.
Davis, Bayard C.; and Heyden, Donald H., to Alarma Systems Incorporated. Method of and apparatus and system for determining temperature conditions. 4,324,138, Cl. 73-341.000.
Davis, James A.; and Koch, Robert C., to Firestone Tire & Rubber Company, The. Naturally occurring thermoplastic resins as a substitute for various petroleum-derived materials in rubber stocks. 4,324,710, Cl. 524-76.000.
Davis, Loren L., to Kraft, Inc. Preparation of a soft cream cheese product. 4,324,804, Cl. 426-36.000.
Davis, Richard P. B.; Emblem, Harold G.; Shaw, Richard D.; and Shelley, Stanley J., to Zirconal Processes Limited. Method for reducing the thermal inertia of furnace or oven walls. 4,324,602, Cl. 110-71.000.
Davis, Steven S., to Envirotech Corporation. Twin belt vacuum washer. 4,324,116, Cl. 68-158.000.
Dawdy, Jack A.: *See*—
  Rutkowski, Edward J.; Mapes, Carl R.; Wing, Steven D.; and Dawdy, Jack A., 4,324,082, Cl. 52-481.000.
Dawson, Charles W.: *See*—
  Parmet, Arthur A.; and Dawson, Charles W., 4,325,117, Cl. 364-200.000.
Daystrom Limited: *See*—
  Riech, Volker; Saupe, Wolfgang; and Sorgenicht, Dietrich, 4,324,126, Cl. 73-1.00J.
DBS, Inc.: *See*—
  Maul, John A., Sr., 4,324,181, Cl. 101-269.000.
de la Guardia, Mario, to Carson Products Company. Hair straightening process and hair curling process and compositions therefor. 4,324,263, Cl. 132-7.000.
Dean, John J.; and Helzig, Lloyd M., to NIPAC, Ltd. Combustible fuel pellets formed from botanical material. 4,324,561, Cl. 44-10.00E.
de Araujo Pinheiro, Edwin J.: *See*—
  Kranz, Roger H.; de Araujo Pinheiro, Edwin J.; and Tuttle, James A., 4,325,116, Cl. 364-200.000.
Deb, Satyendra K., to American Cyanamid Company. Multilayered electroplatographic element comprising ion conductive and electrochromic layers. 4,324,622, Cl. 430-63.000.
Deere & Company: *See*—
  Boushek, Sidney J., Jr.; and Unterzuber, Travis B., 4,324,552, Cl. 474-118.000.
DeFur, Donovan D.: *See*—
  Sowers, Michael G.; Creek, Ronald B.; and DeFur, Donovan D., 4,324,617, Cl. 376-405.000.
Degoulet, Patrice E.: *See*—
  Hirel, Jean C.; Goupy, Francois M.; Bloch, Pierre G.; and Degoulet, Patrice E., 4,324,663, Cl. 210-646.000.
Delguidice, Henry L.: *See*—
  Weisenburger, Lawrence P.; and Delguidice, Henry L., 4,324,450, Cl. 339-97.00R.
Dell, Hans-Dieter: *See*—
  Boltze, Karl-Heinz; Dell, Hans-Dieter; and Jacobi, Haireddin, 4,324,787, Cl. 424-250.000.
Dembicki, Michael T.; and Poad, William J., to Brockway Glass Company, Inc. Preparation of glass container for thermoplastic closure. 4,324,601, Cl. 156-69.000.
Demler, Walter R.; Nagpal, Krishen L.; Dollard, Richard M.; Odin, Eugene; and Donahue, Donald T., to Buffalo Color Corporation. Process for the purification of 4,4' dihydroxydiphenyl. 4,324,926, Cl. 568-[illegible]
Denison, Early B., to Shell Oil Company. Steering drill string. 4,324,297, Cl. 175-45.000.
Denkinger, Charles. Separating wall. 4,324,825, Cl. 428-99.000.
Design + Process Engineering Inc.: *See*—
  Khoylian, Rouzas R.; Cowdery, James R.; and Park, David B., 4,324,326, Cl. 198-461.000.
Dessau, Ralph M., to Mobil Oil Corporation. Shape selective acid catalyzed reactions of olefins over crystalline zeolites. 4,324,940, Cl. 585-466.000.
DeVita, Joseph; and Pirzadeh, Brian, to Western Digital Corporation. Instruction fetch circuitry for computers. 4,325,118, Cl. 364-200.000.
Devlin, Thomas A., to Vultron, Incorporated. Monitor for bus destination signs. 4,325,062, Cl. 340-717.000.
Dewoolfson, Bruce H. Apparatus for collection of metallic containers and method therefor. 4,324,325, Cl. 194-4.00C.
Dey, Ervin J., to SPS Technologies, Inc. Panel fastener assembly with retainer ring. 4,324,517, Cl. 411-353.000.
Dhein, Rolf; Reuter, Knud; Rudolph, Hans; and Pfitzner, Jorg, to Bayer Aktiengesellschaft. β-Hydroxybutyric acid polyesters, a process for their production and their use as starting materials for lacquers. 4,324,880, Cl. 528-80.000.
Dhein, Rolf: *See*—
  Eimers, Erich; and Dhein, Rolf, 4,324,934, Cl. 585-21.000.
Dian, Walter, to Walter Dian, Inc. Golf putter. 4,324,404, Cl. 273-169.000.
Diaz, Juan A. Apparatus for removing a grinding wheel. 4,324,030, Cl. [illegible]
Dibbern, Hans-Werner: *See*—
  Dahlhausen, Gebhard; Dibbern, Hans-Werner; Fulberth; and Ross, Gerhard, 4,324,779, Cl. 424-20.000.
Diemolding Corporation: *See*—
  Puderbaugh, George, 4,324,260, Cl. 128-728.000.
Digital Communications Corporation: *See*—
  Gooch, Robert P., 4,325,085, Cl. 358-261.000.

Dil, Jan G.; and Heemskerk, Jacobus P. J., to U.S. Philips Corporation. Optical record carrier and apparatus for reading it. 4,325,135, Cl. 369-110.000.
Diller, Isaac M. Method for the activation of a composition for fused bath electrolysis. 4,324,624, Cl. 204-67.000.
Dimas, Herman, Jr.; and Dimas, Janice E. Infant carrier particularly for grocery store shopping carts. 4,324,430, Cl. 297-250.000.
Dimas, Janice E.: *See—*
  Dimas, Herman, Jr.; and Dimas, Janice E., 4,324,430, Cl. 297-250.000.
Dines, Martin B., to Occidental Research Corporation. Separation process utilizing microcapsules. 4,324,767, Cl. 423-3.000.
Disko, Harry: *See—*
  Rosenwinkel, Donald A.; and Disko, Harry, 4,324,063, Cl. 46-44.000.
Dixon, Richard D., to Huck Manufacturing Company. Dish compensating flush head fastener. 4,324,518, Cl. 411-361.000.
Dr.-Ing. Reiner Foerst GmbH: *See—*
  Foerst, Reiner, 4,324,166, Cl. 84-454.000.
Dollard, Richard M.: *See—*
  Demler, Walter R.; Nagpal, Krishen L.; Dollard, Richard M.; Odin, Eugene; and Donahue, Donald T., 4,324,926, Cl. 568-730.000.
Donahue, Donald T.: *See—*
  Demler, Walter R.; Nagpal, Krishen L.; Dollard, Richard M.; Odin, Eugene; and Donahue, Donald T., 4,324,926, Cl. 568-730.000.
Dorigotti, Luciano; Gaviraghi, Giovanni; Pifferi, Giorgio; Pinza, Mario; and Semeraro, Claudio, to I.S.F. S.p.A. Alkoxyalkylidenhydrazinopridazines and process for their preparation. 4,324,788, Cl. 424-250.000.
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Dorris, Robert D., to Caterpillar Tractor Co. Mounting assembly for a control actuator. 4,324,155, Cl. 74-834.000.
Doussoux, Pierre: *See—*
  Le Brozec, Pierre; Ferret, Francois; and Doussoux, Pierre, 4,325,053, Cl. 340-347.0DD.
Dow Chemical Company, The: *See—*
  Gibbs, Dale S.; Sinacola, James F.; and Ranck, Dan E., 4,324,714, Cl. 524-111.000.
  Gilbert, Herman S., 4,324,676, Cl. 252-79.000.
  Hayes, Ronald J., 4,324,829, Cl. 428-215.000.
  Holmsen, Theodore W.; Barrons, Keith C.; and Smith, Leonard L., Jr., 4,324,581, Cl. 71-126.000.
  Ivy, John B.; and Boozalis, Ted S., 4,324,757, Cl. 422-7.000.
  Malhotra, Sudarshan K., 4,324,896, Cl. 546-301.000.
  Pryor, Alvetta; and Ishibe, Nobuyuki, 4,324,928, Cl. 570-118.000.
  Smith, William E., 4,324,922, Cl. 568-437.000.
Dow Corning Corporation: *See—*
  Kasprzak, Kenneth A., 4,324,595, Cl. 134-38.000.
  Swihart, Terence J., 4,324,720, Cl. 260-185.000.
Draftex Development, A.G.: *See—*
  Ginster, Helmut, 4,324,826, Cl. 428-122.000.
Drake, Charles A.; and Turk, Stanley D., to Phillips Petroleum Company. Dinitriles and their preparation. 4,324,738, Cl. 260-465.00H.
Dreher, Hans-Joachim; and Becker, Kunibert, to Gewerkschaft Eisenhutte Westfalia. Apparatus for supporting a mine roof support assembly. 4,324,510, Cl. 405-291.000.
Drenckhan, Jurgen; and Trinks, Roland. Method of and arrangement for performing optical interference measurements. 4,324,492, Cl. 356-345.000.
Driemeyer, Manfred, to Mannesmann DeMag AG. Apparatus for manufacturing steel from iron ore dust by direct reduction. 4,324,390, Cl. 266-155.000.
Driker, Benjamin. Method and apparatus for measuring the melting temperature of greasy products. 4,324,130, Cl. 73-17.00R.
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  Ballard, Denis G.; Charnah, Richard M.; Droughton, John F.; and Rideal, Graham R., 4,324,838, Cl. 428-402.000.
Dubovi, Edward J.: *See—*
  Tidwell, Richard R.; Dubovi, Edward J.; and Geratz, Joachim D., 4,324,794, Cl. 424-273.00B.
Ducoin, Jacques H. C.: *See—*
  Cazals, Claude O. E.; and Ducoin, Jacques H. C., 4,324,172, Cl. 99-177.100.
Dudley, James M.: *See—*
  Sain, Bernard S.; and Dudley, James M., 4,324,516, Cl. 411-5.000.
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  Torck, Bernard; Convers, Alaio; Duee, Didier; and Mikitenko, Paul, 4,324,924, Cl. 568-697.000.
Duffy, Thomas G.: *See—*
  Eisentraut, Kent J.; Ross, William D.; Hillan, William J.; Brooks, Joseph J.; and Duffy, Thomas G., 4,324,758, Cl. 422-61.000.
Dugger, Doyle, to Bandag Incorporated. Hose building machine. 4,324,607, Cl. 156-350.000.
Dulen, Edwina K., to Oak Industries Inc. Membrane switch having a puff ink spacer. 4,324,962, Cl. 200-159.00B.
Dumbeck, Robert F. Solar energy collector system. 4,324,947, Cl. 126-448.000.
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  Guillaume, Jacques; Nedelec, Lucien; and Dumont, Claude, 4,324,790, Cl. 424-263.000.
Dunham, Richard M., to GCA Corporation. Automatic wafer alignment system. 4,325,077, Cl. 358-107.000.
Dunlop Limited: *See—*
  Keen, Christopher V., 4,324,835, Cl. 521-54.000.
Dunmire, Howard L.: *See—*
  Horn, Stuart B.; McMillion, Landy H.; Dunmire, Howard L.; Sawyer, Geoffrey S.; and Gerkin, William C., 4,324,104, Cl. 62-77.000.
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  Bruno, Salvatore A., 4,324,721, Cl. 260-196.000.
  Cumbo, Charles C., 4,324,625, Cl. 204-72.000.
  Emerick, Dennis P., 4,324,715, Cl. 523-400.000.
  Fagan, Joseph P., 4,324,574, Cl. 55-487.000.
  Lulay, Arthur; and Lynch, Charles E., 4,324,095, Cl. 57-327.000.
  McCormick, Robert M., 4,324,176, Cl. 100-3.000.
  Withers, Michael S., 4,324,606, Cl. 156-272.200.
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  Bartunek, William; Kaye, Gordon E.; and Mallory, Henry R., 4,325,106, Cl. 362-157.000.
Durai-Swamy, Kandaswamy, to Occidental Research Corporation. Pyrolysis process with feed pretreatment utilizing a beneficially reactive gas. 4,324,637, Cl. 208-8.0LE.
Durai-Swamy, Kandaswamy, to Occidental Research Corporation. Pyrolysis process for stabilizing volatile hydrocarbons. 4,324,638, Cl. 208-8.0LE.
Durai-Swamy, Kandaswamy, to Occidental Research Corporation. Pyrolysis process with feed pretreatment. 4,324,639, Cl. 208-8.0LE.
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Durbin, Howard M., to James B. Lansing Sound, Inc. Diaphragm suspension construction. 4,324,312, Cl. 181-171.000.
Durette, Philippe L., to Merck & Co., Inc. 3-Amino-4-C-carboxy-2,3,4,6-tetradeoxy-D-arabino-hexose trimethylene dithioacetal. 4,324,900, Cl. 549-11.000.
Durham, Donald F., to Caterpillar Tractor Co. Moveable joint seal. 4,324,114, Cl. 64-17.00A.
Durkin, Joseph A.: *See—*
  Lewis, Paul H.; Durkin, Joseph A.; and Froelich, Joseph A., 4,324,698, Cl. 252-455.00Z.
Durney, David J., to Burroughs Corporation. Card cage for electronic circuit cards. 4,324,330, Cl. 206-328.000.
Dust, James A., to Telex Communications, Inc. Mechanism for retracting the pressure rollers of a tape transport when the power is off. 4,324,355, Cl. 226-190.000.
DuTone Corporation: *See—*
  Hunt, John E., 4,324,666, Cl. 210-722.000.
Dykstra, Donald W.; and Calvin, Samuel E., to Compass Electronics. Metal detector for locating objects with full sensitivity in the presence of distributed mineral material. 4,325,027, Cl. 324-329.000.
Dyment, John C.; Look, Christopher M.; and Chik, Kiu-Chi D., to Northern Telecom Limited. Semiconductor lasers with integrally formed light emitting diodes. 4,325,034, Cl. 372-50.000.
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  Josten, Walter; and Vahlensieck, Hans-Joachim, 4,324,736, Cl. 260-429.00R.
E-Med Corporation: *See—*
  Buttaravoli, Philip M., 4,324,237, Cl. 128-214.00R.
Eagle-Picher Industries, Inc.: *See—*
  Lister, Roy D., 4,324,438, Cl. 308-3.500.
Eastman Kodak Company: *See—*
  Adin, Anthony; and Fleming, James C., 4,324,852, Cl. 430-178.000.
  Friahberg, Mark D., 4,324,899, Cl. 548-190.000.
  Harvey, Donald M., 4,324,469, Cl. 354-214.000.
  Kerr, Donald L.; and Russo, Gary M., 4,324,849, Cl. 430-3.000.
  Landis, Newton C. M.; and Zollo, Corrado, 4,324,816, Cl. 427-128.000.
  Seely, Neil G., 4,324,476, Cl. 354-288.000.
  Weaver, Max A.; and Coates, Clarence A., Jr., 4,324,719, Cl. 260-152.000.
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  Wright, Charles E., 4,325,088, Cl. 360-14.000.
Eaton Corporation: *See—*
  Caputi, William J., Jr., 4,325,065, Cl. 343-5.0CM.
  Olson, Jerry A., 4,324,143, Cl. 73-861.620.
Ebara Corp: *See—*
  Aoki, Shinji; Ishikawa, Ryuichi; and Sawada, Yasuhiro, 4,324,759, Cl. 422-62.000.
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  Ito, Kanichi; Hirayama, Yoshio; Ishii, Yoshiaki; and Ando, Naoyoshi, 4,324,620, Cl. 202-89.000.
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  Edenharter, Georg; and Ebnet, Friedrich, 4,324,964, Cl. 200-331.000.

Edenharter, Georg; and Ebnet, Friedrich, to Siemens Aktiengesellschaft. Device for extending plunger drives. 4,324,964, Cl. 200-331.000.
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  Rabinovitch, Yosef K., 4,324,302, Cl. 180-8.00C.
Edwards, Rodney, Jr.: *See—*
  Gazzara, Peter; Burke, John W., Jr.; and Edwards, Rodney, Jr., 4,324,127, Cl. 73-3.000.
Edwards, William A., to Gallant, Jerry B. Freezing gel containment structure and method. 4,324,111, Cl. 62-457.000.
Efimov, Alexei V.: *See—*
  Konstantinov, Igor I.; Kormushechkina, Antonina I.; Avdonin, Jury A.; Kotlyarsky, Vladimir M.; Kim, Albert A.; Obraztsov, Nikolai V.; and Efimov, Alexei V., 4,324,667, Cl. 210-729.000.
Egyt Gyogyszervegyeszeti Gyar: *See—*
  Benko, Pal; Gelleri, Andras; Hajos, Gyorgy; Messmer, Andras; Pallos, Laszlo; Petocz, Lujza; Kosoczky, Ibolya; Grasser, Katalin; Gorog, Peter; and Szirt nee Kiszelly, Eniko, 4,324,894, Cl. 544-118.000.
  Messmer, Andras; Benko, Pal; Hajos, Gyorgy; Petocz, Lujza; Kosoczky, Ibolya; and Gorog, Peter, 4,324,786, Cl. 424-248.540.
Ehling, John W., to Western Electric Company, Inc. Die shear apparatus for trimming wire weld bulges. 4,324,515, Cl. 409-300.000.
Ehrgott, Roland; and Meindl, Gerhard, to Siemens Aktiengesellschaft. Mount for an electromagnetic coil. 4,325,044, Cl. 336-67.000.
Ehrlinger, Klaus: *See—*
  Kruger, Roland; Ciongwa, Joachim; Smusch, Gunther; and Ehrlinger, Klaus, 4,324,264, Cl. 134-68.000.
Eimers, Erich; and Dhein, Rolf, to Bayer Aktiengesellschaft. Hydrocarbon, a process for its production and its use as a reactive thinner for air-drying lacquers. 4,324,934, Cl. 585-21.000.
Eisai Co., Ltd.: *See—*
  Takahashi, Toshio, 4,325,028, Cl. 324-442.000.
Eisentraut, Kent J.; Ross, William D.; Hillan, William J.; Brooks, Joseph J.; and Duffy, Thomas G., to United States of America, Air Force. Analysis of lubricating oils for iron content. 4,324,758, Cl. 422-61.000.
Eistetter, Klaus; and Rapp, Erich, to BYK Gulden Lomberg Chemische Fabrik Gesellschaft mit beschrankter Haftung. Substituted oxiranecarboxylic acids, their use and medicaments containing them. 4,324,796, Cl. 424-278.000.
Eldon, James, III; Saint, David; and Latone, Thomas L., to Graco Metal Products, Inc. Infant swing carrier. 4,324,432, Cl. 297-377.000.
Electric Power Research Institute, Inc.: *See—*
  Guerin, William F., 4,324,619, Cl. 376-290.000.
  Moody, Edward, 4,324,614, Cl. 376-175.000.
  Sowers, Michael G.; Creek, Ronald B.; and DeFur, Donovan D., 4,324,617, Cl. 376-405.000.
ELF France: *See—*
  Jacob, Philippe; and Tondeur, Daniel, 4,324,566, Cl. 55-28.000.
Elfab Corporation: *See—*
  Ammon, J. Preston; Weaver, Harry R.; and Norman, Richard O., 4,324,451, Cl. 339-176.0MP.
Elin-Union AG: *See—*
  Schlusselberger, Richard, 4,324,587, Cl. 75-130.00B.
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  Mitchell, William O.; and Ellington, Gordon H., 4,324,087, Cl. 33-241.000.
Ellion, M. Edmund, to Hughes Aircraft Company. Hydrazine thruster. 4,324,096, Cl. 60-200.00R.
Elliston, Thomas L., to Hydra-Rig, Inc. Stabilized hoist rig for deep ocean mining vessel. 4,324,194, Cl. 114-264.000.
Elser, Kirby W. Servicing stand for three wheeled vehicles. 4,324,384, Cl. 254-8.000.
Elsner, Georg; Vollmer, Hartfrid; and Reutel, Ernst, to Hoechst Aktiengesellschaft. Production of tertiary phosphines. 4,324,919, Cl. 568-8.000.
Eltra Corporation: *See—*
  Sieja, Norman F., 4,324,215, Cl. 123-335.000.
Emblem, Harold G.: *See—*
  Davis, Richard P. B.; Emblem, Harold G.; Shaw, Richard D.; and Shelley, Stanley J., 4,324,602, Cl. 156-71.000.
Emerick, Dennis P., to Du Pont de Nemours, E. I., and Company. Low curing epoxy n-resin coating composition. 4,324,715, Cl. 523-400.000.
Endo, Masanori; and Horiuchi, Kentaro, to Tohoku Metal Industries, Ltd. Thermo-magnetically operated switches having two different operating temperatures. 4,325,042, Cl. 335-208.000.
Enertec: *See—*
  Heller, Isabelle, 4,325,098, Cl. 361-82.000.
Engelhard Corporation: *See—*
  Zyak, Edward D.; and Stephans, Robert, 4,324,588, Cl. 75-208.00R.
English, George F., to General Instrument Corporation. Variable capacitor for use in a keyboard. 4,325,102, Cl. 361-288.000.
Enso-Gutzeit Osakehito: *See—*
  Titoff, Juha, 4,324,659, Cl. 210-386.000.
Envirotech Corporation: *See—*
  Davis, Steven S., 4,324,116, Cl. 68-158.000.
Erdmannsdorfer, Hans; Bergmann, Horst; and Daudel, Helmut, to Daimler-Benz Aktiengesellschaft. Soot filter for an exhaust arrangement of an internal combustion engine. 4,324,572, Cl. 55-385.00R.
Erhardt, Peter F.: *See—*
  Lu, Chin H.; Sherony, Dominic F.; and Erhardt, Peter F., 4,324,851, Cl. 430-106.000.
Eriksson, Gunnar V. Apparatus for removing oil from compressed air. 4,324,573, Cl. 55-396.000.
Erin, Tim: *See—*
  Schwob, Charles J.; Kirbabas, Nicholas; and Erin, Tim, 4,324,117, Cl. 46-201.00R.
Erndt, Hans: *See—*
  Palloch, Herbert; and Erndt, Hans, 4,324,448, Cl. 339-17.00C.
Eschler, Hans: *See—*
  Bulst, Wolf E.; and Eschler, Hans, 4,325,037, Cl. 333-194.000.
ESGE-Marby GmbH & Co.: *See—*
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Esmond, William G. Transfer device having a thin wall plate. 4,324,658, Cl. 210-321.300.
EST Industries, Inc.: *See—*
  Tse, Jackson, 4,324,400, Cl. 273-76.000.
Ethyl Corporation: *See—*
  McKinnie, Bonnie G.; and Ranken, Paul F., 4,324,920, Cl. 568-54.000.
Eugley, Susan L., to Stauffer Chemical Company. Dough-like products exhibiting reduced water activity containing derived protein-containing compositions. 4,324,811, Cl. 426-656.000.
Euteco Impianti S.p.A.: *See—*
  Ghirga, Marcello; Valtorta, Luigi; and Calcagno, Benedetto, 4,324,941, Cl. 585-466.000.
Exxon Production Research Company: *See—*
  Cutler, Christopher R., 4,324,193, Cl. 114-199.000.
Exxon Research & Engineering Co.: *See—*
  Hall, Richard B., 4,324,766, Cl. 423-3.000.
  Patton, Tad L., 4,324,836, Cl. 428-336.000.
Eyerly, Jon V. Bumper car amusement ride. 4,324,301, Cl. 180-2.00R.
Fabrique d'Horlogerie de Fontainemelon: *See—*
  Paratte, Daniel, 4,324,992, Cl. 310-49.00R.
Fagan, Joseph P., to Du Pont de Nemours, E. I., and Company. Felt-like layered composite of PTFE and glass paper. 4,324,574, Cl. 55-487.000.
Fairchild Camera & Instrument Corp.: *See—*
  Johnson, Nicky M.; and Blaser, Lawrence M., 4,324,216, Cl. 123-415.000.
Faisst, Magdalena: *See—*
  Buzzi, Gunther; and Faisst, Magdalena, 4,324,364, Cl. 239-383.000.
Falk, Volker: *See—*
  Weber, Jurgen; Falk, Volker; and Kniep, Claus, 4,324,918, Cl. 564-503.000.
Fallier, Charles N., Jr.: *See—*
  Proud, Joseph M.; Riseberg, Leslie A.; and Fallier, Charles N., Jr., 4,325,004, Cl. 315-45.000.
Fankhauser, Peter, to Firmenich SA. Novel acetylenic compounds useful as starting materials for preparing an alicyclic ketone. 4,324,729, Cl. 260-345.90R.
Farge, Daniel; Leboul, Jean; Le Goff, Yves; and Poiget, Gilbert, to Philargo. Herbicidal and phytohormonal amidoximes. 4,324,579, Cl. 71-74.000.
Farr, Glyn P. R., to Girling Limited. Hydraulic master cylinders for vehicle braking systems. 4,324,101, Cl. 60-562.000.
Farris, Richard C., to Western Geophysical Co. of America. Actuator for an air gun having a reciprocating shuttle valve. 4,324,311, Cl. 181-120.000.
Fauth, Frederick E., to American Bottlers Equipment Company, Inc. Can end washer and dryer. 4,324,265, Cl. 134-82.000.
Fauth, Gunter: *See—*
  Lermann, Peter; Cocron, Istvan; and Fauth, Gunter, 4,324,463, Cl. 354-15.000.
Feher, Tibor: *See—*
  Guard, Wayne; and Feher, Tibor, 4,324,370, Cl. 242-86.520.
Feherguard Products: *See—*
  Guard, Wayne; and Feher, Tibor, 4,324,370, Cl. 242-86.520.
Ferret, Francois: *See—*
  Le Brozec, Pierre; Ferret, Francois; and Doussoux, Pierre, 4,325,053, Cl. 340-347.0DD.
Ferro, Anthony J., to Allis-Chalmers Corporation. Seat centerline operated butterfly valve. 4,324,383, Cl. 251-308.000.
Fertilizer Development S.A.: *See—*
  Baniel, Avraham M., 4,324,774, Cl. 423-321.00R.
Feuer, Laszlo; Furka, Arpad; Sebestyen, Ferenc; Hercsel nee Szepespataky, Jolan; and Bendefy nee Dobay, Erzsebet, to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara Rt. Method of preparing gamma-L-glutamyl taurine. 4,324,743, Cl. 260-513.00N.
Feuerstein, Diane: *See—*
  Snyder, William R.; and Feuerstein, Diane, 4,324,664, Cl. 210-701.000.
Fiber Associates, Incorporated: *See—*
  Geyer, Charles J., Jr.; and White, Ben E., 4,324,751, Cl. 264-23.000.
Fieni, Gabriel J. Wood carrier. 4,324,428, Cl. 294-169.000.
Finck, Hans-Werner: *See—*
  Avar, Lajos; Finck, Hans-Werner; and Kalt, Evelyne, 4,324,628, Cl. 204-159.240.
Finding, Kenneth: *See—*
  Bewley, David K.; and Finding, Kenneth, 4,324,979, Cl. 250-505.000.
Firestone Tire & Rubber Company, The: *See—*
  Davis, James A.; and Koch, Robert C., 4,324,710, Cl. 524-76.000.
  Ravagnani, Frederick J.; and Schonfeld, Steven E., 4,324,281, Cl. 152-359.000.
Firmenich SA: *See—*
  Fankhauser, Peter, 4,324,729, Cl. 260-345.90R.

Pickenhagen, Wilhelm; and Velluz, Alain, 4,324,809, Cl. [illegible]
Fischer, Martin: *See—*
  Kropp, Rudolf; Fischer, Martin; and Halbritter, Klaus, 4,324,725, Cl. [illegible]
Fischer, Robert L., to Caterpillar Tractor Co. Lock assembly for earthworking apparatus. 4,324,435, Cl. 299-37.000.
Flagg, Rodger H. Plant growing system utilizing pneumatic pressure. 4,324,069, Cl. 47-62.000.
Flanders Filters, Inc.: *See—*
  Wilcox, David E.; and Allan, Thomas T., 4,324,568, Cl. 55-97.000.
Fleming, James C.: *See—*
  Adin, Anthony; and Fleming, James C., 4,324,852, Cl. 430-178.000.
Fletcher, James D.: *See—*
  O'Connell, Philip E.; Hughes, Larry M.; and Fletcher, James D., 4,325,136, Cl. 369-219.000.
Fly, Walter: *See—*
  Goldstein, Henry; Fly, Walter; Ting, Patrick; and Chicoye, Etzer, 4,324,810, Cl. 426-600.000.
Flynn, John J.: *See—*
  Chai, Bruce H.; Buehler, Ernest; and Flynn, John J., 4,324,773, Cl. 423-311.000.
FMC Corporation: *See—*
  Billett, Ronald J.; and Viitanen, Veikko K., 4,324,108, Cl. 62-345.000.
  Blake, John H., 4,324,544, Cl. 432-14.000.
Foerst, Reiner, to Dr.-Ing. Reiner Foerst GmbH. Tuning device for musical instruments. 4,324,166, Cl. 84-454.000.
Fonseca, Anthony G., to Conoco Inc. Pyrite removal from coal. 4,324,560, Cl. 44-1.0SR.
Fontana, Fernando. Adjusting and locking device for watch bracelets. 4,324,024, Cl. 24-170.000.
Ford Motor Company: *See—*
  Blair, Howard D.; and Milberg, Morton E., 4,324,356, Cl. [illegible]
Fornell, Robert M.: *See—*
  McCann, Floyd E.; and Fornell, Robert M., 4,324,283, Cl. [illegible]
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  Hillman, Jeffrey D., 4,324,860, Cl. 435-172.000.
Fortuna-Werke Maschinenfabrik GmbH: *See—*
  Belthle, Heinz, 4,324,073, Cl. 51-281.00R.
Foure, Michel, to Societe Nationale Elf Aquitaine. Thermal stabilization of vinyl resins. 4,324,718, Cl. 524-108.000.
Foure, Michel, to Societe Nationale Elf Aquitaine. Process for the preparation of organostannic trihalides. 4,324,737, Cl. 260-429.700.
Fox, Irwin, to Ironite Products Company. Method of using a reactive iron oxide drilling mud additive. 4,324,298, Cl. 175-64.000.
Fradenburgh, Evan A.; Jepson, William D.; and Moffitt, Robert C., to United Technologies Corp. Helicopter blade with a tip having a selected combination of sweep, taper and anhedral to improve hover efficiency. 4,324,530, Cl. 416-228.000.
Frahm, Veryl H., Jr.: *See—*
  Kruesi, Paul R.; and Frahm, Veryl H., Jr., 4,324,582, Cl. 75-1.00R.
Fraley, Lowell D.: *See—*
  Parizot, William D.; O'Lenick, Paul D.; and Fraley, Lowell D., 4,324,649, Cl. 208-130.000.
Fram Corporation: *See—*
  Peyton, Richard H.; and Thornton, Donald I., 4,324,660, Cl. 210-440.000.
Framatome: *See—*
  Marmorat, Andre; and Montaron, Rene, 4,324,616, Cl. 376-203.000.
Frankl & Kirchner GmbH & Co. KG, Fabrik fur Elektromotoren u. elektrische Apparate: *See—*
  Palloch, Herbert; and Erndt, Hans, 4,324,448, Cl. 339-17.00C.
Franklin Electric Co., Inc.: *See—*
  Schaefer, Edward J., 4,325,012, Cl. 318-786.000.
Franklin Industries, Inc.: *See—*
  Schwartz, Larry A., 4,324,223, Cl. 126-200.000.
Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H.: *See—*
  Theurer, Josef; and Oellerer, Friedrich, 4,324,186, Cl. 105-177.000.
Frappier, Michael B., to Thermal Dynamics Corporation. Torch height acquisition using arc transfer. 4,324,971, Cl. 219-121.0PV.
Freedman, Murray; Vale, Arthur E.; and Vale, Peter R., to Vale, Arthur E. Brassiere having a bottom stretch band. 4,324,254, Cl. [illegible]
Frei, Paul, to Griesser A. G. Venetian blind. 4,324,284, Cl. 160-172.000.
Frick Company: *See—*
  Garland, Milton W., 4,324,109, Cl. 62-353.000.
Fried, Josef, to University of Chicago, The. Certain fluorine substituted PGI_2 compounds. 4,324,730, Cl. 260-346.220.
Friedman, Harold L.: *See—*
  Garwin, Richard L.; and Friedman, Harold L., 4,324,020, Cl. 17-51.000.
Friedman, Michael E. Animal safety restraint for vehicles. 4,324,204, Cl. 119-96.000.
Friese, Wayne G. Grain carrying vehicle. 4,324,434, Cl. 298-27.000.
Frishberg, Mark D., to Eastman Kodak Company. 2-Amino-5-cyanothiazoles and their preparation. 4,324,899, Cl. 548-190.000.
Fritz, William E., to Youngstown Steel Door Company, The. Hopper discharge outlet and method. 4,324,188, Cl. 105-282.00R.
Froelich, Joseph A.: *See—*
  Lewis, Paul H.; Durkin, Joseph A.; and Froelich, Joseph A., 4,324,698, Cl. 252-455.00Z.
Frohlich, Walter: *See—*
  Link, Gerhard; Riedl, Josef; Frohlich, Walter; and Krumbock, Reinhard, 4,324,932, Cl. 570-226.000.
Frost, Ralph S., to Chemetron Railway Products, Inc. Locator for rail aligning device. 4,324,048, Cl. 33-180.00R.
Frye, Robert B., to General Electric Company. Silicone resin coating composition. 4,324,839, Cl. 428-412.000.
Frymaster Corporation, The: *See—*
  Moore, L. Frank; and Price, George M., 4,324,173, Cl. 99-330.000.
Fuji Photo Film Co., Ltd.: *See—*
  Fukushima, Osamu; Akisada, Masahide; and Koizumi, Takashi, 4,324,478, Cl. 354-312.000.
  Noguchi, Masaru; Oosaka, Shigenori; and Komura, Tsuneo, 4,324,452, Cl. 350-6.700.
  Oishi, Yasushi; and Hirano, Shigeo, 4,324,855, Cl. 430-378.000.
  Seto, Kunihira; and Naruo, Kyoichi, 4,324,705, Cl. 521-44.000.
  Tsuji, Nobuo; Fujiyama, Masaki; Nakahara, Hiromi; Tadokoro, Eiichi; Tanaka, Keiji; and Yamamoto, Isao, 4,324,177, Cl. 100-155.00R.
Fujii, Hironory; Nagashima, Thuyoshi; and Shibamoto, Nobuyori, to Sugai Chemical Industry Co., Ltd. Process for separation of naphthalenedisulfonic acids. 4,324,742, Cl. 260-505.00C.
Fujisawa Pharmaceutical Co., Ltd.: *See—*
  Kamiya, Takashi; Teraji, Tsutomu; Hemmi, Keiji; and Goto, Jiro, 4,324,892, Cl. 544-28.000.
Fujiwara, Kenichi; Sugi, Hikaru; and Nishikawa, Mineo, to Nippondenso Co., Ltd. Refrigeration system. 4,324,112, Cl. 62-511.000.
Fujiyama, Masaki: *See—*
  Tsuji, Nobuo; Fujiyama, Masaki; Nakahara, Hiromi; Tadokoro, Eiichi; Tanaka, Keiji; and Yamamoto, Isao, 4,324,177, Cl. 100-155.00R.
Fukazawa, Hidehalu: *See—*
  Akasaki, Isamu; Ohsima, Masaki; Matsuda, Nobuhide; Matsuki, Michio; Tsukamoto, Yoshio; Kagi, Hiromichi; and Fukazawa, Hidehalu, 4,325,070, Cl. 346-108.000.
Fukuda, Masakatsu: *See—*
  Kamino, Kimiyaki; and Fukuda, Masakatsu, 4,324,597, Cl. 148-103.000.
Fukumura, Kagenori: *See—*
  Ushijima, Fumihiro; and Fukumura, Kagenori, 4,324,321, Cl. 192-13.00R.
Fukushima, Osamu; Akisada, Masahide; and Koizumi, Takashi, to Fuji Photo Film Co., Ltd. Photosensitive sheet handling method and device. 4,324,478, Cl. 354-312.000.
Fulberth: *See—*
  Dahlhausen, Gebhard; Dibbern, Hans-Werner; Fulberth; and Ross, Gerhard, 4,324,779, Cl. 424-20.000.
Furka, Arpad: *See—*
  Feuer, Laszlo; Furka, Arpad; Sebestyen, Ferenc; Hercsel nee Szepespataky, Jolan; and Bendefy nee Dobay, Erzsebet, 4,324,743, Cl. 260-513.00N.
Furrer, Alfred; and Wehrli, Hans, to Laser-Work A.G. Process and device for laser-beam melting and flame cutting. 4,324,972, Cl. 219-121.0PL.
Furuichi, Minoru; Honma, Chikara; and Ando, Noriaki, to Japan Synthetic Rubber Co., Ltd. Thermoplastic elastomer composition. 4,324,866, Cl. 521-140.000.
Futaba Denshi Kogyo K.K.: *See—*
  Kishino, Takao; Yamaguchi, Toshihiro; and Tanaka, Kazunori, 4,325,064, Cl. 340-753.000.
G A O Gesellschaft fur Automation and Organisation mbH: *See—*
  Mitzel, Wilhelm; and Bernardi, Herbert, 4,324,394, Cl. 271-5.000.
G. D. Searle & Co.: *See—*
  Miyano, Masateru; and Dorn, Clifford R., 4,324,902, Cl. 560-53.000.
Gabor, Andrew, to Xerox Corporation. Print hammer assembly with amplified multi-location impacts. 4,324,497, Cl. 400-144.200.
Gagnon, Pierre; and LaForest, Pierre. Battens system for raising and lowering sceneries or similar loads on a stage. 4,324,386, Cl. 254-288.000.
Gallant, Jerry B.: *See—*
  Edwards, William A., 4,324,111, Cl. 62-457.000.
Garcea, Giampaolo, to Alfa Romeo S.p.A. Combustion chamber for an internal combustion engine. 4,324,214, Cl. 123-309.000.
Gardner, Lloyd E., to Phillips Petroleum Company. Catalytic hydrocracking, hydrodesulfurization, and/or hydrodenitrogenation of organic compounds employing promoted zinc titanate and a zeolite as the catalytic agent. 4,324,647, Cl. 208-111.000.
Gardner, Tommy R.: *See—*
  Norman, Lewis R.; and Gardner, Tommy R., 4,324,669, Cl. 252-8.55C.
Garland, Milton W., to Frick Company. Ice-making apparatus with hot gas defrost. 4,324,109, Cl. 62-353.000.
Garnier, Jacques P.; Garnier, Marcel A.; and Moreau, Rene J., to Agence Nationale de Valorisation de le Recherche (ANVAR). Process and device for confining liquid metals by use of an electromagnetic field. 4,324,266, Cl. 137-13.000.
Garnier, Marcel A.: *See—*
  Garnier, Jacques P.; Garnier, Marcel A.; and Moreau, Rene J., 4,324,266, Cl. 137-13.000.
Garrett, Michael E. Apparatus for the treatment of liquids. 4,324,657, Cl. 210-197.000.
Garwin, Richard L.; and Friedman, Harold L. Mussel washer. 4,324,020, Cl. 17-51.000.
Gasser, Max. Vibration dampened for archery bow. 4,324,222, Cl. 124-89.000.

Gauthier-Lafaye, Jean; and Perron, Robert, to Rhone-Poulenc Industries. Process for the homologization of methanol. 4,324,927, Cl. 568-901.000.
Gaviraghi, Giovanni: *See—*
  Dorigotti, Luciano; Gaviraghi, Giovanni; Pifferi, Giorgio; Pinza, Mario; and Semeraro, Claudio, 4,324,788, Cl. 424-250.000.
Gay, Michael J., to Motorola, Inc. Comparison circuit adaptable for utilization in a television receiver or the like. 4,324,990, Cl. 307-350.000.
Gaylord, Richard P.; and Miller, Wendell E., to Clark Equipment Company. Fluid device and method for making. 4,324,171, Cl. 92-169.000.
Gazzara, Peter; Burke, John W., Jr.; and Edwards, Rodney, Jr., to Biotrine Corporation. Spirometer calibration device and associated displacement detection system. 4,324,127, Cl. 73-3.000.
GCA Corporation: *See—*
  Dunham, Richard M., 4,325,077, Cl. 358-107.000.
Gebler, Kenneth A., to Nalco Chemical Company. Basic (MgO) nonaqueous plastic refractory mixture. 4,324,862, Cl. 501-109.000.
Geier, Georg; and Lohne, Manfred, to WABCO Steuerungstechnik. Control system for regulating a spray gun paint pressure. 4,324,366, Cl. 239-533.100.
Geiger, Gary E.; and May, Roger C., to Betz Laboratories, Inc. Stable compositions for use as corrosion inhibitors. 4,324,684, Cl. 252-389.00A.
Geisser, Stephan, to Graf & Cie. A.-G. Apparatus for retracting flats from the cast iron flat bars of carding machines. 4,324,029, Cl. 19-239.000.
Gelleri, Andras: *See—*
  Benko, Pal; Gelleri, Andras; Hajos, Gyorgy; Messmer, Andras; Pallos, Laszlo; Petocz, Lujza; Kosoczky, Ibolya; Grasser, Katalin; Gorog, Peter; and Szirt nee Kiszelly, Eniko, 4,324,894, Cl. 544-128.000.
GEMA AG Apparatebau: *See—*
  Moos, Kurt; and Buschor, Karl, 4,324,361, Cl. 239-3.000.
General Dynamics Corporation: *See—*
  O'Neill, Richard F., 4,324,375, Cl. 244-163.000.
General Dynamics, Pomona Division: *See—*
  Piesik, Edward T., 4,324,167, Cl. 89-1.800.
General Electric Company: *See—*
  Borland, Walter G.; and Brehse, Robert F., 4,325,008, Cl. 315-241.00R.
  Frye, Robert B., 4,324,839, Cl. 428-412.000.
  Harris, Lawrence A., 4,324,760, Cl. 422-98.000.
  Harris, Lawrence A., 4,324,761, Cl. 422-98.000.
  Kim, Bang M., 4,324,776, Cl. 423-550.000.
  Nickels, Aubrey G., 4,324,529, Cl. 416-187.000.
  Smith, Peter H., 4,324,968, Cl. 219-10.55F.
  Takekoshi, Tohru, 4,324,882, Cl. 528-206.000.
  Vaughn, Howard A., Jr., 4,324,712, Cl. 524-767.000.
  White, Dwain M.; and Keyes, David G., 4,324,883, Cl. 528-207.000.
  White, Dwain M.; and Keyes, David G., 4,324,884, Cl. 528-207.000.
  White, Dwain M.; and Keyes, David G., 4,324,885, Cl. 528-207.000.
  Will, Fritz G., 4,324,848, Cl. 429-228.000.
General Foods Corporation: *See—*
  Katz, Saul N., 4,324,840, Cl. 426-422.000.
  Kim, Myung K.; and Lugay, Joaquin C., 4,324,807, Cl. 426-104.000.
  Ray, George C., III, 4,324,823, Cl. 428-43.000.
General Instrument Corporation: *See—*
  English, George P., 4,325,102, Cl. 361-288.000.
General Motors Corporation: *See—*
  Spurlin, Stephen F.; Lentz, Carl A.; and Miller, Clement P., 4,324,320, Cl. 188-271.000.
General Semiconductor Industries, Inc.: *See—*
  Clark, O. Melville, 4,325,097, Cl. 361-56.000.
General Signal Corporation: *See—*
  Wuebker, Robert A., 4,324,596, Cl. 148-11.50A.
General Tire & Rubber Co., The: *See—*
  Alexander, Joseph H.; and Jellison, Frank R., 4,324,604, Cl. 156-131.000.
Genese, Joseph N.; and Muetterties, Andrew J., to Abbott Laboratories. Equipment sets having a combined air barrier and liquid sequencing device for the sequential administration of medical liquids at dual flow rates. 4,324,238, Cl. 128-214.00G.
Gentex Corporation: *See—*
  Wagner, William E.; and Zachev, Ivan, 4,325,058, Cl. 340-562.000.
George, Patricia M.: *See—*
  Beauchamp, Jesse L.; and George, Patricia M., 4,324,854, Cl. 430-294.000.
Geratz, Joachim D.: *See—*
  Tidwell, Richard R.; Dubovi, Edward J.; and Geratz, Joachim D., 4,324,794, Cl. 424-273.00B.
Gerharz, Reinhold, to United States of America, Army. Optical test pattern. 4,324,459, Cl. 351-32.000.
Gerkin, William C.: *See—*
  Horn, Stuart B.; McMillion, Lundy H.; Dunmire, Howard L.; Sawyer, Geoffrey S.; and Gerkin, William C., 4,324,104, Cl. 62-77.000.
Gerry, Martin E. Fuel and water homogenizer and vaporizer and method therefor. 4,324,209, Cl. 123-25.00B.
Gewerkschaft Eisenhutte Westfalia: *See—*
  Dreher, Hans-Joachim; and Becker, Kunibert, 4,324,510, Cl. 405-291.000.
Geyer, Charles J., Jr.; and White, Ben E., to Fiber Associates, Incorporated. Process for preparing viscose rayon. 4,324,751, Cl. 264-23.000.
Ghirga, Marcello; Valtorta, Luigi; and Calcagno, Benedetto, to Euteco Impianti S.p.A. Process for the production of cumene. 4,324,941, Cl. 585-466.000.
Ghose, Rabindra N. Intercontinental air to air communications by an optimum mode. 4,325,141, Cl. 455-63.000.
Giacone, Felice. Control unit for a serial printer. 4,324,499, Cl. 400-144.200.
Gibbs, Dale S.; Sinacola, James F.; and Ranck, Dan E., to Dow Chemical Company, The. Vinylidene chloride polymer microgel powder lacquer coating composition and substrates coated therewith. 4,324,714, Cl. 524-113.000.
Gilbert, Herman S., to Dow Chemical Company, The. Compositions containing β-diketo chelating compounds. 4,324,676, Cl. 252-79.000.
Gilden, Meyer, to United Technologies Corporation. PRF Stabilized surface acoustic wave oscillator. 4,325,032, Cl. 331-25.000.
Gill, Robert A. Method of producing an air laid paper web utilizing microencapsulated hydrogen bond promoting material. 4,324,753, Cl. 264-121.000.
Gillette Company, The: *See—*
  Trotta, Robert A., 4,324,041, Cl. 30-47.000.
Gillingham, Larry A.: *See—*
  Lunden, Sidney L.; and Gillingham, Larry A., 4,324,521, Cl. [illegible]
Gilmore, John F.; and Lopenski, Stanley A., to Westinghouse Electric Corp. Base and terminal-pin assembly for an electric lamp. 4,324,998, Cl. 313-318.000.
Ginley, Maynard. Control system for legless operation of motor vehicles. 4,324,309, Cl. 180-316.000.
Ginsberg, Martin: *See—*
  Janak, Miloslav; Ginsberg, Martin; and Reiners, Albrecht, 4,325,090, Cl. 360-51.000.
Ginster, Helmut, to Draftex Development, A.G. Finishing and sealing strips. 4,324,826, Cl. 428-122.000.
Girard, Pierre: *See—*
  Colardelle, Joel S.; Girard, Pierre; and Pillou, Jean-Pierre M., 4,325,055, Cl. 340-347.0AD.
Girling Limited: *See—*
  Farr, Glyn P. R., 4,324,101, Cl. 60-562.000.
Gisiger, Urs, to Amiet AG. Permutation lock, particularly for handbags and suitcases. 4,324,120, Cl. 70-312.000.
Gitlitz, Melvin H.; and Russo, David A., to M&T Chemicals Inc. Fungicidal bis(substituted phenyl)alkyltin compounds. 4,324,798, Cl. [illegible]
Gladd Industries, Inc.: *See—*
  Hubbert, Gordon F., 4,324,545, Cl. 432-223.000.
Glasson, Richard E.: *See—*
  Kasting, Edward W.; Glasson, Richard E.; and Primus, Roy J., 4,324,213, Cl. 123-196.00A.
Glatfelter, Edward W.: *See—*
  Baier, Robert J.; and Glatfelter, Edward W., 4,324,233, Cl. [illegible]
Glaxo Group Limited: *See—*
  Bradshaw, John; Oxford, Alexander W.; and Scopes, David I. C., 4,324,792, Cl. 424-267.000.
Glockner, Hermann: *See—*
  Schrecke, Horst G.; and Glockner, Hermann, 4,324,442, Cl. [illegible]
Gneth nee Zalantai, Livia: *See—*
  Huhn, Magda; Somfai, Eva; Szabo, Gabor; Resovszki, Gabor; and Gneth nee Zalantai, Livia, 4,324,903, Cl. 560-82.000.
Godar, Serge E. Installation for the withdrawal and purification treatment of waters and aqueous effluents. 4,324,656, Cl. 210-170.000.
Goetze AG: *See—*
  Buchfeld, Jurgen, 4,325,125, Cl. 364-474.000.
Golan, Kenneth F.; Goloff, Charles N.; and Schmitt, James L., to Caterpillar Tractor Co. Selector valve. 4,324,274, Cl. 137-625.680.
Golden, Edward J.: *See—*
  Sano, Frank M.; Sliwa, Robert A.; and Golden, Edward J., 4,324,168, Cl. 89-1.814.
Goldfarb, Charles; and Iglitzki, Claude. Tamper-proof hanger. 4,324,352, Cl. 223-91.000.
Goldmacher, Jerome. Safety harness. 4,324,205, Cl. 119-96.000.
Goldsmid, Hiroshi J., to Unisearch Limited. Method and means for distinguishing gemstones. 4,324,129, Cl. 73-15.00A.
Goldstein, Henry; Fly, Walter; Ting, Patrick; and Chicoye, Etzer, to Miller Brewing Company. Hop extracts and method of preparation. 4,324,810, Cl. 426-600.000.
Golick, Leonard R.: *See—*
  Cooper, Frank W., Jr.; and Golick, Leonard R., 4,325,026, Cl. [illegible]
Goloff, Charles N.: *See—*
  Golan, Kenneth F.; Goloff, Charles N.; and Schmitt, James L., 4,324,274, Cl. 137-625.680.
Gooch, Robert P., to Digital Communications Corporation. Method and apparatus for adaptive facsimile compression using a two dimensional maximum likelihood predictor. 4,325,085, Cl. 358-261.000.
Goode, Sidney H.: *See—*
  Brantley, Zachry G.; and Goode, Sidney H., 4,324,353, Cl. [illegible]
Goodman, Alan: *See—*
  Goodson, Louis H.; and Goodman, Alan, 4,324,858, Cl. 435-20.000.
Goodman, Donald: *See—*
  Cordes, William F., III; Goodman, Donald; and Miller, Robert S., 4,324,874, Cl. 526-84.000.
Goodson, Louis H.; and Goodman, Alan, to Midwest Research Institute. Stabilization of cholinesterase, detector kit using stabilized

cholinesterase, and methods of making and using the same. 4,324,858, Cl. 435-20.000.
Gordon, Marvin; and Lichtenstein, Joseph, to Whitman Medical Corp. Fitting for use in performing a vascular puncture. 4,324,236, Cl. 128-214.00R.
Gordon, Marvin; and Lichtenstein, Joseph, to Whitman Medical Corp. Safety valve for preventing air embolism and hemorrhage. 4,324,239, Cl. 128-214.00R.
Gorog, Peter: *See—*
Benko, Pal; Gelleri, Andras; Hajos, Gyorgy; Messmer, Andras; Pallos, Laszlo; Petocz, Lujza; Kosoczky, Ibolya; Grasser, Katalin; Gorog, Peter; and Szirt nee Kiszelly, Eniko, 4,324,894, Cl. 544-128.000.
Messmer, Andras; Benko, Pal; Hajos, Gyorgy; Petocz, Lujza; Kosoczky, Ibolya; and Gorog, Peter, 4,324,786, Cl. 424-248.540.
Goto, Jiro: *See—*
Kamiya, Takashi; Teraji, Tsutomu; Hemmi, Keiji; and Goto, Jiro, 4,324,892, Cl. 544-28.000.
Gottlieb, John D., to Standard Microsystems Corporation. Tool for removing integrated circuits from a burn-in board. 4,324,040, Cl. 29-829.000.
Gotzenberger, Adolf: *See—*
Schneeweiss, Manfred; Gotzenberger, Adolf; and Ohm, Aloys, 4,324,416, Cl. 280-661.000.
Gould Inc.: *See—*
Zaghi, Hooshmand; and Tisone, Thomas C., 4,325,048, Cl. [illegible]
Goupy, Francois M.: *See—*
Hirel, Jean C.; Goupy, Francois M.; Bloch, Pierre G.; and Degoulet, Patrice E., 4,324,663, Cl. 210-646.000.
Graco Metal Products, Inc.: *See—*
Eldon, James, III; Saint, David; and Latone, Thomas L., 4,324,432, Cl. 297-377.000.
Grady, Clyde C., II. Structural units and arrays therefrom. 4,324,037, Cl. [illegible]
Graf & Cie. A.-G.: *See—*
Geisser, Stephan, 4,324,029, Cl. 29-239.000.
Graham, Donald W.; Rogers, Edward F.; and Kahan, Frederick M., to Merck & Co., Inc. Renal dipeptidase inhibitors. 4,324,733, Cl. 260-402.500.
Granda, Edward J.: *See—*
Klemarczyk, Philip T.; Schmitt, Frederick L.; Granda, Edward J.; and Luccarelli, Domenick, Jr., 4,324,912, Cl. 564-188.000.
Grandjean, Rene, to Mars-Actel. Connector for connecting electric conductors together. 4,324,949, Cl. 174-71.00R.
Grandmaison, John P.; Huettner, Robert E.; Vernon, John H.; and Yu, Kin C., to Honeywell Information Systems Inc. Process and apparatus employing microprogrammed control commands for transferring information between a control processor and communications channels. 4,325,119, Cl. 364-200.000.
Grasselli, Robert K.; and Guttmann, Andrew T., to Standard Oil Company. Preparation of unsaturated acids and esters from saturated carboxylic acid derivatives and carbonyl compounds over phosphate catalysts. 4,324,908, Cl. 560-210.000.
Grasser, Katalin: *See—*
Benko, Pal; Gelleri, Andras; Hajos, Gyorgy; Messmer, Andras; Pallos, Laszlo; Petocz, Lujza; Kosoczky, Ibolya; Grasser, Katalin; Gorog, Peter; and Szirt nee Kiszelly, Eniko, 4,324,894, Cl. 544-128.000.
Graves, Bernard A.: *See—*
Byrt, Graham A.; and Graves, Bernard A., 4,324,397, Cl. 271-217.000.
Gravisse, Philippe. Solar radiation concentrator. 4,324,946, Cl. [illegible]
Gray, Charles R., to H. H. Robertson Company. Fire-resistant floor structure. 4,324,078, Cl. 52-221.000.
Gray, John B.: *See—*
Pipe, William J. C.; and Gray, John B., 4,324,107, Cl. 62-268.000.
Green, William A., to ACF Industries, Inc. Carburetor improvement for part throttle vacuum staging. 4,324,746, Cl. 261-51.000.
Greene, Ronald W.; and Marshall, John L. Transcutaneous pain control and/or muscle stimulating apparatus. 4,324,253, Cl. 128-421.000.
Greenup, Christopher J.: *See—*
Van Dommelen, Dirk J.; and Greenup, Christopher J., 4,324,075, Cl. 52-2.000.
Grettenberg, Thomas L. Overwater radar navigation system. 4,325,066, Cl. 343-7.0ED.
Griesser A. G.: *See—*
Frei, Paul, 4,324,284, Cl. 160-172.000.
Grieshaber, Karl H., to Ampex Corporation. Digital measurement system for automatically focusing a television camera. 4,325,082, Cl. 358-218.000.
Griffin, Gerald J. L., to Coloroll Limited. Process for incorporating a modifier of properties of a shaped synthetic polymer containing a biodegradable substance therein, and the product of the process. 4,324,709, Cl. 523-210.000.
Groth, Edward J., Jr., to Motorola Inc. Non-linear logic module for increasing complexity of bit sequences. 4,325,129, Cl. 364-717.000.
Groutage, Frederick D., to United States of America, Navy. High-torque/acceleration stabilized sensor platform. 4,324,378, Cl. 248-184.000.
Grumman Aerospace Corp.: *See—*
Oman, Richard A., 4,324,985, Cl. 290-55.000.
Grundy, Reed H., to American Standard Inc. Vital electronic time delay circuit. 4,325,101, Cl. 361-195.000.
Grunert, Wilfried: *See—*
Weihrich, Georg; Grunert, Wilfried; and Nusslin, Hans-Jorg, 4,324,944, Cl. 373-105.000.
GTE Laboratories Incorporated: *See—*
Proud, Joseph M.; Riseberg, Leslie A.; and Fallier, Charles N., Jr., 4,325,004, Cl. 315-45.000.
GTE Products Corporation: *See—*
Broadt, David R., 4,324,543, Cl. 431-359.000.
Broadt, David R.; and Audesse, Emergy G., 4,325,104, Cl. 362-11.000.
Guard, Wayne; and Feher, Tibor, to Feherguard Products. Pool cover roller assembly. 4,324,370, Cl. 242-86.520.
Guenther, Carl D. Easy-on tire chains. 4,324,278, Cl. 152-213.00R.
Guerin, William F., to Electric Power Research Institute, Inc. Apparatus for suspending thermal shielding within a nuclear reactor. 4,324,619, Cl. 376-290.000.
Guillaume, Jacques; Nedelec, Lucien; and Dumont, Claude, to Roussel Uclaf. Antipsychotic tetrahydropyridinyl-indoles, compositions and method of use. 4,324,790, Cl. 424-263.000.
Gulf Oil Corporation: *See—*
Acharya, Vikramkumar; and Lakshmanan, Pallavoor R., 4,324,871, Cl. 525-149.000.
Lakshmanan, Pallavoor R., 4,324,872, Cl. 525-274.000.
Gulf & Western Corporation: *See—*
Baier, Robert J.; and Glatfelter, Edward W., 4,324,233, Cl. 128-58.000.
Gulla, Michael; and Hartnett, Barry J., to Shipley Company Inc. Solute monitoring process. 4,324,589, Cl. 106-1.220.
Gunter, Thomas G.; and Tredennick, Harry L., to Motorola, Inc. Two-level control store for microprogrammed data processor. 4,325,121, Cl. 364-200.000.
Gurries, Albert G. Bow-mounted propeller driven boat. 4,324,551, Cl. 440-38.000.
Gustavson, Richard E.; Selvage, Craig C.; and Whitney, Daniel E., to Charles Stark Draper Laboratory, Inc., The. Operator member erection system and method. 4,324,032, Cl. 29-407.000.
Gutierrez, Eddie N.; and Lamberti, Vincent, to Lever Brothers Company. Citric acid esters and process for producing citric acid. 4,324,906, Cl. 560-176.000.
Guttmann, Andrew T.: *See—*
Grasselli, Robert K.; and Guttmann, Andrew T., 4,324,908, Cl. 560-210.000.
H. A. Phillips & Co.: *See—*
Ross, Robert R.; and Bentsch, Daniel R., 4,324,106, Cl. 62-197.000.
H. H. Robertson Company: *See—*
Gray, Charles R., 4,324,078, Cl. 52-221.000.
Hack, Albert G., to Crescent Engineering Company. Flotation method and apparatus for recovering crude oil from tar-sand. 4,324,652, Cl. 209-3.000.
Hagen, Helmut; Reuther, Wolfgang; and Pommer, Ernst-Heinrich, to BASF Aktiengesellschaft. 4-Nitro-2-trichloromethylphenyl disulfides. 4,324,793, Cl. 424-270.000.
Hagen, Magnus F.; and Rask, Richard O., to Standard Precision, Inc. Anti-rack system for wide drawers and the like. 4,324,439, Cl. 308-3.800.
Hager, Horst, to Hightrack Computer Technik GmbH. Drive unit with a motor. 4,324,994, Cl. 310-68.00R.
Hahn, Karl; and Kampf, Wolfgang, to Chemische Werke Huels, AG. Process for preparing reaction products of conjugated diolefins and aromatic hydrocarbons. 4,324,939, Cl. 585-438.000.
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Davis, Bayard C.; and Heyden, Donald H., 4,324,138, Cl. 73-341.000.
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Kobayashi, Yasuhiro; and Takeda, Renzo, 4,324,615, Cl. 376-267.000.
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Oka, Hitoshi; Kikuchi, Hiroshi; Yokono, Hitoshi; Suzuki, Haruo; Yoshimura, Toyofusa; Matsuo, Akira; Miyazawa, Osamu; Tanaka, Isamu; and Isogai, Tokio, 4,324,629, Cl. 204-180.00P.
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Arpe, Hans-Jurgen, 4,324,921, Cl. 568-427.000.
Dahlhausen, Gebhard; Dibbern, Hans-Werner; Fulberth; and Ross, Gerhard, 4,324,779, Cl. 424-20.000.
Elsner, Georg; Vollmer, Hartfrid; and Reutel, Ernst, 4,324,919, Cl. 568-8.000.
Koch, Manfred; Mildenberger, Hilmar; and Sachse, Burkhard, 4,324,799, Cl. 424-301.000.
Moraw, Roland; Steinau, Peter; and Pierson, Fritz, 4,324,421, Cl. 283-7.000.
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Uskokovic, Milan R.; and Wovkulich, Peter M., 4,324,726, Cl. 260-343.600.
Hole, Robert W. Safety apparatus for barbell. 4,324,398, Cl. 272-123.000.
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Grandmaison, John P.; Huettner, Robert E.; Vernon, John H.; and Yu, Kin C., 4,325,119, Cl. 364-200.000.
Hughes Aircraft Company: *See*—
Ellion, M. Edmund, 4,324,096, Cl. 60-200.00R.
Mastrup, Frithjof N.; and Marabella, Leonard J., 4,324,765, Cl. 422-173.000.
Wittmann, Alois; and Rubin, Charles P., 4,324,374, Cl. 244-158.00R.
Hughes, Brian T.; Redstone, Reuben; Vokes, John C.; and Wight, David R., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Field effect devices and their fabrication. 4,325,073, Cl. 357-22.000.
Hughes, Donald R. Tubular key manufacturing machine. 4,324,513, Cl. 409-82.000.
Hughes, Larry M.: *See*—
O'Connell, Philip E.; Hughes, Larry M.; and Fletcher, James D., 4,325,136, Cl. 369-219.000.
Huhn, Magda; Somfai, Eva; Szabo, Gabor; Resovszki, Gabor; and Gneth nee Zalantai, Livia, to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara RT. Malonic esters. 4,324,903, Cl. 560-82.000.
Humiston, Gerald F. Binary vapor cycle method of electrical power generation. 4,324,983, Cl. 290-1.00R.
Hungerford, Gordon P., to Mobil Oil Corporation. Flowable polyacrylonitrile power treated with essentially pure solvent. 4,324,707, Cl. 524-175.000.
Hunt, John E., to DuTone Corporation. Method of removing ferrocyanide ions from rinse water of an alkaline cyanide metal plating process. 4,324,666, Cl. 210-722.000.
Hushbeck, Donald F., to Halliburton Services. Circulation valve. 4,324,293, Cl. 166-317.000.
Hydra-Rig, Inc.: *See*—
Elliston, Thomas L., 4,324,194, Cl. 114-264.000.
Hydril Company: *See*—
Blose, Thomas L., 4,324,049, Cl. 33-199.00B.
Hydrodynamic Energy Systems Corp.: *See*—
Borgren, Peter M., 4,324,984, Cl. 290-54.000.
Hylton, Thomas A.; and Walker, Jerry A., to Upjohn Company, The. Processes for the preparation of hydratropic acids and esters. 4,324,904, Cl. 560-102.000.
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Dorigotti, Luciano; Gaviraghi, Giovanni; Pifferi, Giorgio; Pinza, Mario; and Semeraro, Claudio, 4,324,788, Cl. 424-250.000.
Ichikawa, Hiroki, to Olympus Optical Co., Ltd. Tape recorder having interlocked tape speed and tone control adjustment. 4,325,094, Cl. 360-137.000.
Ida, Shuichiro: *See*—
Oshima, Syoiti; and Ida, Shuichiro, 4,324,152, Cl. 74-606.00R.
Ideal Toy Corporation: *See*—
Cooper, Julius, 4,324,065, Cl. 46-120.000.
Iglitzki, Claude: *See*—
Goldfarb, Charles; and Iglitzki, Claude, 4,324,352, Cl. 223-91.000.
Ignasiak, Michael J., to Zimmer, Inc. Packaging for surgical implements. 4,324,331, Cl. 206-363.000.
Ignatko, Gyorgy; Ilyes, Zoltan; Nemeth, Ferenc; Racz, Matyas; Varga, Albert; and Varro, Jeno, to Kozponti Banyaszati Fejlesztesi Intezet; and Oroszlanyi Szenbanyak. Mechanized longwall system for mining. 4,324,509, Cl. 405-299.000.
Ikai, Shigeru: *See*—
Ueno, Haruo; Yano, Takefumi; Inoue, Tokuji; Ikai, Shigeru; Tamura, Masanori; and Yuasa, Sakae, 4,324,877, Cl. 526-127.000.
Ikeda, Minoru: *See*—
Yokomichi, Isao; Yamada, Takeo; Mohri, Akio; Ota, Kiyoshi; and Ikeda, Minoru, 4,324,665, Cl. 210-718.000.
Ikeda, Nobuo; and Yoshimura, Hirofumi, to Matsushita Electric Industrial Co., Ltd. Microwave heating apparatus having magnetic coupling for driving the antenna. 4,324,967, Cl. 219-10.55F.
Ikezaki, Muneyoshi: *See*—
Umino, Norihide; Ohishi, Tokuro; Ikezaki, Muneyoshi; Sato, Masanori; and Nagao, Taku, 4,324,800, Cl. 424-308.000.
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Illinois Tool Works Inc.: *See*—
Olsen, Robert C., 4,324,085, Cl. 53-48.000.
Ilyes, Zoltan: *See*—
Ignatko, Gyorgy; Ilyes, Zoltan; Nemeth, Ferenc; Racz, Matyas; Varga, Albert; and Varro, Jeno, 4,324,509, Cl. 405-299.000.
Imahori, Seiichi; Kaneko, Masaharu; Ono, Hitoshi; Imazeki, Shuji; Mukoh, Akio; and Morishita, Hirosada, to Mitsubishi Chemical Industries Limited; and Hitachi Ltd. Liquid crystal composition. 4,324,455, Cl. 350-349.000.
Imazeki, Shuji: *See*—
Imahori, Seiichi; Kaneko, Masaharu; Ono, Hitoshi; Imazeki, Shuji; Mukoh, Akio; and Morishita, Hirosada, 4,324,455, Cl. 350-349.000.
Imperial Chemical Industries Limited: *See*—
Ballard, Denis G.; Charnah, Richard M.; Droughton, John F.; and Rideal, Graham R., 4,324,838, Cl. 428-402.000.
Cartwright, David, 4,324,627, Cl. 204-158.0HA.
Hartshorn, Angus J.; and Jones, Eric, 4,324,691, Cl. 252-429.00B.
Kirby, Ian J.; Mitchell, Michael I.; and Stratton, Andrew, 4,324,182, Cl. 102-217.000.
Senior, Peter J.; Wright, Leonard F.; and Alderson, Barry, 4,324,907, Cl. 560-185.000.
Ina, Toshikazu; and Kawai, Hisasi, to Nippon Soken, Inc. Electronically controlled ignition for internal combustion engines. 4,324,217, Cl. 123-417.000.
Inada, Masami; Hashimoto, Nobuyuki; and Satomoto, Atsushi, to Aisin Seiki Kabushiki Kaisha. Temperature responsive switch. 4,325,047, Cl. 337-370.000.
Ingersoll-Rand Company: *See*—
Brown, Arthur E., 4,324,538, Cl. 418-191.000.
Ingouf, Pierre. Devices for setting a sail. 4,324,192, Cl. 114-106.000.
Inheed Pty Ltd.: *See*—
Wright, Douglas C.; and Roberts, Sidney N., 4,324,334, Cl. [illegible]
Inland Manufacturing Company: *See*—
Chausse, Leon C., 4,324,393, Cl. 269-46.000.
Innovative Computer Products: *See*—
Stutz, William H., Jr.; and Sandor, Joseph, 4,324,014, Cl. 15-4.000.
Ino, Hidetoshi: *See*—
Kobayashi, Sumio; Takahashi, Tadashi; and Ino, Hidetoshi, 4,325,114, Cl. 363-68.000.
Inoue, Hidehiko: *See*—
Ishihara, Takeo; Inoue, Hidehiko; Kishizawa, Yuji; and Hayashi, Tsutomu, 4,324,306, Cl. 180-228.000.
Inoue-Japax Research Incorporated: *See*—
Inoue, Kiyoshi, 4,324,969, Cl. 219-69.00C.
Inoue, Kiyoshi, to Inoue-Japax Research Incorporated. Electrical discharge machining system with optical isolation of a gap monitor from remote control circuit. 4,324,969, Cl. 219-69.00C.
Inoue, Tokuji: *See*—
Ueno, Haruo; Yano, Takefumi; Inoue, Tokuji; Ikai, Shigeru; Tamura, Masanori; and Yuasa, Sakae, 4,324,877, Cl. 526-127.000.
Inouye, Shigeharu: *See*—
Iwamatsu, Katsuyoshi; Tsuruoka, Takashi; Mizutani, Kazuko; Kawaharajyo, Katsumi; Watanabe, Tadahiro; and Inouye, Shigeharu, 4,324,891, Cl. 544-021.000.
Inouye, Yoshinori; and Ohkubo, Tadahiko, to Toray Industries, Inc. Yarn winding apparatus. 4,324,368, Cl. 242-18.0PW.
Institut Francais du Petrole: *See*—
Cosyns, Jean; Juguin, Bernard; Le Page, Jean-Francois; and Miquel, Jean, 4,324,938, Cl. 585-332.000.
Torck, Bernard; Convers, Alain; Duee, Didier; and Mikitenko, Paul, 4,324,924, Cl. 568-697.000.
Institut National de la Sante et de la Recherche Medicale: *See*—
Hirel, Jean C.; Goupy, Francois M.; Bloch, Pierre G.; and Degoulet, Patrice E., 4,324,663, Cl. 210-646.000.
Institute Francais du Petrole: *See*—
Le Page, Jean-Francois; Cosyns, Jean; Miquel, Jean; and Juguin, Bernard, 4,324,646, Cl. 208-71.000.
Intel Corporation: *See*—
Colley, Stephen R.; Cox, George W.; Rattner, Justin R.; and Swanson, Roger C., 4,325,120, Cl. 364-200.000.
International Business Machines Corporation: *See*—
Corcoran, Richard A.; Keenan, William A.; Michaelides, Demetrios; and Yun, Bob H., 4,325,025, Cl. 324-158.00R.
Krantz, Roger H.; de Araujo Pinheiro, Edwin J.; and Tuttle, James A., 4,325,116, Cl. [illegible]
International Flavor & Fragrances Inc.: *See*—
Klemarczyk, Philip T.; Schmitt, Frederick L.; Granda, Edward J.; and Luccarelli, Domenick, Jr., 4,324,912, Cl. 564-188.000.
International Flavors & Fragrances Inc.: *See*—
Kiwala, Jacob; Tokarzewski, Richard J.; Schmitt, Frederick L.; and Sprecker, Mark A., 4,324,923, Cl. 568-659.000.
Trenkle, Robert W.; Mookherjee, Braja D.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,324,704, Cl. 252-522.00R.

International Harvester Company: *See*—
MacKenzie, Hugh J., 4,324,411, Cl. 280-43.230.
Rudy, Douglas W., 4,324,151, Cl. 74-532.000.
Schenk, Dale C.; and Van Hooydonk, Anton H. G., 4,324,296, Cl. 171-311.000.
International Resources Company, Ltd.: *See*—
Hasegawa, Shoichi; Yamashita, Thoru; and Kameda, Mituuo, 4,324,764, Cl. 422-159.000.
International Standard Electric Corporation: *See*—
Colardelle, Joel S.; Girard, Pierre; and Pillou, Jean-Pierre M., 4,325,055, Cl. 340-347.0AD.
Irish, John T., to J. I. Industries, Incorporated. Carrier for pneumatic tube systems. 4,324,511, Cl. 406-189.000.
Ironite Products Company: *See*—
Fox, Irwin, 4,324,298, Cl. 175-64.000.
Irwin, William J.: *See*—
Range, Kenneth; Irwin, William J.; Reed, Russell, Jr.; and Silver, Wallace E., 4,324,599, Cl. 149-39.000.
Isenhoff, Eric H., to Roof Systems, Inc. Batten seaming machine. 4,324,031, Cl. 29-243.580.
Ishibe, Nobuyuki: *See*—
Pryor, Alvetta; and Ishibe, Nobuyuki, 4,324,928, Cl. 570-118.000.
Ishida, Kinji, to Yosnida Kogyo K.K. Dual window assembly. 4,324,071, Cl. 49-63.000.
Ishida, Noboru: *See*—
Kimura, Shoji; Ishida, Noboru; Masunaga, Midori; and Kohno, Yoshiki, 4,324,933, Cl. 585-6.600.
Ishihara Sangyo Kaisha, Ltd.: *See*—
Yokomichi, Isao; Yamada, Takeo; Mohri, Akio; Ota, Kiyoshi; and Ikeda, Minoru, 4,324,665, Cl. 210-718.000.
Ishihara, Takeo; Inoue, Hidehiko; Kishizawa, Yuji; and Hayashi, Tsutomu, to Honda Giken Kogyo Kabushiki Kaisha. Engine supporting structure for motorcycle. 4,324,306, Cl. 180-228.000.
Ishihara, Toshinobu; Taguchi, Kenichi; Yamamoto, Akira; Takasaka, Nobuo; Shimizu, Hisashi; and Oshima, Mitsuyoshi, to Shin-Etsu Chemical Co., Ltd. 1-Halo-4-decene compounds. 4,324,931, Cl. 570-[illegible].
Ishii, Kaoru, to Texas Instruments Incorporated. Magnetic head transducer having enhanced signal output and manufacturing method therefor. 4,325,093, Cl. 360-120.000.
Ishii, Yoshiaki: *See*—
Ito, Kanichi; Hirayama, Yoshio; Ishii, Yoshiaki; and Ando, Naoyoshi, 4,324,620, Cl. 202-89.000.
Ishikawa, Ryuichi: *See*—
Aoki, Shinji; Ishikawa, Ryuichi; and Sawada, Yasuhiro, 4,324,759, Cl. 422-62.000.
Ishikawa, Youhei: *See*—
Nishikawa, Toshio; Ito, Yoji; Ishikawa, Youhei; and Tamura, Sadahiro, 4,325,035, Cl. 331-96.000.
Isogai, Tokio: *See*—
Oka, Hitoshi; Kikuchi, Hiroshi; Yokono, Hitoshi; Suzuki, Haruo; Yoshimura, Toyofusa; Matsuo, Akira; Miyazawa, Osamu; Tanaka, Isamu; and Isogai, Tokio, 4,324,629, Cl. 204-180.00P.
Ito, Kanichi; Hirayama, Yoshio; Ishii, Yoshiaki; and Ando, Naoyoshi, to Ebara Corporation. Pyrolyzing apparatus. 4,324,620, Cl. 202-89.000.
Ito, Katsuo; and Yoshimura, Kazunori, to Murata Manufacturing Coi, Ltd. Provisional fixing structure of electronic tuner. 4,325,103, Cl. 361-424.000.
Ito, Motoya: *See*—
Sato, Masaki; Okuda, Hironori; Ito, Motoya; and Makino, Yuji, 4,324,993, Cl. 310-58.000.
Ito, Satoru; Watanabe, Tadashi; and Sugiura, Shinji, to Kansai Paint Co., Ltd. Metallic painting. 4,324,708, Cl. 524-599.000.
Ito, Yoichiro, to United States of America, Health, Education and Welfare. Apparatus and method for continuous countercurrent extraction and particle separation. 4,324,661, Cl. 210-635.000.
Ito, Yoji: *See*—
Nishikawa, Toshio; Ito, Yoji; Ishikawa, Youhei; and Tamura, Sadahiro, 4,325,035, Cl. 331-96.000.
ITT Industries, Inc.: *See*—
Hinze, Klaus; and Wiskirchen, Klaus B., 4,324,955, Cl. 200-5.00E.
Lupertz, Hans-Henning, 4,324,271, Cl. 137-493.000.
Prohaska, Hans; and Seitter, Wolf, 4,325,007, Cl. 315-200.00A.
Ivy, John B.; and Boozalis, Ted S., to Dow Chemical Company, The. Halogenated hydrocarbons inhibited against denickelification with lower alkylcyanide compounds. 4,324,757, Cl. 422-7.000.
Iwamatsu, Katsuyoshi; Tsuruoka, Takashi; Mizutani, Kazuko; Kawaharajyo, Katsumi; Watanabe, Tadahiro; and Inouye, Shigeharu, to Meiji Seika Kaisha, Ltd. Process for the production of a 7-methoxycephalosporine derivative. 4,324,891, Cl. 544-021.000.
Iwanaga, Kazuyoshi; Sugano, Kazuhiko; and Ohtsuka, Kunio, to Nissan Motor Company, Limited. Hydraulic control system of automatic power transmission. 4,324,154, Cl. 74-869.000.
Iwanaga, Kazuyoshi; Sugano, Kazuhiko; and Ohtsuka, Kunio, to Nissan Motor Company, Limited. Method and apparatus for hydraulic control of automatic transmission. 4,324,156, Cl. 74-869.000.
Iwasaki, Shinichiro, to Aisin Seiki Company, Limited. Temperature sensor. 4,324,137, Cl. 73-362.0CP.
J. I. Industries, Incorporated: *See*—
Irish, John T., 4,324,511, Cl. 406-189.000.
J. M. Voith GmbH: *See*—
Bartmann, Bernhard, 4,324,369, Cl. 242-66.000.
J. S. Staedtler, Firma: *See*—
Rosel, Hans-Dieter, 4,325,072, Cl. 346-140.00R.
Jaber, Mark J.: *See*—
Seymour, Donald E.; Seymour, Greg A.; and Jaber, Mark J., 4,324,578, Cl. 71-67.000.
Jabs, Gert: *See*—
Dahm, Manfred; Jabs, Gert; and Wegner, Christian, 4,324,817, Cl. 427-150.000.
Reischl, Artur; and Jabs, Gert, 4,324,716, Cl. 524-761.000.
Jacob, Philippe; and Tondeur, Daniel, to ELF France. Process for the separation or purification of mixtures by the use of a solid adsorption. 4,324,566, Cl. 55-28.000.
Jacobi, Haireddin: *See*—
Boltze, Karl-Heinz; Dell, Hans-Dieter; and Jacobi, Haireddin, 4,324,787, Cl. 424-250.000.
Jacobs, Harold R.; and Udell, Kent S., to University of Utah. Process for recovering products from oil shale. 4,324,292, Cl. 166-261.000.
Jacobson, Avram A. Automatic flood control valve. 4,324,268, Cl. 137-312.000.
Jacquet, Bernard; Mahieu, Claude; and Papantoniou, Christos, to L'Oreal. Copolymers, process for preparing the same and cosmetic compositions containing the same. 4,324,780, Cl. 424-47.000.
James B. Lansing Sound, Inc.: *See*—
Durbin, Howard M., 4,324,312, Cl. 181-171.000.
Janak, Miloslav; Ginsberg, Martin; and Reiners, Albrecht, to U.S. Philips Corporation. Device for synchronizing a clock pulse generator with a serial data signal. 4,325,090, Cl. 360-51.000.
Japan Iron and Steel Federation: *See*—
Aoki, Shinji; Ishikawa, Ryuichi; and Sawada, Yasuhiro, 4,324,759, Cl. 422-62.000.
Japan Styrene Paper Corporation: *See*—
Hatakeyama, Hideo; and Yamamoto, Toru, 4,324,748, Cl. 264-51.000.
Japan Synthetic Rubber Co., Ltd.: *See*—
Furuichi, Minoru; Homma, Chikara; and Ando, Noriaki, 4,324,866, Cl. 521-140.000.
Jarman, Davis R.; and Hinson, Virgil H. Auto body clamp. 4,324,125, Cl. 72-479.000.
Jarman, James C. Incense burning apparatus. 4,324,763, Cl. 422-116.000.
Jaye, Richard C. Sensor for detecting deleterious conditions. 4,325,059, Cl. 340-585.000.
Jeck, Richard K. Automatic control unit for a wind-following rotor. 4,325,014, Cl. 318-614.000.
Jellison, Frank R.: *See*—
Alexander, Joseph H.; and Jellison, Frank R., 4,324,604, Cl. 156-131.000.
Jenny, Ernst: *See*—
Berchtold, Max; and Jenny, Ernst, 4,324,526, Cl. 415-48.000.
Jepson, William D.: *See*—
Fradenburgh, Evan A.; Jepson, William D.; and Moffitt, Robert C., 4,324,530, Cl. 416-228.000.
Jersey Nuclear-AVCO Isotopes, Inc.: *See*—
Morton, Richard G., 4,325,006, Cl. 315-112.000.
Jessen, Leofwin A.: *See*—
Conn, James F.; and Jessen, Leofwin A., 4,324,772, Cl. 423-309.000.
Jimmy's Radio & Televison Corp.: *See*—
Hills, Joseph F., 4,325,069, Cl. 343-750.000.
Jiruse, Jaroslav; and Svobodova, Antonin, to Adamovske Strojirny, Narodni Podnik. Drive device. 4,324,180, Cl. 101-216.000.
Joelson, Ronald. Slingshot-like tether toy. 4,324,220, Cl. 124-18.000.
Joerns Furniture Company: *See*—
Houlberg, Don M.; Anderson, Larry D.; and Damico, Frank M., 4,324,010, Cl. 5-68.000.
Johansson, Nils L.; and Weiertz, Stig H. A., to AB Volvo. Gear shift not requiring adjustment. 4,324,149, Cl. 74-473.00R.
Johansson, Sixten A. M., to Volvo BM AB. Vehicle with bogie-mounted wheels and raising device for a pair of wheels. 4,324,417, Cl. 180-[illegible].
John H. Best & Sons, Inc.: *See*—
Ovitz, Ernest, III, 4,324,379, Cl. 248-222.100.
Johnson, Alfred L., Jr., to LaJet Energy Company. Space frame. 4,324,083, Cl. 52-650.000.
Johnson, Allen S., Jr. Bag-type filter apparatus with air diffuser having extended bag support. 4,324,571, Cl. 55-302.000.
Johnson, Arnold N.: *See*—
Rim, Yong S.; Nudenberg, Walter; and Johnson, Arnold N., 4,324,870, Cl. 525-127.000.
Johnson, Delmar R., to Bell & Howell Company. Microfilm filing system. 4,324,484, Cl. 355-5.000.
Johnson, E. Marshall, to Rockhill Enterprises. Method and apparatus for growing hydrozoa. 4,324,200, Cl. 119-2.000.
Johnson, Frederick O., to Westinghouse Electric Corp. Regulated DC power supply. 4,325,115, Cl. 363-81.000.
Johnson & Johnson: *See*—
Beede, Charles H.; and Zirnite, Richard N., 4,324,591, Cl. 106-85.000.
Mesek, Frederick K.; and Repke, Virginia L., 4,324,245, Cl. 128-287.000.
Johnson, Logan; Wood, Grant; and Brofft, Jerry, to Minnetonka, Inc. Dispenser for dispensing liquid from a replaceable container. 4,324,348, Cl. 222-181.000.
Johnson Matthey Public Limited Company: *See*—
Heffer, John P., 4,324,700, Cl. 252-472.000.
Johnson, Nicky M.; and Blaser, Lawrence M., to Fairchild Camera & Instrument Corp. Ignition control system with electronic advance. 4,324,216, Cl. 123-415.000.

Johnston, Edwin S.: *See*—
Woodliff, Ronald D.; Paape, Kenneth L.; and Johnston, Edwin S., 4,324,424, Cl. 285-158.000.
Johnston, Tony. Throat guard. 4,324,003, Cl. 2-2.000.
Johnstone, Alexander, to BP Chemicals Limited. Polymerization catalyst and process. 4,324,692, Cl. 252-429.00B.
Jones, Allan P.; and Reichstein, Patrick L. Safety knife holder. 4,324,377, Cl. 248-37.600.
Jones, Eric: *See*—
Hartshorn, Angus J.; and Jones, Eric, 4,324,691, Cl. 252-429.00B.
Jones, Henry B.; and Smith, Randlow, to Texaco Inc. Gasification apparatus with means for cooling and separating solids from the product gas. 4,324,563, Cl. 48-62.00R.
Jonsereds Aktiebolag: *See*—
Carlsson, Kurt L., 4,324,134, Cl. 73-117.100.
Josemans, Leo J. M., to Stackpole Components Company. Slide switch. 4,324,957, Cl. 200-16.00C.
Josten, Walter; and Vahlensieck, Hans-Joachim, to Dynamit Noble Aktiengesellschaft. Tetravalent vanadium compounds which are soluble in organic solvents. 4,324,736, Cl. 260-429.00R.
Juguin, Bernard: *See*—
Cosyns, Jean; Juguin, Bernard; Le Page, Jean-Francois; and Miquel, Jean, 4,324,938, Cl. 585-332.000.
Le Page, Jean-Francois; Cosyns, Jean; Miquel, Jean; and Juguin, Bernard, 4,324,646, Cl. 208-71.000.
Junino, Alex: *See*—
Bugaut, Andree; and Junino, Alex, 4,324,553, Cl. 8-407.000.
Jupe, Christoph; Waldmann, Helmut; and Seifert, Hermann, to Bayer Aktiengesellschaft. Process for the preparation of polyhydric phenols. 4,324,925, Cl. 568-719.000.
Kabushiki Kaisha Daini Seikosha: *See*—
Kuwabara, Tsuneo, 4,325,036, Cl. 331-176.000.
Kabushiki Kaisha Komatsu Seisakusho: *See*—
Aruga, Taketo; Morita, Koichi; Hoshi, Kenzo; and Kojima, Yasuo, 4,324,098, Cl. 60-420.000.
Kabushiki Kaisha L.P.L.: *See*—
Miyazaki, Kiyoshi, 4,324,477, Cl. 354-293.000.
Kabushiki Kaisha Miyano Tekkosho: *See*—
Uehara, Sukehiro, 4,324,162, Cl. 82-2.500.
Kabushiki Kaisha Tokai Rika Denki Seisakusho: *See*—
Yamaguchi, Terumoto; and Ohta, Masaya, 4,324,391, Cl. 266-200.000.
Kaesz, Herbert D.: *See*—
Porter, Clifford R.; and Kaesz, Herbert D., 4,324,559, Cl. 44-1.0SR.
Kagi, Hiromichi: *See*—
Akasaki, Isamu; Ohsima, Masaaki; Matsuda, Nobuhide; Matsuki, Michio; Tsukamoto, Yoshio; Kagi, Hiromichi; and Fukazawa, Hidehalu, 4,325,070, Cl. 346-108.000.
Kahan, Frederick M.: *See*—
Graham, Donald W.; Rogers, Edward F.; and Kahan, Frederick M., 4,324,733, Cl. 260-402.500.
Kahara, Toshiki: *See*—
Ebato, Noboru; Kahara, Toshiki; and Tamura, Kohki, 4,324,828, Cl. 429-209.000.
Kahng, Dawon: *See*—
Chang, Chuan C.; Cooper, James A., Jr.; Kahng, Dawon; and Murarka, Shyam P., 4,324,038, Cl. 29-571.000.
Kajiwara, Shoichiro: *See*—
Naito, Akira; Hayakawa, Toru; Nakanishi, Masakatsu; Ikuta, Sunao; Kajiwara, Shoichiro; and Yamaguchi, Hitoshi, 4,324,784, Cl. 424-130.000.
Kalender, Willi; Linke, Gerhard; and Pfeiler, Manfred, to Siemens Aktiengesellschaft. Tomographic x-ray apparatus for the production of transverse layer images. 4,324,978, Cl. 250-445.00T.
Kalt, Evelyne: *See*—
Avar, Lajos; Finck, Hans-Werner; and Kalt, Evelyne, 4,324,628, Cl. 204-159.240.
Kameda, Mitsuo: *See*—
Hasegawa, Shoichi; Yamashita, Thoru; and Kameda, Mitsuo, 4,324,764, Cl. 422-159.000.
Kamino, Kimiyaki; and Fukuda, Masakatsu, to Mitsubishi Seiko Kabushiki Kaisha. Magnetic alloy. 4,324,597, Cl. 148-103.000.
Kamiya, Takashi; Teraji, Tsutomu; Hemmi, Keiji; and Goto, Jiro, to Fujisawa Pharmaceutical Co., Ltd. 7-(N-Substituted-2-phenylglycinamido)-3-substituted-3-cephem-4-carboxylic acid compounds. 4,324,892, Cl. 544-28.000.
Kampf, Wolfgang: *See*—
Hahn, Karl; and Kampf, Wolfgang, 4,324,939, Cl. 585-438.000.
Kan, Takayoshi, to Research Foundation for Microbial Diseases of Osaka University. Preparation of live attenuated mumps virus for a vaccine. 4,324,861, Cl. 435-237.000.
Kaneko, Masaharu: *See*—
Imahori, Seiichi; Kaneko, Masaharu; Ono, Hitoshi; Imazeki, Shuji; Mukoh, Akio; and Morishita, Hirosada, 4,324,455, Cl. 350-349.000.
Kaneko, Masaru: *See*—
Hashimoto, Hiroshi; Kaneko, Masaru; and Kuge, Yoshihiro, 4,324,304, Cl. 180-9.520.
Kaneko, Yutaka: *See*—
Kawakatsu, Satoshi; Hirabayashi, Shigeto; Ninomiya, Hidetaka; and Kaneko, Yutaka, 4,324,856, Cl. 430-566.000.
Kansai Paint Co., Ltd.: *See*—
Ito, Satoru; Watanabe, Tadashi; and Sugiura, Shinji, 4,324,708, Cl. 524-599.000.
Karasudani, Yasuo, to Tokico Ltd. Dust cover. 4,324,318, Cl. 188-73.310.
Karayannis, Nicholas M.; and Skryantz, John S., to Standard Oil Company (Indiana). Alpha-olefin polymerization catalyst. 4,324,690, Cl. 252-429.00B.
Karl Mengele & Sohne Maschinenfabrik and Eisengiesserei GmbH & Co.: *See*—
Wistuba, Eberhard; Lenzer, Xaver; and Mandle, Herbert, 4,324,091, Cl. 56-16.600.
Karns, Phil J., to Carrier Corporation. Level supply air temperature multi-zone heat pump system and method. 4,324,288, Cl. 165-22.000.
Kashigi, Kazuo; and Kouyama, Toshitake, to Nippon Electric Co., Ltd. Digital television video signal storage system. 4,325,075, Cl. 358-13.000.
Kasper, Dennis L., to President and Fellows of Harvard College. Type II group B *Streptococci polysaccharide*. 4,324,887, Cl. 536-53.000.
Kasprzak, Kenneth A., to Dow Corning Corporation. Method for removing tacky adhesives and articles adhered therewith. 4,324,595, Cl. 134-38.000.
Kasting, Edward W.; Glasson, Richard E.; and Primus, Roy J., to Cummins Engine Company, Inc. Lubrication fluid filtering and cooling assembly. 4,324,213, Cl. 123-196.00A.
Katayama, Yoshitaka: *See*—
Takemura, Yasuo; and Katayama, Yoshitaka, 4,324,988, Cl. 307-221.000.
Katz, Saul N., to General Foods Corporation. Adsorption decaffeination. 4,324,840, Cl. 426-422.000.
Kaufman, John G. Container for dispensing liquid. 4,324,349, Cl. 222-207.000.
Kaufmann, Jochen; Altenschopfer, Theodor; Schumann, Klaus; and Rings, Friedel, to Henkel Kommanditgesellschaft auf Aktien. Stable dishwashing agent compositions containing active chlorine. 4,324,677, Cl. 252-99.000.
Kaun, Thomas D.; and Chilenskas, Albert A., to United States of America, Energy. Negative electrode composition. 4,324,846, Cl. 429-112.000.
Kawabata, Toshimi: *See*—
Kimoto, Tetsuo; Takahashi, Hisao; Koshiishi, Hiromichi; Shinkai, Yasuhiro; and Kawabata, Toshimi, 4,324,598, Cl. 148-111.000.
Kawaharajyo, Katsumi: *See*—
Iwamatsu, Katsuyoshi; Tsuruoka, Takashi; Mizutani, Kazuko; Kawaharajyo, Katsumi; Watanabe, Tadahiro; and Inouye, Shigeharu, 4,324,891, Cl. 544-021.000.
Kawai, Hisasi: *See*—
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Kawakatsu, Satoshi; Hirabayashi, Shigeto; Ninomiya, Hidetaka; and Kaneko, Yutaka, to Konishiroku Photo Industry Co., Ltd. Silver halide photographic material. 4,324,856, Cl. 430-566.000.
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Kawamoto, Tamio, to Nissan Motor Co., Ltd. Mechanism for preventing misselection of reverse gear. 4,324,150, Cl. 74-476.000.
Kaye, Gordon E.: *See*—
Bartunek, William; Kaye, Gordon E.; and Mallory, Henry R., 4,325,106, Cl. 362-157.000.
Keen, Christopher V., to Dunlop Limited. Cellular intumescent materials. 4,324,835, Cl. 521-54.000.
Keenan, William A.: *See*—
Corcoran, Richard A.; Keenan, William A.; Michaelides, Demetrios; and Yun, Bob H., 4,325,025, Cl. 324-158.00R.
Kemner, Ulrich, to Robert Bosch GmbH. Noise damping device. 4,324,276, Cl. 138-30.000.
Kennecott Corporation: *See*—
Bowling, Joseph E.; Carpenter, James H.; and Rowe, Russell L., 4,324,367, Cl. 241-60.000.
Kepes, Andre; Weynant, Eric; Avenas, Pierre; and Haudin, Jean-Marc, to Societe Chimique des Charbonnages-CdF CHIMIE. Process for shaping solid polybut-1-ene and the resulting shaped articles. 4,324,756, Cl. 264-322.000.
Kerby, Robert C., to Cominco Ltd. Method and apparatus for controlling the quality of electrolytes. 4,324,621, Cl. 204-1.00T.
Kern, Edward W., Jr.: *See*—
Buczynski, Neal J.; and Kern, Edward W., Jr., 4,324,444, Cl. 308-201.000.
Kerr, Donald L.; and Russo, Gary M., to Eastman Kodak Company. Imagewise accelerating equilibration in ultrasonographic recording. 4,324,849, Cl. 430-3.000.
Kerr, Leslie I. Microphone holder attachment and switch control therefor. 4,325,143, Cl. 455-89.000.
Kessinger, Orville E.: *See*—
Balzer, David J.; and Kessinger, Orville E., 4,324,303, Cl. 180-9.500.
Kessler, John O., to University of Arizona Foundation, The. Algal cell harvesting. 4,324,067, Cl. 47-1.400.
Keyes, David G.: *See*—
White, Dwain M.; and Keyes, David G., 4,324,883, Cl. 528-207.000.
White, Dwain M.; and Keyes, David G., 4,324,884, Cl. 528-207.000.
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Khoylian, Rouzas R.; Cowdery, James R.; and Park, David B., to Design + Process Engineering Inc. Discharge assembly for an oven. 4,324,326, Cl. 198-461.000.
Kienitz, Lutz: *See*—
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Kikuchi, Hiroshi: *See—*
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Kim, Albert A.: *See—*
Konstantinov, Igor I.; Kormushechkina, Antonina I.; Avdonin, Jury A.; Kotlyarsky, Vladimir M.; Kim, Albert A.; Obraztsov, Nikolai V.; and Efimov, Alexei V., 4,324,667, Cl. 210-729.000.
Kim, Bang M., to General Electric Company. Mid-temperature H_2S removal process. 4,324,776, Cl. 423-550.000.
Kim, Myung K.; and Lugay, Joaquin C., to General Foods Corporation. Simulated adipose tissue. 4,324,807, Cl. 426-104.000.
Kim, Syng N.: *See—*
Sarrafian, Vahram K.; and Kim, Syng N., 4,324,403, Cl. 273-177.00R.
Kimoto, Tetsuo; Takahashi, Hisao; Koshiishi, Hiromichi; Shinkai, Yasuhiro; and Kawabata, Toshimi, to Nippon Steel Corporation. Finish annealing process for grain-oriented electrical steel strip or sheet. 4,324,598, Cl. 148-111.000.
Kimpel, Rolf-Dieter, to Siemens Aktiengesellschaft. Polarized magnet system. 4,325,043, Cl. 335-229.000.
Kimura, Shoji; Ishida, Noboru; Masunaga, Midori; and Kohno, Yoshiki, to Nippon Oil Co., Ltd. Electrical insulating oil compositions. 4,324,933, Cl. 585-6.600.
King Instrument Corporation: *See—*
Neathery, David O.; and Riggs, Edward J., 4,325,092, Cl. 380-119.000.
Kirbabas, Nicholas: *See—*
Schwob, Charles J.; Kirbabas, Nicholas; and Erin, Tim, 4,324,117, Cl. 68-209.00R.
Kirby, Ian J.; Mitchell, Michael I.; and Stratton, Andrew, to Imperial Chemical Industries Limited. Apparatus and method for selectively activating plural electrical loads at predetermined relative times. 4,324,182, Cl. 102-217.000.
Kircher, Morton S.; and Specht, Steven J., to Olin Corporation. Remotely connecting and disconnecting cells from circuit. 4,324,634, Cl. 204-228.000.
Kirwan, David F.; and Naumec, John R., to United Technologies Corp. Energy beam drilling apparatus having optical fiber link position sensor. 4,324,973, Cl. 219-121.0EA.
Kishino, Takao; Yamaguchi, Toshihiro; and Tanaka, Kazunori, to Futaba Denshi Kogyo K.K. Driving circuit for a fluorescent display apparatus having fewer leads. 4,325,064, Cl. 340-753.000.
Kishizawa, Yuji: *See—*
Ishihara, Takeo; Inoue, Hidehiko; Kishizawa, Yuji; and Hayashi, Tsutomu, 4,324,306, Cl. 180-228.000.
Kita, Ryuji; Komai, Hisataka; Wakabayashi, Makoto; and Takagishi, Haruyoshi, to Nippon Zeon Co. Ltd.; and Nisson Motor Co. Ltd. Two-package solventless rust preventive material. 4,324,713, Cl. 523-457.000.
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Kiwala, Jacob; Tokarzewski, Richard J.; Schmitt, Frederick L.; and Sprecker, Mark A., to International Flavors & Fragrances Inc. Cyclohexyl phenethylether derivative. 4,324,923, Cl. 568-659.000.
Kiwala, Jacob: *See—*
Trenkle, Robert W.; Mookherjee, Braja D.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,324,704, Cl. 252-522.00R.
Kjellberg, Jan E. Method of laying-out spacing sticks, and apparatus for carrying out the method. 4,324,520, Cl. 414-42.000.
Klamut, Carl J.: *See—*
Luhman, Thomas; Klamut, Carl J.; Suenaga, Masaki; and Welch, David, 4,324,842, Cl. 428-614.000.
Klancnik, Adolph V.; and Klancnik, Kenneth A., to Universal Automatic Corporation. Automatic turret lathe. 4,324,161, Cl. 82-2.00R.
Klancnik, Kenneth A.: *See—*
Klancnik, Adolph V.; and Klancnik, Kenneth A., 4,324,161, Cl. 82-2.00R.
Klaser, William A. Fence structure. 4,324,388, Cl. 256-19.000.
Kleinke, Bernard L.: *See—*
Chiappetti, Arthur B., 4,324,203, Cl. 119-51.110.
Klemarczyk, Philip T.; Schmitt, Frederick L.; Granda, Edward J.; and Luccarelli, Domenick, Jr., to International Flavor & Fragrances Inc. Carboamidoalkyl norbornanes, organoleptic uses thereof and process for preparing same. 4,324,912, Cl. 564-188.000.
Klimczak, Anthony J., to Lear Siegler, Inc. Aircraft fuel booster pump assembly with altitude start capabilities. 4,324,569, Cl. 55-182.000.
Klinger, Max H. Labeling apparatus. 4,324,608, Cl. 156-351.000,
Klose, George J., to Mattel, Inc. Electronic baseball game. 4,324,402, Cl. 273-88.000.
Kniep, Claus: *See—*
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Knife, James E., to TRW Inc. Cartridge pump. 4,324,532, Cl. 417-360.000.
Knoblauch, Jack R.: *See—*
Beukema, Duane M.; and Knoblauch, Jack R., 4,324,382, Cl. 248-406.000.
Knudsen, Randall C.: *See—*
Anderson, Richard D.; Harvey, Ronald B.; Knudsen, Randall C.; and Wedel, John A., 4,324,488, Cl. 355-74.000.
Kobale, Manfred; Lorenz, Hans P.; Weingand, Kaspar; and Wengert, Rolf, to Siemens Aktiengesellschaft. Luminescent screen for flat image display devices. 4,325,002, Cl. 313-485.000.
Kobayashi, Kazuhiko: *See—*
Nanasawa, Yoshifumi; and Kobayashi, Kazuhiko, 4,324,970, Cl. 119-65.00W.
Kobayashi, Seishichi; Mori, Tatsuo; and Morofuji, Akihiko, to Toyo Seikan Kaisha Ltd. Metal can paint providing coating retaining high adhesion even with lapse of time. 4,324,822, Cl. 428-35.000.
Kobayashi, Sumio; Takahashi, Tadashi; and Ino, Hidetoshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Gate controlling circuit for a thyristor converter. 4,325,114, Cl. 363-68.000.
Kobayashi, Yasuhiro; and Takeda, Renzo, to Hitachi, Ltd. Construction of nuclear reactor core. 4,324,615, Cl. 376-267.000.
Kobayashi, Yoshiro; Kumadaki, Itsumaro; Takahashi, Masaaki; and Yamauchi, Takashi, to Kureha Kagaku Kogyo Kabushiki Kaisha. Process for producing mono, bis or tris(3,3,3-trifluoropropyl)benzene. 4,324,929, Cl. 570-127.000.
Koch, Manfred; Mildenberger, Hilmar; and Sachse, Burkhard, to Hoechst Aktiengesellschaft. Fungicidal thioglycolic acid anilides, processes for their manufacture and pesticidal compositions containing them. 4,324,799, Cl. 424-301.000.
Koch, Robert C.: *See—*
Davis, James A.; and Koch, Robert C., 4,324,710, Cl. 524-76.000.
Koerner, Steve J. Trailer light connection system. 4,325,052, Cl. 340-67.000.
Kohno, Yoshiki: *See—*
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Koito Seisakusho Co. Ltd.: *See—*
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Koizumi, Takashi: *See—*
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Kojima, Yasuo: *See—*
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Kokusai Denshin Denwa Co., Ltd.: *See—*
Yoshikazu, Ikeda, 4,325,137, Cl. 370-4.000.
Komai, Hisataka: *See—*
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Komura, Tsuneo: *See—*
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Konishiroku Photo Industry Co., Ltd.: *See—*
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Shiozawa, Kazuo, 4,324,467, Cl. 354-38.000.
Kono, Yasuaki; and Arai, Hisaharu, to Aisan Kogyo Kabushiki Kaisha. Device for automatically regulating a choke valve in a carburetor for an internal combustion engine. 4,324,745, Cl. 261-39.00E.
Konstantinov, Igor I.; Kormushechkina, Antonina I.; Avdonin, Jury A.; Kotlyarsky, Vladimir M.; Kim, Albert A.; Obraztsov, Nikolai V.; and Efimov, Alexei V. Process for purification of waste waters from aromatic amines. 4,324,667, Cl. 210-729.000.
Koopmann, Juergen: *See—*
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Kosche, Horst, to Ciba-Geigy Corporation. Heat-sensitive recording or copying material. 4,324,420, Cl. 282-27.500.
Koshiishi, Hiromichi: *See—*
Kimoto, Tetsuo; Takahashi, Hisao; Koshiishi, Hiromichi; Shinkai, Yasuhiro; and Kawabata, Toshimi, 4,324,598, Cl. 148-111.000.
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Messmer, Andras; Benko, Pal; Hajos, Gyorgy; Petocz, Lujza; Kosoczky, Ibolya; and Gorog, Peter, 4,324,786, Cl. 424-248.540.
Kothmann, Richard E., to Westinghouse Electric Corp. Variable area fuel cell cooling. 4,324,844, Cl. 429-26.000.
Kotlyarsky, Vladimir M.: *See—*
Konstantinov, Igor I.; Kormushechkina, Antonina I.; Avdonin, Jury A.; Kotlyarsky, Vladimir M.; Kim, Albert A.; Obraztsov, Nikolai V.; and Efimov, Alexei V., 4,324,667, Cl. 210-729.000.
Koulbanis, Constantin; Millet, Catherine; Zabotto, Arlette; and Brun, Alain, to L'Oreal. Cosmetic oil and composition containing the same. 4,324,802, Cl. 424-364.000.
Kouyama, Toshitake: *See—*
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Koyama, Hiroyasu: *See—*
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Kraemer, Edward J.; Therien, Robert D.; Rudy, Michael W.; Walsh, Frederick E.; Lee, Han J.; Bell, Ronald; and Horning, Thomas D., to Terminal Data Corporation. Microfilming system. 4,324,474, Cl. 355-65.000.
Kraft, Inc.: *See—*
Davis, Loren L., 4,324,804, Cl. 426-36.000.
Kraft Systems, Inc.: *See—*
Suszynski, Edward D., 4,325,050, Cl. 338-128.000.
Kranz, Roger H.; de Araujo Pinheiro, Edwin J.; and Tuttle, James A., to International Business Machines Corporation. Parallel storage access by multiprocessors. 4,325,116, Cl. 364-200.000.
Krause, Erich, to Universal Maschinenfabrik Dr. Rudolf Schieber GmbH & Co. KG. Flatbed knitting machine with pulse generator for electronic control. 4,324,115, Cl. 66-75.200.
Krauss, Hermann: *See—*
Reuther, Jurgen; Moser, Heinz; and Krauss, Hermann, 4,324,550, Cl. 433-174.000.
Kreibaum, Otto. Method for processing round lumber into cut lumber. 4,324,277, Cl. 144-312.000.
Kropp, Rudolf; Fischer, Martin; and Halbritter, Klaus, to BASF Aktiengesellschaft. Preparation of 5-(2,2-dihalovinyl)-4,4-dialkyl-tetrahydro-furan-2-ones. 4,324,725, Cl. 260-343.600.
Kruesi, Paul R.; and Frahm, Veryl H., Jr. Process for the recovery of copper from its ores. 4,324,582, Cl. 75-1.00R.
Kruger, Frederick W., Jr.; and Bosch, Warren E., to Product Dynamics, Ltd. Board games having variable game-piece-energized circuits. 4,324,405, Cl. 273-238.000.
Kruger, Roland; Ciongwa, Joachim; Smusch, Gunther; and Ehrlinger, Klaus, to Holstein und Kappert GmbH. Bottle cleaning machine. 4,324,264, Cl. 134-68.000.
Krumbock, Reinhard: *See—*
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Krumme, Robert C.: *See—*
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Kubelka, Axel: *See—*
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Kubota, Hirokazu, to Matsushita Electric Industrial Company, Limited. Inner air-tube of tire for bicycle. 4,324,280, Cl. 152-349.000.
Kubota, Misao; Hanai, Yoshitada; and Yamaguchi, Toshiaki, to Totoku Electric Co., Ltd. Silver-silver chloride electrode and manufacturing method thereof. 4,324,680, Cl. 252-182.100.
Kubota, Reiko: *See—*
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Kuehn, John P., to Audio Dynamics Corporation. Unitary phonograph cartridge and head assembly. 4,325,132, Cl. 369-256.000.
Kuge, Yoshihiro: *See—*
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Kuhn, John J., to American Standard Inc. Railroad highway crossing warning system. 4,324,376, Cl. 246-125.000.
Kuijpers, Martinus H.: *See—*
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Kumadaki, Itsumaro: *See—*
Kobayashi, Yoshiro; Kumadaki, Itsumaro; Takahashi, Masaaki; and Yamauchi, Takashi, 4,324,929, Cl. 570-127.000.
Kumai, Toshiyuki, to Murakami Kaimeido Co., Ltd. Electric mirror angle adjusting device. 4,324,454, Cl. 350-289.000.
Kunz, Paul. Rotatable pressure vessel. 4,324,344, Cl. 220-333.000.
Kureha Kagaku Kogyo Kabushiki Kaisha: *See—*
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Kuroda, Nobuyuki: *See—*
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Kuroda, Takayuki: *See—*
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Kurtz, Alfred: *See—*
Kurtz, Leonard D.; and Bidwell, Robert E., 4,324,244, Cl. 128-276.000.
Kurtz, Leonard D.; and Bidwell, Robert E., to Kurtz, Robert J.; and Kurtz, Alfred. Two-chamber underwater drainage apparatus with oneway outflow valve and dual hangar retainers. 4,324,244, Cl. 128-276.000.
Kurtz, Robert J.: *See—*
Kurtz, Leonard D.; and Bidwell, Robert E., 4,324,244, Cl. 128-276.000.
Kusters, Eduard: *See—*
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Kuwabara, Tsuneo, to Kabushiki Kaisha Daini Seikosha. Temperature compensating circuit. 4,325,036, Cl. 331-176.000.
Ladisich, Gerhard: *See—*
Moroff, Helmut; Boessler, Hanns; Hauser, Hans; and Ladisich, Gerhard, 4,324,832, Cl. 428-289.000.
LaForest, Pierre: *See—*
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Lagros, Gilbert: *See—*
Chouteau, Henri; and Lagros, Gilbert, 4,324,327, Cl. 198-497.000.
Lahti, Raymond L. Environmental heating and cooling apparatus. 4,324,289, Cl. 165-48.00S.
Laitram Corporation, The: *See—*
Lapeyre, James M., 4,324,976, Cl. 235-145.00R.
LaJet Energy Company: *See—*
Johnson, Alfred L., Jr., 4,324,083, Cl. 52-650.000.
Lakshmanan, Pallavoor R., to Gulf Oil Corporation. Alkali soluble blends of an ionomer resin and an alkenyl succinic anhydride. 4,324,872, Cl. 525-274.000.
Lakshmanan, Pallavoor R.: *See—*
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Lamberti, Vincent: *See—*
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Landis, Newton C. M.; and Zollo, Corrado, to Eastman Kodak Company. Method for forming a stripe by extrusion coating. 4,324,816, Cl. 427-128.000.
Lane, John; and Tu, Jerry C., to Anvil Attachments, Inc. Loading apparatus. 4,324,525, Cl. 414-699.000.
Langer, William J., to MTS Systems Corporation. Hydrodynamic support bearing for a belt on a tire testing machine. 4,324,128, Cl. 73-8.000.
Langley, Howard M.; and Stephens, Joseph W., to RCA Corporation. Video disc defect detector. 4,325,134, Cl. 369-58.000.
Lapeyre, James M., to Laitram Corporation, The. Hand-held calculator or similar keyboard device. 4,324,976, Cl. 235-145.00R.
Large, Donald M.: *See—*
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Larsen, Ronald A.; and Schmid, Gustav F., to Schmid Tool & Engineering Corp. Sled body and adjustable attachment means for snow skis. 4,324,409, Cl. 280-12.00F.
Larson, Leigh R., to Hi-Life Rubber, Inc. Milking inflation. 4,324,201, Cl. 119-14.510.
Laser-Work A.G.: *See—*
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Colombo, Roberto, 4,324,493, Cl. 366-79.000.
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Leuthard, John E. Energy efficient water heater. 4,324,207, Cl. 122-448.000.
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Levy, Nicha, to Bell Telephone Laboratories, Incorporated. Low TG soft UV-curable coatings. 4,324,575, Cl. 65-3.110.
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Lim, Franklin; and Moss, Richard D., to Damon Corporation. Encapsulation of labile biological material. 4,324,683, Cl. 252-316.000.
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Link, Gerhard; Riedl, Josef; Frohlich, Walter; and Krumbock, Reinhard. Process for the manufacture of vinyl chloride by the thermal cracking of 1,2-dichloroethane. 4,324,932, Cl. 570-226.000.
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Lovejoy, Curtis N. Electrolytic apparatus for treating continuous strip material. 4,324,633, Cl. 204-206.000.
Lovette, Norris G., Jr.; and Ruprecht, David R., to Air Products and Chemicals, Inc. Spiral-type heat exchanger. 4,324,110, Cl. 62-381.000.
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Lulay, Arthur; and Lynch, Charles E., to Du Pont de Nemours, E. I., and Company. Process for preparing slub yarns. 4,324,095, Cl. 57-327.000.
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Lunsford, Oscar M. Solar collector panel. 4,324,230, Cl. 126-443.000.
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MacKinnon, Hugh S., to Chevron Research Company. Amine salt stabilized phosphate ester-based functional fluid. 4,324,674, Cl. 252-78.500.
Maclay, G. Jordan. Adjustable wrench. 4,324,160, Cl. 81-185.000.
MacLeod, Richard H. Rechargeable flashlight. 4,325,107, Cl. 362-183.000.
Madray, George W. Assembly for attaching a dental prosthesis to teeth. 4,324,549, Cl. 433-169.000.
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Maeder, Edward G., to National Can Corporation. Stripper assembly for bodymaker. 4,324,124, Cl. 72-345.000.
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Maher, Galeb H., to Sprague Electric Company. Method for making high K PLZT ceramic capacitor. 4,324,750, Cl. 264-61.000.
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Majer, Norbert; and Boehmke, Gunther, to Bayer Aktiengesellschaft. Process for the preparation of monoaroylated 1,4-diaminoanthraquinones. 4,324,732, Cl. 260-377.000.
Majicek, Stepan; and Robinson, Harry R., to Verbatim Corporation. High density belt driven digital data tape cartridge. 4,324,372, Cl. 242-192.000.
Major, Emery. Flow meter system. 4,325,127, Cl. 364-510.000.
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Malhotra, Sudarshan K., to Dow Chemical Company, The. 6-(Substituted phenoxy)-2-di-(substituted phenoxy)methyl pyridines. 4,324,896, Cl. 546-301.000.
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Mann, Brian M., to Pacesetter Systems, Inc. Battery monitoring means and method for an implantable tissue stimulator. 4,324,251, Cl. 128-419.0PT.
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Mark, Vernon H.; and Sabin, Thomas D. Reflex hammer. 4,324,261, Cl. 128-740.000.
Marmorat, Andre; and Montaron, Rene, to Framatome. Detachable and leaktight device for closing an orifice of a nuclear reactor vessel. 4,324,616, Cl. 376-203.000.
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Martinez, Emilio M., to Manville Service Corporation. Fiber feeder pulley cleaning system. 4,324,495, Cl. 366-271.000.
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Masuda, Jun: *See*—
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Matsuki, Michio: *See*—
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Matsuo, Yoshihiro; Hata, Takuoki; and Kuroda, Takayuki, to Matsushita Electric Industrial Co., Ltd. Oxide thermistor compositions. 4,324,702, Cl. 252-519.000.
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Matsuura, Kazuo; Shiraishi, Takeichi; Kawamata, Etsuo; Kuroda, Nobuyuki; and Miyoshi, Mitsuji, to Nippon Oil Co., Ltd. Process for the production of polyolefins. 4,324,876, Cl. 526-124.000.
Matsuyama, Iwao; Susa, Kenzo; Satoh, Shin; and Suganuma, Tsuneo, to Hitachi, Ltd. Method for producing optical glass. 4,324,576, Cl. 65-36.000.
Matsuzaki, Meiki; Okabe, Hiroshi; Tanaka, Seishiro; Takiguchi, Takao; and Onodera, Kunikatsu, to Banyu Pharmaceutical Co. Ltd. Phenylguanidine acetylsalicylate compounds, process for production thereof, and pharmaceutical composition thereof. 4,324,801, Cl. 424-311.000.
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Maurer Engineering, Inc.: *See*—
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McCann, Floyd E.; and Fornell, Robert M., to Unit Rig & Equipment Co. Method and apparatus for mounting a giant tire. 4,324,283, Cl. 157-1.280.
McConnell, Thomas T., to Texaco Inc. Preparation of polyalkylene polyamines. 4,324,917, Cl. 564-479.000.
McCormick, Robert M., to Du Pont de Nemours, E. I., and Company. Tow baling. 4,324,176, Cl. 100-3.000.
McCullough, Timothy J. Handpiece for meat-trimming knife. 4,324,043, Cl. 30-276.000.
McDaniel, James W., to Alumina Development Corporation. Extraction and production of alumina containing less than 0.03 percent iron oxide. 4,324,769, Cl. 423-121.000.
McDonald, Ray S.: *See*—
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McFarlane, Richard B. Vehicle tire comprising pneumatic tire inserts. 4,324,279, Cl. 152-314.000.
McGivern, James F., Jr., to United Technologies Corporation. Selective removal of nickel-based braze alloy from nickel-based metals. 4,324,626, Cl. 204-146.000.
McIlwain, Irwin D.: *See*—
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McKay, Dwight L.: *See*—
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McKinnie, Bonnie G.; and Ranken, Paul F., to Ethyl Corporation. Process for the preparation of ortho-(hydrocarbylthio)-phenols. 4,324,920, Cl. 568-54.000.
McLoughlin, John; Athenassiades, Neocles; and Rotblum, Yehuda, to McLoughlin, John. Chemical injection control system for fire fighting. 4,324,294, Cl. 169-13.000.
McMackin, John B., to RCA Corporation. Regulated switching apparatus. 4,325,021, Cl. 323-351.000.
McMillion, Lundy H.: *See*—
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Meffert Alfred; and Tesmann, Holger, to Henkel Kommanditgesellschaft auf Aktien. Preparation of 2-phenylethylene phosphonic acid. 4,324,740, Cl. 260-502.40R.
Mehl, Siegfried, to U.S. Philips Corporation. Device for providing windings on closed ring cores. 4,325,045, Cl. 336-197.000.
Meiji Seika Kaisha, Ltd.: *See*—
Iwamatsu, Katsuyoshi; Tsuruoka, Takashi; Mizutani, Kazuko; Kawaharajyo, Katsumi; Watanabe, Tadahiro; and Inouye, Shigeharu, 4,324,891, Cl. 544-021.000.
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Mercer, William R., to Sanders Associates, Inc. Loran-C signal processor. 4,325,068, Cl. 343-103.000.
Merck & Co., Inc.: *See*—
Durette, Philippe L., 4,324,900, Cl. 549-11.000.
Racciato, Joseph S., 4,324,554, Cl. 8-561.000.
Sletzinger, Meyer, 4,324,890, Cl. 544-021.000.
Merger, Franz; and Nestler, Gerhard, to BASF Aktiengesellschaft. Preparation of butyrolactones. 4,324,727, Cl. 260-343.600.
Mesek, Frederick K.; and Repke, Virginia L., to Johnson & Johnson. Comformable disposable diapers having absorbent panel with bulged side members. 4,324,245, Cl. 128-287.000.
Meshberg, Philip. Locking actuator for a dispenser. 4,324,351, Cl. 222-402.110.
Messer Griesheim GmbH: *See*—
Baier, Alfred; and Pfeuffer, Alfred, 4,324,389, Cl. 266-51.000.
Messmer, Andras; Benko, Pal; Hajos, Gyorgy; Petocz, Lujza; Kosoczky, Ibolya; and Gorog, Peter, to Egyt Gyogyszervegyeszeti Gyar. Pyrido[2,3-e]-as-triazine derivatives and pharmaceutical compositions. 4,324,786, Cl. 424-248.540.
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Metatech Corporation: *See*—
Perlin, Alfred R., 4,324,248, Cl. 128-325.000.
Meyman, Usher. Rotary machine with a plurality of rotors having peripheral rolling contact. 4,324,537, Cl. 418-58.000.
Miale, Joseph N., to Mobil Oil Corporation. Method of preparing crystalline zeolite catalyst of high activity. 4,324,696, Cl. 252-455.00Z.
Michaelides, Demetrios: *See*—
Corcoran, Richard A.; Keenan, William A.; Michaelides, Demetrios; and Yun, Bob H., 4,325,025, Cl. 324-158.00R.
Micheiet, Daniel; and Veracini, Serge, to Rhone-Poulenc Agrochimie. Process for the preparation of 2,3-dihydro-2,2-dimethyl-7-hydroxybenzofuran. 4,324,731, Cl. 260-346.220.
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Michen, Ramon: *See*—
White, Ellis S.; Zatkoff, William C.; Light, John J.; and Michen, Ramon, 4,324,392, Cl. 266-240.000.
Midwest Research Institute: *See*—
Goodson, Louis H.; and Goodman, Alan, 4,324,858, Cl. 435-20.000.
Mikitenko, Paul: *See*—
Torck, Bernard; Convers, Alaio; Duee, Didier; and Mikitenko, Paul, 4,324,924, Cl. 568-697.000.
Mikulicz, Michael Z., to UOP Inc. Butane isomerization process. 4,324,936, Cl. 585-315.000.
Milberg, Morton E.: *See*—
Blair, Howard D.; and Milberg, Morton E., 4,324,356, Cl. 226-193.005.
Mildenberger, Hilmar: *See*—
Koch, Manfred; Mildenberger, Hilmar; and Sachse, Burkhard, 4,324,799, Cl. 424-301.000.
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Goldstein, Henry; Fly, Walter; Ting, Patrick; and Chicoye, Etzer, 4,324,810, Cl. [illegible]
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Spurlin, Stephen F.; Lentz, Carl A.; and Miller, Clement P., 4,324,320, Cl. 188-271.000.
Miller, Glen E., to Boeing Company, The. Light transmission load control system. 4,324,981, Cl. 250-551.000.
Miller, Robert S.: *See*—
Cordes, William F., III; Goodman, Donald; and Miller, Robert S., 4,324,874, Cl. 526-84.000.
Miller, Wendell E.: *See*—
Gaylord, Richard P.; and Miller, Wendell E., 4,324,171, Cl. 92-169.000.
Millet, Catherine: *See*—
Koulbanis, Constantin; Millet, Catherine; Zabotto, Arlette; and Brun, Alain, 4,324,802, Cl. 424-364.000.
Milliner, Ken: *See*—
Sexstone, John H.; Lewis, Tom; and Milliner, Ken, 4,324,540, Cl. 425-383.000.
Minnesota Mining and Manufacturing Company: *See*—
Carlson, Robert C., 4,324,679, Cl. 252-182.000.
Moris, Alfred H., 4,325,087, Cl. 360-13.000.
Rothlauf, Alan P., 4,325,147, Cl. 370-91.000.
Minnetonka, Inc.: *See*—
Johnson, Logan; Wood, Grant; and Brofft, Jerry, 4,324,348, Cl. 222-181.000.
Miquel, Jean: *See*—
Cosyns, Jean; Juguin, Bernard; Le Page, Jean-Francois; and Miquel, Jean, 4,324,938, Cl. 585-332.000.
Le Page, Jean-Francois; Cosyns, Jean; Miquel, Jean; and Juguin, Bernard, 4,324,646, Cl. 208-71.000.
Mishkin, Abraham R.: *See*—
Wertheim, John H.; and Mishkin, Abraham R., 4,324,808, Cl 426-385.000.
Mitani Electronics Industry Corp.: *See*—
Mitani, Minoru; Hashimoto, Kiyoharu; Ninomiya, Kenjiro; Miyazaki, Tochikiyo; Hashimoto, Otokuma; and Mori, Hideki, 4,324,815, Cl. 427-96.000.
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Mitchell, Michael I.: *See*—
Kirby, Ian J.; Mitchell, Michael I.; and Stratton, Andrew, 4,324,182, Cl. 102-217.000.
Mitchell, William O.; and Ellington, Gordon H., to Oxford Industries, Inc. Garment bagging system. 4,324,087, Cl. 53-241.000.
Mitsubishi Chemical Industries Limited: *See*—
Imahori, Seiichi; Kaneko, Masaharu; Ono, Hitoshi; Imazeki, Shuji; Mukoh, Akio; and Morishita, Hirosada, 4,324,455, Cl. 350-349.000.
Mitsubishi Denki Kabushiki Kaisha: *See*—
Aoki, Shin-Ichi; and Takeya, Yasushi, 4,324,960, Cl. 200-144.00B.
Sunohara, Mineo; Okubo, Yasuhiko; Taketa, Mitsugu; Nakai, Yoshiyuki; and Miyazaki, Yukio, 4,325,096, Cl. 361-45.000.
Mitsubishi Gas Chemical Company, Inc.: *See*—
Naito, Akira; Hayakawa, Toru; Nakanishi, Masakatsu; Ikuta, Sunao; Kajiwara, Shoichiro; and Yamaguchi, Hitoshi, 4,324,784, Cl. 424-130.000.
Mitsubishi Jukogyo Kabushiki Kaisha: *See*—
Hashimoto, Hiroshi; Kaneko, Masaru; and Kuge, Yoshihiro, 4,324,304, Cl. 180-9.520.
Honda, Mitsuyasu; Shiraishi, Yoshihiro; and Seto, Toru, 4,324,701, Cl. 252-477.00R.
Mitsubishi Rayon Co., Ltd.: *See*—
Maeda, Toru, 4,324,868, Cl. 525-54.000.
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Kamino, Kimiyaki; and Fukuda, Masakatsu, 4,324,597, Cl. 148-103.000.
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Nanasawa, Yoshifumi; and Kobayashi, Kazuhiko, 4,324,970, Cl. 219-69.00W.
Mitsuhashi, Susumu: *See*—
Saikawa, Isamu; Yasuda, Takashi; Tai, Masaru; Takashita, Yutaka; Sakai, Hiroshi; Mae, Michiko; Takahata, Masahiro; and Mitsuhashi, Susumu, 4,324,783, Cl. 424-114.000.
Mitton, David. Passive wheel lock for bicycles and the like. 4,324,119, Cl. 70-233.000.
Mitzel, Wilhelm; and Bernardi, Herbert, to G A O Gesellschaft fur Automation and Organisation mbH. Device for separating record carrying items. 4,324,394, Cl. 271-5.000.
Miyake, Masayoshi, to Sumitomo Electric Industries, Ltd. Self-bonding magnet wire. 4,324,837, Cl. 428-375.000.
Miyano, Masateru; and Dorn, Clifford R., to G. D. Searle & Co. 7-[5-Oxo-3-hydroxy-2-(3-substituted)-3-hydroxypropyl)-1-cyclopentene]-heptanoic acids and derivatives thereof. 4,324,902, Cl. 560-53.000.
Miyata, Yasuji; and Hirose, Kazuhiko, to Tokico, Ltd. Turbine flowmeter. 4,324,144, Cl. 73-861.770.
Miyazaki, Kiyoshi, to Kabushiki Kaisha L.P.L. Photographic tripod apparatus. 4,324,477, Cl. 354-293.000.
Miyazaki, Tochikiyo: *See*—
Mitani, Minoru; Hashimoto, Kiyoharu; Ninomiya, Kenjiro; Miyazaki, Tochikiyo; Hashimoto, Otokuma; and Mori, Hideki, 4,324,815, Cl. 427-96.000.
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Sunohara, Mineo; Okubo, Yasuhiko; Taketa, Mitsugu; Nakai, Yoshiyuki; and Miyazaki, Yukio, 4,325,096, Cl. 361-45.000.
Miyazawa, Osamu: *See*—
Oka, Hitoshi; Kikuchi, Hiroshi; Yokono, Hitoshi; Suzuki, Haruo; Yoshimura, Toyofusa; Matsuo, Akira; Miyazawa, Osamu; Tanaka, Isamu; and Isogai, Tokio, 4,324,629, Cl. 204-180.00P.
Miyoshi, Mitsuji: *See*—
Matsuura, Kazuo; Shiraishi, Takeichi; Kawamata, Etsuo; Kuroda, Nobuyuki; and Miyoshi, Mitsuji, 4,324,876, Cl. 526-124.000.
Mizusawa Kagaku Kozyo Kabushiki Kaisha: *See*—
Sugahara, Yujiro; Naito, Hiroyuki; Saito, Mamoru; Mori, Takashi; and Honma, Toshio, 4,324,768, Cl. 423-92.000.
Mizutani, Kazuko: *See*—
Iwamatsu, Katsuyoshi; Tsuruoka, Takashi; Mizutani, Kazuko; Kawaharajyo, Katsumi; Watanabe, Tadahiro; and Inouye, Shigeharu, 4,324,891, Cl. 544-021.000.
Mo och Domsjo Aktiebolag: *See*—
Lindahl, Jonas A. I., 4,324,612, Cl. 162-23.000.
Mobil Oil Corporation: *See*—
Angevine, Philip J.; and Stein, Thomas R., 4,324,645, Cl. 208-50.000.
Desan, Ralph M., 4,324,940, Cl. 585-466.000.
Hungerford, Gordon P., 4,324,707, Cl. 524-173.000.
Miale, Joseph N., 4,324,696, Cl. 252-455.00Z.
Rollmann, Louis D.; and Walsh, Dennis E., 4,324,651, Cl. 208-309.000.
Moffitt, Robert C.: *See*—
Fradenburgh, Evan A.; Jepson, William D.; and Moffitt, Robert C., 4,324,530, Cl. 416-228.000.
Molnach, Michael G.; and Harbison, William H., to Anderson Company of Indiana, The. Windshield wiper connecting pin adaptor. 4,324,019, Cl. 15-250.320.

Mohri, Akio: *See*—
Yokomichi, Isao; Yamada, Takeo; Mohri, Akio; Ota, Kiyoshi; and Ikeda, Minoru, 4,324,665, Cl. 210-718.000.
Mohri, Katsuo: *See*—
Abe, Yuuhei; and Mohri, Katsuo, 4,325,081, Cl. 358-127.000.
Molgaard, Aage, to Danfoss A/S. Thermostat attachment for a radiator valve. 4,324,196, Cl. 116-277.000.
Moller, Jens L., to Continental Group, Inc., The. Folded tab. 4,324,343, Cl. 220-270.000.
Molnar, Frank J.: *See*—
Berry, Grant E.; Becker, Wayne A.; Bahr, Karl E.; Scagnelli, George J.; Molnar, Frank J.; McDonald, Ronald K.; and Manning, Harry F., 4,324,034, Cl. 29-410.000.
Monsanto Company: *See*—
Conn, James F.; and Jessen, Leofwin A., 4,324,772, Cl. 423-309.000.
Montaron, Rene: *See*—
Marmorat, Andre; and Montaron, Rene, 4,324,616, Cl. 376-203.000.
Monte, Charles; and Carter, Barry E. Tone changing means for percussion instruments. 4,324,164, Cl. 84-1.040.
Montedison S.p.A.: *See*—
Parrini, Paolo; Ciaccia, Vittorio; Corrieri, Guglielmo; and Righi, Gian P., 4,324,831, Cl. 428-288.000.
Moody, Edward, to Electric Power Research Institute, Inc. Flow distribution system for coolant in a nuclear reactor and method. 4,324,614, Cl. 376-175.000.
Mookherjee, Braja D.: *See*—
Trenkle, Robert W.; Mookherjee, Braja D.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,324,704, Cl, 252-522.00R.
Moon, Suhdok D.; and Trackman, Marshall H., to Qume Corporation. Means to inhibit paper feed during carriage or print wheel movement. 4,324,500, Cl. 400-664.000.
Moore, L. Frank; and Price, George M., to Frymaster Corporation, The. Filter system for frying apparatus. 4,324,173, Cl. 99-330.000.
Moore, Robert L. Wood handling machine. 4,324,519, Cl. 414-28.000.
Moos, Kurt; and Buschor, Karl, to GEMA AG Apparatebau. Method of atomization and atomizing device for coating material using the Coanda effect. 4,324,361, Cl. 239-3.000.
Moranne, Jean-Pierre, to Societe Anonyme des Usines Chausson. Heat exchanger comprising a core of tubes engaged inside end plates mechanically connected with header boxes. 4,324,290, Cl. 165-173.000.
Moraw, Roland; Steinau, Peter; and Pierson, Fritz, to Hoechst Aktiengesellschaft. Identity card with incorporated fibrids. 4,324,421, Cl. 283-7.000.
Moreau, Rene J.: *See*—
Garnier, Jacques P.; Garnier, Marcel A.; and Moreau, Rene J., 4,324,266, Cl. 137-13.000.
Morehouse, James E.; and Pedersen, Richard A., to Bell Telephone Laboratories, Incorporated. Detector circuit for thyristors. 4,325,099, Cl. 361-93.000.
Morgardshammar Aktiebolag: *See*—
Leksen, Lars F., 4,324,113, Cl. 64-7.000.
Mori, Hideki: *See*—
Mitani, Minoru; Hashimoto, Kiyoharu; Ninomiya, Kenjiro; Miyazaki, Tochikiyo; Hashimoto, Otokuma; and Mori, Hideki, 4,324,815, Cl. 427-96.000.
Mori, Takashi: *See*—
Sugahara, Yujiro; Naito, Hiroyuki; Saito, Mamoru; Mori, Takashi; and Honma, Toshio, 4,324,768, Cl. 423-92.000.
Mori, Tatsuo: *See*—
Kobayashi, Seishichi; Mori, Tatsuo; and Morofuji, Akihiko, 4,324,822, Cl. 428-35.000.
Morikawa, Teruo, to Canon Kabushiki Kaisha. Developing device. 4,324,199, Cl. 118-658.000.
Morinushi, Takanobu: *See*—
Sugita, Toshio; Morinushi, Takanobu; and Hanashima, Shigeharu, 4,324,630, Cl. 204-192.00R.
Moris, Alfred H., to Minnesota Mining and Manufacturing Company. Magnetic marker for locating a splice within magnetic tape. 4,325,087, Cl. 360-13.000.
Morishita, Hirosada: *See*—
Imahori, Seiichi; Kaneko, Masaharu; Ono, Hitoshi; Imazeki, Shuji; Mukoh, Akio; and Morishita, Hirosada, 4,324,455, Cl. 350-349.000.
Morita, Koichi: *See*—
Aruga, Taketo; Morita, Koichi; Hosaki, Kenzo; and Kojima, Yasuo, 4,324,098, Cl. 60-420.000.
Moriya, Kiyoshi: *See*—
Sasaki, Yutaka; and Moriya, Kiyoshi, 4,324,586, Cl. 75-69.000.
Morley, Reginald H.: *See*—
Wilson, Charles E.; Wilson, Arnold W.; and Morley, Reginald H., 4,324,429, Cl. 296-100.000.
Moroff, Helmut; Boessler, Hanns; Hauser, Hans; and Ladisich, Gerhard, to Rohm GmbH. Method of impregnating web structures with a synthetic resin. 4,324,832, Cl. 428-289.000.
Morofuji, Akihiko: *See*—
Kobayashi, Seishichi; Mori, Tatsuo; and Morofuji, Akihiko, 4,324,822, Cl. 428-35.000.
Morozowich, Walter, to Upjohn Company, The. Phenacyl-type esters of $PGF_{2\alpha}$ and its 15-methyl analogs. 4,324,905, Cl. 560-121.000.
Morris, Nathan. Sanitation system particularly for marine craft. 4,324,007, Cl. 4-321.000.
Morris, Stephen. Beverage container support. 4,324,381, Cl. 248-311.200.
Morton, Peter M.: *See*—
Graham, Donald A.; Hoffman, Delwin R.; and Morton, Peter M., 4,325,123, Cl. 364-431.070.
Morton, Richard G., to Jersey Nuclear-AVCO Isotopes, Inc. High pulse repetition rate coaxial flashlamp. 4,325,006, Cl. 315-112.000.
Moser, Heinz: *See*—
Reuther, Jurgen; Moser, Heinz; and Krause, Hermann, 4,324,550, Cl. 433-174.000.
Moser, Roland: *See*—
Zondler, Helmut; and Moser, Roland, 4,324,739, Cl. 260-465.400.
Moss, Richard D.: *See*—
Lim, Franklin; and Moss, Richard D., 4,324,683, Cl. 252-316.000.
Motorola, Inc.: *See*—
Clement, Donald R.; and Nikirk, Roger G., 4,324,610, Cl. 156-602.000.
Gay, Michael J., 4,324,990, Cl. 307-350.000.
Groth, Edward J., Jr., 4,325,129, Cl. 364-717.000.
Gunter, Thomas G.; and Tredennick, Harry L., 4,325,121, Cl. 364-200.000.
Ooms, William J.; and Bernett, Richard E., 4,325,031, Cl. 331-1.00A.
Motosacoche S.A.: *See*—
Curetti, Ennio G.; and Collombin, Andre M., 4,324,541, Cl. 425-562.000.
Mountain, John F. Solar heat collecting panel. 4,324,227, Cl. 126-437.000.
Mross, Wolf D.; Titzenthaler, Eckart; Koopmann, Juergen; Vogt, Volker; and Schwarzmann, Matthias, to BASF Aktiengesellschaft. Supported catalysts and their treatment for the preparation of ethylene oxide. 4,324,699, Cl. 252-463.000.
MTS Systems Corporation: *See*—
Langer, William J., 4,324,128, Cl. 73-8.000.
Mueller, Hans; Wulz, Klaus; Beyer, Karl-Heinz; and Streit, Werner, to BASF Aktiengesellschaft. Manufacture of polyalkylenepolyamines. 4,324,724, Cl. 260-239.00E.
Muetterties, Andrew J.: *See*—
Genese, Joseph N.; and Muetterties, Andrew J., 4,324,238, Cl. 128-214.000.
Muhlau, Karl-Heinz. Balancing device for vehicle wheels etc. 4,324,139, Cl. 73-457.000.
Mukoh, Akio: *See*—
Imahori, Seiichi; Kaneko, Masaharu; Ono, Hitoshi; Imazeki, Shuji; Mukoh, Akio; and Morishita, Hirosada, 4,324,455, Cl. 350-349.000.
Mullane, William I.; and Smith, Douglas J., to Procter & Gamble Company, The. Disposable absorbent article having a stain resistant topsheet. 4,324,246, Cl. 128-287.000.
Mullins, John W. Refrigerant line service valve. 4,324,270, Cl. 137-317.000.
Mullins, Wayne L. Thermally insulative cementitious block modules and method of making same. 4,324,080, Cl. 52-309.120.
Mundschenk, David D., to R & D Systems, Inc. Hematology control composition and methods for its use. 4,324,686, Cl. 252-408.000.
Murai, Wasaburo, to Terasaki Denki Sangyo Kabushiki Kaisha. Circuit interrupter. 4,325,041, Cl. 335-35.000.
Murakami Kaimeido Co., Ltd.: *See*—
Kumai, Toshiyuki, 4,324,454, Cl. 350-289.000.
Murarka, Shyam P.: *See*—
Chang, Chuan C.; Cooper, James A., Jr.; Kahng, Dawon; and Murarka, Shyam P., 4,324,038, Cl. 29-571.000.
Murata Manufacturing Coi, Ltd.: *See*—
Ito, Katsuo; and Yoshimura, Kazunori, 4,325,103, Cl. 361-424.000.
Murata Manufacturing Co., Ltd.: *See*—
Nishikawa, Toshio; Ito, Yoji; Ishikawa, Youhei; and Tamura, Sadahiro, 4,325,035, Cl. 331-96.000.
Murkowski, Rita J., to Continental Group, Inc., The. Carton with air cushion end structure. 4,324,357, Cl. 229-37.00E.
Murphy, Randall T.; and Heling, Dennis H., to Lear Siegler, Inc. Vehicle seat with individual adjustable front thigh support. 4,324,431, Cl. 297-284.000.
Muskat, Josef, to Passavant-Werke Michelbacher Hutte. Apparatus for treating wastewater with oxygen. 4,324,655, Cl. 210-96.100.
Muz, Edwin, to Weitman and Konrad GmbH & Co. KG. Device for the electrostatic application of material particles entrained in a stream of gas to an advancing, flat substrate. 4,324,198, Cl. 118-630.000.
Mwanyoha, Bakari, to NU Industries, Inc. Lamp conversion unit. 4,325,109, Cl. 362-412.000.
Nagano, Katsusuke, to Dai Nippon Insatsu Kabushiki Kaisha. Method of proof-printing in gravure printing. 4,324,179, Cl. 101-170.000.
Nagao, Taku: *See*—
Umino, Norihide; Ohishi, Tokuro; Ikezaki, Muneyoshi; Sato, Masanori; and Nagao, Taku, 4,324,800, Cl. 424-308.000.
Nagasaka, Yukio: *See*—
Tanaka, Tsugio; Hashimoto, Kohichi; and Nagasaka, Yukio, 4,324,711, Cl. 523-172.000.
Nagashima, Tsuyoshi: *See*—
Fujii, Hironory; Nagashima, Tsuyoshi; and Shibamoto, Nobuyori, 4,324,742, Cl. 260-505.00C.
Nagel, Dave D., to Maurer Engineering, Inc. Downhole drilling motor with pressure balanced bearing seals. 4,324,299, Cl. 175-107.000.
Nagpal, Krishen L.: *See*—
Demler, Walter R.; Nagpal, Krishen L.; Dollard, Richard M.; Odin, Eugene; and Donahue, Donald T., 4,324,926, Cl. 568-730.000.
Naito, Akira; Hayakawa, Toru; Nakanishi, Masakatsu; Ikuta, Sunao; Kajiwara, Shoichiro; and Yamaguchi, Hitoshi, to Mitsubishi Gas

Chemical Company, Inc. Process for preventing growth of marine organisms on a substance using hydrogen peroxide. 4,324,784, Cl. 424-130.000.
Naito, Hiroyuki: *See*—
 Sugahara, Yujiro; Naito, Hiroyuki; Saito, Mamoru; Mori, Takashi; and Honma, Toshio, 4,324,768, Cl. 423-92.000.
Nakagawa, Tomiyo. Exponential horn for use in horn-type loudspeakers. 4,324,313, Cl. 181-192.000.
Nakahara, Hiromi: *See*—
 Tsuji, Nobuo; Fujiyama, Masaaki; Nakahara, Hiromi; Tadokoro, Eiichi; Tanaka, Keiji; and Yamamoto, Isao, 4,324,177, Cl. 100-155.00R.
Nakai, Hiromitu: *See*—
 Tomita, Yoshifumi; Nishizawa, Masahiro; Yokomizo, Hiroshi; and Nakai, Hiromitu, 4,324,850, Cl. 430-24.000.
Nakai, Yoshiyuki: *See*—
 Sunohara, Mineo; Okubo, Yasuhiko; Taketa, Mitsugu; Nakai, Yoshiyuki; and Miyazaki, Yukio, 4,325,096, Cl. 361-45.000.
Nakanishi, Masakatsu: *See*—
 Naito, Akira; Hayakawa, Toru; Nakanishi, Masakatsu; Ikuta, Suneo; Kajiwara, Shoichiro; and Yamaguchi, Hitoshi, 4,324,784, Cl. 424-130.000.
Nakano, Jiro: *See*—
 Sugimoto, Hiroshi; Nakano, Jiro; and Yanagihara, Noritaka, 4,324,153, Cl. 74-866.000.
Nakazawa, Kunihiro, to Nippon Electric Co., Ltd. Portable radio set with a carrying holder. 4,325,142, Cl. 455-89.000.
Nalco Chemical Company: *See*—
 Gebler, Kenneth A., 4,324,862, Cl. 501-109.000.
Nanasawa, Yoshifumi; and Kobayashi, Kazuhiko, to Mitsubushiki Denki Kabushiki Kaisha. Wire cut method of shaping workpiece by electric discharge. 4,324,970, Cl. 219-69.00W.
Narang, Rajendra K. Endless track. 4,324,437, Cl. 305-11.000.
Narens, Daniel S.; and Reuben, Harold, to Akro Corporation, The. Tufted pile floor covering with piling of coated fibrous material. 4,324,824, Cl. 428-92.000.
Naruo, Kyoichi: *See*—
 Seto, Kunihiro; and Naruo, Kyoichi, 4,324,705, Cl. 521-44.000.
National Can Corporation: *See*—
 Maeder, Edward G., 4,324,124, Cl. 72-345.000.
National Distillers & Chemical Corp.: *See*—
 Hinnenkamp, James A., 4,324,695, Cl. 252-437.000.
 Horvitz, David; and Brima, Thomas S., 4,324,909, Cl. 560-246.000.
National Gypsum Company: *See*—
 Pearson, Robert J., 4,324,079, Cl. 52-255.000.
 Rutkowski, Edward J.; Mapes, Carl R.; Wing, Steven D.; and Dawdy, Jack A., 4,324,082, Cl. 52-481.000.
National Research Development Corporation: *See*—
 Bewley, David K.; and Finding, Kenneth, 4,324,979, Cl. 250-505.000.
 Wright, Basil M., 4,324,259, Cl. 128-722.000.
Naumann, Gerd; and Treine, Bernd, to Hermann Berstorff Maschinenbau GmbH. Microwave heating method and apparatus including adjustable tuning members. 4,324,965, Cl. 219-10.55F.
Naumec, John R.: *See*—
 Kirwan, David F.; and Naumec, John R., 4,324,973, Cl. 219-121.0EA.
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 Oliker, Michael D., 4,324,564, Cl. 55-20.000.
Neathery, David O.; and Riggs, Edward J., to King Instrument Corporation. Apparatus for detection of cue data carried by a recording medium moving at greatly varying speeds. 4,325,092, Cl. 360-119.000.
Nedelec, Lucien: *See*—
 Guillaume, Jacques; Nedelec, Lucien; and Dumont, Claude, 4,324,790, Cl. 424-263.000.
Neelameggham, Ramaswami: *See*—
 Barlow, E. W.; and Neelameggham, Ramaswami, 4,324,771, Cl. 423-283.000.
Nemeth, Ferenc: *See*—
 Ignatko, Gyorgy; Ilyes, Zoltan; Nemeth, Ferenc; Racz, Matyas; Varga, Albert; and Varro, Jeno, 4,324,509, Cl. 405-299.000.
Nesterov, Boris F.: *See*—
 Redikultsev, Jury V.; Litvinenko, Leonid A.; Petrikevich, Svetlana B.; Chernenskay, Taisia S.; Verahkov, David S.; Nesterov, Boris F.; and Bogoroditskaya, Irina V., 4,324,762, Cl. 422-106.000.
Nestler, Gerhard: *See*—
 Merger, Franz; and Nestler, Gerhard, 4,324,727, Cl. 260-343.600.
Newton, Richard C.; and Romanek, Gerald A., to Phillips Petroleum Company. Process for producing a fused fabric. 4,324,752, Cl. 264-25.000.
Nickels, Aubrey G., to General Electric Co. Axial-centrifugal flow impeller. 4,324,529, Cl. 416-187.000.
Niedecker, Herbert. Wrapper closed with a U-shaped clip and process and apparatus for attaching a hanger loop to the wrapper section. 4,324,086, Cl. 53-134.000.
Nikirk, Roger G.: *See*—
 Clement, Donald R.; and Nikirk, Roger G., 4,324,610, Cl. 156-502.000.
Nilles, John D.; Stankiewicz, Stanley L.; and Zubriski, David S., to American Hospital Supply Corporation. Latch mechanism for dental handpiece assembly. 4,324,548, Cl. 433-126.000.
Ninomiya, Hidetaka: *See*—
 Kawakatsu, Satoshi; Hirabayashi, Shigeto; Ninomiya, Hidetaka; and Kaneko, Yutaka, 4,324,856, Cl. 430-566.000.
Ninomiya, Kenjiro: *See*—
 Mitani, Minoru; Hashimoto, Kiyoharu; Ninomiya, Kenjiro; Miyazaki, Tochikiyo; Hashimoto, Otokuma; and Mori, Hideki, 4,324,815, Cl. 427-96.000.
NIPAC, Ltd.: *See*—
 Dean, John J.; and Helzig, Lloyd M., 4,324,561, Cl. 44-10.00E.
Nippon Electric Co., Ltd.: *See*—
 Kashigi, Kazuo; and Kouyama, Toshitake, 4,325,075, Cl. 358-13.000.
 Nakazawa, Kunihiro, 4,325,142, Cl. 455-89.000.
Nippon Gakki Seizo Kabushiki Kaisha: *See*—
 Takeuchi, Atsushi, 4,325,016, Cl. 318-640.000.
Nippon Kogaku K.K.: *See*—
 Terunuma, Hiroshi, 4,324,470, Cl. 354-214.000.
Nippon Oil Co., Ltd.: *See*—
 Kimura, Shoji; Ishida, Noboru; Masunaga, Midori; and Kohno, Yoshiki, 4,324,933, Cl. 585-6.600.
 Matsuura, Kazuo; Shiraishi, Takeichi; Kawamata, Etsuo; Kuroda, Nobuyuki; and Miyoshi, Mitsuji, 4,324,876, Cl. 526-124.000.
Nippon Seiko Kabushiki Kaisha: *See*—
 Ueda, Takeo, 4,324,419, Cl. 280-804.000.
Nippon Soken, Inc.: *See*—
 Hattori, Tadashi; and Ueno, Yoshiki, 4,324,218, Cl. 123-440.000.
 Ina, Toshikazu; and Kawai, Hisasi, 4,324,217, Cl. 123-417.000.
Nippon Steel Corporation: *See*—
 Kimoto, Tetsuo; Takahashi, Hisao; Koshiishi, Hiromichi; Shinkai, Yasuhiro; and Kawabata, Toshimi, 4,324,598, Cl. 148-111.000.
Nippon Zeon Co. Ltd.: *See*—
 Kita, Ryuji; Komai, Hisataka; Wakabayashi, Makoto; and Takagishi, Haruyoshi, 4,324,713, Cl. 523-457.000.
Nippondenso Co., Ltd.: *See*—
 Fujiwara, Kenichi; Sugi, Hikaru; and Nishikawa, Mineo, 4,324,112, Cl. 62-511.000.
Nishihama, Takamichi, to Dainippon Screen Seizo Kabushiki Kaisha. Film suction plate for a process camera. 4,324,487, Cl. 355-73.000.
Nishikawa, Masaji, to Olympus Optical Company Limited. Recording device including a heating means. 4,324,486, Cl. 355-14.0FU.
Nishikawa, Mineo: *See*—
 Fujiwara, Kenichi; Sugi, Hikaru; and Nishikawa, Mineo, 4,324,112, Cl. 62-511.000.
Nishikawa, Toshio; Ito, Yoji; Ishikawa, Youhei; and Tamura, Sadahiro, to Murata Manufacturing Co., Ltd. Oscillator using dielectric resonator. 4,325,035, Cl. 331-96.000.
Nishizawa, Masahiro: *See*—
 Tomita, Yoshifumi; Nishizawa, Masahiro; Yokomizo, Hiroshi; and Nakai, Hiromitu, 4,324,850, Cl. 430-24.000.
Nissan Chemical Industries, Ltd.: *See*—
 Yokomichi, Isao; Yamada, Takeo; Mohri, Akio; Ota, Kiyoshi; and Ikeda, Minoru, 4,324,665, Cl. 210-718.000.
Nissan Motor Company, Limited: *See*—
 Aoyama, Syunichi, 4,324,210, Cl. 123-90.550.
 Iwanaga, Kazuyoshi; Sugano, Kazuhiko; and Ohtsuka, Kunio, 4,324,154, Cl. 74-869.000.
 Iwanaga, Kazuyoshi; Sugano, Kazuhiko; and Ohtsuka, Kunio, 4,324,156, Cl. 74-869.000.
 Kawamoto, Tamio, 4,324,150, Cl. 74-476.000.
Nisshin Flour Milling Co. Ltd.: *See*—
 Tahara, Yoshiyuki; Koyama, Hiroyasu; Komatsu, Yasuhiro; Kubota, Reiko; and Takahashi, Toshihiro, 4,324,916, Cl. 564-462.000.
Nissan Motor Co. Ltd.: *See*—
 Kita, Ryuji; Komai, Hisataka; Wakabayashi, Makoto; and Takagishi, Haruyoshi, 4,324,713, Cl. 523-457.000.
Nitto Chemical Industry Co., Ltd.: *See*—
 Sasaki, Yutaka; and Moriya, Kiyoshi, 4,324,586, Cl. 75-69.000.
Nix, Richard J. Saddle. 4,324,090, Cl. 54-44.000.
Noble Manufacturing Company: *See*—
 Bethea, James R., 4,324,605, Cl. 156-247.000.
Noguchi, Masaru; Oosaka, Shigenori; and Komura, Tsuneo, to Fuji Photo Film Co., Ltd. Light beam scanning system with motor and vibration isolating means. 4,324,452, Cl. 350-6.700.
Nomura, Norimasa; and Yoshida, Atsushi, to Dainippon Screen Seizo Kabushiki Kaisha. Automatic film feeder for an automatic developer. 4,324,480, Cl. 354-320.000.
Norman, Lewis R.; and Gardner, Tommy R., to Halliburton Company. Foamed high viscosity aqueous inorganic acid solutions and methods of using the same. 4,324,669, Cl. 252-8.55C.
Norman, Richard O.: *See*—
 Ammon, J. Preston; Weaver, Harry R.; and Norman, Richard O., 4,324,451, Cl. 339-176.0MP.
North Pacific Products, Inc.: *See*—
 Bettencourt, Pierre A.; and Cleveland, Charles H., 4,324,064, Cl. 46-81.000.
Northern Telecom Limited: *See*—
 Dyment, John C.; Look, Christopher M.; and Chik, Kin-Chi D., 4,325,034, Cl. 372-50.000.
Novo Industri A/S: *See*—
 Olsen, Hans A. S., 4,324,805, Cl. 426-46.000.
NRG Research Laboratories, Inc.: *See*—
 Page, Edward J.; and Rock, James E., 4,324,834, Cl. 428-312.600.
NU Industries, Inc.: *See*—
 Mwanyoha, Bakari, 4,325,109, Cl. 362-412.000.
Nudenberg, Walter: *See*—
 Rim, Yong S.; Nudenberg, Walter; and Johnson, Arnold N., 4,324,870, Cl. 525-127.000.

Nusslin, Hans-Jorg: *See*—
 Weihrich, Georg; Grunert, Wilfried; and Nusslin, Hans-Jorg, 4,324,944, Cl. 373-105.000.
Oak Industries Inc.: *See*—
 Dulen, Edwina K., 4,324,962, Cl. 200-159.00B.
Obayashi, Tsutomu; and Hiraoka, Hideyuki, to Hiraoka & Co., Ltd. Water-proof, fuse-bonding fabric. 4,324,827, Cl. 428-192.000.
Obermayer, Arthur S. Method of monitoring toxic fluids. 4,324,558, Cl. 23-232.00R.
Oborg, Lars: *See*—
 Sundkvist, Per H.; and Oborg, Lars, 4,324,249, Cl. 128-360.000.
Obraztsov, Nikolai V.: *See*—
 Konstantinov, Igor I.; Kormushechkina, Antonina I.; Avdonin, Jury A.; Kotlyarsky, Vladimir M.; Kim, Albert A.; Obraztsov, Nikolai V.; and Efimov, Alexei V., 4,324,667, Cl. 210-729.000.
Ocampo, Joseph D. Board game method. 4,324,406, Cl. 273-242.000.
Occidental Petroleum Corporation: *See*—
 Woinsky, Samuel G., 4,324,102, Cl. 60-641.300.
Occidental Research Corporation: *See*—
 Dines, Martin B., 4,324,767, Cl. 423-3.000.
 Durai-Swamy, Kandaswamy, 4,324,637, Cl. 208-8.0LE.
 Durai-Swamy, Kandaswamy, 4,324,638, Cl. 208-8.0LE.
 Durai-Swamy, Kandaswamy, 4,324,639, Cl. 208-8.0LE.
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 Durai-Swamy, Kandaswamy, 4,324,641, Cl. 208-8.0LE.
 Durai-Swamy, Kandaswamy, 4,324,642, Cl. 208-8.0LE.
 Durai-Swamy, Kandaswamy, 4,324,643, Cl. 208-8.0LE.
 Durai-Swamy, Kandaswamy, 4,324,644, Cl. 208-8.0LE.
O'Connell, Philip E.; Hughes, Larry M.; and Fletcher, James D., to RCA Corporation. Video disc player having carriage drive apparatus. 4,325,136, Cl. 369-219.000.
Oda Gosen Kogyo Kabushiki Kaisha: *See*—
 Shimizu, Hichio, 4,324,371, Cl. 242-153.000.
Odin, Eugene: *See*—
 Demler, Walter R.; Nagpal, Krishen L.; Dollard, Richard M.; Odin, Eugene; and Donahue, Donald T., 4,324,926, Cl. 364-130.000.
Oellerer, Friedrich: *See*—
 Theurer, Josef; and Oellerer, Friedrich, 4,324,186, Cl. 105-177.000.
Officine Savio S.p.A.: *See*—
 Cicerone, Aurelio, 4,324,094, Cl. 57-267.000.
Ogawa, Tomoya: *See*—
 Matsui, Masanao; and Ogawa, Tomoya, 4,324,895, Cl. 544-313.000.
Ogawa, Yukio; and Hirohata, Michio, to Canon Kabushiki Kaisha. Electromagnetic drive device for camera. 4,324,471, Cl. 354-234.000.
Ohishi, Tokuro: *See*—
 Umino, Norihide; Ohishi, Tokuro; Ikezaki, Muneyoshi; Sato, Masanori; and Nagao, Taku, 4,324,800, Cl. 424-308.000.
Ohkubo, Tadahiko: *See*—
 Inouye, Yoshinori; and Ohkubo, Tadahiko, 4,324,368, Cl. 242-18.0PW.
Ohm, Aloys: *See*—
 Schneeweiss, Manfred; Gotzenberger, Adolf; and Ohm, Aloys, 4,324,416, Cl. 280-661.000.
Ohsima, Masaaki: *See*—
 Akasaki, Isamu; Ohsima, Masaaki; Matsuda, Nobuhide; Matsuki, Michio; Tsukamoto, Yoshio; Kagi, Hiromichi; and Fukazawa, Hidehalu, 4,325,070, Cl. 346-108.000.
Ohta, Masaya: *See*—
 Yamaguchi, Terumoto; and Ohta, Masaya, 4,324,391, Cl. 246-200.000.
Ohtsuka, Kunio: *See*—
 Iwanaga, Kazuyoshi; Sugano, Kazuhiko; and Ohtsuka, Kunio, 4,324,154, Cl. 74-869.000.
 Iwanaga, Kazuyoshi; Sugano, Kazuhiko; and Ohtsuka, Kunio, 4,324,156, Cl. 74-869.000.
Oishi, Yasushi; and Hirano, Shigeo, to Fuji Photo Film Co., Ltd. Process for developing a silver halide emulsion. 4,324,855, Cl. 430-378.000.
Oka, Hitoshi; Kikuchi, Hiroshi; Yokono, Hitoshi; Suzuki, Haruo; Yoshimura, Toyofusa; Matsuo, Akira; Miyazawa, Osamu; Tanaka, Isamu; and Isogai, Tokio, to Hitachi, Ltd. Process for regenerating chemical copper plating solution. 4,324,629, Cl. 204-180.00P.
Okabe, Hiroshi: *See*—
 Matsuzaki, Meiki; Okabe, Hiroshi; Tanaka, Seishiro; Takiguchi, Takao; and Onodera, Kunikatsu, 4,324,801, Cl. 424-311.000.
Okamoto, Toyoo: *See*—
 Asakura, Kouichi; and Okamoto, Toyoo, 4,324,485, Cl. 355-8.000.
Okamoto, Yukikazu; and Tagami, Manabu, to Sumitomo Chemical Company, Limited. Pesticidal aqueous suspension. 4,324,781, Cl. 424-78.000.
Okauchi, Tetsuo; Hiraga, Kentaro; and Sato, Yasuo, to Takeda Chemical Industries, Ltd. Acaricidal agents. 4,324,795, Cl. 424-274.000.
Okubo, Yasuhiko: *See*—
 Sunohara, Mineo; Okubo, Yasuhiko; Taketa, Mitsugu; Nakai, Yoshiyuki; and Miyazaki, Yukio, 4,325,096, Cl. 361-45.000.
Okuda, Hironori: *See*—
 Sato, Masaki; Okuda, Hironori; Ito, Motoya; and Makino, Yuji, 4,324,993, Cl. 310-58.000.
O'Lenick, Paul D.: *See*—
 Parizof, William D.; O'Lenick, Paul D.; and Fraley, Lowell D., 4,324,649, Cl. 208-130.000.
Oliker, Michael D., to Near Equilibrium Research Associates. Adsorption beds and method of operation thereof. 4,324,564, Cl. 55-20.000.
Olin Corporation: *See*—
 Kircher, Morton S.; and Specht, Steven J., 4,324,634, Cl. 204-228.000.
Olsen, Hans A. S., to Novo Industri A/S. Method of producing soy protein hydrolysate from fat-containing soy material, and soy protein hydrolysate. 4,324,805, Cl. 426-46.000.
Olsen, Robert C., to Illinois Tool Works Inc. Carrier assembly apparatus. 4,324,085, Cl. 53-48.000.
Olson, Jerry A., to Eaton Corporation. Single path adjustable flowmeter. 4,324,143, Cl. 73-861.620.
Olsson, Sven O. Paint equipment cleaning tool. 4,324,018, Cl. 15-236.00R.
Olympus Optical Co., Ltd.: *See*—
 Ichikawa, Hiroki, 4,325,094, Cl. 360-137.000.
 Nishikawa, Masaji, 4,324,486, Cl. 355-14.0FU.
 Sakai, Noboru; and Shimizu, Tokuo, 4,324,995, Cl. 310-153.000.
 Satoh, Ken, 4,325,080, Cl. 358-127.000.
 Takayama, Syuichi, 4,324,466, Cl. 354-33.000.
 Terada, Katumi; and Saito, Michiharu, 4,324,472, Cl. 354-266.000.
Oman, Richard A., to Grumman Aerospace Corp. Portable wind turbine for charging batteries. 4,324,985, Cl. 290-55.000.
Omron Tateisi Electronics Co.: *See*—
 Sakakino, Takahiro; and Yamada, Hiroyoshi, 4,324,956, Cl. 200-16.00R.
Omura, Satoshi; Tanaka, Haruo; Awaya, Juichi; and Hata, Toju, to Kitasato Institute, The. Compound nanaomycin A and derivatives thereof and a process for producing the same. 4,324,728, Cl. 260-343.200.
O'Neill, Richard F., to General Dynamics Corporation. Heat sink/fluid-to-fluid mechanical coupling of spacecraft coolant systems. 4,324,375, Cl. 244-163.000.
Ono, Hitoshi: *See*—
 Imahori, Seiichi; Kaneko, Masaharu; Ono, Hitoshi; Imazeki, Shuji; Mukoh, Akio; and Morishita, Hirosada, 4,324,455, Cl. 350-349.000.
Onodera, Kunikatsu: *See*—
 Matsuzaki, Meiki; Okabe, Hiroshi; Tanaka, Seishiro; Takiguchi, Takao; and Onodera, Kunikatsu, 4,324,801, Cl. 424-311.000.
Ooms, William J.; and Barnett, Richard E., to Motorola, Inc. Divider with dual modulus prescaler for phase locked loop frequency synthesizer. 4,325,031, Cl. 331-1.00A.
Oosaka, Shigenori: *See*—
 Noguchi, Masaru; Oosaka, Shigenori; and Komura, Tsuneo, 4,324,452, Cl. 350-6.700.
Opfer, John C.: *See*—
 Hall, Walter J.; and Opfer, John C., 4,324,959, Cl. 200-144.0AP.
Organisation Europeenne de Recherches Spatiales: *See*—
 Renner, Udo; 4,325,124, Cl. 364-459.000.
Oroszlanyi Szenbanyak: *See*—
 Ignatko, Gyorgy; Ilyes, Zoltan; Nemeth, Ferenc; Racz, Matyas; Varga, Albert; and Varro, Jeno, 4,324,509, Cl. 405-299.000.
Osada, Yoshihide; and Sugioka, Syuji, to Tokyo Shibaura Electric Co., Ltd. Semiconductor switching device. 4,325,074, Cl. 357-37.000.
Oshima, Mitsuyoshi: *See*—
 Ishihara, Toshinobu; Taguchi, Kenichi; Yamamoto, Akira; Takasaka, Nobuo; Shimizu, Hisashi; and Oshima, Mitsuyoshi, 4,324,931, Cl. 570-189.000.
Oshima, Syoiti; and Ida, Shuichiro, to Toyota Jidosha Kogyo Kabushiki Kaisha. Sealing device for a manual transmission for an automobile. 4,324,152, Cl. 74-606.00R.
Osteo AG: *See*—
 Reuther, Jurgen; Moser, Heinz; and Krause, Hermann, 4,324,550, Cl. 433-174.000.
Ota, Kiyoshi: *See*—
 Yokomichi, Isao; Yamada, Takeo; Mohri, Akio; Ota, Kiyoshi; and Ikeda, Minoru, 4,324,665, Cl. 210-718.000.
Otis Elevator Company: *See*—
 Sun, Lu; and Cilderman, Janis J., 4,324,360, Cl. 238-349.000.
Otsuka, Kenichi, to Tokyo Shibaura Denki Kabushiki Kaisha. Counter controlled pulse width modulated inverter. 4,325,112, Cl. 363-42.000.
Ovitz, Ernest, III, to John H. Best & Sons, Inc. Display shelf lock. 4,324,379, Cl. 248-222.100.
Owens-Corning Fiberglas Corporation: *See*—
 Poulsen, Peder U., 4,324,982, Cl. 250-560.000.
 Williamson, Michael, 4,324,942, Cl. 373-39.000.
 Yau, Ben J., 4,324,833, Cl. 428-290.000.
Oxford, Alexander W.: *See*—
 Bradshaw, John; Oxford, Alexander W.; and Scopes, David I. C., 4,324,792, Cl. 424-267.000.
Oxford Industries, Inc.: *See*—
 Mitchell, William O.; and Ellington, Gordon H., 4,324,087, Cl. 53-241.000.
Oy E. Sarlin AB: *See*—
 Sarvanne, Hannu, 4,324,531, Cl. 417-360.000.
Oy Wartsila AB: *See*—
 Samuel, Olof; and Hellemaa, Heikki, 4,324,212, Cl. 123-179.00F.
Paape, Kenneth L.: *See*—
 Woodliff, Ronald D.; Paape, Kenneth L.; and Johnston, Edwin S., 4,324,424, Cl. 285-158.000.
Pacesetter Systems, Inc.: *See*—
 Mann, Brian M., 4,324,251, Cl. 128-419.0PT.
Packaging Corporation of America: *See*—
 Champlin, Charles L., 4,324,328, Cl. 206-194.000.
Paddock, Paul F.: *See*—
 Conway, Tim D.; and Paddock, Paul F., 4,324,335, Cl. 209-586.000.

Page, Edward J.; and Rock, James E., to NRG Research Laboratories, Inc. Insulation means and method. 4,324,834, Cl. 428-312.600.
Pako Corporation: *See*—
  Anderson, Richard D.; Harvey, Ronald B.; Knudsen, Randall C.; and Wedel, John A., 4,324,488, Cl. 355-74.000.
Pallmar, Anders B.: *See*—
  Sarebjork, Karl W. H.; and Pallmar, Anders B., 4,324,735, Cl. 260-425.000.
Palloch, Herbert; and Erndt, Hans, to Frankl & Kirchner GmbH & Co. KG, Fabrik fur Elektromotoren u. elektrische Apparate. Circuit board with plug connector. 4,324,448, Cl. 339-17.00C.
Pallos, Laszlo: *See*—
  Benko, Pal; Gelleri, Andras; Hajos, Gyorgy; Messmer, Andras; Pallos, Laszlo; Petocz, Lujza; Kosoczky, Ibolya; Grasser, Katalin; Gorog, Peter; and Szirt nee Kiszelly, Eniko, 4,324,894, Cl. 544-128.000.
Palomer, Enrique P. Process for generating movement and energy on the basis of the flotation of bodies. 4,324,099, Cl. 60-497.000.
Papantoniou, Christos: *See*—
  Jacquet, Bernard; Mahieu, Claude; and Papantoniou, Christos, 4,324,780, Cl. 424-47.000.
Paratte, Daniel, to Fabrique d'Horlogerie de Fontainemelon. Electromagnetic motor. 4,324,992, Cl. 310-49.00R.
Parfitt, Ronald H. Instrument assembly. 4,324,197, Cl. 116-300.000.
Parizot, William D.; O'Lenick, Paul D.; and Fraley, Lowell D., to Pullman Incorporated. Fired process heater. 4,324,649, Cl. 208-130.000.
Park, David B.: *See*—
  Khoylian, Rouzas R.; Cowdery, James R.; and Park, David B., 4,324,326, Cl. 198-461.000.
Parks, Bennett A.; and Parks, Stephen I. Method and apparatus for event rate prospecting and application to wind prospecting. 4,325,122, Cl. 364-420.000.
Parks, Edward G.; and Troncale, August J., Jr., to United States of America, Navy. Anti-slosh baffle compartment assembly. 4,324,272, Cl. 137-574.000.
Parks, Stephen I.: *See*—
  Parks, Bennett A.; and Parks, Stephen I., 4,325,122, Cl. 364-420.000.
Parmet, Arthur A.; and Dawson, Charles W., to Honeywell Information Systems Inc. Apparatus for calculating a check digit for a stream of data read from a document. 4,325,117, Cl. 364-200.000.
Parrini, Paolo; Ciaccia, Vittorio; Corrieri, Guglielmo; and Righi, Gian P., to Montedison S.p.A. Formed structures based on synthetic fibers and having soundproofing properties. 4,324,831, Cl. 428-288.000.
[illegible] Werke Michelbacher Hutte: *See*—
  Muskat, Josef, 4,324,655, Cl. 210-96.100.
Patel, Naren I., to Siecor Corporation. Filling materials for electrical and light waveguide communications cables. 4,324,453, Cl. 350-96.230.
Patel, Natvarlal K.; and Plaisted, Anthony C., to Celtite, Inc. Cartridge containing fast acting inorganic adhesive systems, grouting compositions and method of use. 4,324,592, Cl. 106-85.000.
Patton, John T., Jr.; and Rupert, John P., to BASF Wyandotte Corporation. Process for the preparation of molded polyurethane-polyurea elastomers and molded parts prepared thereby. 4,324,867, Cl. 521-159.000.
Patton, Tad L., to Exxon Research & Engineering Co. Polymers characterized by 1,3-imidazolidine-1,3-diyl rings plasticized with aromatic nitriles. 4,324,836, Cl. 428-336.000.
Peabody Process Systems, Inc.: *See*—
  Bakke, Even, 4,324,770, Cl. 423-242.000.
Pearson, Laurence B., to Pearson's Inc. Panel mounting arrangement for squeeze chutes. 4,324,206, Cl. 119-99.000.
Pearson, Robert J., to National Gypsum Company. Cornerbead and corner clip. 4,324,079, Cl. 52-255.000.
Pearson's Inc.: *See*—
  Pearson, Laurence B., 4,324,206, Cl. 119-99.000.
Peck, Paul L. Arrow rest for archery bow. 4,324,221, Cl. 124-24.00R.
Pedain, Josef: *See*—
  Bock, Manfred; Pedain, Josef; and Uerdingen, Walter, 4,324,879, Cl. 528-45.000.
Pedersen, Richard A.: *See*—
  Morehouse, James E.; and Pedersen, Richard A., 4,325,099, Cl. 361-93.000.
Pelletier, James A., to Bell Telephone Laboratories, Incorporated. Cable shield fault location using a capacitive-inductive coupler. 4,325,022, Cl. 324-52.000.
Pennwalt Corporation: *See*—
  Sandler, Stanley R.; and Chen, Mabel M., 4,324,910, Cl. 564-60.000.
Perego, Guiseppe. Collapsible perambulator cot frame structure including telescopic side members. 4,324,410, Cl. 280-42.000.
Perlin, Alfred R., to Metatech Corporation. Microsurgical clip. 4,324,248, Cl. 128-325.000.
Perron, Robert: *See*—
  Gauthier-Lafaye, Jean; and Perron, Robert, 4,324,927, Cl. 568-902.000.
Perry Oceanographics, Inc.: *See*—
  Cunningham, Frank D.; Witt, Michael A.; and Hill, Robert M., 4,324,195, Cl. 114-312.000.
Peschau, Gerhard: *See*—
  Pforr, Gerhard; Peschau, Gerhard; Schippmann, Guenter; Appl, Max; Voelkl, Erfried; and Stark, Hans, 4,324,570, Cl. 55-267.000.
Peterson, Donovan F. Pulse width modulation control circuit. 4,325,011, Cl. 318-345.00B.
Petocz, Lujza: *See*—
  Benko, Pal; Gelleri, Andras; Hajos, Gyorgy; Messmer, Andras; Pallos, Laszlo; Petocz, Lujza; Kosoczky, Ibolya; Grasser, Katalin; Gorog, Peter; and Szirt nee Kiszelly, Eniko, 4,324,894, Cl. 544-128.000.
  Messmer, Andras; Benko, Pal; Hajos, Gyorgy; Petocz, Lujza; Kosoczky, Ibolya; and Gorog, Peter, 4,324,786, Cl. 424-248.540.
Petrikevich, Svetlana B.: *See*—
  Redikultsev, Jury V.; Litvinenko, Leonid A.; Petrikevich, Svetlana B.; Chermenskay, Taisia S.; Vershkov, David S.; Nesterov, Boris F.; and Bogoroditskaya, Irina V., 4,324,762, Cl. 422-106.000.
Peyton, Ralph B. Speed indicator for fishing gear. 4,324,135, Cl. 73-187.000.
Peyton, Richard H.; and Thornton, Donald I., to Fram Corporation. Fluid filter. 4,324,660, Cl. 210-440.000.
Pfeiler, Manfred: *See*—
  Kalender, Willi; Linke, Gerhard; and Pfeiler, Manfred, 4,324,978, Cl. 250-445.00T.
Pfeuffer, Alfred: *See*—
  Baier, Alfred; and Pfeuffer, Alfred, 4,324,389, Cl. 266-51.000.
Pfitzner, Jorg: *See*—
  Dhein, Rolf; Reuter, Knud; Rudolph, Hans; and Pfitzner, Jorg, 4,324,880, Cl. 528-80.000.
Pforr, Gerhard; Peschau, Gerhard; Schippmann, Guenter; Appl, Max; Voelkl, Erfried; and Stark, Hans, to BASF Aktiengesellschaft. Apparatus for de-dusting gases. 4,324,570, Cl. 55-267.000.
Philargo: *See*—
  Farge, Daniel; Leboul, Jean; Le Goff, Yves; and Poiget, Gilbert, 4,324,579, Cl. 71-74.000.
Phillips Petroleum Company: *See*—
  Borst, Roger L., 4,324,555, Cl. 23-230.0EP.
  Drake, Charles A.; and Turk, Stanley D., 4,324,738, Cl. 260-465.00H.
  Edmonds, James T., Jr.; and Scoggins, Lacey E., 4,324,886, Cl. 528-387.000.
  Gardner, Lloyd E., 4,324,647, Cl. 208-111.000.
  Newton, Richard C.; and Romanek, Gerald A., 4,324,752, Cl. 264-25.000.
  Roberts, John S.; Bertus, Brent J.; McKay, Dwight L.; and Mark, H. Wayne, 4,324,648, Cl. 208-114.000.
Pickenhagen, Wilhelm; and Velluz, Alain, to Firmenich SA. Flavoring with α, β-unsaturated aldehydes. 4,324,809, Cl. 426-534.000.
Pickles, Robert A., to Texaco, Inc. Locking mechanism for telescopic tubing. 4,324,502, Cl. 403-104.000.
Pierson, Fritz: *See*—
  Moraw, Roland; Steinau, Peter; and Pierson, Fritz, 4,324,421, Cl. 283-7.000.
Piesik, Edward T., to General Dynamics, Pomona Division. Flexible area launch tube rear cover. 4,324,167, Cl. 89-1.800.
Pifferi, Giorgio: *See*—
  Dorigotti, Luciano; Gaviraghi, Giovanni; Pifferi, Giorgio; Pinza, Mario; and Semeraro, Claudio, 4,324,788, Cl. 424-250.000.
Pillou, Jean-Pierre M.: *See*—
  Colardelle, Joel S.; Girard, Pierre; and Pillou, Jean-Pierre M., 4,325,055, Cl. 340-347.0AD.
Pinza, Mario: *See*—
  Dorigotti, Luciano; Gaviraghi, Giovanni; Pifferi, Giorgio; Pinza, Mario; and Semeraro, Claudio, 4,324,788, Cl. 424-250.000.
Pipe, William J. C.; and Gray, John B. Method of and apparatus for cooling blocks of hot porous material. 4,324,107, Cl. 62-268.000.
Pirzadeh, Brian: *See*—
  DeVita, Joseph; and Pirzadeh, Brian, 4,325,118, Cl. 364-200.000.
Pitesky, Isadore. Tubular fitment. 4,324,423, Cl. 285-156.000.
Pitney Bowes Inc.: *See*—
  Albright, David B.; and Conti, Joseph A., 4,324,396, Cl. 271-125.000.
  Tomlie, Robert J., Jr., 4,325,113, Cl. 363-60.000.
Plaisted, Anthony C.: *See*—
  Patel, Natvarlal K.; and Plaisted, Anthony C., 4,324,592, Cl. 106-85.000.
Plantation Patterns, Inc.: *See*—
  Saiger, Herbert C., 4,324,433, Cl. 297-442.000.
Poad, William J.: *See*—
  Dembicki, Michael T.; and Poad, William J., 4,324,601, Cl. 156-69.000.
Pocket Supportable Atomizer Device Trust: *See*—
  Stansbury, Benjamin H., Jr., 4,324,362, Cl. 239-211.000.
Poiget, Gilbert: *See*—
  Farge, Daniel; Leboul, Jean; Le Goff, Yves; and Poiget, Gilbert, 4,324,579, Cl. 71-74.000.
Polaroid Corporation: *See*—
  Berger, Michael, 4,324,853, Cl. 430-245.000.
  Coughlan, Edward H., 4,324,473, Cl. 354-276.000.
Polychrome Corporation: *See*—
  Huang, Jen-chi, 4,324,841, Cl. 428-457.000.
Pommer, Ernst-Heinrich: *See*—
  Hagen, Helmut; Reuther, Wolfgang; and Pommer, Ernst-Heinrich, 4,324,793, Cl. 424-270.000.
Porter Chadburn Limited: *See*—
  Porter, Harold, 4,324,333, Cl. 206-526.000.
Porter, Clifford R.; and Kaesz, Herbert D. Method for the removal of sulfur from carbonaceous material. 4,324,559, Cl. 44-1.0SR.
Porter, Harold, to Porter Chadburn Limited. Transportation of fluent material. 4,324,333, Cl. 206-526.000.
Poulsen, Peder U., to Owens-Corning Fiberglas Corporation. Pipe wall thickness monitoring apparatus. 4,324,982, Cl. 250-560.000.
PPG Industries, Inc.: *See*—
  Zibritosky, George, 4,324,373, Cl. 244-121.000.

Prahauser, Georg; Schmidlin, Robert; and Trede, Wolfgang, to Buck Chemisch-Technische Werke GmbH & Co. Smoke projectile charge. 4,324,183, Cl. 102-334.000.
Pratt, Charles E., to Chattem, Inc. Process for making a mixed oxyaluminum acylate composition useful in grease manufacture. 4,324,670, Cl. 252-37.700.
Pratt, Roy E.: *See*—
  Castagnos, Leonce F., Jr.; Menzies, William R., III; and Pratt, Roy E., 4,324,688, Cl. 252-417.000.
President and Fellows of Harvard College: *See*—
  Kasper, Dennis L., 4,324,887, Cl. 536-53.000.
Prete, Ernest, Jr., to Ancra Corporation. Ratchet buckle having reinforcement strengthening means. 4,324,022, Cl. 24-68.0CD.
Prete, Ernest, Jr., to Ancra Corporation. Ratchet buckle having reinforcing spreader bar insert. 4,324,023, Cl. 24-68.0CD.
Prewo, Karl M.: *See*—
  Brennan, John J.; and Prewo, Karl M., 4,324,843, Cl. 428-697.000.
Price, George M.: *See*—
  Moore, L. Frank; and Price, George M., 4,324,173, Cl. 99-330.000.
Priepke, Edward H.; and Martenas, Wayne B., to Sperry Corporation. Apparatus for declutching a gear selector. 4,324,324, Cl. 192-101.000.
Prigent, Madeleine: *See*—
  Bonicel, Jean P.; Cottevielle, Christian; Maucolot, Michel; and Prigent, Madeleine, 4,324,863, Cl. 521-85.000.
Primus, Roy J.: *See*—
  Kasting, Edward W.; Glasson, Richard E.; and Primus, Roy J., 4,324,213, Cl. 123-196.00A.
Procter & Gamble Company, The: *See*—
  Aziz, Mohammed I., 4,324,247, Cl. 128-287.000.
  Mullane, William I.; and Smith, Douglas J., 4,324,246, Cl. 128-287.000.
Product Design & Development, Inc.: *See*—
  Sterner, Maurice E., Jr., 4,324,072, Cl. 49-129.000.
Product Dynamics, Ltd.: *See*—
  Kruger, Frederick W., Jr.; and Bosch, Warren E., 4,324,405, Cl. 273-128.000.
Prohaska, Hans; and Seitter, Wolf, to ITT Industries, Inc. Hazard warning circuit. 4,325,007, Cl. 315-200.00A.
Proud, Joseph M.; Riseberg, Leslie A.; and Fallier, Charles N., Jr., to GTE Laboratories Incorporated. Method and apparatus for starting high intensity discharge lamps. 4,325,004, Cl. 315-45.000.
Provesta Corporation: *See*—
  Vanderveen, John W.; and Malick, Emil A., 4,324,527, Cl. 415-213.00B.
Pryor, Alvetta; and Ishibe, Nobuyuki, to Dow Chemical Company, The. Stabilized methylchloroform formulation containing cyclopropyl methyl carbinol. 4,324,928, Cl. 570-118.000.
Pryor, Harry H.; and Schinker, James J., to UMC Industries, Inc. Drink dispensing. 4,324,494, Cl. 366-156.000.
Puderbaugh, George, to Diemolding Corporation. Volumetric spirometer. 4,324,260, Cl. 128-728.000.
Pullman Incorporated: *See*—
  Parizot, William D.; O'Lenick, Paul D.; and Fraley, Lowell D., 4,324,649, Cl. 208-130.000.
  Roldness, David J., 4,324,189, Cl. 105-378.000.
Purdie, Anthony F., to Barr & Stroud Limited. Laser component. 4,324,475, Cl. 356-352.000.
Purtell, Jack L.; and Purtell, Rufus J. Floating water detector. 4,325,060, Cl. 340-604.000.
Purtell, Rufus J.: *See*—
  Purtell, Jack L.; and Purtell, Rufus J., 4,325,060, Cl. 340-604.000.
Quanta Chemical Ltd.: *See*—
  Reilly, Frank, 4,324,036, Cl. 29-437.000.
Quintini, Massimo: *See*—
  Biaggi, Roberto; and Quintini, Massimo, 4,324,878, Cl. 526-200.000.
Quiogue, Virgilio, to Burroughs Corporation. Switched mode regulated DC to DC converter. 4,325,111, Cl. 363-17.000.
Quiroz, Gabriella. Solar panel, particularly for facades of buildings. 4,324,232, Cl. 126-450.000.
Qume Corporation: *See*—
  Moon, Suhdok D.; and Trackman, Marshall H., 4,324,500, Cl. 400-564.000.
  Steinhardt, Maxwell, 4,324,498, Cl. 400-144.200.
R. A. Hanson Co., Inc.: *See*—
  Hanson, Richard W., 4,324,539, Cl. 425-59.000.
R & D Systems, Inc.: *See*—
  Mundschenk, David D., 4,324,686, Cl. 252-408.000.
Rabinovitch, Yosef K., to Edward L. Bateman Limited. Walking machines. 4,324,302, Cl. 180-8.00C.
Racciato, Joseph S., to Merck & Co., Inc. Use of TKP as an antimigrant. 4,324,554, Cl. 8-561.000.
Racz, Matyas: *See*—
  Ignatko, Gyorgy; Ilyes, Zoltan; Nemeth, Ferenc; Racz, Matyas; Varga, Albert; and Varro, Jeno, 4,324,509, Cl. 405-299.000.
Radiometer A/S: *See*—
  Vesterager, Peter K. R., 4,324,256, Cl. 128-635.000.
Rai, Raghuvir, to Telautograph Corporation. Thermal recording stylus. 4,325,071, Cl. 346-139.00C.
Rains, John K.; and Reimert, Larry E., to Vetco Offshore, Inc. Low torque pack-off seal assembly with retrievable lower section. 4,324,422, Cl. 285-140.000.
Rains, Lyle V.: *See*—
  Stubben, David R.; and Rains, Lyle V., 4,324,401, Cl. 273-85.00G.
Ranck, Dan E.: *See*—
  Gibbs, Dale S.; Sinacola, James F.; and Ranck, Dan E., 4,324,714, Cl. 524-113.000.
Range, Kenneth; Irwin, William J.; Reed, Russell, Jr.; and Silver, Wallace E., to United States of America, Navy. Gelled slurry explosive. 4,324,599, Cl. 149-39.000.
Ranke, Gerhard; and Weiss, Horst, to Linde Aktiengesellschaft. Separation of gaseous components from a gaseous mixture by physical scrubbing. 4,324,567, Cl. 55-43.000.
Ranken, Paul F.: *See*—
  McKinnie, Bonnie G.; and Ranken, Paul F., 4,324,920, Cl. 568-34.000.
Ransburg Corporation: *See*—
  Bentley, Stanley L., 4,324,812, Cl. 427-8.000.
Rapp, Erich: *See*—
  Eistetter, Klaus; and Rapp, Erich, 4,324,796, Cl. 424-278.000.
Rappinger, Bo: *See*—
  Stenkvist, Sven-Einar; and Rappinger, Bo, 4,324,943, Cl. 371-72.000.
Rask, Richard O.: *See*—
  Hagen, Magnus F.; and Rask, Richard O., 4,324,439, Cl. 308-3.800.
Rathbone, Elner B., to Talres Development (N.A.) N.V. Process for the preparation of chlorodeoxysugars. 4,324,888, Cl. 536-122.000.
Rattner, Justin R.: *See*—
  Colley, Stephen R.; Cox, George W.; Rattner, Justin R.; and Swanson, Roger C., 4,325,120, Cl. 364-200.000.
Rauen, John T., Jr., to C-D Marketing Ltd. Headlamp washer assembly having a multiported flow valve. 4,324,363, Cl. 239-284.00A.
Ravagnani, Frederick J.; and Schonfeld, Steven E., to Firestone Tire & Rubber Company, The. Method, composition and product employing a tetracarboxylic dianhydride to improve adhesion between a metal member and a contiguous rubber skim stock. 4,324,281, Cl. 152-359.000.
Ray, George C., III, to General Foods Corporation. Selective tamper resistance for on-package peelable premiums. 4,324,823, Cl. 428-43.000.
RCA Corporation: *See*—
  Harwood, Leopold A.; and Wittmann, Erwin J., 4,325,076, Cl. 358-31.000.
  Langley, Howard M.; and Stephens, Joseph W., 4,325,134, Cl. 369-58.000.
  McMackin, John B., 4,325,021, Cl. 323-351.000.
  O'Connell, Philip E.; Hughes, Larry M.; and Fletcher, James D., 4,325,136, Cl. 369-219.000.
  Reichert, Walter F., 4,324,814, Cl. 427-86.000.
  Schade, Otto H., Jr., 4,325,017, Cl. 323-313.000.
  Schade, Otto H., Jr., 4,325,018, Cl. 323-313.000.
  Whitley, George J., 4,325,040, Cl. 334-17.000.
  Williams, Richard, 4,324,132, Cl. 73-61.300.
Reale, Michael J., to Stauffer Chemical Company. Polyurethane foams having low discoloration. 4,324,865, Cl. 521-107.000.
Redactron Corporation: *See*—
  Herman, Morton B., 4,325,063, Cl. 340-750.000.
Rederiaktiebolaget Nordstjernan: *See*—
  Samuel, Olof; and Hellemaa, Heikki, 4,324,212, Cl. 123-179.00F.
Redikultsev, Jury V.; Litvinenko, Leonid A.; Petrikevich, Svetlana B.; Chermenskay, Taisia S.; Vershkov, David S.; Nesterov, Boris F.; and Bogoroditskaya, Irina V. Apparatus for sterilization by steam of fermentation objects. 4,324,762, Cl. 422-106.000.
Redstone, Reuben: *See*—
  Hughes, Brian T.; Redstone, Reuben; Vokes, John C.; and Wight, David R., 4,325,073, Cl. 357-22.000.
Reed, Russell, Jr.: *See*—
  Range, Kenneth; Irwin, William J.; Reed, Russell, Jr.; and Silver, Wallace E., 4,324,599, Cl. 149-39.000.
Rees, Robert L. Tax calculator. 4,324,975, Cl. 235-70.00A.
Reese, William J., to Lobo, Alfred D., a part interest. Hypodermic syringe operable with double-looped ring. 4,324,241, Cl. 128-218.0PA.
Rehm, Stephen J.; and Lee, Young R., to Combustion Engineering, Inc. De-emulsifier. 4,324,734, Cl. 260-403.000.
Reichelderfer, Richard F.: *See*—
  Vogel, Diane C.; Tang, Marian C.; and Reichelderfer, Richard F., 4,324,611, Cl. 156-643.000.
Reichert, Walter F., to RCA Corporation. Method for forming a narrow thin film line. 4,324,814, Cl. 427-86.000.
Reichhold Limited: *See*—
  Sudan, Krishan K.; and Berchem, Antoine, 4,324,747, Cl. 264-13.000.
Reichstein, Patrick L.: *See*—
  Jones, Allan P.; and Reichstein, Patrick L., 4,324,377, Cl. 248-37.600.
Reilly, Frank, to Quanta Chemical Ltd. "Method of making orthodontic screw-type device". 4,324,036, Cl. 29-437.000.
Reimert, Larry E.: *See*—
  Rains, John K.; and Reimert, Larry E., 4,324,422, Cl. 285-140.000.
Reinecke, Erich, to WABCO Fahrzeugbremsen GmbH. Automatic load-dependent braking-force control device. 4,324,436, Cl. 303-22.00R.
Reiners, Albrecht: *See*—
  Janak, Miloslav; Ginsberg, Martin; and Reiners, Albrecht, 4,325,090, Cl. 360-51.000.
Reinert, Charles P., to Solarein, Inc. Solar collector panels having coated fibrous filling for fire inhibition. 4,324,231, Cl. 126-449.000.
Reinhard, Fred J.: *See*—
  Bankes, Kristen E.; Large, Donald M.; Reinhard, Fred J.; and Tamechasky, Joseph A., 4,324,600, Cl. 156-64.000.

Reischl, Artur; and Jabs, Gert, to Bayer Aktiengesellschaft. Solutions of polyisocyanate polyaddition products. 4,324,716, Cl. 524-761.000.
Reitmayer, Gustav. Disc player apparatus. 4,325,133, Cl. 369-263.000.
Reliable Electric Company: *See*—
  Baumbach, Bertram W., 4,325,100, Cl. 361-119.000.
Renner, Udo, to Organisation Europeenne de Recherches Spatiales. System for controlling the direction of the momentum vector of a geosynchronous satellite. 4,325,124, Cl. 364-459.000.
Repke, Virginia L.: *See*—
  Mesek, Frederick K.; and Repke, Virginia L., 4,324,245, Cl. 128-287.000.
Research Foundation for Microbial Diseases of Osaka University: *See*—
  Kan, Takayoshi, 4,324,861, Cl. 435-237.000.
Research Triangle Institute: *See*—
  Tidwell, Richard R.; Dubovi, Edward J.; and Geratz, Joachim D., 4,324,794, Cl. 424-273.00B.
Resovszki, Gabor: *See*—
  Huhn, Magda; Somfai, Eva; Szabo, Gabor; Resovszki, Gabor; and Gneth nee Zalantai, Livia, 4,324,903, Cl. 560-82.000.
Reuben, Harold: *See*—
  Narens, Daniel S.; and Reuben, Harold, 4,324,824, Cl. 428-92.000.
Reutel, Ernst: *See*—
  Elsner, Georg; Vollmer, Hartfrid; and Reutel, Ernst, 4,324,919, Cl. [illegible]
Reuter, Knud: *See*—
  Dhein, Rolf; Reuter, Knud; Rudolph, Hans; and Pfitzner, Jorg, 4,324,880, Cl. 528-80.000.
Reuter, Peter; Blechschmitt, Kurt; and Wirth, Friedrich, to BASF Aktiengesellschaft. Supported catalysts containing vanadium pentoxide, titanium dioxide, phosphorus, rubidium and/or cesium, with or without zirconium dioxide. 4,324,694, Cl. 252-435.000.
Reuther, Jurgen; Moser, Heinz; and Krauss, Hermann, to Osteo AG. Implant for the jaw. 4,324,550, Cl. 433-174.000.
Reuther, Wolfgang: *See*—
  Hagen, Helmut; Reuther, Wolfgang; and Pommer, Ernst-Heinrich, 4,324,793, Cl. 424-270.000.
Rhone-Poulenc Agrochimie: *See*—
  Cordier, Georges, 4,324,914, Cl. 564-412.000.
  Michelet, Daniel; and Veracini, Serge, 4,324,731, Cl. 260-346.220.
Rhone-Poulenc Industries: *See*—
  Gauthier-Lafaye, Jean; and Perron, Robert, 4,324,927, Cl. [illegible]
Ricci, Louis N.: *See*—
  Maier, Alfred E.; and Ricci, Louis N., 4,324,963, Cl. 200-318.000.
Richter, Herbert. Key ring. 4,324,121, Cl. 70-459.000.
Rickey, Robert B. Exercising device. 4,324,399, Cl. 272-144.000.
Ricoh Company, Ltd.: *See*—
  Asakura, Kouichi; and Okamoto, Toyoo, 4,324,485, Cl. 355-8.000.
  Tagawa, Kazuaki; Suzuki, Minoru; and Hashimoto, Makoto, 4,324,483, Cl. 355-3.0DD.
Rideal, Graham R.: *See*—
  Ballard, Denis G.; Charnah, Richard M.; Droughton, John F.; and Rideal, Graham R., 4,324,838, Cl. 428-402.000.
Riech, Volker; Saupe, Wolfgang; and Sorgenicht, Dietrich, to Daystrom Limited. Calibration devices. 4,324,126, Cl. 73-1.00J.
Riedl, Josef: *See*—
  Link, Gerhard; Riedl, Josef; Frohlich, Walter; and Krumbock, Reinhard, 4,324,932, Cl. 570-226.000.
Riggs, Edward J.: *See*—
  Neathery, David O.; and Riggs, Edward J., 4,325,092, Cl. 360-119.000.
Righi, Gian P.: *See*—
  Parrini, Paolo; Ciaccia, Vittorio; Corrieri, Guglielmo; and Righi, Gian P., 4,324,831, Cl. 428-288.000.
Rikagaku Kenkyusho: *See*—
  Matsui, Masanao; and Ogawa, Tomoya, 4,324,895, Cl. 544-313.000.
Rim, Yong S.; Nudenberg, Walter; and Johnson, Arnold N., to Uniroyal, Inc. Scorch-safe acceleration of urethane vulcanization of unsaturated rubbers. 4,324,870, Cl. 525-127.000.
Rings, Friedel: *See*—
  Kaufmann, Jochen; Altenschopfer, Theodor; Schumann, Klaus; and Rings, Friedel, 4,324,677, Cl. 252-99.000.
Riseberg, Leslie A.: *See*—
  Proud, Joseph M.; Riseberg, Leslie A.; and Fallier, Charles N., Jr., 4,325,004, Cl. 315-45.000.
Risser, James A. Solar collector and heat and cold generator. 4,324,229, Cl. 126-439.000.
Ristuccia, Donald J.; and Cotton, John F., to Westinghouse Electric Corp. Distribution transformer having a primary disconnect switch. 4,324,961, Cl. 200-150.00R.
Roantree, Michael L.; and Young, Rodney C., to Smith Kline & French Laboratories Limited. 1-Benzyl-5-nitro-4-(pyridyl or imidazolyl) alkylamino-1,2,3,6-tetrahydropyrimidines and blocking of histamine H_2-receptors therewith. 4,324,789, Cl. 424-251.000.
Robert Bosch GmbH: *See*—
  Kemner, Ulrich, 4,324,276, Cl. 138-30.000.
Roberts, John S.; Bertus, Brent J.; McKay, Dwight L.; and Mark, H. Wayne, to Phillips Petroleum Company. Cracking catalyst poisons passivated with tin compounds plus both sulfur and phosphorus. 4,324,648, Cl. 208-114.000.
Roberts, Sidney N.: *See*—
  Wright, Douglas C.; and Roberts, Sidney N., 4,324,334, Cl. [illegible]
Robertshaw Controls Company: *See*—
  Bauer, Werner R.; and Van Fossen, Robert A., 4,324,273, Cl. [illegible]
Robertson, Robert F.; Connor, Thomas J.; and Rodkey, F. Lee, to United States of America, Navy. Portable COHB analyzer. 4,324,556, Cl. 23-230.00B.
Robeson, Lloyd M., to Union Carbide Corporation. Polyarylate blends with ethylene-alkyl acrylate copolymers. 4,324,869, Cl. 525-68.000.
Robinson, Harry R.: *See*—
  Majicek, Stepan; and Robinson, Harry R., 4,324,372, Cl. 242-192.000.
Roch, Jacques L., to Xynetics, Inc. Universal high speed holder. 4,324,047, Cl. 33-18.00R.
Rock, James E.: *See*—
  Page, Edward J.; and Rock, James E., 4,324,834, Cl. 428-312.600.
Rockhill Enterprises: *See*—
  Johnson, E. Marshall, 4,324,200, Cl. 119-2.000.
Rockwell International Corporation: *See*—
  Shutt, Sidney G., 4,325,033, Cl. 372-94.000.
Rodder, Fritz: *See*—
  Heitlinger, Paul; and Rodder, Fritz, 4,324,546, Cl. 433-25.000.
Rodkey, F. Lee: *See*—
  Robertson, Robert F.; Connor, Thomas J.; and Rodkey, F. Lee, 4,324,556, Cl. 23-230.00B.
Rodriguez, George H., to Sprague Electric Company. PTCR Package. 4,325,051, Cl. 338-220.000.
Rogers, Edward F.: *See*—
  Graham, Donald W.; Rogers, Edward F.; and Kahan, Frederick M., 4,324,733, Cl. 260-402.500.
Rogers, Russell L.: *See*—
  Upham, Neil R.; and Rogers, Russell L., 4,324,407, Cl. 277-27.000.
Rohde & Schwarz GmbH & Co KG: *See*—
  Zirwick, Kurt, 4,325,023, Cl. 324-77.00B.
Rohm GmbH: *See*—
  Moroff, Helmut; Boessler, Hanns; Hauser, Hans; and Ladisich, Gerhard, 4,324,832, Cl. 428-289.000.
Rohrbaugh, John M.: *See*—
  Stonestreet, Jimmy B.; and Rohrbaugh, John M., 4,324,202, Cl. 119-51.00R.
Roldness, David J., to Pullman Incorporated. Car end foldable doors locking device. 4,324,189, Cl. 105-378.000.
Rollmann, Louis D.; and Walsh, Dennis E., to Mobil Oil Corporation. Deasphalting process. 4,324,651, Cl. 208-309.000.
Roman, Steven A., to Shell Oil Company. Ketoenamine pyrethroid intermediates. 4,324,915, Cl. 564-454.000.
Romanek, Gerald A.: *See*—
  Newton, Richard C.; and Rómanek, Gerald A., 4,324,752, Cl. 204-25.000.
Roof Systems, Inc.: *See*—
  Isenhoff, Eric H., 4,324,031, Cl. 29-243.580.
Rosel, Hans-Dieter, to J. S. Staedtler, Firma. Writing device control apparatus. 4,325,072, Cl. 346-140.00R.
Rosencwaig, Allan. Liquid chromatography detector. 4,324,131, Cl. 73-61.10C.
Rosenwinkel, Donald A.; and Disko, Harry, to Marvin Glass & Associates. Toy motor vehicle. 4,324,063, Cl. 46-44.000.
Ross, Gerhard: *See*—
  Dahlhausen, Gebhard; Dibbern, Hans-Werner; Fulberth; and Ross, Gerhard, 4,324,779, Cl. 424-20.000.
Ross Operating Valve Company: *See*—
  Beach, Earl; and Matle, Calvin, 4,324,314, Cl. 181-230.000.
Ross, Robert R.; and Bansch, Daniel R., to H. A. Phillips & Co. Refrigeration system. 4,324,106, Cl. 62-197.000.
Ross, William D.: *See*—
  Eisentraut, Kent J.; Ross, William D.; Hillan, William J.; Brooks, Joseph J.; and Duffy, Thomas G., 4,324,758, Cl. 422-61.000.
Rossbach, Horst; and Wagensonner, Eduard, to AGFA-Gevaert AG. Arrangement for adjusting components of photographic apparatus or the like. 4,324,465, Cl. 354-25.000.
Rossing, Martin A.; and McDonald, Ray S., to Medtronic, Inc. Memory control circuitry for implantable medical devices. 4,324,252, Cl. 128-419.0PG.
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Rothenberg, Bruce J. Mounting pin. 4,324,380, Cl. 248-302.000.
Rothlauf, Alan P., to Minnesota Mining & Manufacturing Co. Asynchronous multiplex system. 4,325,147, Cl. 370-91.000.
Rouchon, Jean M.; and Lepeytre, Jean P., to Thomson-CSF. High dynamics multispectral opto-electrical receiver system. 4,325,083, Cl. 358-228.000.
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  Guillaume, Jacques; Nedelec, Lucien; and Dumont, Claude, 4,324,790, Cl. 424-263.000.
Rouverol, William S.; and Krumme, Robert C. Rolling contact element. 4,324,441, Cl. 308-177.000.
Rovinsky, William, to Step-Lite Footwear Inc. Night light slipper. 4,324,054, Cl. 36-137.000.
Rowe, Russell L.: *See*—
  Bowling, Joseph E.; Carpenter, James H.; and Rowe, Russell L., 4,324,367, Cl. 241-60.000.
Royal Maid, Inc.: *See*—
  Herbig, Eugene O., 4,324,016, Cl. 15-119.00A.
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  Wittmann, Alois; and Rubin, Charles P., 4,324,374, Cl. 244-[illegible]
Rudolph, Hans: *See*—
  Dhein, Rolf; Reuter, Knud; Rudolph, Hans; and Pfitzner, Jorg, 4,324,880, Cl. 528-80.000.

Rudy, Douglas W., to International Harvester Company. Four quadrant control lever restraint. 4,324,151, Cl. 74-532.000.
Rudy, Michael W.: *See*—
  Kraemer, Edward J.; Therien, Robert D.; Rudy, Michael W.; Walsh, Frederick E.; Lee, Han J.; Bell, Ronald; and Horning, Thomas D., 4,324,474, Cl. 355-65.000.
Ruhrchemie Aktiengesellschaft: *See*—
  Weber, Jurgen; Falk, Volker; and Kniep, Claus, 4,324,918, Cl. 564-503.000.
Rule, William T., to Hanna Mining Company, The. Recovery of copper from copper oxide minerals. 4,324,654, Cl. 209-166.000.
Rupert, John P.: *See*—
  Patton, John T., Jr.; and Rupert, John P., 4,324,867, Cl. 521-159.000.
Ruprecht, David R.: *See*—
  Lovette, Norris G., Jr.; and Ruprecht, David R., 4,324,110, Cl. 62-381.000.
Rush, Dale L.: *See*—
  Cox, Howard E.; and Rush, Dale L., 4,324,224, Cl. 126-422.000.
Russo, David A.: *See*—
  Gitlitz, Melvin H.; and Russo, David A., 4,324,798, Cl. 424-288.000.
Russo, Gary M.: *See*—
  Kerr, Donald L.; and Russo, Gary M., 4,324,849, Cl. 430-3.000.
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Ruttgerodt, Gottlieb, to Wegmann U. Co. GmbH. Main battletank turret. 4,324,169, Cl. 89-36.00L.
S&C Electric Company: *See*—
  Hall, Walter J.; and Opfer, John C., 4,324,959, Cl. 200-144.0AP.
Sabin, Thomas D.: *See*—
  Mark, Vernon H.; and Sabin, Thomas D., 4,324,261, Cl. 128-740.000.
Sachs, Emanuel M. Film processing method and apparatus. 4,324,479, Cl. 354-319.000.
Sachse, Burkhard: *See*—
  Koch, Manfred; Mildenberger, Hilmar; and Sachse, Burkhard, 4,324,799, Cl. 424-301.000.
Sagami Chemical Research Center: *See*—
  Umemoto, Teruo, 4,324,741, Cl. 260-505.00R.
Saiger, Herbert C., to Plantation Patterns, Inc. Knockdown arm chair. 4,324,433, Cl. 297-442.000.
Saikawa, Isamu; Yasuda, Takashi; Tai, Masaru; Takashita, Yutaka; Sakai, Hiroshi; Mae, Michiko; Takahata, Masahiro; and Mitsuhashi, Susumu, to Toyama Chemical Co., Ltd. Antibacterial composition for medical use. 4,324,783, Cl. 424-114.000.
Sain, Bernard S.; and Dudley, James M., to Trailer Marine Transport Corporation. Tire security cap. 4,324,516, Cl. 411-5.000.
Saint, David: *See*—
  Eldon, James, III; Saint, David; and Latone, Thomas L., 4,324,432, Cl. 297-377.000.
St. Regis Paper Company: *See*—
  Weldon, Scott B., 4,324,820, Cl. 427-420.000.
Saito, Mamoru: *See*—
  Sugahara, Yujiro; Naito, Hiroyuki; Saito, Mamoru; Mori, Takashi; and Honma, Toshio, 4,324,768, Cl. 423-92.000.
Saito, Michiharu: *See*—
  Terada, Katumi; and Saito, Michiharu, 4,324,472, Cl. 354-266.000.
Saito, Seiji: *See*—
  Sato, Yasushi; Saito, Seiji; and Ayata, Naoki, 4,325,086, Cl. 358-296.000.
Sakaba, Masaru: *See*—
  Sasaki, Katsuhiko; Sakaba, Masaru; and Hayashi, Kingo, 4,324,051, Cl. 34-20.000.
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Sakai, Noboru; and Shimizu, Tokuo, to Olympus Optical Co., Ltd. Thrust preventive device for the output shaft of an electric motor. 4,324,995, Cl. 310-153.000.
Sakakino, Takahiro; and Yamada, Hiroyoshi, to Omron Tateisi Electronics Co. Fluid-proof slide switch. 4,324,956, Cl. 200-16.00R.
Salvatori, Anthony L., to Salvatori Ophthalmics, Inc. Contact lens for non-rotational orientation. 4,324,461, Cl. 351-160.00H.
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  Salvatori, Anthony L., 4,324,461, Cl. 351-160.00H.
Sambo, Claudio, to Schweizerische Lokomotiv-und Maschinenfabrik. Rail vehicle having a roll support device. 4,324,187, Cl. 105-199.00A.
Samuel, Olof; and Hellemaa, Heikki, to Rederiaktiebolaget Nordstjernan; and Oy Wartsila AB. Compressed air starter. 4,324,212, Cl. 123-179.00F.
Sanada, Shinichi: *See*—
  Wada, Moriyasu; Suzuki, Shuichi; Sanada, Shinichi; and Hayase, Shuzi, 4,324,873, Cl. 525-507.000.
Sandbank, Hans A., to Andrex N.D.T. Products (U.K.) Limited. Separating apparatus. 4,324,336, Cl. 209-589.000.
Sanders Associates, Inc.: *See*—
  Brodeur, Lester R., 4,325,067, Cl. 343-103.000.
  Mercer, William R., 4,325,068, Cl. 343-103.000.
Sandler, Stanley R.; and Chen, Mabel M., to Pennwalt Corporation. Substituted urea compound containing 2,2,2-trichloro-1-hydroxyethyl group. 4,324,910, Cl. 564-60.000.
Sandmold Systems, Inc.: *See*—
  White, Ellis S.; Zatkoff, William C.; Light, John J.; and Michen, Ramon, 4,324,392, Cl. 266-240.000.
Sandor, Joseph: *See*—
  Stutz, William H., Jr.; and Sandor, Joseph, 4,324,014, Cl. 15-4.000.
Sandoz Ltd.: *See*—
  Avar, Lajos; Finck, Hans-Werner; and Kalt, Evelyne, 4,324,628, Cl. 104-159.240.
Sano, Frank M.; Sliwa, Robert A.; and Golden, Edward J., to Bendix Corporation, The. Weapon firing system including weapon interrogation means. 4,324,168, Cl. 89-1.814.
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  Scotese, Anthony C.; and Santilli, Arthur A., 4,324,893, Cl. 544-171.000.
Sarebjork, Karl W. H.; and Pallmar, Anders B., to Alfa-Laval AB. Method for winterizing (dewaxing) of vegetable oils. 4,324,735, Cl. 260-425.000.
Sarl dite: Astin-France-Assistance Technique Industrielle: *See*—
  Corradi, Gabriel, 4,324,609, Cl. 156-470.000.
Sarrafian, Vahram K.; and Kim, Syng N., to Wiczer, Max. Post assembly for pinball game. 4,324,403, Cl. 273-127.00R.
Sarvanne, Hannu, to Oy E. Sarlin AB. Guide apparatus for a submersible pump. 4,324,531, Cl. 417-360.000.
Sasaki, Katsuhiko; Sakaba, Masaru; and Hayashi, Kingo, to Hitachi Shipbuilding & Engineering Co., Ltd. Process and apparatus for recovering heat from finely to coarsely divided material having high temperature. 4,324,051, Cl. 34-20.000.
Sasaki, Yutaka; and Moriya, Kiyoshi, to Nitto Chemical Industry Co., Ltd. Separation of tellurium from tellurium-antimony-containing metal oxide catalysts. 4,324,586, Cl. 75-69.000.
Satake Engineering Co. Ltd.: *See*—
  Satake, Toshihiko, 4,324,175, Cl. 99-519.000.
Satake, Toshihiko, to Satake Engineering Co. Ltd. Apparatus for rice polishing. 4,324,175, Cl. 99-519.000.
Sato, Masaki; Okuda, Hironori; Ito, Motoya; and Makino, Yuji, to Hitachi, Ltd. Cooling medium baffling device in rotary electric machine. 4,324,993, Cl. 310-58.000.
Sato, Masanori: *See*—
  Umino, Norihide; Ohishi, Tokuro; Ikezaki, Muneyoshi; Sato, Masanori; and Nagao, Taku, 4,324,800, Cl. 424-308.000.
Sato, Yasuhisa, to Canon Kabushiki Kaisha. Tele-objective lens with a movable sub-group for focusing. 4,324,458, Cl. 350-454.000.
Sato, Yasuo: *See*—
  Okauchi, Tetsuo; Hiraga, Kentaro; and Sato, Yasuo, 4,324,795, Cl. 424-274.000.
Sato, Yasushi; Saito, Seiji; and Ayata, Naoki, to Canon Kabushiki Kaisha. Recording device. 4,325,086, Cl. 358-296.000.
Satoh, Ken, to Olympus Optical Co., Ltd. Apparatus for displaying video track number in viewfinder of vidgo camera. 4,325,080, Cl. 358-127.000.
Satoh, Shin: *See*—
  Matsuyama, Iwao; Sasa, Kenzo; Satoh, Shin; and Suganuma, Tsuneo, 4,324,576, Cl. 65-26.000.
Satomoto, Atsushi: *See*—
  Inada, Masami; Hashimoto, Nobuyuki; and Satomoto, Atsushi, 4,325,047, Cl. 337-370.000.
Saupe, Wolfgang: *See*—
  Riech, Volker; Saupe, Wolfgang; and Sorgenicht, Dietrich, 4,324,126, Cl. 73-1.00J.
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  Aoki, Shinji; Ishikawa, Ryuichi; and Sawada, Yasuhiro, 4,324,759, Cl. 422-62.000.
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  Horn, Stuart B.; McMillion, Lundy H.; Dunmire, Howard L.; Sawyer, Geoffrey S.; and Gerkin, William C., 4,324,104, Cl. 62-77.000.
Sax Zzyzx, Ltd.: *See*—
  Anthony, Myron L., 4,324,068, Cl. 47-1.400.
Saxholm, Rolf. Apparatus and associated methods for use in microbiological, serological, immunological, clinical-chemical and similar laboratory work. 4,324,859, Cl. 435-33.000.
Scagnelli, George J.: *See*—
  Berry, Grant E.; Becker, Wayne A.; Bahr, Karl E.; Scagnelli, George J.; Molnar, Frank J.; McDonald, Ronald K.; and Manning, Harry F., 4,324,034, Cl. 29-410.000.
Schade, Otto H., Jr., to RCA Corporation. Temperature-correction network for extrapolated band-gap voltage reference circuit. 4,325,017, Cl. 323-313.000.
Schade, Otto H., Jr., to RCA Corporation. Temperature-correction network with multiple corrections as for extrapolated band-gap voltage reference circuits. 4,325,018, Cl. 323-313.000.
Schaefer, Edward J., to Franklin Electric Co., Inc. Start winding cut-out circuit for an electric motor. 4,325,012, Cl. 318-786.000.
Schaefer, Rudolf. Refrigerating or warming cabinet. 4,324,445, Cl. 312-236.000.
Schaer, Glenn R., to Koito Seisakusho Co. Ltd. Method and apparatus for replenishing an electroplating bath with metal to be deposited. 4,324,623, Cl. 204-15.000.
Schenk, Dale C.; and Van Hooydonk, Anton H. G., to International Harvester Company. Multi-section agricultural implement including latch assembly therefor. 4,324,296, Cl. 172-311.000.
Schinker, James J.: *See*—
  Pryor, Harry H.; and Schinker, James J., 4,324,494, Cl. 366-156.000.
Schippmann, Guenter: *See*—
  Pforr, Gerhard; Peschau, Gerhard; Schippmann, Guenter; Appl, Max; Voelkl, Erfried; and Stark, Hans, 4,324,570, Cl. 55-267.000.
Schittino, Giuseppe; and Schittino, Vincent. Snow/ice melter for automotive vehicles. 4,324,307, Cl. 180-313.000.

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  Schittino, Giuseppe; and Schittino, Vincent, 4,324,307, Cl. [illegible]
Schlicht, Raymond C.: *See*—
  Levine, Stephen A.; Schlicht, Raymond C.; and Chafetz, Harry, 4,324,672, Cl. 252-49.700.
Schliebener, Claus: *See*—
  Wernicke, Hans J.; and Schliebener, Claus, 4,324,935, Cl. 585-314.000.
Schluderberg, Donald C., to Babcock & Wilcox Company, The. Fuel element assembly. 4,324,618, Cl. 376-434.000.
Schlusselberger, Richard, to Elin-Union AG. Process for maintaining magnesium-containing cast iron melts in a castable state. 4,324,587, Cl. 75-130.[illegible]
Schmid, Gustav F.: *See*—
  Larsen, Ronald A.; and Schmid, Gustav F., 4,324,409, Cl. 280-[illegible]
Schmid Tool & Engineering Corp.: *See*—
  Larsen, Ronald A.; and Schmid, Gustav F., 4,324,409, Cl. 280-[illegible]
Schmidlin, Robert: *See*—
  Prahauser, Georg; Schmidlin, Robert; and Trede, Wolfgang, 4,324,183, Cl. 102-334.000.
Schmidt, Franz: *See*—
  Blinne, Gerd; Wurmb, Rolf; and Schmidt, Franz, 4,324,881, Cl. [illegible]
Schmitt, Frederick L.: *See*—
  Kiwala, Jacob; Tokarzewski, Richard J.; Schmitt, Frederick L.; and Sprecker, Mark A., 4,324,923, Cl. 568-659.000.
  Klemarczyk, Philip T.; Schmitt, Frederick L.; Granda, Edward J.; and Luccarelli, Domenick, Jr., 4,324,912, Cl. 564-188.000.
  Trenkle, Robert W.; Mookherjee, Braja D.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,324,704, Cl. 252-522.00R.
Schmitt, James L.: *See*—
  Golan, Kenneth F.; Goloff, Charles N.; and Schmitt, James L., 4,324,274, Cl. 137-625.680.
Schmitt, Wilhelm; and Taniguchi, Toyotake, to Carl Freudenberg, Firma. Non-return valve. 4,324,097, Cl. 60-293.000.
Schmitz, Helga. Method for the softening of tough mushrooms. 4,324,806, Cl. 426-52.000.
Schneeweiss, Manfred; Gotzenberger, Adolf; and Ohm, Aloys, to Audi NSU Auto Union Aktiengesellschaft. Wheel suspension for motor vehicles. 4,324,416, Cl. 280-661.000.
Schneider, Fred A. Humane insect trap for the live capture of spiders and the like. 4,324,062, Cl. 43-110.000.
Schnell, William J., to Baxter Travenol Laboratories, Inc. Flow reversal in a dialyzer. 4,324,662, Cl. 210-646.000.
Schonfeld, Steven E.: *See*—
  Ravagnani, Frederick J.; and Schonfeld, Steven E., 4,324,281, Cl. 152-359.000.
Schoppe, Fritz. Method of improving the storage safety of pulverized brown coal. 4,324,562, Cl. 44-1.00G.
Schrecke, Horst G.; and Glockner, Hermann, to SKF Kugellagerfabriken GmbH. Device for supplying an oil-air mixture to bearing locations. 4,324,442, Cl. 308-187.000.
Schroder, Johann, to U.S. Philips Corporation. Thermal storage device. 4,324,287, Cl. 165-10.000.
Schroeder, Earle E.; and Baker, James E., to Allis-Chalmers Corporation. Universal guard. 4,324,533, Cl. 417-360.000.
Schub, Leonard, to Wonder Corporation of America, Inc. Apparatus and method of delivering depolarization mix into a dry cell can. 4,324,039, Cl. 29-623.100.
Schulz, Hans H.; Uerdingen, Walter; and Wagner, Kuno, to Bayer Aktiengesellschaft. Fixatives for dentistry and their use. 4,324,590, Cl. 106-35.000.
Schumann, Klaus: *See*—
  Kaufmann, Jochen; Altenschopfer, Theodor; Schumann, Klaus; and Rings, Friedel, 4,324,677, Cl. 252-99.000.
Schurdak, Edward J.: *See*—
  Weston, Norma A.; and Schurdak, Edward J., 4,324,682, Cl. [illegible]
Schwartz, Larry A., to Franklin Industries, Inc. Stove door construction. 4,324,223, Cl. 126-200.000.
Schwarzmann, Matthias: *See*—
  Mross, Wolf D.; Titzenthaler, Eckart; Koopmann, Juergen; Vogt, Volker; and Schwarzmann, Matthias, 4,324,699, Cl. 252-463.000.
Schweizer, Gottfried; Kubelka, Axel; Stritzl, Karl; and Svoboda, Josef, to TMC Corporation. Device for skis. 4,324,415, Cl. 280-605.000.
Schweizerische Lokomotiv-und Maschinenfabrik: *See*—
  Sambo, Claudio, 4,324,187, Cl. 105-199.00A.
Schwob, Charles J.; Kirbabas, Nicholas; and Erin, Tim, to Mead Corporation, The. Jet device for application of liquid dye to a fabric web. 4,324,117, Cl. 68-205.00R.
Scimonelli, Don R. Headlight assembly. 4,325,105, Cl. 362-80.000.
Scoggins, Lacey E.: *See*—
  Edmonds, James T., Jr.; and Scoggins, Lacey E., 4,324,886, Cl. 528-387.000.
Scopes, David I. C.: *See*—
  Bradshaw, John; Oxford, Alexander W.; and Scopes, David I. C., 4,324,792, Cl. 424-267.000.
Scotese, Anthony C.; and Santilli, Arthur A., to American Home Products Corporation. 4-Amino-3-carboxy or cyano-1,2-dihydro-2-oxo-1,8-naphthyridine derivatives. 4,324,893, Cl. 544-127.000.
Seaton, John C.; and Cohen, Leonard, to TeleMine Company, Inc., The. Pay per view television control device. 4,325,078, Cl. 358-117.000.
Sebestyen, Ferenc: *See*—
  Feuer, Laszlo; Furka, Arpad; Sebestyen, Ferenc; Hercsel nee Szepespataky, Jolan; and Bendefy nee Dobay, Erzsebet, 4,324,743, Cl. 260-513.00N.
Security Imprinter Corporation: *See*—
  Barbour, William P., 4,324,178, Cl. 101-45.000.
Seely, Neil G., to Eastman Kodak Company. Camera door apparatus. 4,324,476, Cl. 354-288.000.
Seifert, Hermann: *See*—
  Jupe, Christoph; Waldmann, Helmut; and Seifert, Hermann, 4,324,925, Cl. 568-719.000.
Seiichi Ishizaka, Director General of Agency of Industrial Science and Technology: *See*—
  Suzuki, Hiroshi, 4,324,797, Cl. 424-287.000.
Seitter, Wolf: *See*—
  Prohaska, Hans; and Seitter, Wolf, 4,325,007, Cl. 315-200.00A.
Seldner, Abraham, to Amerchol Corporation. Polyol fragrance fixatives. 4,324,703, Cl. 252-522.00R.
Selvage, Craig C.: *See*—
  Gustavson, Richard E.; Selvage, Craig C.; and Whitney, Daniel E., 4,324,032, Cl. 29-407.000.
Semeraro, Claudio: *See*—
  Dorigotti, Luciano; Gaviraghi, Giovanni; Pifferi, Giorgio; Pinza, Mario; and Semeraro, Claudio, 4,324,788, Cl. 424-250.000.
Sendzimir, Tadeus. Production of heavy metal coatings on only one face of steel strips. 4,324,818, Cl. 427-174.000.
Senior, Peter J.; Wright, Leonard F.; and Alderson, Barry, to Imperial Chemical Industries Limited. Extraction process. 4,324,907, Cl. 560-185.000.
Sepehri-Nik, Hossein K., to Beker Industries, Inc. Method and apparatus for beneficiating phosphate ores. 4,324,577, Cl. 71-33.000.
Servochem AB: *See*—
  Wegstedt, Gunnar L., 4,324,557, Cl. 23-232.00R.
Seto, Kunihiro; and Naruo, Kyoichi, to Fuji Photo Film Co., Ltd. Process for recovering materials from scrapped film. 4,324,705, Cl. 521-44.000.
Seto, Toru: *See*—
  Honda, Mitsuyasu; Shiraishi, Yoshihiro; and Seto, Toru, 4,324,701, Cl. 252-477.00R.
Severson, Asbjorn M., to Honeywell Inc. Method of fabricating a solar absorber panel. 4,324,028, Cl. 29-157.30C.
Sevrence, Warren E., to Acco Industries, Inc. Two-piece anchorage device. 4,324,503, Cl. 403-197.000.
Sexstone, John H.; Lewis, Tom; and Milliner, Ken, to Brown & Williamson Tobacco Corporation. Apparatus for making grooves in tobacco smoke filters. 4,324,540, Cl. 425-385.000.
Seymour, Donald E.; Seymour, Greg A.; and Jaber, Mark J., to Applied Biochemists, Inc. Method of preparing a copper complex for use as an algaecide. 4,324,578, Cl. 71-67.000.
Seymour, Greg A.: *See*—
  Seymour, Donald E.; Seymour, Greg A.; and Jaber, Mark J., 4,324,578, Cl. 71-67.000.
Shah, Ramesh M. High carbon content chromatographic packing and method for making same. 4,324,689, Cl. 252-428.000.
Shahinian, Lee, Jr. Surgical knife for precise depth of cut control. 4,324,044, Cl. 30-294.000.
Shank, Dane G., to Caterpillar Tractor Co. Link-coupled rotor assembly. 4,324,536, Cl. 418-53.000.
Sharkey, Robert L., to Andrew Master Hones Limited. Power supply apparatus. 4,324,534, Cl. 417-414.000.
Sharp Kabushiki Kaisha: *See*—
  Tanabe, Takeshi, 4,324,966, Cl. 219-10.55B.
Shaw, Richard D.: *See*—
  Davis, Richard P. B.; Emblem, Harold G.; Shaw, Richard D.; and Shelley, Stanley J., 4,324,602, Cl. 156-71.000.
Shell Oil Company: *See*—
  Denison, Early B., 4,324,297, Cl. 175-45.000.
  Roman, Steven A., 4,324,915, Cl. 564-454.000.
Shelley, Stanley J.: *See*—
  Davis, Richard P. B.; Emblem, Harold G.; Shaw, Richard D.; and Shelley, Stanley J., 4,324,602, Cl. 156-71.000.
Sherer, Robert B.; and Weir, Robert M., to Whirlpool Corporation. Method of attaching a removable cabinet for front-serviceable appliances. 4,324,035, Cl. 29-434.000.
Sherony, Dominic F.: *See*—
  Lu, Chin H.; Sherony, Dominic F.; and Erhardt, Peter F., 4,324,851, Cl. 430-106.000.
Sherwick, Steven P.; Leapley, David G.; and Vonderhorst, James P., to Accraply, Inc. Method of labeling undersized containers. 4,324,058, Cl. 40-310.000.
Shibamoto, Nobuyori: *See*—
  Fujii, Hironory; Nagashima, Tsuyoshi; and Shibamoto, Nobuyori, 4,324,742, Cl. 260-505.00C.
Shimada, Keizo: *See*—
  Tabe, Yutaka; Takamoto, Hiromitsu; Shimada, Keizo; and Sugita, Yasusaburo, 4,324,706, Cl. 523-149.000.
Shimizu, Hichio, to Oda Gosen Kogyo Kabushiki Kaisha, a part interest. Apparatus for controlling tension of filament yarn. 4,324,371, Cl. 242-153.000.
Shimizu, Hisashi: *See*—
  Ishihara, Toshinobu; Taguchi, Kenichi; Yamamoto, Akira; Takasaka, Nobuo; Shimizu, Hisashi; and Oshima, Mitsuyoshi, 4,324,931, Cl. 570-189.000.

Shimizu, Tokuo: *See*—
  Sakai, Noboru; and Shimizu, Tokuo, 4,324,995, Cl. 310-153.000.
Shin-Etsu Chemical Co., Ltd.: *See*—
  Ishihara, Toshinobu; Taguchi, Kenichi; Yamamoto, Akira; Takasaka, Nobuo; Shimizu, Hisashi; and Oshima, Mitsuyoshi, 4,324,931, Cl. 570-189.000.
Shinkai, Yasuhiro: *See*—
  Kimoto, Tetsuo; Takahashi, Hisao; Koshiishi, Hiromichi; Shinkai, Yasuhiro; and Kawabata, Toshimi, 4,324,598, Cl. 148-111.000.
Shiozawa, Kazuo, to Konishiroku Photo Industry Co., Ltd. Programed exposure control device. 4,324,467, Cl. 354-38.000.
Shipley Company Inc.: *See*—
  Gulla, Michael; and Hartnett, Barry J., 4,324,589, Cl. 106-1.220.
Shippee, Paul. Solar heating apparatus. 4,324,228, Cl. 126-437.000.
Shiraishi, Takeichi: *See*—
  Matsuura, Kazuo; Shiraishi, Takeichi; Kawamata, Etsuo; Kuroda, Nobuyuki; and Miyoshi, Mitsuji, 4,324,876, Cl. 526-124.000.
Shiraishi, Yoshihiro: *See*—
  Honda, Mitsuyasu; Shiraishi, Yoshihiro; and Seto, Toru, 4,324,701, Cl. 252-477.00R.
Shutt, Sidney G., to Rockwell International Corporation. Pneumatically dithered laser gyro. 4,325,033, Cl. 372-94.000.
Sibeud, Jean-Paul. Method for the automatic control of a gearbox, in particular on a motor vehicle. 4,324,322, Cl. 192-0.032.
Siecor Corporation: *See*—
  Patel, Naren I., 4,324,453, Cl. 350-96.230.
Sieja, Norman F., to Eltra Corporation. Engine speed limiting circuit. 4,324,215, Cl. 123-335.000.
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  Stut, Hans, 4,324,989, Cl. 307-252.00J.
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  Roantree, Michael L.; and Young, Rodney C., 4,324,789, Cl. 424-251.000.
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  Moranne, Jean-Pierre, 4,324,290, Cl. 165-173.000.
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  Bonicel, Jean P.; Cottevielle, Christian; Maucolot, Michel; and Prigent, Madeleine, 4,324,863, Cl. 521-85.000.
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  Wertheim, John H.; and Mishkin, Abraham R., 4,324,808, Cl. 426-385.000.
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  Foure, Michel, 4,324,718, Cl. 524-108.000.
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  Maher, Galeb H., 4,324,750, Cl. 264-61.000.
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  Gottlieb, John D., 4,324,040, Cl. 29-829.000.
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Stauffer Chemical Company: *See*—
Eugley, Susan L., 4,324,811, Cl. 426-656.000.
Reale, Michael J., 4,324,865, Cl. 521-107.000.
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Steigenberger, Richard; and Hirt, Dieter, to MAN Maschienfabrik Augsburg Nurnberg. Containing bearing for supercritical rotors. 4,324,440, Cl. [illegible]
Stein, Reinhardt P., to American Home Products Corporation. 1,2,3 Oxadiazolium salts. 4,324,897, Cl. 548-125.000.
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Steinau, Peter: *See*—
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Steinhagen, Horst G., to Twin Disc, Incorporated. Power delivery system having a pressure modulated hydrodynamic retarder for controlling a load. 4,324,387, Cl. 254-310.000.
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Steinke, Thomas J. Self-regulating fluid control valves. 4,324,506, Cl. [illegible]
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Rovinsky, William, 4,324,054, Cl. 36-137.000.
Stephans, Robert: *See*—
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Stephens, Joseph W.: *See*—
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Stephenson, Edward G.; and Taylor, Tom, to Crompton Parkinson Limited. Method of inserting a powder in the manufacture of electrical dry cells. 4,324,754, Cl. 264-268.000.
Stephenson, Robert L., to Allied Corporation. Passive seat belt system. 4,324,418, Cl. 280-802.000.
Stepp, Jesse W. Casting net holding device. 4,324,061, Cl. 43-4.500.
Sterner, Maurice E., Jr., to Product Design & Development, Inc. Insulated multiple component single plane building structure portal closure. 4,324,072, Cl. 49-129.000.
Stevens, Emma S., to Stevens, Emma S.; and Holmes, Stephen A. Foot powder. 4,324,785, Cl. 424-195.000.
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Stitzer, Steven N., to United States of America, Air Force. Full duplex communication system apparatus using frequency selective limiters. 4,325,140, Cl. 455-19.000.
Stockel, Joseph F., to Communications Satellite Corp. Metal-oxide-hydrogen cell with variable conductant heat pipe. 4,324,845, Cl. [illegible]
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Stonestreet, Jimmy B.; and Rohrbaugh, John M. Knock down weather and salt resistant salt and mineral feeder for cattle. 4,324,202, Cl. 119-[illegible]
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Streit, Werner: *See*—
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Strickland, James C. Amplifier for driving electrostatic loudspeakers. 4,324,950, Cl. 179-1.00A.
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Strong, Kline D.: *See*—
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Stubben, David R.; and Rains, Lyle V., to Atari, Inc. Method and system for generating moving objects on a video display screen. 4,324,401, Cl. 273-85.00G.
Stut, Hans, to Siemens Aktiengesellschaft. Solid-state relay. 4,324,989, Cl. 307-252.00J.
Stutz, William H., Jr.; and Sandor, Joseph, to Innovative Computer Products. Cassette cleaner. 4,324,014, Cl. 15-4.000.
Sudan, Krishan K.; and Berchem, Antoine, to Reichhold Limited. Pulp waste liquor-phenolic resin binder. 4,324,747, Cl. 264-13.000.
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Sugahara, Yujiro; Naito, Hiroyuki; Saito, Mamoru; Mori, Takashi; and Honma, Toshio, to Mizusawa Kagaku Kozyo Kabushiki Kaisha. Process for preparation of lead compounds. 4,324,768, Cl. 423-92.000.
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Sullivan, C. Gardner, II; and Hedges, Walter P., to Cyborex Laboratories, Inc. System and method for optimizing shed/restore operations for electrical loads. 4,324,987, Cl. 307-35.000.
Sullivan, Donald P., to Universal Mobility, Inc. Temperature control system and method for an automated guideway transit system. 4,324,184, Cl. 104-279.000.
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Sun, Lu; and Cilderman, Janis J., to Otis Elevator Company. Elevator guide rail mounting arrangement. 4,324,360, Cl. 238-349.000.
Sundkvist, Per H.; and Oborg, Lars. Device for securing a teat to a pacifier. 4,324,249, Cl. 128-360.000.
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Conway, Tim D.; and Paddock, Paul F., 4,324,335, Cl. 209-586.000.
Sunohara, Mineo; Okubo, Yasuhiko; Taketa, Mitsugu; Nakai, Yoshiyuki; and Miyazaki, Yukio, to Mitsubishi Denki Kabushiki Kaisha. Zero-phase current transformer. 4,325,096, Cl. 361-45.000.
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Suszynski, Edward D., to Kraft Systems, Inc. Control stick assembly. 4,325,050, Cl. 338-128.000.
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Sweeney, Charles T. Generation of chlorine-chlorine dioxide mixtures. 4,324,635, Cl. 204-266.000.
Swihart, Terence J., to Dow Corning Corporation. Lubricant-bearing fibers and lubricant compositions therefor. 4,324,720, Cl. 260-185.000.
Swisher, Carolyn L. Self-watering planter. 4,324,070, Cl. 47-81.000.
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Valleau, Robert L., 4,324,958, Cl. 200-16.00F.
Symmons, Edgar B., to Siemens Medical Laboratories, Inc. Electron exit window assembly for a linear accelerator. 4,324,980, Cl. 250-505.000.
Szabo, Gabor: *See*—
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Szlucha, Thomas F., to Xerox Corporation. Pressure roll cleaning device. 4,324,482, Cl. 355-3.0FU.
Tabe, Yutaka; Takamoto, Hiromitsu; Shimada, Keizo; and Sugita, Yasusaburo, to Teijin Limited; and Adebono Brake Industry Co., Ltd. Friction material. 4,324,706, Cl. 523-149.000.
Tadokoro, Eiichi: *See*—
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Tai, Masaru: *See*—
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Ishihara, Toshinobu; Taguchi, Kenichi; Yamamoto, Akira; Takasaka, Nobuo; Shimizu, Hisashi; and Oshima, Mitsuyoshi, 4,324,931, Cl. 570-189.000.
Takashita, Yutaka: *See*—
Saikawa, Isamu; Yasuda, Takashi; Tai, Masaru; Takashita, Yutaka; Sakai, Hiroshi; Mae, Michiko; Takahata, Masahiro; and Mitsuhashi, Susumu, 4,324,783, Cl. 424-114.000.
Takayama, Syuichi, to Olympus Optical Co., Ltd. Light source apparatus for endoscope. 4,324,466, Cl. 354-33.000.
Takeda Chemical Industries, Ltd.: *See*—
Okauchi, Tetsuo; Hiraga, Kentaro; and Sato, Yasuo, 4,324,795, Cl. 424-274.000.
Takeda, Renzo: *See*—
Kobayashi, Yasuhiro; and Takeda, Renzo, 4,324,615, Cl. 376-267.000.
Takeda, Tamio, to Trio Kabushiki Kaisha. Tone arm bearing system. 4,325,131, Cl. 369-255.000.
Takekoshi, Tohru, to General Electric Company. Method for making polyimides. 4,324,882, Cl. 528-206.000.
Takemura, Yasuo; and Katayama, Yoshitaka, to Tokyo Shibaura Denki Kabushiki Kaisha. Solid-state imaging device driving system. 4,324,988, Cl. 307-221.00D.
Taketa, Mitsugu: *See*—
Sunohara, Mineo; Okubo, Yasuhiko; Taketa, Mitsugu; Nakai, Yoshiyuki; and Miyazaki, Yukio, 4,325,096, Cl. 361-45.000.
Takeuchi, Atsushi, to Nippon Gakki Seizo Kabushiki Kaisha. Device for controlling pickup arm movement in linear tracking pickup arm apparatus. 4,325,016, Cl. 318-640.000.
Takeya, Yasushi: *See*—
Aoki, Shin-Ichi; and Takeya, Yasushi, 4,324,960, Cl. 200-144.00B.
Takiguchi, Takao: *See*—
Matsuzaki, Meiki; Okabe, Hiroshi; Tanaka, Seishiro; Takiguchi, Takao; and Onodera, Kunikatsu, 4,324,801, Cl. 424-311.000.
Talon, Inc.: *See*—
Berry, Grant E.; Becker, Wayne A.; Bahr, Karl E.; Scagnelli, George J.; Molnar, Frank J.; McDonald, Ronald K.; and Manning, Harry F., 4,324,034, Cl. 29-410.000.
MacFee, Norman W., 4,324,033, Cl. 29-408.000.
Talres Development (N.A.) N.V.: *See*—
Rathbone, Elner B., 4,324,888, Cl. 536-122.000.
Tamaki, Nobuo, to Casio Computer Co., Ltd. Voltage selector circuit. 4,324,991, Cl. 307-443.000.
Tamashasky, Joseph A.: *See*—
Bankes, Kristen E.; Large, Donald M.; Reinhard, Fred J.; and Tamashasky, Joseph A., 4,324,600, Cl. 156-64.000.
Tamborski, Christ: *See*—
Christian, John B.; and Tamborski, Christ, 4,324,671, Cl. 252-49.600.
Christian, John B.; and Tamborski, Christ, 4,324,673, Cl. 252-51.50R.
Tamura, Kohki: *See*—
Ebato, Noboru; Kahara, Toshiki; and Tamura, Kohki, 4,324,828, Cl. 425-209.000.
Tamura, Masanori: *See*—
Ueno, Haruo; Yano, Takefumi; Inoue, Tokuji; Ikai, Shigeru; Tamura, Masanori; and Yuasa, Sakae, 4,324,877, Cl. 526-127.000.
Tamura, Sadahiro: *See*—
Nishikawa, Toshio; Ito, Yoji; Ishikawa, Youhei; and Tamura, Sadahiro, 4,325,035, Cl. 331-96.000.
Tanabe Seiyaku Co., Ltd.: *See*—
Umino, Norihide; Ohishi, Tokuro; Ikezaki, Muneyoshi; Sato, Masanori; and Nagao, Taku, 4,324,800, Cl. 424-308.000.
Tanabe, Takeshi, to Sharp Kabushiki Kaisha. Menu responsible automatic sensor selection in a cooking utensil. 4,324,966, Cl. 219-10.55B.
Tanaka, Haruo: *See*—
Omura, Satoshi; Tanaka, Haruo; Awaya, Juichi; and Hata, Toju, 4,324,728, Cl. 260-345.200.
Tanaka, Isamu: *See*—
Oka, Hitoshi; Kikuchi, Hiroshi; Yokono, Hitoshi; Suzuki, Haruo; Yoshimura, Toyofusa; Matsuo, Akira; Miyazawa, Osamu; Tanaka, Isamu; and Isogai, Tokio, 4,324,629, Cl. 204-180.00P.
Tanaka, Kazunori: *See*—
Kishino, Takao; Yamaguchi, Toshihiro; and Tanaka, Kazunori, 4,325,064, Cl. 340-753.000.
Tanaka, Keiji: *See*—
Tsuji, Nobuo; Fujiyama, Masaaki; Nakahara, Hiromi; Tadokoro, Eiichi; Tanaka, Keiji; and Yamamoto, Isao, 4,324,177, Cl. 100-155.00R.
Tanaka, Seishiro: *See*—
Matsuzaki, Meiki; Okabe, Hiroshi; Tanaka, Seishiro; Takiguchi, Takao; and Onodera, Kunikatsu, 4,324,801, Cl. 424-311.000.
Tanaka, Tsugio; Hashimoto, Kohichi; and Nagasaka, Yukio, to Atom Chemical Paint Co., Ltd. Melt-adhesive traffic paint composition. 4,324,711, Cl. 523-172.000.
Tang, Marian C.: *See*—
Vogel, Diane C.; Tang, Marian C.; and Reichelderfer, Richard F., 4,324,611, Cl. 156-643.000.
Tang, Woei S. Vase-type illuminative device. 4,325,110, Cl. 362-806.000.
Tani, Isao. Device for mounting an electrical circuit component part such as an electrolytic capacitor. 4,324,329, Cl. 206-328.000.
Taniguchi, Toyotake: *See*—
Schmitt, Wilhelm; and Taniguchi, Toyotake, 4,324,097, Cl. 60-293.000.
Tano, Eiichi; and Suzuki, Koji, to Asahi Kogaku Kogyo Kabushiki Kaisha. Exposure time control circuit for camera. 4,324,462, Cl. 354-23.00D.
Tano, Eiichi; and Suzuki, Koji, to Asahi Kogaku Kogyo Kabushiki Kaisha. Electric source circuit for camera. 4,324,468, Cl. 354-149.000.
Tantram, Anthony D. S.; and Chan, Yat S., to City Technology Limited. Gas sensor. 4,324,632, Cl. 204-195.00P.
Taylor, Owen S.; and Broniarek, Czeslaw A., to Westinghouse Electric Corp. Dampened brush system. 4,324,997, Cl. 310-248.000.

Taylor, Raymond G., to Western Electric Company, Incorporated. Dialing circuits and methods for electronic telephone sets. 4,324,954, Cl. 179-90.00B.
Taylor, Tom: *See—*
Stephenson, Edward G.; and Taylor, Tom, 4,324,754, Cl. 264-248.000.
Teijin Limited: *See—*
Tabe, Yutaka; Takamoto, Hiromitsu; Shimada, Keizo; and Sugita, Yasusaburo, 4,324,706, Cl. 523-149.000.
Telautograph Corporation: *See—*
Rai, Raghuvir, 4,325,071, Cl. 346-139.00C.
Teleflex Incorporated: *See—*
Sildve, Ants, 4,324,148, Cl. 74-108.000.
TeleMine Company, Inc., The: *See—*
Seaton, John C.; and Cohen, Leonard, 4,325,078, Cl. 358-117.000.
Telex Communications, Inc.: *See—*
Dust, James A., 4,324,355, Cl. 226-190.000.
Tenneco Chemicals, Inc.: *See—*
Cordes, William F., III; Goodman, Donald; and Miller, Robert S., 4,324,874, Cl. 526-84.000.
Terada, Katumi; and Saito, Michiharu, to Olympus Optical Company Ltd. Switch for camera. 4,324,472, Cl. 354-266.000.
Teraji, Tsutomu: *See—*
Kamiya, Takashi; Teraji, Tsutomu; Hemmi, Keiji; and Goto, Jiro, 4,324,892, Cl. 544-28.000.
Terasaki Denki Sangyo Kabushiki Kaisha: *See—*
Murai, Wasaburo, 4,325,041, Cl. 335-35.000.
Terminal Data Corporation: *See—*
Kraemer, Edward J.; Therien, Robert D.; Rudy, Michael W.; Walsh, Frederick E.; Lee, Han J.; Bell, Ronald; and Horning, Thomas D., 4,324,474, Cl. 355-65.000.
Terunuma, Hiroshi, to Nippon Kogaku K.K. Light intercepting device of a camera. 4,324,470, Cl. 354-214.000.
Tesmann, Holger: *See—*
Meffert Alfred; and Tesmann, Holger, 4,324,740, Cl. 260-502.40R.
Texaco Inc.: *See—*
Castagnos, Leonce F., Jr.; Menzies, William R., III; and Pratt, Roy E., 4,324,688, Cl. 252-417.000.
Jones, Henry B.; and Smith, Randlow, 4,324,563, Cl. 48-62.00R.
Levine, Stephen A.; Schlicht, Raymond C.; and Chafetz, Harry, 4,324,672, Cl. 252-49.700.
Lewis, Paul H.; and Vartuli, James C., 4,324,697, Cl. 252-455.00Z.
Lewis, Paul H.; Durkin, Joseph A.; and Froelich, Joseph A., 4,324,698, Cl. 252-455.00Z.
McConnell, Thomas T., 4,324,917, Cl. 564-479.000.
Pickles, Robert A., 4,324,502, Cl. 403-104.000.
Wong, Kenny; and Hall, Wilbur L., 4,324,291, Cl. 166-252.000.
Texas Instruments Incorporated: *See—*
Ishii, Kaoru, 4,325,093, Cl. 360-120.000.
Tezuka, Hideharu, to Tokyo Shibaura Denki Kabushiki Kaisha. Current stabilizer. 4,325,019, Cl. 323-315.000.
Therien, Robert D.: *See—*
Kraemer, Edward J.; Therien, Robert D.; Rudy, Michael W.; Walsh, Frederick E.; Lee, Han J.; Bell, Ronald; and Horning, Thomas D., 4,324,474, Cl. 355-65.000.
Thermal Dynamics Corporation: *See—*
Frappier, Michael B., 4,324,971, Cl. 219-121.0PV.
Theurer, Josef; and Oellerer, Friedrich, to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H. Convertible rail-highway lateral track set off apparatus. 4,324,186, Cl. 105-177.000.
Thoma, Ferdinand, to Siemens Aktiengesellschaft. Centrally controlled conveyor system. 4,325,126, Cl. 364-478.000.
Thomas, David W. Seed drill apparatus. 4,324,347, Cl. 221-237.000.
Thompson, Kenneth W. Elastomeric apparatus for pressure dispensing of fluid. 4,324,350, Cl. 222-212.000.
Thomson-CSF: *See—*
Rouchon, Jean M.; and Lepeytre, Jean P., 4,325,083, Cl. 358-228.000.
Thormack Sealants Limited: *See—*
Cottingham, Richard L.; Thorpe, David J.; and Bickerstaff, Eric, 4,324,504, Cl. 404-74.000.
Thornton, Donald I.: *See—*
Peyton, Richard H.; and Thornton, Donald I., 4,324,660, Cl. [illegible]
Thorpe, David J.: *See—*
Cottingham, Richard L.; Thorpe, David J.; and Bickerstaff, Eric, 4,324,504, Cl. 404-74.000.
Thrasher, George E., Jr.; and Lombardi, David, to Master Pneumatic-Detroit, Inc. Injection lubricator controlled by counting mechanism. 4,324,316, Cl. 184-29.000.
Tidwell, Richard R.; Dubovi, Edward J.; and Geratz, Joachim D., to Research Triangle Institute. Inhibition of respiratory syncytial virus-induced cell fusion by amidino compounds. 4,324,794, Cl. 424-[illegible]
TII Industries Inc.: *See—*
Simokat, Frank L., 4,324,953, Cl. 179-17.00A.
Tiltscher, Gerald, to Mannesmann Aktiengesellschaft. Reprogrammable control apparatus. 4,325,130, Cl. 364-900.000.
Ting, Patrick: *See—*
Goldstein, Henry; Fly, Walter; Ting, Patrick; and Chicoye, Etzer, 4,324,810, Cl. 426-600.000.
Tinkle, Anthony R.: *See—*
Wener, Kenneth R.; and Tinkle, Anthony R., 4,324,310, Cl. 181-116.000.
Tisone, Thomas C.: *See—*
Zaghi, Hooshmand; and Tisone, Thomas C., 4,325,048, Cl. 338-3.000.
Titoff, Juha, to Enso-Gutzeit Osakehito . Lime sludge press unit. 4,324,659, Cl. 210-386.000.
Titzenthaler, Eckart: *See—*
Mross, Wolf D.; Titzenthaler, Eckart; Koopmann, Juergen; Vogt, Volker; and Schwarzmann, Matthias, 4,324,699, Cl. 252-463.000.
TMC Corporation: *See—*
Schweizer, Gottfried; Kubelka, Axel; Stritzl, Karl; and Svoboda, Josef, 4,324,415, Cl. 280-605.000.
Tohoku Metal Industries, Ltd.: *See—*
Endo, Masanori; and Horiuchi, Kentaro, 4,325,042, Cl. 335-208.000.
Tokan Kogyo Kabushiki Kaisha: *See—*
Yamaguchi, Kisaburo; and Yoshikawa, Tsukasa, 4,324,341, Cl. 220-258.000.
Yamaguchi, Kisaburo; and Yoshikawa, Tsukasa, 4,324,342, Cl. 220-268.000.
Tokarzewski, Richard J.: *See—*
Kiwala, Jacob; Tokarzewski, Richard J.; Schmitt, Frederick L.; and Sprecker, Mark A., 4,324,923, Cl. 568-659.000.
Tokico Ltd.: *See—*
Karasudani, Yasuo, 4,324,318, Cl. 188-73.310.
Miyata, Yasuji; and Hirose, Kazuhiko, 4,324,144, Cl. 73-861.770.
Tokyo Shibaura Denki Kabushiki Kaisaha: *See—*
Wada, Moriyasu; Suzuki, Shuichi; Sanada, Shinichi; and Hayase, Shuzi, 4,324,873, Cl. 525-507.000.
Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Kobayashi, Sumio; Takahashi, Tadashi; and Ino, Hidetoshi, 4,325,114, Cl. 363-68.000.
Otsuka, Kenichi, 4,325,112, Cl. 363-42.000.
Takemura, Yasuo; and Katayama, Yoshitaka, 4,324,988, Cl. 307-221.00D.
Tezuka, Hideharu, 4,325,019, Cl. 323-315.000.
Yamashita, Kiyoshi; and Takagi, Shoji, 4,324,088, Cl. 53-527.000.
Tokyo Shibaura Electric Co., Ltd.: *See—*
Osada, Yoshihide; and Sugioka, Syuji, 4,325,074, Cl. 357-37.000.
Tomita, Yoshifumi; Nishizawa, Masahiro; Yokomizo, Hiroshi; and Nakai, Hiromitu, to Hitaci, Ltd. Method of forming a fluorescent screen for a color picture tube. 4,324,850, Cl. 430-24.000.
Tomlie, Robert J., *Jr.*, to Pitney Bowes Inc. High voltage power supply. 4,325,113, Cl. 363-60.000.
Tomori, Yasumasa, to Asahi Kogaku Kogyo Kabushiki Kaisha. Macro photographic change-over device for zoom lens barrel. 4,324,457, Cl. 350-430.000.
Tondeur, Daniel: *See—*
Jacob, Philippe; and Tondeur, Daniel, 4,324,566, Cl. 55-28.000.
Toray Industries, Inc.: *See—*
Inouye, Yoshinori; and Ohkubo, Tadahiko, 4,324,368, Cl. 242-18.0PW.
Torck, Bernard; Convers, Alaio; Duee, Didier; and Mikitenko, Paul, to Institut Francais du Petrole. Process for removing isobutene from a C_4 cut and producing methyl tert-butyl ether. 4,324,924, Cl. 568-697.000.
Totoku Electric Co., Ltd.: *See—*
Kubota, Misao; Hanai, Yoshitada; and Yamaguchi, Toshiaki, 4,324,680, Cl. 252-182.100.
Towns, Mark E.: *See—*
Abnett, Albert C.; and Towns, Mark E., 4,325,128, Cl. 364-511.000.
Toyama Chemical Co., Ltd.: *See—*
Saikawa, Isamu; Yasuda, Takashi; Tai, Masaru; Takashita, Yutaka; Sakai, Hiroshi; Mae, Michiko; Takahata, Masahiro; and Mitsuhashi, Susumu, 4,324,783, Cl. 424-114.000.
Toyo Kogyo Co., Ltd.: *See—*
Hara, Takanori; Yoshinaga, Makoto; Yano, Haruto; and Matumura, Noriyasu, 4,324,986, Cl. 307-10.0LS.
Toyo Seikan Kaisha Ltd.: *See—*
Kobayashi, Seishichi; Mori, Tatsuo; and Morofuji, Akihiko, 4,324,822, Cl. 428-35.000.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Oshima, Syoiti; and Ida, Shuichiro, 4,324,152, Cl. 74-606.00R.
Sugimoto, Hiroshi; Nakano, Jiro; and Yanagihara, Noritaka, 4,324,153, Cl. 74-866.000.
Ushijima, Fumihiro; and Fukumura, Kagenori, 4,324,321, Cl. 192-13.00R.
Trackman, Marshall H.: *See—*
Moon, Suhdok D.; and Trackman, Marshall H., 4,324,500, Cl. 400-664.000.
Trailer Marine Transport Corporation: *See—*
Sain, Bernard S.; and Dudley, James M., 4,324,516, Cl. 411-5.000.
Trambarulo, Ralph F.: *See—*
Slusky, Susan E. G.; and Trambarulo, Ralph F., 4,325,144, Cl. 455-324.000.
Trane Company, The: *See—*
Brett, William C., 4,324,286, Cl. 165-2.000.
Transportation Security, Inc.: *See—*
Michelson, Thorwald J., 4,324,426, Cl. 292-281.000.
Trede, Wolfgang: *See—*
Prahauser, Georg; Schmidlin, Robert; and Trede, Wolfgang, 4,324,183, Cl. 102-334.000.
Tredennick, Harry L.: *See—*
Gunter, Thomas G.; and Tredennick, Harry L., 4,325,121, Cl. 364-200.000.
Treine, Bernd: *See—*
Naumann, Gerd; and Treine, Bernd, 4,324,965, Cl. 219-10.55F.

Trenkle, Robert W.; Mookherjee, Braja D.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, to International Flavors & Fragrances Inc. Process for hydrogenation of damascenone, products produced thereby and organoleptic uses of said products. 4,324,704, Cl. 252-522.00R.
Tribey, John M. Solar tracking device. 4,324,225, Cl. 126-425.000.
Trinks, Roland: *See—*
Drenckhan, Jurgen; and Trinks, Roland, 4,324,492, Cl. 356-345.000.
Trio Kabushiki Kaisha: *See—*
Takeda, Tamio, 4,325,131, Cl. 369-255.000.
Triumph-Adler A.G.: *See—*
Link, Manfred, 4,324,496, Cl. 400-144.200.
Troncale, August J., Jr.: *See—*
Parks, Edward G.; and Troncale, August J., *Jr.*, 4,324,272, Cl. 137-574.000.
Troponwerke GmbH & Co., KG: *See—*
Boltze, Karl-Heinz; Dell, Hans-Dieter; and Jacobi, Haireddin, 4,324,787, Cl. 424-250.000.
Trotta, Robert A., to Gillette Company, The. Razor blade assembly. 4,324,041, Cl. 30-47.000.
TRW Inc.: *See—*
Buczynski, Neal J.; and Kern, Edward W., *Jr.*, 4,324,444, Cl. 308-201.000.
Herbenar, Edward J., 4,324,501, Cl. 403-133.000.
Knife, James E., 4,324,532, Cl. 417-360.000.
Tschopp, Paul, to Ciba Geigy AG. Heterocyclic compounds useful as color photographic material. 4,324,898, Cl. 548-184.000.
Tse, Jackson, to EST Industries, Inc. Table tennis bat blade. 4,324,400, Cl. 273-76.000.
Tsuji, Nobuo; Fujiyama, Masaaki; Nakahara, Hiromi; Tadokoro, Eiichi; Tanaka, Keiji; and Yamamoto, Isao, to Fuji Photo Film Co., Ltd. Calender roll for supercalender. 4,324,177, Cl. 100-155.00R.
Tsukamoto, Yoshio: *See—*
Akasaki, Isamu; Ohsima, Masaaki; Matsuda, Nobuhide; Matsuki, Michio; Tsukamoto, Yoshio; Kagi, Hiromichi; and Fukazawa, Hidehalu, 4,325,070, Cl. 346-108.000.
Tsuruoka, Takashi: *See—*
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Tu, Jerry C.: *See—*
Lane, John; and Tu, Jerry C., 4,324,525, Cl. 414-699.000.
Tulowiecki, David; and Lavasseur, Richard R., to Carrier Corporation. Minimum airflow control. 4,324,358, Cl. 236-49.000.
Tung, Shao E. Process for recovering sulfur by removal of sulfur dioxide from gaseous mixtures. 4,324,775, Cl. 423-539.000.
Turk, Stanley D.: *See—*
Drake, Charles A.; and Turk, Stanley D., 4,324,738, Cl. 260-465.00H.
Tuttle, James A.: *See—*
Kranz, Roger H.; de Araujo Pinheiro, Edwin J.; and Tuttle, James A., 4,325,116, Cl. 364-200.000.
Twin Disc, Incorporated: *See—*
Steinhagen, Horst G., 4,324,387, Cl. 254-310.000.
Ube Industries, Ltd.: *See—*
Ueno, Haruo; Yano, Takefumi; Inoue, Tokuji; Ikai, Shigeru; Tamura, Masanori; and Yuasa, Sakae, 4,324,877, Cl. 526-127.000.
Uchida, Yoshitsugu, to Victor Company of Japan, Limited. Cassette tape recorder. 4,325,091, Cl. 360-96.600.
Udell, Kent S.: *See—*
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Ueda, Takeo, to Nippon Seiko Kabushiki Kaisha. Latch for runner utilized in passive type seat belt system. 4,324,419, Cl. 280-804.000.
Uehara, Sukehiro, to Kabushiki Kaisha Miyano Tekkosho. Machine tool having hollow main spindle and bar stock feeding mechanism. 4,324,162, Cl. 82-2.500.
Ueno, Haruo; Yano, Takefumi; Inoue, Tokuji; Ikai, Shigeru; Tamura, Masanori; and Yuasa, Sakae, to Ube Industries, Ltd. Method for polymerizing α-olefin. 4,324,877, Cl. 526-127.000.
Ueno, Yoshiki: *See—*
Hattori, Tadashi; and Ueno, Yoshiki, 4,324,218, Cl. 123-440.000.
Uerdingen, Walter: *See—*
Bock, Manfred; Pedain, Josef; and Uerdingen, Walter, 4,324,879, Cl. 528-45.000.
Schulz, Hans H.; Uerdingen, Walter; and Wagner, Kuno, 4,324,590, Cl. 106-35.000.
Ugine Aciers: *See—*
Marizy, Georges, 4,324,584, Cl. 75-60.000.
UMC Industries, Inc.: *See—*
Pryor, Harry H.; and Schinker, James J., 4,324,494, Cl. 366-156.000.
Umemoto, Teruo, to Sagami Chemical Research Center. Perfluoroalkyl compounds and process for preparing the same. 4,324,741, Cl. 260-505.00R.
Umino, Norihide; Ohishi, Tokuro; Ikezaki, Muneyoshi; Sato, Masanori; and Nagao, Taku, to Tanabe Seiyaku Co., Ltd. Novel benzylalcohol derivatives and processes for preparing same. 4,324,800, Cl. 424-308.000.
Union Carbide Corporation: *See—*
Hamilton, Jarrette A., 4,324,583, Cl. 75-43.000.
Robeson, Lloyd M., 4,324,869, Cl. 525-68.000.
Union Underwear Company: *See—*
Smith, Juan A.; Adams, Catherine L.; and Adams, Wayne M., 4,324,004, Cl. 2-131.000.
Uniroyal, Inc.: *See—*
Rim, Yong S.; Nudenberg, Walter; and Johnson, Arnold N., 4,324,870, Cl. 525-127.000.
Unisearch Limited: *See—*
Goldsmid, Hiroshi J., 4,324,129, Cl. 73-15.00A.
Unit Rig & Equipment Co.: *See—*
McCann, Floyd E.; and Fornell, Robert M., 4,324,283, Cl. 157-1.26S.
United Aircraft Corporation: *See—*
Birbara, Philip J., 4,324,819, Cl. 427-283.000.
United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the: *See—*
Hughes, Brian T.; Redstone, Reuben; Vokes, John C.; and Wight, David R., 4,325,073, Cl. 357-22.000.
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Air Force: *See—*
Bilow, Norman, 4,324,830, Cl. 428-257.000.
Christian, John B.; and Tamborski, Christ, 4,324,671, Cl. [illegible]
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Eisentraut, Kent J.; Ross, William D.; Hillen, William J.; Brooks, Joseph J.; and Duffy, Thomas G., 4,324,758, Cl. 422-61.000.
Stitzer, Steven N., 4,325,140, Cl. 455-19.000.
Army: *See—*
Gerharz, Reinhold, 4,324,459, Cl. 351-32.000.
Healy, James J., 4,324,170, Cl. 89-159.000.
Horn, Stuart B.; McMillion, Landy H.; Dunmire, Howard L.; Sawyer, Geoffrey S.; and Gerkin, William C., 4,324,104, Cl. [illegible]
Energy: *See—*
Kaun, Thomas D.; and Chilenskas, Albert A., 4,324,846, Cl. 429-112.000.
Luhman, Thomas; Klamut, Carl J.; Suenaga, Masaki; and Welch, David, 4,324,842, Cl. 428-614.000.
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Ito, Yoichiro, 4,324,661, Cl. 210-635.000.
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Navy: *See—*
Auld, Bertram A., 4,324,140, Cl. 73-602.000.
Groutage, Frederick D., 4,324,378, Cl. 248-184.000.
Hueber, Werner G., 4,324,491, Cl. 356-152.000.
Parks, Edward G.; and Troncale, August J., Jr., 4,324,272, Cl. 137-574.000.
Range, Kenneth; Irwin, William J.; Reed, Russell, Jr.; and Silver, Wallace E., 4,324,599, Cl. 149-39.000.
Robertson, Robert F.; Connor, Thomas J.; and Rodkey, F. Lee, 4,324,556, Cl. 23-230.00B.
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Wisconsin Alumni Research Foundation: *See—*
West, Robert C.; and David, Lawrence D., 4,324,901, Cl. 156-430.000.
Wisskirchen, Klaus B.: *See—*
Hinze, Klaus; and Wisskirchen, Klaus B., 4,324,955, Cl. 200-5.00E.
Wistuba, Eberhard; Lenzer, Xaver; and Mandle, Herbert, to Karl Mengele & Sohne Maschinenfabrik and Eisengiesserei GmbH & Co. Vehicular forage harvester. 4,324,091, Cl. 56-16.600.
Withers, Michael S., to Du Pont de Nemours, E. I., and Company. Process for forming a reinforced membrane. 4,324,606, Cl. 156-272.200.
Witkowski, Robert E.: *See—*
Hrizo, John; Bauerle, James E.; and Witkowski, Robert E., 4,325,029, Cl. 324-468.000.
Witt, Michael A.: *See—*
Cunningham, Frank D.; Witt, Michael A.; and Hill, Robert M., 4,324,195, Cl. 114-312.000.
Wittmann, Alois; and Rubin, Charles P., to Hughes Aircraft Company. Integrated spacecraft and cradle structure. 4,324,374, Cl. 244-158.00R.
Wittmann, Erwin J.: *See—*
Harwood, Leopold A.; and Wittmann, Erwin J., 4,325,076, Cl. 318-31.000.
Woinsky, Samuel G., to Occidental Petroleum Corporation. Process and system for recovery of energy from geothermal brines and other hot water sources. 4,324,102, Cl. 60-641.300.
Wolar, William. Protective means for attachments affixed to electrically operated beds. 4,325,061, Cl. 340-679.000.
Wolf, Gunter: *See—*
Hoppner, Klaus; and Wolf, Gunter, 4,324,045, Cl. 30-381.000.
Wolfe, John E., to Burroughs Corporation. Electron-beam cathode having a uniform emission pattern. 4,324,999, Cl. 313-336.000.
Wolfe, John E.; and Swanson, Lynwood W., to Burroughs Corporation. Low work function cathode. 4,325,000, Cl. 313-336.000.
Wolfrum, Gerhard: *See—*
vor der Bruck, Dieter; and Wolfrum, Gerhard, 4,324,722, Cl. 260-207.000.
vor der Bruck, Dieter; and Wolfrum, Gerhard, 4,324,723, Cl. 260-207.100.
Wonder Corporation of America, Inc.: *See—*
Schub, Leonard, 4,324,039, Cl. 29-623.100.
Wong, Kenny; and Hall, Wilbur L., to Texaco Inc. Viscous oil recovery method. 4,324,291, Cl. 166-252.000.
Wood, Grant: *See—*
Johnson, Logan; Wood, Grant; and Broffi, Jerry, 4,324,348, Cl. 222-181.000.
Woodliff, Ronald D.; Paape, Kenneth L.; and Johnston, Edwin S., to Allen-Bradley Company. Slip-type conduit hub for enclosures. 4,324,424, Cl. 285-158.000.
Woolslayer, Joseph R., to Lee C. Moore Corporation. Method of moving a drilling rig long and short distances. 4,324,077, Cl. [illegible].
Wovkulich, Peter M.: *See—*
Uskokovic, Milan R.; and Wovkulich, Peter M., 4,324,726, Cl. 260-343.600.
Wright, Basil M., to National Research Development Corporation. Body function detection and medical instruments therefor. 4,324,259, Cl. 128-722.000.
Wright, Charles E., to Eastman Technology, Inc. Lap and dissolve in video cameras with VTR. 4,325,088, Cl. 360-14.000.
Wright, Douglas C.; and Roberts, Sidney N., to Inheed Pty Ltd. Spiral separators. 4,324,334, Cl. 209-459.000.
Wright, Leonard F.: *See—*
Senior, Peter J.; Wright, Leonard F.; and Alderson, Barry, 4,324,907, Cl. 560-185.000.
Wrobbel, Edward J. Open end ratchet wrench. 4,324,159, Cl. 81-111.000.
Wu, George, to Velo-Bind, Inc. Punching and binding machine. 4,324,013, Cl. 412-16.000.
Wuebker, Robert A., to General Signal Corporation. Method for substantially cold working nonheat-treatable aluminum alloys. 4,324,596, Cl. 148-11.50A.
Wulff, Bernard J., to Caterpillar Tractor Co. Composite shield-step. 4,324,412, Cl. 280-163.000.
Wulz, Klaus: *See—*
Mueller, Hans; Wulz, Klaus; Beyer, Karl-Heinz; and Streit, Werner, 4,324,724, Cl. 260-239.00E.
Wurmb, Rolf: *See—*
Blinne, Gerd; Wurmb, Rolf; and Schmidt, Franz, 4,324,881, Cl. 528-173.000.
Xerox Corporation: *See—*
Burnham, Paul W., 4,324,490, Cl. 355-3.0DD.
Gabor, Andrew, 4,324,497, Cl. 400-144.200.
Lu, Chin H.; Sherony, Dominic F.; and Erhardt, Peter F., 4,324,851, Cl. 430-106.000.
Silverberg, Morton, 4,324,395, Cl. 271-98.000.
Szlucha, Thomas F., 4,324,482, Cl. 355-3.0FU.
Xynetics, Inc.: *See—*
Roch, Jacques L., 4,324,047, Cl. 33-18.00R.
Yamada, Hiroyoshi: *See—*
Sakakino, Takahiro; and Yamada, Hiroyoshi, 4,324,956, Cl. 200-16.00R.
Yamada, Sadahiko: *See—*
Harada, Masato; Yamada, Sadahiko; Suzuki, Atsushi; and Masuda, Jun, 4,324,875, Cl. 526-115.000.
Yamada, Takeo: *See—*
Yokomichi, Isao; Yamada, Takeo; Mohri, Akio; Ota, Kiyoshi; and Ikeda, Minoru, 4,324,665, Cl. 210-718.000.
Yamaguchi, Hitoshi: *See—*
Naito, Akira; Hayakawa, Toru; Nakanishi, Masakatsu; Ikuta, Sunao; Kajiwara, Shoichiro; and Yamaguchi, Hitoshi, 4,324,784, Cl. 424-130.000.
Yamaguchi, Kisaburo; and Yoshikawa, Tsukasa, to Tokan Kogyo Kabushiki Kaisha. Easily openable cover member. 4,324,341, Cl. 220-258.000.
Yamaguchi, Kisaburo; and Yoshikawa, Tsukasa, to Tokan Kogyo Kabushiki Kaisha. Easily openable cover member. 4,324,342, Cl. 220-266.000.
Yamaguchi, Terumoto; and Ohta, Masaya, to Kabushiki Kaisha Tokai Rika Denki Seisakusho. Pre-heating assembly to be used for pre-heating ingots. 4,324,391, Cl. 266-200.000.
Yamaguchi, Toshiaki: *See—*
Kubota, Misao; Hanai, Yoshitada; and Yamaguchi, Toshiaki, 4,324,680, Cl. 252-182.100.
Yamaguchi, Toshihiro: *See—*
Kishino, Takao; Yamaguchi, Toshihiro; and Tanaka, Kazunori, 4,325,064, Cl. 340-753.000.
Yamamoto, Akira: *See—*
Ishihara, Toshinobu; Taguchi, Kenichi; Yamamoto, Akira; Takasaka, Nobuo; Shimizu, Hisashi; and Oshima, Mitsuyoshi, 4,324,931, Cl. 570-189.000.
Yamamoto, Isao: *See—*
Tsuji, Nobuo; Fujiyama, Masaaki; Nakahara, Hiromi; Tadokoro, Eiichi; Tanaka, Keiji; and Yamamoto, Isao, 4,324,177, Cl. 100-155.00R.
Yamamoto, Toru: *See—*
Hatakeyama, Hideo; and Yamamoto, Toru, 4,324,748, Cl. 264-51.000.
Yamashita, Kiyoshi; and Takagi, Shoji, to Tokyo Shibaura Denki Kabushiki Kaisha. Refuse storage apparatus with sealer for sealing pliable bag top. 4,324,088, Cl. 53-527.000.
Yamashita, Thoru: *See—*
Hasegawa, Shoichi; Yamashita, Thoru; and Kameda, Mitsuo, 4,324,764, Cl. 422-159.000.
Yamauchi, Takashi: *See—*
Kobayashi, Yoshiro; Kumadaki, Itsumaro; Takahashi, Masaaki; and Yamauchi, Takashi, 4,324,929, Cl. 570-127.000.
Yanagihara, Noritaka: *See—*
Sugimoto, Hiroshi; Nakano, Jiro; and Yanagihara, Noritaka, 4,324,153, Cl. 74-866.000.
Yano, Haruto: *See—*
Hara, Takanori; Yoshinaga, Makoto; Yano, Haruto; and Matumura, Noriyasu, 4,324,986, Cl. 307-10.0LS.
Yano, Takefumi: *See—*
Ueno, Haruo; Yano, Takefumi; Inoue, Tokuji; Ikai, Shigeru; Tamura, Masanori; and Yuasa, Sakae, 4,324,877, Cl. 526-127.000.
Yasuda, Takashi: *See—*
Saikawa, Isamu; Yasuda, Takashi; Tai, Masaru; Takashita, Yutaka; Sakai, Hiroshi; Mae, Michiko; Takahata, Masahiro; and Mitsuhashi, Susumu, 4,324,783, Cl. 424-114.000.
Yau, Ben J., to Owens-Corning Fiberglas Corporation. Wet process mat binder. 4,324,833, Cl. 428-290.000.
Yazaki Corporation: *See—*
Watanabe, Mitsugu; and Hirano, Tomoyuki, 4,324,449, Cl. 339-91.00R.
Yokomichi, Isao; Yamada, Takeo; Mohri, Akio; Ota, Kiyoshi; and Ikeda, Minoru, to Ishihara Sangyo Kaisha, Ltd.; and Nissan Chemical Industries, Ltd. Process for recovering bromine from waste liquid. 4,324,665, Cl. 210-718.000.
Yokomizo, Hiroshi: *See—*
Tomita, Yoshifumi; Nishizawa, Masahiro; Yokomizo, Hiroshi; and Nakai, Hiromitu, 4,324,850, Cl. 430-24.000.
Yokono, Hitoshi: *See—*
Oka, Hitoshi; Kikuchi, Hiroshi; Yokono, Hitoshi; Suzuki, Haruo; Yoshimura, Toyofusa; Matsuo, Akira; Miyazawa, Osamu; Tanaka, Isamu; and Isogai, Tokio, 4,324,629, Cl. 204-180.00P.
Yoshida, Atsushi: *See—*
Nomura, Norimasa; and Yoshida, Atsushi, 4,324,480, Cl. 354-320.000.
Yoshikawa, Tsukasa: *See—*
Yamaguchi, Kisaburo; and Yoshikawa, Tsukasa, 4,324,341, Cl. 220-258.000.

Yamaguchi, Kisaburo; and Yoshikawa, Tsukasa, 4,324,342, Cl. 220-266.000.
Yoshikazu, Ikeda, to Kokusai Denshin Denwa Co., Ltd. Power supply system to terminal equipment through an optical fiber cable. 4,325,137, Cl. 370-4.000.
Yoshimura, Hirofumi: *See—*
Ikeda, Nobuo; and Yoshimura, Hirofumi, 4,324,967, Cl. 219-10.55F.
Yoshimura, Kazunori: *See—*
Ito, Katsuo; and Yoshimura, Kazunori, 4,325,103, Cl. 361-424.000.
Yoshimura, Toyofusa: *See—*
Oka, Hitoshi; Kikuchi, Hiroshi; Yokono, Hitoshi; Suzuki, Haruo; Yoshimura, Toyofusa; Matsuo, Akira; Miyazawa, Osamu; Tanaka, Isamu; and Isogai, Tokio, 4,324,629, Cl. 204-180.00P.
Yoshinaga, Makoto: *See—*
Hara, Takanori; Yoshinaga, Makoto; Yano, Haruto; and Matumura, Noriyasu, 4,324,986, Cl. 307-10.0LS.
Yosnida Kogyo K.K.: *See—*
Ishida, Kinji, 4,324,071, Cl. 49-63.000.
Young, Rodney C.: *See—*
Roantree, Michael L.; and Young, Rodney C., 4,324,789, Cl. 424-251.000.
Youngstown Steel Door Company, The: *See—*
Fritz, William E., 4,324,188, Cl. 105-282.00R.
Yu, Kin C.: *See—*
Grandmaison, John P.; Huettner, Robert E.; Vernon, John H.; and Yu, Kin C., 4,325,119, Cl. 364-200.000.
Yuasa, Sakae: *See—*
Ueno, Haruo; Yano, Takefumi; Inoue, Tokuji; Ikai, Shigeru; Tamura, Masanori; and Yuasa, Sakae, 4,324,877, Cl. 526-127.000.
Yun, Bob H.: *See—*
Corcoran, Richard A.; Keenan, William A.; Michaelides, Demetrios; and Yun, Bob H., 4,325,025, Cl. 324-158.00R.
Zablocky, William J. System for handling tubular containers, including apparatus and cases therefor. 4,324,523, Cl. 414-131.000.
Zabotto, Arlette: *See—*
Koulbanis, Constantin; Millet, Catherine; Zabotto, Arlette; and Brun, Alain, 4,324,802, Cl. 424-364.000.
Zachev, Ivan: *See—*
Wagner, William E.; and Zachev, Ivan, 4,325,058, Cl. 340-562.000.
Zaghi, Hooshmand; and Tisone, Thomas C., to Gould Inc. Deformable flexure element for strain gage transducer and method of manufacture. 4,325,048, Cl. 338-3.000.
Zatkoff, William C.: *See—*
White, Ellis S.; Zatkoff, William C.; Light, John J.; and Michen, Ramon, 4,324,392, Cl. 266-240.000.
Zibritosky, George, to PPG Industries, Inc. Method and apparatus for add-on reinforcement for transparency system for crew module for aircraft. 4,324,373, Cl. 244-121.000.
Zimmer, Inc.: *See—*
Ignasiak, Michael J., 4,324,331, Cl. 206-363.000.
Zirconal Processes Limited: *See—*
Davis, Richard P. B.; Emblem, Harold G.; Shaw, Richard D.; and Shelley, Stanley J., 4,324,602, Cl. 156-71.000.
Zirnite, Richard N.: *See—*
Beede, Charles H.; and Zirnite, Richard N., 4,324,591, Cl. 106-85.000.
Zirwick, Kurt, to Rohde & Schwarz GmbH & Co KG. Device for inspecting an individual high frequency signal selected according to frequency from a broad frequency band. 4,325,023, Cl. 324-77.00B.
Zollo, Corrado: *See—*
Landis, Newton C. M.; and Zollo, Corrado, 4,324,816, Cl. 427-128.000.
Zondler, Helmut; and Moser, Roland, to Ciba-Geigy Corporation. Dimethylamino derivatives and their use. 4,324,739, Cl. 260-465.400.
Zscheile, John W., Jr., to Sperry Corporation. Continuous wave adaptive signal processor system. 4,325,138, Cl. 375-1.000.
Zubriski, David S.: *See—*
Nilles, John D.; Stankiewicz, Stanley L.; and Zubriski, David S., 4,324,548, Cl. 433-126.000.
Zysk, Edward D.; and Stephans, Robert, to Engelhard Corporation. Arc erosion resistant composite materials and processes for their manufacture. 4,324,588, Cl. 75-208.00R.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 13TH DAY OF APRIL, 1982

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Boxrud, Phillip E., to Outboard Marine Corporation. Soil sampling device. Re. 30,901, Cl. 73-864.310.
Elevator Equipment Co.: *See*—
Lawrence, William A. P.; and Whelchel, Robert J., Re. 30,902, Cl. 137-625.390.
Gerber, Mark S.: *See*—
Miller, Don W.; and Gerber, Mark S., Re. 30,904, Cl. 250-370.000.
Graphic Scanning, Inc.: *See*—
Vicari, Ronald P.; and Yampol, Barry, Re. 30,903, Cl. 179-27.0FH.
Kallman, Robert A. Accessory holder for use on article of clothing. Re. 30,899, Cl. 24-3.00C.
Lawrence, William A. P.; and Whelchel, Robert J., to Elevator Equipment Co. Pressure and temperature compensating hydraulic valve. Re. 30,902, Cl. 137-625.390.
Miller, Don W.; and Gerber, Mark S., to Ohio State University, The. Control system for gamma camera. Re. 30,904, Cl. 250-370.000.
Ohio State University, The: *See*—
Miller, Don W.; and Gerber, Mark S., Re. 30,904, Cl. 250-370.000.
Outboard Marine Corporation: *See*—
Boxrud, Phillip E., Re. 30,901, Cl. 73-864.310.
Shih, Hsing-Hua, to Westinghouse Electric Corp. Fluid current meter. Re. 30,900, Cl. 73-189.000.
Vicari, Ronald P.; and Yampol, Barry, to Graphic Scanning, Inc. Computer controlled telephone answering system. Re. 30,903, Cl. 179-27.0FH.
Westinghouse Electric Corp.: *See*—
Shih, Hsing-Hua, Re. 30,900, Cl. 73-189.000.
Whelchel, Robert J.: *See*—
Lawrence, William A. P.; and Whelchel, Robert J., Re. 30,902, Cl. 137-625.390.
Yampol, Barry: *See*—
Vicari, Ronald P.; and Yampol, Barry, Re. 30,903, Cl. 179-27.0FH.

LIST OF DESIGN PATENTEES

AB Dentatus: *See*—
Edwardson, Svante R., 263,878, Cl. D24-16.000.
AB Jarnarmatur: *See*—
Pettersson, Dan A. B., 263,781, Cl. D32-66.000.
Abbott Laboratories: *See*—
Genese, Joseph N., 263,873, Cl. D24-54.000.
Genese, Joseph N., 263,874, Cl. D24-54.000.
Genese, Joseph N., 263,875, Cl. D24-54.000.
Action Industries, Inc.: *See*—
Keller, Nicholas W., 263,773, Cl. D6-153.000.
AGFA-Gevaert AG: *See*—
Schlagheck, Norbert; Schultes, Herbert; and Rubner, Karlheinz, 263,845, Cl. D16-5.000.
Schlagheck, Norbert; Schultes, Herbert; and Rubner, Karlheinz, 263,846, Cl. D16-1.000.
Schlagheck, Norbert; Schultes, Herbert; and Rubner, Karlheinz, 263,847, Cl. D16-1.000.
Ahrens, John E., to C. Schmidt Company, The. Combined refrigerator door and frame unit. 263,835, 4-13-82, Cl. D15-91.000.
Allibert Exploitation: *See*—
Deconinck, Didier, 263,774, Cl. D6-146.000.
Alpert, Alan, to Tree Time, Inc. Mirror. 263,772, 4-13-82, Cl. D6-144.000.
Alton Box Board Company: *See*—
Magee, Guion C., 263,793, Cl. D9-433.000.
American Cyanamid Company: *See*—
Grip, John A., 263,806, Cl. D9-370.000.
American Home Products Corporation: *See*—
Francis, Stephen A., 263,880, Cl. D24-17.000.
Angleman, John D.; and du Cret, Doris, to Bristol-Myers Company. Packaging container. 263,800, 4-13-82, Cl. D9-332.000.
Aqua-Leisure Industries, Inc.: *See*—
Fireman, Simon C., 263,796, Cl. D9-418.000.
Ashley, Ward R., to Vision Group, The. Perforated drain cover. 263,776, 4-13-82, Cl. D6-86.000.
Automatic Liquid Packaging, Inc.: *See*—
Pagels, Louis T., 263,795, Cl. D9-370.000.
Bachmann, G. Merle; Burrous, Homer C.; and Shelton, Walter L., to Coca-Cola Company, The. Display panel for a vending machine. 263,855, 4-13-82, Cl. D20-8.000.
Baranowski, Frank, Jr. Double-barrel gas torch. 263,790, 4-13-82, Cl. D8-30.000.
Barber, Herbert L. Container for enclosing a board game. 263,861, 4-13-82, Cl. D21-15.000.
Barbera, Lawrence E.; Connin, John L.; Lawing, Michael E.; and Richardson, Dean W., to Exxon Research & Engineering Co. Facsimile transceiver or similar article. 263,831, 4-13-82, Cl. D14-94.000.
Beatrice Foods Co.: *See*—
Chow, Ho; and Uyeda, Tim M., 263,868, Cl. D23-7.000.
Beauchamp, Roger P., to International Packaging Corp. Display box. 263,797, 4-13-82, Cl. D9-424.000.
Bechtold, Paul E. Mobile. 263,814, 4-13-82, Cl. D11-141.000.
Beidler, Glenn S.; Johnson, Leighton C.; and Kheiri, Mohammad A., to Miles Laboratories, Inc. Reagent cassette. 263,876, 4-13-82, Cl. D24-29.000.
Bell Telephone Laboratories, Incorporated: *See*—
Hagelbarger, David W.; and Kubik, Peter S., 263,824, Cl. D14-54.000.
Birch, Walter F., to Denroy Plastics Limited. Hairbrush. 263,768, 4-13-82, Cl. D4-35.000.
Blake, Marc B.: *See*—
Sogoian, Tig; and Blake, Marc B., 263,767, Cl. D2-400.000.
Blaszkowski, Henry. Combined soap bar and holder. 263,885, 4-13-82, Cl. D28-8.100.
Bristol-Myers Company: *See*—
Angleman, John D.; and du Cret, Doris, 263,800, Cl. D9-332.000.
Burrous, Homer C.: *See*—
Bachmann, G. Merle; Burrous, Homer C.; and Shelton, Walter L., 263,855, Cl. D20-8.000.
Buschmann, Sylvester. Artifact holding locket. 263,813, 4-13-82, Cl. D11-83.000.
Butler, Lawrence G.; and Means, Dorthea. Combined coaster and ash tray holder. 263,784, 4-13-82, Cl. D7-71.000.
C. Schmidt Company, The: *See*—
Ahrens, John E., 263,835, Cl. D15-91.000.
Calvert, James T. Decal. 263,854, 4-13-82, Cl. D20-11.000.
Canon Kabushiki Kaisha: *See*—
Sakurai, Mitsuru, 263,844, Cl. D16-30.000.
Chapman, Robert B. Loudspeaker housing or similar article. 263,823, 4-13-82, Cl. D14-34.000.
Chow, Ho; and Uyeda, Tim M., to Beatrice Foods Co. Water sprinkler base. 263,868, 4-13-82, Cl. D23-7.000.
Coca-Cola Company, The: *See*—
Bachmann, G. Merle; Burrous, Homer C.; and Shelton, Walter L., 263,855, Cl. D20-8.000.
Cole, David R.: *See*—
Hildebrand, Robert A.; and Cole, David R., 263,780, Cl. D6-24.000.
Cole, Russell P. Hand surf board. 263,860, 4-13-82, Cl. D21-228.000.
Connin, John L.: *See*—
Barbera, Lawrence E.; Connin, John L.; Lawing, Michael E.; and Richardson, Dean W., 263,831, Cl. D14-94.000.
Dahan, Sion. Jewelry pendant. 263,816, 4-13-82, Cl. D11-81.000.
Dallaire, Raymond. Window component extrusion. 263,882, 4-13-82, Cl. D25-74.000.
Dallaire, Raymond. Window component extrusion. 263,883, 4-13-82, Cl. D25-74.000.
Dallaire, Raymond. Window component extrusion. 263,884, 4-13-82, Cl. D25-74.000.
Deconinck, Didier, to Allibert Exploitation. Table or similar article. 263,774, 4-13-82, Cl. D6-146.000.
Denroy Plastics Limited: *See*—
Birch, Walter F., 263,768, Cl. D4-35.000.
Dillon, Richard L. Stove. 263,864, 4-13-82, Cl. D23-97.000.

D'Onofrio, Anthony: *See*—
Hochstrate, Paul; and D'Onofrio, Anthony, 263,811, Cl. D10-123.000.
Drutz, Alvin S.: *See*—
McKinnon, Eugene T.; and Drutz, Alvin S., 263,788, Cl. D8-394.000.
DuBois, R. Clark; and Hamma, John C., to Gradco/Dendoki, Inc. Copying and sorting apparatus. 263,848, 4-13-82, Cl. D16-31.000.
DuBois, R. Clark; and Hamma, John C., to Gradco/Dendoki, Inc. Continuous form feeding and copying apparatus. 263,850, 4-13-82, Cl. D16-31.000.
du Cret, Doris: *See*—
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E-Z-EM Company, Inc.: *See*—
Greene, Franklin R., 263,870, Cl. D24-56.000.
Edwah Electronics Limited: *See*—
Lee, Kwong C., 263,832, Cl. D14-73.000.
Edwards, Richard T., to Genpak Corporation. Food container. 263,798, 4-13-82, Cl. D9-426.000.
Edwardson, Svante R., to AB Dentatus. Root canal screw. 263,878, 4-13-82, Cl. D24-16.000.
Engelhardt, Philip L., to S. Engelhardt & Co. Cuff link with centerpiece. 263,765, 4-13-82, Cl. D2-422.000.
Englishtown Sportswear Ltd.: *See*—
Heinfling, Martin, 263,766, Cl. D2-28.000.
Euwema, George J.; and Euwema, George W. Table attachable seat for a child. 263,769, 4-13-82, Cl. D6-9.000.
Euwema, George W.: *See*—
Euwema, George J.; and Euwema, George W., 263,769, Cl. D6-9.000.
Exxon Research & Engineering Co.: *See*—
Barbera, Lawrence E.; Connin, John L.; Lawing, Michael E.; and Richardson, Dean W., 263,831, Cl. D14-94.000.
F. T. Read & Sons, Inc.: *See*—
Read, James L., 263,836, Cl. D15-147.000.
Fireman, Simon C., to Aqua-Leisure Industries, Inc. Combined packaging and display box. 263,796, 4-13-82, Cl. D9-418.000.
Fleit & Jacobson: *See*—
Gallub, Thomas M., 263,852, Cl. D18-24.000.
Francis, Stephen A., to American Home Products Corporation. Obstetrical telemetry instrument enclosure. 263,880, 4-13-82, Cl. D24-17.000.
Fraze, Ermal C. End closure for a container. 263,802, 4-13-82, Cl. D9-438.000.
Fraze, Ermal C. End closure for a container. 263,803, 4-13-82, Cl. D9-438.000.
Frieberg, Bengt O. Lock washer. 263,791, 4-13-82, Cl. D8-399.000.
Frieberg, Bengt O. Lock washer. 263,792, 4-13-82, Cl. D8-399.000.
Fuerneisen, Thomas J., to Microtime, Incorporated. Adhesively mounted timepiece. 263,812, 4-13-82, Cl. D10-15.000.
Fukushima, Hisao; and Hirooka, Junji, to Oki Electric Industry Co., Ltd. Microphone for a vehicular telephone set or similar article. 263,830, 4-13-82, Cl. D14-12.000.
Gallub, Thomas M., to Fleit & Jacobson. Position Marker. 263,852, 4-13-82, Cl. D18-24.000.
Genese, Joseph N., to Abbott Laboratories. Flexible stylet. 263,873, 4-13-82, Cl. D24-54.000.
Genese, Joseph N., to Abbott Laboratories. Flexible stylet. 263,874, 4-13-82, Cl. D24-54.000.
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CERTIFICATES WERE ISSUED

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Rokosz, Ferdinand, to Westinghouse Electric Corporation. Safety switch which renders HID lamp inoperative on accidental breakage of outer envelope. B1 4,032,816, Cl. 315-73.
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420	4,324,098
497	4,324,099
545	4,324,100
562	4,324,101
641.3	4,324,102
663	4,324,103
CLASS 62	
77	4,324,104
196 A	4,324,105
197	4,324,106
268	4,324,107
345	4,324,108
353	4,324,109
381	4,324,110
457	4,324,111
511	4,324,112
CLASS 64	
7	4,324,113
17 A	4,324,114
CLASS 65	
3.11	4,324,575
26	4,324,576
CLASS 66	
75.2	4,324,115
CLASS 68	
158	4,324,116
205 R	4,324,117
CLASS 69	
6.5	4,324,118
CLASS 70	
233	4,324,119
312	4,324,120
459	4,324,121
CLASS 71	
33	4,324,577
67	4,324,578
74	4,324,579
118	4,324,580
126	4,324,581
CLASS 72	
41	4,324,122
345	4,324,124
479	4,324,125
CLASS 73	
1 J	4,324,126
3	4,324,127
8	4,324,128
15 A	4,324,129
17 R	4,324,130
61.1 C	4,324,131
61.3	4,324,132
117	4,324,133
117.1	4,324,134
159	4,324,136
187	4,324,135
189	Re.30,900
341	4,324,138
362 CP	4,324,137
457	4,324,139
602	4,324,140
626	4,324,142
627	4,324,141
861.62	4,324,143
861.77	4,324,144
861.89	4,324,145
863.12	4,324,146
864.31	Re.30,901
CLASS 74	
37	4,324,147
108	4,324,148
473 R	4,324,149
476	4,324,150
532	4,324,151
606 R	4,324,152
834	4,324,155
866	4,324,153
869	4,324,154
	4,324,156
CLASS 75	
1 R	4,324,582
43	4,324,583
60	4,324,584
68 B	4,324,585
69	4,324,586
130 B	4,324,587
208 R	4,324,588
CLASS 81	
57.17	4,324,157
60	4,324,158
111	4,324,159
185	4,324,160
CLASS 82	
2 R	4,324,161
2.5	4,324,162
CLASS 83	
855	4,324,163
CLASS 84	
1.04	4,324,164
318	4,324,165
454	4,324,166
CLASS 89	
1.8	4,324,167
1.814	4,324,168
36 L	4,324,169
159	4,324,170
CLASS 92	
169	4,324,171
CLASS 99	
277.1	4,324,172
330	4,324,173
421 H	4,324,174
519	4,324,175
CLASS 100	
3	4,324,176
155 R	4,324,177
CLASS 101	
45	4,324,178
170	4,324,179
216	4,324,180
269	4,324,181
CLASS 102	
217	4,324,182
334	4,324,183
CLASS 104	
279	4,324,184
283	4,324,185
CLASS 105	
177	4,324,186
199 A	4,324,187
282 R	4,324,188
378	4,324,189
CLASS 106	
1.22	4,324,589
35	4,324,590
85	4,324,591
	4,324,592
203	4,324,593
CLASS 108	
51.1	4,324,190
CLASS 112	
277	4,324,191
CLASS 114	
106	4,324,192
199	4,324,193
264	4,324,194
312	4,324,195
CLASS 116	
277	4,324,196
300	4,324,197
CLASS 118	
630	4,324,198
658	4,324,199
CLASS 119	
2	4,324,200
14.51	4,324,201
51 R	4,324,202
51.11	4,324,203
96	4,324,204
	4,324,205
99	4,324,206
CLASS 122	
448 B	4,324,207
CLASS 123	
25 B	4,324,209
90.55	4,324,210
143 A	4,324,211
179 F	4,324,212
195 C	4,324,208
196 A	4,324,213
309	4,324,214
335	4,324,215
415	4,324,216
417	4,324,217
440	4,324,218
620	4,324,219
CLASS 124	
18	4,324,220
24 R	4,324,221
89	4,324,222
CLASS 126	
200	4,324,223
422	4,324,224
425	4,324,225
429	4,324,226
437	4,324,227
	4,324,228
439	4,324,229
443	4,324,230
449	4,324,231
450	4,324,232
CLASS 128	
51	4,324,233
202.14	4,324,234
207.15	4,324,235
214 G	4,324,238
214 R	4,324,236
	4,324,237
	4,324,239
218 PA	4,324,241
232	4,324,242
276	4,324,243
	4,324,244
287	4,324,245
	4,324,246
	4,324,247
325	4,324,248
360	4,324,249
395	4,324,250
419 PG	4,324,252
419 PT	4,324,251
421	4,324,253
494	4,324,254
530	4,324,255
635	4,324,256
	4,324,257
551	4,324,258
722	4,324,259
728	4,324,260
740	4,324,261
756	4,324,262
CLASS 132	
7	4,324,263
CLASS 134	
2	4,324,594
38	4,324,595
68	4,324,264
82	4,324,265
CLASS 136	
242	4,324,945
247	4,324,946
248	4,324,947
CLASS 137	
13	4,324,266
100	4,324,267
312	4,324,268
315	4,324,269
317	4,324,270
493	4,324,271
574	4,324,272
625.39	Re.30,902
625.43	4,324,273
625.68	4,324,274
876	4,324,275
CLASS 138	
30	4,324,276
CLASS 144	
312	4,324,277
CLASS 148	
11.5 A	4,324,996
101	4,324,597
111	4,324,598
CLASS 149	
39	4,324,599
CLASS 152	
213 R	4,324,278
314	4,324,279
349	4,324,280
359	4,324,281
CLASS 156	
64	4,324,600
69	4,324,601
71	4,324,602
131	4,324,604
247	4,324,605
272.2	4,324,606
350	4,324,607
351	4,324,608
470	4,324,609
584	4,324,603
602	4,324,610
643	4,324,611
CLASS 157	
1.22	4,324,282
1.21	4,324,283
CLASS 160	
172	4,324,284
CLASS 162	
23	4,324,612
111	4,324,613
CLASS 164	
2	4,324,285
	4,324,286
10	4,324,287
22	4,324,288
48 S	4,324,289
173	4,324,290
CLASS 166	
252	4,324,291
261	4,324,292
317	4,324,293
CLASS 169	
13	4,324,294
CLASS 172	
28	4,324,295
49.5	4,324,123
311	4,324,296
CLASS 174	
71 R	4,324,949
CLASS 175	
45	4,324,297
64	4,324,298
107	4,324,299
379	4,324,300
CLASS 179	
1 A	4,324,950
1 B	4,324,951
1 GS	4,324,952
17 A	4,324,953
27 FH	Re.30,903
90 B	4,324,954
CLASS 180	
2 R	4,324,301
8 C	4,324,302
9.5	4,324,303
9.52	4,324,304
134	4,324,305
228	4,324,306
313	4,324,307
315	4,324,308
316	4,324,309
CLASS 181	
116	4,324,310
120	4,324,311
171	4,324,312
192	4,324,313
230	4,324,314

CLASS 184
15 R 4,324,315
29 4,324,316

CLASS 187
25 4,324,317

CLASS 188
73.31 4,324,318
79.5 K 4,324,319
271 4,324,320

CLASS 192
0.032 4,324,322
13 R 4,324,321
64 4,324,323
101 4,324,324

CLASS 194
4 C 4,324,325

CLASS 198
461 4,324,326
497 4,324,327

CLASS 200
5 E 4,324,955
16 C 4,324,957
16 F 4,324,958
16 R 4,324,956
144 AP 4,324,959
144 B 4,324,960
150 R 4,324,961
159 B 4,324,962
318 4,324,963
331 4,324,964

CLASS 201
89 4,324,620

CLASS 204
1 T 4,324,621
15 4,324,623
67 4,324,624
72 4,324,625
146 4,324,626
158 HA 4,324,627
159.24 4,324,628
180 P 4,324,629
192 M 4,324,631
192 R 4,324,630
195 P 4,324,632
206 4,324,633
228 4,324,634
266 4,324,635
296 4,324,636

CLASS 206
194 4,324,328
328 4,324,329
4,324,330
363 4,324,331
454 4,324,332
526 4,324,333

CLASS 208
8 LE 4,324,637
4,324,638
4,324,639
4,324,640
4,324,641
4,324,642
4,324,643
4,324,644
50 4,324,645
71 4,324,646
111 4,324,647
114 4,324,648
130 4,324,649
206 4,324,650
309 4,324,651

CLASS 209
3 4,324,652
166 4,324,654
167 4,324,653
459 4,324,334
586 4,324,335
589 4,324,336

CLASS 210
96.1 4,324,655
170 4,324,656
197 4,324,657
321.3 4,324,658
344 4,324,659
440 4,324,660
635 4,324,661
646 4,324,662
4,324,663
701 4,324,664
718 4,324,665
723 4,324,666
739 4,324,667

CLASS 211
89 4,324,337

CLASS 215
6 4,324,338
239 4,324,339

CLASS 219
10.55 B 4,324,966
10.55 F 4,324,965
4,324,967
4,324,968
69 C 4,324,969
69 W 4,324,970
121 EA 4,324,973
121 FS 4,324,972
121 PV 4,324,971
553 4,324,974

CLASS 220
1 R 4,324,340
258 4,324,341
268 4,324,342
270 4,324,343
333 4,324,344

CLASS 221
41 4,324,345
171 4,324,346
237 4,324,347

CLASS 222
181 4,324,348
207 4,324,349
212 4,324,350
402.11 4,324,351

CLASS 223
91 4,324,352

CLASS 226
118 4,324,353
189 4,324,354
190 4,324,355

CLASS 228
193 4,324,356

CLASS 229
37 E 4,324,357

CLASS 235
70 A 4,324,975
145 R 4,324,976

CLASS 236
49 4,324,358

CLASS 237
46 4,324,359

CLASS 238
349 4,324,360

CLASS 239
3 4,324,361
211 4,324,362
284 A 4,324,363
383 4,324,364
424 4,324,365
533.1 4,324,366

CLASS 241
60 4,324,367

CLASS 242
18 PW 4,324,368
66 4,324,369
86.52 4,324,370
153 4,324,371
192 4,324,372

CLASS 244
121 4,324,373
158 R 4,324,374
163 4,324,375

CLASS 246
125 4,324,376

CLASS 248
37.6 4,324,377
184 4,324,378
222.1 4,324,379
302 4,324,380
311.2 4,324,381
406 4,324,382

CLASS 250
222 R 4,324,977
370 Re.30,904
445 T 4,324,978
505 4,324,979
4,324,980
551 4,324,981
560 4,324,982

CLASS 251
308 4,324,383

CLASS 252
8.55 C 4,324,668
4,324,669
37.7 4,324,670
49.6 4,324,671
49.7 4,324,672
51.5 R 4,324,673
78.5 4,324,674
79 4,324,675
4,324,676
99 4,324,677
136 4,324,678
182 4,324,679
182.1 4,324,680
184 4,324,681
301.27 4,324,682
316 4,324,683
389 A 4,324,684
408 4,324,685
4,324,686
4,324,687
417 4,324,688
428 4,324,689
429 B 4,324,690
4,324,691
4,324,692
4,324,693
435 4,324,694
437 4,324,695
455 Z 4,324,696
4,324,697
4,324,698
462 4,324,699
472 4,324,700
477 R 4,324,701
519 4,324,702
522 R 4,324,703
4,324,704

CLASS 254
8 B 4,324,384
270 4,324,385
288 4,324,386
310 4,324,387

CLASS 256
19 4,324,388

CLASS 260
152 4,324,719
185 4,324,720
196 4,324,721
207 4,324,722
207.1 4,324,723
239 E 4,324,724
343.6 4,324,725
4,324,726
4,324,727
345.2 4,324,728
345.9 R 4,324,729
346.22 4,324,730
4,324,731
402.5 4,324,733
403 4,324,734
425 4,324,735
429 R 4,324,736
429.7 4,324,737
465 H 4,324,738
465.4 4,324,739
502.4 R 4,324,740
505 C 4,324,742
505 R 4,324,741
513 N 4,324,743
932 4,324,744

CLASS 261
39 E 4,324,745
51 4,324,746
112 4,324,749

CLASS 264
13 4,324,747
23 4,324,751
25 4,324,752
51 4,324,748
61 4,324,750
121 4,324,753
268 4,324,754
312 4,324,755
322 4,324,756

CLASS 266
51 4,324,389
155 4,324,390
200 4,324,391
240 4,324,392

CLASS 269
46 4,324,393

CLASS 271
5 4,324,394
98 4,324,395
125 4,324,396
217 4,324,397

CLASS 272
123 4,324,398
144 4,324,399

CLASS 273
76 4,324,400
85 G 4,324,401
88 4,324,402
127 R 4,324,403
169 4,324,404
238 4,324,405
242 4,324,406

CLASS 277
27 4,324,407

CLASS 280
7.13 4,324,408
12 F 4,324,409
42 4,324,410
43.23 4,324,411
163 4,324,412
205 4,324,413
242 WC 4,324,414
605 4,324,415
661 4,324,416
678 4,324,417
802 4,324,418
804 4,324,419

CLASS 282
27.5 4,324,420

CLASS 283
7 4,324,421

CLASS 285
140 4,324,422
156 4,324,423
158 4,324,424

CLASS 290
1 R 4,324,983
54 4,324,984
55 4,324,985

CLASS 292
201 4,324,425
281 4,324,426

CLASS 293
106 4,324,427

CLASS 294
169 4,324,428

CLASS 296
100 4,324,429

CLASS 297
250 4,324,430
284 4,324,431
377 4,324,432
442 4,324,433

CLASS 298
27 4,324,434

CLASS 299
37 4,324,435

CLASS 303
22 R 4,324,436

CLASS 306
11 4,324,437

CLASS 307
10 LS 4,324,986
35 4,324,987
221 D 4,324,988
252 J 4,324,989
350 4,324,990
443 4,324,991

CLASS 308
3.5 4,324,438
3.8 4,324,439
26 4,324,440
177 4,324,441
187 4,324,442
187.1 4,324,443
201 4,324,444

CLASS 310
49 R 4,324,992
58 4,324,993
68 R 4,324,994
153 4,324,995
156 4,324,996
248 4,324,997

CLASS 312
236 4,324,445
245 4,324,446

CLASS 313
318 4,324,998
336 4,324,999
4,325,000
348 4,325,001
485 4,325,002

CLASS 315
39.51 4,325,003
45 4,325,004
111.81 4,325,005
112 4,325,006
200 A 4,325,007
241 R 4,325,008
386 4,325,009
73 B1 4,032,816

CLASS 316
17 4,324,447

CLASS 318
139 4,325,010
345 B 4,325,011
578 4,325,013
614 4,325,014
625 4,325,015
640 4,325,016
786 4,325,012

CLASS 323
313 4,325,017
4,325,018
315 4,325,019
340 4,325,020
351 4,325,021

CLASS 324
52 4,325,022
77 B 4,325,023
99 D 4,325,024
158 R 4,325,025
232 4,325,026
329 4,325,027
442 4,325,028
468 4,325,029

CLASS 328
140 4,325,030

CLASS 331
1 A 4,325,031
25 4,325,032
96 4,325,035
176 4,325,036

CLASS 333
194 4,325,037
195 4,325,038
237 4,325,039

CLASS 334
17 4,325,040

CLASS 335
35 4,325,041
208 4,325,042
229 4,325,043

CLASS 336
67 4,325,044
197 4,325,045

CLASS 337
56 4,325,046
370 4,325,047

CLASS 338
3 4,325,048
86 4,325,049
128 4,325,050
220 4,325,051

CLASS 339
17 C 4,324,448
91 R 4,324,449
97 R 4,324,450
176 MP 4,324,451

CLASS 340
67 4,325,052
347 AD 4,325,054
4,325,055
347 DD 4,325,053
4,325,056
539 4,325,057
562 4,325,058
583 4,325,059
604 4,325,060
679 4,325,061
717 4,325,062
750 4,325,063
753 4,325,064
567 B1 3,703,718

CLASS 343
5 CM 4,325,065
7 ED 4,325,066
103 4,325,067
4,325,068
750 4,325,069

CLASS 346
108 4,325,070
139 C 4,325,071
140 R 4,325,072

CLASS 350
6.7 4,324,452
96.23 4,324,453
289 4,324,454
349 4,324,455
362 4,324,456
430 4,324,457
454 4,324,458

CLASS 351
32 4,324,459
36 4,324,460
160 H 4,324,461

CLASS 354
23 D 4,324,462
25 4,324,463
4,324,464
4,324,465
33 4,324,466
38 4,324,467
149 4,324,468
214 4,324,469
4,324,470
234 4,324,471
266 4,324,472
276 4,324,473
288 4,324,476
293 4,324,477
312 4,324,478
319 4,324,479
320 4,324,480
324 4,324,481

CLASS 355
3 DD 4,324,483
4,324,490
3 FU 4,324,482
5 4,324,484
8 4,324,485
14 FU 4,324,486
65 4,324,474
73 4,324,487
74 4,324,488
84 4,324,489

CLASS 356
152 4,324,491
345 4,324,492
352 4,324,475

CLASS 357
22 4,325,073
37 4,325,074

CLASS 358
13 4,325,075
31 4,325,076
107 4,325,077
117 4,325,078
120 4,325,079
127 4,325,080
4,325,081
218 4,325,082
228 4,325,083
241 4,325,084
261 4,325,085
296 4,325,086

CLASS 360
13 4,325,087
14 4,325,088
15 4,325,089
51 4,325,090
96.6 4,325,091
119 4,325,092
120 4,325,093
137 4,325,094

CLASS 361
23 4,325,095
45 4,325,096
56 4,325,097
82 4,325,098
93 4,325,099
119 4,325,100
195 4,325,101
288 4,325,102
424 4,325,103

CLASS 362
11 4,325,104
80 4,325,105
157 4,325,106
183 4,325,107
4,325,108
412 4,325,109
806 4,325,110

CLASS 363
17 4,325,111
42 4,325,112
60 4,325,113
68 4,325,114
81 4,325,115

CLASS 364
200 4,325,116
4,325,117
4,325,118
4,325,119
4,325,120
4,325,121
420 4,325,122
431.07 4,325,123
459 4,325,124
474 4,325,125
478 4,325,126
510 4,325,127
511 4,325,128
717 4,325,129
900 4,325,130

CLASS 366
79 4,324,493
136 4,324,494
271 4,324,495

CLASS 368
58 4,325,134
110 4,325,135
219 4,325,136
255 4,325,131
256 4,325,132
263 4,325,133

CLASS 370
4 4,325,137
91 4,325,147

CLASS 372
50 4,325,034
94 4,325,033

CLASS 373
39 4,324,942
72 4,324,943
105 4,324,944

CLASS 375
1 4,325,138
28 4,325,139

CLASS 376
175 4,324,614
203 4,324,616
267 4,324,615
290 4,324,619
405 4,324,617
434 4,324,618

CLASS 400
144.2 4,324,496
4,324,497
4,324,498
4,324,499
664 4,324,500

CLASS 403
104 4,324,502
133 4,324,501
197 4,324,503

CLASS 404
74 4,324,504

CLASS 405
60 4,324,505
96 4,324,506
186 4,324,507
284 4,324,508
291 4,324,510
299 4,324,509

CLASS 406
189 4,324,511

CLASS 408
240 4,324,512

CLASS 409
82 4,324,513
179 4,324,514
300 4,324,515

CLASS 411
5 4,324,516
353 4,324,517
361 4,324,518

CLASS 412
16 4,324,013

CLASS 414
28 4,324,519
42 4,324,520
4,324,521
51 4,324,522
131 4,324,523
291 4,324,524
699 4,324,525

CLASS 415
48 4,324,526
213 B 4,324,527

CLASS 416
132 B 4,324,528
187 4,324,529
228 4,324,530

CLASS 417
360 4,324,531
4,324,532
4,324,533
414 4,324,534

CLASS 418
51 4,324,535
53 4,324,536
58 4,324,537
151 4,324,538

CLASS 422
7 4,324,757
61 4,324,758
62 4,324,759
98 4,324,760
4,324,761
106 4,324,762
116 4,324,763
159 4,324,764
173 4,324,765

CLASS 423
3 4,324,766
4,324,767
92 4,324,768
121 4,324,769
242 4,324,770
283 4,324,771
309 4,324,772
311 4,324,773
321 R 4,324,774
539 4,324,775
550 4,324,776
579 4,324,777

CLASS 424
10 4,324,778
20 4,324,779
47 4,324,780
78 4,324,781
87 4,324,782
114 4,324,783
180 4,324,784
195 4,324,785
248.54 4,324,786
250 4,324,787
4,324,788
251 4,324,789
263 4,324,790
267 4,324,791
4,324,792
270 4,324,793
273 B 4,324,794
274 4,324,795
278 4,324,796
287 4,324,797
288 4,324,798
301 4,324,799
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311 4,324,801
364 4,324,802

CLASS 425
59 4,324,539
385 4,324,540
562 4,324,541

CLASS 426
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46 4,324,805
52 4,324,806
104 4,324,807
385 4,324,808
422 4,324,840
534 4,324,809
600 4,324,810
656 4,324,811

CLASS 427
8 4,324,812
44 4,324,813
86 4,324,814
96 4,324,815
128 4,324,816
150 4,324,817
174 4,324,818
283 4,324,819
213 B1 3,253,944
420 4,324,820

CLASS 428
34 4,324,821
35 4,324,822
43 4,324,823
92 4,324,824
99 4,324,825
122 4,324,826
192 4,324,827
215 4,324,829
257 4,324,830
288 4,324,831
289 4,324,832
290 4,324,833
312.6 4,324,834
336 4,324,836
375 4,324,837
402 4,324,838
412 4,324,839
457 4,324,841
472 4,324,803
614 4,324,842
697 4,324,843

CLASS 429
26 4,324,844
101 4,324,845
112 4,324,846
181 4,324,847
209 4,324,828
228 4,324,848

CLASS 430
3 4,324,849
24 4,324,850
63 4,324,622
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178 4,324,852
245 4,324,853
296 4,324,854
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566 4,324,856

CLASS 431
78 4,324,542
359 4,324,543

CLASS 432
14 4,324,544
223 4,324,545

CLASS 433
25 4,324,546
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169 4,324,549
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CLASS 434
349 B1 3,751,826

CLASS 435
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33 4,324,859
172 4,324,860
237 4,324,861

CLASS 440
28 4,324,551

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83 4,325,141
89 4,325,142
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324 4,325,144
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604 4,325,146

CLASS 474
118 4,324,552

CLASS 501
109 4,324,862

CLASS 521
44 4,324,705
54 4,324,835
85 4,324,863
100 4,324,864
107 4,324,865
140 4,324,866
159 4,324,867

CLASS 523
149 4,324,706
172 4,324,711
210 4,324,709
400 4,324,715
457 4,324,713

CLASS 524
76 4,324,710
108 4,324,718
113 4,324,714
173 4,324,707
244 4,324,717
599 4,324,708
761 4,324,716
767 4,324,712

CLASS 525
54 4,324,868
68 4,324,869
127 4,324,870
149 4,324,871
274 4,324,872
507 4,324,873

CLASS 526
84 4,324,874
115 4,324,875
124 4,324,876
127 4,324,877
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CLASS 528
45 4,324,879
80 4,324,880
173 4,324,881
206 4,324,882
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387 4,324,886

CLASS 536
53 4,324,887
122 4,324,888

CLASS 542
426 4,324,889

CLASS 544
28 4,324,892
021 4,324,890
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127 4,324,893
128 4,324,894
313 4,324,895

CLASS 546
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CLASS 548
125 4,324,897
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190 4,324,899

CLASS 549
11 4,324,900

CLASS 558
430 4,324,901

CLASS 560
53 4,324,902
82 4,324,903
102 4,324,904
121 4,324,905
176 4,324,906
185 4,324,907
210 4,324,908
246 4,324,909

CLASS 564
60 4,324,910
141 4,324,911
188 4,324,912
410 4,324,913
412 4,324,914
454 4,324,915
462 4,324,916
479 4,324,917
503 4,324,918

CLASS 568
8 4,324,919
54 4,324,920
427 4,324,921
437 4,324,922
659 4,324,923
697 4,324,924
719 4,324,925
730 4,324,926
902 4,324,927

CLASS 570
118 4,324,928
127 4,324,929
134 4,324,930
189 4,324,931
226 4,324,932

CLASS 585
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21 4,324,934
314 4,324,935
315 4,324,936
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332 4,324,938
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D4—	35	263,768
D6—	9	263,769
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	32	263,775
	71	263,770
	86	263,776
	120	263,778
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	128	263,777
	143	263,771
	146	263,774
	153	263,773
	244	263,772
D7—	62	263,783
	71	263,784
	86	263,782
	105	263,786
	107	263,785
D8—	26	263,789
	30	263,790
	74	263,787
	394	263,788
	399	263,791
		263,792
D9—	332	263,800
	353	263,807
	370	263,795
		263,806
	413	263,804
	418	263,796
	424	263,797
	426	263,798
	432	263,794
	433	263,793
	438	263,802
		263,803
	439	263,799
	450	263,805
	456	263,801
D10—	15	263,812
	73	263,809
	123	263,811
	124	263,808
	126	263,810
D11—	81	263,816
	83	263,813
	141	263,814
	157	263,817
	166	263,815
D12—	103	263,818
	181	263,819
D13—	41	263,821
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D14—	1	263,829
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	2	263,834
	02	263,825
	12	263,830
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	34	263,823
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	73	263,832
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	111	263,828
D15—	7	263,839
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	97	263,840
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	147	263,836
D16—	1	263,846
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	31	263,848
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		263,850
D17—	22	263,851
D18—	7	263,853
	24	263,852
D20—	8	263,855
	11	263,854
D21—	9	263,862
	13	263,859
	15	263,861
	87	263,856
	141	263,858
	211	263,863
	228	263,860
	253	263,857
D23—	7	263,868
	27	263,866
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	97	263,864
D24—	12	263,877
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	17	263,880
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	28	263,876
	41	263,872
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	56	263,870
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D25—	16	263,882
		263,883
		263,884
D28—	8.8	263,885
	21	263,886
D32—	23	263,842
	66	263,781
D34—	23	263,820
D92—	26	263,881
		263,887
		263,888
D99—	28	263,889

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PATENTS

01 : 4,324,216
4,324,782
04 : 4,324,067
[illegible]
4,324,229
4,324,610
4,324,987
[illegible]
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DESIGN PATENTS

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PLANT PATENTS

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April 20, 1982 | Volume 1017 | Number 3

CONTENTS

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT member countries and the most recent PCT rule changes see the notices appearing in the Official Gazette at 1001 O.G. 14 on Dec. 9, 1980 and at 1012 O.G. 20 on Nov. 17, 1981.

Note that the international fees have been increased as of Jan. 1, 1982. The current schedule of fees is as follows:

Transmittal fee	$ 35.00
Search fee	300.00
International Fees	
Basic Fee (first 30 pages)	270.00
Basic Supplemental Fee (for each sheet over 30)	6.00
Designation Fees	65.00

GERALD J. MOSSINGHOFF,
Commissioner of Patents and Trademarks.

Jan. 19, 1982.

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

3,523,610, Re. S.N. 302,739, Filed Sept. 16, 1981, Cl. 209/155, PARTICLE SEPARATOR, Edward M. Purcell, Owner of Record: *Inventor,* Attorney or Agent: Robert F. O'Connell, et al., Ex. Gp.: 177

3,769,032, Re. S.N. 337,226, Filed Jan. 6, 1982, Cl. 426/594, AROMA-ENRICHED COFFEE PRODUCTS AND PROCESS, Timothy A. Lubsen, et al., Owner of Record: *The Procter and Gamble Co., Cincinnati, Ohio,* Attorney or Agent: Rose Ann Dabek, et al., Ex. Gp.: 172

3,851,526, Re. S.N. 346,422, Filed Feb. 5, 1982, Cl. 73/202, FLUID FLOWMETER, Charles F. Drexel, Owner of Record: *Tylan Corp., Torrance, Calif.,* Attorney or Agent: Robert Berliner, et al., Ex. Gp.: 244

3,970,934, Re. S.N. 318,630, Filed Nov. 5, 1981, Cl. 324/158P, PROBE HEAD FOR TESTING PRINTED CIRCUIT BOARDS, Akin Aksu, Owner of Record: *Inventor,* Attorney or Agent: Franklin D. Ubell, Ex. Gp.: 252

4,171,561, Re. S.N. 313,273, Filed Oct. 21, 1981, Cl. 277/1, MOLDED LIP SEAL WITH POLYTETRAFLUOROETHYLENE LINER AND METHOD FOR MAKING SAME, Dean R. Bainard, et al., Owner of Record: *Garlock, Inc., Rochester, N.Y.,* Attorney or Agent: Thomas R. Boston, et al., Ex. Gp.: 241

4,184,914, Re. S.N. 347,755, Filed Feb. 10, 1982, Cl. 162/135, FOAM COATING OF PAPER EMPLOYING A HYDROLYZED PROTEIN FOAMING AGENT, Byron Jenkins, Owner of Record: *Star Paper Ltd., Feniscowles, Blackburn, Lancashire, England,* Attorney or Agent: Lawrence Rosen, Ex. Gp.: 173

4,187,148, Re. S.N. 345,690, Filed Feb. 4, 1982, Cl. 48/197R, PROCEDURE FOR SEPARATING AND RECOVERING MARSH GAS, Veli E. Reijonen, Owner of Record: *Vyr-Metoder AB, Taby, Sweden,* Attorney or Agent: Richard S. Faust, Ex. Gp.: 173

4,187,721, Re. S.N. 348,071, Filed Feb. 11, 1982, Cl. 73/861.32, METHOD AND STRUCTURE FOR FLOW MEASUREMENT, James E. Smith, Owner of Record: *Robert Harvey French, Samuel K. Johnson, James E. Smith, David H. Stainton, Boulder, Colo., Kurt O. Plache, Indian Head Park, Ill.,* Attorney or Agent: Mary Helen Sears, et al., Ex. Gp.: 244

4,214,485, Re. S.N. 345,755, Filed Feb. 4, 1982, Cl. 73/655, ELECTRO-MECHANICAL TRANSDUCER, Paul J. Berger, et al., Owner of Record: *Paul J. Berger, Kalispell, Mont.,* Attorney or Agent: Cushman, Darby & Cushman, Ex. Gp.: 244

4,234,417, Re. S.N. 338,279, Filed Jan. 11, 1982, Cl. 209/306, FIBROUS STOCK SCREEN, W. Thomas Gauld, et al., Owner of Record: *Inventors,* Attorney or Agent: John Walker, et al., Ex. Gp.: 177

4,239,243, Re. S.N. 345,735, Filed Feb. 4, 1982, Cl. 277/153, MOLDED LIP SEAL WITH POLYTETRAFLUOROETHYLENE LINER AND METHOD FOR MAKING SAME, Dean R. Bainard, et al., Owner of Record: *Garlock, Inc., Longview, Tex.,* Attorney or Agent: Thomas R. Boston, Ex. Gp.: 241

4,249,896, Re. S.N. 317,698, Filed Nov. 2, 1981, Cl. 433/126, COMPLIANTLY MOUNTABLE TURBINE CARTRIDGE ASSEMBLY FOR GAS-DRIVEN DENTAL HANDPIECE, Frank W. Kerfoot, Jr., Owner of Record: *Syntex (U.S.A.), Inc., Palo Alto, Calif.,* Attorney or Agent: John A. Dhuey, et al., Ex. Gp.: 333

4,262,222, Re. S.N. 337,217, Filed Jan. 6, 1982, Cl. 307/608, INTERRUPTABLE SIGNAL GENERATOR, Merlin D. Bjorke, Owner of Record: *Honeywell, Inc., Minneapolis, Minn.,* Attorney or Agent: John R. Sumner, et al., Ex. Gp.: 254

4,270,422, Re. S.N. 337,266, Filed Jan. 5, 1982, Cl. 82/36, CUTTING TOOL, Ken G. E. Andersson, Owner of Record: *Sandvik Aktiebolag, Sandviken, Sweden,* Attorney or Agent: Ronald Grudziecki, et al., Ex. Gp.: 324

4,275,343, Re. S.N. 337,139, Filed Jan. 5, 1982, Cl. 318/721, BACK EMF CONTROLLED PERMANENT MAGNET MOTOR, Donald E. Fulton, et al., Owner of Record: *Inventors,* Attorney or Agent: Joseph Weingarten, et al., Ex. Gp.: 217

4,284,322, Re. S.N. 325,474, Filed Nov. 27, 1981, Cl. 339/223.002, IGNITION CABLE TERMINAL CONSTRUCTION, James M. Keller, Owner of Record: *Eltra Corp., Toledo, Ohio,* Attorney or Agent: L. J. Flury, Ex. Gp.: 322

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b).

3,473,430, Reexam. No. 90/000,176, Requested: Mar. 22, 1982, Cl. 411/472, SEALING CLAMP, Herbert Niedecker, Owner of Record: *Inventor,* Attorney or Agent: Arnold Sprung, et al., Ex. Gp.: 355, Requester: S. Blondheim & Co., Inc., Oakland, Calif.

PATENT NOTICES

Certificates of Correction for the Week of April 20, 1982,

4,179,157	4,280,668	4,300,401	4,310,100
4,195,323	4,282,001	4,300,541	4,310,897
4,228,496	4,282,457	4,301,329	4,310,960
4,244,291	4,287,036	4,301,873	4,310,963
4,245,076	4,287,862	4,302,362	4,311,121
4,252,232	4,288,335	4,302,445	4,311,135
4,256,646	4,288,356	4,302,971	4,311,586
4,260,634	4,288,395	4,303,303	4,311,780
4,264,695	4,290,744	4,303,935	4,311,849
4,265,310	4,290,794	4,304,431	4,312,277
4,265,588	4,292,280	4,304,439	4,312,450
4,267,596	4,293,431	4,304,601	4,312,570
4,268,452	4,293,915	4,305,265	4,312,611
4,269,741	4,294,411	4,305,992	4,312,770
4,270,283	4,295,587	4,306,673	4,312,974
4,271,134	4,296,159	4,306,984	4,313,043
4,271,289	4,296,241	4,306,993	4,313,083
4,271,713	4,296,280	4,307,045	4,313,162
4,272,926	4,296,337	4,307,099	4,313,442
4,273,035	4,296,780	4,307,327	4,313,917
4,273,065	4,297,909	4,307,670	4,313,959
4,273,159	4,298,498	4,307,818	4,314,417
4,273,685	4,298,638	4,308,371	4,314,517
4,275,071	4,298,936	4,308,668	4,314,967
4,275,118	4,299,255	4,308,906	4,315,170
4,275,277	4,299,604	4,309,486	4,315,222
4,276,228	4,299,831	4,309,715	4,315,788
4,276,779	4,299,872	4,309,717	4,316,069
4,278,781	4,299,900	4,309,786	4,317,076
4,279,792	4,299,985	4,309,922	4,317,184

Disclaimers

3,546,355.—*Fred B. Maynard,* Phoenix, Ariz. AUTOMATIC TONE GENERATING SYSTEM FOR AN ELECTRONIC ORGAN. Patent dated Dec. 8, 1970. Disclaimer filed Feb. 2, 1981, by the assignee, *Motorola, Inc.*

Hereby enters this disclaimer to claim 5 of said patent.

4,059,215.—*Alfred B. Owen* and *Bruce M. Gifford,* Houston, Tex. CIRCULAR DOUBLE-JACKETED GASKET WITH SINGLE JOINT. Patent dated Nov. 22, 1977. Disclaimer filed Mar. 15, 1982, by the assignee, *Lamons Metal Gasket Co.*

Hereby enters this disclaimer to claims 21 and 22 of said patent.

4,097,594.—*Clinton Joseph Peake* and *Wayne Nelson Harnish,* Medina, and *Bruce Lloyd Davidson,* Middleport, N.Y. MONO-5-SUBSTITUTED-3-CHLORO-4H-1,2,6-THIADIAZIN-4-ONE ANTIFUNGAL AGENTS. Patent dated June 27, 1978. Disclaimer filed Jan. 27, 1982, by the assignee, *FMC Corp.*

Hereby enters this disclaimer to claim 5 of said patent.

4,100,281.—*Clinton Joseph Peake* and *Wayne Nelson Harnish,* Medina, and *Bruce Lloyd Davidson,* Middleport, N.Y. MONO-5-SUBSTITUTED-THIO-3-CHLORO-4H-1,2,6-THIADIAZIN-4-ONE ANTIFUNGAL AGENTS. Patent dated July 11, 1978. Disclaimer filed Jan. 13, 1982, by the assignee, *FMC Corp.*

Hereby enters this disclaimer to claim 1 of said patent.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

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Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
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Minnesota	Minneapolis Public Library & Information Center	(612) 372-6552
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214, 215
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7814
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 930-0850
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
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	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1321**
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 226
South Carolina	Charleston: Medical University of South Carolina	(803) 792-2372
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	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
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Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

*Collection organized by subject matter.

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PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF March 6, 1982

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director	6-23-80
Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director	1-04-80
Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director	3-04-81
Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthdontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director	3-02-81
Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director	12-08-80
Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—S. W. ENGLE, Director	6-18-80
Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	
SPECIAL LAWS ADMINISTRATION, GROUP 220—KENNETH L. CAGE, Director	7-09-80
Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy, Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	
INFORMATION TRANSMISSION, STORAGE, AND RETRIEVAL, GROUP 230—EARL LEVY, Director	4-17-80
Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240—G. M. FORLENZA, Director	2-26-79
Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling; Shaft; Impellers; Rotary Fluid Motors.	
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director	11-26-79
Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	
DESIGN, GROUP 290—KENNETH L. CAGE, Director	5-05-80
Industrial Arts; Household, Personal and Fine Arts.	
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director	6-30-80
Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—M. M. NEWMAN, Director	7-14-80
Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. AEGERTER, Director	5-06-80
Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director	12-11-79
Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—A. L. SMITH, Director	6-02-80
Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Miscellaneous Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	

Expiration of patents: The patents within the range of numbers indicated below expire during March 1982, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents . . . . . . Numbers 3,171,131 to 3,176,313, inclusive

Plant Patents . . . . . . Numbers 2,486 to 2,489 inclusive

REISSUES

APRIL 20, 1982

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 30,905
MULTI-SECTION TELESCOPIC BOOM

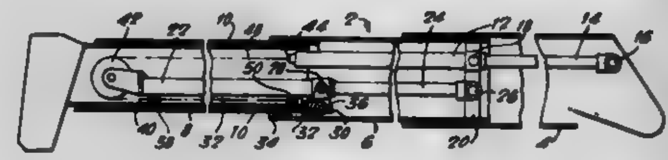
Robert J. Lester, Sunderland, and Raymond Murta, West Boldon, both of England, assignors to Coles Crane Ltd., Sunderland, England

Original No. 4,156,331, dated May 29, 1979, Ser. No. 850,129, Nov. 10, 1977. Application for reissue Jun. 23, 1980, Ser. No. 161,791

Claims priority, application United Kingdom, Nov. 11, 1976, 47015/76

Int. Cl.³ E04H *12/34*

U.S. Cl. 52—115 **9 Claims**



1. A multi-section telescopic boom comprising: a base section; first and second inner sections telescopically received within the base section; a third outermost section telescopically received within the [third] *second* section; a first ram having a first end connected to the base section and a second end connected to the first section for telescopically moving the first section relative to the base section; a second ram connected to the first section and to the second section for telescopically moving the second section relative to the first section; elongate, tension applying means having [first and second] *its* ends connected with the first section [and the second section], the tension applying means including an intermediate portion of a sufficient length so as to extend at least partially over the length of the third section; pulley means connected with the second section[, located within the longitudinal extent of the third section] and engaging [the intermediate portion of] the tension applying means so as to maintain the tension applying means taut; and coupling means connected with the tension applying means and the third section for releasably securing to the third section a part of the tension applying means; whereby extension *or retraction* of the second ram with the coupling means released causes no extension *or retraction* of the third section relative to the second section, and extension *or retraction* of the second ram with the coupling means engaged causes an extension *or retraction* of the third section relative to the second section.

Re. 30,906
ENVELOPE GENERATOR

Teruo Hiyoshi; Akira Nakada, both of Hamamatsu; Tsutomu Suzuki, Shizuoka; Eiichiro Aoki, Hamamatsu, and Eiichi Yamaga, Tokyo, all of Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Original No. 4,178,826, dated Dec. 18, 1979, Ser. No. 839,912, Oct. 6, 1977. Application for reissue May 30, 1980, Ser. No. 154,992

Claims priority, application Japan, Oct. 8, 1976, 51-120936

Int. Cl.³ G10H *1/02*

U.S. Cl. 84—1.26 **16 Claims**

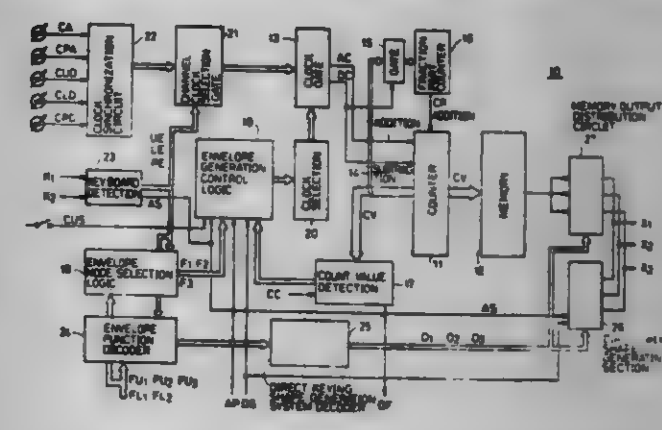
10. An envelope generator used in a keyboard electronic musical instrument for selectively generating an envelope waveshape signal which is used to impart a characteristic varying with time to a musical tone produced by said instrument, comprising:

switch responsive means for producing a binary coded envelope selection signal indicative of a selected one of plural envelope waveshapes available for production by said envelope generator,

envelope mode selection logic for providing one subset of a set of envelope mode selecting signals in response to said binary coded envelope selection signal,

register means for storing envelope waveshape data corresponding to the current value of said envelope waveshape signal which establishes said time varying characteristic of the musical tone,

arithmetic means, receiving waveshape variation data, for arithmetically combining the waveshape variation data with at least a pair of said envelope waveshape data stored in said register means, the resultant new envelope waveshape data being stored in said register means in place of the data previ-



ously stored therein, said arithmetic means performing designatable arithmetic operations,

control logic means for programmatically controlling operations of said arithmetic means and producing said waveshape variation data in response to the depression and release of a keyboard key and to the provided subset of envelope mode selecting signals, said provided subset of envelope mode selecting signals at least designating the certain arithmetic operations of said arithmetic means required to obtain said selected one envelope waveshape, and

feedback means for feeding back at least a part of the stored envelope waveshape data of said register means to said control logic means so that the production of said waveshape variation data is modified thereby.

Re. 30,907
COOLING DEVICE FOR SEWING MACHINES

Hermann Gauch, Moglingen, and Dieter Schopf, Gerlingen, both of Fed. Rep. of Germany, assignors to Union Special G.m.b.H., Stuttgart, Fed. Rep. of Germany

Original No. 4,062,310, dated Dec. 13, 1977, Ser. No. 709,476, Jul. 28, 1976. Application for reissue Nov. 15, 1979, Ser. No. 94,517

Claims priority, application Fed. Rep. of Germany, Aug. 2, 1975, 2534568; Jun. 6, 1976, 2627015

Int. Cl.³ D05B *71/00*

U.S. Cl. 112—280 **8 Claims**

1. A cooling device for sewing machines having stitch forming instrumentalities defining a stitch forming area and a frame having a machine chamber means, said cooling device comprising:

a main drive shaft means mounted in said frame longitudinally thereof;

a drive pulley means mounted on said drive shaft means, including fan means formed as an integral part thereof;

handwheel means [surrounding said fan means and] fixedly secured [thereto] *to said fan means,* said handwheel means having [an] *a tubular* inlet [port] *passage opening*

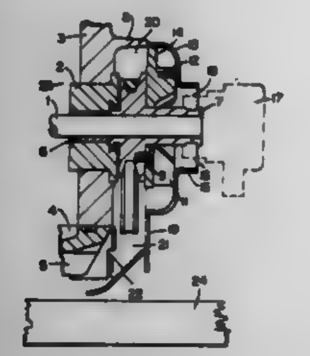
to said fan means and centrally arranged so that air drawn through said inlet passage by said fan means is directed toward and propelled radially outwardly from the central area of said fan means;

shroud means secured to said frame [,] and associating with said frame and said handwheel means whereby forming an air chamber means; and

means for directing air discharged from said air chamber means along the bottom of said machine.

7. A cooling device for sewing machines having a frame including a machine chamber means, said cooling device comprising:

a drive shaft means mounted in bearing means on said frame longitudinally thereof;



a combined handwheel and drive pulley means carried by said drive shaft means and having [at least one] *centrally arranged air* inlet [port] means;

a belt guard means secured to said frame about said handwheel and drive pulley means and having shroud means secured thereto whereby forming an air chamber means;

a fan means formed as an integral part of said handwheel and drive pulley means, said fan means being disposed in said air chamber means; and

said shroud means includes baffle means for directing air discharged from said air chamber means along the bottom of said machine.

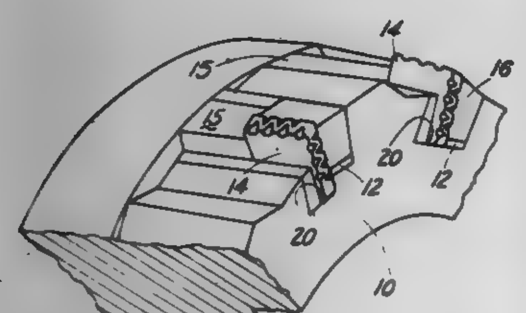
Re. 30,908
CUTTING INSERT

Ernest J. Friedline, and Donald W. Warren, both of Latrobe, Pa., assignors to Kennametal Inc., Latrobe, Pa.

Original No. 2,201,979, Ser. No. 852,711, Nov. 18, 1977. Application for reissue Feb. 4, 1981, Ser. No. 231,426

Int. Cl.³ B26D *1/00*

U.S. Cl. 407—114 **9 Claims**



1. A cutting insert comprising: a body of hard wear resistant material having spaced substantially parallel faces that are polygonal when viewed in plan; a peripheral wall extending between said faces; cutting edge means comprising at least two cutting edges*; each cutting edge* formed at the juncture of said peripheral wall and [at least] one of said faces, said peripheral wall having recesses formed therein interrupting said cutting edge means; said recesses interrupting one cutting edge of said insert being staggered relative to the recesses interrupting the other cutting edge of the insert when said cutting edges are viewed in superposed relation; the depth of said recesses in said peripheral wall decreasing as the recess extends away from said cutting edge means; and said two cutting edges formed one on each face along the same side of said insert.

Re. 30,909
SILOXANE-TIN COATINGS AND THEIR USE FOR PROTECTING MATERIALS FROM GROWTH OF PESTIFEROUS ORGANISMS

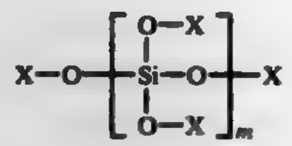
Gabriel H. Law, Whittier, and Albert P. Gysegem, Monrovia, both of Calif., assignors to Ameron, Inc., Monterey Park, Calif.

Original No. 4,080,190, dated Mar. 21, 1978, Ser. No. 718,149, Aug. 26, 1976. Application for reissue Feb. 15, 1980, Ser. No. 121,725

Int. Cl.³ A01N *9/00;* **C07F** *7/22;* **C08G** *77/04*

U.S. Cl. 71—67 **50 Claims**

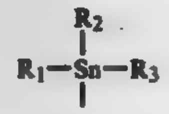
6. A siloxane for forming a binder for an antifouling marine coating, wherein the siloxane has the formula:



where m is from about 1 to about 10,

where each X is independently selected from the group consisting of alkyl and alkoxyalkyl radicals containing less than 6 carbon atoms and Y,

where Y has the formula:



where R_1, R_2, and R_3 are independently selected from the group consisting of alkyl and cycloalkyl radicals, where R_1, R_2 and R_3 contain in combination up to 18 carbon atoms, and

where the X's are selected so the ratio of tin atoms to silicon atoms in the siloxane is from about 1:50 to about 2:5.

Re. 30,910
REDUCING CHOLESTEROL LEVELS

Alan H. Weigand, Fort Lee, N.J., assignor to Intellectual Property Development Corporation, New Rochelle, N.Y.

Original No. 3,859,437, dated Jan. 7, 1975, Ser. No. 346,751, Apr. 2, 1973. Continuation of Ser. No. 867,322, Jan. 5, 1978, which is a continuation-in-part of Ser. No. 259,062, Jun. 2, 1972, abandoned, which is a continuation-in-part of Ser. No. 126,296, Mar. 19, 1971, abandoned. Application for reissue Jan. 31, 1980, Ser. No. 117,239

Int. Cl.³ A01N *45/00*

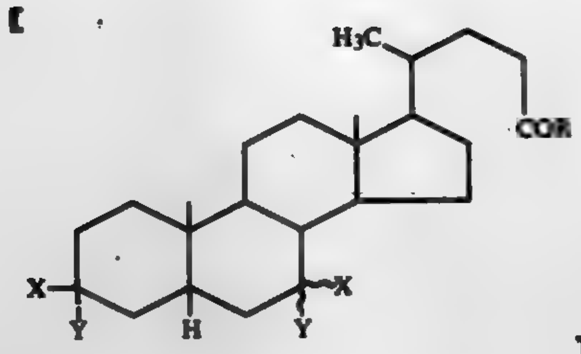
U.S. Cl. 424—238 **8 Claims**

[1. The method of reducing lipid levels of human beings, which comprises;

a. orally administering over an extended period of time, to a human being in a hyperlipidemic state;

b. a small but effective amount sufficient to effect a reduction of the lipid levels of said human being, of a compound of the formula:]

[



]

[wherein

R is OH, $NHCH_2COOH$, or $NHCH_2CH_2SO_3H$;

each X is hydrogen;

each Y is hydroxy, or acyloxy; and X and Y when taken together is oxo (O═);

and the non-toxic, pharmaceutically acceptable salts thereof.]

Re. 30,911
OPTICAL SCANNING AND ENCODING DEVICE

James E. Burnett, Xenia, Ohio, assignor to The Mead Corporation, Dayton, Ohio

Original No. 4,151,555, dated Apr. 24, 1979, Ser. No. 854,803, Nov. 25, 1977. Application for reissue Dec. 20, 1979, Ser. No. 106,073

Int. Cl.³ H04N *1/46, 9/02*

U.S. Cl. 358—75 **13 Claims**

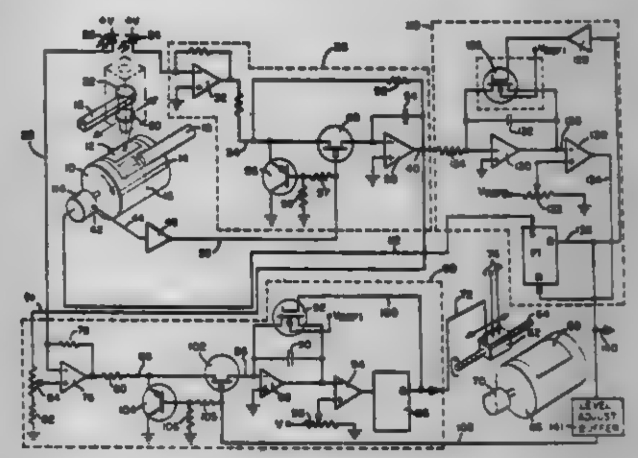
12. An optical scanning and encoding device for providing a print signal pulse train to an ink jet printer in which a master image, including a reference image area, is scanned along a scan line and said print signal pulse train is generated at a frequency proportional to the density of said master image, comprising:

optical scanner means for scanning the master image along a scan line and for providing an image density signal related to the density of the master image along the scan line,

reference level means for receiving light from said reference image area and for providing a reference level signal,

level shifter means, responsive to said image density signal and to said reference level signal, for providing an adjusted image density signal, and

integrator means, responsive to said adjusted image density signal and to said reference level signal, for repetitively integrating said adjusted image density signal and providing a pulse in said print signal pulse train each time said adjusted image density signal is integrated to a predetermined level, said integrator means further including means, responsive to said reference level signal for adjusting the time required for said integrator to integrate to said predetermined level, whereby the frequency of said print signal pulse train is adjusted to compensate for fluctuations in light reflected from said reference image area.



PLANT PATENTS

GRANTED APRIL 20, 1982

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,839
SPUR-TYPE RED DELICIOUS APPLE TREE
William G. Evans, and Don R. Snipes, both of Yakima, Wash., assignors to Van Well Nursery, Inc., Wenatchee, Wash.
Filed May 9, 1980, Ser. No. 148,249
Int. Cl.³ A01H *5/00*
U.S. Cl. Plt.—35 **1 Claim**

1. A new and distinct variety of spur-type Red Delicious tree, substantially as described and illustrated, with the productivity and growth characteristics of its parent Oregon Spur and with fruit and stem coloring with blush red formation nearest resembling the color of Early Red One, U.S. Plant Pat. No. 3,556, but approximately 15 days ahead of the initiation of coloration and ahead of the attainment of full coloration of Early Red One.

4,840
ROSE PLANT
F. Harmon Saville, Rowley, Mass., assignor to Nor'East Miniature Roses, Inc., Rowley, Mass.
Filed Sep. 22, 1980, Ser. No. 189,171
Int. Cl.³ A01H *5/00*
U.S. Cl. Plt.—10 **1 Claim**

1. A new and distinct variety of rose plant of the miniature class, substantially as shown and described, characterized particularly by brilliant red, high centered blooms borne primarily singly to a stem on an upright, vigorous plant.

PATENTS

GRANTED APR. 20, 1982

ERRATA

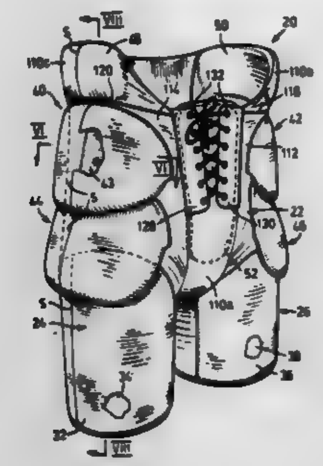
For CLASS	See PATENT NO.
524–083	4,325,851
523-334	4,325,852
524–458	4,325,856
523–412	4,325,857
524–524	4,325,858
524–096	4,325,859
524–155	4,325,860
524–087	4,325,862
524–111	4,325,863
524–104	4,325,864
523–205	4,325,865
373–101	4,326,093
372–061	4,326,178
364–900	4,326,207

PATENTS

GRANTED APRIL 20, 1982

GENERAL AND MECHANICAL

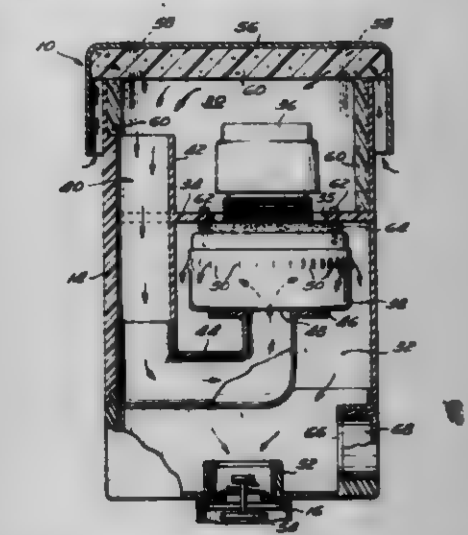
4,325,148
UNIFORMS FOR ICE HOCKEY PLAYERS
John Livernois, St. Jean, Canada, assignor to Canada Cycle and Motor Company Limited, Weston, Canada
Filed May 30, 1980, Ser. No. 155,045
Claims priority, application Canada, Apr. 23, 1980, 350445
Int. Cl.^{3} A41D *13/00*
U.S. Cl. 2—2 **10 Claims**



1. An inner protective garment for an ice hockey player, comprising a one-piece shell including a body portion of generally tubular shape dimensioned to fit closely around the lower part of a wearer's torso including the hips, and a pair of tubular leg portions extending outwardly from the body portion over a distance sufficient to at least substantially completely enclose the wearer's thighs, said shell being provided with a plurality of pockets capable of receiving protective pads and including at least one pocket in a rear central area of said body portion intended to receive a tail-bone protector pad and at least one pocket in each of the leg portions of the shell, said leg pockets extending over substantially the entire length of and encircling substantially the entire circumference of the leg portions including at least the sides of said portions, the garment further including at least one flap-like pouch secured to each side of said shell, said pouches being shaped and arranged to cover the hips of a wearer and forming pockets for receiving protective hip pads and each said pouch including a lower portion which is free of attachment to the shell so as to permit relative movement of the underlying parts of said shell and allow a wearer reasonable freedom of bending movement at the hips.

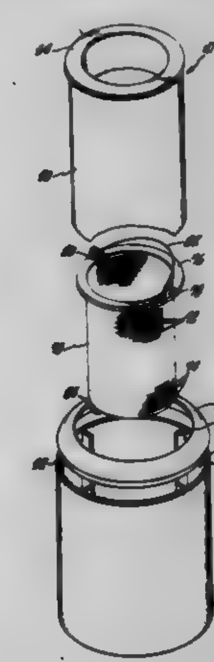
4,325,149
AIR SUPPLY SYSTEM FOR SPAS
Gerald W. Moreland, Garden Grove, Calif., assignor to Hydro Air Industries, Inc., Orange, Calif.
Filed Jun. 5, 1980, Ser. No. 156,668
Int. Cl.^{3} A61H *9/00;* E04H *3/20;* A47K *3/10;* F04D *29/40*
U.S. Cl. 4—488 **13 Claims**

1. Apparatus for supplying air, under pressure, to aerate water in a spa, comprising:
a housing, comprising:
an air pressure chamber;
a motor chamber; and
a moistureproof partition separating said motor chamber from said air pressure chamber to prohibit moisture from passing directly from said air pressure chamber to said motor chamber;
a blower mounted in said air pressure chamber, said blower comprising a fan enclosed within a blower housing, said blower housing communicating with said air pressure chamber only through flow constricting orifices to supply air under pressure thereto, the inlet of said blower located in said air pressure chamber;
an air inlet duct, connected to supply air to said blower inlet from a location outside of said housing, said air inlet duct communicating with said air pressure chamber solely through said blower inlet and said blower, and sealed from said air pressure chamber to prevent water in said air pressure chamber from entering said air inlet duct without passing through said blower housing



an air outlet duct, connecting said air pressure chamber to said spa;
a motor mounted in said motor chamber;
means for connecting said motor to drive said blower, said connecting means passing through an aperture in said partition; and
means for sealing said air pressure chamber from said motor chamber at said aperture.

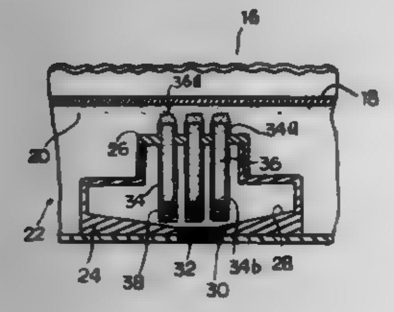
4,325,150
POOL SURFACE SKIMMING APPARATUS
H. E. Buddy, 3311 Bounty Cir., Huntington Beach, Calif. 92649
Filed Sep. 22, 1980, Ser. No. 189,680
Int. Cl.^{3} E04H *3/20*
U.S. Cl. 4—490 **9 Claims**



1. A pool cleaning apparatus for removing the top layers of water in a swimming pool or the like, the apparatus comprising,
a body member,

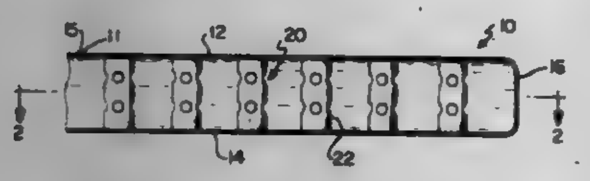
a means for attaching said body member to said swimming pool,
a means for creating a suction within said body member, said creating means attached to said body member,
a second body member engageable with said body member, said second body member having an upper ring integral therewith,
a flotation means, said flotation means integral with said second body element,
a filter means disposed within said body member and said second body member whereby fluid passing through said second body member passes through said filter means prior to existing said body member.

4,325,151
COOLING PILLOW WITH HEAT DISSIPATOR
An C. Wu, FL. 4-1, No. 58, Hsin-Yi Rd., Section 4, Taipei, Taiwan
Filed Mar. 12, 1980, Ser. No. 129,809
Int. Cl.³ A47G *9/00*
U.S. Cl. 5—441 **6 Claims**



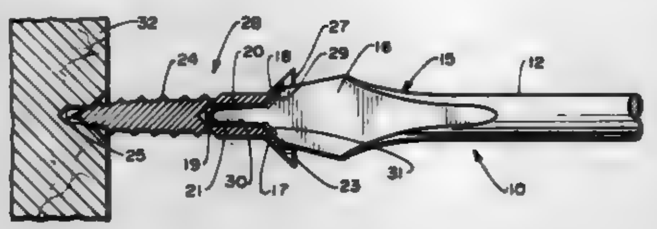
1. A cooling pillow with heat dissipator essentially including an upper cushion in the form of an elastic envelope and lower heat dissipator, said heat dissipator comprising a metal plate of good thermal conductivity, an absorbent fabric lamina in contact with and beneath said plate, a cooling means communicating with said absorbent fabric including a water tank and a cover therefor and a plurality of open-endedtubes containing absorbent material, said tubes extending above, through, and below said cover, the top of the absorbent material in said tubes being in contact with said absorbent fabric which contacts said plate and the lower ends of said tubes extending into said water tank.

4,325,152
FLOTATION MATTRESS
Michael Carpenter, 227 Easton S., Laurel, Md. 20810
Filed Feb. 28, 1979, Ser. No. 16,175
Int. Cl.³ A47C *27/08*
U.S. Cl. 5—451 **19 Claims**



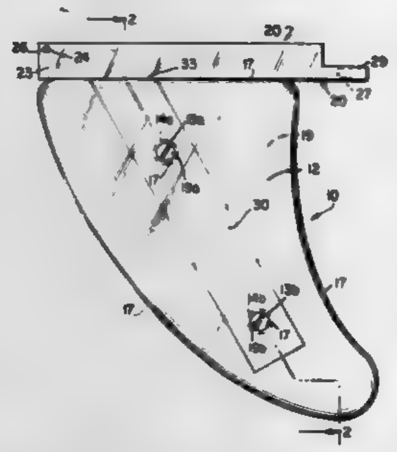
1. A flotation mattress comprised of flexible sheet material which forms a liquid-impermeable envelope having two opposing interior surfaces, a plurality of flexible damping chambers disposed within said envelope, said chambers having at least one opening to provide liquid communication between the liquid within the interior portion of said chambers and the liquid in said envelope surounding said chambers; each said chamber being comprised of a wall portion and upper and lower end portions, only one said end portion being fixedly attached to one of said opposing interior surfaces of said envelope and the other said end portion being substantially free to move relative to the other opposing interior surface of said envelope.

4,325,153
COMBINED SCREWDRIVER AND BORING APPARATUS
Charles Flanegan, 9582 Fairview Dr., Orangevale, Calif. 95662
Filed Oct. 22, 1979, Ser. No. 86,939
Int. Cl.³ B25F *1/00;* B25B *15/02*
U.S. Cl. 7—165 **5 Claims**



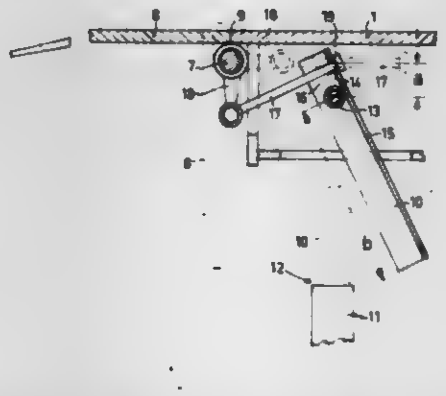
1. An apparatus for performing a hole in wood or the like, holding a screw prior to screwing the same into a substrate and screwing the screw into the substrate comprising:
a tool having a handle, an elongated shank extending from the handle, and a screw-engaging tip at the terminal end of said shank, said tip having oppositely disposed generally flat sides and a pair of oppositely disposed downwardly extending tapered cutting surfaces terminating in an elongated point; and,
a screw having a threaded shank and a tapered head, said head having a driver receiving slot therein, said slot having a first and a second portion, said slot's first portion being a downwardly extending elongated slot, and the second portion commencing at a point inwardly spaced from each end of said first portion and being a downwardly tapered slot conforming to the taper of the head, and communicating with said first portion,
said first portion having a pair of spaced opposed generally flat sidewalls forming said slot, the distance between said sidewalls being generally the same as the width of said flat sides so that said tip is insertable into said screw receiving slot in a manner providing a friction fit therebetween,
said screw shank having a generally centerally located downwardly extending bore communicating with said slot's second portion for receiving said point therein.

4,325,154
SURFBOARD FIN
William E. Collum, Jr., Millstone Dr., Southampton, N.Y. 11968
Filed Mar. 31, 1980, Ser. No. 135,500
Int. Cl.³ A63C *15/05*
U.S. Cl. 441—74 **11 Claims**



1. A surfboard fin consisting of a body formed of molded plastic being formed as a hollow cavity so as to be buoyant, and means connected to the body to join said body to a surfboard; said plastic extending outwardly from said means so as to provide an outwardly extending external contour and fin profile so as to reduce drag on said fin while imparting buoyancy to the surfboard, said outwardly extending plastic being formed with a pair of facingly disposed shoulders disposed on opposite sides of said means, and opposed side members curving downwardly from said shoulders to form said external contour and fin profile.

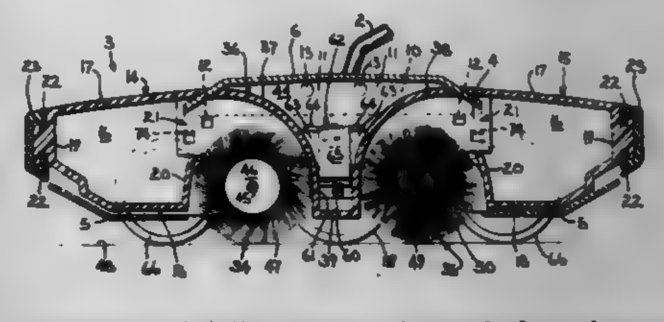
4,325,155
DOCK LEVELER
Kurt Alten, Ringstr. 14, 3015 Wennigsen, Fed. Rep. of Germany
Filed Apr. 14, 1980, Ser. No. 140,412
Claims priority, application Fed. Rep. of Germany, Apr. 12, 1979, 2914963
Int. Cl.³ E01D *1/00*
U.S. Cl. 14—71.1 **19 Claims**



1. A dock leveler for use with a ramp or dock having a ramp recess provided with an abutment support, said dock leveler comprising in combination:
a bridge plate pivotally journalled at its rear end on said ramp about a horizontal axis;
an extension pivotally connected to the front end of said bridge plate, said extension being pivoted downwardly in the rest position of said dock leveler, and being pivoted into the plane of said bridge plate in the working position of said dock leveler, said extension serving for exclusive support of said bridge plate upon a vehicle which is to be loaded or unloaded;
a pendulum-like support having a pivot shaft for pivotally connecting it near the front end of said bridge plate, said support providing support for said bridge plate upon said abutment support when dock leveler is not being used, i.e., is in the rest position;
a lever connected to said extension for pivoting therewith, said support maintaining a pivot position, for introducing said bridge plate into said ramp recess, by means of said lever, said support, in such pivot position being unable to correspond or align with said abutment support;
an extension prolongation of said support located beyond said pivot shaft on that end of said support remote from said abutment support; and
a pull rod pivotally connected to said lever, said pull rod engaging behind said extension prolongation whereby holding of said support by said pull rod exists until the pull rod releases said support by shifting of the pull rod in a direction toward the bridge rear end to increase reaction speed of said support during downward pivoting of said extension.

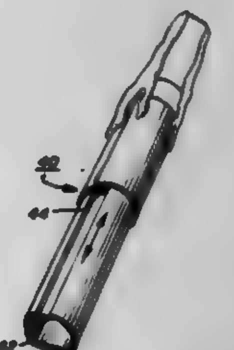
4,325,156
FLOOR SWEEPER WITH IMPROVED CONSTRUCTION
Henry J. Rosendall, Grand Rapids, Mich., assignor to Bissell, Inc., Grand Rapids, Mich.
Filed Dec. 4, 1980, Ser. No. 212,857
Int. Cl.³ A47L *11/33*
U.S. Cl. 15—41 R **21 Claims**

1. In a floor sweeper having a handle and a bail attached to said handle, a lower sweeping unit attached to said bail and comprising:
(a) a frame having transversely spaced longitudinally extending end plates,
(b) dust pans disposed at the front and rear end portions of said frame,
(c) front and rear transversely extending uni-directionally



rotatable brush rollers disposed inwardly from the respective front and rear dust pans,
(d) means to rotatably drive said brush rollers,
(e) and transversely extending deflector means disposed centrally between and serving both said front and rear brush rollers to assist said rollers in carrying debris up from the floor and hence longitudinally outwardly into the respective dust pans.

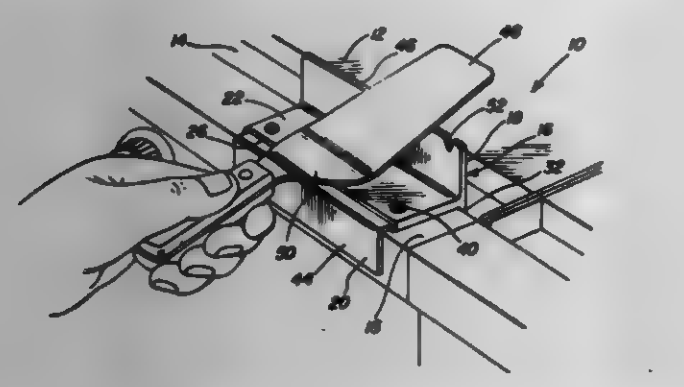
4,325,157
EXTENSION HANDLE
Peter Balint, Milwaukee, and Fredrick B. Burns, South Milwaukee, both of Wis., assignors to E Z Painter Corporation, Milwaukee, Wis.
Continuation of Ser. No. 65,069, Aug. 9, 1979, abandoned. This application Mar. 20, 1981, Ser. No. 245,910
Int. Cl.³ B25G *1/04*
U.S. Cl. 15—144 B **1 Claim**



1. A paint applying tool capable of easy telescoping extension, less prone to binding due to dried paint drippings, comprising:
a paint applicator having a mounting bracket and a paint applying pad connected to said bracket;
a handle having at least two tubular sections which telescope one within the other, one tubular section having a larger diameter than the other, said larger diameter tubular section being releasably connected to said bracket on one end thereof, and having a series of aligned holes spaced along its length, said smaller diameter tubular section having an aperture near its end which is telescoped within said larger diameter tube and a spring biased detent extending through said aperture in said smaller diameter tubular section for selective engagement with any one of the aligned holes in said larger tubular section; and
alignment means located on each of said tubular sections to prevent rotation relative to one another, said means including a groove extending substantially along the length of one of said tubular sections and a mating tongue extending substantially along the length of the other of said tubular sections, said tongue being slidable in said groove to permit telescopic movement of said tubular sections,

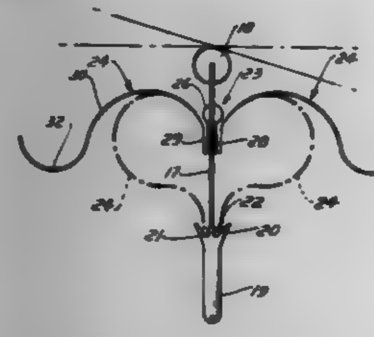
said alignment means on said larger tube section being located within the interior of said larger tube section.

4,325,158
SPATULA SCRAPER ATTACHMENT FOR COOKING GRILLE
Dale J. Divish, M.M.M. Sonesta St. L101, Umatilla, Oreg. 97882, and Harvey W. Driggs, 990 W. Juniper, Apt. #33, Hermiston, Oreg. 97838
Filed Nov. 28, 1980, Ser. No. 211,058
Int. Cl.³ A47L *17/00*
U.S. Cl. 15—236 R 6 Claims



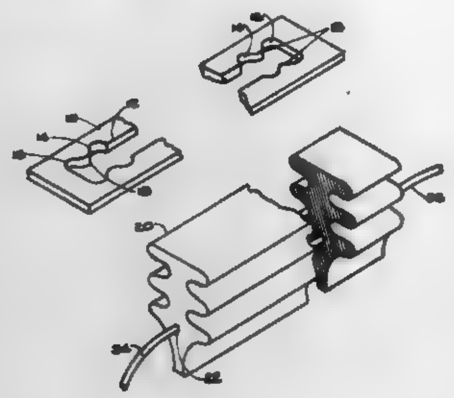
1. A spatula scraper attachment for a cooking grille, said attachment including an adjustable width inverted channel member including depending inner and outer side longitudinal flanges interconnected along their upper longitudinal marginal edge portions by a bight portion extending and secured therebetween, said channel members being positionable over the front transverse curb of a cooking grille with the opposing inner surfaces of said flanges opposing the front and rear sides of said curb and the latter frictionally gripped between said flanges, the inner longitudinal side of said channel member including an upwardly extending longitudinal scraping flange projecting upwardly above said bight portion and extending therealong, said scraping flange including an upper edge having a horizontally straight portion over which the under and upper surfaces of a spatula may be frictionally scraped in order to scrape food clinging to the spatula therefrom.

4,325,159
PAINT DRIP CATCHER
Laureano P. Rico, 29 Crimson Ave., Malverne, N.Y. 11565
Filed May 1, 1980, Ser. No. 139,277
Int. Cl.³ B05C *21/00*
U.S. Cl. 15—248 A 8 Claims



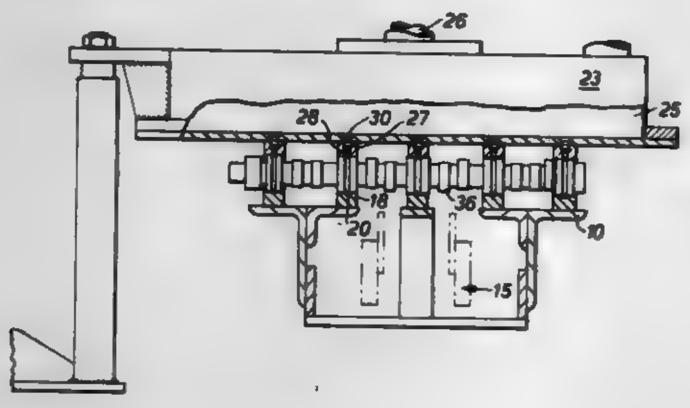
1. A paint applicator roller shield device comprising a pair of wing members formed of resilient flexible sheet material and being movable between oppositely laterally projecting extended positions and rearwardly extending contracted positions and in their normal unstressed condition being in said extended positions and in their contracted positions being rearwardly deformed, means releasably engaging the outer border of said wing members in their rearwardly contracted positions for releasably retaining said wing member in said contracted positions and means for separably attaching said pair of wing members to a paint applicator roller.

4,325,160
WINDSHIELD WIPER BLADE ASSEMBLY
Robert K. Burgess, Easton, Conn., assignor to Auto Parts Mfg. Inc., Branford, Conn.
Filed Jul. 21, 1980, Ser. No. 169,512
Int. Cl.³ B60S *1/38*
U.S. Cl. 15—250.06 4 Claims



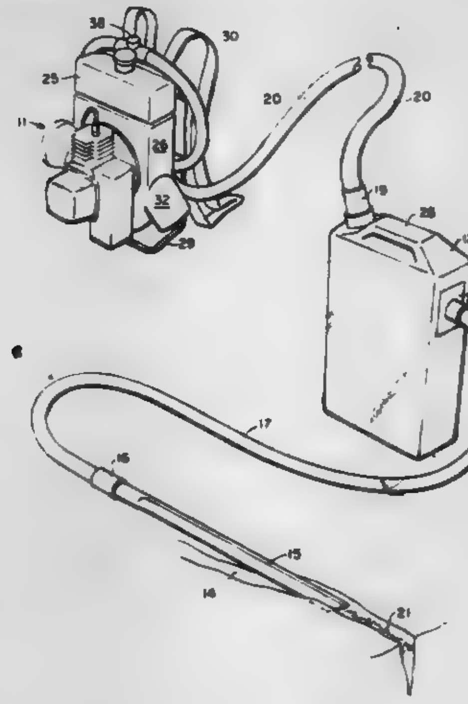
1. In a windshield wiper comprising an extruded blade of rubber or rubber-like material formed with a main body mounting portion, a generally triangular wiping portion, and a pair of complimentary longitudinally extending side grooves forming a thin section interconnecting the main body mounting portion and the generally triangular wiping portion, the improvement comprising a longitudinally extending heater wire having a round cross-section embedded in but non-adhering to the rubber or rubber-like material of the blade, said wire being positioned in the wider section of the generally triangular wiping portion in proximity to the neutral or elastic axis of the blade whereby when the blade is under stress during a windshield wiping operation the wire will cause minimum torsional resistance and bending stiffness in the blade.

4,325,161
WORKPIECE CLEANSING APPARATUS
Trevor E. Wood, Leamington Spa; Gene R. Cooper, Coventry, and Raymond Kemp, Birmingham, all of England, assignors to Otto Durr, Warwick, England
Filed Sep. 3, 1980, Ser. No. 183,407
Claims priority, application United Kingdom, Sep. 7, 1979, 31221/79
Int. Cl.³ A47L *5/38*
U.S. Cl. 15—304 10 Claims



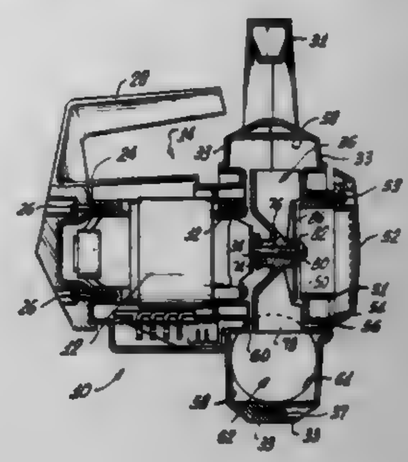
1. A workpiece apparatus comprising:
conveyor means for transporting to a first work station a workpiece having an interior channel therein and at least one passageway extending from the interior channel to the exterior;
first support means for supporting said workpiece in said first work station in such a manner that said at least one passageway is not blocked by the first support means;
first fluid flow means for causing pressurised fluid to flow through said at least one passageway in one direction;
second support means for supporting the workpiece in a second work station to which the workpiece is transported from the first work station by said conveyor means, the second support means being such that said at least one passageway in the workpiece is not blocked thereby; and
second fluid flow means for causing pressurised fluid to flow through said at least one passageway in the opposite direction.

4,325,162
APPARATUS FOR COLLECTING MINERAL-BEARING DEBRIS
Earl W. Chambers, 23165 Eastbrook Ave., and John L. Doglietto, 23175 Eastbrook Ave., both of Los Altos, Calif. 94022
Filed May 29, 1980, Ser. No. 154,466
Int. Cl.³ A47L *9/32*
U.S. Cl. 15—327 C 4 Claims



1. Apparatus for collecting soil and rocks from remote crevices and the like comprising:
a portable self-powered blower assembly having a first exhaust port and first intake port;
a collector separated from said blower assembly and comprising a closed container having an intake opening and an exhaust opening;
a harness for mounting said blower on the user's back;
a first flexible hollow tube connecting the intake port of said blower with the exhaust opening of the collector;
a rigid tubular elongated hollow member having one end suitable for probing remote crevices and a second end adapted for attachment to a flexible tube;
a second flexible hollow tube connecting the intake opening of the collector with the tubular member second end whereby the blower assembly can be energized to create a vacuum air flow inward through the rigid member for picking up soil and rocks;
second and third intake ports connecting with said blower assembly with a third flexible tube connected therebetween; and a flow-regulating intake port connecting with said third flexible tube to regulate the flow of air through said blower assembly.

4,325,163
PORTABLE BLOWER-VACUUM UNIT
Charles A. Mattson, Woodland Hills; George M. Zink, Simi Valley, and Douglas A. Milliken, Thousand Oaks, all of Calif., assignors to Allegretti & Company, Chatsworth, Calif.
Filed Apr. 7, 1980, Ser. No. 138,166
Int. Cl.³ B02C *18/06*
U.S. Cl. 15—330 23 Claims

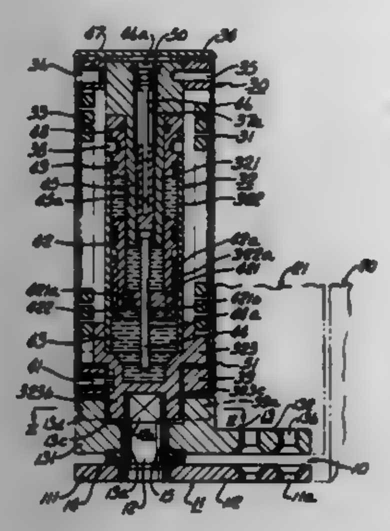


20. A blower-vacuum unit for selective operation in a blower mode, and in a vacuum mode, comprising:
a housing including means forming an air inlet and an air outlet;
a motor carried by said housing;
an impeller rotatably driven by said motor and positioned within said housing for drawing air into said housing through said air inlet, and for pumping the drawn air out of said housing through said air outlet;
an elongated blade mounted axially adjacent said impeller for rotation along with said impeller, said blade being interposed between said impeller and said air inlet and having a length spanning at least the cross-sectional dimension of said air inlet, said blade being formed from a material for chopping solid material drawn into said housing along with the drawn air prior to communication with said impeller;
nozzle tube means securable with respect to said housing in flow alignment with said air outlet when the unit is operated in the blower mode, and in flow alignment with said air inlet when the unit is operated in the vacuum mode;
a protective perforate cover plate movable to a position overlying said air inlet when the unit is operated in the blower mode; and
a vacuum bag securable to said housing for receiving the drawn air pumped out of said housing when the unit is operated in the vacuum mode.

4,325,164
OFFSET PIVOT HINGES WITH DOOR CLOSING DEVICES
Kyoichi Sasaki, Tokyo, Japan, assignor to Nippon Electric Industry Co., Ltd., Tokyo, Japan
Filed Aug. 15, 1979, Ser. No. 66,658
Claims priority, application Japan, Aug. 19, 1978, 53-112962[U]; Feb. 14, 1979, 54-16604; Feb. 14, 1979, 54-16605; Feb. 14, 1979, 54-16606; Feb. 14, 1979, 54-166071; Jun. 27, 1979, 54-80078
Int. Cl.³ E05F *3/20, 3/22*
U.S. Cl. 16—55 13 Claims

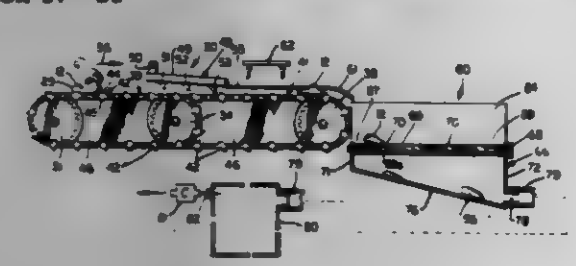
1. An offset pivot hinge with a door closing device easily and removably assembled thereto comprising:
said offset pivot hinge having a first plate member to be secured to one of a door and a floor or a door frame, a pivot pin secured onto a surface of one end portion of said first plate member, and a second plate member to be secured to the other of the door and the floor or the door frame, and being pivoted on said pivot pin at one end portion thereof; and

said closing device comprising an outer sleeve which is easily and removably mounted onto said second plate at one end of said sleeve, an inner member being mounted in said outer sleeve to be rotatable in relation to said outer sleeve and being removably connected to said pivot pin,



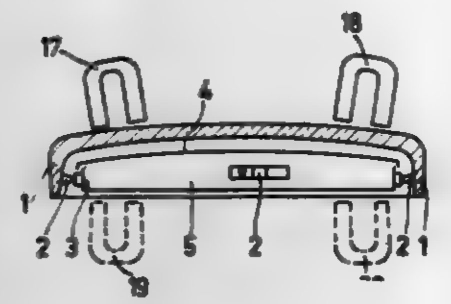
and a coil spring member disposed within said outer sleeve with one end of said spring being connected to said outer sleeve and with the other end being connected to said inner member so that said coil spring member may be twisted by a relative rotation of said outer sleeve and said inner member to provide the door closing torque.

4,325,165
GIZZARD SPLITTER
Horace De Long, Rte. 6, Box 257 A, Macon, Ga. 31201
Filed Jan. 28, 1980, Ser. No. 115,960
Int. Cl.³ A27C *21/00*
U.S. Cl. 17—50 9 Claims



1. A method removing skin and the like from poultry parts comprising rotating in opposite directions of rotation the rolls of a pair of parallel juxtaposed helical toothed peeler rolls oriented in a substantially horizontal plane with their teeth meshed and with the adjacent surfaces of the peeler rolls moving downwardly and with some portions of the helical teeth of at least one of the rolls missing to form gaps in the teeth, placing a poultry part on the upper surfaces of the peeler rolls, inducing a flow of air in a downward direction between the peeler rolls to induce the skin of the poultry parts to move downwardly between the peeler rolls and inducing an increased flow of air between the peeler rolls as the gaps in the teeth of a peeler roll move downwardly adjacent the opposite peeler roll.

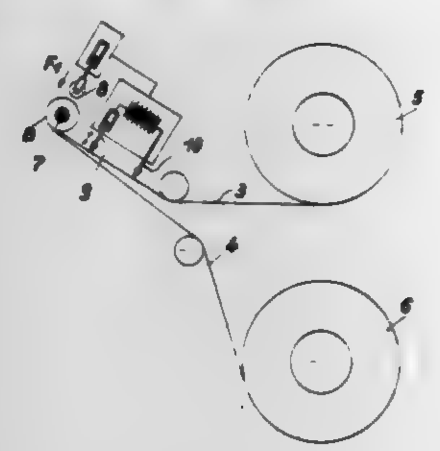
4,325,166
METHOD OF MANUFACTURING A COLOR TELEVISION DISPLAY TUBE
Hubert Göddecke; Werner Reichardt; Kurt Schumacher, all of Aachen, and Rainer Töpfer, Herzogenrath, all of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.
Continuation of Ser. No. 39,538, May 16, 1979, abandoned. This application Mar. 30, 1981, Ser. No. 248,915
Claims priority, application Fed. Rep. of Germany, May 22, 1978, 2822345
Int. Cl.³ H01J *9/18*
U.S. Cl. 29—25.15 8 Claims



1. A method of positioning a supporting frame for a color television tube mask in a repeatedly obtainable rest position with respect to the face plate of the tube to facilitate a tube manufacturing process requiring such positioning, said method comprising the steps of:

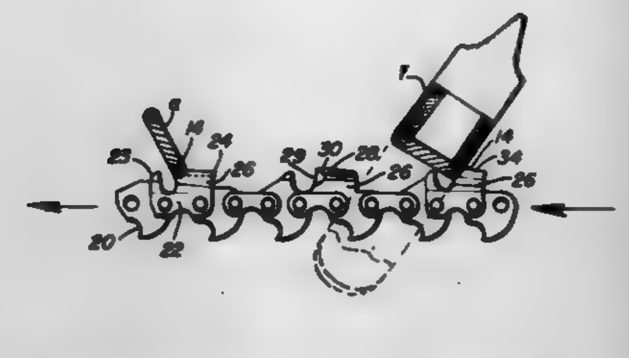
A. attaching the supporting frame to the face plate by engaging holders provided on the frame with respective frame-locating members provided on the face plate; and
B. applying a time-varying electromagnetic field to the frame until said holders and their respective frame locating members are vibrated into ultimate rest positions relative to each other.

4,325,167
PROCESS FOR THE MANUFACTURE OF ROLLED CAPACITORS
Jean M. L. Rosenberg, 83, rue Desiree Richebois, 94 Fontenay-Sous-Bois, France
Filed Jun. 22, 1979, Ser. No. 50,997
Claims priority, application France, Jul. 7, 1978, 78 20252
Int. Cl.³ H01G *4/18*
U.S. Cl. 29—25.42 5 Claims



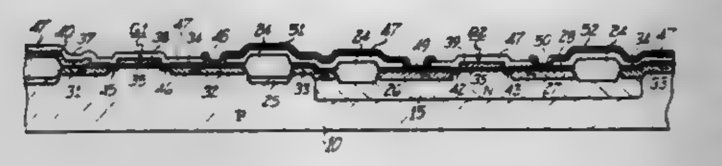
1. A process of winding wound capacitors upon a rotating spindle by rolling at least two metallized films thereon to form a plurality of overlapping layers of which one is a radially innermost layer, comprising the steps of demetallizing a part of at least one of said films prior to rolling of the radially innermost layer and at least a first layer overlapping said radially innermost layer; bonding said radially innermost layer and at least said first overlapping layer together to form a unitary substantially rigid sleeve on said spindle; and continuing the rolling of said two metallized films without bonding the remaining over-lapping layers together.

4,325,168
FILE FOR A CHAIN SAW
Kipling C. Swentzel, P.O. Box 58, West Milford, W. Va. 26451
Filed Jun. 30, 1980, Ser. No. 164,278
Int. Cl.³ B23D *71/00, 63/00*
U.S. Cl. 29—78 5 Claims



1. A long flat file for use on a chisel tooth chain saw, said file having a smooth flat upper and lower surface, rounded longitudinal side edges serrated to provide a filing surface, the filing surface at each side edge extending beyond the curvature for a distance onto the flat upper and lower surfaces in an area parallel to the longitudinal axis of the file, the thickness of the file adapted to fit between the depth guage and cutting tooth of a chain saw for longitudinal filing of the leading edge of the cutting tooth, and for routing and filing of the beveled edges of the cutting tooth, by pivoting the file about one longitudinal edge, the rounded edges of the file being semi-circular, and the thickness of the file being equal to the diameter of the semi-circle.

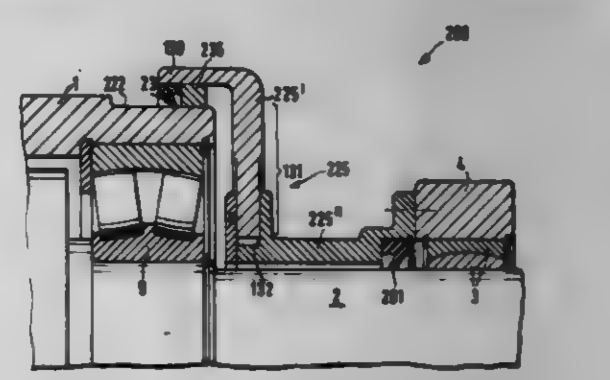
4,325,169
METHOD OF MAKING CMOS DEVICE ALLOWING THREE-LEVEL INTERCONNECTS
James E. Ponder, Cat Spring; Graham S. Tubbs; Perry W. Lou, both of Houston, all of Tex., and Stephen A. Farnow, Beaverton, Oreg., assignors to Texas Instruments Incorporated, Dallas, Tex.
Filed Oct. 11, 1979, Ser. No. 83,700
Int. Cl.³ H01L *21/225;* B01J *17/00*
U.S. Cl. 29—571 6 Claims



1. A method of making complimentary insulated gate field effect transistors in an integrated circuit comprising the steps of:

(a) introducing N-type impurity into a selected area of a face of a P-type semiconductor body to provide a tank region for forming a P-channel transistor,
(b) selectively growing thick field oxide using an oxidation mask to provide a first enclosed surface area on said face spaced from said tank region and a second enclosed surface on said face within said tank region,
(c) introducing P-type impurity into the second surface area to produce conductor regions and to produce source and drain regions of the P-channel transistor, while masking the first surface area,
(d) and introducing N-type impurity into the first surface area to produce conductor regions and to produce regions of the N-channel transistor while masking said second surface area,
(e) there after depositing a layer of conductive material on said face over a thin gate insulator and patterning to provide a gate of an N-channel transistor in said first surface area but spaced from the source and drain regions and a gate of a P-channel transistor in said second surface area but spaced from the source and drain regions, the conductive material also extending across conductor regions but insulated therefrom,
(f) and implanting N-type and P-type inpurity into the first and second surface areas, respectively, self-aligned with said gates, adjacent said source and drain regions.

4,325,170
DEFLECTION CONTROLLED CYLINDER
Hermann Verboom, Kempen; Peter F. Mingers, Willich-Anrath, and Valentin Appenzeller, Kempen, all of Fed. Rep. of Germany, assignors to Eduard Küsters, Krefeld, Fed. Rep. of Germany
Filed Feb. 1, 1980, Ser. No. 117,781
Claims priority, application Fed. Rep. of Germany, Sep. 24, 1979, 293[illegible]
Int. Cl.³ B21B *13/02, 31/03*
U.S. Cl. 29—116 AD 11 Claims

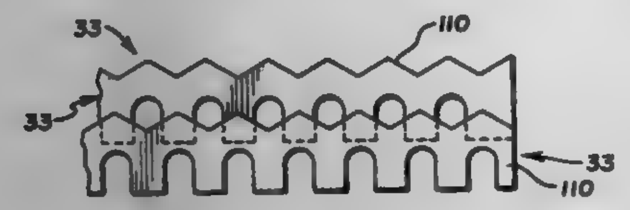


1. In a deflection controlled cylinder having a hollow cylinder which forms the working cylinder circumference and through which a stationary core extends lengthwise, leaving space all around from the inside circumference of the hollow cylinder, with means dividing the space between said core and said hollow cylinder into at least two longitudinal chambers, one on the side of the cylinder at which a roll gap will be established, said hollow cylinder being supported on the core with spacing by bearings at the end of the core, and being supported between the bearings against the core by the working pressure of a pressure medium supplied to said longitudinal chamber adjacent the roll gap, said controlled cylinder having at least one terminating cover which is provided at one end of the hollow cylinder, surrounds the core in ring fashion and is sealed by a sealing arrangement to prevent the escape of oil from the end of the cylinder at its outside and inside circumference, the improvement comprising, said sealing arrangement including a rotary seal which is radially seated and a rotary bearing holding said rotary seal at a predetermined distance from the sliding surface to compensate for displacement occurring when the core is bent, said rotary seal and rotary bearing disposed within the terminating cover enclosing the sealing arrangement.

4,325,171
MEANS AND METHOD FOR SEALING HEAT EXCHANGER WALLS
Elon J. Nobles, Minnetonka, Minn., assignor to Econo-Therm Energy Systems Corporation, Minnetonka, Minn.
Filed Oct. 15, 1979, Ser. No. 85,225
Int. Cl.³ B23P *15/26*
U.S. Cl. 29—157.3 C 32 Claims

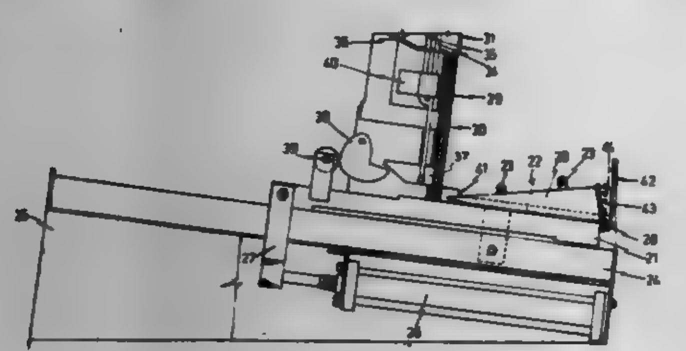
1. An end wall or intermediate baffle partition for a heat

exchanger having an array of substantially regularly spaced-apart tubes extending therethrough, said partition comprising:
a plurality of individual plates, each plate having at least one slotted aperture therein having a width which corresponds to the diameter of the tubes and which extends to the edge of the plate to receive a corresponding tube and each plate having sufficient width and height to overlap



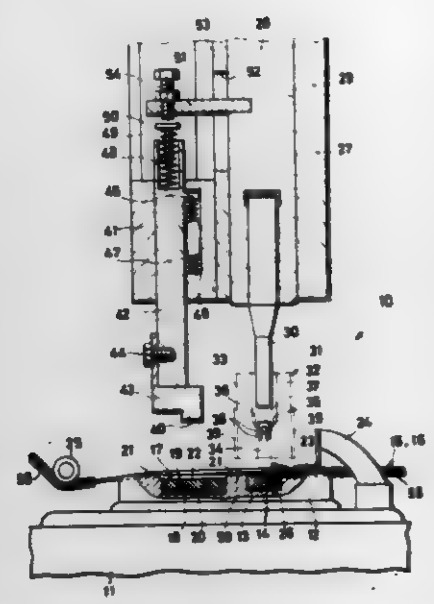
adjacent plates and to cover the portions of the slots therein not occupied by the tube passing therethrough, said plates being sequentially positioned on the tubes in a plane perpendicular to the direction of the array of tubes so that each tube in the array is positioned in a corresponding aperture and the entire area between the tubes in the plane of the end wall or intermediate baffle partition is sealed by the overlapping portions of the plates.

4,325,172
ELASTIC RING EXPANDER
Ross J. Holdaway, Blenheim, New Zealand, assignor to Elastrator Company Limited, Blenheim, New Zealand
Filed Nov. 14, 1979, Ser. No. 94,295
Claims priority, application New Zealand, Nov. 14, 1978, [illegible]
Int. Cl.³ B23P *19/02*
U.S. Cl. 29—235 5 Claims



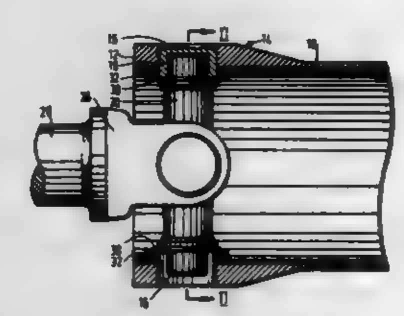
1. An automatic elastic ring expander comprising: a substantially conical mandrel; a reciprocable push member which runs adjacent the surface of the mandrel; a fixed housing within which the mandrel is loosely held to allow some axial movement of the mandrel, the housing being open at each of opposite ends to allow placement of a ring to be expanded on the small diameter end and the removal of the expanded ring from the large diameter end of the mandrel; mandrel loading means, separate from the mandrel, which locates a ring to be expanded in a plane substantially at right angles to the mandrel axis with the ring center lying approximately on the line of the mandrel axis adjacent the small diameter end of the mandrel, the ring then being positioned such that, on a forward stroke of the push member, the push member engages the ring, locates it on the small diameter end of the mandrel and forces it to the large diameter end of the mandrel, thereby also moving the mandrel forwardly in the housing; and restraining means which abuts the periphery of the large diameter end of the mandrel and limits its said forward movement, the restraining means restraining the expanded ring from slipping off the large diameter end of the mandrel under the inherent contraction forces exerted by the expanded ring, release of the ring being effected by pushing the mandrel back from the restraining means.

4,325,173
METHOD AND APPARATUS FOR FINISHING A PAIR OF ELONGATE SLIDE FASTENER STRINGERS
Kazuo Kirii, Kurobe, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan
Filed Nov. 15, 1979, Ser. No. 94,501
Claims priority, application Japan, Nov. 16, 1978, 53-141606
Int. Cl.³ B29D *5/00;* A41H *37/06*
U.S. Cl. 29—408 9 Claims



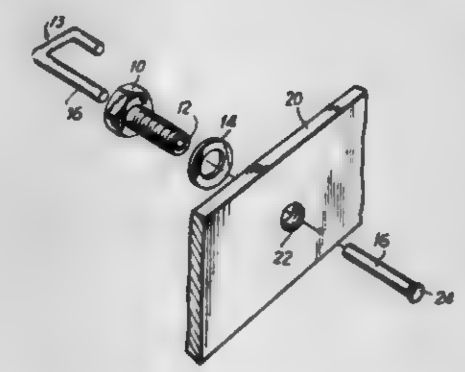
1. A method of finishing a pair of elongate slide fastener stringers including longitudinally spaced chains of interlocked rows of coupling elements mounted on a pair of respective stringer tapes, said method comprising the steps of:
(a) attaching end stops one at a time to the slide fastener stringers at terminal ends of the chains; and
(b) fusing the stringer tapes in a transverse direction thereof adjacent to said terminal ends substantially at the same time as said attaching step (a), said fusing step (b) beginning slightly earlier and ending slightly later than said attaching step (a).

4,325,174
COMPOSITE DRIVE SHAFTS
Derek R. Smith, and Gordon P. Worgan, both of Bristol, England, assignors to Union Carbide Corporation, Danbury, Conn.
Division of Ser. No. 898,900, Apr. 21, 1978, Pat. No. 4,218,895.
This application Apr. 25, 1980, Ser. No. 143,629
Claims priority, application United Kingdom, Apr. 28, 1977, 17695/77; Apr. 4, 1978, 17695/78
Int. Cl.³ F16D *3/26;* B65H *81/00;* F16C *1/02;* B32B *1/08*
U.S. Cl. 29—434 5 Claims



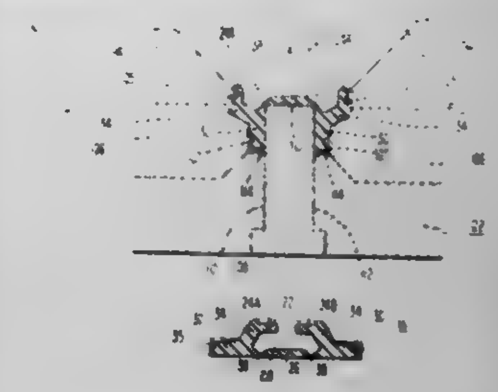
1. A method of making a combination of a shaft and a universal joint of the Hookes type comprising: winding on a mandrel a plurality of layers of reinforcing fibres; impregnating the fibres with an uncured resin either before, after or simultaneously with the winding; curing the resin to a rigid structure; removing the resulting tubular shaft from the mandrel; forming adjacent to one end thereof a pair of aligned, diametrically opposed bores; and inserting into each of said bores a journal bearing and subsequently or simultaneously supporting in said bearings the opposite end portions of one limb of a cross-shaped coupling, the other limb of which is received in a yoke member.

4,325,175
FASTENER AND METHOD OF FASTENING
Nathan Milner, 404 Bordeaux, Marais Rd., Sea Point, Cape Town, South Africa
Filed Aug. 17, 1979, Ser. No. 67,461
Claims priority, application South Africa, Aug. 30, 1978, 78/4951
Int. Cl.³ B23P *11/00;* B65D *63/02;* F16L *33/22, 3/08*
U.S. Cl. 29—444 10 Claims



1. A method of fastening a first member to a second member comprising
(a) positioning the first member adjacent to the second member,
(b) passing a holding member having a free end, a holding end and a holding formation at the holding end through a bolt having a head end, an externally-threaded stud end and an axial bore therein from the head end of the bolt so that the holding member is freely rotatable in the bore, the shape of the holding formation being complementary to the shape of the first member for engagement therewith,
(c) forming a head at the free end of the holding member, said head adapted to bear on the mouth of the bore at the stud end of the bolt,
(d) locating the bolt in a threaded hole in the second member,
(e) engaging the holding formation of the holding member with the first member, and
(f) screwing the bolt into the threaded hole to apply tension between the holding formation of the holding member and the free end of the holding member to secure the first member to the second member.
8. An assembly including a fastener for securing a first member to a second member, the fastener comprising at least one bolt having a head end, an externally-threaded stud end an an axial bore therein, a holding member adapted to pass through and be freely rotatable in the bore in said at least one bolt, and a head formed at one end of the holding member for bearing on the mouth of the bore at the stud end of said at least one bolt, said holding member also including a holding formation adapted to engage with the first member, and said second member also including at least one threaded hole, said at least one bolt being adapted to be screwed into said at least one threaded hole to secure the first member adjacent to the second member.

4,325,176
METHOD OF FORMING A ONE-PIECE MEMBER WITH A COMPARTMENT THEREIN
Kenard E. Urion, Woodbury, N.J., and Douglas R. Cleminshaw, Tully, N.Y., assignors to Scott Paper Company, Philadelphia, Pa.
Division of Ser. No. 959,833, Nov. 9, 1978, Pat. No. 4,210,043.
This application Jan. 11, 1980, Ser. No. 111,252
Int. Cl.³ B23P *11/02;* B29C *17/02*
U.S. Cl. 29—450 9 Claims



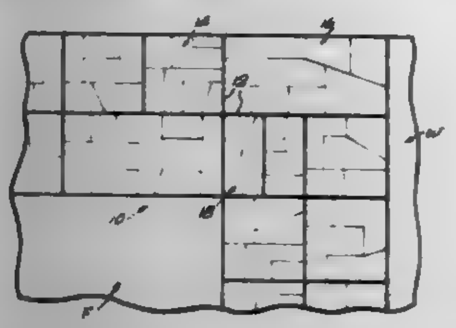
1. A method of forming a one-piece member having a compartment defined in part by a bottom wall, side sections joined to said bottom wall, a split upper wall formed in two segments, each of said segments being joined to one of said side sections and end closures at opposite ends of the compartment, each of said closures being formed by two end segments; said method including the steps of:
(a) molding the side sections at an angle to the bottom wall and joined to said bottom wall through thin, flexible hinge sections;
(b) molding both upper wall segments as continuous extensions of respective side sections and at angles relative to their required orientation in the completed member, one upper wall segment and its associated side section being joined to the bottom wall through one flexible hinge section and the other upper wall segment and its respective side section being joined to the bottom wall through the other flexible hinge section;
(c) molding each end segment employed in forming the end closures as a continuous extension of one of the upper wall segments and at an angle relative to the position it assumes in the completed member; and
(d) pivoting the side sections, upper wall segments and closure segments about the flexible hinge sections to move the upper wall segments into overlying relationship with at least a portion of the bottom wall and to close opposite ends of the compartment by said end segments.

4,325,177
MODULAR ART WALL SYSTEMS
Lieven L. DePoorter, 6031 SW. 83 Ave., Miami, Fla. 33143
Filed Jan. 19, 1979, Ser. No. 4,767
Int. Cl.³ B23P *25/00*
U.S. Cl. 29—458 2 Claims

1. A process for the formation of a decorative wall panel comprising the steps of:
a. providing a relatively thin sheet of a suitable malleable metal material, of a predetermined size and shape, and folding peripheral edge portions thereof inwardly at approximately 90 degrees to a main face panel thereof to generally define a shallow pan configuration;
b. defining a plurality of randomly sized and configurated panel portions in said main face panel by impressed formation of a plurality of grooves therein;
c. forming a characteristic design in bold relief in at least one of said panel portions;
d. flowing a melt of solder into said grooves to a predeter-

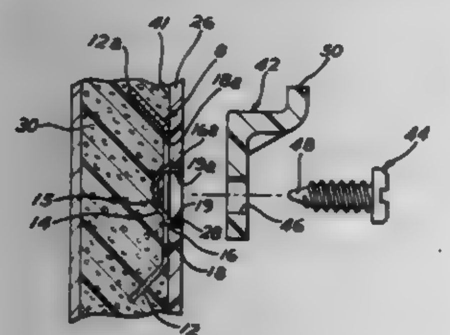
mined depth, and allowing said solder to harden and form a permanent bond with said sheet;

e. creating various artistic designs in randomly selected said panel portions as desired;



f. nesting a support block of an appropriate size, and formed of a suitable plastic foam material, within a cavity defined by said shallow pan.

4,325,178
SCREW ANCHORING DEVICE AND METHOD
Leslie L. Pruehs, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.
Filed Jun. 5, 1980, Ser. No. 156,725
Int. Cl.³ B23P *3/00, 25/00;* F16B *37/04*
U.S. Cl. 29—458 10 Claims



1. A screw anchoring device for pre-assembled aperture sealing attachment with an apertured panel to confine insulating material foamed in place between the panel and a spaced wall comprising:

a flat portion having a central helical screw receiving impression with a retained knock-out central area capable of being displaced by a screw,

means for securing the device to the apertured panel with the screw receiving impression overlying the panel aperture, and

one or more wing portions formed integrally with the flat portion, said wing portions diverging from the plane of the flat portion in a direction away from the screw receiving impression and adapted to be imbedded in the foamed insulating material.

7. The method of securing a utility component to a panel of a composite structure having an attached spaced wall and foamed insulating material therebetween comprising:

forming an aperture in the panel;

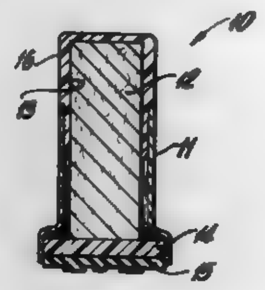
securing a screw anchoring device to the panel, said device having a flat portion with a central helical screw receiving impression with a retained knock-out central area capable of being displaced by a screw and having one or more wing portions formed integrally with the flat portion, said wing portions diverging from the plane of the flat portion in a direction away from the screw impression, said screw anchoring device being secured to the panel such that the screw receiving impression overlies the panel aperture;

foaming insulation material between the panel and the spaced wall, with the wings of the device being imbedded therein;

placing the utility component on the opposite side of the panel from the screw anchoring device and overlying the panel aperture; and

passing a screw first through the utility component, then through the panel aperture and then through the screw anchoring device whereby the knock-out portion of said device is displaced and the screw is retained in the central helical screw receiving impression.

4,325,179
PROCESS FOR FABRICATING A SELF-CONTAINED INK APPLICATOR FOR CONTINUOUS IMPRINTING ON NON-ABSORBENT SURFACES
Harold Werwa, 4120 NW. 88th Ave., Apt. 102, Coral Springs, Fla. 33065
Filed Jul. 30, 1980, Ser. No. 173,852
Int. Cl.³ B23P *25/00;* B41F *31/00;* B41K *1/40*
U.S. Cl. 29—458 5 Claims



1. A process for fabricating a self-contained ink applicator for continuous imprinting on non-absorbent surfaces, said process comprising the steps of;

(a) fabricating a housing formed so as to provide an interior chamber;

(b) immersing a porous material into an air drying ink composition for utilization on non-absorbent surfaces, said air drying ink composition comprising a dye, a resin and a solvent, said solvent being capable of enlarging the cell structure of a porous rubber die utilized in said self-contained ink applicator;

(c) placing within said interior chamber after immersing said porous material;

(d) mounting within said housing a porous rigid supporting member which is immediately adjacent to said interior chamber and in direct contact with said porous material;

(e) immersing said porous rubber die into an air drying ink composition for utilization on non-absorbent surfaces, said air drying ink composition comprising a dye, a resin and a solvent, each being identical to that utilized regarding the immersion of said porous material; and

(f) mounting onto said housing said porous rubber die immediately after the immersion of said porous rubber die into said air drying ink composition, said porous rubber die being mounted onto said housing immediately adjacent to and in direct contact with said porous rigid supporting member, said porous rubber die having exposed on its exterior surface after mounting onto said housing a formed predetermined imprint.

4,325,180
PROCESS FOR MONOLITHIC INTEGRATION OF LOGIC, CONTROL, AND HIGH VOLTAGE INTERFACE CIRCUITRY
Patrick A. Curran, Garland, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed Feb. 15, 1979, Ser. No. 12,267
Int. Cl.³ H01L *21/22*
U.S. Cl. 29—571 16 Claims

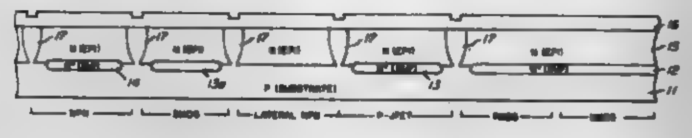
10. A process for the monolithic integration of a semiconductor circuit having D-MOS and high performance vertical NPN components, comprising the steps of:

(a) selectively forming an n+ region at the surface of a monocrystalline p-type semiconductor substrate, at each

location where a vertical NPN component is to be fabricated;

(b) epitaxially forming a monocrystalline n-type surface layer on said substrate, covering each n+ location, and each location where a D-MOS component is to be fabricated;

(c) forming p+ regions extending through said epitaxial layer to provide pn junction isolation between components;



(d) selectively forming a lightly-doped p-type region in the isolated portion of said epitaxial layer where D-MOS is to be fabricated.

(e) selectively forming medium doped p-type regions constituting the vertical npn base and the D-MOS gate contact;

(f) then selectively forming n-type regions constituting the vertical NPN emitter, the vertical NPN collector contact, and D-MOS source and drain, respectively;

(g) then selectively forming gate oxide over the D-MOS channel; and

(h) then completing contact vias and metallization.

4,325,181
SIMPLIFIED FABRICATION METHOD FOR HIGH-PERFORMANCE FET
Max N. Yoder, Falls Church, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Dec. 17, 1980, Ser. No. 217,306
Int. Cl.³ H01L *21/20*
U.S. Cl. 29—571 8 Claims

1. A method for producing a high-performance FET comprising the steps of:

forming on a semi-insulating semiconductor substrate an N-type layer of the substrate material which will constitute the active channel of the FET;

forming on the N-type layer an (N+) layer of the substrate material;

forming on the (N+) layer an (N++) layer of lower bandgap material;

cutting a channel through the (N++) lower-bandgap material and the (N+) semiconductor to form a gate channel along the top of the (N) layer of semiconductor;

forming a layer of refractory metal on all exposed portions of the previous layers;

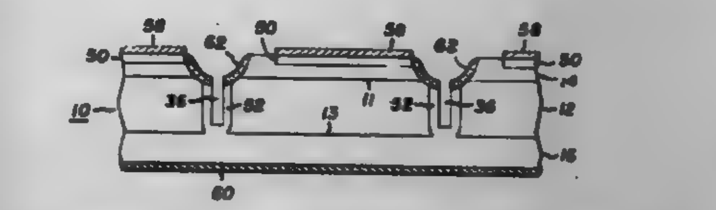
forming a layer of metal on the refractory metal layer;

using a common mask to delineate the areas which are to to be the gate, source and drain electrodes and forming a properly exposed photoresist layer under said comon mask;

cutting through said exposed photoresist and metal layers to form metal source, gate and drain electrodes of the proper size; and

cutting through the refractory metal in the gate channel region to remove the remaining refractory metal lying above the active channel except for a stalk under the gate electrode and a pair of vertical regions extending from the refractory metal layers lying under the metal source and drain electrodes to the top of the active channel layer.

4,325,182
FAST ISOLATION DIFFUSION
Edward G. Tefft, Auburn, and Bernard R. Tuft, Scipio Center, both of N.Y., assignors to General Electric Company, Syracuse, N.Y.
Filed Aug. 25, 1980, Ser. No. 180,832
Int. Cl.³ H01L *21/263, 21/302*
U.S. Cl. 29—583 26 Claims

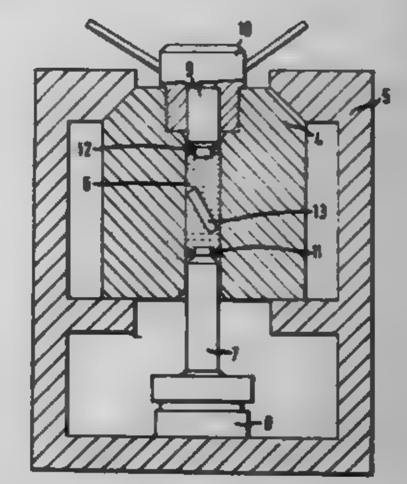


1. A method for forming a low residual stress recess in a body of semiconductor material comprising:

selectively damaging the semiconductor body at the location of the recess to be formed, said damaging step producing a localized relatively high residual stress at the location of said recess, and

dry etching said body at least in said damaged region to remove substantially all of the damaged material thereby providing said low residual stress recess in said body.

4,325,183
PROCESS FOR PRODUCING AN ELECTRICAL RESISTOR HAVING A METAL FOIL BONDED TO A CERAMIC OR GLASS-CERAMIC SUBSTRATE
Adi F. Khambatta, Whitley Bay, England, assignor to Welwyn Electric Limited, Northumberland, England
Division of Ser. No. 897,963, Apr. 20, 1978, abandoned, which is a division of Ser. No. 830,750, Sep. 6, 1977, abandoned. This application May 7, 1979, Ser. No. 36,707
Claims priority, application United Kingdom, Sep. 7, 1976, 36995/76; Mar. 2, 1977, 8735/77
Int. Cl.³ H01C *17/28*
U.S. Cl. 29—621 5 Claims



1. A process for producing an electrical resistor which comprises:

placing a ceramic or glass-ceramic substrate, the surface of which is provided with small cavities or pores, and a self-supporting metallic foil into a sealed tightly fitting fluid impervious envelope with adjoining surfaces of said substrate and said foil in direct contact with one another;

introducing said fluid impervious envelope into a fluid;

applying to said fluid a pressure of at least two tons per square inch but less than that at which undesirable damage

is caused to said foil and/or to said substrate, whereby an equal pressure is applied from every side to said foil and said substrate and said foil is plastically deformed to intrude into and be retained within said small cavities or pores of the adjoining surface of said substrate so that direct adhesion of said foil to said substrate is achieved without any intervening bonding agent; and

securing electrically conductive terminals in electrical contact with spaced apart regions of said foil.

4,325,184

APPARATUS FOR MANUFACTURING COILED COUPLING ELEMENTS FOR SLIDE FASTENERS

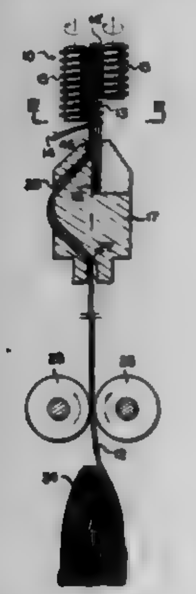
Shigenori Omori, Uozu, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan

Continuation-in-part of Ser. No. 971,645, Dec. 20, 1978, abandoned. This application Nov. 25, 1980, Ser. No. 210,296

Claims priority, application Japan, Dec. 30, 1977, 52-158065

Int. Cl.³ B29D *5/00*

U.S. Cl. 29—766 **9 Claims**



1. In apparatus for the manufacture of a continuous length of helicoidal-coil type coupling element together with a continuous core cord received in place therein, the apparatus being of the type including a coiler mechanism for coiling a continuous filament while introducing the core cord into place within the convolutions of the coil, and a reciprocating member disposed adjacent to the coiler mechanism and controlled by a reciprocating mechanism to reciprocate relative to the coiler mechanism during the formation of each convolution of the coil, the improvement comprising means for paying off the core cord, means adapted to be actuated intermittently, at a speed slightly higher than the speed at which each coil convolution is formed around a mandrel of the coiler mechanism, for forcibly pulling away from the pay-off means successive unit lengths of the core cord and delivering each unit length without tension to the coiler mechanism in step with the corresponding convolution of the coil such that the core cord is substantially slack at the point of delivery to the coiler mechanism during the time that the reciprocating member is moving away from the pulling means, each unit length being longer than a pitch of each convolution of the coupling element, and a passageway in the reciprocating member through which the core cord passes from the pulling means to the coiler mechanism, the passageway being adapted to hold the core cord at least party in frictional contact with the reciprocating member, the reciprocation of which is towards and away from the pulling means.

4,325,185

APPARATUS FOR GAPPING A CONTINUOUS SLIDE FASTENER STRINGER

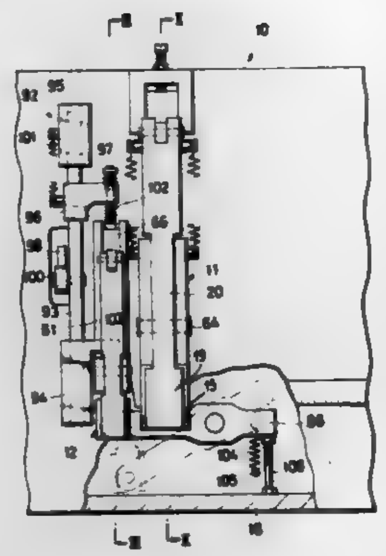
Yoshihiro Kanzaka, Nyuzen, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan

Filed Dec. 28, 1979, Ser. No. 107,827

Claims priority, application Japan, Dec. 28, 1978, 53-164829

Int. Cl.³ B23P *21/00*

U.S. Cl. 29—770 **5 Claims**



1. An apparatus for gapping a slide fastener stringer having a continuous row of fastener elements having leg portions secured to a stringer tape along one longitudinal edge thereof, said apparatus comprising:

(a) a frame;

(b) a presser unit mounted on said frame remotely from the tape side of the stringer and having a punch and die, said punch and die normally being separated from each other by a first laterally unobstructed space for receiving a first portion of a manually fed stringer edgewise, the fastener elements being at the leading edge during such receiving, at least one of said punch and die being movable toward and away from the other for pressing a group of the fastener elements, in the first portion of the stringer placed therebetween, to reduce the thickness of their leg portions, and for holding the pressed fastener elements;

(c) a gripper unit disposed on said frame remotely from the tape side of the stringer and along-side said pressure unit and having a pair of relatively pivotable grip members, said grip members normally being separated from each other by a second laterally unobstructed space for simultaneously receiving a second portion of the manually fed stringer edgewise, the fastener elements being at the leading edge during such receiving, the grip members being adapted to grip the tape on the opposite sides of the second portion of the stringer from the fastener element side thereof while encircling the adjacent fastener elements, the gripper unit being spaced away from the presser unit in a longitudinal direction of the stringer, said gripper unit being movable on said frame between its normal position and an advanced position in an arcuate path for moving the gripped second portion of the tape to remove said group of fastener elements from said first portion seriatim;

(d) a first drive means operatively connected to said one of said punch and die for moving the same toward and away from each other;

(e) a second drive means operatively connected to said gripper unit for moving the same between said normal and advanced positions; and

(f) a third drive means operatively connected to one of said grip members for moving the same toward and away from the other.

4,325,186

PROTECTION DEVICE ADAPTABLE FOR VERTICAL BLADE CUTTERS

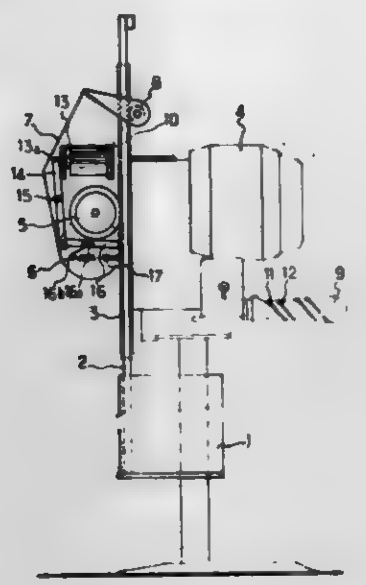
Claude Creton, Residence des Acacias Batiment E3, Avenue de Saige, 33600 Pessac, France

Filed Apr. 24, 1980, Ser. No. 143,296

Claims priority, application France, Apr. 26, 1979, 79 11214

Int. Cl.³ B26B *7/00*

U.S. Cl. 30—275 **11 Claims**



1. Protection device adapted for use with a vertical blade cutter comprising a cutting blade, said device comprising:

(a) a moveable plate for covering said blade and protecting against accidental contact with said blade, said moveable plate being adapted to be retracted during cutting and further being adapted to be otherwise lowered in front of said blade;

(b) a bar adapted to slide in a guide adapted to be attached to said cutter, said moveable plate being mounted on said bar;

(c) a plate support journaled on said guide; and

(d) a rotatable wheel movably attached to said plate support, said rotatable wheel, when brought into contact with said bar while rotating, being adapted to raise said bar and moveable plate and whereas disengagement of said wheel from said bar causes said moveable plate to be lowered in front of said blade by virtue of its own weight and that of the plate.

4,325,187

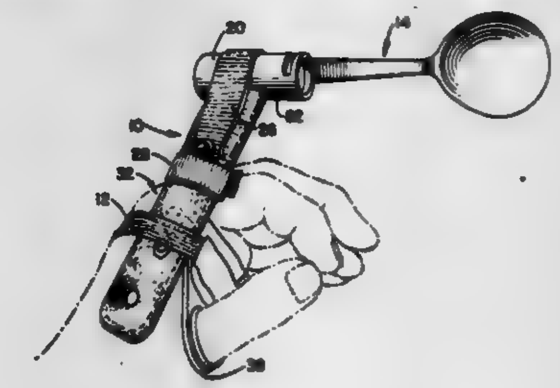
SWIVEL SPOON FEEDING DEVICE

Phyllis E. Wasson, 12814 Prestwick Dr., Oxon Hill, Md. 20022

Filed Dec. 31, 1979, Ser. No. 108,650

Int. Cl.³ A47J *43/28*

U.S. Cl. 30—327 **4 Claims**



1. A swivel utensil feeding device comprising:

a handle adapted to be grasped by the hand of a user;

a support attached to one end of said handle;

a food holding portion, said food holding portion containing a means for holding the food and an elongated member swivelly attached to the end of said support; and

means for encircling the hand of the user and said handle, for maintaining the utensil within the user's grasp.

4,325,188

TRACING TABLE FOR RECORDING THE PROGRAM FOR AN AUTOMATIC MACHINE, IN PARTICULAR FOR CUTTING GLASS

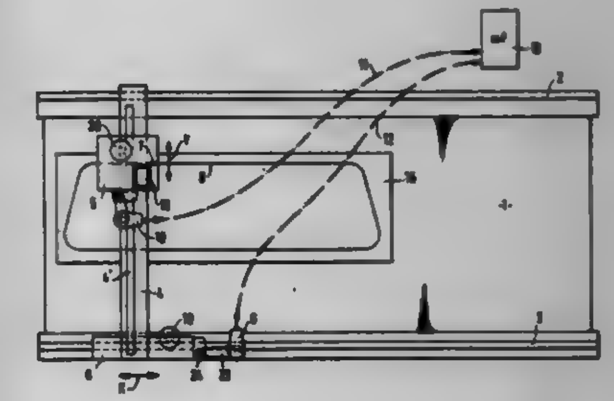
Heinz-Josef Reinmold, and Josef Audi, both of Aachen, Fed. Rep. of Germany, assignors to Saint Gobain Industries, Neuilly-sur-Seine, France

Filed Nov. 9, 1979, Ser. No. 92,972

Claims priority, application Fed. Rep. of Germany, Nov. 18, 1978, 2850127

Int. Cl.³ G09G *3/00*

U.S. Cl. 33—1 M **7 Claims**



1. A Cartesian coordinate driving table for entering a program into a memory of an automatically controlled machine, the table having a ferromagnetic guide bar extending in the X direction, a ferromagnetic guide bar extending in the Y direction, a cursor, a first rotary pulse generator responsive to movement of the cursor in the X direction and a second rotary pulse generator responsive to movement of the cursor in the Y direction, the improvement comprising in having a carriage slidable along the guide bar extending in the X direction, in that said first rotary generator is mounted on said carriage, in that said guide bar extended in the Y direction is mounted on said carriage, in that said cursor is slidable along said guide bar extending in the Y direction, in that said second pulse generator is mounted on said cursor, in that each of said pulse generators has a rotatable shaft including a driving roller having a magnet thereon contacting a guide bar with a roller being driven by frictional engagement with a guide bar, and in that the driving roller of at least one pulse generator is interchangeable with a roller of different diameter for tracing a coordinate which deviates along at least one of the coordinates from the pattern to be reproduced.

4,325,189

METHOD AND APPARATUS FOR CHECKING A GEAR

George E. Fransson; Stuart J. Johnson, and Edward W. Haug, all of Rockford, Ill., assignors to Barber-Colman Company, Rockford, Ill.

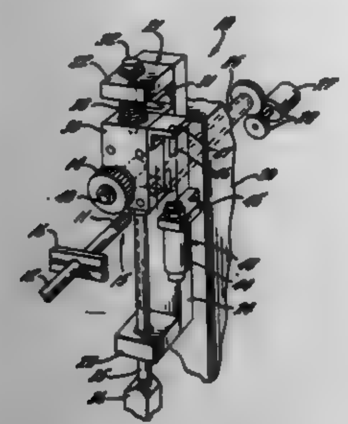
Filed May 27, 1980, Ser. No. 153,999

Int. Cl.³ G01B *5/14;* **G01M** *13/02*

U.S. Cl. 33—179.5 B **11 Claims**

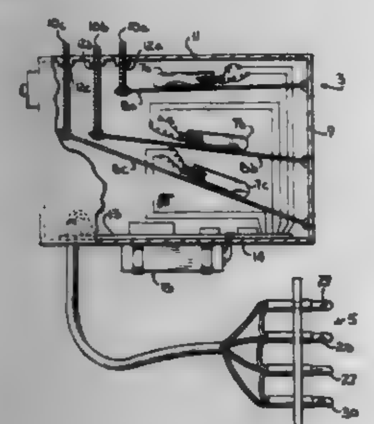
1. Apparatus for checking a sample gear having a central axis, said apparatus comprising means for holding said gear rotationally stationary in a checking station, a support, a head mounted on said support to rotate about an axis alined axially with the axis of said gear, a carriage mounted on said head to rotate therewith and to move back and forth on said head along a path extending perpendicular to the rotational axis thereof, a master gear mounted on said carriage to rotate about an axis extending parallel to and offset radially from the axis of said sample gear, means for bringing said master gear and said

sample gear into engagement and for turning said head about its rotational axis to cause said master gear to orbit and roll around said sample gear, and means responsive to the move-



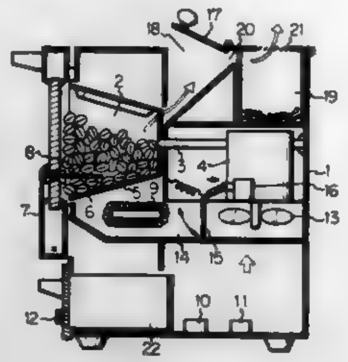
ment of said carriage along said path for indicating the radial distance between the axes of said gears during rotation of said head.

4,325,190
BOW SIGHT
Thomas Duerst, 720 Balcom St., Eau Claire, Wis. 54701
Filed Aug. 25, 1980, Ser. No. 180,669
Int. Cl.^{3} F41G *1/00*
U.S. Cl. 33—265 **5 Claims**



1. A bow sight comprising:
a. a casing for mounting on the bow,
b. an electrical energy source mounted on said casing,
c. a plurality of switches mounted in said casing, each of said switches being operable by a different predetermined vertical inclination of the bow,
d. a plurality of light emitting sight pins connected to the bow in a vertically spaced relationship, said sight pins operably connected to said energy source through said switches, each of said sight pins being designated for use at a preselected shooting range and
e. circuit means mounted in said casing and operable to selectively energize one of said sight pins upon detection of each of said different predetermined angles of bow inclination by one of said switches whereby the designated sight pin is illuminated for the preselected shooting range corresponding to said predetermined bow inclination.

4,325,191
COFFEE ROASTER
Ryohei Kumagai, Kodaira, and Kazuo Maruta, Tokyo, both of Japan, assignors to Advance Company Limited, Tokyo, Japan
Filed May 16, 1980, Ser. No. 150,648
Int. Cl.^{3} F26B *11/04*
U.S. Cl. 34—54 **4 Claims**

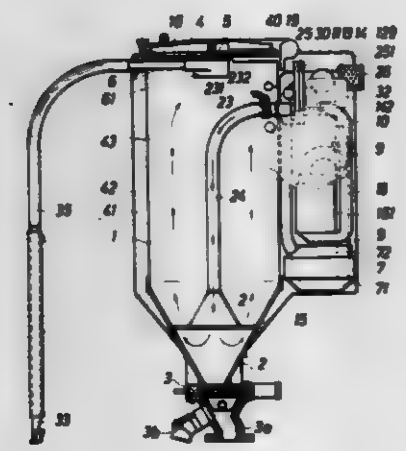


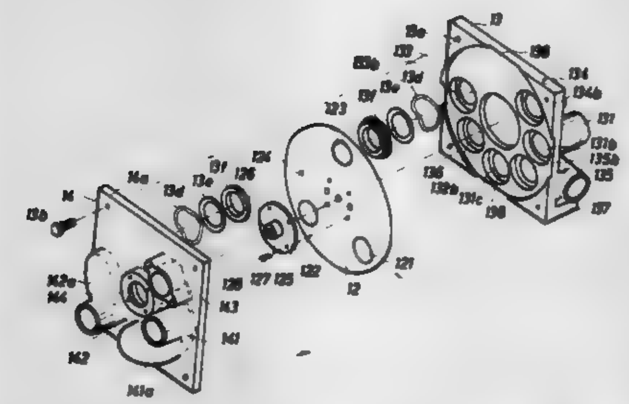
1. An automatic coffee roaster having a compact structure, comprising a rotatable drum provided at a side thereof with a plurality of ventilation holes, an air supplying duct arranged at a lower portion of said roaster below said drum and provided therein with a heater, for heating the air to roast coffee beans, and a fan, which heater and fan are separated from each other by an air flow rate adjusting plate, an exhaust duct arranged at an upper portion of the roaster above said drum and provided therein with a hood for covering an inlet portion of the duct, a recovery vessel for receiving thin husks which become separated from the coffee beans, a roasting control mechanism including a switching device which disconnects said heater on receipt of a detection signal from a temperature sensing device which is mounted on an inner surface of said drum so as to detect the surface temperature of coffee beans therein, and an air supply control mechanism, including an air flow adjustor device, connected to said switching device which operates to open the adjusting plate so as to increase air flow to the drum for rapidly cooling the roasted coffee beans at the same time as said heater is disconnected, the air flow adjustor device normally operating to close said adjusting plate so as to supply a small volume of air flow to said drum through the small perforation holes located in the adjusting plate, which air is heated during the roasting operation, whereby coffee beans are homogeneously roasted and thereafter rapidly cooled in said roaster through automatic consecutive operations while effecting efficient recovery of the thin husks which become separated from the coffee beans during roasting.

4,325,192
APPARATUS FOR DISSICANT DRYING AND CONVEYING OF A GRANULATE AND A VALVE MEANS PREFERABLY FOR USE WITH SAID APPARATUS
Poul Larsen, Elsinore, and Hans B. Jochumsen, Frederikssund, both of Denmark, assignors to Lejbolle Maskinfabrik APS, Tranekaer, Denmark
PCT No. PCT/DK79/00060, § 371 Date Aug. 13, 1980, § 102(e) Date Aug. 13, 1980, PCT Pub. No. WO80/01315, PCT Pub. Date Jun. 26, 1980
PCT Filed Dec. 18, 1979, Ser. No. 201,063
Claims priority, application Denmark, Dec. 19, 1978, 5707/78
Int. Cl.^{3} F26B *15/08*
U.S. Cl. 34—80 **4 Claims**

1. An apparatus for preheating and drying a granulated material, said apparatus comprising: a drier housing adapted to be connected to the material inlet of a plastic processing machine;
a material inlet opening on said housing, said material inlet opening being adapted to be connected to a source of material to be dried;
a material discharge opening on said drier housing, said

material discharge opening being adapted to be connected to said plastic processing machine;
a reversible blower;
a heating means;
a multiport valve positionable in at least three operational positions plus a closed position and adapted to permit air flow in two direction;
an air drier;
a heat accumulator; and
conduit means connecting said housing with said blower, said heating means, said air drier and said heat accumulator, via the ports of said valve,

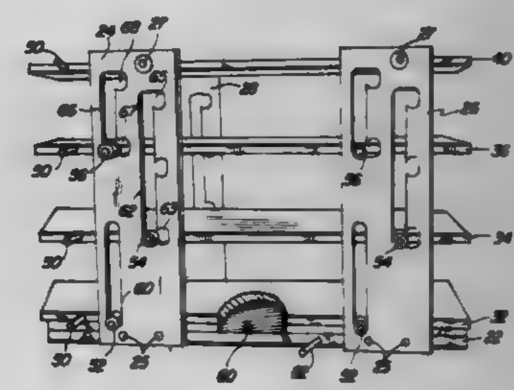




whereby a first air flow circuit is formed through said valve, said blower, said air drier, said heating means, said heat accumulator, said valve and said housing when said valve is in a first position and said blower is rotating in a first direction,
whereby a second air flow circuit is formed through said valve, said heat accumulator, said heating means, said air drier, said blower and said valve when said valve is in a second position and said blower is rotating in a second direction, and
whereby a third air flow circuit is formed through said material inlet opening on said housing, said valve and said blower when said valve is in a third position and said blower is rotating in said first direction.

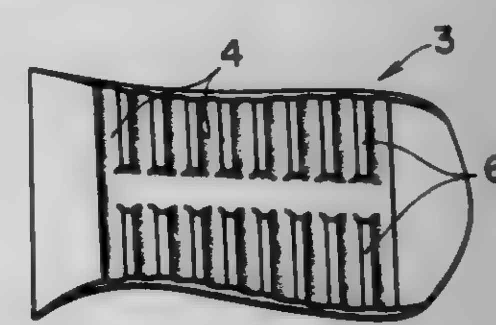
4,325,193
SHELF ARRANGEMENT FOR FREEZE DRYING APPARATUS
Marc J. Thompson, New Paltz, N.Y., assignor to The Virtis Company, Inc.
Filed Nov. 26, 1980, Ser. No. 210,714
Int. Cl.^{3} F26B *13/30*
U.S. Cl. 34—92 **4 Claims**

1. In a freeze dryer of the type including a sealable vacuum-tight drying chamber, a refrigerator condenser for condensing and freezing moisture removed from items being dried in the drying chamber, a vacuum pump connected to the drying chamber for evacuating the air from the drying chamber, and a cooling system for cooling the condenser; an improved shelf arrangement for use in the drying chamber comprising:
a rigid frame assembly having an upper bracket, and a lower bracket;
a plurality of slotted spacing members holding said upper bracket and said lower bracket in a spaced-apart relationship;
stop means provided in said spacing members at predetermined positions along respective slots of said spacing members;
a plurality of shelf means for supporting items to be dried in the drying chamber;



flange means mounted on said shelf means in suitable positions to slidably travel in said slots of said spacing members, said flange means adapted for positioning in said stop means so that the corresponding flange means of said shelf means are supported by respective ones of said stop means in predetermined positions between said upper bracket and said lower bracket; and
an inflatable elevating means mounted on said lower bracket, said elevating means operably connectable to the lowest shelf means of said plurality of shelf means to cause said lowest shelf means to move vertically when said elevating means is inflated.

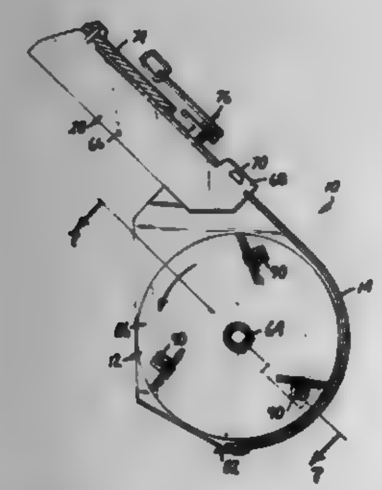
4,325,194
SPORT SHOE SOLE
Masanobu Inohara, Akashi, Japan, assignor to Asics Corporation, Kobe, Japan
Division of Ser. No. 896,477, Apr. 14, 1978, Pat. No. 4,236,326. This application Aug. 4, 1980, Ser. No. 174,891
Int. Cl.^{3} A43B *13/20, 21/28*
U.S. Cl. 36—29 **5 Claims**



1. A sole for use with sport shoes comprising a rigid abrasion-resistant ground sole, the ground sole having a heel portion, an arch portion, and a toe portion, a resilient and elastic interlayer body bonded to said ground sole, and a resilient and elastic interlayer sole bonded to said interlayer body, said interlayer body being extended over and bonded to the heel portion and the shoe arch portion of the ground sole and having uniform thickness at the heel portion and decreasing into a wedge shape toward the top of the shoe arch portion, the interlayer body being provided with a plurality of parallel, transversely extending grooves on the surface of said interlayer body from its one side to its opposite side, each groove

communicating to each other at the center of the interlayer body, the cross section of each groove being semi-circular so as to have uniform distribution of stress, preferred absorbing power of impact load, and a durable shape, the resilience of the interlayer body and the interlayer sole and the air in the grooves permitting preferred absorption of impact load exerted against the heel portion of the sole at the time of landing and good restoration and long durability of arched shapes.

4,325,195
SNOW THROWER
Robert C. Comer, Hopkins, Minn., assignor to The Toro Company, Minneapolis, Minn.
Continuation of Ser. No. 118,466, Feb. 4, 1980, abandoned, which is a continuation of Ser. No. 906,637, May 16, 1978, abandoned. This application Dec. 1, 1980, Ser. No. 211,985
Int. Cl.³ E01H 5/00
U.S. Cl. 37—43 D 3 Claims

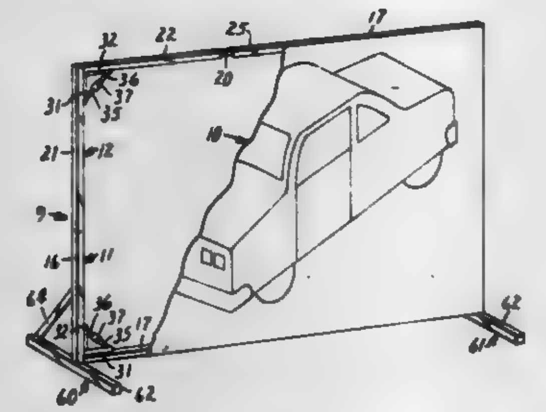


1. A lightweight snow thrower capable of use similar to that of a manually powered snow shovel, comprising in combination:
(a) a snow directing housing, including a rear wall having a first portion whose cross-section is substantially arcuate and a second discharge portion extending generally tangentially of said first portion, which second portion, in normal use of the snow thrower, extends obliquely upward and forward in the direction of snow to be cleared at approximately 45° relative to a horizontal line through said second portion to maximize the distance of throw for snow thrown along said second portion;
(b) an impeller mounted in said housing with a portion of the periphery thereof closely adjacent to said first portion, said impeller including a plurality of blades mounted at the periphery thereof and including an open volume to the interior of said impeller to permit air to pass through said impeller, each of said blades mounted to have a working surface which is angled inward with respect to the periphery of said impeller, wherein said inward angle on said blades is between 5° and 25° with respect to a radial line from an axis of rotation of the impeller to the outermost edge of said blades, and wherein said blade working surfaces are substantially planar to further maximize distance of throw;
(c) drive means cooperating with said impeller to provide rotary drive of said impeller in a direction to move snow along said rear wall from said first portion to said second portion; and
(d) handle means fastened to the rear wall to enable an operator to maneuver the snow thrower, wherein the combined weight of said housing, impeller, drive means and handle means is sufficiently small so as to allow an operator to pick up the snow thrower and use the snow thrower by holding the snow thrower adjacent to the ground and by pushing the snow thrower in the manner of a manually powered snow shovel.

4,325,196
MULTILAYER IDENTIFICATION CARDS WITH RELIEF-LIKE SURFACE
Wolfgang Gauch, Otterfing; Joachim Hoppe, and Yahya Haghiri-Tehrani, both of Munich, all of Fed. Rep. of Germany, assignors to G.A.O. Gesellschaft für Automation und Organisation mbH, Munich, Fed. Rep. of Germany
Continuation of Ser. No. 861,420, Dec. 16, 1977, abandoned. This application Feb. 15, 1980, Ser. No. 121,886
Int. Cl.³ G09F 3/02
U.S. Cl. 40—2.2 2 Claims

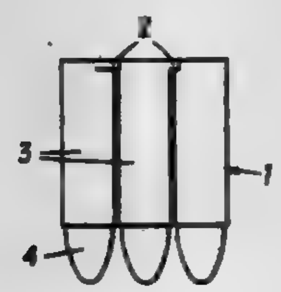
1. A laminated multi-layer identification card comprising:
a paper blank layer (2);
a top thermoplastic PVC layer (3) adhered under pressure to one surface of said blank layer;
a bottom thermoplastic PVC layer (4) adhered under pressure to an opposite surface of said paper blank layer; and
a paper strip (6) having intaglio printing (7) on one surface thereof, which surface is adapted to receive a signature, adhered under pressure to an outer surface of one of said PVC layer (3), covering only a portion of said outer surface, with the plane of said one surface of said paper strip disposed in the plane of said outer surface of said one of said PVC layers.

4,325,197
QUICK-ERECT PORTABLE DISPLAY STRUCTURE
David J. Achten, Oakdale, and Robert W. Fritts, Afton, both of Minn., assignors to Minnesota Mining & Manufacturing Company, St. Paul, Minn.
Filed Feb. 2, 1981, Ser. No. 230,548
Int. Cl.³ G09F 15/00
U.S. Cl. 40—610 4 Claims



1. A quick-erect portable display structure adapted to support a rectangular mural on a flexible fabric material, said structure comprising
four similar collapsible corner members each comprising a pair of hollow tubular legs pivotally connected adjacent one end and movable about an axis between a folded parallel position and a perpendicular position and each having a locking toggle to form a gusset between said legs, at least one leg of each member being formed with a projecting end portion adapted to fit in a hollow end of an adjacent tubular member and having a plurality of spaced holes affording an adjustable locked position between said end portion and said adjacent member;
a strip of fastening tape adhered to a face of each leg of said corner members which face is disposed perpendicular to the axis of said pivotal connection;
a pair of footings each formed of rigid straight tubular material of a predetermined length, each footing having a pin extending perpendicular thereto intermediate its ends for receiving one leg of a said corner member and having a brace extending from an end thereof adapted to connect with said one leg of said corner member for maintaining said structure in an upright position.

4,325,198
CARTRIDGE LOAD FOR REVOLVERS
Gerhard Muck, Peter Jordanstr. 159, A 1180 Wien, and Kurt Peter, Donaustr. 101/102, A 2344 Maria Enzersdorf-Südstadt, both of Austria
Filed Apr. 25, 1979, Ser. No. 33,223
Claims priority, application Austria, Apr. 27, 1978, 3038/78
Int. Cl.³ F42B 39/04
U.S. Cl. 42—89 6 Claims

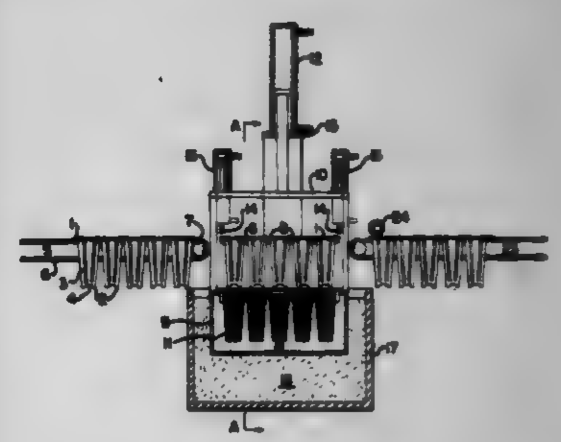


1. A cartridge load for a revolver cylinder having a plurality of angularly spaced cartridge-receiving bores, said load comprising a plurality of angularly spaced cartridges in number corresponding to the number of said bores and extending codirectionally from an end plane, and ligatures connecting each cartridge with a pair of adjacent cartridges to form an endless ring from said cartridges, each cartridge comprising a casing receiving a charge and a bullet, said ligatures being formed unitarily with and projecting from each casing at said plane, each of said ligatures being flexible and elastic to enable at least limited spreading of said cartridges to accommodate the load to various revolver cylinders.

4,325,199
ENGINE SOUND SIMULATOR
Timothy K. McEdwards, 1000 W. MacArthur Blvd., Apt. 31, Santa Ana, Calif. 92707
Filed Oct. 14, 1980, Ser. No. 196,840
Int. Cl.³ A63H 33/26
U.S. Cl. 46—232 24 Claims

1. An engine sound simulating apparatus for a vehicle having drive means powered by an electric motor to propel the vehicle in a desired path, said drive means having a rotatable member that rotates in direct proportion to the speed of the vehicle comprising: digital switch sensor means responsive to the speed of rotation of the rotatable member for producing an output signal having a frequency proportional to the speed of the vehicle, signal converting means for receiving said output signal and converting said signal to a signal having a frequency that changes in response to ranges of speed of the vehicle, transmitter means connected to the signal converting means to transmit signals from the signal converting means, a plurality of receiver means located adjacent the path along which the vehicle is propelled for receiving the transmitted signals, said receiver means having speaker means providing an audio output simulating the operation of an engine powering the vehicle.

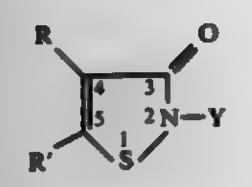
4,325,200
METHOD AND APPARATUS FOR FILLING SEEDLING POTS
Bengt G. L. Ovarnström, Rakvägen 2, S-230 22, Smygehamn, Sweden
PCT No. PCT/SE79/00229, § 371 Date Jul. 8, 1980, § 102(e) Date Jul. 3, 1980, PCT Pub. No. WO80/00906, PCT Pub. Date May 15, 1980
PCT Filed Nov. 7, 1979, Ser. No. 198,942
Int. Cl.³ A01G 1/00
U.S. Cl. 47—1 A 7 Claims



1. A method for filling growth medium into seedling pots with perforated side and bottom walls, characterized by the following consecutive steps:
(a) a tray with the seedling pots is placed in a perforated matrix forming the lid of a closed box,
(b) the box with the tray and the pots is dipped into an aqueous suspension of growth medium,
(c) air and water are sucked from the box until the pots are filled with growth medium,
(d) the box is raised out of the suspension and
(e) the tray with the pots is separated from the box.

4,325,201
SEED TREATMENT WITH 3-ISOTHIAZOLONES
Sheldon N. Lewis, Willow Grove; George A. Miller, Glenside, and Andrew B. Law, Levittown, all of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.
Division of Ser. No. 910,730, May 30, 1978, Pat. No. 4,243,403, which is a division of Ser. No. 368,168, Jun. 8, 1973, Pat. No. 4,105,431, a continuation-in-part of Ser. No. 836,660, Jun. 25, 1969, Pat. No. 3,761,488, which is a continuation-in-part of Ser. No. 672,437, Oct. 3, 1967, Pat. No. 3,523,121, which is a continuation-in-part of Ser. No. 621,788, Mar. 9, 1967, abandoned. This application Dec. 10, 1979, Ser. No. 101,600
Int. Cl.³ A01C 1/06; A01N 43/78
U.S. Cl. 47—57.6 7 Claims

1. A method of protecting a seed subject to the attack of microorganisms selected from the group consisting of bacteria and fungi which comprises disseminating over the seed, a bactericidally and fungicidally effective amount of a compound of the formula



wherein

Y is an unsubstituted or substituted alkyl, alkenyl, or alkynyl group of 1 to 18 carbon atoms, an unsubstituted or substituted cycloalkyl group having a 3 to 6 carbon atom ring and up to 12 carbon atoms, an unsubstituted or substituted aralkyl group of up to 10 carbon atoms, or an unsubstituted or substituted aryl group of up to 10 carbon atoms,

R is hydrogen, halogen, or a (C_1–C_4)alkyl group, and

R' is hydrogen, halogen, or a (C_1–C_4)alkyl group, or a salt of a compound of the above formula with a strong acid.

4,325,202

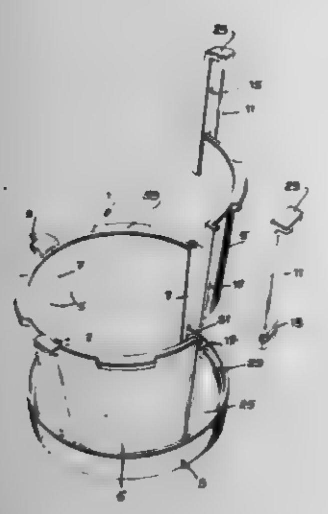
KNOCK-DOWN PLANT POT

Maurice Liard, 276, de Salaberry St., Joliette, Quebec, Canada (J6E 4G1)

Filed Jun. 13, 1980, Ser. No. 159,063

Int. Cl.³ A01G *9/02, 9/04*

U.S. Cl. 47—73 4 Claims



1. A knock-down plant pot separable into component parts whereby to free a plant when contained therein without affecting the radicular system of the plant, said pot comprising:

an upright lateral plant-retaining wall portion made up of a plurality of arcuate wall segments abutting one another along upright edges thereof and means releasably holding said segments in firm abutting relationship, said holding means including locking strips projecting outwardly of said segments, each strip being formed with a groove at the lower end thereof;

a saucer portion, for holding said wall portion, said saucer portion having an upstanding peripheral skirt and a series of horizontal thread portions projecting inwardly from said skirt and capable of being snugly received into said grooves at the bottom of said strips whereby said wall portion may be held firm in said saucer portion;

said thread portions being spaced from one another a distance sufficient to allow said strips to be inserted therebetween prior to be rotated, for engagement of said thread portions into said grooves; and

each segment being cut-out of a cylinder with tapered side edges and parallel top and bottom arcuate edges, whereby each segment can be removed during a transplantation without disturbing the earth surrounding said segment.

4,325,203

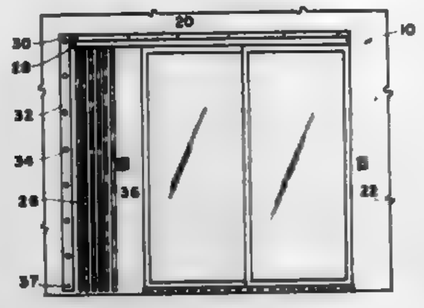
PATIO DOOR AND WINDOW GUARD SYSTEM INVENTION

Jerome L. Wicks, 3401 Rockdale Ct., Baltimore, Md. 21207

Filed Apr. 29, 1980, Ser. No. 144,951

Int. Cl.³ E06B *7/00*

U.S. Cl. 49—57 10 Claims



1. A system for guarding patio doors and the like against intrusion therethrough, said doors having interior and exterior faces, comprising: a plurality of rods having first and second ends, means for slidably holding said first end of each rod above a patio door interior face with each said rod depending vertically from the means for slidably holding; means for detachably securing respective middle portions of said rods in spaced succession across a said patio door, means for slidably receiving a said second end of each rod along a sill of a said patio door and preventing said second end from being pushed inward or outward relative to a said patio door; said means for slidably holding including an overhead track and a portion of each rod shaped for engaging the overhead track, the means for detachably securing including a detachable bar with a plurality of longitudinally spaced perforations therein for respectively receiving when in a horizontal position each of said plurality of rods in one of said perforations and sliding up said rods to said rod middle portions; and the means for slidably receiving comprising an upwardly open track for installation along the lower inside margin of a patio door opening in parallel spaced relation with said overhead track.

4,325,204

DOOR CONSTRUCTION

Walter I. Martine, 19767 Reedview Dr., Rowland Heights, Calif. 91748

Filed Jan. 10, 1980, Ser. No. 110,847

Int. Cl.³ E05F *15/06*

U.S. Cl. 49—372 11 Claims

1. A pocket door assembly including a header structure and comprising:

a first element which is generally planar and generally horizontal;

second, third, fourth and fifth elements, each of which is generally planar and extends downward from said first element in sequential generally parallel spaced relationship;

a roller support channel which is generally J-shaped, said roller support channel depending from said first element between said third and fourth elements;

said first through fifth elements forming portions of said header structure

a door which includes a generally planar door and a plurality of rollers extending upwards beyond the top of said door, said rollers being spaced a predetermined distance apart, said rollers being dimensioned and configured for engagement with said roller support channel, said second and third elements including a plurality of slots spaced said predetermined distance apart; and

said slots being dimensioned to allow passage of said rollers into said roller support channel.

4,325,205

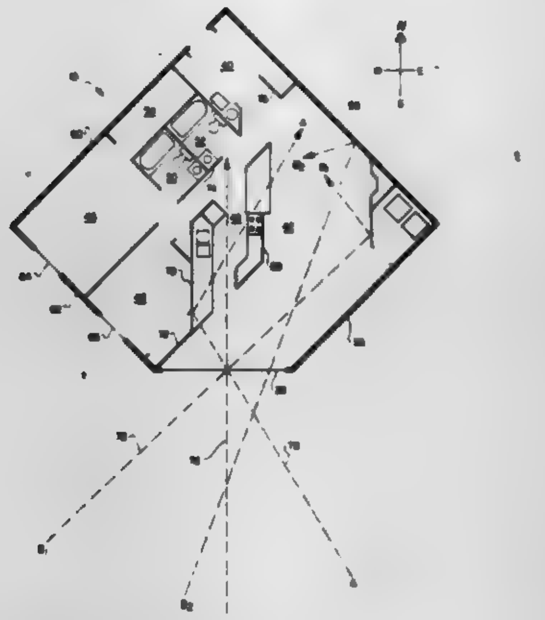
MODULAR SOLAR BUILDING CONSTRUCTION

Massoud A. Salim, and Thomas L. Hamacher, both of Salt Lake City, Utah, assignors to Tios Corporation, Salt Lake City, Utah

Filed Mar. 31, 1980, Ser. No. 135,367

Int. Cl.³ E04H *1/00*

U.S. Cl. 52—79.1 18 Claims



1. Solar building construction comprising:

a five-sided building comprising a generally rectangular shaped building having a cut-off corner, said cut-off corner being defined by a diagonal cut along a generally vertical plane that intersects adjacent exterior walls of said building, a fifth exterior wall along said cut-off corner having more than one half of the surface area thereof as an opening through which solar rays from the sun may pass, said building being oriented so that said fifth wall is exposed to the sun for the longest possible time during the winter months when the sun is low in the sky, whereby solar rays from the sun may enter said building through said opening for a maximum time during daylight hours;

translucent enclosure means for selectively enclosing said opening of said fifth wall and preventing air from passing therethrough while still allowing passage of solar rays and light therethrough;

penetration means for allowing said solar rays to deeply penetrate into the interior of said building and be absorbed therein after said rays have passed through said opening; and

overhang means above and extending outwardly from said fifth wall for preventing said solar rays from entering through said opening of said fifth wall during the summer months when the sun is high in the sky.

4,325,206

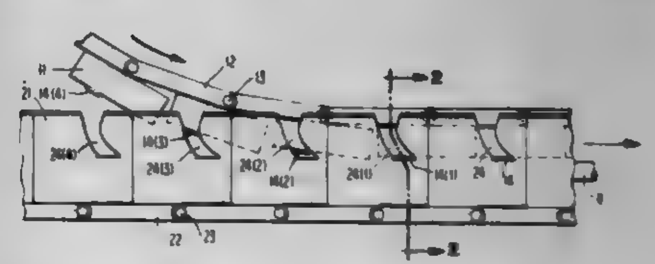
GUIDE TUBE FOR SEWER RODDING MACHINE

Charles B. Caperton, P.O. Box 187, Spring Lake, N.J. 07762

Filed Apr. 14, 1980, Ser. No. 139,817

Int. Cl.³ E04A *12/18*

U.S. Cl. 52—108 7 Claims



1. A rigid restraining tube for restraining sewer rod and the like against reaction forces, said tube comprising:

a. a first series of axially short hollow section halves on one side of the longitudinal center axis of the tube;

b. a second series of complimentary axially short hollow section halves on the other side of said center axis;

c. first link bars pivotally connecting together the section halves of said first series;

d. second link bars pivotally connecting together the section halves of said second series;

e. each section half of said first series having a pair of opposed laterally-extending ears;

f. each section half of said second series having a pair of curved slots for receiving the ears of a complimentary section half of said first series;

g. said section halves of said second series being larger circumferentially than the section halves of said first series;

h. said section halves of said second series having tangentially extended sidewalls;

i. said slots being located in said extended sidewalls;

j. said slots having greater width at the mouth and at the bottom and smaller width at a point intermediate said mouth and bottom;

k. said smaller width being less than the length of an ear, whereby said ear may pass through said intermediate point of said slot only if it is disposed at an inclined angle relative to the longitudinal center axis of said tube.

4,325,207

ARCH FORMING ASSEMBLY

Leslie T. Russell, Halifax; George M. Proctor, Cornwall, and William H. Bowes, Ottawa, all of Canada, assignors to Canadian Patents & Development Ltd., Ottawa, Canada

Continuation-in-part of Ser. No. 21,333, Mar. 19, 1979, abandoned. This application May 2, 1980, Ser. No. 146,358

Claims priority, application Canada, Apr. 25, 1978, 301939

Int. Cl.³ E04B *1/32;* E04C *3/46*

U.S. Cl. 52—641 6 Claims

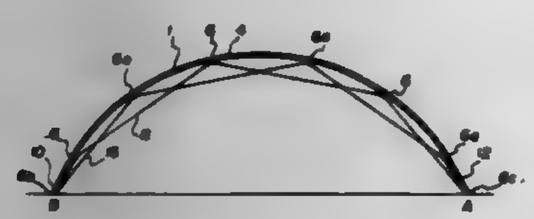
1. An arch forming assembly, comprising:

(a) a substantially flat flexible member for bending to the shape of the curved arch,

(b) a plurality of tension line guides attached to the flexible member at spaced intervals to a side of the flexible mem-

ber which will define the inside of the arch so that tension line guides will be spaced therearound,

(c) a first tension line attached at one end to a first side portion of the flexible member and threaded through even number tension line guides only, counted from the said first side portion to a second side portion opposed thereto, and attached at the other end to the second side portion,



(d) a second tension line attached at one end to the first side portion 10 of the flexible member and threaded through odd number tension line guides only, counted from the said first side portion towards the said second side portion, and attached at the other end to the said second side portion, and

(e) means for tensioning the said first and second tension lines to bend the flexible member to the shape of the curved arch.

4,325,208

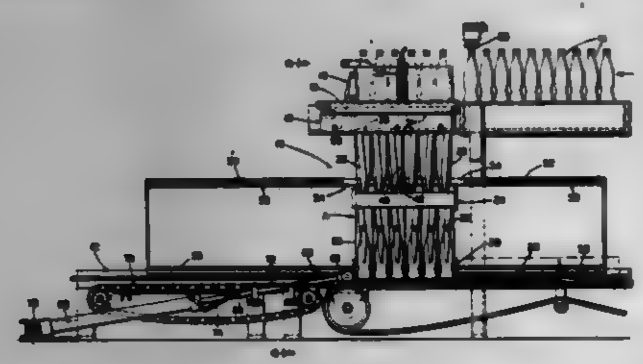
METHOD OF AND APPARATUS FOR UTILIZING AUXILIARY GRID IN CASE PACKER MACHINE

Theodore L. Barker, Hudson, Ohio, assignor to Figgie International Inc., Willoughby, Ohio

Filed Jan. 21, 1980, Ser. No. 113,692

Int. Cl.³ B65B *21/06, 57/04*

U.S. Cl. 53—448 5 Claims



1. A method of packing articles in case where streams of articles are supplied to a packer drop area, and are collected in a group of articles positioned in case filling relation on an upper grid at the drop area including the steps of:

positioning a lower grid of corresponding size and article grouping as the upper grid below and in vertical alignment therewith, dependent drop fingers being present on said lower grid,

moving a supply of cases along a horizontal course positioned below said lower grid,

stopping an empty case when it is moved into alignment with said grids,

sensing when a case is at said drop area and sensing when said grid is full of articles,

moving said lower grid downwardly when both of said sensing means are actuated, and

releasing articles on said upper grid simultaneously with start of movement of said lower grid downwardly.

4,325,209

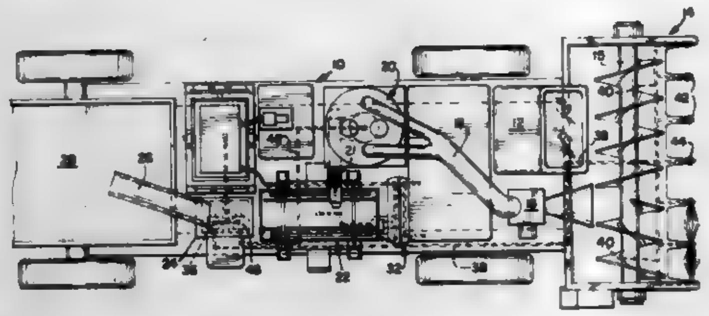
METHOD AND APPARATUS FOR IN-FIELD CROP HARVESTING

George B. Cicci, Burr Ridge, Ill., assignor to International Harvester Company, Chicago, Ill.

Filed Apr. 28, 1981, Ser. No. 258,254

Int. Cl.³ A01D *45/00, 55/00, 91/04*

U.S. Cl. 56—1 18 Claims



1. A method for harvesting a standing crop comprising the steps of:

separating a liquid portion from the crop; and

directing at least a portion of said liquid portion in a high pressure flow to sever the standing crop from the ground.

4,325,210

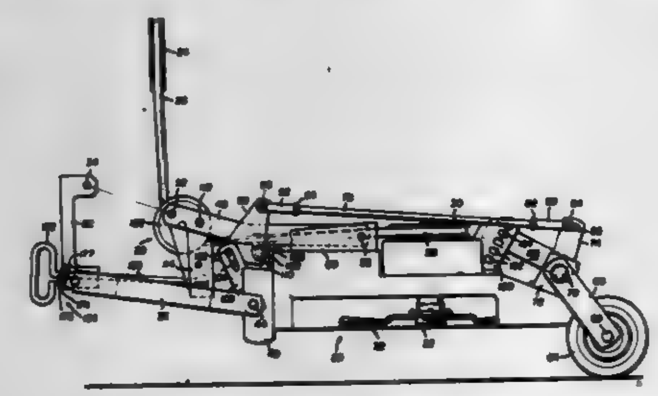
IDLER SHEAVE ASSEMBLY

John H. Marto, Oshkosh, Wis., assignor to J. I. Case Company, Racine, Wis.

Filed Dec. 18, 1980, Ser. No. 217,718

Int. Cl.³ A01D *69/08*

U.S. Cl. 56—11.6 11 Claims



1. An idler sheave assembly for a belt driven lawn mower having a flexible endless drive belt, said idler sheave assembly comprising:

a support bracket, a fixed mule sheave rotatably supported on a first arm fixed to said bracket, a spring loaded rock sheave rotatably supported on a second arm generally parallel to said first arm, a shaft generally perpendicular to said arms extending through coaxially aligned apertures in said arms, an annular sleeve rotatably journaled on said shaft received through said second arm aperture, said second arm fixed relative to said sleeve and rotatable therewith, a torsion spring spirally wound around said sleeve having a first end fixed relative to said bracket and a free end fixed relative to said second arm spring biasing said spring loaded rock sheave relative to said fixed mule sheave, and an adjustment means adapted to incrementally adjust the position of said support bracket relative to said mower to adjust the tension of a drive belt received around said sheaves.

4,325,211

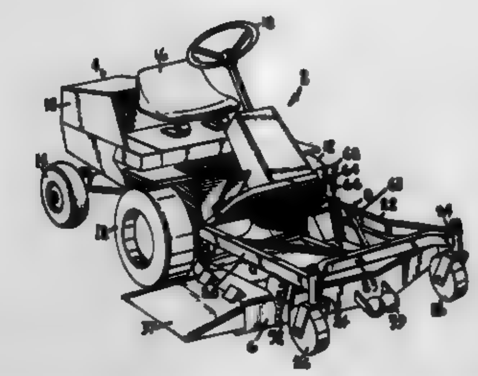
FLOATING DECK FOR RIDER MOWER

Robert H. Witt, Bloomington, and Walter J. Petersen, Eden Prairie, both of Minn., assignors to The Toro Company, Minneapolis, Minn.

Filed Sep. 2, 1980, Ser. No. 183,293

Int. Cl.³ A01D *35/26*

U.S. Cl. 56—15.8 8 Claims



1. A vegetation cutting apparatus, which comprises:

(a) a base unit which is movable over the ground in a longitudinal direction;

(b) a cutting unit having means for cutting vegetation; and

(c) means for mounting the cutting unit on the base unit, wherein the mounting means comprises means for suspending the cutting unit from the base unit on at least two laterally spaced suspension points with the cutting unit free to move upwardly at each suspension point to allow the cutting unit to tilt side-to-side laterally relative to the base unit, wherein the suspending means comprises a suspension unit at each of the suspension points, wherein each suspension unit comprises a suspension member carried on the cutting unit which is received in an elongated vertical slot on the base unit to allow upward vertical movement of the cutting unit relative to the base unit at each of the suspension points, and wherein at least one of the suspension members on the base unit is also continuously longitudinally constrained in the vertical slot on the base unit to longitudinally couple the cutting unit to the base unit for movement therewith.

4,325,212

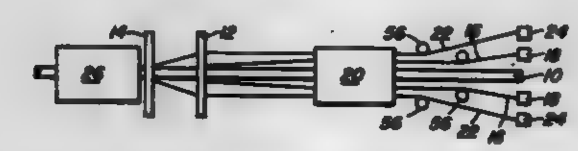
LAYING OPTICAL WAVEGUIDES AND ELECTRICAL CONDUCTORS ONTO A SUPPORT FILAMENT

Tomasz S. Hope nee Swiecicki, Kanata, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Nov. 20, 1980, Ser. No. 208,567

Int. Cl.³ D02G *3/44;* D01H *13/04;* B65H *81/08*

U.S. Cl. 57—15 3 Claims



1. Apparatus for laying a set of optical waveguides and a set of electrical conductors on a support filament, the apparatus comprising one laying unit for laying waveguides on the filament, another laying unit for laying conductors on the filament, the laying units being spaced apart in laying positions along a feed path for the support filament through the apparatus, reeling-off positions for the waveguides and conductors upstream of the units to feed the sets of waveguides and conductors side-by-side to a first of the laying positions and one of the sets to a second of the laying positions, and means for holding one set separated from the other set as they move to the first laying position.

4,325,213

FRICTION FALSE TWIST APPARATUS HAVING IMPROVED YARN THREAD-UP CAPABILITY

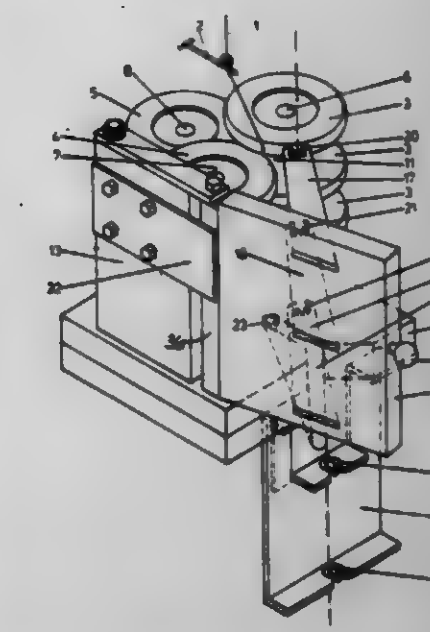
Frank Adenbeuer, Wuppertal, Fed. Rep. of Germany, assignor to Barmag Barmer Maschinenfabrik, Remscheid, Fed. Rep. of Germany

Filed Jul. 31, 1980, Ser. No. 174,008

Claims priority, application Fed. Rep. of Germany, Aug. 8, 1979, 2932074

Int. Cl.³ D01H *15/00;* D02G *1/08*

U.S. Cl. 57—280 11 Claims



1. An apparatus for friction false twisting a moving yarn, and characterized by the ability to readily permit thread-up while the apparatus is in operation, and comprising

a mounting bedplate,

at least three spindles mounted to said bedplate for rotation about fixed, parallel axes which are positioned at the corner points of an equilateral polygon having a number of sides corresponding to the number of spindles, each spindle including a plurality of circular discs mounted for rotation therewith, and with the discs of the spindles overlapping at a point centrally between said spindles and defining an operative path of travel extending axially therebetween,

means for concurrently rotating each spindle in a common direction and such that twist is imparted to a yarn moving along said operative path of travel by contact with the rotating discs, and comprising a pulley coaxially fixed to each spindle, and a common endless drive belt operatively contacting each pulley,

movable yarn deflecting means for selectively moving a yarn from an inoperative thread-up position disposed laterally of said operative path of travel, toward said operative path of travel, and comprising at least one arm, and means mounting each such arm to said bedplate for movement in a plane perpendicular to the axes of said spindles, and

yarn guide means for guiding the moving yarn between said operative path of travel and a position exteriorly of the area encompassed by said endless drive belt, said yarn guide means including yarn catch means fixedly mounted in axial alignment with the operative path of travel and intermediate all of said discs and said drive belt for operatively engaging a running yarn upon the yarn being moved from said inoperative thread-up position toward said operative path of travel, and for then retaining the yarn in substantial axial alignment with the operative path of travel and against lateral movement in the opposite direction,

whereby the thread-up of the yarn through the apparatus may be readily accomplished while the spindles are operatively rotating, and without the need to manually thread

the yarn through the discs of the spindles, or through the area encompassed by the endless drive belt.

4,325,214

APPARATUS FOR STRANDING WIRE

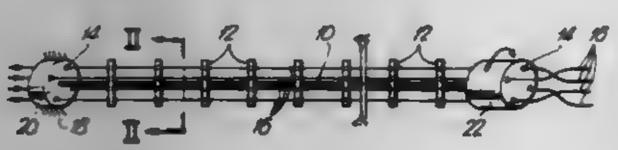
Bretislav P. Zaber, Montreal, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Continuation-in-part of Ser. No. 106,375, Dec. 21, 1979, abandoned. This application Nov. 13, 1980, Ser. No. 206,656

Claims priority, application Canada, Dec. 19, 1979, 342240

Int. Cl.³ H01B *13/04*

U.S. Cl. 57—293 **13 Claims**



1. Apparatus for stranding wire comprising:

an elongate member having a longitudinal axis and being rotationally flexible about said axis;

a plurality of longitudinally spaced-apart wire guiding elements extending radially outwardly from the member and defining a plurality of longitudinally extending wire guiding holes, the holes being angularly spaced around the axis for passage therethrough of a plurality of wires and also being longitudinally spaced with each hole corresponding with other longitudinally spaced holes to define a single guide path for wire along the member;

wire twisting means at a downstream end of the member, in the sense of the direction of wire movement, the twisting means extending outwardly of and secured to the member and defining a plurality of longitudinally extending holes, one for each of the paths and angularly spaced around the axis;

holding means for holding the member stationary at a position upstream of the wire guiding elements and of the downstream end; and

means for rotating the downstream end of the member and the twisting means for a predetermined number of revolutions about the axis alternately in one direction and then the other.

4,325,215

HYDRAULIC APPARATUS

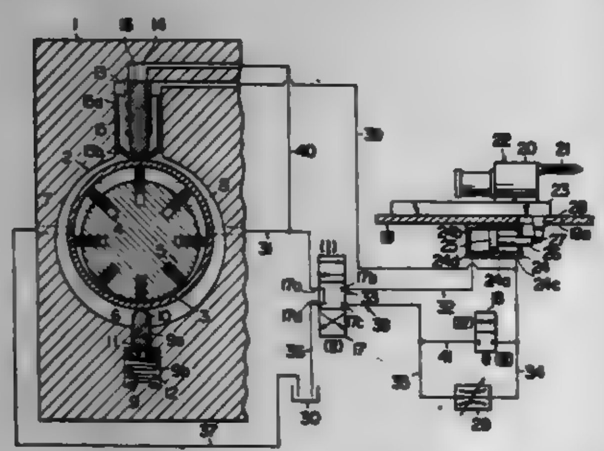
Toru Yamamoto, Gifu, Japan, assignor to Teijin Seiki Company Limited, Osaka and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of, Japan

Continuation-in-part of Ser. No. 885,342, Mar. 10, 1978, abandoned. This application Mar. 4, 1980, Ser. No. 127,138

Claims priority, application Japan, Mar. 10, 1977, 52-26388

Int. Cl.³ F16D *31/02;* F04B *49/00*

U.S. Cl. 60—450 **7 Claims**



1. A hydraulic apparatus for changing the flow rate by displacing a flow rate changing member of a variable displacement hydraulic pump accommodated in a casing, comprising, in combination: an actuator, a first sliding member slidably received in a first cylinder chamber provided in said casing and movable in one direction to urge said flow rate changing member toward a direction where the flow rate of said hydraulic pump is decreased, a second sliding member slidably received in a second cylinder chamber provided in said casing and movable in said one direction to urge the flow rate changing member toward a direction where the flow rate of said hydraulic pump is decreased, a resilient member accommodated in said casing to resiliently urge said flow rate changing member against a resultant force of said first and second sliding member toward a direction where the flow rate of said hydraulic pump is increased, said resilient member being the only means for urging said first and second sliding members in a direction opposite to said one direction, a first fluid conduit having one end connected with an outlet port of said hydraulic pump and the other end thereof connected with a rear port of said actuator, a second fluid conduit having one end connected with a fore port of said actuator and the other end connected with a port of a pressure compensated flow control valve means for permitting pressure oil passing therethrough to be maintained constant in volume even with variations in pressure of the fluid, a third fluid conduit having one end connected with another port of said flow control valve means and the other end thereof connected with an inlet port of the hydraulic pump, a fourth fluid conduit having one end connected with said second fluid conduit and the other end connected with said first cylinder chamber, and a fifth fluid conduit having one end connected with said first fluid conduit and the other end connected with said second cylinder chamber.

4,325,216

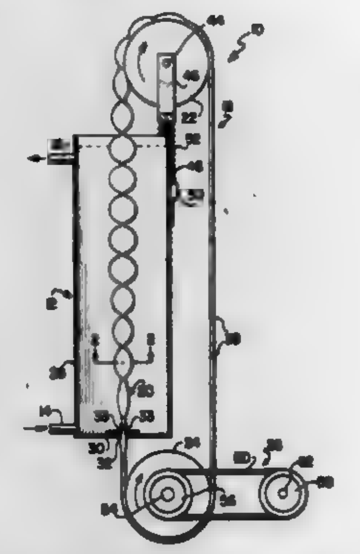
THERMODYNAMIC FLOTATION ENGINE

Ronald F. Mermis, 1900 Gardenia Ter., Manhattan, Kans. 66502

Filed Jun. 2, 1980, Ser. No. 155,553

Int. Cl.³ F03B *13/12*

U.S. Cl. 60—496 **15 Claims**



1. A thermodynamic engine comprising:

an upright tank for holding a heated fluid;

means defining a continuous loop member having a series of discrete heat-transferring bladder means thereon;

structure for supporting said loop member with an elongated portion thereof within said tank, and for allowing continuous shifting movement of the loop member through said tank with successive portions thereof moving into said tank at a lower region thereof, through the hot fluid therein, and thence out of said tank at an upper region thereof,

said tank including a loop member inlet at said lower region, and a loop member outlet at said upper region;

a quantity of liquid material within each bladder having a vaporization temperature below that of said hot fluid but above that of the ambient temperature exteriorly of said tank, such that the material in each respective bladder means is successively converted to the gaseous form thereof as the respective bladder means passes through the hot fluid in said tank for causing upward shifting of the loop member by virtue of the buoyancy effect created by such vaporization, said material in each successive bladder means reconverted to the liquid form thereof after the respective bladder means pass out of said tank; and

power takeoff means operatively coupled to said loop member.

4,325,217

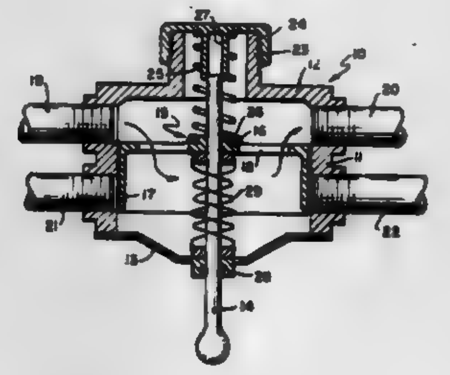
SOLID STATE ENGINE WITH ALTERNATING MOTION

Ahmad A. Golestaneh, Bolingbrook, Ill., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jan. 21, 1980, Ser. No. 113,868

Int. Cl.³ F03G *7/06*

U.S. Cl. 60—527 **3 Claims**



1. A device for converting heat energy to reciprocating mechanical energy comprising:

a cylinder having inlet and outlet ports for hot water at one end of the cylinder to establish a warm end thereof and inlet and outlet ports for cold water at the other end of the cylinder to establish a cool end thereof opposite to the warm end,

a piston reciprocally contained within said cylinder having a warm side and a cool side corresponding respectively to the warm end and the cool end of said cylinder, said piston having openings therein for passage for water longitudinally therethrough,

means movable with said piston for alternately opening and closing said hot water and cold water ports,

a spring disposed within the cylinder bearing on the warm side of the piston, and

a double helix of a thermal memory material attached to the cool end of the cylinder and the cool side of the piston.

4,325,218

VACUUM BRAKE BOOSTER

Rolf Weiler, and Peter Böhm, both of Frankfurt, Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Filed Feb. 14, 1980, Ser. No. 121,349

Claims priority, application Fed. Rep. of Germany, Mar. 5, 1979, 2908515

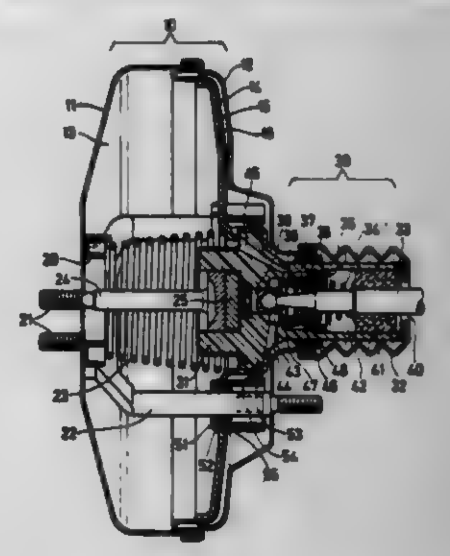
Int. Cl.³ B60T *13/00*

U.S. Cl. 60—547 R **9 Claims**

1. A brake booster utilizing the differential of pressure between a vacuum and atmospheric pressure comprising:

a vacuum casing having at least one movable wall dividing said casing into a vacuum chamber and a working chamber and acting upon a push rod guided along a longitudinal axis of said casing; and

a base plate assembly distinct from said casing including a base plate disposed in said vacuum chamber having one surface thereof abutting one transverse end wall of said casing defining said vacuum chamber and another surface thereof parallel to and spaced from said one surface within said vacuum chamber, said another surface having at least two bars integrally formed therewith, said two bars extending into said casing substantially parallel to said push rod, penetrating said movable wall in a slidable sealed relationship and connected to the other transverse end



wall of said casing defining said working chamber and to a vehicle member, said one surface having a plurality of bolts integrally formed therewith upon which a master cylinder is secured to said booster, said plurality of bolts extending through said one transverse end wall.

4,325,219

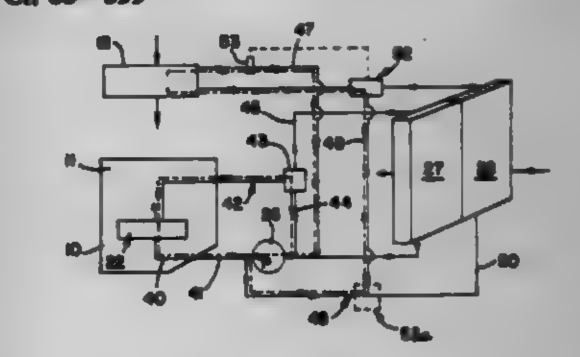
TWO LOOP ENGINE COOLANT SYSTEM

John H. Stang, Columbus, Ind., and Hiromasa Yamaguchi, Tokyo, Japan, assignors to Cummins Engine Company, Inc., Columbus, Ind. and Komatsu Ltd., Tokyo, Japan

Filed Dec. 31, 1979, Ser. No. 108,821

Int. Cl.³ F02B *29/04*

U.S. Cl. 60—599 **11 Claims**



1. A coolant system for an internal combustion engine including an aftercooler for cooling the intake air flowing into the engine, said aftercooler having a coolant intake and a coolant outlet, and said engine including a block and a head, said coolant system comprising an engine loop and an aftercooler loop, a pump having an output, both of said loops including said pump, said engine loop including said pump, the engine block and head, a first radiator, and a first radiator bypass, said aftercooler loop including said pump, said intake of the aftercooler being connected to said output of said pump, a second radiator and a second radiator bypass connected to said inlet of said aftercooler, each of said loops further including a temperature responsive flow control thermostat for regulating the coolant flow through the associated radiator and said bypass, said thermostat in said aftercooler loop including a sensor located in said coolant outlet to sense the temperature of the coolant leaving said aftercooler.

4,325,220

CRYOADSORPTION PUMPS HAVING PANELS WITH ZEOLITE PLATES

David J. McFarlin, Ellington, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Continuation-in-part of Ser. No. 16,263, Feb. 28, 1979, abandoned. This application Oct. 6, 1980, Ser. No. 194,157

Int. Cl.³ B01D *8/00*

U.S. Cl. 62—55.5 3 Claims

1. Assembly for a cryoadsorption pump comprised of a high thermal conductivity metal panel adapted for cooling by a cryogenic fluid;

the metal panel having mounted thereon a zeolite plate in intimate but unbounded contact;

the zeolite plate made by a process which includes isostatically pressing powder having a poor size between $2\text{-}25\times10^{-10}$ m; and

means for resiliently maintaining contact between the panel and the plate.

4,325,221

METHOD AND APPARATUS FOR REDUCING THE TEMPERATURE OF ARTICLES

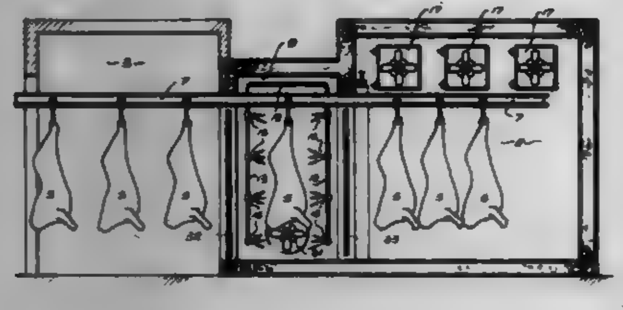
Lloyd C. Grewar, Bramall, Australia, assignor to The Commonwealth Industrial Gases Limited, Surry Hills, Australia

Filed Jul. 26, 1979, Ser. No. 61,034

Claims priority, application Australia, Jul. 28, 1978, PD5267

Int. Cl.³ F25D *13/06*

U.S. Cl. 62—63 7 Claims



1. A method of refrigerating a freshly slaughtered suspended carcass having body weight in excess of 5 kg. comprising the steps of supplying cryogenic liquid to a pre-chilling station containing the suspended carcass after introduction of the carcass into the pre-chilling station, the supply being in timed sequence with the introduction of the carcass; quick chilling a thin outer layer of the entire carcass to seal the moisture therein by contacting all of the outer surface of the carcass with controlled usage of the supplied cryogenic liquid, and subsequently cooling the carcass throughout by placing it in a mechanically refrigerated cold room under conditions that ensure that the previously chilled outer layer does not thaw.

4,325,222

DEVICE RESPONSIVE TO UNUSUAL TEMPERATURE CHANGE IN REFRIGERANT COMPRESSOR

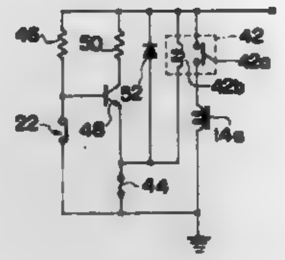
Teruo Nakamura, Konan, and Masami Otani, Higashimatsuyama, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama and Diesel Kiki Company, Limited, Tokyo, both of, Japan

Filed Dec. 14, 1979, Ser. No. 103,580

Claims priority, application Japan, Jan. 10, 1979, 54-1651[U]

Int. Cl.³ F25B *27/00;* G05B *5/00;* H02H *5/04*

U.S. Cl. 62—126 10 Claims



1. A refrigerant compressor driving device comprising:

an electromagnetic clutch for driving the compressor, said clutch being movable between a first position in which it connects the compressor to a driving means to drive the compressor and a second position in which it disconnects the compressor from said driving means;

an over-heating sensing means inserted into a refrigerant in said compressor to detect over-heating of the refrigerant, said over-heating sensing means being normally in on position and turned off in response to the refrigerant temperature being higher than a predetermined temperature;

a switch means connected with said over-heating sensing means and being turned on in response to turning off of said over-heating sensing means to produce a high level current; and

a circuit breaking element responsive to said high level current for breaking the power supply to said clutch for positioning the clutch into said second position.

4,325,223

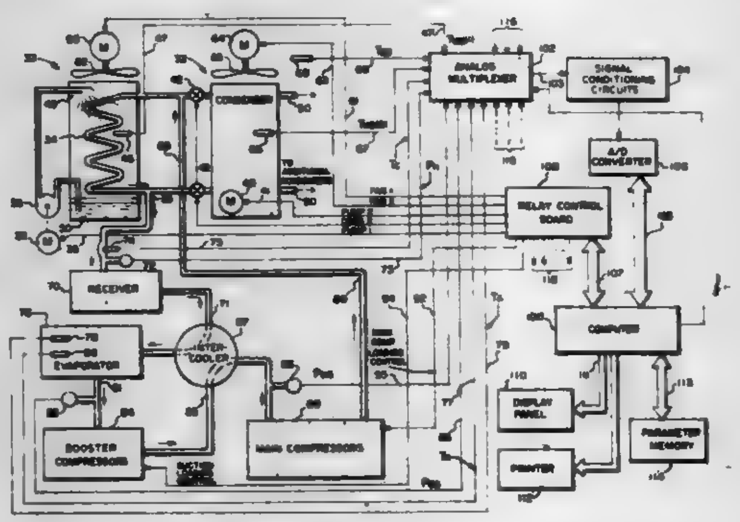
ENERGY MANAGEMENT SYSTEM FOR REFRIGERATION SYSTEMS

Robert J. Cantley, 905 Versailles Ct., Maitland, Fla. 32751

Filed Mar. 16, 1981, Ser. No. 244,161

Int. Cl.³ F25B *49/00;* F25D *3/00*

U.S. Cl. 62—126 35 Claims



1. An energy management system for a single stage refrigeration system having evaporative type condensers comprising:

A. a plurality of electrical temperature sensors attached to said refrigeration system, said sensors producing electrical signals representative of operating parameters of said refrigeration system including

a. wet bulb temperature,

b. dry bulb temperature,

c. condensing temperature, and

d. ambient temperature;

B. a plurality of electrical pressure sensors attached to said refrigeration system, said pressure sensors producing electrical signals representative of operating parameters of said refrigeration system including

a. head pressure, and

b. suction pressure;

C. signal processing circuits connected to said temperature sensors and said pressure sensors for receiving said respective electrical signals therefrom for producing a sequence of binary digital signals representative of said electrical signals;

D. computer means connected to said signal processing circuits for receiving said sequence of binary digital signals, said computer means having memory means for storing system design parameters, said computer means programmed to periodically calculate other operating parameters of said refrigeration system including

a. relative humidity,

b. efficiency of said refrigeration system,

c. temperature difference between said condensing temperature and said wet bulb temperature,

d. difference between said head pressure and said suction pressure, and

e. the cost to operate said refrigeration system;

E. control relays connected to said computer means for controlling, in said refrigeration system,

a. condenser fans in response to calculated value of said difference between said condensing temperature and said wet bulb temperature,

b. condenser pumps responsive to the calculated value of said difference between said condensing temperature and said wet bulb temperature, and

c. compressor loading responsive to calculated value of said diffference between said head pressure and said suction pressure; and

F. first alarm means responsive to a deviation of said head pressure relative to said condensing temperature to indicate presence of non-condensible gases in said refrigeration system, and second alarm means responsive to said difference between said condensing temperature and said wet bulb temperature to indicate fouled condensers in said refrigeration system.

4,325,224

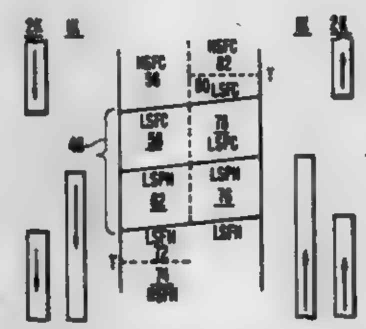
METHOD AND APPARATUS FOR TRANSPORT REFRIGERATION SYSTEM CONTROL

Leland L. Howland, Belle Plaine, Minn., assignor to Thermo King Corp., Minneapolis, Minn.

Filed Apr. 29, 1980, Ser. No. 145,190

Int. Cl.³ F25B *41/00, 29/00*

U.S. Cl. 62—196 A 12 Claims



1. In a transport refrigeration system of the type having the capabilities of at least heating and cooling operations, and dual compressor speed operation, and having first relay means including switch means controlling heating and cooling operations, and second relay means including switch means controlling compressor speed operation, said first and second relay means being responsive to temperatures in the served space for controlling said system normally in at least four stages of operation in accordance with the differences in temperature of the served space from the setpoint temperature, two of said stages of operation including low speed compressor operation in the temperature band encompassing temperatures closely above and below said setpoint temperature, the improvement comprising:

auxiliary control relay means including switch means;

time delay means connected to control operation of said auxiliary control relay, said time delay means being connected to be controlled in a timed operation in accordance with the condition of said second relay following said first relay means having first operated to a heating condition position;

said auxiliary control relay being operative to maintain said compressor speed at a lower level until said time delay means operates to change the condition of said auxiliary control relay to thereby change said compressor speed to the higher level in accordance with said second relay calling uninterruptedly for a predetermined time period for compressor speed at a higher level.

4,325,225

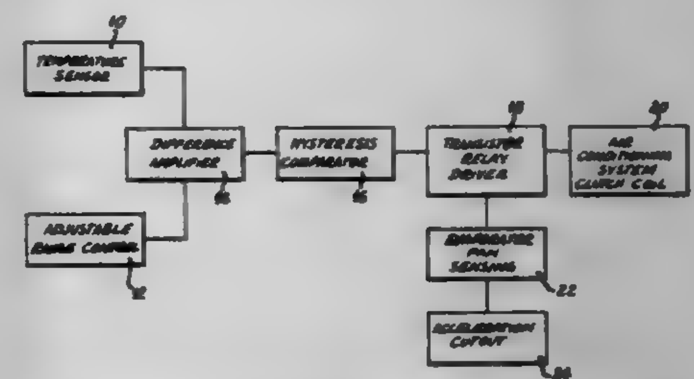
ELECTRONIC TEMPERATURE CONTROL

David L. Price, II, Huntsville, Ala., assignor to Eaton Corporation, Cleveland, Ohio

Filed Jul. 28, 1980, Ser. No. 172,801

Int. Cl.³ F25B *1/00, 49/00*

U.S. Cl. 62—229 9 Claims



1. In an air conditioning system for controlling the temperature in an enclosed space, including an evaporator, an evaporator fan, and an evaporator fan switch having at least an "on" position and an "off" position, an electronic temperature control comprising:

means for sensing and indicating the ambient temperature of the enclosed space;

adjustable means for indicating the range of temperature desired to be maintained in the enclosed space;

means for amplifying the difference between the indications from said sensing means and said adjustable means, the output of said amplifying means being at a greater voltage when the ambient temperature is lower than the desired temperature and at a lesser voltage when the ambient temperature is higher than the desired temperature;

a hysteresis compactor for comparing said output of said amplifying means to a predetermined voltage, switching its output to a lower level when said output of said amplifying means reaches a predetermined level above said predetermined voltage, and switching its output to a higher level when said output of said amplifying means reaches a predetermined level above said predetermined voltage, and switching its output to a higher level when said output of said amplifying means reaches a predetermined level below said predetermined voltage;

means for energizing the air conditioning system when said

output of said hysteresis comparator switches to said higher level, and for deenergizing the air conditioning system when said output switches to said lower level; and

first disabling means for disabling said energizing means when the evaporator fan switch is in the "off" position, such that the air conditioning system cannot be energized when the fan is not operating.

4,325,226

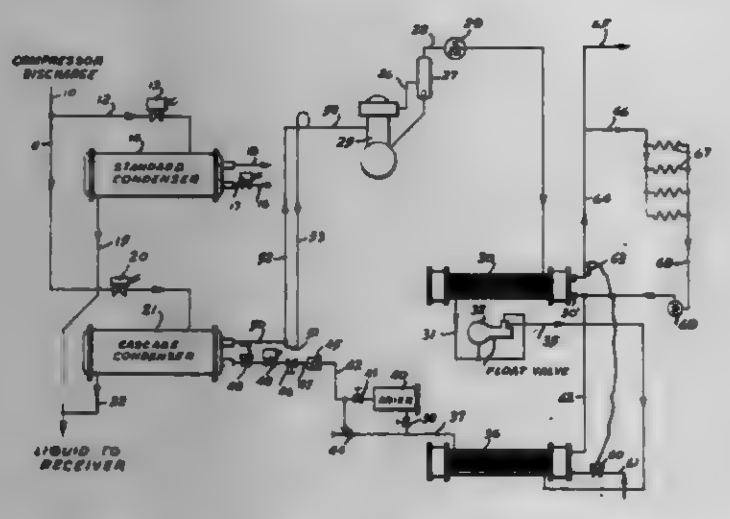
REFRIGERATION SYSTEM CONDENSER HEAT RECOVERY AT HIGHER TEMPERATURE THAN NORMAL CONDENSING TEMPERATURE

Bruce S. Schaeffer, Waynesboro, Pa., assignor to Frick Company, Waynesboro, Pa.

Filed Feb. 18, 1981, Ser. No. 235,404

Int. Cl.³ F25B *7/00*

U.S. Cl. 62—238.6 4 Claims



1. A medium heating system comprising, primary and auxiliary refrigeration systems, said auxiliary refrigeration system having first refrigerant condensing means and first refrigerant evaporating means, said primary refrigeration system having second refrigerant condensing means connected to said first refrigerant evaporating means whereby heat rejected by the refrigerant in said second refrigerant condensing means is absorbed by refrigerant in said first refrigerant evaporating means, said auxiliary refrigeration system having its condensing means connected by a line to feed liquid refrigerant to refrigerant liquid subcooling means, trap means in said line permitting liquid only to flow to said liquid subcooling means after condensation in said first refrigerant condensing means, whereby substantially only heat of condensation is given up in said first refrigerant condensing means, means for bringing medium to be heated, seriatim, into heat exchange relation with refrigerant in said liquid subcooling means, and then into heat exchange relation with refrigerant in said first refrigerant condensng means, whereby said medium is initially heated in said liquid subcooling means to a temperature below that prevailing in said first refrigerant condensing means, and then is further heated in said first refrigerant condensing means to a higher temperature approaching the condensing temperature in said first refrigerant condensing means.

4,325,227

ENERGY EFFICIENT GLASS DOOR MERCHANDIZER

Fayez F. Ibrahim, Niles, Mich., assignor to Tyler Refrigeration Corporation, Niles, Mich.

Continuation-in-part of Ser. No. 25,473, Mar. 30, 1979, Pat. No. 4,245,482, Ser. No. 58,916, Jul. 19, 1979, Pat. No. 4,242,882, Ser. No. 101,069, Dec. 7, 1979, Pat. No. 4,265,090, and Ser. No. 124,544, Feb. 25, 1980. This application May 1, 1980, Ser. No. 145,712

Int. Cl.³ A47F *3/04*

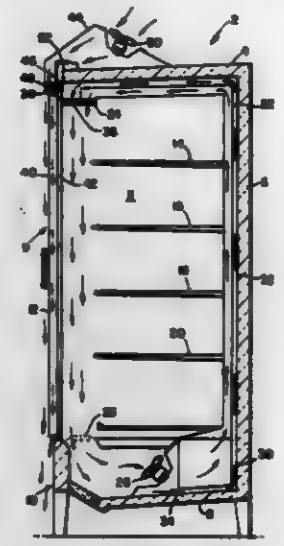
U.S. Cl. 62—248 18 Claims

1. A glass door refrigerated display case comprising:

a cabinet having top, bottom, rear and front walls and an interior display space, with an access opening in said front wall for enabling access into said interior display space;

at least one glass door covering said access opening in said front wall, said door being movable into an open position for enabling access to products in said interior display space, said door having two glass members mounted within a frame with a space between said glass members;

a refrigeration air conduit extending along said top, bottom and rear walls and having an outlet opening and an inlet opening at opposing ends thereof, said outlet opening and said inlet opening being arranged so that air leaving said outlet opening will be directed toward and received by said inlet opening so as to form a refrigerated air curtain across said front opening along a path inside of said door;



refrigeration means including an evaporator coil arranged within said refrigeration air conduit for refrigerating air circulated through said refrigeration air conduit during a refrigeration cycle of operation;

first air circulating means for circulating air through said refrigeration air conduit; and,

means for circulating ambient air through said glass door between said glass members, said means for circulating ambient air through said door includes an air conduit having an outlet opening arranged in alignment with said glass door for directing air between said glass members when said glass door is in a closed position and ambient air circulating means for drawing ambient air into said ambient air conduit and circulating ambient air through said ambient air conduit.

4,325,228

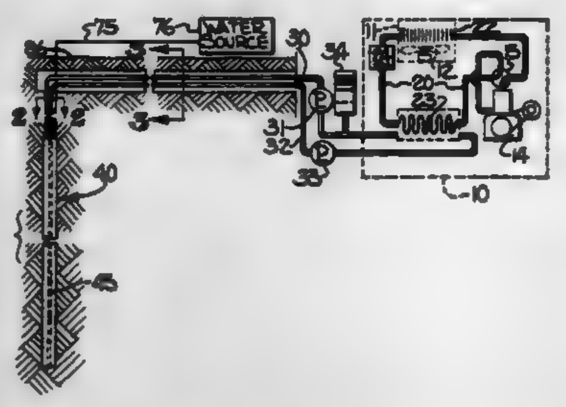
GEOTHERMAL HEATING AND COOLING SYSTEM

Herman B. Wolf, Rte. 1, Box 99-P, Pineville, N.C. 28134

Filed May 20, 1980, Ser. No. 151,583

Int. Cl.³ F28D *7/12; F25D 23/12*

U.S. Cl. 62—260 11 Claims



1. In a geothermal system for conditioning air in an enclosed space by selective transfer of heat between such air and the subterranean water system of the earth including a heat pump

of the liquid-to-air type, an air circulation system for circulating air through said heat pump in heat exchange relationship with a refrigerant therein and for directing such air into the enclosed space, and a liquid circulating system for circulating a liquid through said heat pump in heat exchange relationship with said refrigerant, and a heat sink in heat exchange relationship with the subterranean water system of the earth and connected to said liquid circulating system, the improvement therein wherein said heat sink comprises

(a) an elongate, generally cylindrical liquid container of a material having high thermal conductivity, said container having a length of at least about forty times its diameter to provide a large amount of surface contact with the earth for the volume of liquid contained therein, said container being buried in the earth in a generally vertical orientation and at a depth providing a good heat transfer relationship with the subterranean water system of the earth, said container having an inlet conduit communicating with the interior of the container at the top thereof and an outlet conduit extending generally longitudinally of and within said container and communicating with the interior of said container adjacent the bottom thereof so that liquid enters at the top of said container, travels downwardly therein in heat transfer relationship with the thermally conductive material of the container and is withdrawn from the bottom portion of the container, means surrounding and thermally insulating said outlet conduit substantially throughout its length from the liquid in said container, and means for maintaining said outlet conduit substantially centered within said container and for stabilizing said outlet conduit therein, said centering and stabilizing means including a plurality of positioning devices spaced along said outlet conduit, said positioning devices extending between the interior of said container and said outlet conduit and permitting the liquid to travel downwardly around said outlet conduit,

(b) said liquid circulating system providing a temperature gradient of approximately 20 degrees F. between the liquid being withdrawn from said container and the subterranean water for maximizing the heat transfer rate between said heat sink and the subterranean water and also providing a predetermined liquid dwell time sufficient for at least about a 10 degree F. change in temperature of the liquid within said heat sink and a BTU per hour capacity rating of at least 20,000.

4,325,229

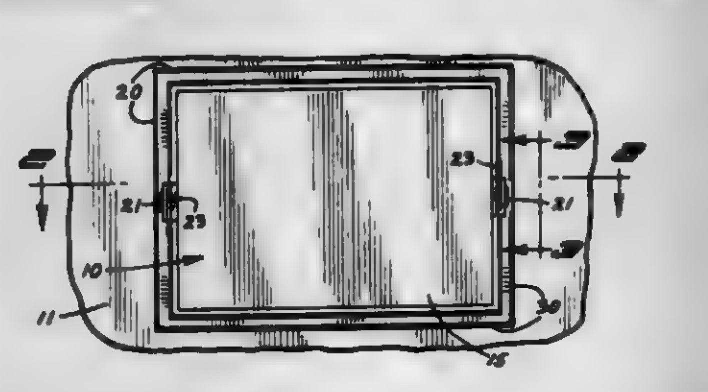
INTERIOR AIR CONDITIONER COVER

Ted E. DeZurik, 2141 East Kenwood Dr., St. Paul, Minn. 55117

Filed Apr. 7, 1980, Ser. No. 138,175

Int. Cl.³ F25D *23/12;* B65B *11/00*

U.S. Cl. 62—262 4 Claims



1. In combination with a through-the-wall air conditioner having a housing, said housing being mounted in an opening defined in a building wall, the improvement comprising a cover which overlies a portion of the air conditioner protruding through said wall to the interior of a room, said cover including a peripheral wall of slightly larger size than the opening, said peripheral wall having outer edges that lie generally along a plane corresponding to the plane of the wall through which the opening is defined, gasket means on the outer edges of said peripheral wall of said cover, said gasket means being compressible a substantial amount, and cooperating latch means on the cover and the interior of the room to latch said cover in position with the outer edges of said peripheral wall of said housing circumscribing the opening through the building wall, said latch means including means to provide a force urging the outer edges of the peripheral wall toward the building wall to compress said gasket to seal around the opening.

4,325,230

PLASTIC ICE CUBE

Mark Driscoll, c/o George Spector, 3615 Woolworth Bldg., 233 Broadway, and George Spector, 3615 Woolworth Bldg., 233 Broadway, both of New York, N.Y. 10007

Filed May 5, 1980, Ser. No. 146,467

Int. Cl.³ F25D *3/00, 3/08*

U.S. Cl. 62—293 4 Claims

1. A freezable object for cooling a beverage, comprising in combination, a hollow shell of transparent plastic material, an identifying disc therein and a quantity of water filling an interior of said shell, wherein said disc comprises a flat member made of transparent plastic material with an identifying character printed thereon, said disc being located between said shell and water when frozen.

4,325,231

CASCADE COOLING ARRANGEMENT

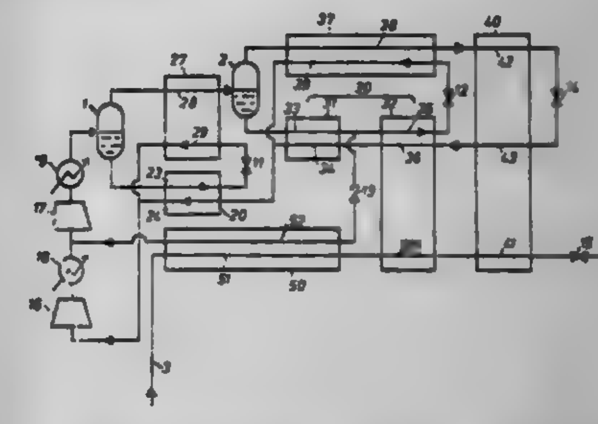
Heinrich Krieger, Leitlestrasse 16, 8100 Garmisch-Partenkirchen, Fed. Rep. of Germany

Division of Ser. No. 23,089, Mar. 22, 1979, which is a continuation of Ser. No. 808,621, Jun. 21, 1977, abandoned. This application Jul. 31, 1980, Ser. No. 175,187

Claims priority, application Fed. Rep. of Germany, Jun. 23, 1976, 2628007

Int. Cl.³ F25B *7/00*

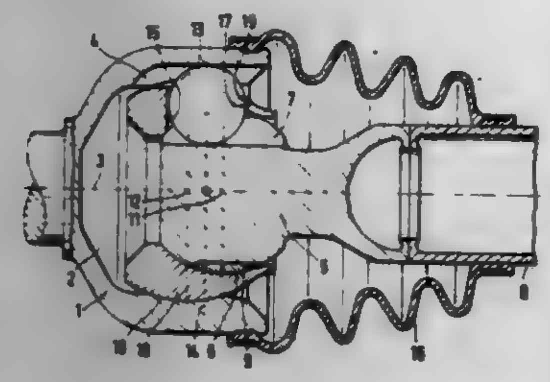
U.S. Cl. 62—335 2 Claims



1. A cooling arrangement that comprises at least one cooling circuit wherein compressor means with cooling means operated by an ambient cooling fluid, expansion means and heat

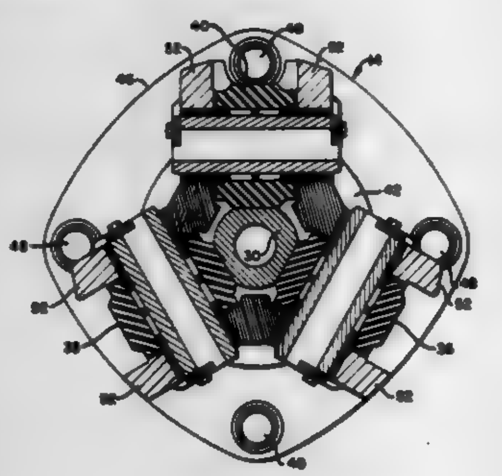
exchanger means are included and the output of the compressor means is connected to the input of the expansion means and the output of the expansion means is connected via the heat exchanger means to the input of the compressor means, at least one cooling circuit being an incorporated cascade circuit wherein first phase separator means having a vapor-liquid input side for the vapor-liquid system to be separated into its liquid and vapor phases, a vapor discharge side and a liquid discharge side are further included and the output of the compressor means is connected via a first flow channel of a first portion of the heat exchanger means to the vapor-liquid input side of said first phase separator means, a second flow channel of said first portion of the heat exchanger means being connected to the input of the compressor means of one cooling circuit, and the liquid discharge side of said first phase separator means is connected via a first flow channel of a second portion of the heat exchanger means to the input of a first portion of the expansion means and the vapor discharge side of said first phase separator means is connected via a first flow channel of a third portion of the heat exchanger means to the input of a second portion of the expansion means and the outputs of said first and second portions respectively of the expansion means are connected essentially in parallelism via second flow channels of said third and second portions respectively of the heat exchanger means to the input of the compressor means, said second and third portions of the heat exchanger means being essentially thermally segregated from one another and in said second and third portions of the heat exchanger means said first and second flow channels being arranged in countercurrent heat-exchange relationship.

4,325,232
CONSTANT VELOCITY UNIVERSAL JOINT
Sobhy L. Girguis, Troisdorf-Oberlar, Fed. Rep. of Germany, assignor to Uni-Cardan AG, Siegburg, Fed. Rep. of Germany
Filed Aug. 24, 1979, Ser. No. 69,369
Claims priority, application Fed. Rep. of Germany, Aug. 26, 1978, 2837361
Int. Cl.³ F16D 3/30
U.S. Cl. 64—21 5 Claims



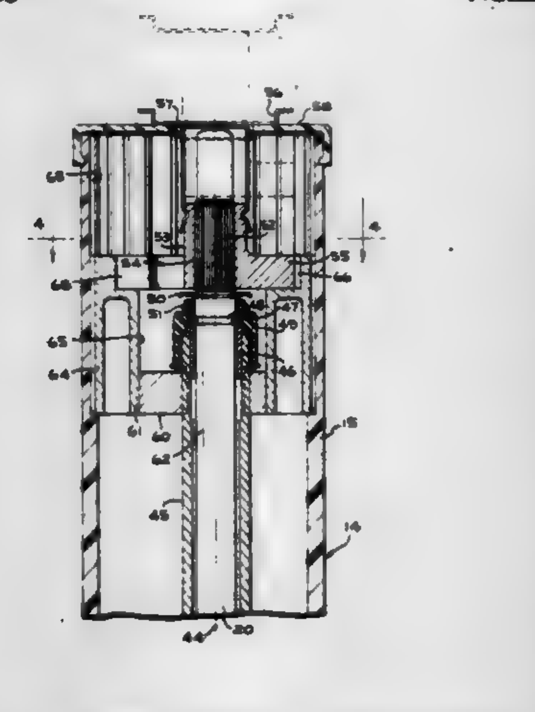
1. Constant velocity universal joint, comprising a hollow outer joint body having an inner surface defining a hollow interior and with the inner surface encircling the axis of said outer joint body and the inner surface having spaced grooves therein extending generally in the axial direction of said outer joint body, an inner joint body located within the hollow interior of said outer joint body and having an outer surface speed inwardly from the inner surface of said outer joint body, said inner joint body having an axis alignable with the axis of said outer joint body and said axes being angularly displaceable one relative to the other when the universal joint is angularly displaced from the aligned arrangement of the axes of said outer and inner joint bodies, said outer surface of said inner joint body having a number of grooves therein corresponding in number to the grooves in said joint body and extending generally in the axial direction of said inner joint body, a plurality of balls located between said outer and inner joint bodies with each said ball positioned in one of said grooves in said outer joint body and in a corresponding groove in said inner joint body for transmitting torque between said outer and inner joint bodies, a cage located within said outer joint body and between the inner surface of said outer joint body and the outer surface of said inner joint body, said cage having window openings therethrough with each said ball located in one of said window openings between the corresponding grooves, the centers of said balls being located in a plane which bisects the angle between the axes of said outer and inner joint bodies when the axes are angularly displaced out of alignment, each of said windows having a pair of opposed boundary surfaces spaced from and disposed parallel to the plane containing the centers of said balls and said pair of opposed boundary surfaces comprising a first boundary surface and a second boundary surface, and said first boundary surface serving under torque load as a bearing surface for said ball wherein the improvement comprises that said first boundary surface has a bevelled face extending outwardly from said first boundary surface to said outer surface of said cage, the prolongation of said bevelled face intersecting the plane containing the centers of said balls at a location spaced inwardly from the center of said ball within said window containing said bevelled face, said cage having an outer surface in contact with the inner surface of said outer joint body and an inner surface in contact with the outer surface of said inner joint body, the outer surface and inner surface of said cage being spherically shaped and the center of the spherically shaped outer surface being located on one side of the plane of said balls and the center of the spherically shaped inner surface being located on the opposite side of the plane of said balls from the center of the outer surface so that said cage has a decreasing thickness in the axial direction of said outer and inner joint bodies in the direction extending from the second boundary surface toward the first boundary surface the bevelled face being located on the first boundary surface of said window adjacent the end of said cage having the least wall thickness and the second boundary surface has a greater thickness than the first boundary surface and extends outwardly to the outer surface of said cage.

4,325,233
KELLY AND KELLY DRIVE BUSHING
Charles W. Haynes, Spring, Tex., assignor to Joy Manufacturing Company, Pittsburgh, Pa.
Filed Dec. 13, 1979, Ser. No. 103,258
Int. Cl.³ F16D 3/00
U.S. Cl. 64—23.5 15 Claims



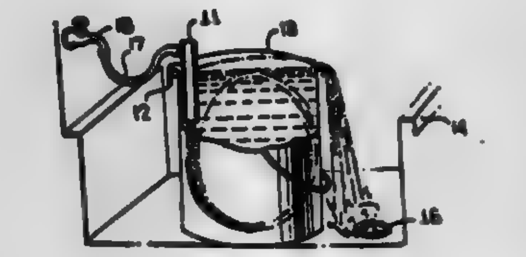
1. An improved kelly having an elongated six sided drive section with a longitudinally extending central axis of rotation, said drive section having a substantially uniform cross section along the length thereof, with the outer peripheral surface having three arcuately spaced continuous flat drive sides converging and alternating with three continuous arcuate sides, said arcuate sides being spaced a substantially equal radii from said central axis of said kelly, said flat drive sides each having a midpoint spaced substantially the same radial distance from said central axis which radial distance is less than the radius of said arcuate sides.

4,325,234
ADJUSTABLE STOKE AGITATION SYSTEM
Daniel N. Toma, Georgetown, Ind., assignor to General Electric Company, Louisville, Ky.
Filed Oct. 14, 1980, Ser. No. 196,908
Int. Cl.³ D06F 13/02
U.S. Cl. 68—133 7 Claims



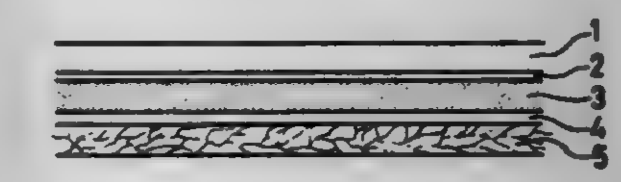
1. In an automatic washing machine of the vertical axis type, an adjustable agitation system comprising:
input means oscillatable about a first, generally vertical, axis;
an agitator mounted for oscillation about a second, generally vertical, axis spaced from the first axis, and
drive means interconnecting said agitator with said input means for oscillating said agitator about the second axis in response to oscillation of said input means about the first axis;
said drive means being manually adjustable to provide a selected one of a plurality of driving relationships between said input means and said agitator to produce oscillation of said agitator through a selected one of a plurality of oscillation arcs in response to oscillation of said input drive means through a predetermined arc.

4,325,235
WASHING APPARATUS
Peter Bauer, Germantown, and Julian Lazrus, Bethesda, both of Md., assignors to Bowles Fluidics Corporation, Silver Spring, Md.
Division of Ser. No. 576,713, May 12, 1975, Pat. No. 4,227,550, which is a division of Ser. No. 356,416, May 2, 1973, abandoned. This application Apr. 3, 1980, Ser. No. 136,860
Int. Cl.³ D06F 7/00, 39/06
U.S. Cl. 68—3 SS 26 Claims



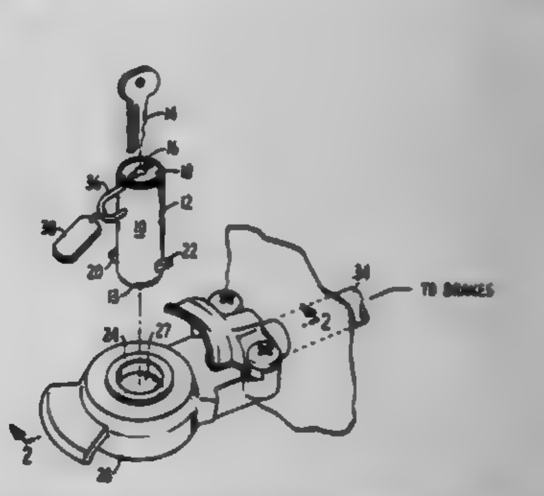
1. A clothes washer comprising:
a container defined by a substantially vertical surface generated about the periphery of the container suitable for containing a predetermined volume of wash liquid, said container having an upper edge permitting overflow from the surface of said volume of liquid upon addition of liquid to said container in excess of said predetermined volume;
pulsing means for delivering wash liquid pulses into said container; and
mounting means for securing said pulsing means in a predetermined position relative to said container to deliver said liquid pulses into said container such that the pulses are oriented to induce and maintain a re-circulating liquid flow in a vertical plane in said container and such that the delivery of wash liquid provides overflow from the surface of said volume of wash liquid.

4,325,236
PROCESS FOR MANUFACTURING REGENERATED LEATHER
Yu-Ming Tsai, No. 34-3, 31 Alley, 89 La., Sec. 5 Nanking East Rd., Taipei, Taiwan
Filed Feb. 11, 1980, Ser. No. 120,505
Int. Cl.³ C14B 1/00
U.S. Cl. 69—21 5 Claims



1. A process for manufacturing regenerated leather characterized by preparing a short-fiber and a long-fiber leather pulps from wasted natural leather; sending the two kinds of pulp separately to a refrigerator for freezing and then drying in a vacuum dryer, thus form two sheets of cake-like leather; combining the two sheets to one and dipping with proper bonding agent; fluffing the long-fiber leather sheet by a fluff-forming machine thus to form a regenerated natural leather.

4,325,237
LOCK PLUG FOR GLAD HAND BRAKE LINE COUPLER
Larry L. Menzie, Antioch, Calif., assignor to James G. O'Neill, Walnut Creek, Calif.
Filed Sep. 8, 1980, Ser. No. 185,217
Int. Cl.³ B60R 25/00; E05B 65/12
U.S. Cl. 70—14 5 Claims



1. In combination with a glad hand brake line coupler, a lock plug for insertion into and locking in place in a passage opening formed in said brake line coupler, said lock plug comprising a hollow cylindrical body having a base formed integrally with said body at one end thereof and a moveable locking member rotatably held in said body at the other end thereof; a plurality of locking fingers connected to said moveable locking member and extendable from and retractable into said body, and operating means insertable into an opening formed in said moveable locking member whereby the turning of said operating means from a first position to a second position will rotate said move-

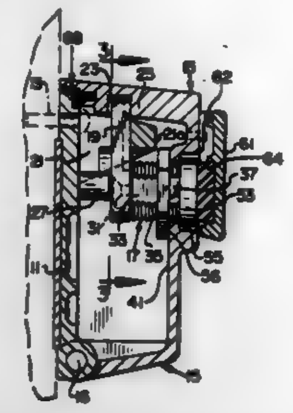
able locking member to retract said locking fingers into said hollow body to allow said lock plug to be inserted into said passage opening with the base thereof pressed against an interior wall of said coupler, and the turning of said operating means back from said second position to said first position will rotate said moveable locking member to thereby extend said locking fingers from said hollow body to thereby hold said lock plug within said brake line coupler by the abutment of said fingers against an interior wall of said fitting opposite said interior wall against which said base is pressed.

4,325,238
CABLE LOCK
Frank J. Scherbing, River Grove, Ill., assignor to Fort Lock Corporation, River Grove, Ill.
Filed Jun. 16, 1980, Ser. No. 159,803
Int. Cl.³ E05B *73/00*
U.S. Cl. 70—18 **4 Claims**

1. A cable lock, comprising an elongated lock body, said body being secured to one end of a flexible cable, said lock body including a key actuated lock mechanism, a transverse cable receiving bore passing completely through said body, said lock mechanism carrying a first securement means rotatable by actuation of a proper key and in communication with the transverse cable receiving bore, the opposite end of the cable having a lug engagement member connected thereto and adapted to be moved into and through the transverse bore of said body, said lug engagement member having cooperating means for interlocking engagement with the lock mechanism securement means for securement to the cable body upon rotation of a proper key, said cable having a plurality of lug engagement members secured thereto at predetermined spaced intervals, each of said lug members having corresponding engagement means for interlocking with said key actuated engagement means upon rotation of a proper key, and said bore and said lugs each having a corresponding longitudinally extending key and keyway for positively guiding the lugs in said bore.

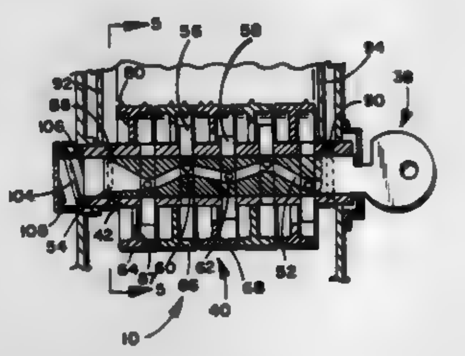
4,325,239
KEY SAFE HAVING IMPROVED BAR LOCKING SYSTEM
Wayne F. Larson, Salem, Oreg., assignor to Supra Products, Inc., Salem, Oreg.
Filed Jan. 17, 1980, Ser. No. 112,867
Int. Cl.³ E05B *65/06*; E05C *3/02*
U.S. Cl. 70—139 **8 Claims**

1. In a lock device,
a first member and a second member to be locked together,
a lock including an arm on one member movable to and from a locking position with respect to a retaining means on the other member,



and means for establishing a connection between said arm and said one member at opposite sides of said retaining means when said arm is in its locking position.

4,325,240
LOCKING MECHANISM
Derek J. Gable, Rancho Palos Verdes, Calif., assignor to Denis V. Bosley, Rancho Palos Verdes, Calif., a part interest
Filed Sep. 17, 1979, Ser. No. 76,326
Int. Cl.³ E05B *37/00*
U.S. Cl. 70—284 **24 Claims**

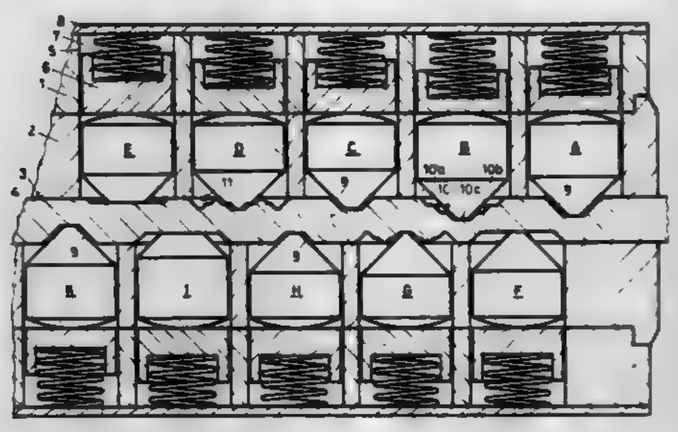


1. A locking mechanism comprising:
a tumbler;
means for moving said tumbler to one of a plurality of predetermined positions;
a web;
a plurality of cooperative means in said web each for cooperating with said tumbler, each one of said cooperative means within said web being positionable to receive said tumbler when said tumbler is correctly positioned by said tumbler moving means;
means for controlling the position of said web because positioning of both said cooperative means on said web and said tumbler is necessary for said tumbler to be received by said cooperative means so that said locking mechanism can be unlocked.

4,325,241
SYSTEM FOR THE INCREASE OF THE NUMBER OF DIFFERING LOCKING POSSIBILITIES IN ROTARY CYLINDER LOCKS
Ernst Keller, Untere Schwandenstrasse 22, 8805 Richterswil, Switzerland
Filed Jul. 21, 1980, Ser. No. 171,233
Claims priority, application Switzerland, Apr. 24, 1979, 3851/79
Int. Cl.³ E05B *27/04*
U.S. Cl. 70—358 **6 Claims**

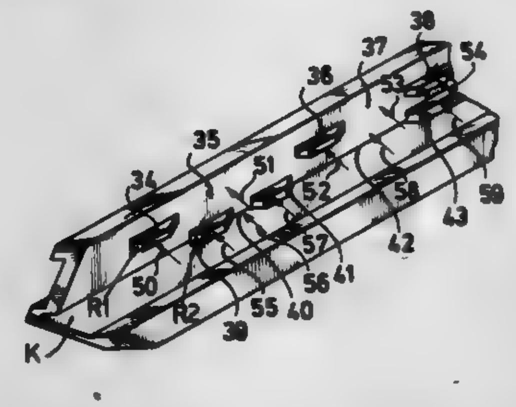
1. In a rotary cylinder lock comprising a cylinder housing, a cylinder core disposed therein and having a key channel, and a

plurality of spring-loaded, two-piece tumbler pins disposed in bores running radially through the cylinder core and the cylinder housing and which can be positioned by a flat key in the key channel to permit free movement of the cylinder core and positions the correct alignment of rows of the tumbler pins by means of recesses in side surfaces of the key, the improvement comprising
means for increasing the number of differing locking possi-



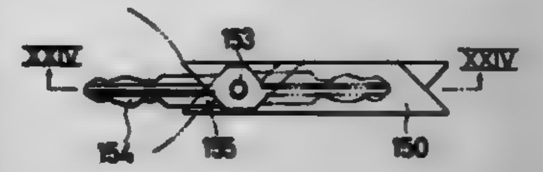
bilities comprising variably shaped heads on the tip ends of said tumbler pins, and wherein at least one of the recesses of the key has two or more differing control surfaces for the head of the accompanying tumbler pin, and the heads of the respective tumbler pins in the several locks are disposed in such a manner that the heads are only arranged in the correct alignment when the heads interact with either one, several or all control surfaces at the same time.

4,325,242
MULTI-LEVEL LOCK SYSTEM AND METHOD
Werner Tietz, Berlin, Fed. Rep. of Germany, assignor to ZEISS IKON AG Goerzwerk, Berlin, Fed. Rep. of Germany
Continuation-in-part of Ser. No. 940,787, Sep. 8, 1978, Pat. No. 4,221,121. This application Mar. 19, 1980, Ser. No. 131,810
Claims priority, application Fed. Rep. of Germany, Aug. 25, 1977, 2738313
Int. Cl.³ E05B *19/02*
U.S. Cl. 70—401 **9 Claims**



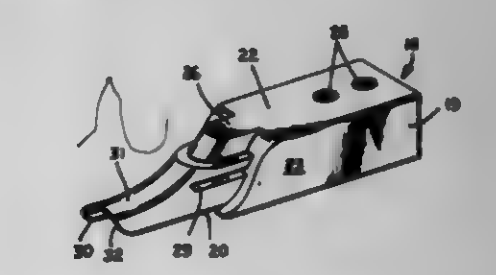
1. In a key for use in a hierarchal lock system with an elongated body having selectively spaced notches cut on an elongated edge thereof, an improvement comprising:
a first plurality of discontinuous rib members selectively arranged and affixed to a side of the body wherein higher order keys in the hierarchy have more discontinuous rib members than do lower order keys.

4,325,243
KEY HOLDER
Minoru Toyoda, Nagoya, Japan, assignor to Aisin Seiki Company, Limited, Kariya, Japan
Filed Aug. 22, 1979, Ser. No. 68,568
Claims priority, application Japan, Sep. 8, 1978, 53-110845; Feb. 6, 1979, 54-13025; Feb. 6, 1979, 54-13026; Feb. 6, 1979, 54-13027; Feb. 6, 1979, 54-13028; Feb. 6, 1979, 54-13029
Int. Cl.³ A47G *29/10*
U.S. Cl. 70—456 R **21 Claims**



1. A tie pin type key holder within which a tie can be inserted comprising:
a body;
a key pivotably mounted on said body at one end portion of said body and movable between an operating position in which the key is disposed outside said body and a non-operating position in which the key is housed within said body;
said key further comprising an end hook portion extending therefrom and engageable for moving said key from said non-operating position to said operating position, said end hook portion projecting outwardly from said body;
a guide member formed at an end portion of said body opposite said one end portion of said body for guiding said tie upon insertion within said key holder; and
biasing means having one end connected to said body for maintaining said key at the non-operating position thereof and having a free end opposite said one end of said biasing means for allowing insertion of said tie within said key holder.

4,325,244
SELF-REPAIRING WIPER DIE
Robert L. Stowe, 6696 Carriage Dr., Mableton, Ga. 30059, and Wilbur B. Taylor, 3499 Chestnut Dr., Doraville, Ga. 30340
Filed Sep. 2, 1980, Ser. No. 183,420
Int. Cl.³ B21D *7/04*
U.S. Cl. 72—158 **6 Claims**



1. A wiper-die assembly for mounting on a tube bending machine comprising:
a metallic base means having an outer bottom surface and configured to define a longitudinal U-shaped channel by a pair of channel sidewalls and a channel floor, said channel extending completely through the longitudinal length of said base means;
a longitudinally extending metallic insert means having an upper, lower, and pair of sidewall surfaces, said lower and sidewall surfaces of the insert\means configured to slideably engage longitudinally with the sidewalls and floor of said base means channel when the insert means is located in the channel;
the upper surface of said insert means configured to form a

semi-circular longitudinal channel therealong with said channel having a diametric value of no greater than the width of the base means channel;

the longitudinal length of said upper surface of said insert means being greater than that of the insert means lower and sidewall surfaces such that one end of the insert means is configured to provide a curvatured transition section that extends from the insert means lower and sidewall surfaces to termination in a sharp feather-edge substantially tangent to the semi-circular channel in the insert means upper surface;

cooperative retention means in the sidewalls of said base means channel and the sidewalls of said insert means whereby when the insert means is located within the base means channel, the insert means may be selectively slid in the channel in either longitudinal direction while restrained from an upward direction out of said first means channel;

and, a metallic adjusting means for making a relative longitudinal movement between the base means and the insert means, said adjusting means comprising an axially extending rotatable member having a threaded portion thereon nesting in a longitudinal semi-circular cutout in the channel floor surface of said base means with the threaded portion engaging a longitudinal semi-circular and threaded cutout in the lower surface of the insert means whereupon the insert means may be moved in either direction longitudinally in the base means channel upon selective rotation of said rotatable member.

4,325,245

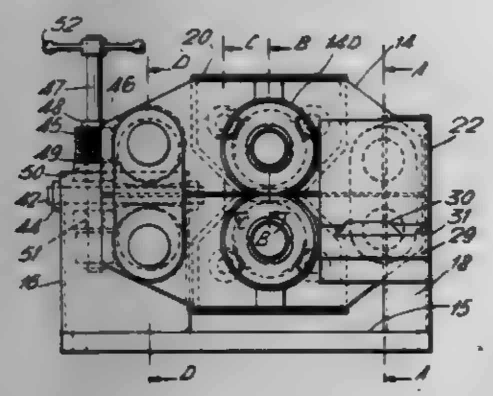
ROLLING MILL STAND

William L. Sherwood, 6968 Ash St., Vancouver, British Columbia, Canada

Filed Mar. 13, 1980, Ser. No. 130,063

Int. Cl.³ B21B *31/24*

U.S. Cl. 72—248 4 Claims



1. In a rolling mill stand employing cantilevered work rolls, the combination comprising a top roll housing box and a bottom roll housing box mounted one above the other, a roll shaft supported for rotation within a main load bearing mounted in the back wall, said shaft projecting from the housing box front wall and carrying a work roll ring mounted on the projecting shaft end; at least one pair of parting adjustment shaft members, a top shaft in the top bearing box, and a bottom shaft in the bottom bearing box, with axes oriented horizontally, parallel and in a plane substantially at right angles to the pass line on which are fixed external circular eccentric bushings for rotation with the shafts and within bearing surfaces in said front and back walls of said housing boxes; at least one spacer member connecting between said top and bottom shafts adapted for maintaining fixed spacing between the shafts while allowing for shaft and bushing rotation; a fixed support for maintaining a constant vertical position of said spacer member; a sliding guide integral with said fixed support allowing horizontal movement of the said spacer member and thereby of said shafts in the rolling pass-line direction; rotation means for rotating the top parting shaft and bottom parting shaft simultaneously in opposite directions, for substantial equal angular distances, thereby adjusting the spacing between the top and bottom housing boxes according to the amount and direction of eccentricity of said circular bushings.

4,325,246

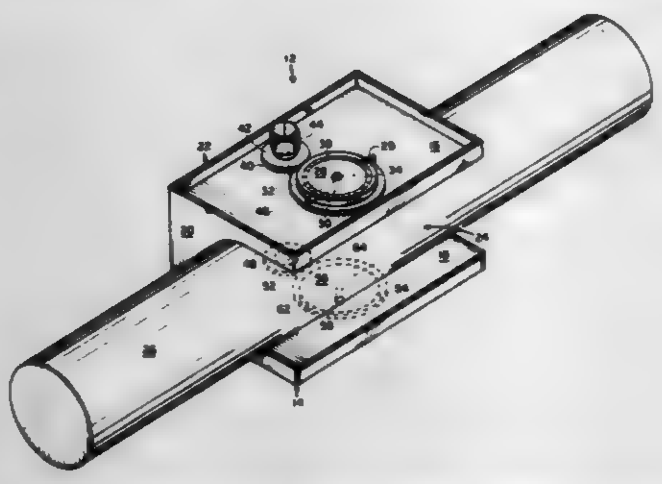
COMPASS CHECKER

Gordon R. Cooke, Poway, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 29, 1981, Ser. No. 268,601

Int. Cl.³ G01C *25/00*

U.S. Cl. 73—1 E 12 Claims



1. A device for generating a rotatable magnetic field comprising:

a housing having first and second walls and a channel therebetween;

a first magnetic means secured to said first wall for generating a first magnetic field in the area of said channel; and

a second magnetic means secured to said second wall for generating a second magnetic field in the area of said channel.

4,325,247

METHOD FOR DETERMINING GASEOUS CONTAMINANTS IN VAPOR COOLED TRANSFORMERS

Stephen D. Foss, Pittsfield, Mass., assignor to General Electric Company

Filed Jul. 14, 1980, Ser. No. 168,062

Int. Cl.³ G01N *7/14*

U.S. Cl. 73—19 5 Claims

1. A method for determining the concentration of dissolved gas in condensable power transformer coolants comprising the steps of:

providing container means in fluid coupled relation with a power transformer tank;

evacuating the container means;

admitting a sample of condensable coolant from the transformer tank to completely fill the container means;

closing the container means to allow the coolant and any noncondensable gas dissolved therein to achieve a state of thermal equilibrium within the container means;

measuring the total pressure within the container means; and

measuring the temperature of the sample in its state of thermal equilibrium;

whereby the concentration of dissolved noncondensable gas in the sample is determined by Henry's Law.

4,325,248

DEVICE FOR MEASURING THICKNESS OF STORAGE CELL PLATES IN SORTING

Ivan A. Kolosov, 1 Ogorodny tupik, 15, kv. 104, Saratov, U.S.S.R.

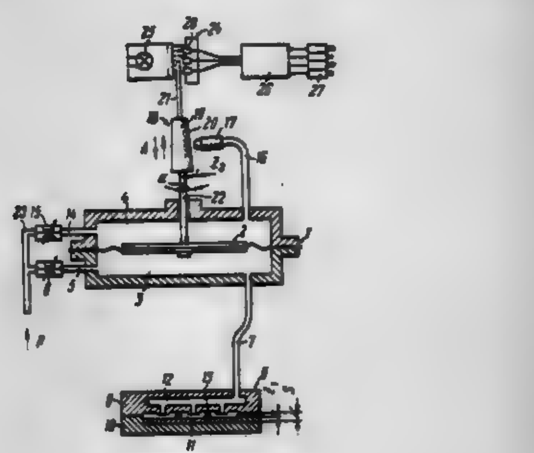
PCT No. PCT/SU79/00065, § 371 Date Jun. 25, 1980, § 102(e) Date May 22, 1980, PCT Pub. No. WO80/00874, PCT Pub. Date May 1, 1980

PCT Filed Aug. 14, 1979, Ser. No. 194,456

Claims priority, application U.S.S.R., Oct. 25, 1978, 2678132

Int. Cl.³ G01B *13/06*

U.S. Cl. 73—37.5 3 Claims



1. A device for measuring thickness of storage cell plates in sorting, comprising a hollow case divided by a movable diaphragm into a measuring chamber and a counterpressure chamber, said measuring chamber having an inlet duct with an air flow restrictor and an outlet duct connected with a sensing element provided with a space for accommodating a storage cell plate to be measured and further provided with a measuring nozzle facing toward said space, said counterpressure chamber having an inlet duct with an air flow restrictor and an outlet duct with a counterpressure nozzle the air flow resistance of which is governed by the movement of a transmitting element having an adjustable transmission ratio, rigidly connected to the movable diaphragm and adapted to actuate a transmitting element travel indicator, characterized in that the indicator of the travel of the transmitting element (18) is constructed as a multirange photorelay (24) designed for sorting storage cell plates (11) being measured, and the transmitting element (18) includes a wedge (19) to which is rigidly attached a blind (21) designed to act upon the multirange photorelay (24), said wedge (19) having provision for varying the angle of the working surface (20) thereof in relation to the counterpressure nozzle (17) for the purpose of adjusting the transmission ratio of the transmitting element (18) and varying the travel of the blind (21) with respect to the photorelay (24).

4,325,249

SELF-STABILIZING PNEUMATIC POSITION SENSOR

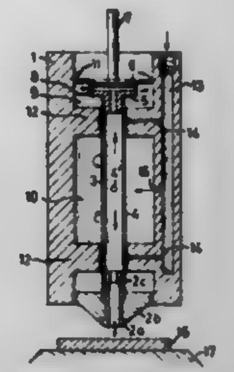
Per R. Berglund, Musserongatan 18, S-13534 Tyresö, Sweden

Filed Jan. 29, 1980, Ser. No. 116,646

Claims priority, application Sweden, Jan. 30, 1979, 7900795

Int. Cl.³ G01B *13/06*

U.S. Cl. 73—37.6 11 Claims



1. Pneumatic position indicator for measuring position by blowing a compressed gas against a surface to be sensed, the indicator comprising:

means defining a closed chamber for being filled with compressed gas;

a hollow, axially movable measuring means extending through the chamber; a compressed gas entrance hole into the measuring means and positioned on the measuring means to be within the chamber;

a nozzle aimed for directing gas against a surface to be sensed, the nozzle communicating with the measuring means and being located outside the chamber at one side of the chamber;

the measuring means having an exit opening that is located outside of the chamber at the other side of the chamber from the nozzle;

an additional member attached to the measuring means and being movable together with the measuring means, the additional member being located on the side of the exit opening of the measuring means that is away from the chamber, and the additional member being shaped for having pressure applied thereto in view of the compressed gas flowing through the exit opening; means defining a gas leakage pathway located past the additional member for throttling the flow of gas from the exit opening past the additional member;

whereby the moving means is acted upon to shift axially with respect to the chamber by a combination of gravity, the gas exiting through the nozzle, and the gas exiting through the exit opening applying pressure against the additional member and then exiting through the leakage pathway.

4,325,250

CIGARETTE TESTING DEVICE

Reginald C. Bolt; John G. Dowding, and Robert E. Williams, all of London, England, assignors to Molins Limited, London, England

Filed Apr. 30, 1980, Ser. No. 145,231

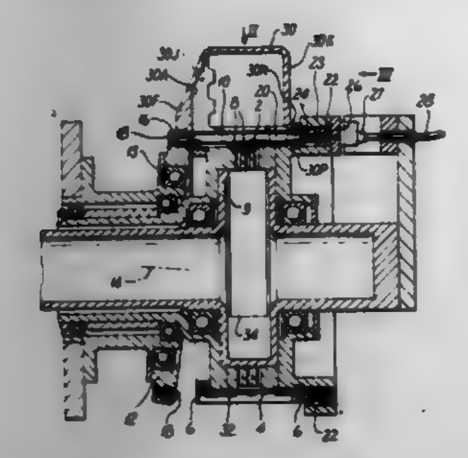
Claims priority, application United Kingdom, May 2, 1979, 15325/79

Int. Cl.³ G01N *15/08*

U.S. Cl. 73—38 23 Claims

1. A device for testing filter cigarettes, comprising a drum or equivalent means for conveying cigarettes in succession through a test station at which each cigarette in turn is tested with the aid of a pressure chamber surrounding the wrapper of the cigarette, and a pressure detector connected to the filter end of the cigarette while the tobacco end of the cigarette is

open to atmosphere, and including means for measuring the pressure in the pressure chamber and means for comparing that



pressure with the pressure detected at the filter end of the cigarette.

4,325,251

APPARATUS FOR TESTING A CONTROL SYSTEM FOR AUTOMOTIVE VEHICLE

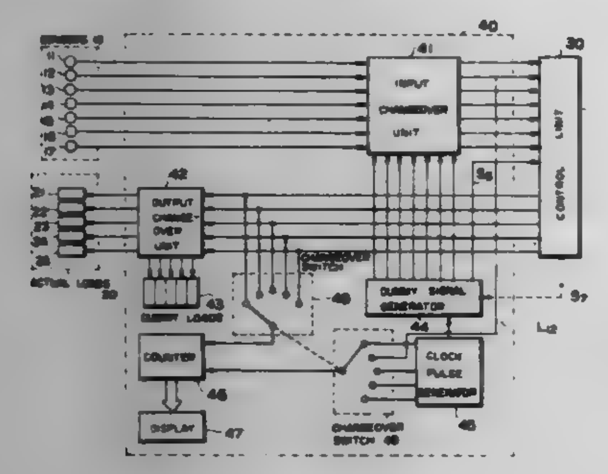
Hidetoshi Kanegae, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Kanagawa, Japan

Filed Jun. 23, 1980, Ser. No. 162,091

Claims priority, application Japan, Jun. 28, 1979, 54-80722

Int. Cl.³ G01M *15/00*

U.S. Cl. 73—119 A 11 Claims



1. An apparatus for testing a system which controls various devices mounted on an automotive vehicle, said system including a plurality of sensors for sensing various operational conditions of the automotive vehicle to output signals representing the operational conditions, a control unit responsive to the signals from said plurality of sensors to output various control signals, and a plurality of actuators responsive to the control signals to control corresponding devices, said apparatus comprising:

a dummy signal generator for producing a plurality of dummy signals corresponding to the signals from said plurality of sensors;

a plurality of dummy loads substantially electrically equivalent to said plurality of actuators;

an input changeover means for selectively connecting each of either the signals from said sensors or the dummy signals to said control unit;

an output changeover means for selectively connecting each of either said plurality of actuators or said dummy loads to said control unit; and

means for measuring the control signals from said control unit.

4,325,252

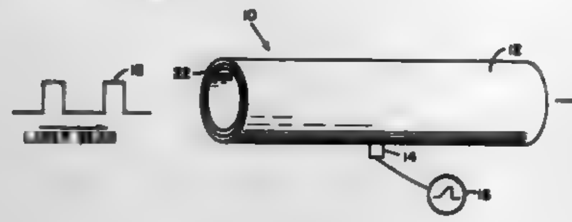
POWER MEASURING DEVICE FOR PULSED LASERS

Thomas G. Miller, Madison, and Billie O. Rogers, Huntsville, both of Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jun. 2, 1980, Ser. No. 155,347

Int. Cl.³ G01K *17/00*; G01J *3/42*

U.S. Cl. 73—190 EW 5 Claims



1. Apparatus for measuring the power of a laser beam without blocking the beam comprising:

(a) an open ended tubular member having an expandible fluid therein;

(b) measuring means for indicating the magnitude of pressure in said tubular member responsive to expansion of said fluid by heat from a laser beam passed through the length of said tubular member and through said fluid.

4,325,253

APPARATUS FOR MEASURING THE MASS OF A FLOWING MEDIUM

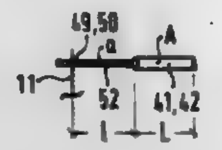
Peter Romann, Stuttgart, and Udo Hafner, Lorch, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 15,994, Feb. 28, 1979, abandoned. This application Apr. 2, 1980, Ser. No. 136,659

Claims priority, application Fed. Rep. of Germany, Mar. 4, 1978, 2809455

Int. Cl.³ G01F *1/68*

U.S. Cl. 73—204 2 Claims



1. In an apparatus for measuring the mass of a flowing medium, such as the intake air mass to an internal combustion engine, comprising:

a probe ring through which the medium to be measured flows;

at least one temperature-dependent resistor through which a current flows; and

a plurality of support elements mounted to the probe ring for mounting the resistor to the probe ring such that it is exposed to the flowing medium, wherein:

(i) the resistor is embodied as a hot wire, a parameter of which is controlled in dependence on the mass of the flowing medium, the extent to which the parameter is controlled being a measure of the mass of the flowing medium; and

(ii) at least one of said support elements is embodied as an elongated element having a longitudinal axis, which is improved with respect to its capacity to minimize the conduction of heat resulting from a current flowing through the resistor, each improved support element having a variable cross section along its longitudinal axis, including a contact area defining a securing portion at the minimum cross section to which the hot wire resistor is attached, further wherein each said improved support element includes two areas of different constant

cross section, with the area of smaller constant cross section being cylindrical and comprising the contact area.

4,325,254

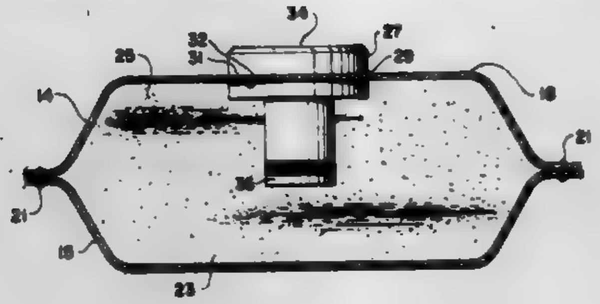
TEMPERATURE INDICATIVE HOTPACK

Lawrence M. Svacina, Denver, and Donald N. James, Estes Park, both of Colo., assignors to Staodynamics, Inc., Longmont, Colo.

Filed Jan. 29, 1980, Ser. No. 116,373

Int. Cl.³ G01K *1/14*, *11/12*

U.S. Cl. 73—356 11 Claims



1. A temperature indicative hotpack for applying moist heat to a body, said hotpack comprising:

a liquid permeable cover having an enclosed space therein;

a heat retaining material within said enclosed space formed by said liquid permeable cover, said material being capable of absorbing hot liquid to heat the same, and said cover being of a material to retain said heat retaining material when said cover is both dry and wet;

at least one temperature monitor having a collar portion for securing said monitor to said liquid permeable cover with said monitor being retained on said cover when said cover is both wet and dry, said temperature monitor having an elongated temperature sensing portion within said enclosed space formed by said liquid permeable cover and in thermal contact with said heat retaining material therein, and said temperature monitor also having an indicating portion responsive to the temperature of said heat retaining material sensed by said sensing portion, said indicating portion including visually discernable indicia at least a portion of which assumes one state when the temperature of said heat retaining material is below a predetermined temperature to indicate a not sufficiently heated condition, and a second state when the temperature of said heat retaining material is above said predetermined temperature to indicate a sufficiently heated condition.

4,325,255

ULTRASONIC APPARATUS AND METHOD FOR MEASURING THE CHARACTERISTICS OF MATERIALS

Paul L. Howard; William B. Tarpley, Jr., both of West Chester; George R. Moulder, Coatesville, and William R. McBride, Glenmore, all of Pa., assignors to Energy and Minerals Research Co., Exton, Pa.

Filed Apr. 7, 1980, Ser. No. 137,879

Int. Cl.³ G01N *29/00*; G01F *23/28*

U.S. Cl. 73—589 10 Claims

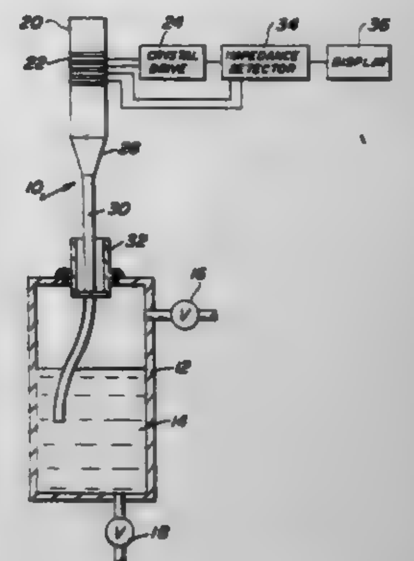
1. Ultrasonic apparatus for measuring the characteristics of a material by sensing impedance to the ultrasonic energy driving a probe, comprising:

a transducer including means whose electrical output varies with dimensional changes and whose dimensions vary with an applied electrical signal;

said transducer being acoustically connected to a probe, said probe being adapted for insertion into a material whose characteristics are to be measured;

means for sensing the ultrasonic acoustic energy in said probe and determining the equivalent impedance;

said sensing means being in series mechanically with said transducer and including a closed loop servo control drive



and means for operating said drive in the continuous wave, burst or pulse mode.

4,325,256

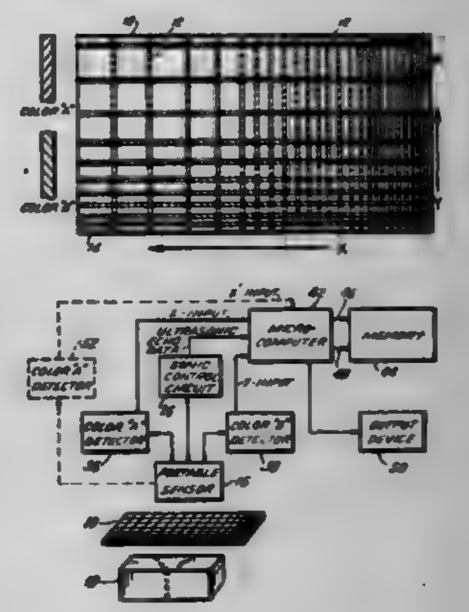
OPTICAL BICHROMATIC POSITION FINDER

Michael Horn, Sound Beach, N.Y., assignor to Optosonic Research Associates, Ltd., New York, N.Y.

Division of Ser. No. 102,241, Dec. 10, 1979, Pat. No. 4,275,596. This application Dec. 15, 1980, Ser. No. 216,567

Int. Cl.³ G01N *29/00*

U.S. Cl. 73—607 7 Claims



1. An ultrasonic scanning system, comprising:

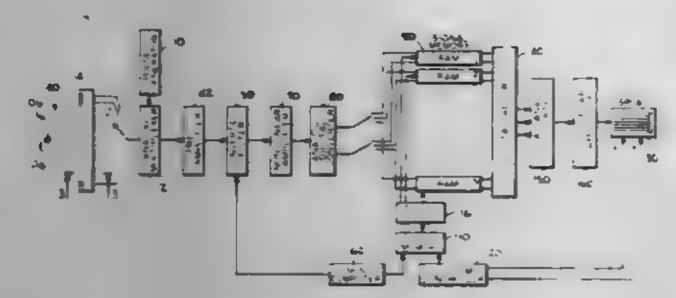
bichromatic screen means having one surface colored with first and second colors, the intensity of said first color varying in a selected manner along a first direction on said surface, and the intensity of said second color varying in a second selected manner along a second direction on said surface oblique to said first direction;

portable ultrasonic transducer means movable with respect to said screen means;

means for causing said transducer means to repeatedly transmit ultrasonic signals through said screen means and to receive ultrasonic signals reflected off an object being scanned and located behind said screen means with respect to said transducer means; and

detector means for measuring the respective intensities of said first and second colors at a point on said colored surface of said screen means corresponding to the lateral position of said ultrasonic transducer means with respect to said screen means.

4,325,257
REAL-TIME DIGITAL, SYNTHETIC-FOCUS, ACOUSTIC IMAGING SYSTEM
Gordon S. Kino, 867 Cedro Way; Paul D. Corl, 53-D Escondido Village, both of Stanford, Calif. 94305, and Peter M. Grant, #9 Grange Rd., Edinburgh, Scotland (EH9 1U.Q.)
Filed Feb. 20, 1980, Ser. No. 122,880
Int. Cl.³ G01N *29/00*
U.S. Cl. 73—626 4 Claims

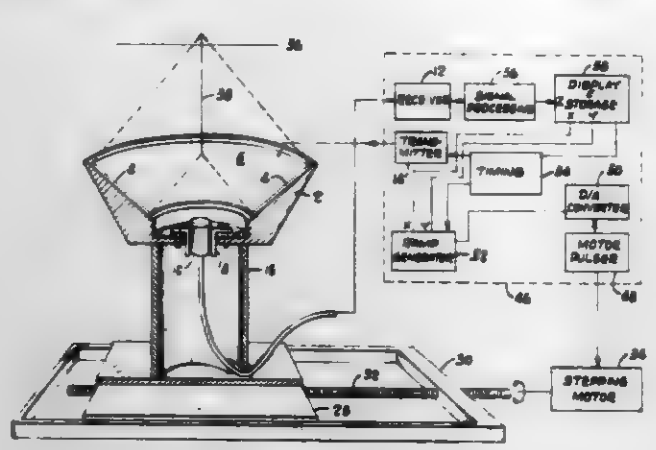


1. A real-time digital, synthetic-focus acoustic imaging system which comprises:
an array of electro-acoustic transducers,
a source of pulses,
means arranged to selectively deliver pulses in sequence from said source to said transducers,
means arranged to receive reflected signals in sequence from said transducers,
an analog-to-digital converter for receiving and digitizing all signals from all of said transducers is sequence,
digital memory means for receiving and storing the digitized signals from said analog-to-digital converter,
focus memory means for equalizing the time delay of the digitized signals from all transducers,
a single nonlinear amplifier providing square root compression gain arranged to amplify the signals received from each of said transducers before delivery to said analog-to-digital converter,
means for adding all of said time-equalized digital signals to provide a summed digital output signal,
a digital-to-analog converter arranged to receive said summed digital output signal to convert the same to an analog output signal, and
a nonlinear amplifier for squared gain expansion of said output analog signal.
2. An inverse filter which comprises:
a plurality of shift registers arranged to operate as a tapped delay line when digital signals are received,
a plurality of multiplying digital-to-analog converters connected to said shift registers to multiply the digital signals by tap weight reference voltages to produce an analog current output, and
means for delivering said reference voltages to said digital-to-analog converters including a plurality of latching digital-to-analog converters, and
means for programming said latching digital-to-analog converters in accordance with the desired frequency response in accord with the Wiener solution

$$H(\omega) = \frac{D(\omega)X^{*}(\omega)}{X(\omega)X^{*}(\omega) + N^{2}(\omega)}$$

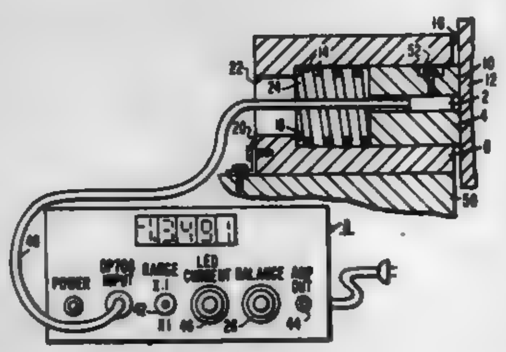
where
$X(\omega)$ is the input signal,
$X^{*}(\omega)$ is the complex conjugate of $X(\omega)$,
$N^{2}(\omega)$ is the noise power, and
$D(\omega)$ is the desired output signal, and
means for summing the output currents and converting to a single output voltage signal.

4,325,258
CONICAL TRANSDUCER ULTRASONIC SCANNING
Francis S. Foster, Toronto, Canada, assignor to Ontario Cancer Institute, Toronto, Canada
Filed Apr. 23, 1980, Ser. No. 142,973
Int. Cl.³ G01N *29/04*
U.S. Cl. 73—642 15 Claims



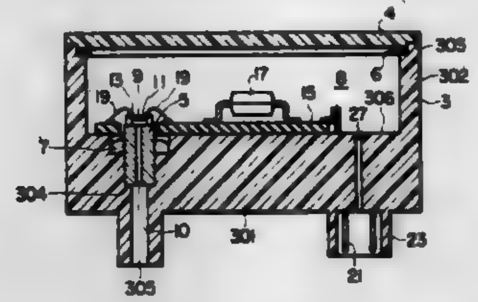
1. An ultrasonic imaging device, comprising transducer means for transmitting ultrasound pulses into a portion of a structure to be imaged and receiving ultrasound scattered by said structure portion and generating signals in response thereto, means to energize said transducer means to transmit said pulses, scanning means for progressively relating said transducer means to successive portions of said structure according to a scanning pattern, and receiver and signal processing means for assembling an image from said generated signals, wherein the transducer means comprises separate transmitting and receiving transducers, one of said transducers being one of a real or simulated conical transducer having a line focus, and the other of said transducers having its axis in parallel alignment with said line focus, the scanning means being operative to move said line focus in relation to a structure to be imaged in accordance with said scanning pattern.

4,325,259
VIBRATION AMPLITUDE MEASURING DEVICE
Lothar E. Willertz, Monroeville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Oct. 7, 1980, Ser. No. 194,719
Int. Cl.³ G01N *29/04*
U.S. Cl. 73—653 5 Claims



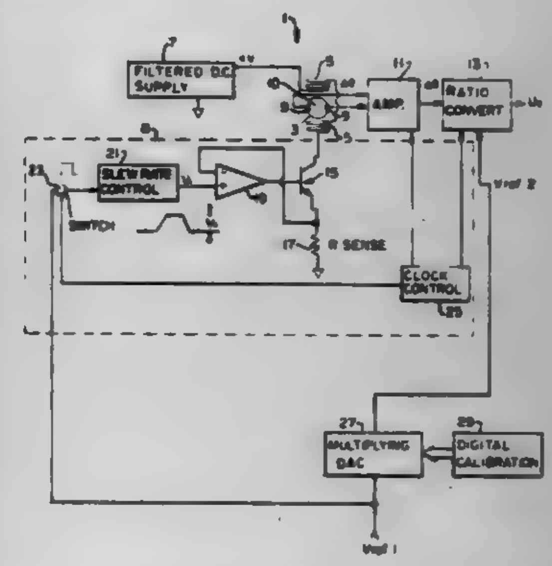
1. A device for the measurement of vibration amplitude and frequency comprising:
sensor means having a probative surface for monitoring variations in the position of a target surface relative to a point located a predetermined distance from the probative surface and having means for generating an output indicative of the target surface position,
means for interpreting and indicating the output of said sensor means,
a sensor housing having a front face for contacting the target surface,
means for supporting said sensor means within said sensor housing so that the probative surface of said sensor means is positioned said predetermined distance from the front face of said sensor housing, providing a path for communication between the probative surface of said sensor means and the target surface,
a base housing having a front face having an opening therein,
means for supporting said sensor housing within said base housing so that said sensor housing is permitted to slide along an axis within said base housing, defining a path of travel communicating with the opening in the front face of said base housing,
and biasing means within said base housing to bias said sensor housing along the path of travel against the target surface with the front face of said sensor housing protruding from the front face of said base housing so that when the target surface is caused to vibrate, said sensor housing remains substantially stationary at one peak of vibration, tracking thermally induced changes in the position of one peak of vibration, while said sensor means detects variations in the position of the target surface due to vibration.

4,325,260
PRESSURE TRANSDUCER
Minoru Takahashi; Hitoshi Minorikawa; Masaru Iguchi, and Seiichi Kashiwazaki, all of Ibaraki, Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Jan. 31, 1980, Ser. No. 117,078
Claims priority, application Japan, Feb. 5, 1979, 54-11449
Int. Cl.³ G01L *9/04*
U.S. Cl. 73—726 6 Claims



3. A pressure transducer for automobiles comprising:
a casing having a bottom portion and a side wall extending from the one side of said bottom portion and forming an open end of said side wall;
means for closing said open end airtightly thereby to provide a closed chamber;
means provided in said bottom portion of said casing for receiving pressure to be detected and converting the pressure into electric signals;
means disposed in said closed chamber for amplifying electric signals;
terminals electrically connected to said amplifying means and partially inserted in said bottom portion of said casing so that one end of said terminals is disposed out of said closed chamber;
means with air passage formed in said bottom portion about the positions of said terminals for preventing water from penetrating into said chamber, said means with air passage communicating with the atmosphere;
wherein said means with air passage includes a projection projecting from said bottom portion of said casing so as to surround said terminals and said air passage, further including
a plug having therein outer terminals and lead wires electrically connected to said outer terminals, and inserted in said projection so that said terminals contact with said outer terminals,
wherein said air passage comprises an air hole made in said bottom portion of said casing, a space defined by said wall, gaps between said wall and said plug and gaps between said terminals and said outer terminals.

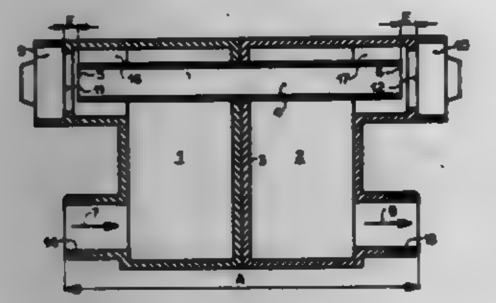
4,325,261
PULSED DC CONSTANT CURRENT MAGNETIC FLOWMETER
William R. Freund, Jr., Hatfield; John C. Grebe, Jr., Norristown, and Paul K. Kuhn, Lansdale, all of Pa., assignors to Emerson Electric Co., St. Louis, Mo.
Filed Oct. 9, 1979, Ser. No. 82,890
Int. Cl.³ G01F *01/58*
U.S. Cl. 73—861.12 7 Claims



1. In a magnetic flowmeter comprising a body adapted to be connected in a flow system for measuring the flow of a fluid therethrough, coil means for generating a magnetic field in said fluid flowing through said body, means for producing an output voltage dependent on the electric field generated in said fluid flowing through said magnetic field, and signal processing means for converting said output voltage to an output signal, the improvement comprising a reference voltage source, pulse forming means operatively connected to said coil means for producing pulses of filtered direct current through said coil means, said pulse forming means including means operatively connected to said reference voltage source and responsive to said reference voltage source for controlling the current of said pulses and hence for controlling the magnetic field produced by said coil means, and means operatively connected to said reference voltage source for generating a second reference voltage dependent on said first reference voltage, said second reference voltage being operatively connected to said signal processing means, said signal processing means including ratioing means responsive to said output voltage and to said second reference voltage for making said output signal dependent on said second reference voltage, whereby changes in said output voltage caused by changes in said reference voltage are compensated in said output circuit by changes in said second reference voltage, and said output signal is made substantially independent of fluctuations in said reference voltage.

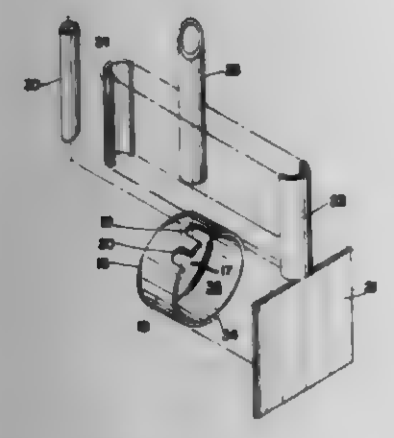
4,325,262
APPARATUS FOR MEASURING LIQUID FLOW
Claudio Meisser, Allenwinden; Hans Strasser, Baar, and Hubert Lechner, Cham, all of Switzerland, assignors to LGZ Landis & Gyr Zug AG, Zug, Switzerland
Filed Jun. 4, 1980, Ser. No. 156,334
Claims priority, application Switzerland, Jun. 8, 1979, 5343/79
Int. Cl.³ G01F *1/66*
U.S. Cl. 73—861.28 16 Claims
1. An apparatus for ultrasonically determining fluid flow passing through a measurement section,

comprising in combination:
a tube having two ends, and an average predetermined inner cross-sectional area, constituting said measurement section,
a sound-emitting transducer disposed near one end of said tube, having a first sound-transfer surface,
a sound-receiving transducer disposed near the other end of said tube, having a second sound transfer surface,
each sound transfer surface being disposed at a sufficiently large predetermined distance from a corresponding end of said tube so as to permit said fluid flowing through said tube,



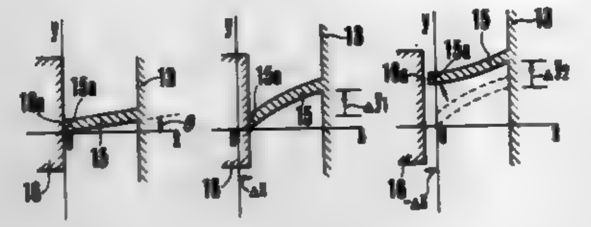
a fluid-receiving chamber communicating with said one end of said tube, having a first average cross-sectional area, and
a fluid-discharge chamber communicating with the other end of said tube, having a second average cross-sectional area, said tube extending through said chambers,
each of said first and second cross-sectional areas exceeding the inner cross-sectional area by a factor of at least two,
at least one of said chambers surrounding a corresponding end of said tube along at least a longitudinal portion of said tube exceeding the average inner width thereof.

4,325,263
METAL SAMPLING APPARATUS
Frederick W. Gaines, Jr., and Ethel M. Gaines, both of 37451 Hunters Ridge Rd., Solon, Ohio 44139
Filed Mar. 31, 1980, Ser. No. 135,649
Int. Cl.³ G01N *1/12*
U.S. Cl. 73—864.55 9 Claims



1. Apparatus for collecting a sample of a molten metal including in combination a mold member having an end wall and an annularly extending sidewall extending therefrom and terminating in an edge which edge is located substantially in a single plane, a substantially flat closure plate member engaging said edge of said annularly extending sidewall and in combination with said mold member defining a mold cavity, wall means in said sidewall forming an opening to said mold cavity, inlet conduit means communicating with said opening to said mold cavity, and spring clamping means holding said mold member and said flat closure plate in position relative to each other.

4,325,264
SUPERSONIC VIBRATION DRIVEN MOTOR DEVICE
Toshiiku Sashida, 1-8, Kasuya 2-chome, Setagaya-ku, Tokyo, Japan
Filed Mar. 24, 1980, Ser. No. 133,309
Int. Cl.³ F16H *27/02, 29/02*
U.S. Cl. 74—88 9 Claims

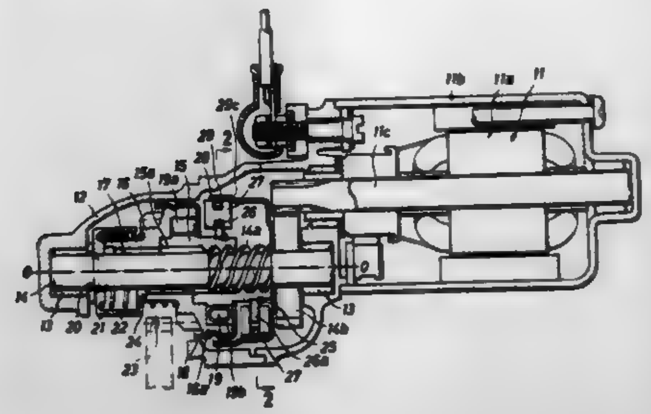


1. A supersonic vibration driven motor device comprising:
a supersonic oscillator; and
a mass to be rotationally driven by way of supersonic vibration,
said supersonic oscillator being provided with a vibration disc secured thereto on an end face thereof which is opposite to said mass to be driven;
said mass to be driven being integrally formed with a plurality of plate-shaped resilient vibratory pieces annularly arranged on an end face thereof opposite to said oscillator and axially extending at a predetermined angle of inclination relative to the axis of the mass to be rotated,
said vibration disc and vibratory pieces being located so that their respective end portions come in contact with one another,
vibratory displacement of the supersonic oscillator, in a direction transverse to the face of said mass being transformed into rotational movement of the mass by the flexible deformation of said vibratory pieces, and further including additional supersonic oscillators, all of the oscillators being coupled to one another with the aid of supporting members and located so as to come in contact with the vibratory pieces formed integrally with the mass to be driven and arranged on the end face of the supersonic oscillator in such a manner that operational phases of the respective oscillators lag each other by a predetermined phase angle so as to obtain even and smooth rotation of the mass.

4,325,265
STARTER DEVICE FOR INTERNAL COMBUSTION ENGINE
Goroei Wakatsuki, Fujimi, and Masahide Yokoo, Tsurugashima, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 3, 1980, Ser. No. 126,719
Claims priority, application Japan, Mar. 2, 1979, 54/24185; Mar. 5, 1979, 54/27711[U]; Mar. 19, 1979, 54/35310[U]
Int. Cl.³ F02N *15/06*
U.S. Cl. 74—7 R 18 Claims

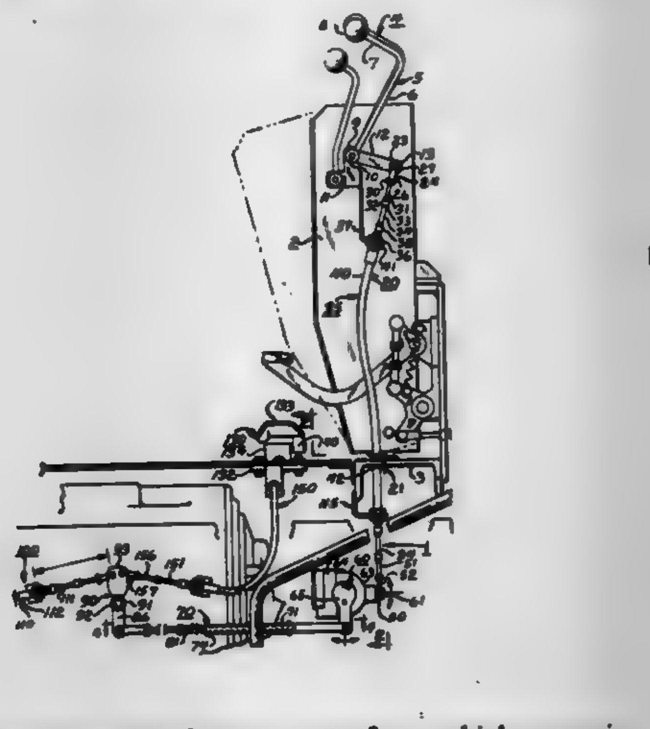
1. A starter device for an internal combustion engine, comprising:
a starter motor;
a pinion shaft connected with said starter motor so as to be rotated by said starter motor;
a movable cylindrical member fitted on said pinion shaft and coupled thereto by a helical spline coupling;
a pinion gear fitted for free rotation on said pinion shaft;
a unidirectional clutch provided between said pinion gear and said movable cylindrical member;
said pinion gear and said movable cylindrical member being coupled together for axial movement in unison with each other;

means for preventing retreat of said pinion gear provided on the outer periphery of said movable cylindrical member;
said pinion gear retreat-prevention means being axially fixed in position but radially movable relative to said movable cylindrical member; and



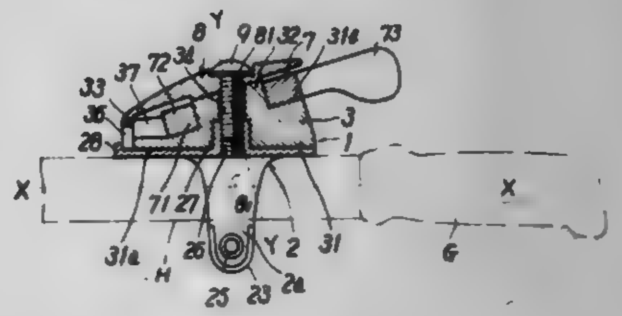
a lock member provided at a position in the vicinity of said pinion gear retreat-prevention means so as to be engageable with said pinion gear retreat-prevention means when said pinion gear retreat-prevention means is radially displaced by centrifugal forces.

4,325,266
ACCELERATOR/DECELERATOR PEDAL AND SYSTEM
Larry W. Lynch, Galion, Ohio, assignor to Fiat-Allis Construction Machinery, Inc., Deerfield, Ill.
Filed Mar. 18, 1980, Ser. No. 131,455
Int. Cl.³ G05G *1/14, 11/00*
U.S. Cl. 74—482 15 Claims



1. An accelerator/decelerator system for a vehicle comprising:
throttle means operatively coupled to a speed control device of a vehicle to control the engine speed or output thereof;
said throttle means including a manually adjustable member being movable in a range of positions to establish an engine speed or output in accordance with a selected one of said positions;
said throttle means further including throttle linkage means coupling said adjustable member to the speed control device of the vehicle;
override means to temporarily alter engine speed or output determined by a selected one of said positions of said adjustable member;
said override means including an actuator and override linkage means operatively coupling said actuator to the speed control device;
said actuator being mounted for selected override movement to control engine speed or output and override the engine speed or output determined by the adjustable member;
said throttle linkage means including spring linkage means operatively coupled to said override linkage means permitting engine speed or output to resume as determined by a selected one of said positions upon release of said actuator;
said actuator being a foot pedal mounted on a shaft for selected pivotal movement about an axis extending in a substantial longitudinal direction toward the operator's position of the vehicle to permit said foot pedal to be operated in a lateral plane, and
said foot pedal being operated in a first lateral direction to accelerate engine speed or output and in a second lateral direction to decelerate engine speed or output.

4,325,267
BICYCLE CONTROL LEVER DEVICE HAVING CONTROL LEVER MOVEMENT CONFORMING TO A CYCLIST'S FINGERS
Masao Kojima, Sakai, Japan, assignor to Shimano Industrial Company Limited, Osaka, Japan
Filed Apr. 21, 1980, Ser. No. 142,379
Claims priority, application Japan, May 2, 1979, 54-59086[U]
Int. Cl.³ G05G *7/00, 5/06*
U.S. Cl. 74—489 5 Claims

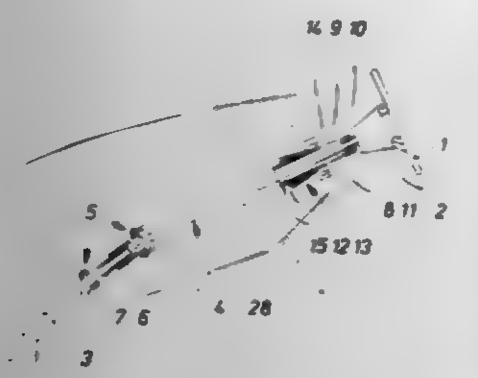


1. A control lever device for a bicycle mounted on a handle bar in the vicinity of a grip thereat, said device comprising:
a fixing member attached to said handle bar;
a lever shaft mounted on said fixing member, said lever shaft being slanted at the foremost end thereof in the direction away from said grip with respect to the axis of said handle bar; and
a control lever for moving a control wire, said control lever having a boss and a control portion supported rotatably to said lever shaft through said boss, said control portion of said control lever being positioned adjacent to said grip, said control portion being positioned radially outwardly of said handle bar with respect to said boss.

4,325,268
SAFETY STEERING COLUMN ASSEMBLY FOR AUTOMOBILES
Hubertus Benteler, Bielefeld; Rainer Hansen; Egon Olszewski, both of Paderborn-Elsen, and Ferdinand Wecker, Paderborn-Sennelager, all of Fed. Rep. of Germany, assignors to Benteler-Werke AG, Paderborn, Fed. Rep. of Germany
Filed Mar. 18, 1980, Ser. No. 131,351
Claims priority, application Fed. Rep. of Germany, Mar. 21, 1979, 2911021
Int. Cl.³ B62D *1/18*
U.S. Cl. 74—492 12 Claims

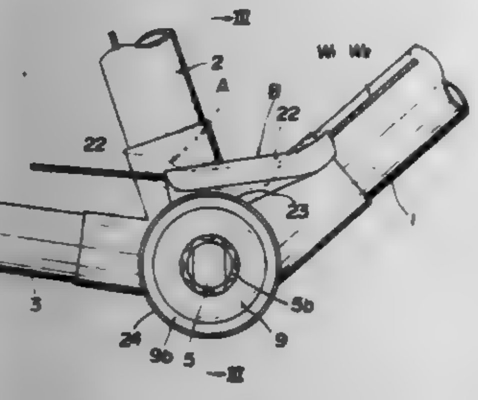
1. A safety steering column assembly for automobiles comprising steering shaft means of variable axial length for connecting a steering wheel with a steering gear mechanism; a guide and support tube surrounding a portion of the steering shaft means in a region adjacent the steering wheel; impact absorption means comprising a corrugated tube in which the corrugations are compressed to a block and in which the stiff-

ness of the corrugation changes along the length of the corrugated tube, said corrugated tube surrounding a portion of the guide and support tube and having an end distant from the steering wheel fixedly connected to said guide and support



tube; and means for connecting the other end of the corrugated tube to a portion of the body of the automobile, so that said impact absorption means is stressed in tension upon impact of a force on the steering wheel.

4,325,269
WIRE GUIDE FOR A BICYCLE
Masashi Nagano, Sakai, Japan, assignor to Shimano Industrial Company Limited, Osaka, Japan
Filed Feb. 6, 1980, Ser. No. 119,137
Claims priority, application Japan, Feb. 20, 1979, 54/21227[U]
Int. Cl.³ F16C *1/00*
U.S. Cl. 74—501 R 2 Claims

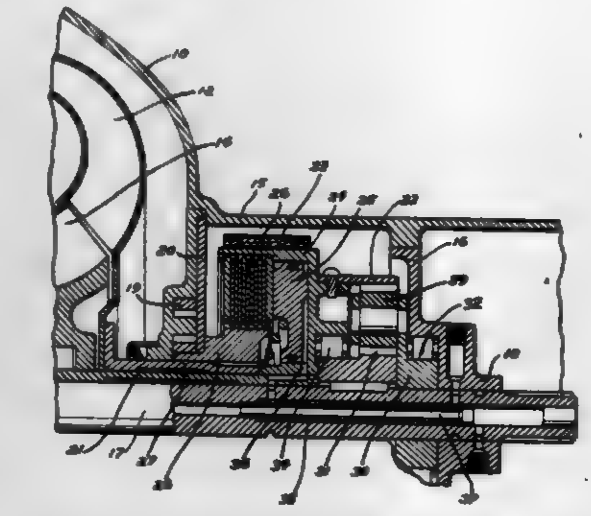


1. A wire guide for mounting with a bottom bracket of a bicycle, said bottom bracket supporting a crank shaft and provided with threaded bearing tubular members for supporting said crank arm, said wire guide comprising,

a guide body, said guide body having a guide groove for guiding therethrough a control wire for a derailleur at the bicycle and having a support extending from said guide groove axially of said bottom bracket,

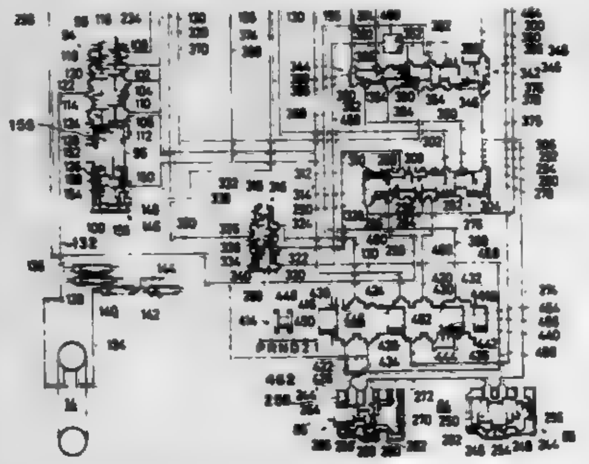
a fixture provided in continuation of the extending end of said support at said guide body, said fixture comprising a ring plate having a narrow width and circular arc, having an inner periphery of a larger diameter than an inner diameter of said bottom bracket, being approximately perpendicular to the direction of said extending end, and being opposite to one axial end face of said bottom bracket, so that said threaded tubular member is screwed with said bottom bracket to thereby fix said fixture to said bottom bracket, said ring plate including a plurality of projections extending axially of said bracket.

4,325,270
TORQUE CONVERTER MECHANISM
Edwin C. McRae, Box 922, Cussets, Ala. 36852
Filed Nov. 23, 1979, Ser. No. 96,653
Int. Cl.³ F16H *47/04, 47/08, 57/10*
U.S. Cl. 74—677 4 Claims



1. In a motor vehical torque converter having impeller and turbine and stator members mounted to define a fluid circuit, a planetary gear set comprising a planet carrier and a sun gear and a ring gear and planet pinions rotatably mounted upon said carrier to mesh with said sun gear and ring gear to form said gear set, a turbine shaft which connects said turbine to said sun gear, a stator sleeve rotatably mounted to rotate in a reverse direction around said turbine shaft connecting said stator to said ring gear, and an overrunning clutch disposed between the converter housing and said carrier which prevents rearward rotation of said carrier, said carrier functioning as a torque re-action member to reverse the rearward torque of said stator into forward torque on said turbine shaft, and said ring gear and sun gear being of such relative sizes that reverse rotation of said stator will drive said turbine shaft forwardly at a substantially greater speed than the reverse speed of said stator, for the purpose described.

4,325,271
SHOCK CONTROL ARRANGEMENT IN HYDRAULIC CONTROL SYSTEM OF AUTOMATIC POWER TRANSMISSION
Kazuyoshi Iwanaga, Yokohama; Kazuhiko Sugano, Tokyo, and Kunio Ohtsuka, Yokohama, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan
Filed Nov. 8, 1978, Ser. No. 958,915
Claims priority, application Japan, Aug. 7, 1978, 53/95920
Int. Cl.³ B60K *41/06*
U.S. Cl. 74—869 12 Claims



1. In an automatic power transmission having a transmission mechanism including a fluid operated frictional unit adapted to

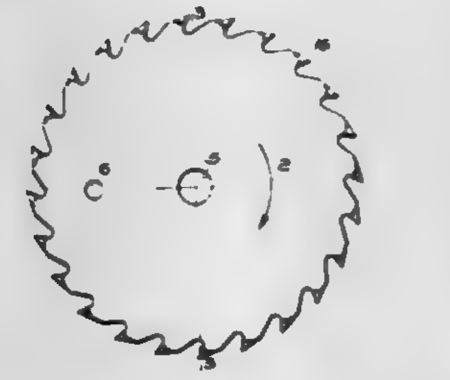
effect, when hydraulically actuated, an upshift between two predetermined lower and higher gear ratios in an automatic forward drive range condition of the power transmission, and a hydraulic control system including a transmission throttle valve responsive to load on the engine for producing a throttle pressure variable with engine load, a pressure regulator valve responsive to said throttle valve for producing a line pressure variable with and not lower than the throttle pressure and a hydraulic fluid circuit operatively intervening between said pressure regulator valve and said frictional unit, a shock control arrangement for controlling mechanical shocks in said frictional unit during upshifting between said gear ratios, comprising:

signal pressure supply means communicating with said hydraulic fluid circuit for delivering thereto a signal fluid pressure variable with said throttle pressure;

pressure reducing valve means provided in said hydraulic fluid circuit and operative to develop an output fluid pressure variable with said signal fluid pressure, said output fluid pressure being always lower than said line pressure, the pressure reducing valve means including a valve element having a first pressure acting area to be acted upon by said signal fluid pressure for urging the valve element to move in a first direction and a second pressure acting area to be acted upon by said output fluid pressure for urging the valve element to move in a second direction, resilient biasing means urging the valve element to move in one of said first and second directions, the valve element being responsive to an excess of fluid pressure higher than said output fluid pressure and movable in said second direction in response to the excess of fluid pressure, and fluid discharge means for discharging the excess of fluid pressure from the pressure reducing valve means in response to movement of said valve element in said second direction; and

output pressure passageway means for providing fluid communication between said pressure reducing valve means and said frictional unit for conducting said output fluid pressure to the frictional unit in the presence of the output fluid pressure in the pressure reducing valve means, whereby upon the upshift between the predetermined lower and higher gear ratios, said frictional unit is operated only by said output fluid pressure which is variable with said signal pressure and which is always lower than said line pressure.

4,325,272
METHOD OF MAKING SAW BLADES
Robert D. Kelsey, Halfway, England, assignor to Bramah Stainless Products Limited, Sheffield, England
Filed Oct. 11, 1978, Ser. No. 950,740
Int. Cl.³ B23D *65/02*
U.S. Cl. 76—112 8 Claims



1. A method of manufacturing a circular saw blade comprising advancing a blank in strip form of thickness required for said saw blade and of width slightly greater than the diameter required for said saw blade, and having the physical characteristics required of said saw blade through a press tool having multiple blanking stations, the method comprising effecting a first blanking operation on said blank at a first blanking station to blank out leading edges of non-consecutive teeth simultaneously with trailing edges of preceding adjacent teeth, advancing said blank to at least one subsequent blanking station and blanking out identical edges of some or all of the remaining teeth, advancing said blank to a further blanking station and forming outer edges on some or all of the teeth separate from forming the leading and trailing edges of said teeth, and blanking a centre hole and a drive hole at one of said stations.

4,325,273
OPENER FOR SPLIT RING KEY HOLDER
James Gibbons, 205 W. Riverside Dr., Truth or Consequences, N. Mex. 87901
Filed Jun. 12, 1980, Ser. No. 158,806
Int. Cl.³ A44B *15/00*
U.S. Cl. 81—3 R 14 Claims

1. For facilitating installation of a key on and removal of the key from a split ring key retainer of the type comprising a tight helix of an internal diameter D of strip material which extends through at least one complete helical turn and at least a fraction of another, so as to have a portion intermediate two opposite ends of the strip, where corresponding portions of axially adjoining turns normally abut one another providing a normally closed split,

an opener device, for temporarily opening up the split, near either end thereof so that a key already on the split ring can be begun to be wound off, or so that a key not yet on the ring can be begun to be wound onto the ring, said opener device comprising:

a shank having a handle at one end and a bit at the axially opposite end thereof;

said bit comprising an axially forwardly tapering wedging probe based on said shank, which wedging probe tapers to a tip;

said handle having means defining an axially elongated slot formed completely through the thickness thereof, and by which the opener device itself may be carried on the split ring key retainer just as if it were a key;

said slot being so long that the length L axially along the opener device from the slot to said wedging probe tip is less than said internal diameter D.

4,325,274
HYDRAULIC FORCE PRODUCING DEVICE
Ghislain A. Marteleo, Liege, Belgium, assignor to Cockerill, Seraing, Belgium
Filed Jun. 11, 1980, Ser. No. 158,442
Claims priority, application Belgium, Jun. 22, 1979, 0195900
Int. Cl.³ B25B *17/00*
U.S. Cl. 81—57.13 9 Claims

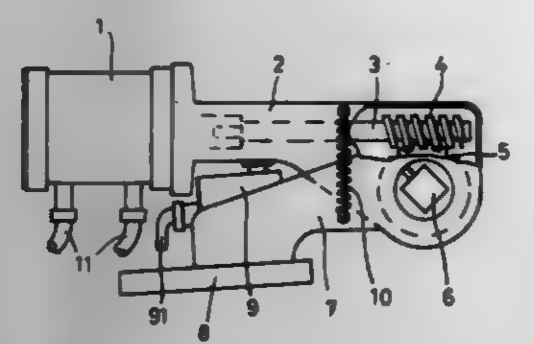
1. A hydraulically operated device for applying a force to a component, said device comprising:

first engagement means adapted to abut a support surface; and

second continuous action engagement means mounted within a first arm to engage said component;

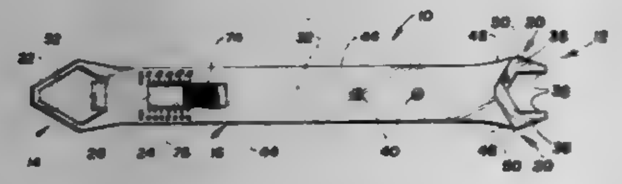
first hydraulically operated driving means mechanically coupled to the second engaging means and adapted to drive the second engaging means at a relatively high

speed, said first driving means and associated gears retaining the second engagement means fixed relative to the first engagement means, and a second hydraulically operated driving means positioned to move the second engaging



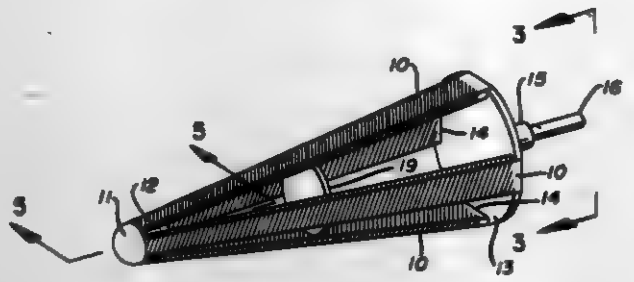
means with an increasing force at a relatively low speed but with a substantial force thus to impart a further movement to the second engagement means relative to the first engagement means.

4,325,275
ADJUSTABLE OPEN-END AND BOX-END WRENCH
David S. Colvin, 31324 Burbank, Farmington Hills, Mich. 48018
Filed Apr. 23, 1980, Ser. No. 143,052
The portion of the term of this patent subsequent to May 1, 1996, has been disclaimed.
Int. Cl.³ B25B *13/10, 13/18*
U.S. Cl. 81—77 16 Claims



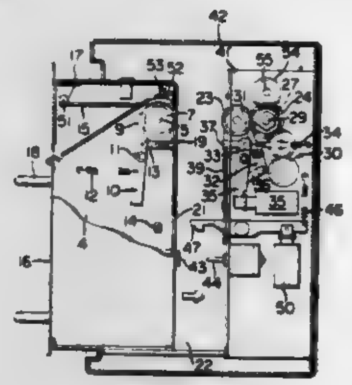
1. In an adjustable open-end and box-end wrench including an elongated housing of a hollow construction, a polygonal box structure on one end of the housing, an adjusting member received within the housing for longitudinal movement with respect thereto and having an outer engagement surface for cooperating with the box structure to grip nuts and bolt heads of different sizes in accordance with the longitudinal position of the adjusting member so as to thereby provide an adjustable box-end wrench, and a pair of jaws having inner ends connected to the adjusting member within the housing for longitudinal movement therewith and having outer ends with associated engagement surfaces that oppose each other in a parallel relationship, the improvement comprising: a pair of pins mounted on the housing spaced longitudinally therealong adjacent the jaws; each jaw including a pair of slots that respectively receive the pair of pins; the slots of each jaw extending parallel to each other in a skewed relationship to the longitudinal axis of the housing such that the longitudinal jaw movement is accomplished by lateral movement of the jaw engagement surfaces toward or away from each other while maintaining the parallel relationship therebetween in order to provide an adjustable open-end wrench; a lock mechanism for locking the adjusting member and the jaws against longitudinal movement to control the size of nuts or bolt heads that can be gripped by either the open-end or box-end of the wrench; and interengaged slide surfaces on the housing and each jaw at the open-end of the wrench for cooperating with the pins and slots to position the jaws in any adjusted position.

4,325,276
NIPPLE ENGAGING TOOL
William Jordan, 2990 McVey, Campbell, Ohio 44405
Filed Sep. 25, 1980, Ser. No. 190,707
Int. Cl.³ B25B *13/54*
U.S. Cl. 81—441 5 Claims



1. A device for turning threaded fittings onto threaded articles, said device having a continuously tapered body formed of a plurality of elongated metal cutting files, end members of different sizes, said files attached at their respective ends to said end members in tapered relation to an axial center line engaging said end members, said files arranged in circumferentially spaced relation to one another and a shaft formed on one of said end members and extending outwardly therefrom on said axial center line.

4,325,277
DISPENSER FOR MAKING PAYMENT OF PRE-PACKED PAPER SHEETS
Isamu Uchida; Eiichi Kokubo, and Toshinobu Sasaki, all of Tokyo, Japan, assignors to Laurel Bank Machine Co., Ltd., Tokyo, Japan
Filed May 22, 1980, Ser. No. 152,191
Claims priority, application Japan, May 25, 1979, 54-64656
Int. Cl.³ G07F *11/68*
U.S. Cl. 83—205 5 Claims

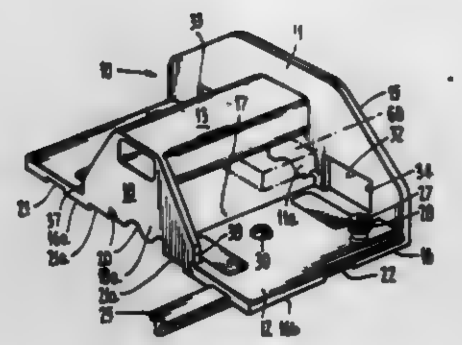


1. A dispenser for making payment of pre-packed paper sheet comprising:

container unit means including a container section for stocking a continuous train of sealed envelopes enclosing a predetermined number of sheets in the folded condition, said envelopes being provided with perforations at at least one marginal side portion, shifting means for meshing with said perforations and means for locating the train of the envelopes by a preset pitch; and

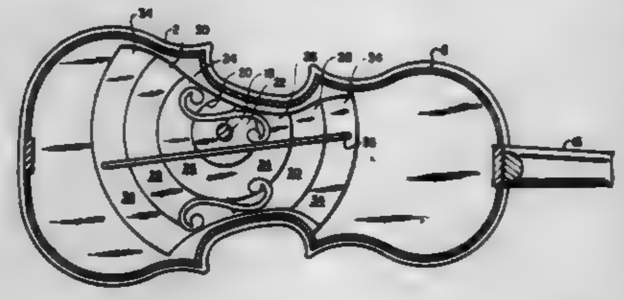
dispensing unit means having a cavity for receiving said container unit means and including means for actuating said locating means of the container unit means, conveyor means operable to receive and convey said train of envelopes by said preset pitch, and cutter means for cutting off a leading envelope from said train along the folded line.

4,325,278
HAND SAW GUIDE
Cornelis J. Beerens, 40-42 Berkshire Rd., North Sunshine, Victoria, Australia
Filed Feb. 28, 1980, Ser. No. 125,564
Claims priority, application Australia, Mar. 1, 1979, PD7861; Sep. 17, 1979, PE0524
Int. Cl.³ B27B *21/08*
U.S. Cl. 83—745 9 Claims



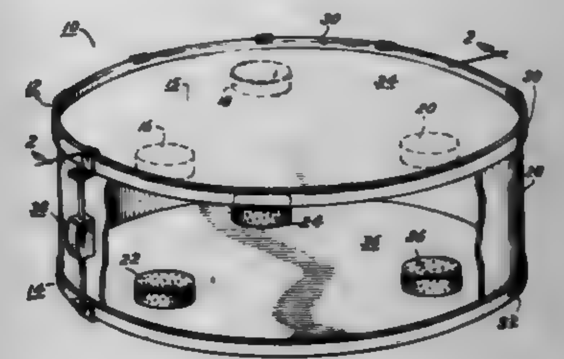
1. A hand saw guide comprising an integral moulded first member having two right angular related flat faces arranged to permit location of one face in face to face relation with a surface of a workpiece with the other face perpendicular to said surface of the workpiece, two sets of elongated grooves in said one face of the first member, said sets of grooves being spaced from one another, each set of grooves including one groove at right angles to said other face and one at 45 degrees to said other face, a second member adapted to be selectively seated in any one of said grooves with a portion of said second member projecting from said one face and extending in the direction of the groove in which it is seated, means to lock said second member in any one of said grooves, said portion of the second member being adapted to engage an edge of the workpiece when the second member is locked in a selected groove and with the one face of the first member in said face to face relation with the workpiece to thereby set the angle of the other face to said edge of the workpiece.

4,325,279
SOUND BOX FOR MUSICAL INSTRUMENT
Louis H. Lower, P.O. Box 151, Hayden Lake, Id. 83835
Filed Oct. 14, 1980, Ser. No. 196,380
Int. Cl.³ G10D *1/02*
U.S. Cl. 84—275 10 Claims



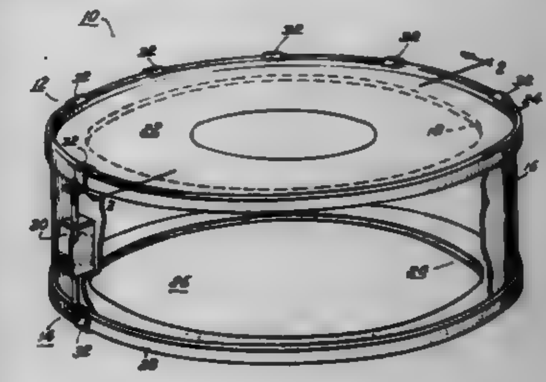
1. A musical instrument sound box comprising a front wall, a back wall, said front and back walls being interconnected by a side wall, string retainer means disposed on said box and adapted to retain strings proximate an outward surface of said front wall, a first of said front and back walls having distinct zones of wall thickness, a first zone of most wall thickness being proximate a central portion of said first wall, a last zone of least wall thickness being most removed from said central portion, and an intermediate zone between said first and said last zones, and having a wall thickness less that said first zone, said first zone being substantially circular, and said intermediate and last zones being of generally interrupted annular configuration disposed concentrically about said first zone.

4,325,280
DEVICE FOR DEADENING DRUMHEADS
Bruce N. Hardy, Elkhart, Ind., assignor to Silver Street, Incorporated, Elkhart, Ind.
Filed Apr. 14, 1980, Ser. No. 139,719
The portion of the term of this patent subsequent to Jan. 13, 1998, has been disclaimed.
Int. Cl.³ G10D *13/02*
U.S. Cl. 84—411 M 19 Claims



1. A device for deadening drumheads to minimize the ringing phenomenon associated principally with synthetic drum membranes: said devices comprising a plurality of bodies of porous, pliable material for reacting with one another and with the drumhead membrane, said bodies being positioned generally around the preferred attack area of the membrane, and an adhesive layer on each of said bodies for attaching each of said bodies to the drumhead membrane.

4,325,281
DRUMHEAD RING REDUCER
Bruce N. Hardy, Elkhart, Ind., assignor to Silver Street, Incorporated, Elkhart, Ind.
Filed Jul. 2, 1980, Ser. No. 165,273
Int. Cl.³ G10D *13/02*
U.S. Cl. 84—411 M 14 Claims



1. In a musical drum having a drum shell and a drumhead membrane: a drumhead ring reducer comprising an annular body of porous pliable material disposed in contact with the inner side of the membrane for reacting with the membrane without substantially muffling the percussive drum sounds to reduce the ringing phenomenon, and a layer of adhesive on said body for attaching said body to the inner surface of the drum shell.

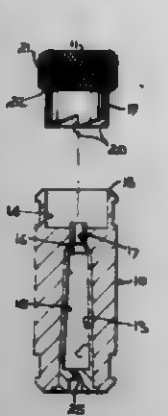
4,325,282
UNITIZED CASE RESIZER AND TRIMMER
Mark Schoenner, 11737 N. Solar Ave. 77W, Mequon, Wis. 53092
Filed Jul. 14, 1980, Ser. No. 168,012
Int. Cl.³ F42B *33/00*
U.S. Cl. 86—24 6 Claims

1. An apparatus for resizing and trimming a used cartridge, comprising:

a sizing body having a longitudinal bore formed there-

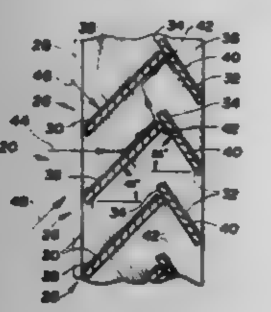
through that includes a cutter-receiving portion at one end, and a coaxial cartridge-receiving portion at its other end for receiving and reshaping at least a portion of the external configuration of a used cartridge driven therein by mechanical force; and

a rotatable cutter having a cutting edge adapted to be inserted into the cutter-receiving portion of said bore to



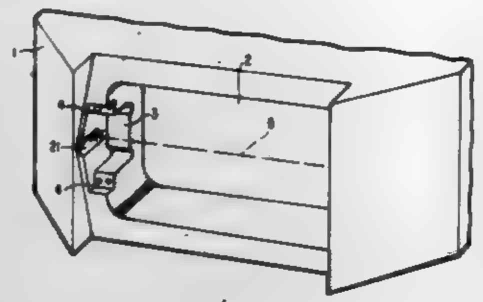
engage and trim the neck of a used cartridge disposed within the cartridge-receiving portion of said bore, said cutter having a projecting shoulder formed along its length engageable with said body so that said cutting edge may be inserted within the cutter-receiving portion of said bore only a predetermined distance to trim the overall length of the used cartridge to its proper standard dimension.

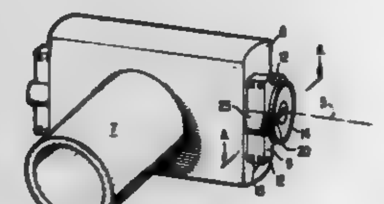
4,325,283
ARMORED GRILLE
James M. Bemiss, St. Clair Shores, Mich., assignor to Cadillac Gage Company, Warren, Mich.
Filed Mar. 19, 1980, Ser. No. 131,585
Int. Cl.³ F41H *5/00*
U.S. Cl. 89—36 F 9 Claims



1. An armored grille for a vehicle body opening comprising: a plurality of vertically spaced louvers having elongated shapes extending horizontally across the opening; each louver including an outer armor plate that is inclined downwardly in an outward direction with respect to the opening; each louver also including an inner armor plate that is engaged with and secured to the upper and inward extremity of the associated outer armor plate; and each inner armor plate extending downwardly from the associated outer armor plate and having an upper extremity that projects above the associated outer armor plate to deflect a projectile impacted therewith upwardly toward the engaged outer and inner armor plates of the next higher louver so as to thereby prevent passage of projectiles through the grille.

4,325,284
TRUNNION BEARING IN ARMORED HOUSING
Peter Grünewald, Pöhldruck, and Uwe Sprafke, Kassel both of Fed. Rep. of Germany assignors to Wegmann & Co. GmbH, Fed. Rep. of Germany
Filed Nov. 19, 1976, Ser. No. 744,948
Claims priority, application Fed. Rep. of Germany, Nov. 20, 1975, 2552009
Int. Cl.³ F41F *23/06*
U.S. Cl. 89—37 E 2 Claims





1. A battletank turret having an aperture for receiving a gun barrel mount from the outside of the turret without vertical separation of the turret comprising:

a cradle roller for receiving a gun barrel, said cradle roller having a trunnion laterally extending from opposite sides thereof;

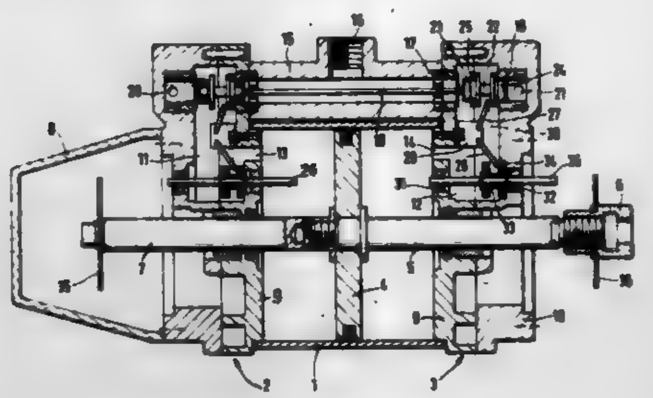
a bearing ring carried by each of said trunnions, each of said bearing rings having an upwardly extending lug and a downwardly extending lug on the gun muzzle side of said cradle roller, said lugs being apertured to receive fastening means, and being adapted for support by cooperating shoulders on a pair of generally U-shaped recesses open to the outside of the turret in the side walls defining the aperture in the turret;

fastening means extending through the apertures in said lugs into said cooperating shoulders at the gun breech end of said generally U-shaped recesses to thereby secure said bearing ring and thus said cradle mount to the turret; and

means for adjusting the play between said cradle mount and the turret whereby a gun and its cradle roller may be inserted in a general horizontal direction into an aperture in the turret without the vertical separation of the turret.

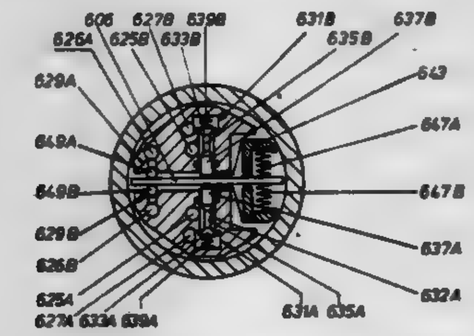
4,325,285
COMPRESSED AIR MOTOR
Erich Roser, Friedrichshafen, Fed. Rep. of Germany, assignor to Rudolf Hübner GmbH & Co., Fed. Rep. of Germany
Filed Dec. 28, 1979, Ser. No. 108,040
Int. Cl.³ F01L *23/00, 31/02*
U.S. Cl. 91—341 R 8 Claims

1. A compressed air motor, comprising, a cylinder, a piston slidable in said cylinder, a compressed air inlet to said cylinder, a slide valve mechanism connected between said compressed air inlet and each end of said cylinder for admitting air to respective ends of said cylinder for driving said piston in respective directions and for venting the side of said cylinder in front of the direction of movement of said piston, an action rod disposed in the path of said piston on each end of said cylinder and being movable by said piston upon a predetermined movement of said piston, a snap lever mechanism connected between each action rod and said slide valve mechanism and acting on said slide valve mechanism upon movement of said action rod to reverse said slide valve mechanism after the predetermined movement of said piston, and means connected



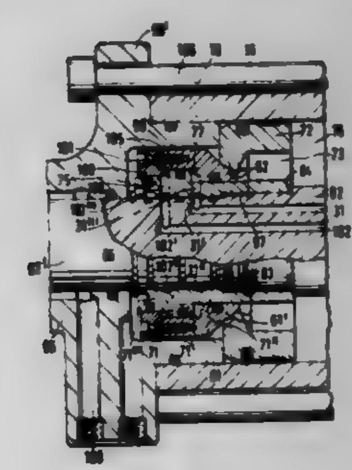
to said piston to move each said action rod back to an initial position upon return movement of said piston.

4,325,286
STEERING VALVE MECHANISM HAVING CLOSED NEUTRAL POSITION
Armin Lang, Schwäb. Gmünd, Fed. Rep. of Germany, assignor to Zahnradfabrik Friedrichshafen, AG., Friedrichshafen, Fed. Rep. of Germany
Filed Aug. 13, 1979, Ser. No. 65,840
Int. Cl.³ F15B *9/10*
U.S. Cl. 91—373 4 Claims



1. A valve mechanism for a hydraulically operated steering system having a pressure source (4, 604, 804) from which pressurized fluid is conducted by supply conduits (3, 403, 503, 603, 716) to operating chambers (20, 520, 623, 715, 832) of a servomotor (21, 500, 709, 810) through the steering valve mechanism (2, 22-24, 422-424, 522-524, 631-629, 707-734, 818) which includes a pair of inlet valves (6, 28, 428, 522, 613, 707, 818) blocking flow to the servomotor in a neutral position of an associated valve actuator (12, 38, 470, 570, 641, 701, 806), and a fluid reservoir (69, 608, 828) to which fluid is exhausted from the operating chambers by return conduits (53, 458, 558) through a pair of outlet valves (24, 424, 524, 629, 734, 814); the improvement which comprises: regulating spring means (10, 26, 466, 566, 647, 703-728, 820) operatively connecting the valve actuator to the inlet valves for transmitting a valve operating force in opposite directional senses to the respective inlet valves in response to displacemeent of the valve actuator from the neutral position, whereby a regulated pressure proportional to the valve operating force is established in one of the operating chambers to which pressurized fluid is conducted by one of the inlet valves, differential pressure control means (32, 474, 574, 606, 703) operatively connecting the regulating spring means to the outlet valves for exerting a bias on each of the outlet valves in a directional sense opposite to the valve operating force applied to the associated inlet valve, whereby each of the outlet valves maintains a pressure in each of the operating chambers higher than said regulated pressure established by the associated inlet valve, by a substantially constant pressure difference (ΔP), said differential pressure control means including supplementary spring means (639, 722, 822) exerting a closing bias on each of the inlet valves independently of the pressure of said source in the supply conduits, each of said inlet valves including a valve body having a valve bore, a valve element (633, 717) on which said supplementary spring means acts, and a valve piston (637, 720, 819) slidably mounted in said bore and connected to the valve element, the supply conduits being connected to the valve bores between the valve elements and the pistons, each of the operating chambers having one of the inlet valves and one of the outlet valves assigned thereto for controlling the flow of fluid thereto and exhaust of fluid therefrom, and a balance beam (703) engageable with each of said inlet and outlet valves, said regulating spring means being disposed between the balance beam and the valve actuator.

4,325,287
HYDRAULIC ACTUATOR FOR INJECTION MOLDING MACHINE
Karl Hehl, Arthur-Hehl-Strasse, 7298 Lossburg 1, Fed. Rep. of Germany
Filed Oct. 19, 1979, Ser. No. 86,435
Claims priority, application Fed. Rep. of Germany, Oct. 19, 1978, 2845448
Int. Cl.³ F15B *11/18*
U.S. Cl. 91—422 9 Claims



1. An improvement in a hydraulic actuator assembly of the type which is usable to open and close an injection molding die in the die closing unit of an injection molding machine, which hydraulic actuator assembly includes; a power cylinder enclosing a double-acting power piston attached to a piston rod which sealingly extends through both axial extremities of the power cylinder, so as to define a high pressure space on that axial side of the power piston from which the latter moves away in a die closing stroke and a low pressure space on the opposite axial side of the power piston; an annular valve seat on the high-pressure side of the piston rod, in a concentrically spaced relationship with the piston rod; at least one bypass channel extending axially through the power piston so as to form a bypass flow connection between the two pressure spaces of the power cylinder, the bypass channel having its opening to the high-pressure side located radially within said valve seat; an annular valve plunger arranged on the piston rod, in the high-pressure space of the power cylinder, the valve plunger being axially slidable on the piston rod, for movements into and out of contact with said valve seat, thereby closing and opening the bypass flow channel; and hydraulic means for controlling the opening and closing movements of the valve plunger, the improvement in said assembly relating more specifically to the valve plunger and its hydraulic control means and comprising:

a bore formation in the valve plunger defining first, second and third cylindrical bore portions in axial succession, the first and third bore portions being smaller in diameter than the second bore portion;

three successive matching guide portions on the piston rod, the smaller-diameter first and third guide portions being located on opposite axial sides of a collar formation, and

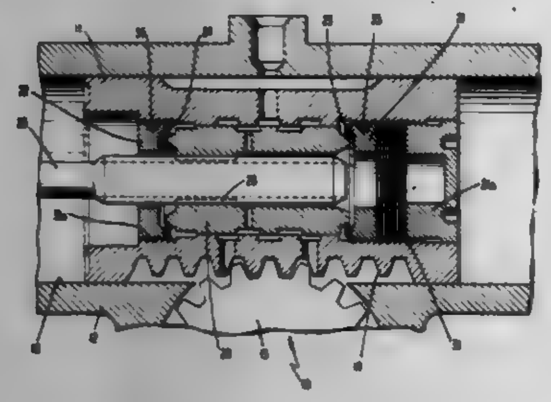
the second guide portion being defined by the periphery of the collar formation, the three guide portions cooperating with the three plunger bore portions to form first, second and third sliding seals, which define a valve-closing pressure space between the first and second sliding seals and a valve-opening pressure space between the second and third sliding seals; and

two hydraulic supply lines leading to the two plunger pressure spaces, via two pressure channels in the piston rod; and wherein

the outer diameter of the contact surface between the valve plunger and the valve seat on the power piston is larger than the diameter of the third sliding seal, so that the valve plunger, in its closed position, receives a closing bias from a pressure in the surrounding high-pressure space, but the effective area for this closing bias on the closed plunger is smaller than the effective area of the valve-opening pressure space; and

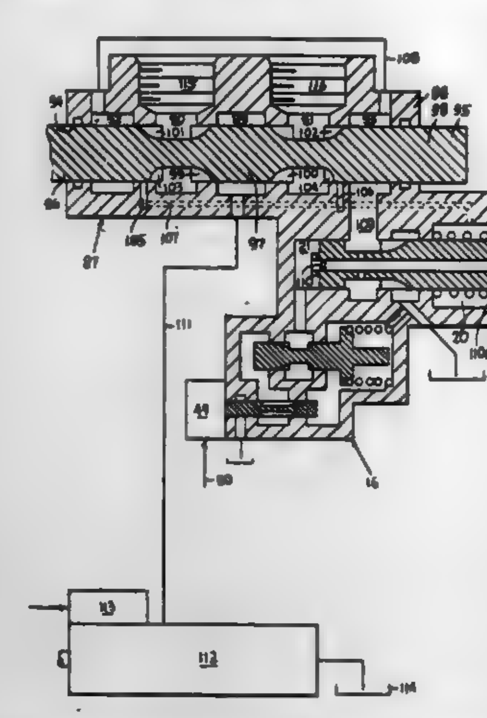
the effective area of the valve-closing pressure space, as determined by the difference in diameter of the first and second sliding seals, is larger than the area of the valve plunger which is exposed to the fluid pressure of the low-pressure space, in the closed valve position, as determined by the inner diameter of the contact surface on the valve seat of the power piston, thereby making it possible to exert an elevated die-opening force on the power piston by simultaneously pressurizing the low-pressure space of the power cylinder and the valve-closing pressure space.

4,325,288
POWER STEERING GEAR WITH INITIAL LOCKABLE SPRING ADJUSTING NUTS
Peter H. Sheppard, R. H. Sheppard Co., Inc., Hanover, Pa. 17331
Filed Jan. 24, 1980, Ser. No. 115,045
Int. Cl.³ F15B *9/10*
U.S. Cl. 91—422 11 Claims



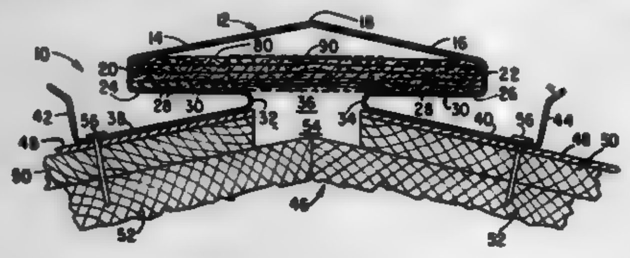
1. An integral power steering gear having a reciprocating power piston in a cylinder, a valve within the piston to selectively distribute pressurized fluid to a first and second end of the piston within the cylinder for steering action, a washer spring adjacent each end of said piston to provide centering action for the valve, a steering input shaft operatively engaging the valve, output means in engagement with said piston, the improvement comprising an adjusting nut having threads mounted adjacent each end of said valve in the piston for adjusting the loading in the washer springs, openings in said piston having mating threads for operatively receiving the adjusting nuts, aperture means provided in one of said threads and a deformable insert means placed in said aperture means, the deformable insert means being deformed upon engagement with the other threads, centering said nut and establishing sufficient friction to prevent inadvertent movement of said adjusting nut during subsequent manufacturing steps of preloading of the springs and final locking of the adjusting nut in position.

4,325,289
LOAD RESPONSIVE FLUID CONTROL VALVE
Tadeusz Budzich, 80 Murwood Dr., Moreland Hills, Ohio 44022
Continuation-in-part of Ser. No. 111,194, Jan. 11, 1980. This application Jan. 18, 1980, Ser. No. 113,288
Int. Cl.³ F15B *13/04*
U.S. Cl. 91—446 34 Claims



1. A valve assembly comprising a housing having an inlet chamber connected to a fluid motor, and an exhaust chamber connected to exhaust means, control orifice means interposed between said inlet chamber and said fluid motor, first valve means having control means and fluid throttling means operable to throttle fluid flow from said inlet chamber to said exhaust chamber to maintain a constant pressure differential at a preselected constant level across said control means at said first valve means and to maintain a constant pressure differential across said control orifice means, and second valve means having means operable through said fluid throttling means of said first valve means to vary the level of said constant pressure differential across said control orifice means while said pressure differential across said control means of said first valve means remains constant at said constant predetermined level.

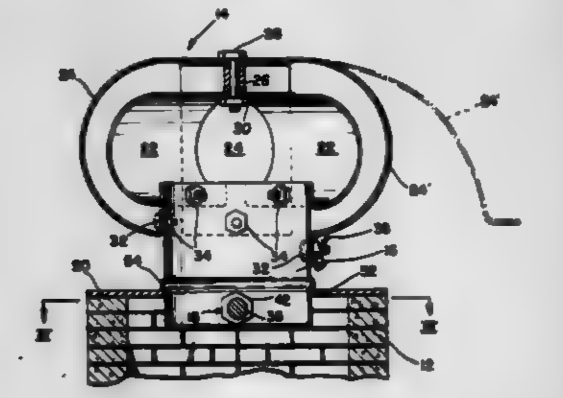
4,325,290
FILTERED ROOF RIDGE VENTILATOR
Clarke E. Wolfert, Peoria, Ill., assignor to Air Vent, Inc., Peoria, Ill.
Filed Oct. 6, 1980, Ser. No. 194,581
Int. Cl.³ F24F *7/02*
U.S. Cl. 98—42 A 9 Claims



1. In roof edge ventilator adapted to be installed overlying the open ridge of and along the length of the roof of a building, said ventilator including an integral, elongate member providing a top part, a pair of outer side walls depending from the top part, a pair of panels with louvered openings extending from said side walls inwardly toward each other and spaced below the top part, wall means on said; panels forming a throat in registry with the open ridge, flashing parts spaced below the panels extending outwardly from said wall means and protruding beyond the outer side walls, and baffle means upstanding

from ends of the flashing parts and spaced from said outer side walls; the improvement comprising: means for filtering moisture from any air which passes inadvertently from said space between the baffles and side walls to enter the space below the roof through said louvered openings as a result of external winds impinging against the ventilator from a direction which is at a small angle relative to the length of the ventilator, comprising: (a) a moisture filter medium located between the louvered openings and the space below the roof in the path of air extending from the louvered openings through the throat and open ridge to the space below the roof, so that all air passing through the elongate member to and from the space below the roof must pass through the filter medium; and (b) the filter medium being a porous, resilient, nonwoven member having a high impedance to moisture and a low impedance to air flow and having a substantial thickness selected so that air passing into the filter medium from the space below the roof and striking said moisture may move laterally of and around the trapped moisture and through the ventilator for exhausting to ambient atmosphere, whereby in freezing conditions any moisture collected in said filter medium may freeze, thereby closing off or restricting inflow through the louvered openings.

4,325,291
CHIMNEY CAP AND SECUREMENT
Richard H. Payaton, and William C. Payaton, both of Attleboro Falls, Mass., assignors to Improved Consumers Products, Inc., Attleboro Falls, Mass.
Filed Feb. 19, 1980, Ser. No. 122,777
Int. Cl.³ F23L *17/12*
U.S. Cl. 98—67 7 Claims



1. A cap capable of being secured to a chimney or flue of any configuration or size comprising:

an annular member for insertion into a chimney or flue, said annular member having an outside circumference smaller than an opening of said chimney or flue;

a first plurality of slats separated by spaces along at least a portion of their length in a circumferential direction and connected to said annular member to form a first crown;

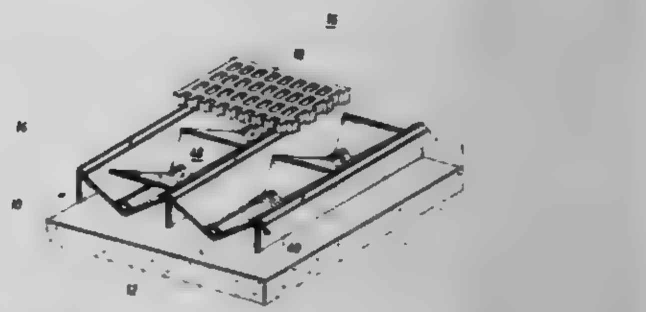
a second plurality of slats connected to said annular member to form a second crown exterior said first crown with the slats of said second crown being aligned with the spaces between the slats of said first crows;

one of said slats of said second crown being detachable at its connection to said annular member to allow access to the interior of said annular member;

an exterior circumferential rim below said connection of said slats on said annular member for engaging a plate covering the top of a chimney and through which said annular member is to be inserted to thereby support said cap on said plate; and

securement means extending from the interior through to the exterior of said annular member for securing said cap and said plate to said chimney or flue by engaging the interior of said chimney or flue when adjustably extended.

4,325,292
BLAST ROOM FLOOR
Richard P. McNinney, Jr., 9707 Braeburn Glen, #102, and Robert E. Thompson, 9206 Cadawac, both of Houston, Tex. 77074
Continuation of Ser. No. 844,602, Oct. 25, 1977, abandoned. This application Oct. 22, 1979, Ser. No. 87,291
Int. Cl.³ B08B *15/02*; B05C *15/00*
U.S. Cl. 98—115 SB 4 Claims



1. An apparatus for collecting blastroom particles, debris, and other particulate matter which settles on the floor thereof, comprising:

(a) a first wall piece adapted to abut a single wall of the blastroom;

(b) a plurality of similar angle sections disposed parallel to said first wall piece, each of said angle sections including first and second sides disposed at an angle to one another to form a V-shaped valley therebetween and being positioned so that said first wall piece supports one of said angle sections in an upright position with the valley thereof exposed to receive falling particulate matter thereon;

(c) a plurality of lock plates to secure said angle sections in upright positions relative to said first wall piece above the floor of the blastroom;

(d) a plurality of vacuum tubes each having a plurality of holes therein along the length thereof and adapted to remove particulate matter by vacuum flow, a respective one of said vacuum tubes being longitudinally disposed in each of said angle sections between the first and second sides thereof to expose the holes therein to enable the particulate matter to enter therein;

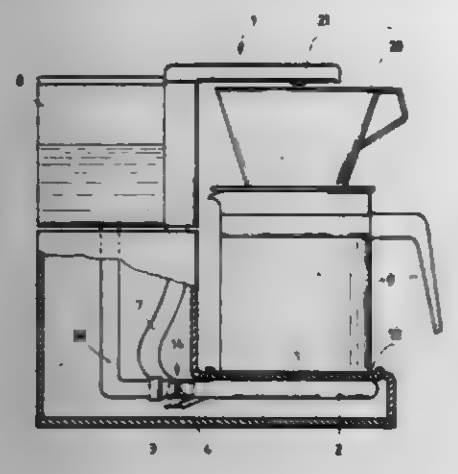
(e) a plurality of identical multi-sided inserts positioned longitudinally in said angle sections over said vacuum tubes to funnel particulate matter into the holes in said vacuum tubes for removal of the particulate matter from the blastroom, said inserts having notches therein constructed and arranged to fit over said vacuum tubes; and

(f) a plurality of spacers placed on said vacuum tubes to position said inserts along said tubes so that the particulate matter funnels toward the holes disposed therein.

4,325,293
APPARATUS FOR MAKING INFUSION DRINKS
Ingo Bleckmann, Ignaz-Rieder-Kai 11, 5020 Salzburg, Austria
Filed Nov. 20, 1979, Ser. No. 96,178
Claims priority, application Fed. Rep. of Germany, Nov. 27, 1978, 2851224; European Pat. Off., Jun. 29, 1979, 79102191.8
Int. Cl.³ A47J *31/057*
U.S. Cl. 99—300 22 Claims

1. In apparatus for making an infusion beverage, comprising means for receiving a fluid supply container, a fluid through-flow conduit adapted to communicate with said supply container to carry fluid therefrom, means having a heating output from 500 to 1,000 watts for heating fluid in said conduit, a pipe adapted to carry heated fluid to an outlet for infusion of the beverage, and means disposed between said supply container and a part of said conduit for regulating the flow of fluid therethrough, the improvement wherein said regulating means

is a restrictor means operable to reduce the cross-section of the flow therethrough to a cross sectional area having an effective diameter not larger than 3.0 mm and to increase the through-flow speed whereby the quantity of fluid flowing through the



conduit per unit of time is substantially constant over substantially the entire period for which the fluid is flowing through the apparatus and the flow pressure in the restrictor means is higher than a fluid pressure required for driving the fluid out of said pipe.

4,325,294

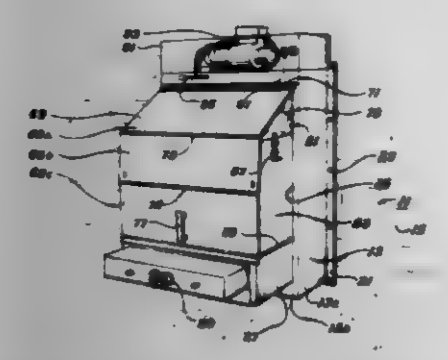
COLLAPSIBLE OUTDOOR COOKING APPARATUS

Grover M. Hammond, 2005 Vista Trail, Roanoke, Tex. 76262

Filed May 9, 1980, Ser. No. 148,564

Int. Cl.³ A47J *37/06*

U.S. Cl. 99—337 14 Claims



1. A cooking apparatus, comprising in combination:
a housing having sidewalls and a front opening;
mounting means for mounting the housing to a building wall with the opening facing outward;
a tray carried in the housing;
pivot means for moving the tray between a vertical position contained within the housing, to a horizontal position protruding outward from the opening;
a grill carried by the tray for holding food for cooking;
frame means mounted in the tray below the grill for carrying a plurality of rocks; and
energy means carried by the tray and having burners below the grill for providing heat.

4,325,295

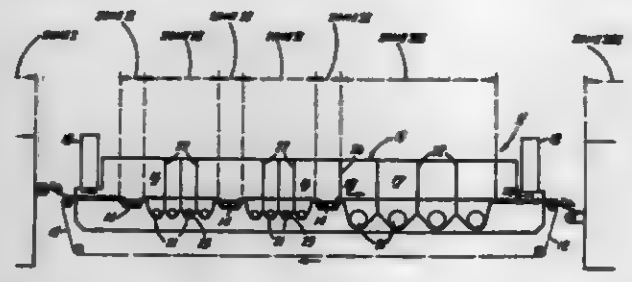
APPARATUS FOR PREPARING FRENCH FRIED POTATOES

Andrew A. Caridis, Foster City; Clark K. Benson, Millbrae; Steven G. Leary, San Mateo, and Arthur A. Nilsen, San Francisco, all of Calif., assignors to Heat and Control, Inc., San Francisco, Calif.

Division of Ser. No. 13,461, Feb. 21, 1979, Pat. No. 4,269,861. This application Jan. 19, 1981, Ser. No. 226,469

Int. Cl.³ A47J *37/00*

U.S. Cl. 99—339 4 Claims



1. In apparatus for preparing french fried potatoes wherein pre-fried french fried potatoes are obtained with low oil content, the combination of: means forming a treatment chamber of appreciable length, conveyor means extending continuously through said treatment chamber serving to carry french fried potato slices there through for process treatment, said conveyor means being of open, wire-mesh construction, means in said treatment chamber defining a treatment zone of a first type serving to treat all surfaces of the potato slices in a supply of hot oil, means in said treatment chamber defining a treatment zone of a second type, said second type treatment zone having therein steam injection means, heating means, and fan means coacting with said heating means and steam injection means for circulating a hot, moist process vapor in said treatment zone through said conveyor; said treatment chamber having a plurality of each said first and second types of treatment zones; and means in said chamber permitting one of said second type of treatment zones to establish and maintain a different temperature and moisture content level from the next adjacent treatment zone permitting variations in temperature and moisture ranges between adjacent treatment zones.

4,325,296

APPARATUS FOR ADJUSTING INTERNAL PRESSURE OF ASEPTIC STORAGE TANK

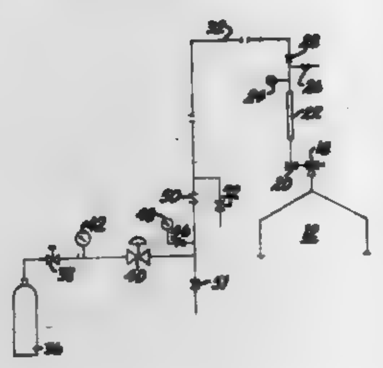
Nobuo Ukai, Machida; Akira Funado, Funabashi, and Tetsuya Yokota, Mathudo, all of Japan, assignors to Kagome Co., Ltd., Aichi, Japan

Filed Sep. 7, 1979, Ser. No. 73,272

Claims priority, application Japan, Sep. 28, 1978, 53-118624

Int. Cl.³ A23B *7/00*

U.S. Cl. 99—468 2 Claims



1. Apparatus for maintaining an aseptic gaseous atmosphere in a storage tank for spoilable foodstuffs and the like comprising, a system connectable externally of said storage tank and having means for providing a gas flow path for connecting a container of an inert aseptic gas under pressure for supply of said gas to said storage tank to supply an atmosphere of said gas in said storage tank comprising adjustable pressure-reducing valve means connectable in said same flow path to said gas container for receiving said gas and reducing it to a given pressure level to be maintained in the storage tank, a one-way valve connected in the system in said same flow path downstream of said pressure-reducing valve means to allow flow of said gas along a flow path in a direction toward said storage tank only, means in said system for connecting the one-way valve in said flow path to said tank, a single pressure-maintaining valve connected in said system between the storage tank and the one-way valve and in said flow path to maintain said pressure level in said storage tank in the event internal pressure in said storage tank rises independently of the gas under pressure supplied thereto and a microbiological filter connected in said flow path downstream of said pressure-maintaining valve and between it and said storage tank.

4,325,297

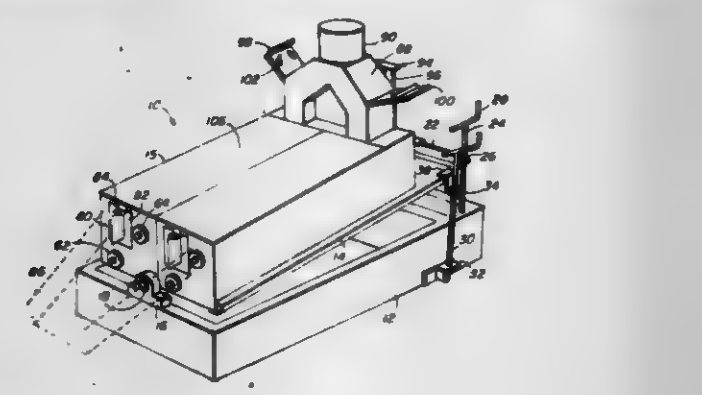
APPARATUS FOR BUFF BLANCHING PEANUTS

Lowell E. Weyant, Edenton, N.C., assignor to Seabrook Blanching Corporation, Edenton, N.C.

Continuation of Ser. No. 92,537, Nov. 8, 1979, abandoned, which is a continuation of Ser. No. 937,488, Aug. 28, 1978, abandoned. This application Mar. 9, 1981, Ser. No. 241,793

Int. Cl.³ A23N *7/00, 12/00*

U.S. Cl. 99—625 9 Claims



1. Apparatus for buff blanching shelled peanuts and the like, comprising
(a) an elongated housing having a feed end and a discharge end,
(b) a pair of rollers rotatably mounted in closely spaced, coextensive, parallel relation longitudinally within said housing between said ends, the gap between said rollers being less than the average size of shelled peanuts passing through said apparatus,
(c) the end of each of said rollers at the feed end of said apparatus defining smooth cylindrical outer surfaces the remaining portion of said rollers being covered with an abrasive grit stratum,
(d) power means connected to said rollers for rotating said rollers in the same rotary direction,
(e) means mounting said housing for angular adjustment thereof about at least two mutually perpendicular axes whereby the buff blanching action of peanuts flowing through said housing may be selectively controlled, one of said axes extending parallel to the axes of said rolls and the other axis being generally horizontal and intersecting said one axis, and,
(f) at least one longitudinal baffle mounted in a generally vertical plane to said housing in operative parallel relation to each of said rollers and generally tangential thereto and extending substantially the full length thereof to define a longitudinal channel parallel to said rollers for directing a flow of peanuts through said housing from one end of said rollers to the other,
(g) said rollers being mounted in offset relation to one another with the axis of one roller mounted to the side and above the axis of the other roller, the direction of rotation of said rollers being such that the top portion of the other and lowermost roller is towards the bottom portion of the one and uppermost roller,
(h) the lower edge of one of said baffles being disposed proximate to the other tangential portion of said other lowermost roller and the lower edge of the other of said baffles being disposed proximate to the inner tangential portion of said one uppermost roller, and
(i) guide means for directing peanuts fed into said feed end of said apparatus onto the top portion and smooth end of said other lowermost roller for flow along said channel.

4,325,298

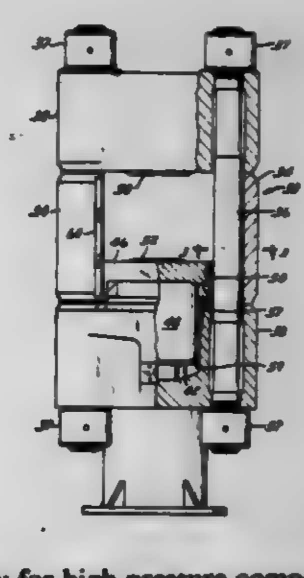
FRAME STRUCTURE FOR A PRESS ASSEMBLY

Philip T. Delmer, Shorewood, Wis., assignor to Rexnord Inc., Milwaukee, Wis.

Continuation-in-part of Ser. No. 49,030, Jun. 18, 1979, Pat. No. 4,240,342. This application Dec. 19, 1980, Ser. No. 218,583

Int. Cl.³ B30B *15/04*

U.S. Cl. 100—214 2 Claims



1. An assembly for high pressure compacting comprising:
(a) a frame structure including,
(1) an upper resistance member having a plurality of vertical passages therethrough spaced a predetermined horizontal distance apart,
(2) a lower resistance member vertically spaced below said upper resistance member and having a plurality of vertical passages therethrough spaced a predetermined horizontal distance apart, each said passage in said lower resistance member vertically aligned with a said passage in said upper resistance member,
(3) a plurality of vertically disposed tie rods, each extending through a said passage in said upper resistance member and an aligned said passage in said lower resistance member and under a predetermined stress in tension, the diameter of each said tie rod being substantially equal to the diameter of the respective upper or lower passage through which it extends, and the ends of each said tie rod having external threads about the circumference thereof,
(4) a plurality of washers, one of said washers mounted on each end of each said tie rod, each said washer having a flat outward surface with a diameter greater than the diameter of the respective said passage through said upper or lower resistance member which the tie rod on which said washer is mounted extends, a bore the diameter of which is substantially identical to the diameter of said tie rod it is mounted on, and an inward surface providing a flat central portion with straight, parallel side lines and a pair of outwardly tapered transverse portions, the width of said flat central portion being greater than the diameter of said respective passage, each said washer mounted on said tie rod with said flat central portion in contact with the outward surface of said respective upper or lower resistance member, and

said parallel side lines of said flat central portion substantially perpendicular to the line from the center of the respective said tie rod to the central vertical axis of said assembly between said plurality of tie rods in the plane of said outward surface of the respective said resistance member in contact with it,

(5) a plurality of vertical compression members, each spaced from one of said tie rods in a direction away from the outer facing surface thereof and having its upper surface in contact with the inward surface of said upper resistance member and its lower surface in contact with the inward surface of said lower resistance member under a predetermined compressive load,

(6) a plurality of nuts, each of said nuts rotatably affixed to one end of one said tie rod with the inward surface of said nut in contact with the outward surface of said one of said washers mounted on said end of its respective tie rod, and each said nut having a bore therethrough with internal threads therein complementary to said external threads on said end of its respective tie rod; whereby said nuts, washers, compression members and tie rods cooperate to secure said upper and lower resistance members in said spaced apart relationship;

(b) a force means including a movable platen located on said central vertical axis and guided on the inner facing surface of said tie rods; and

(c) moving means connected to one of said upper and lower resistance members for vertically moving said platen.

4,325,299

HOUSEHOLD APPLIANCE, ESPECIALLY A GARBAGE COMPACTOR

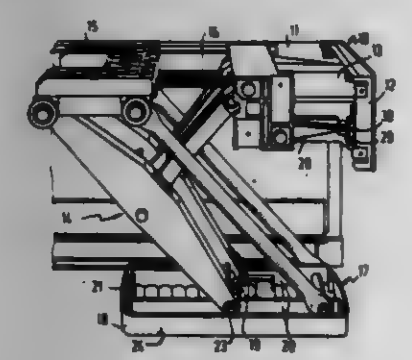
Karl-Heinz Färber, Giengen, and Alexander Rupp, Sontheim-Bergenweiler, both of Fed. Rep. of Germany, assignors to Bosch-Siemens Hausgeräte GmbH, Stuttgart, Fed. Rep. of Germany

Filed Aug. 4, 1980, Ser. No. 174,874

Claims priority, application Fed. Rep. of Germany, Aug. 3, 1979, 2931537

Int. Cl.³ B30B *15/06*

U.S. Cl. 100—295 4 Claims



1. Household garbage compactor, comprising press means for executing a piston stroke for given periods of time in a container holding garbage to be compacted, a pressure plate for compacting the garbage, means for easily releasably holding and re-attaching said pressure plate to said press means, said holding means being continuously accessible and manually actuatable from without the compactor when the compactor is in a closed and operational condition, said press means having an end facing toward said pressure plate, a support frame disposed on said end of said press means, said pressure plate having a surface facing said support frame, said holding means being in the form of a spring-loaded latch disposed on said surface of said pressure plate above the center of gravity thereof, a rod passing through the middle of said support frame and being engageable by said latch, said pressure plate being in the form of a press ram movable into an upper dead center position by said press means, a transfer mechanism for releasing said latch, a service panel having an opening to the outside of the compactor formed therein, and releasing means disposed in said service panel for manually activating said transfer mechanism from without the compactor through said opening to release said latch for removing said pressure plate in said upper dead center position.

4,325,300

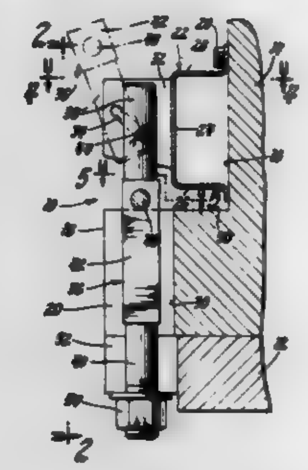
DIE CLAMP ARRANGEMENT

Joseph R. Fortier, New Baltimore, and John L. Klett, Howell, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 13, 1980, Ser. No. 206,554

Int. Cl.³ B30B *15/06*

U.S. Cl. 100—295 3 Claims



1. In combination with a press slide having a lower horizontal face, an upper horizontal face and a vertical face, a die clamp arrangement for securing a die member beneath the lower horizontal face, comprising,

an elongated die attachment member having an upper end, a lower threaded end, and an intermediate portion,

means pivotally and slidably mounting the die attachment member to the press slide for movement between an attachment position wherein the die member hangs vertically with respect to the press slide with the lower threaded end beneath the lower horizontal face of the press slide for securing a die member thereto, and a self-stored position wherein the die attachment member is maintained in a position extending up and away from the vertical face of the press slide and free of the space beneath the lower horizontal face of the press slide to allow removal of the die member,

torque load distribution means cooperating between the intermediate portion of the die attachment member and the press slide to maintain the die attachment member non-rotatably and releasably with respect to the press slide and to distribute the torque loads resulting from attachment of the die member to the press slide,

compressive load distribution means cooperating between the die attachment member and the upper horizontal face of the press slide to distribute to the press slide compressive loads on the die attachment member occurring from attachment of the die member thereto,

the torque and compressive load distributing means acting in cooperation with the press slide upon movement of the die attachment member into the attachment position such that said means become operative without additional action by the operator.

4,325,301

PAPER WEB SHIFTING APPARATUS

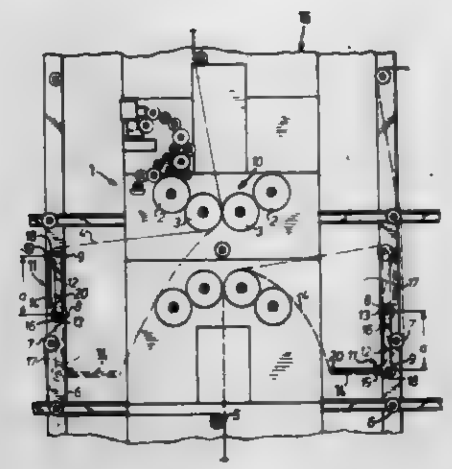
Heinrich K. Grosshauser, Wurzburg, Fed. Rep. of Germany, assignor to Koenig & Bauer AG, Wurzburg, Fed. Rep. of Germany

Filed Jul. 8, 1980, Ser. No. 167,100

Claims priority, application Fed. Rep. of Germany, Aug. 8, 1979, 2932067

Int. Cl.³ B41F *7/02, 13/54;* E04G *3/00*

U.S. Cl. 101—217 3 Claims



1. A paper web feed shifting apparatus for shifting the path of paper web feed through a web-feed rotary printing press between a normal path in which portions of the press are inaccessible to a press operator and a shifted path which affords access to those normally inaccessible press sections, the press having at least one printing couple, said shifting apparatus comprising:

a plurality of fixed paper web guide rollers serially positioned for rotation in spaced side frames of the printing press and contacting the web before the web is fed to the printing couple when the web is in the normal path of paper web feed, the one of said fixed guide rollers which is positioned nearest to the printing couple in the direction of paper web feed being rotatably carried on a rotatable shaft secured in the side frames of the press; and

a shiftable guide roller rotatably supported in first ends of spaced shifting bars, second ends of said spaced shifting bars being rigidly secured to said rotatable shaft for rotation therewith, said shifting bars being rotatable through an angle of about 180° to shift said shiftable guide roller and the paper web which is in contact with said shiftable guide roller between the normal and shifted paths whereby access to said normally inaccessible press sections is afforded the press operator by rotating said shifting bars to shift the web to the shifted path.

4,325,302

APPARATUS FOR PRINTING AND APPLYING PRESSURE SENSITIVE LABELS

Eugene W. Beers, Lafayette, Calif., assignor to Esselte Pendaflex Corp., Garden City, N.Y.

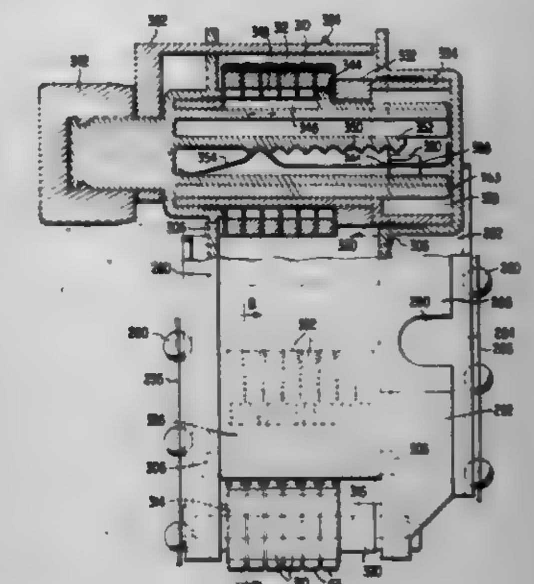
Filed Oct. 29, 1979, Ser. No. 88,847

Int. Cl.³ B41J *1/20*

U.S. Cl. 101—288 25 Claims

1. Apparatus for printing and applying pressure sensitive labels carried on a release liner of supporting material comprising:

a casing having a handle;
a manually engageable hand lever disposed at the handle;
an anvil mounted with respect to the frame;
a print head mounted with respect to the frame;
means for peeling printed labels from the release liner;
label applying means for applying the printed labels;
a feed wheel;
first ratchet teeth coupled to the feed wheel;
a first pawl cooperable with the first ratchet teeth to advance the feed wheel and the release liner;
second ratchet teeth coupled to the feed wheel;
a brake for engaging the labels carried on the release liner for preventing advancement of the release liner during application of the printed labels by said label applying means, said brake including a second pawl cooperable with the second ratchet teeth to remove the brake from the labels on the release liner; and



actuator means coupled to the hand lever for moving the print head to print a label and for thereafter moving the first pawl to advance the feed wheel and release liner and the second ratchet teeth, said second pawl being responsive to the movement of the second ratchet teeth to remove the brake from the labels on the release liner during advancement of the release liner.

4,325,303

PRINTING MACHINE INK DOCTOR BLADE ADJUSTMENT APPARATUS

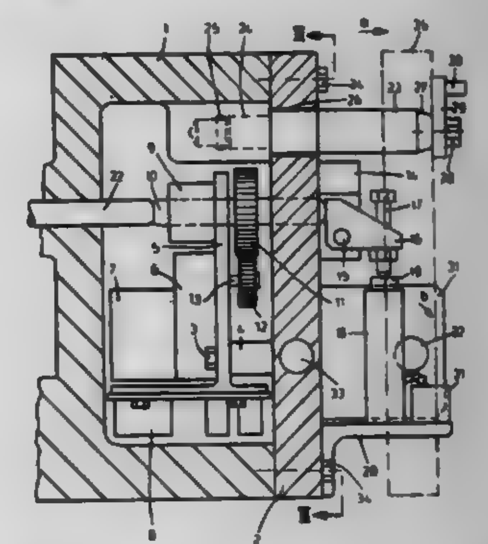
Werner Rees, Augsburg, Fed. Rep. of Germany, assignor to M.A.N.-Roland Druckmaschinen Aktiengesellschaft, Offenbach am Main, Fed. Rep. of Germany

Filed Sep. 9, 1980, Ser. No. 185,414

Claims priority, application Fed. Rep. of Germany, Sep. 22, 1979, 2938487

Int. Cl.³ B41F *31/04;* B41L *27/06*

U.S. Cl. 101—365 9 Claims

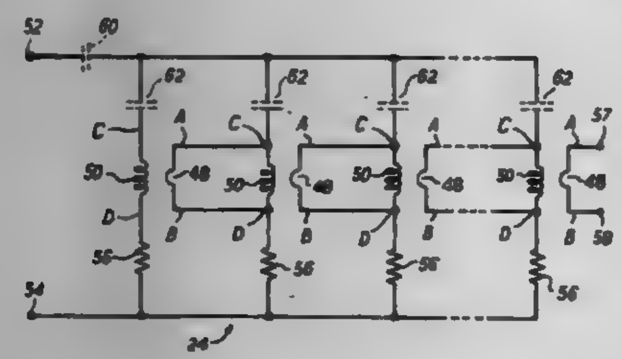


1. In a printing machine, an attachment arrangement for power-positioned doctor blade adjustment apparatus having

a frame (1) supporting a plurality of doctor blade control pins (22);

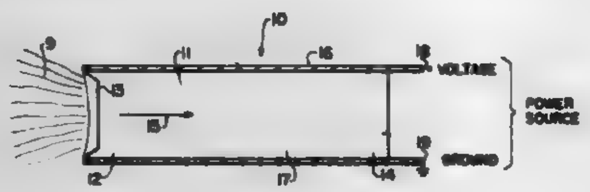
an elongated carrier plate (2) removably facing the frame at one side thereof;
motor means (7) and motion transfer means (6, 8–11) secured to the carrier plate at the side thereof facing the frame, in motion transfer relation to the doctor blade control pins (22);
and means for removably securing the carrier plate, with the motor means and the motion transfer means thereon, from operative connection on the frame while supporting the carrier plate thereon
comprising, in accordance with the invention,
position sensing means (14–21) secured to the plate at the side remote from said facing side and operatively coupled to the pins (22) to derive a feedback signal of actual pin position;
at least one support rail (23) extending from the frame in a direction beyond the side of the carrier plate (2) remote from said facing side;
suspension means (26) formed on the carrier plate and suspending the carrier plate on the at least one rail;
a releasable end stop (29) releasably limiting suspended translatory movement of the plate on the suspension means;
lateral wings (31) attached to the frame adjacent the narrow lateral sides of the plate and extending to a position matching the position of the plate when translated towards the end stop (29);
and releasable pivot means (32, 33, 36) engageable in the wings and the plate to permit pivoting movement of the plate, and hence the motor and motion transfer means and the position sensing means secured thereto after removal of the plate from operative position adjacent the frame by initial translatory movement along said at least one rail.

4,325,304
PYROTECHNIC DEVICES AND SYSTEMS AND FIRING CIRCUITS THEREFOR
Peter T. Ormiston, Farnham, England, assignor to The Solartron Electronic Group Limited, Farnborough, England
Filed Jan. 29, 1980, Ser. No. 116,436
Claims priority, application United Kingdom, Feb. 3, 1979, 03866/79
Int. Cl.³ F42C *15/40*; F42B *4/24*
U.S. Cl. 102—200 14 Claims



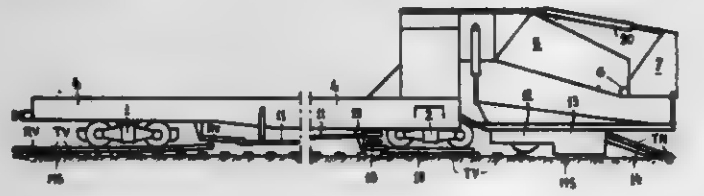
1. A pyrotechnic system comprising:
a plurality of pyrotechnic charges each including a principal, relatively fast-burning, pyrotechnic material, an electrically-operable primer for firing said principal pyrotechnic material and an auxiliary, relatively slow-burning, pyrotechnic material arranged to be ignited by the firing of said principal material; and
electric circuit means for applying electric firing signals to the primers;
wherein said electric circuit means comprises at least two input terminals for receiving said firing signals; the primers are connected in parallel circuit paths between said input terminals; the charges are arranged in a predetermined firing sequence in respective chambers in a common housing member; and each charge is associated with a respective rupturable conductor which is connected effectively to substantially short-circuit the primer of the next charge in the firing sequence and which is arranged to be ruptured by the burning of the auxilary pyrotechnic material only after said principal pyrotechnic material has been fired; whereby the firing of each of the second and subsequent charges in the firing sequence is enabled only after the preceding charge has been fired.

4,325,305
ELECTRICAL AUGMENTATION OF DETONATION WAVE
Donald J. Pastine, Highland, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Jul. 17, 1980, Ser. No. 169,577
Int. Cl.³ F42C *19/00*
U.S. Cl. 102—201 15 Claims



1. A device for increasing the energy from the detonation of an explosive, comprising:
an explosive charge; and
means adding energy to the detonation wave of the explosive charge;
whereby upon detonation of the explosive charge the detonation wave passes through the charge and the means adding energy increases the velocity and pressure of the detonation wave.

4,325,306
MACHINE FOR THE RENEWAL OF RAILWAY TRACKS
Sergio Valditerra, Novi Lagure, Italy, assignor to Canron Inc. (Montreal), Vaud, Switzerland
Filed Mar. 14, 1979, Ser. No. 20,274
Claims priority, application Italy, Mar. 15, 1978, 67562 A/78; Apr. 21, 1978, 67906 A/78
Int. Cl.³ E01B *29/05*
U.S. Cl. 104—2 12 Claims

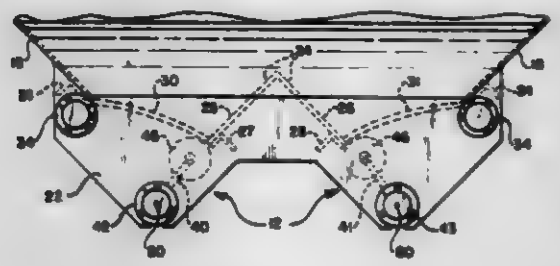


1. A machine for the renewal of railway tracks adapted to effect at least the replacement of old sleepers with new sleepers comprising a front and rear frame connected by a swivel, said front frame resting on a front and middle bogie, with said rear frame resting on a rear bogie, said machine further including a means disposed between said front and middle bogies capable of removing the rails and a means, disposed between said middle and rear bogies, capable of removing old sleepers and replacing new sleepers and in addition, the relaying of the rails, and wherein said middle bogie is provided with a carriage means, said carriage means being defined by a sledge having a width and gauge identical to the width and gauge of the railway tracks, said sledge capable of sliding on said old sleepers, said carriage means enabling said middle bogie to move along said old sleepers in a direction parallel to the longitudinal axis of said railway tracks, said sleepers acting as a lateral guide means for said carriage means, said machine further including a dynamic means disposed close to said swivel and interconnecting said front and rear frames, said dynamic means for imparting forces on both the front and rear bogies thereby reducing the load impinging on said middle bogie by transferring said load to both said front and rear bogies whereby the movement of said middle bogie and said carriage means along said old sleepers is facilitated.

4,325,307
BUFFER STOP
David E. Bick, Newent, England, assignor to Dowty Hydraulic Units Limited, Cheltenham, England
Filed May 5, 1980, Ser. No. 146,892
Claims priority, application United Kingdom, May 25, 1979, 18254/79
Int. Cl.³ B61K *7/18*
U.S. Cl. 104—256 11 Claims

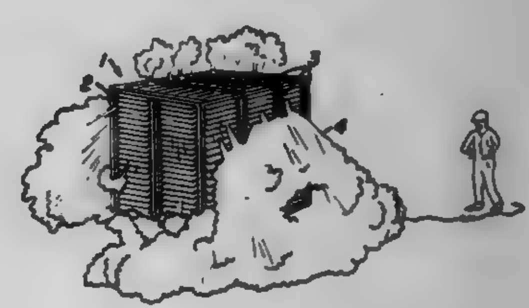
1. A buffer stop comprising an arm, capable of being pivotally-mounted at one end portion in the region of a railway track, and a piston-and-cylinder device adapted to act in one mode of operation as an energy-absorbing device and in another mode of operation as an extendible and contractible fluid-pressure-operable device, one end portion of said device being pivotally-connectible to the other end portion of the arm and the other end portion of said piston and-cylinder device being adapted for direct pivotal connection to structure fast with respect to the railway track at a distance away from said one end portion of the arm.

4,325,308
CONTROLLED-DISCHARGE DOOR FOR PARTICULATE MATERIALS AND LIQUIDS
Frank R. Erfurth, Boise, Id., assignor to Morrison-Knudsen Co., Inc., Boise, Id.
Filed Apr. 21, 1980, Ser. No. 141,996
Int. Cl.³ E01D *7/02, 7/18*
U.S. Cl. 105—280 7 Claims



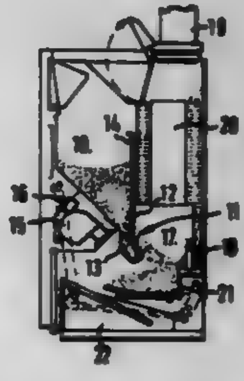
1. A controlled-discharge door assembly for controlling the discharge of particulate or liquid contents of a hopper car or the like, comprising:
a discharge opening in the car;
door supports depending from the discharge opening;
a discharge door having a concave configured outer surface. pivotally mounted at one end to the door supports for movement between a closed position wherein the door closes the discharge opening and an open position for discharge of the contents of the car therethrough;
a lever pivotally mounted at one end to the door supports beneath the pivotal connection of the discharge door and intermediate the ends of the discharge door; and
a roller rotatably mounted to the lever and engaging the concave surface of the door intermediate its ends when the door is in its open position and movable along the curved surface of the door as the lever is moved about its pivotal connection, the roller having a diameter relative to the length of the lever arm such that a greater amount of force is applied against the door by the roller as the roller approaches the free end of the door opposite its pivotal connection to the door supports and as the door approaches its closed position, thereby permitting the door to be closed against the weight of the contents of the car being discharged through the discharge opening.

4,325,309
BLAST SUPPRESSIVE SHIELDING
Paul V. King, Joppatowne; Albert P. Becher, Fallston, and Wilmer P. Henderson, Bel Air, all of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Division of Ser. No. 699,738, Jun. 24, 1976, abandoned, which is a continuation of Ser. No. 495,177, Aug. 6, 1974, abandoned.
This application Sep. 17, 1979, Ser. No. 75,770
Int. Cl.³ F41H *5/00*; E05G *1/00*
U.S. Cl. 109—49.5 15 Claims



1. In a building with hazardous materials the improvement wherein said building includes at least one wall, ceiling or roof portion having a metal and gas venting shield comprising:
at least one perforated plate for overpressure attenuation means;
at least one metal louvered plate spaced from and adjacent to said perforated plate for slowing or confining debris;
fire confining and heat dissipating means in the form of at least one metal screen affixed to one of said plates.

4,325,310
BOILERS
Thomas A. Babbage, Walton-on-Thames, England, assignor to Trianco Redfyre Limited, Sheffield, England
Filed Aug. 11, 1980, Ser. No. 177,240
Claims priority, application United Kingdom, Aug. 13, 1979, 28143/79
Int. Cl.³ F23K *3/00*
U.S. Cl. 110—101 R 6 Claims



1. A heating boiler comprising in combination:
a combustion chamber;

a hopper having a throat opening into one side of the combustion chamber at a level such that solid fuel pellets in said hopper flow out to form a firebed until the surface of the firebed slopes downwardly from said throat at the natural angle of repose of said fuel pellets;
a thermostatically controlled fan operable to cause primary air to flow through the firebed;
a support that slopes downwardly into the combustion chamber for an initial portion of the downward travel of the fuel pellets;
a regulator extending generally across said throat for controlling flow of fuel pellets from said hopper; and
means on said regulator for defining a localized thinning of the firebed so that the firebed is shallow at the localized region with respect to the thickness of the firebed adjacent said localized region, said means including a tongue mounted on said regulator, said tongue having a longitudinal area less than the cross-sectional area of said throat so that the tongue at least substantially prevents the flow of fuel pellets at one region of said throat downstream of said tongue so that a localized shallow region forms in the firebed through which breakthrough of primary air is facilitated and controlled while maintaining a thick edged firebed, said regulator being spaced from said support so that the effective throat, between the regulator and the support, is less than about 40 mm so that fuel pellets having sizes equal to or less than about 5/16 inch can be efficiently handled by the boiler.

4,325,311

METHOD AND EQUIPMENT FOR TREATMENT OF FUEL FOR FLUIDIZED BED COMBUSTION

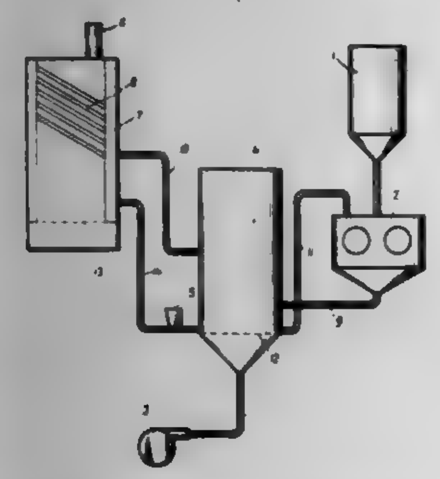
Jaroslav Beranek; Jan Cermak, both of Prague; Jaroslav Dobrozemsky, Uhliska, and Vratislav Fibinger, Vaclava Vacka, all of Czechoslovakia, assignors to Ceskoslovenska akademie ved, Prague, Czechoslovakia

Filed May 16, 1980, Ser. No. 150,317

Claims priority, application Czechoslovakia, May 17, 1979, 3424-79

Int. Cl.³ F22B *1/00*

U.S. Cl. 110—245 **2 Claims**



1. A method for treatment of particulate fuel for fluidized bed combustion in a fluidized bed combustor, comprising: removing hot particles from the bed of said combustor and passing same to a fluidized bed dryer, mixing the fuel with the hot particles removed from the bed of the fluidized bed combustor and, drying the mixture at a drying temperature in the fluidized bed dryer while introducing fluidization fluid to said dryer at a velocity not greater than the minimum fluidization velocity of particles in the fluidized bed combustor, removing particles from the fluidized bed in the dryer, charging the same to the fluidized bed combustor, removing particulate material which fluidizes at a fluidizing fluid velocity higher than the fluidizing fluid velocity in the fluidized bed dryer from the bottom of the bed in the fluidized bed dryer, and passing the same to a crusher wherein the particle size is reduced, and returning the particulate material having a reduced particle size to the fluidized bed dryer.

4,325,312

METHOD AND INSTALLATION OF INJECTION OF SOLID FUELS INTO A SHAFT FURNACE

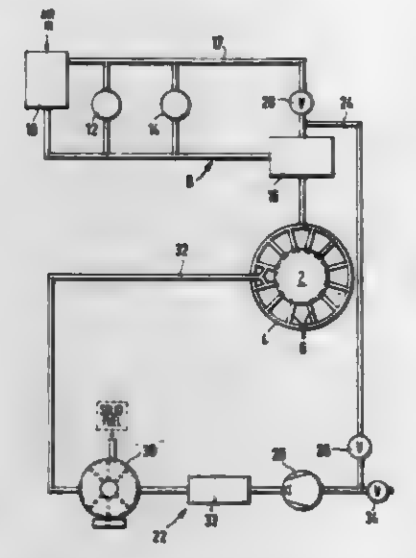
Leon Ulveling, Luxembourg, Luxembourg, assignor to Paul Wurth S.A., Luxembourg

Filed Jul. 7, 1980, Ser. No. 166,618

Claims priority, application Luxembourg, Jul. 17, 1979, 81519

Int. Cl.³ F23D *1/00*

U.S. Cl. 110—347 **10 Claims**



1. A method for the injection of solid fuel into a shaft furnace, the furnace being provided with a common hot air supply conduit which is coupled to the interior thereof by means of a plurality of tuyere stocks, the furnace further including external means for producing heated air and a mixing station whereby the temperature of the heated air is reduced to a controlled level by mixture with relatively cold air, said method comprising the steps of:
diverting a portion of the cold air being delivered to the mixing station;
raising the pressure of the diverted air, the temperature of the air increasing with the increase in pressure;
entraining a pulverized solid fuel in the pressurized air to form a fuel/air mixture; and
injecting the fuel/air mixture into at least a first tuyere stock whereby the said fuel/air mixture is delivered into the furnace along with heated air discharged from the mixing station.

4,325,313

AUTOMATIC EMBROIDERY SEWING MACHINE

Taneichi Kawai; Kouji Nishida, both of Anjyo; Osamu Miyake, Toyota, and Shigemitsu Hamajima, Oobu, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Aichi, Japan

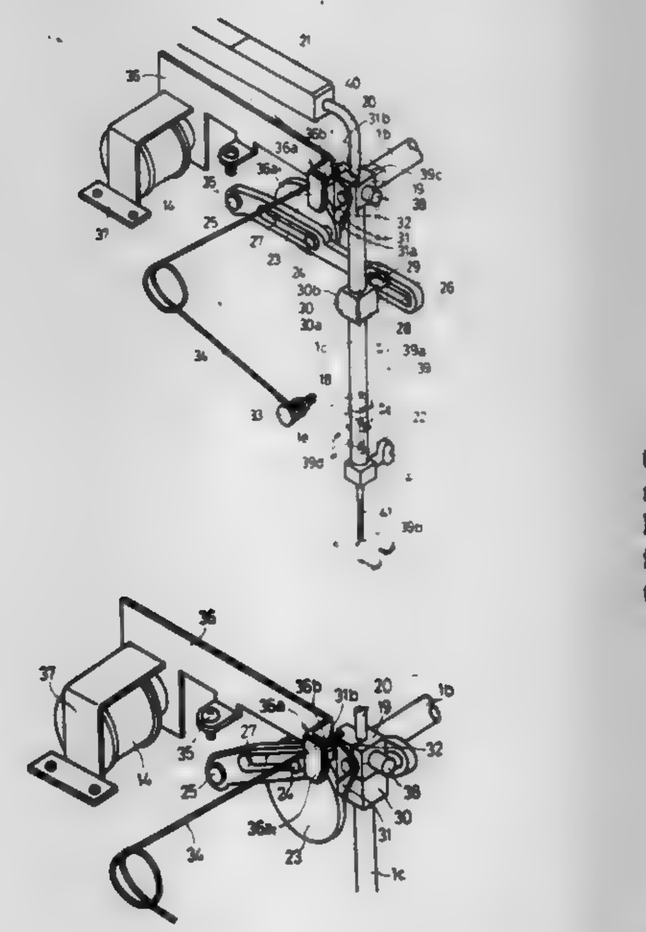
Filed May 15, 1980, Ser. No. 150,024

Claims priority, application Japan, May 21, 1979, 54/67896; Jun. 14, 1979, 54/75062

Int. Cl.³ D05C *5/04*

U.S. Cl. 112—103 **3 Claims**

1. An automatic embroidery sewing machine comprising an X-axis drive system, a Y-axis drive system, a support member coupled with said drive systems and supporting an embroidery frame, a needle bar and a needle bar drive system, an electromagnetic clutch mechanism for selectively coupling and uncoupling said needle bar with said needle bar drive system and an electronic control system for driving embroidery sewing data which represents an X-axis component and a Y-axis component of a stroke over which the embroidery frame is to be driven along the X-axis and the Y-axis respectively, said data being utilized in the X-axis and Y-axis drive systems, said control system rendering said electromagnetic clutch mechanism in its operative condition for X and Y-axis components which are below respective given values and rendering the electromagnetic clutch mechanism inoperative until the termination of the positioning of the support member by the X and Y-axis drive systems whenever either component exceeds its associated given value, said electromagnetic clutch mechanism comprising a slider disposed in operative engagement with said needle bar drive system for imparting vertical reciprocatory motion to said slider, said slider being slidably mounted on said needle bar and having a bottom step portion, a latch member pivotally mounted on said needle bar at a point above said slider, said latch member having a laterally extending hook at one end adapted to engage said bottom step on said slider to operatively couple said needle bar to said slider and an oppositely extending lateral projection at the other end thereof, a spring angularly urging the latch member in a direction to be coupled with said slider, a resilient cam member having a cam surface formed on one end thereof and movable between a first position in which said cam surface is spaced from the latch member and a second position in which the cam surface en-



gages part of the latch member, an electromagnetic assembly effective to drive the cam member from said first to said second position whenever energized wherein the electronic control system operates to maintain the electromagnetic assembly deenergized whenever both components of the stroke are below the given values and to energize the electromagnet assembly whenever either component of the stroke exceeds the associated given value and subsequently deenergizes it after the termination of the operation of the X and Y-axis drive system to position the support member for a stitch, said cam surface having a lower portion inclined downwardly away from said lateral projection on said latch member and an upper cam surface having a first vertically extending portion and a second inclined portion extending upwardly away from said lateral projection, said first and second portions being disposed side-by-side with said second inclined portion being offset to define an abutment surface between said first and second portions whereby upon energization of said electromagnet assembly when said needle bar is in its uppermost position, the abutment surface on said cam member will engage the end of said lateral projection on said latch member so that upon downward movement of said needle bar, said lateral projection will engage said second inclined portion of said cam surface to pivot said latch member out of engagement with said step portion on said slider to disengage said needle bar from said needle bar drive system.

4,325,314

THREAD CONTROL MECHANISM FOR SEWING MACHINES

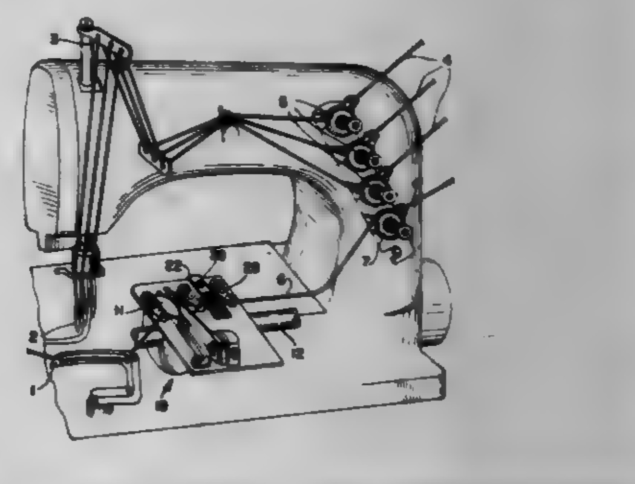
Wolfgang Niem, Leonberg, Fed. Rep. of Germany, assignor to Union Special G.m.b.H., Stuttgart, Fed. Rep. of Germany

Filed Apr. 1, 1980, Ser. No. 136,204

Claims priority, application Fed. Rep. of Germany, Apr. 7, 1979, 2914117

Int. Cl.³ D05B *1/10*

U.S. Cl. 112—199 **8 Claims**



2. Sewing apparatus including a machine having reciprocal thread carrying needle means, oscillatory rocking thread carrying looper means, rotary drive shaft means for moving said looper means in timed relation to said needle means so as to form a stitch, a supply of thread for said looper means and a thread control mechanism comprising:
means operable in timed relation with the movements of said looper means for intermittently clamping the thread passing to said looper means at a point located between said thread supply and said looper and effective to break said looper thread when it becomes entangled with said rotary drive shaft means.

4,325,315

METHOD FOR SEWING A MONOGRAM PATTERN

Peter J. Totino, North Bergen, and Alfonse N. Vona, Jersey City, both of N.J., assignors to The Singer Company, Stamford, Conn.

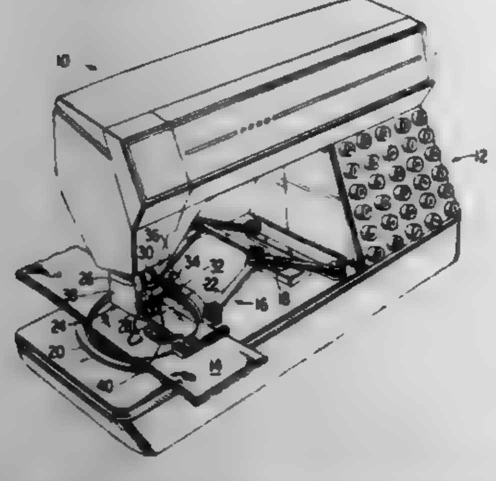
Filed May 11, 1981, Ser. No. 262,168

Int. Cl.³ D05B *3/02, 97/00*

U.S. Cl. 112—266.1 **4 Claims**

1. A method of operating a zig zag sewing machine to produce a visible pattern of zig zag stitches in a work fabric along a predetermined path to form a monogram within a defined field on the work fabric, comprising the steps of:
locating the defined field on the work fabric at a predetermined location and orientation with respect to the sewing machine;
unlatching the needle bar from the needle bar drive mechanism to prevent reciprocation of the needle bar;
feeding the work fabric in a selected longitudinal direction substantially perpendicular to the direction of lateral jogging movement of the needle bar to a point of intersection with said predetermined path;
latching the needle bar to the needle bar drive mechanism to allow reciprocation of the needle bar;

sewing a straight stitch along said predetermined path to a starting point for said monogram along said path; and



sewing zig zag stitches along said path from said starting point to form said monogram.

4,325,316

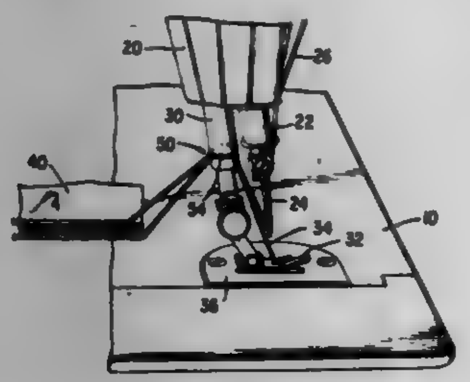
OMNI-DIRECTIONAL THREAD CUTTER

Robert B. Branch, Wayne, and Martin W. Heine, Summit, both of N.J., assignors to The Singer Company, Stamford, Conn.

Filed Nov. 12, 1980, Ser. No. 205,860

Int. Cl.³ D05B 65/00

U.S. Cl. 112—292 9 Claims



1. An omni-directional thread cutter in a sewing machine including a member having a substantially cylindrical shaped surface and an axis of generation of said cylindrical shaped surface, said surface having an annular cutting edge formed therein generally defining a plane which is substantially perpendicular to said axis of generation.

4,325,317

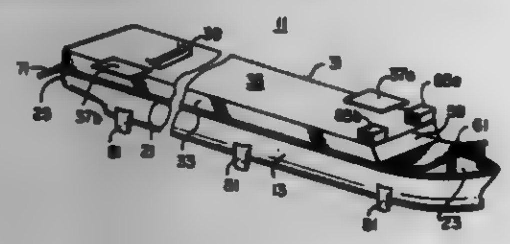
AIRCRAFT CARRIER

E. Burke Wilford, 840 Montgomery Ave., Bryn Mawr, Pa. 39046

Filed Nov. 8, 1979, Ser. No. 92,353

Int. Cl.³ B63B 35/035

U.S. Cl. 114—261 14 Claims



1. An aircraft carrier comprising a hull having propulsion means to propel said hull through a body of water, a main deck having service bays for aircraft disposed thereon, said main deck comprising a bow portion, and a stern portion, a hangar covering at least one of said portions, said hangar enclosing a work area occupying about 50 to 75 percent of the total area of said main deck, said work area including said service bays, said hangar comprising armored spaced-apart sidewalls, an armored roof member supported by said sidewalls and disposed substantially parallel to said main deck, said service bays being arranged in a predetermined sequence in assembly-line fashion, the upper surface of said roof member having a flat portion providing a takeoff and landing area for said aircraft, and elevator means between said upper roof surface and said main deck for transporting said aircraft therebetween; take-off assisting means for said aircraft disposed on said bow portion; said stern portion being provided with at least one ramp extending outwardly and downwardly therefrom, said ramp being adapted to be disposed at or below the surface of said body of water, whereby amphibious craft may traverse said ramp into said stern portion.

4,325,318

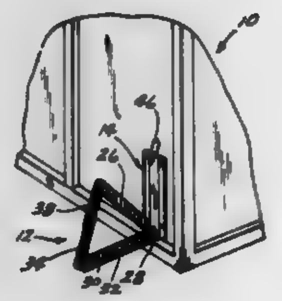
FOLDING DISABLED VEHICLE WARNING SYMBOL

John V. Kitrell, 4639 Holdrege, Lincoln, Nebr. 68503

Filed Mar. 26, 1980, Ser. No. 133,978

Int. Cl.³ E01F 9/10

U.S. Cl. 116—28 R 8 Claims



8. A folding disabled vehicle warning sign for attachment to a vehicle, comprising,

an elongated rectangular housing attached to the vehicle,

a first elongated sign segment operatively secured to said housing and being movable from a position within said housing to a position outwardly of said housing,

a second elongated sign segment pivotally secured at one of its ends to said first sign segment adjacent one end thereof,

a third elongated sign segment pivotally secured at one of its ends to the other end of said second sign segment,

a fourth elongated sign segment pivotally secured at one of its ends to the other end of said third sign segment and pivotally secured at its other end to the other end of said first sign segment,

said second, third and fourth sign segments being movable with said first sign segment,

said sign segments being movable from a superposed stored position within said housing to a warning position outwardly of said housing,

said sign segments, when in the said warning position, defining a triangular disabled vehicle warning symbol,

said housing having an open end to permit said sign segments to be moved from the stored position within said housing to said warning position, and

means on said first sign segment to close said housing open end when said segments are in their stored position.

4,325,319

AIR FLOW SYSTEM FOR THE CHARGING CONDUCTOR IN AN ELECTROSTATIC PAINTING SYSTEM

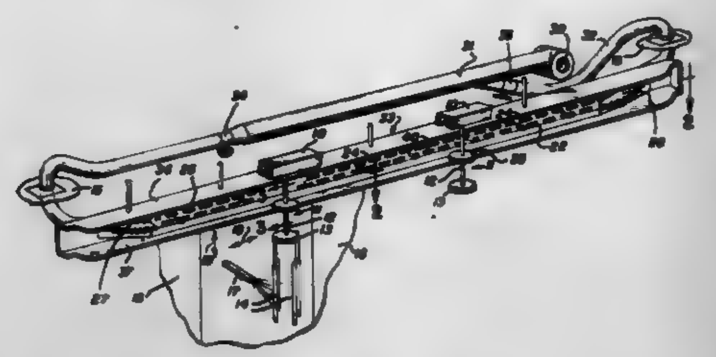
Thomas J. Richards, Peoria; Robert G. Smead, St. Charles, and Paul J. Staebler, Dunlap, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US80/00047, §371 Date Jan. 18, 1980, §102(e) Date Jan. 18, 1980, PCT Pub. No. WO81/01967, PCT Pub. Date Jul. 23, 1981

PCT Filed Jan. 18, 1980, Ser. No. 145,068

Int. Cl.³ B05B 5/02

U.S. Cl. 118—634 15 Claims



1. In an electrostatic painting system having a conveyor (10) with a plurality of article carriers (11) which pass through a coating zone and means for electrically charging articles as they pass through the coating zone (15, 16), including a charged conductor (22) extending along the path of travel of the article carriers and a charge collector (23) on each carrier having a path of travel adjacent the charged conductor to transfer a potential to the article carrier and to articles (14) carried thereby, an improved air flow system for preventing the deposition of paint particles on said charged conductor, comprising:

a blower (30);

means defining a plenum chamber (33) extending along the length of said charged conductor;

means (31, 32) for directing a flow of air from said blower through said plenum chamber; and

a perforate wall (25) between said plenum chamber and said charged conductor, a flow of air being directed through said perforate wall (25) outwardly across said charged conductor (22).

4,325,320

APPARATUS EMPLOYED IN SURFACE TREATMENT

Atsushi Kirisawa, Aichi, Japan, assignor to Japan Envirotic Industry Co., Ltd., Nagoya, Japan

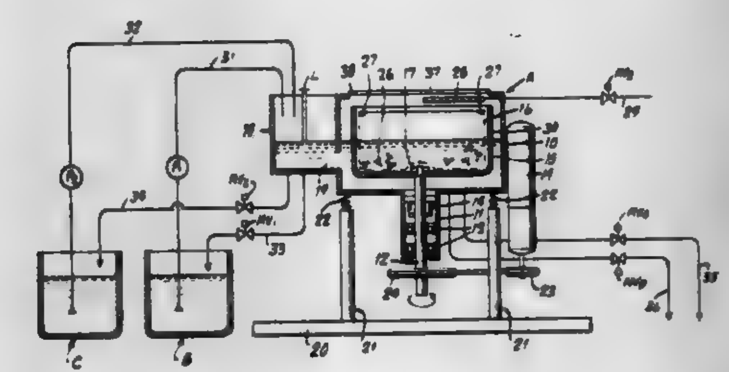
Division of Ser. No. 90,578, Nov. 2, 1979, Pat. No. 4,294,626.

This application Jun. 13, 1980, Ser. No. 159,111

Claims priority, application Japan, Nov. 9, 1978, 53-138487

Int. Cl.³ B05C 3/04

U.S. Cl. 118—52 1 Claim



1. An apparatus employed in surface treatment which comprises a stationary vessel, an open top holed container rotatably mounted within said vessel, an open top cage adapted to be positioned within said container for rotation therewith, one or more washing nozzles fixed to said vessel at its upper part and adapted for treating or washing the contents of said cage within said container, and a supply tank attached to the outside of said vessel which connects with one or more tanks of treating liquid and/or washing liquid for supplying said treating liquid or washing liquid to said vessel through an aperture in said vessel.

4,325,321

GLUE APPLICATOR

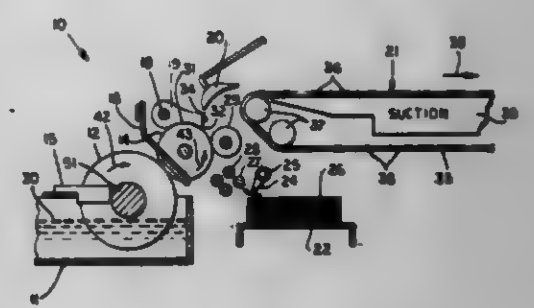
Paul Wahnschaff, 3202 Marjan Dr., Atlanta, Ga. 30340

Division of Ser. No. 111,528, Jan. 14, 1980, Pat. No. 4,263,869.

This application Nov. 13, 1980, Ser. No. 206,438

Int. Cl.³ B05C 1/02

U.S. Cl. 118—245 3 Claims



1. In apparatus for applying glue and the like to sheet-like material comprising a glue pan for containing liquid glue, a glue wetting roll partially submerged in the glue in said glue pan, a glue applicator roll in parallel juxtaposition with respect to said glue wetting roll, means for rotating said glue wetting roll and said glue applicator roll whereby the glue wetting roll transfers glue from said glue pan to said glue applicator roll, feed means for moving sheet-like material into contact with said glue applicator roll, and pick means in sliding contact with said glue applicator roll for picking the sheet-like material off said glue applicator roll, the improvement therein of said glue applicator roll including a cylindrical metal core, end plugs inserted in the ends of said core and each end plug including a radially extending annular flange with a periphery of larger diameter than the outer surface of said core, an annular layer of hardened ceramic material formed on the outer annular surface of said core of a thickness to form an outer cylindrical surface which is coextensive with the outer annular surfaces of the annular flanges of said end plugs, and said pick means being positioned to contact only the ceramic coating of said glue applicator roll.

4,325,322

LIQUID APPLICATOR FOR TEXTILE YARNS

James B. Leach; William Postman, both of Anderson, S.C.; Thomas A. Ward, Lubbock, Tex., and Willis E. Cole, Anderson, S.C., assignors to Badische Corporation, Williamsburg, Va.

Filed Oct. 4, 1979, Ser. No. 81,705

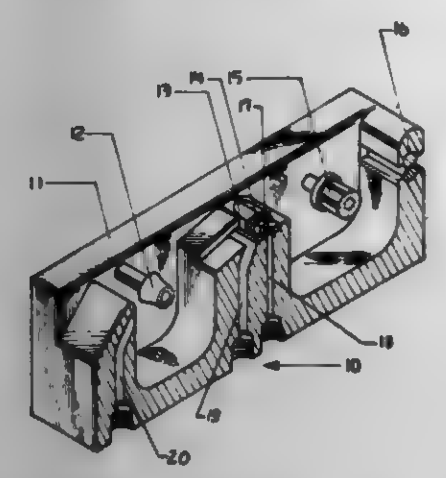
Int. Cl.³ B05C 3/15

U.S. Cl. 118—410 4 Claims

1. A device for the application of a liquid treating composition uniformly over the width and along the length of a traveling textile yarn comprising a plurality of individual filaments, which device comprises:

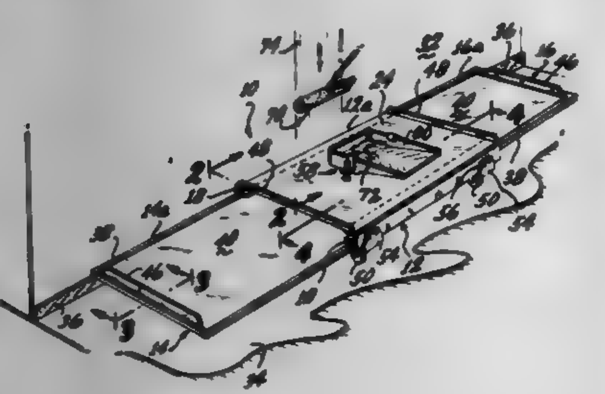
(a) a liquid receptacle in the form of a chamber having a slit in one section thereof, the elongated sides of the slit being parallel straight lines substantially perpendicular to the path of the traveling textile yarn, the chamber communicating through another section thereof with means for the supply thereto of the liquid treating composition at a controlled rate; the slit having a minimum length equal to the total width of the traveling textile yarn when config-

ured in a close-packed monofilamentary layer; the slit having a width of between 0.001 and 0.01 inches; and
(b) guide means for configuring the traveling textile yarn in



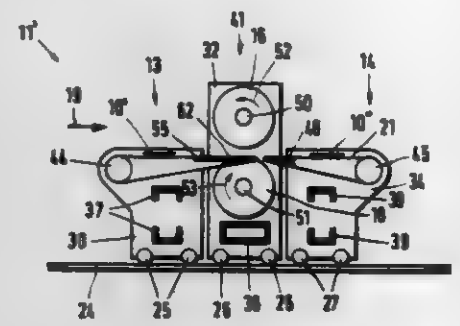
a closed-packed monofilamentary layer and directing the so-configured traveling textile yarn over the slit and in contact with the chamber at a point downstream of the slit and in proximity thereto.

4,325,323
COLLAPSIBLE PAINT TRAY CARRIER AND PAINT SPATTER PROTECTOR
Jean P. Rioux, 6870 SW. 18 Ct., Pom Pano Beach, Fla. 33068
Filed Dec. 22, 1980, Ser. No. 218,545
Int. Cl.³ B05C *11/16*
U.S. Cl. 118—504 **7 Claims**



1. An apparatus for protecting a baseboard and floor adjacent a wall when applying a coating of a substance to the wall, comprising:
a horizontally extending rectangular central frame including a pair of E-shaped side pieces each defining upper and lower channels;
means for supporting the frame for movement along the floor; and
a pair of horizontally extending rectangular side panels having longitudinal edges, a first one of the side panels having its longitudinal edges slidably received in the upper channels of the E-shaped side pieces and a second one of the side panels having its longitudinal edges slidably received in the lower channels of the E-shaped side pieces, the side panels being slidably extensible from collapsed positions in which the side panels overlie each other to positions in which they extend from opposite ends of the central frame with only a small end portion of each side panel within the frame and with at least one set of longitudinal edges of the frame and side panels being aligned so that when they are positioned closely adjacent the wall, the frame and the side panels will shield the baseboard and the floor.

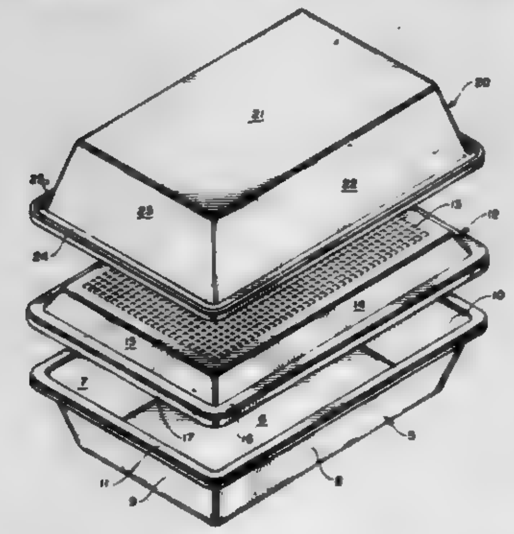
4,325,324
APPARATUS FOR STIFFENING TEXTILE SHEETS BY COATING WITH PLASTIC
Martin Kannegiesser, Bad Salzuflen, Fed. Rep. of Germany, assignor to Herbert Kannegiesser GmbH & Co., Vlotho, Fed. Rep. of Germany
Filed Jun. 2, 1980, Ser. No. 155,727
Claims priority, application Fed. Rep. of Germany, Jun. 2, 1979, 2922613; Jun. 2, 1979, 7916050
Int. Cl.³ B05C *1/02*
U.S. Cl. 118—642 **9 Claims**



1. Apparatus for the stiffening of textile sheets of various shapes for the manufacture of garments by coating with plastic, especially for the stiffening of such sheets for outer fabrics, said apparatus including a device for the coating of the textile sheets and a device for the subsequent heat treatment thereof, and a belt-shaped conveyor mechanism for the conveying of the textile sheets through said device, the coating device having a printing unit with a printing cylinder arranged above a pressure roller and the heat treatment device having a tunnel drier, the operating range of said printing unit being smaller than the operating width of said conveyor mechanism and said printing cylinder and said pressure roller being vertically arranged without a conveyor belt therebetween, the improvement wherein said conveyor mechanism is divided into at least first and second movable units couplable to said printing unit across the entire operating width in the area of said coating device transversely to a conveying direction of textile sheets in said conveyor mechanism, said first movable unit being arranged in front of said printing unit and having a first conveyor belt with a width corresponding to the length of said printing cylinder and a second conveyor belt longer than said first conveyor belt and having a width corresponding to the difference between the length of said printing cylinder and the operating width of said conveyor mechanism, said second movable unit having a third conveyor belt, said second conveyor belt leading in said conveying direction directly to said third conveyor belt, and said second movable unit being as wide as the sum of the widths of said first conveyor belt and said second conveyor belt.

4,325,325
SELF-CLEANING LITTER BOX
Wayne D. Larter, Box 405, Cruz Bay, St. John, V.I. 00830
Filed Oct. 31, 1980, Ser. No. 202,598
Int. Cl.³ A01K *29/00*
U.S. Cl. 119—1 **10 Claims**

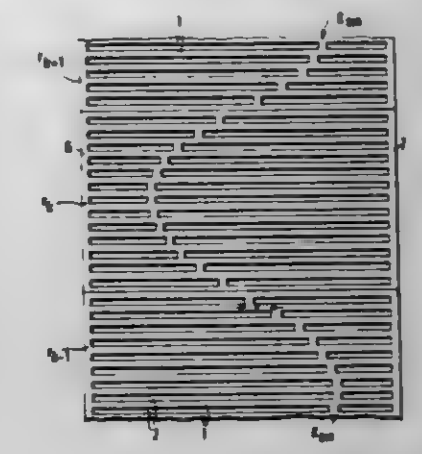
1. A self-cleaning animal litter box comprising:
(a) a container having an imperforate bottom and imperforate wall structure extending upwardly from said bottom and having free upper edge portions and cooperatively forming with said bottom an imperforate receptacle adapted to receive and contain litter and animal excrement therewithin;
(b) a horizontal extending abutment shoulder carried by said upper edge portions of said wall structure and extending therealong;
(c) a separator constructed and arranged to be disposed in superimposed relation to said container and having a foraminous central portion spaced a substantial distance above said container and imperforate wall structure surrounding said central portion extending downwardly and outwardly therefrom and having lower peripheral portions;
(d) an abutment shoulder carried by said lower peripheral portions of said separator wall structure;
(e) said wall structure and said shoulder of said separator having such dimensions and being so constructed and arranged as to cause said separator shoulder to abut said container shoulder in flush sealing relation throughout their respective lengths when said separator is superimposed upon said container;
(f) means associated with said separator for holding said shoulders against lateral shifting movement relative to each other; and
(g) an inverted second container constructed and arranged to be superimposed upon said first mentioned container in non-telescoping relation and having an imperforate bottom and imperforate wall structure extending down-



wardly from said bottom and cooperatively forming therewith a second imperforate receptacle having lower edge portions;
(h) said second container having a horizontally extending abutment shoulder carried by said lower edge portions of its said wall structure and extending outwardly therealong, and being constructed and arranged to rest in abutting superimposed sealing relation along its length upon the upper surface of said separator shoulder, whereby any litter within said first container, upon inversion thereof as a unit with said separator and said second container so superimposed, will pass through said separator into said second container and will thereby be separated from any animal excrement which may have been deposited upon such litter within said first container, while said separator was not so disposed;
(i) the openings in said foraminous central portion of said separator being slightly larger than the granules of commercial kitty litter.

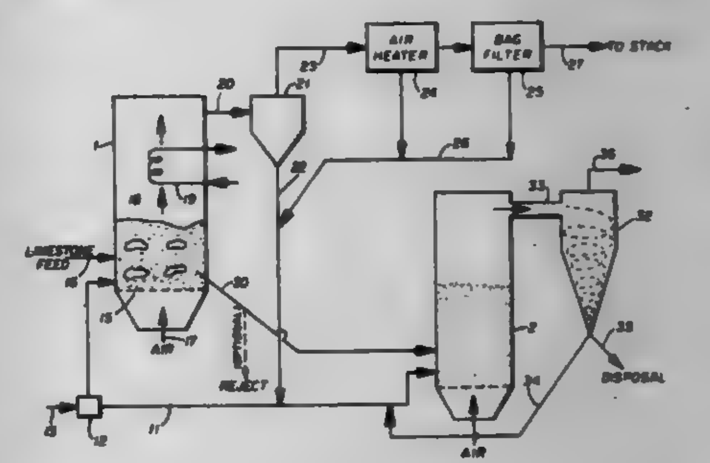
4,325,326
CAST GRATE, ESPECIALLY FOR PIG STABLES
Reinhard Schierenbeck, Böttcherei 171, 2803 Weyhe-Leeste, Fed. Rep. of Germany
Filed Feb. 20, 1980, Ser. No. 123,383
Claims priority, application Fed. Rep. of Germany, Feb. 20, 1979, 2906515
Int. Cl.³ A01K *1/01*
U.S. Cl. 119—28 **10 Claims**

1. Cast grate, especially for pig stables, consisting of parallel profile bars having tread surfaces with connecting end bars and stabilizing bridges along one or more bridge lines running transversely to the bars bridging the slit between adjacent bars, having the improvement comprising,
said bridges along bridge curves running angularly to the direction which is perpendicular to the bars with the result of displacements in a direction parallel to said bars of bridges across neighbouring slits with the width a of each bar within the range of substantially 11.5 mm to substantially 35 mm and the width b of each slit within the range of substantially 9 mm to 20 mm,



said bridge displacements being predominantly within the range of one third to twice the bar width a,
said tread surfaces and bridges having an incline towards the grate slits of about ⅛ to 1/16 with convex upper shoulders contiguous with concave flanks for supporting the hoofs of little pigs.

4,325,327
HYBRID FLUIDIZED BED COMBUSTER
Prabhudas P. Kantesaria, Windsor, and Francis T. Matthews, Poquonock, both of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.
Filed Feb. 23, 1981, Ser. No. 237,183
Int. Cl.³ F22B *1/00*
U.S. Cl. 122—4 D **6 Claims**



1. A system for burning solid fuel, including,
a first furnace in which is supported a fluidized bed of crushed solid fuel and limestone,
a supply of crushed solid fuel,
means for separating the supply of crushed fuel into a predetermined coarse size and a predetermined fine size,
a conduit connected to the separating means and the first furnace to supply the first furnace with the crushed fuel of predetermined coarse size,
a second furnace,
a conduit connected to the separating means and the second furnace to supply the second furnace with crushed fuel of predetermined fine size,
means connected to the first furnace to supply combustion air at a velocity within the range of 6–12 ft./sec.,
means connected to the second furnace to supply combustion air at a velocity within the range of 15–35 ft./sec.,
means connected to the first furnace to supply crushed

limestone for absorption of sulfur compounds from the crushed fuel burned in the first furnace,

a conduit connected between the first and second furnaces for supplying the second furnace with incompletely utilized limestone drained from the first furnace,

and heat exchangers mounted in the furnaces to absorb their heat of combustion into water for the production of steam.

4,325,328

VAPOR GENERATOR HAVING A PAIR OF COMBUSTION CHAMBERS

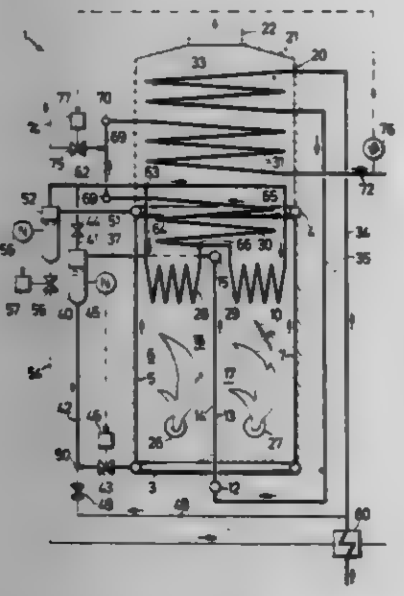
Pawel Miszak, Winterthur, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Aug. 6, 1980, Ser. No. 175,881

Claims priority, application Switzerland, Aug. 22, 1979, 7640/79

Int. Cl.³ F22B *37/00*

U.S. Cl. 122—6 A 7 Claims



1. A vapor generator comprising

a plurality of interconnected tubes defining four enclosing walls and a partition for conveying a working medium threthrough in series from said partition tp said walls, said partition being disposed within said enclosing walls to form two combustion chambers and having an outlet for the working medium;

a superheater disposed within said walls and having an inlet; [redacted]

a vapor separator connected to said outlet of said partition to receive working medium therefrom, said separator having a water outlet connected to an inlet of said walls to deliver working medium thereto and a vapor outlet connected to said inlet of said superheater to deliver vapor thereto.

4,325,329

METHOD AND APPARATUS FOR PRODUCING ALCOHOL AND AN ALCOHOL-PETROLEUM FUEL MIX

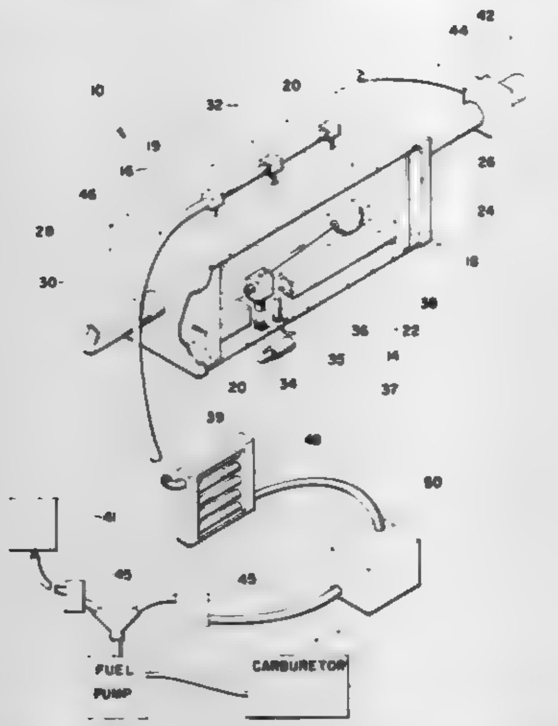
Thomas G. Taylor, Rte. 1, Box 136-A, Parkton, N.C. 28371

Filed May 5, 1980, Ser. No. 146,282

Int. Cl.³ F02B *43/08*

U.S. Cl. 123—3 8 Claims

1. An on board vehicle alcohol-petroleum fuel producing and blending fuel system for a vehicle having an engine and an exhaust system, and adapted to be mounted on and incorporated into said vehicle for producing and blending alcohol with conventional petroleum fuel to produce a combined alcohol-petroleum fuel composition for consumption and use by said vehicle, said system comprising: a boiler communicatively connected with and operatively associated with said engine and exhaust system for receiving heat from said engine while said vehicle is operating, and adapted to receive a fermented alcohol base solution and to heat the same with heat received from said engine and exhaust system to produce an alcohol vapor that upon condensing gives rise to liquid alcohol; said boiler including a chamber provided with inlet means for receiving said fermented alcohol base solution; heating tube means extending through said boiler and including inlet means operatively connected to the vehicle engine and exhaust system for allowing engine exhaust air to be directed through said heating tube means in heat exchange relationship with said chamber such that the fermented alcohol base solution contained therein may be heated and vaporized; vapor outlet means associated with said chamber for directing alcohol vapor therefrom as the same is generated by said boiler in response to the chamber being heated; condenser means for receiving said alcohol vapor and condensing the same to form



liquid alcohol; temperature control means for controlling the temperature of said boiler and including means to selectively meter the quantity of exhaust air that is directed through said boiler so as to effectively regulate the temperature within the chamber thereof; a conventional petroleum fuel tank provided with said vehicle that is adapted to contain conventional petroleum fuel; means associated with said conventional fuel tank for directing said petroleum fuel from said tank to a fuel mixing area; fuel mixing means operatively associated with said vehicle for mixing said produced liquid alcohol with said petroleum fuel for producing a combined alcohol-petroleum fuel composition; and means for directing said mixed alcohol-petroleum fuel composition to the vehicle engine for consumption.

4,325,330

APPARATUS FOR CONTROLLING THE COOLING SYSTEM OF A MOTOR-VEHICLE DRIVE

Artur Kugler, Hainhofen/near Augsburg, and Franz X. Zauberger, Augsburg, both of Fed. Rep. of Germany, assignors to Firma Zahnräderfabrik Renk Aktiengesellschaft, Augsburg, Fed. Rep. of Germany

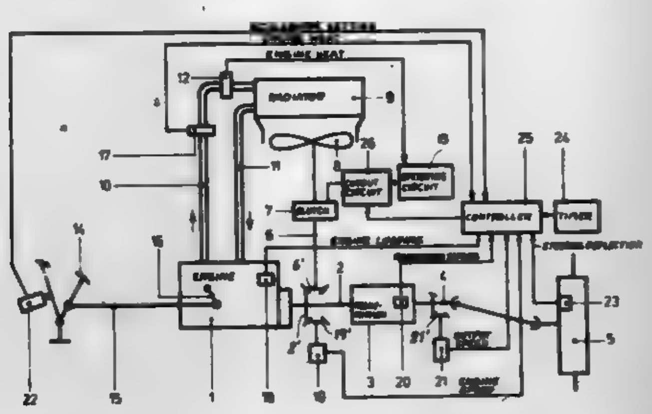
Continuation of Ser. No. 510,740, Sep. 30, 1974, abandoned. This application Jun. 6, 1979, Ser. No. 46,041

Int. Cl.³ F01P *7/08*

U.S. Cl. 123—41.12 4 Claims

1. In a vehicular drive wherein an internal-combustion engine is provided with cooling means for preventing overheating thereof, control means responsive to full depression of an accelerator pedal for deactivating said cooling means to enhance the power output of the engine, and heat-sensing means

for disabling said control means in the presence of engine temperatures exceeding a predetermined limit,



the combination therewith of a timer connected to said control means for limiting the deactivation of said cooling means to a predetermined maximum period.

4,325,331

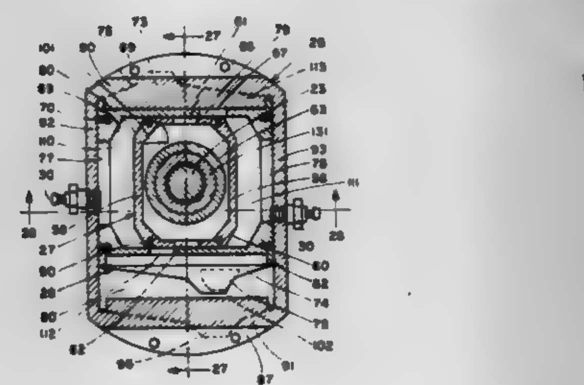
DUAL-EXPANSION INTERNAL COMBUSTION CYCLE AND ENGINE

Frederick L. Erickson, 2610 Bosworth Dr., Fort Wayne, Ind. 46805

Continuation-in-part of Ser. No. 959,795, Nov. 13, 1978, abandoned. This application Aug. 21, 1980, Ser. No. 180,135

Int. Cl.³ F02B *59/00*

U.S. Cl. 123—42 8 Claims



1. A method of developing power mechanically through the combustion of a combustible fluid, comprising the steps of

(a) providing a source of a combustible fluid;

(b) providing a primary combustion/expansion chamber of controllable variable volume and a secondary expansion chamber of controllable variable volume in controllable fluid communication with said primary chamber;

(c) compressing within said primary chamber a predetermined amount of said combustible fluid by reducing the volume thereof to a minimum and igniting said combustible fluid as said volume approaches said minimum, and simultaneously forcing combustion gases to exhaust from said secondary chamber by reducing the volume thereof while maintaining said primary and secondary chambers isolated from each other;

(d) increasing the volume of said primary chamber to provide combustion gases under pressure and simultaneously reducing the volume of said secondary chamber to its minimum while said chambers remain isolated from each other;

(e) preliminarily expanding said combustion gases in said primary chamber by increasing its volume;

(f) continuing expanding said combustion gases in said primary chamber and increasing its volume, and simultaneously transferring said combustion gases into said secondary chamber and increasing its volume whereby there is provided a total expansion volume greater than the maximum volume of said primary chamber to give rise to a fluid pressure within said chambers below ambient pressure;

(g) continuing the transfer of said combustion gases into the secondary chamber so that further volumetric expansion of the sum of the volumes of the primary and secondary chambers causes pressure in said primary and secondary chambers to become subatmospheric pressure, thereby transferring exhaust gases into the secondary chamber while charging the primary chamber with the combustible fluid via suction caused by said subatmospheric pressure;

(h) decreasing the volume of said primary chamber while continuing said transferring of said combustion gases and simultaneously increasing the volume of said secondary chamber, and then closing off the flow of said combustible fluid into said primary chamber;

(i) continuing decreasing the volume of said primary chamber thereby beginning the compressing of said combustible fluid while simultaneously decreasing the volume of said secondary chamber and exhausting said combustion gases therefrom at approximately ambient pressure while maintaining said primary and secondary chambers isolated from each other, thereby providing the conditions required to repeat the cycle of steps (c)–(i); and

(j) employing the expansion of said combustion gases to deliver work.

4,325,332

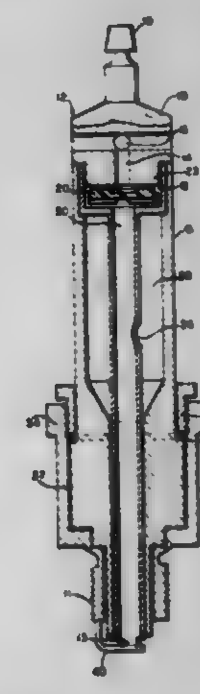
AIR INJECTION SYSTEM FOR INTERNAL COMBUSTION ENGINES

Charles A. Hukill, 806 Kewanna Ave., Pittsburgh, Pa. 15234

Filed Dec. 21, 1979, Ser. No. 106,420

Int. Cl.³ F02P *13/00*; H01T *13/02*

U.S. Cl. 123—169 PA 11 Claims



1. An air injection system for a spark plug and the like, for injecting air into a combustion cylinder prior to compression, comprising:

air inlet means disposed in said plug, said inlet means including a valve means for metering air into said cylinder;

a tube connected to said valve means and extending therefrom through said plug, being in communication with said cylinder when said plug is mounted in an engine; and,

a compression chamber surrounding the tube, substantially occupying the interior of the plug, and in communication only with the tube, gases from prior combustions filling said chamber during exhaust strokes, whereby air and gases from prior combustions are injected into the cylinder prior to ignition, and back pressure shock on the valve means is substantially reduced.

4,325,333

INTERNAL COMBUSTION ENGINE EQUIPPED WITH AN AUXILIARY COMBUSTION CHAMBER

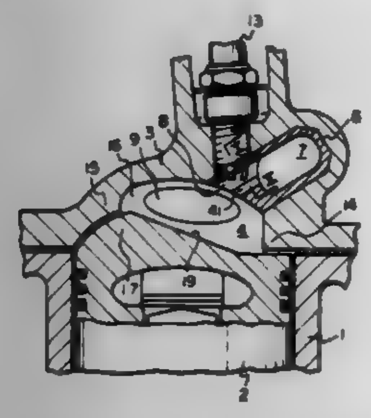
Takashi Kato, Susono, and Toshio Tanahashi, Toyota, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Division of Ser. No. 39,905, May 17, 1979, abandoned. This application Aug. 6, 1980, Ser. No. 175,889

Claims priority, application Japan, Jul. 20, 1978, 53-87660

Int. Cl.[3] F02B *19/18*; 123 *260;263;268;286;287;293;661*

U.S. Cl. 123—260 12 Claims



1. An internal combustion engine comprising:
a cylinder block having a cylinder bore therein;
a cylinder head having an inner wall mounted on said cylinder block and forming therein an auxiliary combustion chamber having a longitudinal axis;
a first raised portion downwardly projecting from the periphery of the inner wall of said cylinder head, having a horizontally flat bottom face and an approximately vertical side wall exposed to said main combustion chamber;
a piston reciprocally movable in said cylinder bore, having a top face which has a horizontally flat peripheral portion approachable to said flat bottom face so as to create a horizontally planar first squish area therebetween at the end of the compression stroke for spouting out a first squish flow along the top face of said piston;
a main combustion chamber defined by the inner wall of said cylinder head and the top face of said piston;
a single connecting passage of C-shaped transverse cross-section and uniform size for its entire length, having a projection formed on a lower wall thereof, said connecting passage being fluidly interposed between said main chamber and said auxiliary chamber and extending substantially parallel to said longitudinal axis, said single connecting passage being the only connecting passage between said main chamber and said auxiliary chamber, the transverse cross section of said connecting passage being taken on a plane normal to a longitudinal axis of said auxiliary chamber;
an intake valve movably mounted on said cylinder head;
an exhaust valve movably mounted on said cylinder head;
a second raised portion formed on the top face of said piston at a position opposite to said first raised portion with respect to an axis of said piston, having a rear face and a front face exposed to said main combustion chamber;
a third raised portion formed on the inner wall of said cylinder head above said second raised portion, having a part-spherically shaped bottom wall, and a steeply inclined side wall spaced directly above and extending upwards from a ridge formed by the junction of said front and rear faces of said second raised portion, said rear face having a shape which is complementary to the shape of said part-spherical bottom wall, said rear face being approachable to said part-spherical bottom wall so as to create a part-spherical shell shaped second squish area therebetween at the end of the compression stroke for spouting out a second squish flow which moves forward in the upper interior of said main combustion chamber in the direction opposite to the spouting direction of said first squish flow, said first and second squish flows cooperating with each other to create a strong swirl motion rotating about a horizontal axis in said main combustion chamber; and
an intake passage in fluid communication with said main combustion chamber through said intake valve, having a carburetor equipped with a throttle valve, and swirl motion creating means arranged in said intake passage for creating a swirl motion rotating about an axis of said piston in said main combustion chamber, said swirl motion creating means comprising a helically shaped portion of said intake passage located in the vicinity of said intake valve.

4,325,334

PRECHAMBER CUP FOR AN INTERNAL COMBUSTION ENGINE

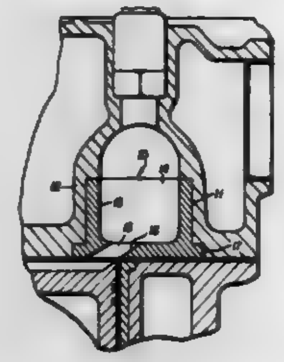
Katsutoshi Nishida; Syoji Okada, both of Yokohama; Akio Ando, Kawasaki, and Masato Sakai, Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Mar. 17, 1980, Ser. No. 131,279

Claims priority, application Japan, Aug. 2, 1979, 54-98096

Int. Cl.[3] F02B *19/16, 19/18*

U.S. Cl. 123—270 20 Claims



1. A prechamber cup for insertion within a cylinder head, said cup formed of a ceramic material and including a surface finished exterior wall portion positioned within said cylinder head, a surface finished gas passage portion and a sintered non-surface finished interior wall portion forming a cup-shaped portion, said gas passage portion extending from said interior wall portion to said exterior wall portion.

4,325,335

TWO STROKE ENGINE HAVING EXHAUST TIMING CONTROL VALVE MEANS

Hirotaka Shibata, Hamamatsu, Japan, assignor to Yamaha, Hatsudoki, Kabushiki, Kaisha, Japan

Filed May 27, 1980, Ser. No. 153,707

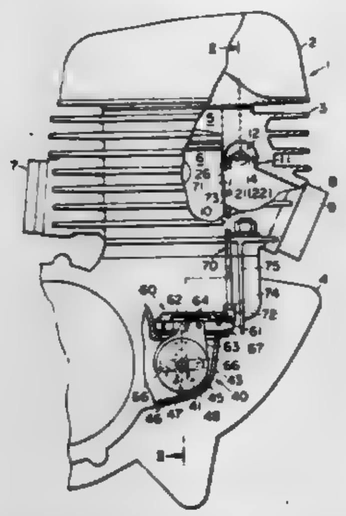
Claims priority, application Japan, May 29, 1979, 54-65592

Int. Cl.[3] F02D *9/06*

U.S. Cl. 123—323 3 Claims

1. Two stroke engine comprising cylinder means, piston means which is received in said cylinder means for reciprocating movement, and crankshaft means connected with said piston means, said cylinder means having exhaust port timing control rotary valve means provided in said exhaust port means at the upper portion thereof, said valve means being rotatable on an axis parallel to the axis of rotation of the crankshaft means between a projected position wherein it is projected into the exhaust port means to thereby cover the upper portion of the exhaust port means and a retracted position wherein it is retracted from the exhaust port means, actuator means for moving said valve means between said projected and retracted positions in accordance with engine speed, said actuator means including driven shaft means extending parallelly with said crankshaft means, a centrifugal governor, said governor having a first disc secured to rotate with said driven shaft means and a second disc mounted to move along said driven

shaft means, at least one ball mounted between the first and second discs, spring means urging the second disc toward the first disc and said at least one ball, a cross shaft mounted for rotation on an axis normal to said driven shaft means, a bell-crank lever, one end of said lever attached to the cross shaft



along the axis of rotation of the cross shaft, the other end of the bell-crank lever engaging said second disc and tie rod means linking said cross shaft and said rotatable exhaust valve means so that said valve means is moved toward the projected position in response to a decrease in the engine speed.

4,325,336

ELECTRONIC SPEED CONTROL SYSTEM FOR AUTOMOTIVE VEHICLES

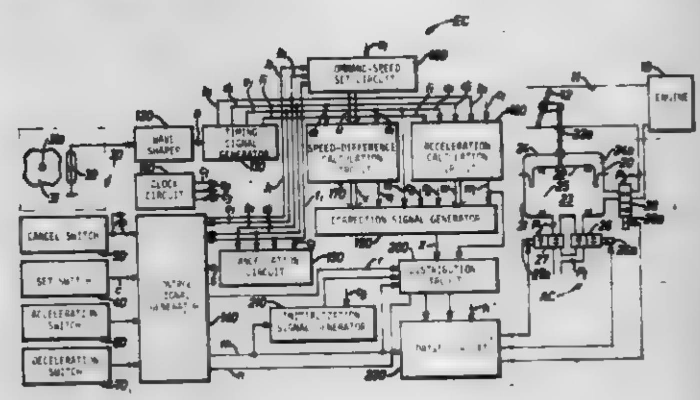
Akira Kuno, Oobu; Takeshi Matsui, and Yoshio Shinoda, both of Aichi, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Jul. 18, 1980, Ser. No. 170,088

Claims priority, application Japan, Jul. 20, 1979, 54-92754

Int. Cl.[3] F02D *5/00*; B60K *31/00*

U.S. Cl. 123—350 5 Claims



1. A speed control system for an automotive vehicle driven by an internal combustion engine under control of a throttle valve, the control system comprising:
first means for producing a timing signal with a period of time responsive to the actual speed of the vehicle;
second means for producing a command signal indicative of a predetermined period of time defined by a desired speed of the vehicle;
third means responsive to the timing signal for calculating a first time difference between the predetermined period of time and the actual period of time of the timing signal and for producing a first difference signal indicative of an absolute value of the calculated first time difference and a first sign signal indicative of the positive or negative sign of the calculated first time difference;
fourth means responsive to the timing signal for calculating a second time difference between respective actual periods of time of the preceding and following timing signals and for producing a second difference signal indicative of an absolute value of the calculated second time differene and a second sign signal indicative of the positive or negative sign of the calculated second time difference;
fifth means for limiting a value of the second difference signal to a predetermined maximum value when the actual acceleration of the vehicle exceeds a maximum value;
sixth means responsive to the timing signal for calculating a sum of the absolute values when respective signs of the first and second sign signals are identical to each other and for calculating a difference between the absolute values when respective signs of the first and second sign signals are opposite to each other, said sixth means selectively producing first and second correction signals respectively indicative of the calculated sum and the calculated difference and ceasing to produce the first and second correction signals when the respective calculated values are zero;
seventh means responsive to the timing signal and one of the first and second correction signals for selectively producing first and second control signals respectively in relation to the positive and negative signs of the second sign signal; and
actuator means for decreasing and increasing the opening angle of said throttle valve respectively in response to the first and second control signals.

4,325,337

RPM GOVERNOR FOR A FUEL INJECTION PUMP

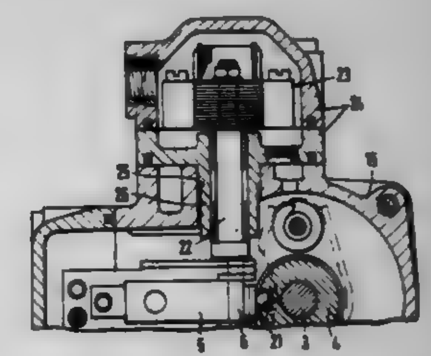
Franz Eheim, Stuttgart, and Gerald Höfer, Weissach-Flacht, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Oct. 2, 1979, Ser. No. 81,285

Claims priority, application Fed. Rep. of Germany, Oct. 17, 1978, 2845096

Int. Cl.[3] F02D *31/00*

U.S. Cl. 123—357 2 Claims



1. In an rpm governor for a fuel injection pump of an internal combustion engine which includes
a quantity adjustment means for determining the quantity of fuel injected, said quantity adjustment means being movable along a predetermined path between a first position at which a maximum quantity of fuel is injected and a second position at which a minimum quantity of fuel is injected,
a first shaft,
a governor lever means for positioning said quantity adjustment means, said governor lever means being pivotable about said first shaft and coupled to said quantity adjustment means,
an rpm adjuster means for exerting a force on said governor lever means proportional to the rpm of the internal combustion engine,
restoring force means for exerting a force on said governor lever means counter to the force exerted on said governor lever means by said rpm adjuster means, and
regulation intervention means, actuatable by an electronic control device which processes at least one engine parameter, for varying the setting of said rpm governor,
the improvement wherein said regulation intervention

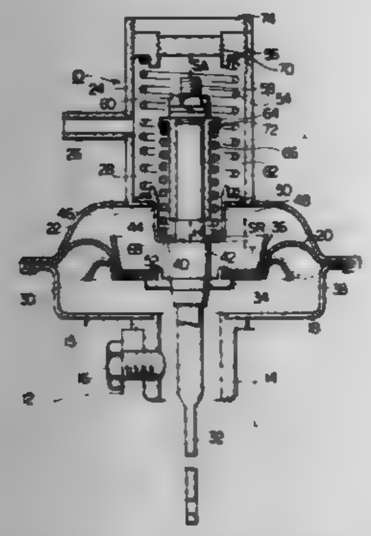
means comprises an electromagnet coupled to said first shaft and said first shaft is movable by said electromagnet along a path orthogonal to the axis of said first shaft to vary the setting of said rpm governor.

4,325,338

PRESSURE-RESPONSIVE IGNITION TIMING CONTROLLER FOR A SUPERCHARGED INTERNAL COMBUSTION ENGINE

Hiroshi Fujiwara; Kazutoshi Kobayashi, and Shinichi Miyo, all of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 22, 1980, Ser. No. 171,269
Claims priority, application Japan, Jul. 25, 1979, 54-93736
Int. Cl.[3] F02P *5/04*
U.S. Cl. 123—407 10 Claims



1. A pressure-responsive ignition timing controller for a supercharged internal combustion engine having a distributor with an ignition signal generating means, comprising:
a diaphragm housing comprising first and second parts secured together along the peripheral edges thereof and having end walls formed therein with substantially coaxial openings, said first part being secured to said distributor;
a diaphragm disposed in said diaphragm housing and cooperative with said first diaphragm housing part to define a first chamber communicated with the atmosphere;
a generally tubular spring casing having a closed outer end and an open inner end with a radially inwardly extending first annular flange defining a central opening therein, the inner end of said spring casing being secured in air-tight manner to the end wall of said second diaphragm housing part so that said central opening in said spring casing is substantially coaxial with the opening in said second diaphragm housing part;
said second diaphragm housing part, said diaphragm and said spring casing cooperating together to define a second chamber pneumatically connected to the intake passage of said engine adjacent to the engine throttle valve so that a signal pressure is applied to said diaphragm;
an elongated rod member axially extending through said diaphragm housing and said spring casing and operatively associated at one end with said ignition signal generating means, said rod member being secured at an intermediate portion to said diaphragm so that said rod is axially movable with said diaphragm when the same is axially deformed by the pressure change in said second chamber, the other end of said rod being disposed in said spring casing, said rod member having an annular shoulder formed thereon between said diaphragm and the other end of said rod and directed toward said other end;
a first spring retainer means mounted in said spring casing adjacent to the inner end thereof and having a radially outwardly extending first annular section and a radially inwardly extending second annular section defining therein a central opening substantially coaxial with the opening in said inner end of said spring casing, said first spring retainer means being axially movable relative to said spring casing so that said first annular section of said first spring retainer means is moved into and out of engagement with said first flange;
a second spring retainer means mounted in said spring casing adjacent to said closed outer end thereof;
a sleeve-like member mounted on said rod member between said annular shoulder and the other end of said rod member and having a second annular flange extending radially outwardly from said sleeve-like member, said second annular flange constituting a third spring retainer means;
the part of said rod member between said shoulder and the inner end of said sleeve-like member extending through the central opening in said first spring retainer means for a limited axial movement relative to said first spring retainer means;
a positioning means on said rod member axially supporting said sleeve-like member at a predetermined position on said rod member so that the inner end of said sleeve-like member is spaced a predetermined distance from said annular shoulder;
a first compression coil spring means disposed in said spring casing and extending between said first annular section of said first spring retainer means and said second spring retainer means and biasing said first annular section of said first spring retainer means toward said first flange of said spring casing;
a second compression coil spring means disposed in said spring casing substantially coaxially with said first compression coil spring means and extending between said second annular section of said first spring retainer means and said second annular flange on said sleeve-like member and biasing said sleeve-like member away from said first spring retainer means;
the deformation of said diaphragm in one axial direction as caused by the decrease in the signal pressure beyond a first pressure level lower than the atmospheric pressure level causing said rod member to move with said first spring retainer means toward the closed outer end of said spring casing against said first compression coil spring means only to thereby advance the ignition timing of said engine;
the deformation of said diaphragm in the other axial direction as caused by the increase in the signal pressure beyond a second pressure level higher than the atmospheric pressure level causing said rod member to move with said sleeve-like member toward said first spring retainer means against said second compression coil spring means only to thereby retard the ignition timing of said engine; and
means for limiting the stroke of said rod member in the ignition-timing advancing direction.

4,325,339

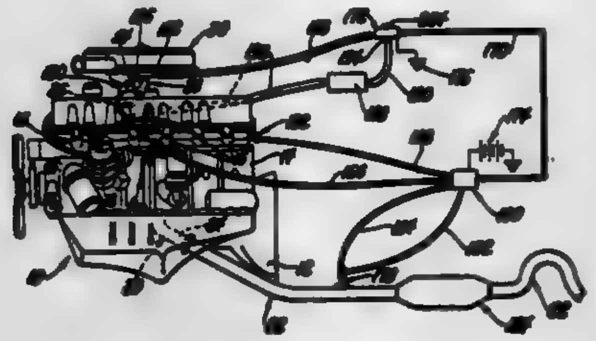
APPARATUS AND SYSTEM FOR CONTROLLING THE AIR-FUEL RATIO SUPPLIED TO A COMBUSTION ENGINE

Kenneth C. Bier, Bloomfield Hills, and Robert J. Miller, Warren, both of Mich., assignors to Colt Industries Operating Corp, New York, N.Y.

Continuation of Ser. No. 924,173, Jul. 13, 1978, abandoned, which is a division of Ser. No. 684,547, May 10, 1976, Pat. No. 4,135,482. This application Nov. 30, 1978, Ser. No. 964,838
Int. Cl.[3] F02M *7/16*
U.S. Cl. 123—440 44 Claims

1. A carburetor for a combustion engine, comprising carburetor body means, induction passage means formed in said body means, variably positionable throttle valve means for controlling the rate of motive fluid through said induction passage means and into said engine, fuel reservoir chamber means formed in said body means, idle fuel metering system means communicating generally between said fuel reservoir chamber means and said induction passage means, main fuel metering system means communicating generally between said fuel reservoir chamber means and said induction passage

means, said idle fuel metering system means comprising first modulating valve means carried by said body means and effective to be variably positioned in order to thereby controllably alter the rate of metered idle fuel flow through said idle fuel metering system means to said induction passage means, said main fuel metering system means comprising second modulating valve means carried by said body means and effective to be variably positioned in order to thereby controllably alter the rate of metered main fuel flow through said main fuel metering system means to said induction passage means, first fluid pressure responsive motor means carried by said body means and operatively connected to said first modulating valve means, said first fluid pressure responsive motor means comprising first chamber means and first pressure responsive movable wall means, said first pressure responsive wall means being effective



to variably position said first modulating valve means in response to the magnitude of an actuating fluid pressure applied to said first pressure responsive wall means, and second fluid pressure responsive motor means carried by said body means and operatively connected to said second modulating valve means, said second fluid pressure responsive motor means comprising second chamber means and second pressure responsive movable wall means, said second pressure responsive movable wall means being effective to variably position said second modulating valve means in response to the magnitude of an actuating fluid pressure applied to said second pressure responsive wall means, said first and second chamber means being effective for receiving actuating fluid pressure and in turn causing said actuating fluid pressure to be applied to said first and second pressure responsive wall means.

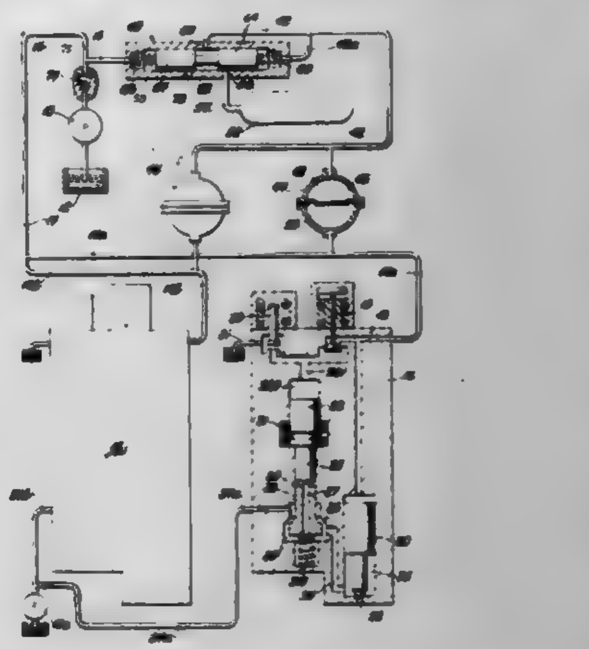
4,325,340

VARIABLE PRESSURE FUEL INJECTION SYSTEM

Cormac G. O'Neill, Walnut Creek, Calif., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jul. 21, 1980, Ser. No. 170,387
Int. Cl.[3] F02M *39/00*
U.S. Cl. 123—447 6 Claims

1. An engine fuel injector system comprising a liquid fuel pump constructed to produce a variable delivery pressure in the pump output line; individual electrically-programmed fuel injectors connected to the pump output line for delivering fuel pulses to the engine combustion chambers; a gas pressure source; a hollow accumulator having a membrane therein subdividing the accumulator volume into a gas chamber and a fuel chamber; valve means alternately communicating the accumulator gas chamber with the gas pressure source or atmosphere, said valve means normally occupying a centered position wherein the gas chamber is isolated from both the gas pressure source and the atmosphere; a first operator connection (15) between the fuel pump output and the valve means for biasing the valve means toward a position in which the gas pressure source acts to pressurize the accumulator gas chamber; and a second operator connection (42a) between the gas chamber and the valve means for biasing the valve means



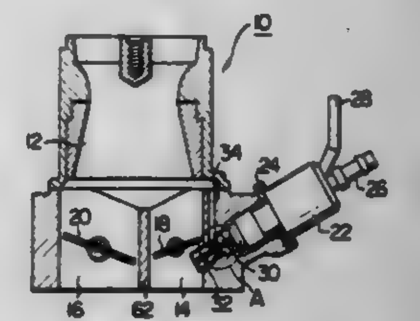
toward a position in which the gas chamber is vented to atmosphere.

4,325,341

FUEL CONTROL DEVICE FOR FUEL INJECTION SYSTEM FOR INTERNAL COMBUSTION ENGINE

Teruo Yamauchi; Yoshishige Oyama, both of Katsuta, and Mamoru Fujieda, Ibaraki all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 5, 1979, Ser. No. 91,499
Claims priority, application Japan, Nov. 6, 1978, 53-135785
Int. Cl.[3] F02M *51/00*
U.S. Cl. 123—472 14 Claims



1. A fuel control device for a fuel injection system of a type having an intake passage adapted for supply air into an internal combustion engine and a fuel injector adapted for intermittently injecting a fuel into the intake air flowing through said intake air passage, said fuel control device comprising: a porous tubular element defining therein a passage opened at its both ends, said porous tubular element being disposed between a discharge orifice of said fuel injector and said intake passage such that the most part of the fuel injected through said discharge orifice of said fuel injector is made to collide with and adhere to an inner peripheral surface of said porous tubular element; and means for supplying air from a space around said porous tubular element into said passage in said porous tubular element through a wall of said porous tubular element to thereby form an air-fuel mixture in said passage in said porous tubular element.

4,325,342

FUEL INJECTION PUMP CONTROL FOR INTERNAL COMBUSTION ENGINES, ESPECIALLY DIESEL ENGINES

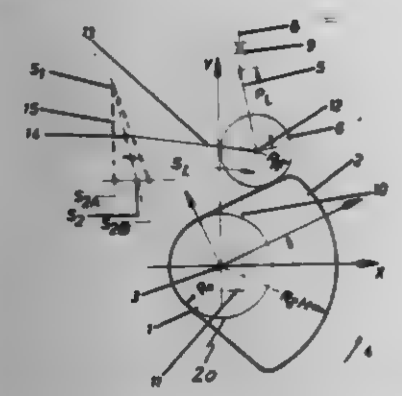
Wolfgang Köhler, and Karl E. Hafner, both of Cologne, Fed. Rep. of Germany, assignors to Klöckner-Humboldt-Deutz Aktiengesellschaft, Cologne, Fed. Rep. of Germany

Filed Oct. 18, 1979, Ser. No. 86,257

Claims priority, application Fed. Rep. of Germany, Oct. 20, 1978, [illegible]

Int. Cl.³ F02M *59/20*

U.S. Cl. 123—506 9 Claims



1. A fuel injection pump control for internal combustion engines having a camshaft, comprising in combination:
a cam mounted on said camshaft, said cam having a base circle;
a pump piston actuatable in response to the motion of said cam so that the fuel delivery volume is controlled by varying the effective stroke of said pump piston, with the longitudinal central axis of said pump piston being arranged in the plane of rotation of said cam and removed eccentrically a predetermined distance from that perpendicular line in said plane which passes through the axis of rotation of said camshaft;
a cam follower roller, said roller being movable in response to rotation of said cam when in contact therewith;
shaft means for rotatably mounting said cam follower roller with one end thereof and the other end being pivotally connected to said pump piston; and
a lever having a first end operatively connectible to at least one of the group consisting of said cam follower roller and said shaft means, said lever also having a second end which is adapted to be adjustably positioned only within a predetermined area, said predetermined area having substantially the shape of a planar triangle.

4,325,343

FUEL METERING SYSTEM

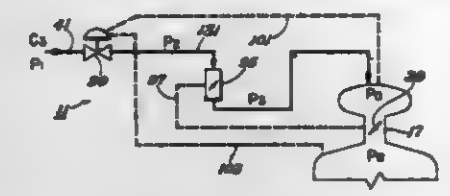
William F. Turner, P.O. Box 732, Sanderson, Tex. 79484

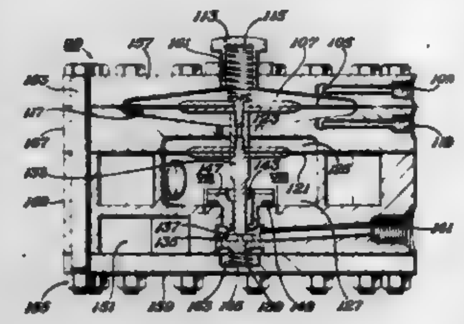
Filed Feb. 14, 1980, Ser. No. 121,407

Int. Cl.³ F02M *21/04*

U.S. Cl. 123—527 11 Claims

1. In a fuel metering system having:
a. an engine;
b. a carburetor means for controlling speed and power of said engine;
c. at least one fluid fuel supply at super atmospheric pressure and a fuel supply means and lines for supplying fuel to said carburetor; and,
d. a throttle means having a butterfly valve means in said carburetor for altering the controlled speed and power attained by said carburetor; the improvement comprising:
e. a fuel pressure regulator interposed in said fuel supply lines and responsively connected with said fuel supply line downstream thereof for regulating the pressure in creating a constant pressure fuel in said supply line downstream of said fuel pressure regulator;
f. first and second means for regulating the flow of said constant pressure fuel so as to maintain a substantially constant fuel-air ratio being fed to said engine regardless of the carburetor demand signal; said first and second means being connected with said fuel supply line downstream from said fuel pressure regulator and upstream of said carburetor; said first and second means being operationally connected so as to sense the position of said butterfly valve means of said throttle means and a differential





pressure across said carburetor and adapted to provide an obstruction to fuel flow and fuel differential pressure across the obstruction proportional to the relative position of the butterfly valve means and the differential pressure thereacross; such that a substantially constant fuel-air ratio is maintained.

4,325,344

FUEL EVAPORATOR

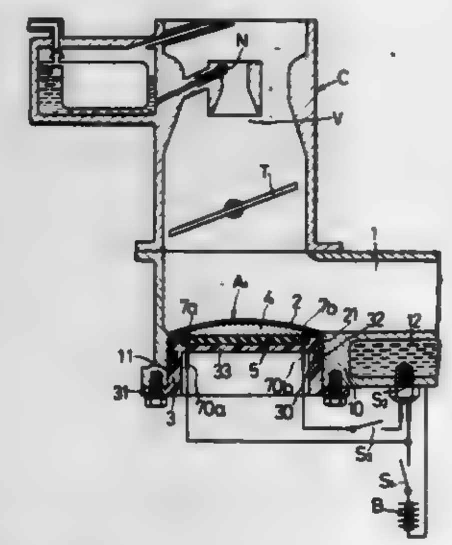
Toshihiko Igashira, Toyokawa; Naoki Umeda, Nagoya, and Seiko Abe, Kariya, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed May 30, 1980, Ser. No. 155,014

Claims priority, application Japan, Jun. 5, 1979, 54-70287; Jun. 8, 1979, 54-72477; Apr. 28, 1980, 55-56822

Int. Cl.³ F02M *31/00*

U.S. Cl. 123—549 10 Claims



1. A fuel evaporator for use in a fuel entry system of an internal combustion engine comprising:
a heating element which is made of ceramics and has a positive temperature coefficient of resistance, the resistance of said heating element suddenly increasing at a specific temperature;
a covering plate which is made of a material having high thermal conductivity and covers said heating element to be contacted with fuel droplets falling within an intake gas supplying passage of said fuel entry system of said engine; and
a connecting means for electrically connecting said heating element to an electric power source; said connecting means being composed of two electrifying routes and provided with a switching means which operates corresponding to the driving condition of said engine to connect said two electrifying routes in parallel or in series or break one of said two electrifying routes from said electric power source, selectively.

4,325,345

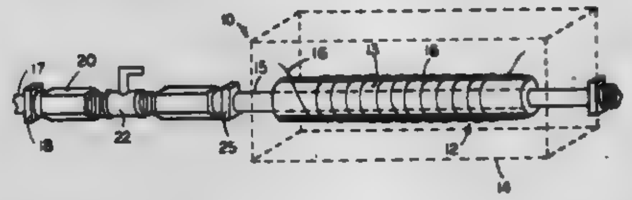
GASOLINE FUEL VAPORIZATION SYSTEM FOR INTERNAL COMBUSTION ENGINES

Robert S. Wilkinson, P. O. Box 61, Newfield, Me. 04095, and Alan S. Lowe, Kennebunk, Me., assignors to Robert S. Wilkinson, Newfield, Me.

Filed Sep. 4, 1979, Ser. No. 71,839

Int. Cl.³ F02M *31/00*

U.S. Cl. 123—557 33 Claims



1. A new and improved gasoline fuel vaporization and delivery system for vaporization of gasoline from the fuel line of an internal combustion engine and for delivery of fuel in the vapor state to a conventional carburetor or into an airstream at the intake manifold of the internal combustion engine, said engine having an associated electrical power supply comprising:
an elongate vaporization chamber comprised of a tubular length of metal covered with a high temperature resistant, high thermal conductivity electrically insulating material, a heating coil of resistance wire wrapped in a helix around the electrically insulating material, and a coating of high temperature refractory material coated over the heating coil and chamber, said vaporization chamber formed with an inlet end for receiving liquid gasoline guel from the fuel line of the engine and an outlet end for delivering vaporized fuel;
said resistance wire heating coil comprised of a high temperature durable alloy having a resistance per unit length and overall length selected to generate heat at a temperature above the vaporization temperature of the gasoline fuel fractions or constituents but below the flash point temperature of such fuel constituents, when said coil is coupled to the electrical power supply voltage for the internal combustion engine, whereby the resistance wire heating coil at the applicable voltage of the power supply is self limiting in temperature output attained in the vaporization chamber to a level at a safe margin below the flash point of gasoline fractions;
high temperature durable lead wires coupled to the ends of the heating coil, said high temperature lead wires having a lower electrical resistance than the heating coil resistance wire, the couplings between the ends of the heating coil and the high temperature lead wires also being of the type durable at high temperature;
a housing enclosing the vaporization chamber and also enclosing the couplings of high temperature durable lead wires to the ends of the heating coil;
the ends of the high temperature lead wires opposite the couplings located outside the vaporization chamber housing enclosure for coupling to power supply lead wire; and
valve means to control the flow of gasoline fuel into the chamber including a restricted delivery orifice at the inlet end to fragment the liquid fuel as it enters the chamber and thereby facilitate vaporization, said restricted delivery orifice oriented to deliver fuel in a direction off axis from the elongate axis of the vaporization chamber thereby increasing the travel time of fuel in the chamber for complete vaporization.

4,325,346

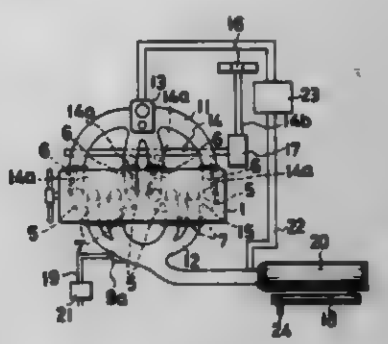
FOUR-CYCLE INTERNAL COMBUSTION ENGINE

Hiroshi Yokoyama, Hamamatsu, Japan, assignor to Suzuki Jidosha Kogyo Kabushiki Kaisha, Hamana, Japan

Filed Sep. 5, 1980, Ser. No. 184,346

Int. Cl.³ F02M *25/06*

U.S. Cl. 123—568 13 Claims



1. Four-cycle internal combustion engine which permits recirculation of exhaust gas to the combustion chamber, comprising:
a main suction path extending from the carburetor to the combustion chamber and opening into said combustion chamber, said main suction path being designed such that the mixed gas passing through said main suction path may develop a swirl in said combustion chamber;
a sub-suction path having a less wide effective opening area than said main suction path and having its outlet directed in tangential direction of the side wall of said combustion chamber so that the swirl generated in said main suction path may be promoted;
and a control device to control the gas volume flowing in said sub-suction path in such a way as reduce the effective opening area of said sub suction-path at least in time of idling.

4,325,347

METHOD OF CONTROLLING FLUID FLOW RATE USING ON-OFF TYPE ELECTROMAGNETIC VALVE

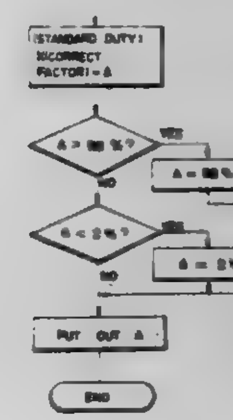
Hiroshi Yamaguchi, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Mar. 20, 1980, Ser. No. 132,297

Claims priority, application Japan, Mar. 29, 1979, 54-37543

Int. Cl.³ F02M *25/06*

U.S. Cl. 123—571 9 Claims

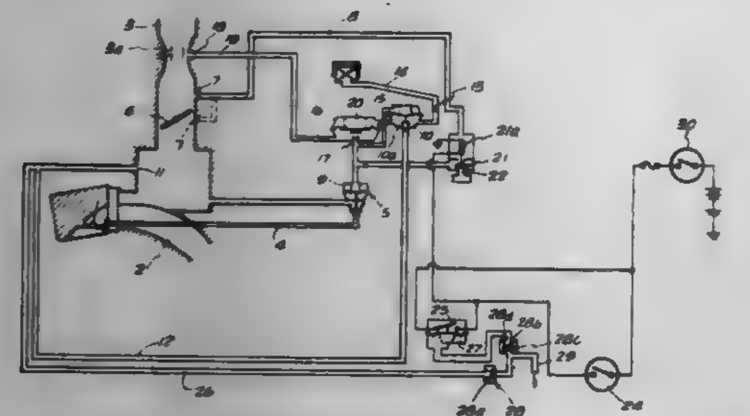


1. In a method of controlling the rate of flow of a fluid by operating an electromagnetic flow control valve of the on-off functioning type with a constant frequency pulse signal and regulating the duty of the pulse signal thereby regulating the

proportion of the duration of the open state and duration of the closed state of the electromagnetic valve,

the improvement comprising the minimum value of the duty of said pulse signal for minimizing, or maximizing, said rate of flow being made to be a predetermined definite value greater than 0% but not greater than a first critical value which is slightly greater than 0%, and the maximum value of the duty of said pulse signal for maximizing, or minimizing, said rate of flow being made to be a predetermined definite value smaller than 100% but not smaller than a second critical value which is slightly smaller than 100%.

4,325,348
EXHAUST GAS RECIRCULATION SYSTEM FOR INTERNAL COMBUSTION ENGINE
Yoshiharu Abe, Wako; Osamu Gotoh, Higashikurume, and Akinobu Takagi, Yokohama, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Jul. 8, 1980, Ser. No. 167,396
Claims priority, application Japan, Jul. 16, 1979, 54-89247
Int. Cl.³ F02M *25/06*
U.S. Cl. 123—571 4 Claims



1. In an internal combustion engine having an intake passage for delivering an air-fuel mixture into the engine, the intake passage having a throttle valve and having a Venturi portion, the combination of: an exhaust passage for carrying exhaust gases from the engine, means including a passageway connecting said exhaust passage to said intake passage downstream from said throttle valve for recirculating exhaust gases into the engine, a first control valve in said passageway, an air conduit connecting said intake passage to atmosphere, a second control valve in said air conduit, each of said control valves having a vacuum-responsive actuator, an electrically operated valve for venting to atmosphere the actuator for the first control valve, means responsive to an engine operating condition for actuating said electrically operated valve, and a regulating valve for controlling vacuum intensity in the actuator for each said control valve, said regulating valve being responsive to differential vacuum pressure between vacuum pressure in said Venturi portion and vacuum pressure in said air conduit.

4,325,349
AIR VALVE FOR A FUEL SUPPLY SYSTEM
Siegfried Fehrenbach, Markgröningen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany
Filed Jul. 11, 1980, Ser. No. 167,620
Claims priority, application Fed. Rep. of Germany, Aug. 18, 1979, 2933587
Int. Cl.³ F02M *7/12*
U.S. Cl. 123—587 3 Claims

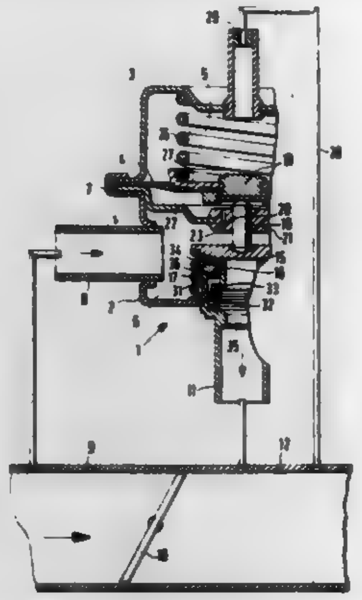
1. In a fuel supply system of an internal combustion engine having an air intake tube, an arbitrarily actuatable throttle valve disposed in the air intake tube, and a throttle valve bypass connecting the air intake tube upstream of the throttle valve to the air intake tube downstream of the throttle valve, an air valve means, connected via an underpressure line to the air intake tube downstream of the throttle valve, for varying the cross-sectional area of the throttle valve bypass in accordance with a differential air pressure between the pressure of air within the air intake tube upstream of the throttle valve and the pressure of air within the air intake tube downstream of the throttle valve, the throttle valve bypass comprising the air valve means, a first line connected between the air valve means and the air intake tube upstream of the throttle valve, and a second line connected between the air valve means and the air intake tube downstream of the throttle valve, and the air valve means comprising:

a housing;

adiaphragm which divides the housing into a first chamber and a second chamber, the first chamber communicating with the air intake tube downstream of the throttle valve via the underpressure line, and the second chamber communicating with the air intake tube upstream of the throttle valve via the first line;

a mouthpiece, projecting into the second chamber, having inner and outer ends defining a passage therebetween, the passage communicating with the air intake tube downstream of the throttle valve via the second line connected to the mouthpiece at its outer end, the mouthpiece including a stop;

a valve seat sheath, slidably disposed within the mouthpiece passage for movement in a first direction inwardly toward



the diaphragm or in an opposite second direction outwardly from the diaphragm, the valve seat sheath and the mouthpiece defining a flow cross section therebetween connecting the second chamber with the second line, the valve seat sheath including a sealing step which engages the mouthpiece stop to close the flow cross section and determine the innermost position of the valve seat sheath;

a starting spring means for exerting a force on the valve seat sheath in the first direction;

a movable valve element, disposed in the second chamber and engaging the diaphragm, the valve element and the valve seat sheath defining a valve passage therebetween connecting the second chamber with the second line, the valve element being movable in the second direction to a closed position at which it engages the valve seat sheath and closes the valve passage and the valve element being movable in the first direction from its closed position to reopen the valve passage;

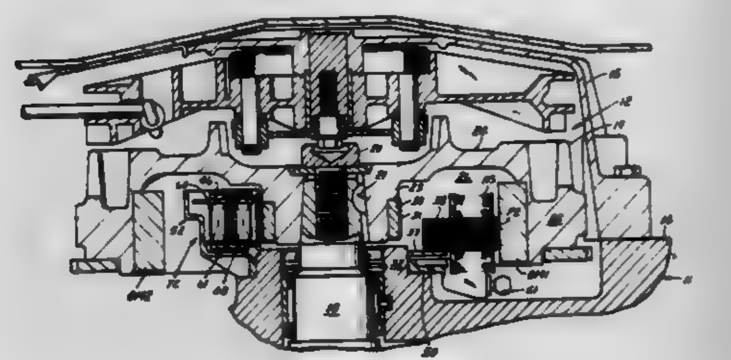
first valve spring means for exerting a force on the diaphragm and valve element in the first direction; and

second valve spring means for exerting a force on the diaphragm and valve element in the second direction;

wherein the starting spring means, the first valve spring means and the second valve spring means are selected so that (1) when the air differential pressure is less than a first predetermined value indicating a non-running or starting

condition of the engine, the valve element and valve seat sheath are disposed such that the flow cross section is open and the valve passage closed, (2) when the air differential pressure is at least equal to the first predetermined value but less than a second predetermined value, the valve element and valve seat sheath are disposed such that both the flow cross section and the valve passage are closed, and (3) when the air differential pressure is at least equal to the second predetermined value indicating an engine overrunning condition, the valve element and valve seat sheath are disposed such that the flow cross section is closed and the valve passage is open.

4,325,350
ALTERNATOR-POWERED BREAKERLESS CAPACITOR DISCHARGE IGNITION SYSTEM HAVING IMPROVED LOW-SPEED TIMING CHARACTERISTICS
Michael E. Bauer, and Richard L. Sleder, both of Fond du Lac, Wis., assignors to Brunswick Corporation, Skokie, Ill.
Filed Nov. 28, 1979, Ser. No. 98,070
Int. Cl.³ F02P *1/02*
U.S. Cl. 123—605 5 Claims



1. A breakerless capacitor discharge ignition system for an internal combustion engine, said ignition system comprising:

(A) an ignition coil means;

(B) a capacitor means for energizing said ignition coil means;

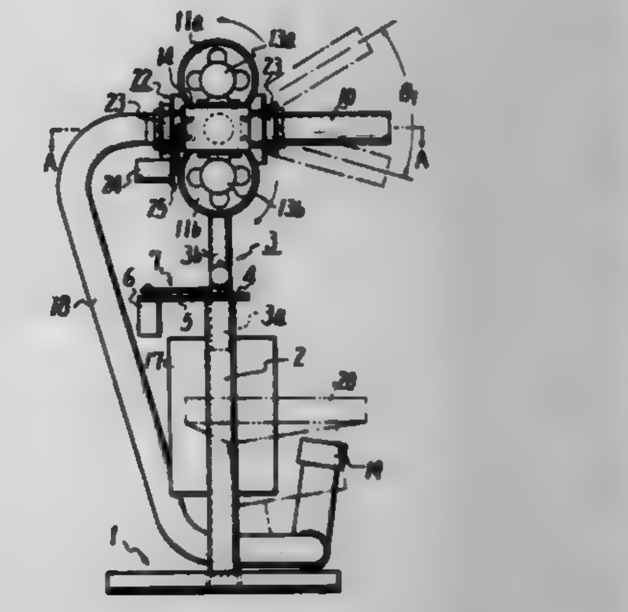
(C) an alternator for providing electrical power pulses to said capacitor means and for producing electrical trigger pulses, said alternator including:

(1) a rotor driven by said engine, said rotor having an inner cylindrical surface, an outer cylindrical surface, and a surface connecting said cylindrical surfaces, a first magnet means mounted on said outer surface, and a second magnet means mounted on said inner surface, said second magnet means including a first portion which is radially polarized with a first polarity, a second portion which is radially polarized with a second polarity opposite to said first polarity, and neutral zones therebetween; and

(2) a stator assembly having a charging coil means cooperable with said first magnet means to produce said power pulses and a trigger coil means cooperable with said second magnet means to produce said trigger pulses, said trigger coil means including a core means forming a magnetic circuit from said second magnet means to said connecting surface and a trigger coil about a portion of said core means; and

(D) a control circuit for receiving said trigger pulses and for effecting timed energization of said ignition coil means from said capacitor means.

4,325,351
COACTING WHEEL BALL EMITTING DEVICE OF TENNIS TRAINING SYSTEM
Sueto Yuasa, 5-9-10, Seta, Setagaya-ku, Tokyo, Japan
Filed Jan. 23, 1980, Ser. No. 114,562
Claims priority, application Japan, Jan. 30, 1979, 54-10999[U]
Int. Cl.³ F41B *15/00*
U.S. Cl. 124—78 1 Claim



1. A ball emitting device comprising:

(a) a ball emitting cylinder;

(b) means for controlling horizontal and vertical rotation of said ball emitting cylinder;

(c) a supporting member for rotatably supporting said ball emitting cylinder;

(d) said supporting member having a rear plate extending downward therefrom;

(e) a control motor mounted on an outer surface of said rear plate and driven at a low speed in forward and backward directions;

(f) first and second side plates on said supporting member having first and second aligned bearings therein respectively for supporting said ball emitting cylinder at a predetermined axial position thereof;

(g) a base plate fixed to said ball emitting cylinder;

(h) said base plate having at least one bent portion bent at a substantial angle to the remainder thereof;

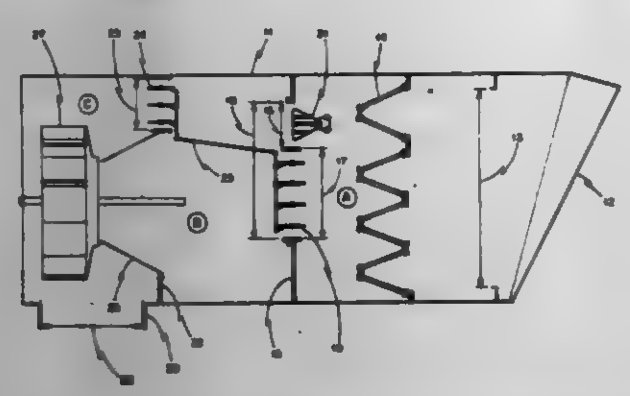
(i) upper and lower motors on said base plate, speeds of said upper and lower motors being independently variable;

(j) upper and lower ball emitting pulleys affixed respectively to said upper and lower motors;

(k) perimeters of said upper and lower ball emitting pulleys particularly protruding into opposed locations in said ball emitting cylinder through openings in upper and lower peripheral surfaces thereof thereby to drivingly emit balls from said ball emitting cylinder with variable speed and variable spin speed; and

(l) inclined angle control means including said control motor and a link member driven by said control motor said link member being disposed between said rear plate and said bent portion and connected to said bent portion, said inclined angle control means being effective to control inclined angles of axes of said ball emitting pulleys to impart variable spin direction to emitted balls.

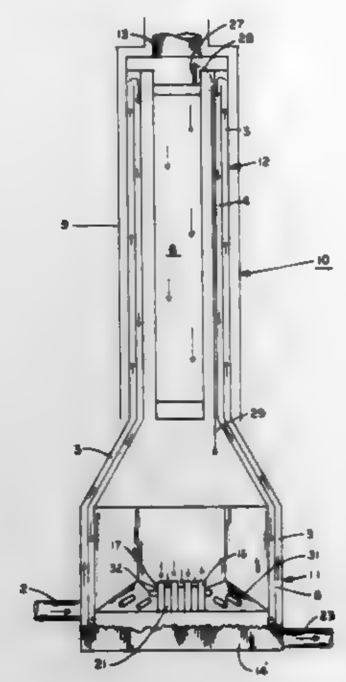
4,325,352
INTERNAL RECIRCULATION DEVICE
James V. Dirkes, Grand Rapids, Mich., assignor to Rapid Engineering Inc., Mich.
Filed Sep. 26, 1980, Ser. No. 191,288
Int. Cl.³ F24H *3/02;* F25B *29/00*
U.S. Cl. 126—110 A 1 Claim



1. A direct gas fired heating apparatus for supplying a variable volume discharge air flow output to a building comprising
a housing having an air inlet and an air outlet,
a profile partition and a bulkhead partition; the said bulkhead partition situated downstream of the said profile partition and compartmentalizing the said housing into a first, second and third chamber; an aperture in the said profile partition in communication with the said first and said second chambers and an aperture in the bulkhead partition in communication with said second and third chambers, each of said apertures served by a first and second damping means respectively which are mechanically interlocked in opposition to each other,
a burner assembly supported in the housing and in spaced relationship with the upper part of the aperture in the said profile partition not served by the first damping means,
a blower assembly supported in the bulkhead partition for flowing a low pressure air stream forwardly past the burner and through the said aperture of the said profile partition at a substantial constant velocity,
wherein the said blower assembly forces the volume discharge air flow through both the air outlet into the interior of the building and through the said aperture in the said bulkhead partition for recirculating the volume of air flow output increment recirculated controlled by the resistance imposed by the said aperture of the said bulkhead partition.

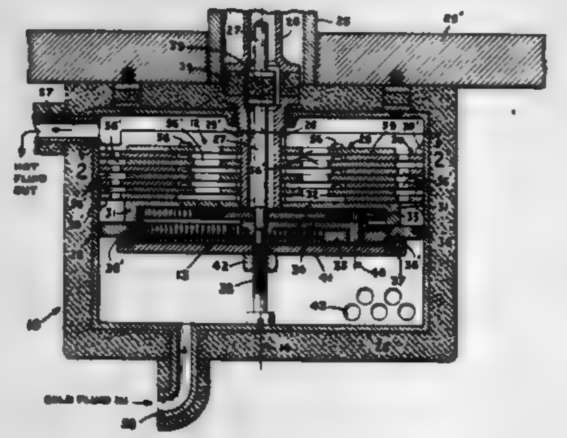
4,325,353
HEATING APPARATUS
Marlin V. Huss, Liberty, Nebr. 68381
Filed May 2, 1980, Ser. No. 146,007
Int. Cl.³ F24B *7/00*
U.S. Cl. 126—121 12 Claims

1. An improvement in heating apparatus of a type having a firebox in fluid communication with a chimney wherein the improvement comprises:
(a) Updraft passageways surrounding the firebox;
(b) Downdraft passageways surrounding the firebox wherein the downdraft passageways are in fluid communication with the updraft passageways;
(c) A diagonal downdraft duct transversing the interior of the chimney space, in fluid communication with said updraft and downdraft passageways;
(d) A front manifold in communication with said downdraft passageways;
(e) Inlet means wherein unheated air is introduced into the updraft passageways;
(f) Exit means wherein said exit means are in fluid communication with said front manifold means;
(g) An exhaust chimney wherein said updraft passageways and said downdraft passageways extend into said chimney; and



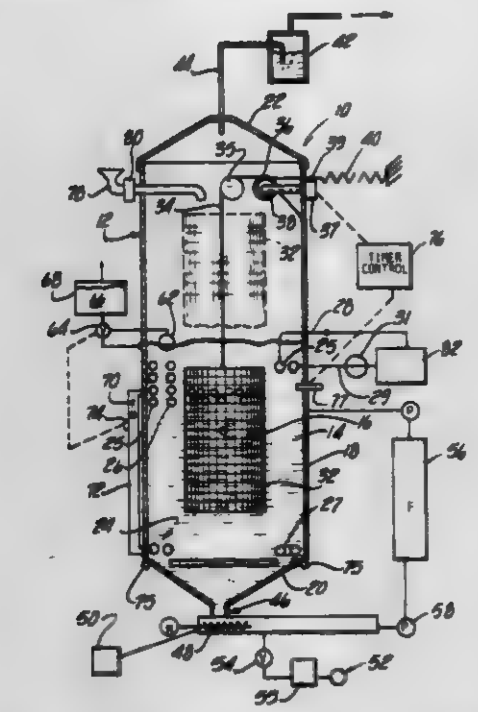
(h) Forced air means for forcibly moving air through the inlet means, the updraft passageways, the downdraft passageways, the diagonal downdraft duct, the front manifold, and the exit means.

4,325,354
ENERGY CONVERSION APPARATUS
Francis J. Fuchs, 9 University Way, Princeton, N.J. 08550
Filed Jan. 22, 1979, Ser. No. 5,003
Int. Cl.³ F22B *37/10*
U.S. Cl. 126—247 6 Claims



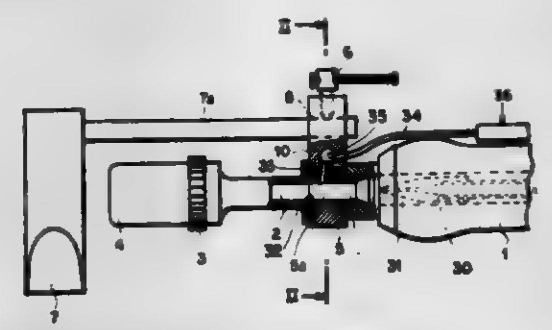
1. Apparatus for converting rotational kinetic energy into a different energy form, said rotational kinetic energy being obtained from the rotor shaft of a rotatable energy conversion device that itself converts the kinetic energy of a moving stream of fluid into said rotational kinetic energy, said fluid kinetic energy conversion having a maximum efficiency at a predetermined rotor shaft speed, said rotatable energy conversion device including means for measuring the velocity of the stream of fluid and for translating the same to the rotation of a second shaft, said apparatus comprising:
(a) at least one rotatable friction disc connected to said rotor shaft for rotation therewith;
(b) at least one stationary friction disc mounted on a support means;
(c) said rotatable and said stationary discs being relatively displaceable between positions of high and low frictional engagement with each other; and
(d) means responsive to variations in the relative angular velocities of said rotor shaft and said second shaft to vary the position of said rotatable and stationary discs whereby to vary the frictional engagement therebetween.

4,325,355
HEATING SYSTEM
Clifford F. Houser, Flint, Mich., assignor to Molecular Energy Corp., Flint, Mich.
Filed Jan. 28, 1980, Ser. No. 116,142
Int. Cl.³ F24J *1/00*
U.S. Cl. 126—263 16 Claims



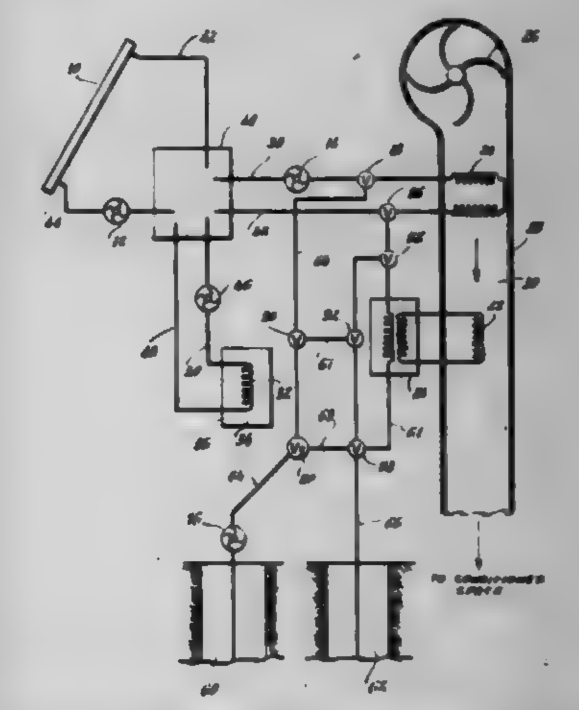
1. A heating system for continuously producing heat by flameless exothermic reaction comprising; an enclosed housing, a liquid solution occupying the lower portion of said housing, a container movably disposed in said housing and being supported for movement completely into and out of said solution, a solid metal material disposed in said container and being capable of reacting with said solution, a movement means regulating the immersion of said container downwardly into said solution in response to the temperature of said solution below a predetermined valve and upwardly from said solution in response to the temperature of said solution above another predetermined valve, and heat transfer means completely immersed in said solution for absorbing heat from said solution and conveying it to the exterior of said housing.

4,325,356
IGNITER FOR PORTABLE GAS APPLIANCES
Felix Taschler, Triesterstr. 35, A 2620 Neunkirchen, Austria
Filed Apr. 3, 1980, Ser. No. 136,925
Claims priority, application Austria, Apr. 9, 1979, 2637/79
Int. Cl.³ B23K *3/02*
U.S. Cl. 126—413 5 Claims



1. A portable gas appliance comprising:
a mixing nozzle connected to a source of a combustible gas and provided with an air source for forming an ignitable gas mixture downstream of said nozzle;
a tube forming a main gas flow passage extending axially from said nozzle for conducting said mixture;
a tubular burner mouth formed on said tube at an end thereof remote from said nozzle and constructed to produce a torch-like flame;
means forming an ignition chamber laterally offset from said passage and communicating therewith at a location downstream of said nozzle but upstream of said mouth whereby a portion of the ignitable mixture traversing said passage forms in said chamber
ignition means including an electrode extending into said chamber for firing said portion of said ignitable mixture whereby the firing of said portion is transmitted to the remainder of the ignitable mixture in said passage;
a handle, said nozzle being formed in said handle;
a holder disposed adjacent said handle; and means for adjustably mounting a soldering iron on said holder whereby a head of said iron is disposed in the effective region of said flame ahead of said mouth, said chamber being formed by a semicylindrical electrically insulating and heat-resistant body disposed on said tube and formed with an opening, said tube being provided with an orifice registering with said opening and communicating with the chamber defined therein.

4,325,357
SOLAR ENERGY AND GROUND-WATER COOLING DEVICES
Eric M. Wormser, 88 Foxwood Rd., Stamford, Conn. 06903
Filed May 12, 1980, Ser. No. 149,270
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—427 7 Claims



1. Apparatus for modifying the temperature of air comprising
radiant energy collection means for heating liquid,
storage tank means for storing liquid heated by said radiant energy collection means,
an air plenum having an associated air impeller means,
a direct coil positioned in said plenum for imparting temperature change to air passing therethrough,
first pump means for propelling liquid from and back to said storage tank means,
heat pump means for extracting heat from liquid passing therethrough when the heat pump means is operating in the compression heating mode and for imparting heat to liquid passing therethrough when the heat pump means is operating in the evaporation cooling mode, said heat pump means having an associated heat pump coil positioned in said plenum for imparting heat to air passing

therethrough when said pump is operating in the compression heating mode and for extracting heat from air passing therethrough when said pump is operating in the evaporation cooling mode,

ground-water source means and ground-water return means having a second pump means associated therewith for propelling ground-water from said source means to said return means,

and associated valve means and conduit means for selectively directing the flow of liquid from said storage tank means to either of said direct coil and said heat pump means, and from said ground-water source means to either as well as both of said direct coil and said heat pump means.

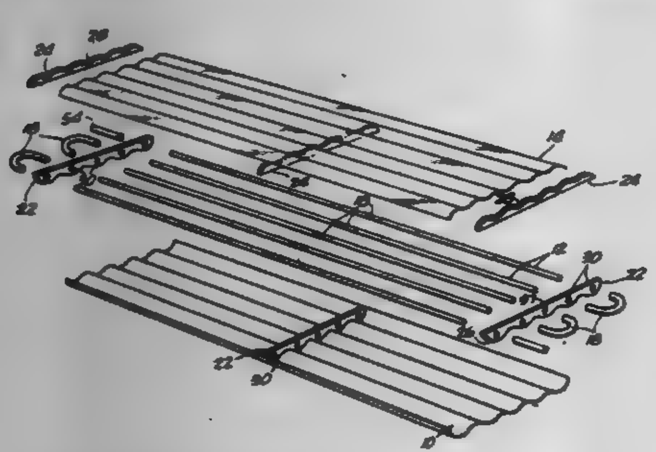
4,325,358
SOLAR HEATING APPARATUS

John E. Comparetto, 108 Cropper St., Chincoteague, Va. 23336
Filed Aug. 17, 1979, Ser. No. 67,503
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—432 20 Claims

1. Solar heat collecting apparatus comprising a plurality of bulbous portions subjected to solar energy wherein each bulbous portion is integrally and severally connected to one of a plurality of stem portions that are arranged in a culstered manner, all stem portions being self-supported and individually and integrally connected and terminated in one of a plurality of central cores, said stem portions comprising means for the transfer of heat from said bulbous portions to said control cores, the bulbous portions having cross sections greater than two times respective cross sections of stem portions for direct collection of solar energy by the bulbous portions, and the central cores including means for connection to a master core for transfer of heat thereto.

4,325,359
FOCUSING SOLAR HEAT COLLECTOR

James E. Fries, 7860 Valley View St., Apt. 242, Buena Park, Calif. [illegible]
Filed Jul. 12, 1979, Ser. No. 56,873
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—438 5 Claims



1. A focusing solar heater collector comprising:

(a) a light reflective corrugated base surface;

(b) a plurality of spaced-apart, light-transmitting conduits positioned in correspondingly spaced-apart corrugations of the reflective surface so that light reflected by the reflective surface is focused on the conduits, the conduits not substantially masking the light reflective corrugated base surface from sunlight;

(c) a light-transmitting upper surface air spaced apart from the conduit;

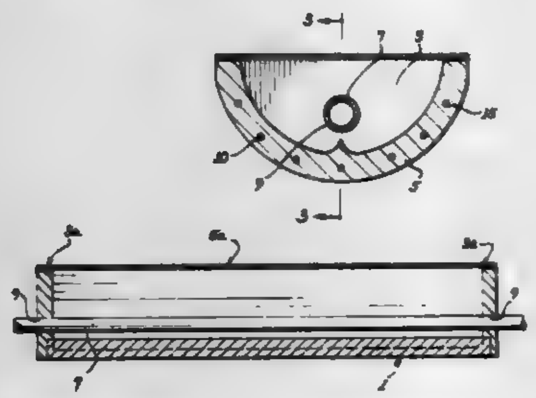
(d) a black liquid within the conduits to receive the focused light;

(e) means for tilting the base surface, conduits, and upper surface together to focus sunlight upon the conduits; and

(f) means for supporting at least a portion of the conduits air spaced apart from the reflective surface.

4,325,360
SOLAR HEAT COLLECTOR

Lee M. Kelley, 3356 E. Pima, Tucson, Ariz. 85716
Continuation of Ser. No. 43,200, May 29, 1979, abandoned. This application Apr. 1, 1981, Ser. No. 249,788
Int. Cl.³ F24J *3/02*; G02B *7/18*
U.S. Cl. 126—438 6 Claims



1. A concentrating solar heat collector for heating a fluid contained in absorber pipe extending therethrough in an axial direction wherein a reflecting surface is contained within said collector which comprises:

(a) a trough-like structure of integral unitary construction having a lengthwise axis and at least a partial curvilinear cross-section and including at least one supporting portion, said structure being formed of light-weight concrete with the density thereof varying in the axial direction, said support portion being located in a zone of higher density, and

(b) means for receiving an absorber pipe extending in the direction of the lengthwise axis of said structure, and supporting said trough-like structure therefrom, said means being contained in said zone of higher density.

4,325,361
DEEP HEATING ELECTRODE

William H. Harrison, Woodland Hills, Calif., assignor to Donald L. Morton & Associates, Pacific Palisades, Calif.
Division of Ser. No. 854,730, Nov. 25, 1977, Pat. No. 4,186,729. This application May 4, 1979, Ser. No. 36,223
Int. Cl.³ A61N *1/42*
U.S. Cl. 128—1.3 2 Claims

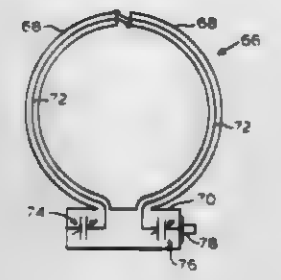
1. An electrode for use in the destruction of tumors in living animal tissue by hyperthermia comprising:

(a) a shield box of a conductive material;

(b) a pair of electrical connectors for attaching a source of radio frequency energy carried by said box, one of said electrical connectors being electrically connected to said box;

(c) a pair of semi-annular conduits of an electrically conductive material each electrically connected on one end thereof to said shield box and communicating with the interior thereof, said pair of conduits being disposed to form a substantially annular shape with the other ends thereof in close adjacent spaced relationship;

(d) a pair of electrical conductors disposed coaxially within respective ones of said conduits and insulated therefrom from respective first ends disposed within said shield box to respective second ends exiting said close adjacent spaced ends of said conduits, each conductor being electrically connected on said second end to said spaced end of said conduit in which it is not coaxially disposed;

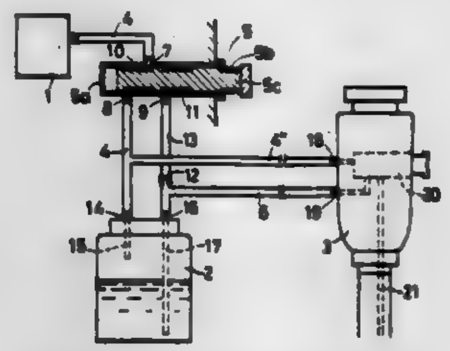


(e) a first variable capacitor electrically connected between one of said first ends of said pair of conductors and said shield box; and,

(f) a second variable capacitor electrically connected between the other of said first ends of said pair of conductors and the one of said pair of connectors not electrically connected to said box.

4,325,362
ENDOSCOPE

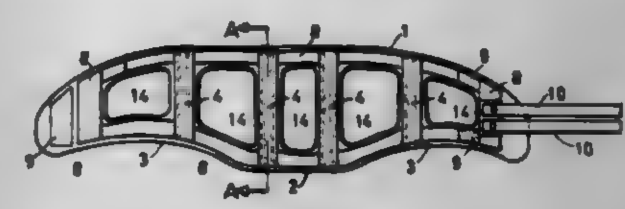
Teruo Ouchi, Kamifukuoka; Hirohisa Ueda, and Kazukiyo Tamada, both of Tokyo, all of Japan, assignors to Kabushiki Kaisha Medos Kenkyusho, Tokyo, Japan
Division of Ser. No. 24,214, Mar. 26, 1979, Pat. No. 4,261,343. This application Dec. 22, 1980, Ser. No. 218,988
Claims priority, application Japan, Mar. 28, 1978, 53/39814[U]; Mar. 28, 1978, 53/39815[U]; Mar. 31, 1978, 53/41966[U]; May 15, 1978, 53/64797[U]
Int. Cl.³ A61B *1/00*
U.S. Cl. 128—4 22 Claims



1. An air and water supplying device for an endoscope, comprising; an air pump air supplying tube connected to an air pump, an endoscope provided with air and water switching valve means, a water tank provided with a compressed air receiving inlet and a water delivering outlet, a water supplying tube connecting said endoscope and said water tank to supply air and water to the top end part of said endoscope and air valve switching means for receiving compressed air in said air pump and distributing it in a water supplying path comprising said water supplying tube and a water pumping-up tube in said water storing tank in such a manner that, said particular inlet is normally closed by said air valve switching means and when a particular inlet is opened by said air valve switching means the compressed air introduced into said particular inlet discharges the water remaining in the water supplying path.

4,325,363
POSTURE TRAINING THERAPEUTIC NECK SUPPORT

Joseph Berkeley, 1244 Devonshire Rd., Windsor, Ontario, Canada (N8X 1J3)
Continuation of Ser. No. 919,130, Jun. 26, 1978, abandoned. This application Mar. 12, 1980, Ser. No. 129,738
Int. Cl.³ A61F *5/00*
U.S. Cl. 128—75 2 Claims



1. A posture training and therapeutic neck support comprising a collar shaped to fit the front, back, and the upper and lower joints of the neck of a person, said collar being made of a soft, spongy material reinforced around the rim, a plurality of holes provided in the collar at intervals along a substantial portion of the length of the collar for ventilation, a plurality of generally vertical stays spaced at predetermined intervals between said holes along a substantial portion of the length of said collar, each of said stays comprising a narrow receptacle of a soft material and a thin strip of pliable material in at least some of said receptacles, which strips can be removed, shortened, and/or bent, as required, each of said narrow receptacles having attaching means extending substantially the length thereof, means for closing and opening the collar at the ends thereof, said collar also having attaching means near the ends thereof beyond the end ventilation holes therein, a plurality of separate, generally vertical supports of generally rectangular shape with the height exceeding the width and with the height exceeding the width of said collar for all portions of said collar, said supports having vertical legs and upper and lower legs connecting the vertical legs, with all of said legs enclosing thin bendable strips therein to enable said vertical supports to be bent and shaped as required, said supports having attachment means on the vertical legs thereof for temporarily attaching said vertical supports to said collar at said attaching means of said narrow receptacles to enable said supports to be moved to various heights relative to the width of said collar so as to project adjustable distances above the upper edge of said collar and to be located at various incremental positions along substantially the entire length of said collar, whereever additional support is required.

4,325,364
TRAINING BREATHING APPARATUS

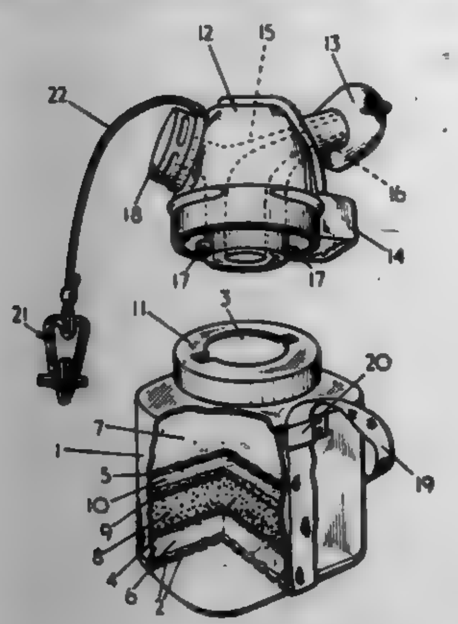
John D. Evans, Balerno, Scotland, assignor to Coal Industry (Patents) Limited, London, England
Filed Dec. 26, 1978, Ser. No. 972,935
Claims priority, application United Kingdom, Jan. 10, 1978, [illegible]/78
Int. Cl.³ A62B *7/00*
U.S. Cl. 128—201.13 7 Claims

1. A warm air training model breathing apparatus comprising:

a breathing air conduit having a first end for receiving exhaled air from a user and supplying inhaled air to a user;

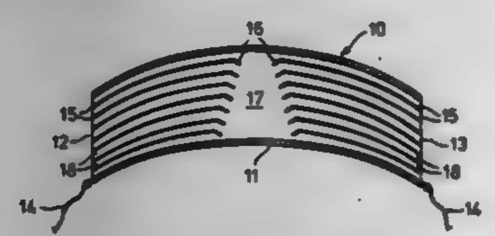
a canister having a first opening connected to a second end of said breathing conduit and a second opening communicating with ambient atmosphere, said canister containing, between said first and second openings, a reagent which creates heat by reaction with carbon dioxide and/or moisture in exhaled air, said canister including passage means for directly passing inhaled air from said second opening through said reagent where it is heated and through said first opening to said breathing conduit to a user and pass-

ing exhaled air from a user from said breathing conduit through said first opening, through said reagent causing



generation of heat, and through said second opening to ambient atmosphere.

4,325,365
ATHLETE'S BREATHING APPARATUS
John P. Barbuto, 5801 S. 300 East #260, Murray, Utah 84107
Filed Dec. 11, 1980, Ser. No. 215,190
Int. Cl.³ A62B *7/00*
U.S. Cl. 128—201.13 6 Claims



1. An apparatus for warming and moisturizing inspired cold air for athletes, comprising in combination:

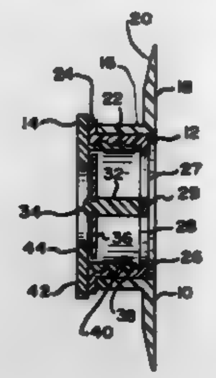
A hollow housing having both a downward and a lateral curvature for fitting over the mouth of a wearer; said housing having an oral aperture disposed centrally of the laterally curving portion of said housing on the concave side thereof; said housing also having mutually opposing open lateral ends;

Strap means attached to said housing for securing said housing to the head of a wearer; and

A plurality of mutually spaced-apart analogous pairs of leaf members with each member of a pair extending laterally within said housing outwardly from the center to said ends of said housing; said pairs of leaf members being arranged with in said housing so that a chamber is formed next to said oral aperture by the inner ends of said leaf members, said chamber having diminishing width created by decreasing distance between the ends of successive leaf pairs from the oral aperture to the opposite side of said housing.

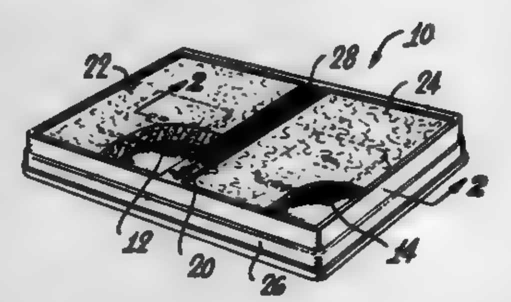
4,325,366
VALVE AND METHOD FOR USE WITH A TRACHEOTOMY TUBE
Carl J. Taber, 9845 Reavis Rd., St. Louis, Mo. 63123
Filed Jul. 7, 1980, Ser. No. 166,345
Int. Cl.³ A61M *25/00*
U.S. Cl. 128—207.16 16 Claims

1. A valve for use with a tracheotomy tube comprising a valve body having an air passageway therethrough, said valve body including means for connecting said passageway with a tracheotomy tube, a post in said air passageway, means for centering said post in said air passageway and allowing passage of air through said air passageway, flexible diaphragm means whose center is attached to said post and sized to fit within said air passageway, and a valve seat at one end of said air passageway and spaced a predetermined distance from said diaphragm means, said valve seat having an opening therethrough smaller than said (membrane) diaphragm means, said flexible dia-



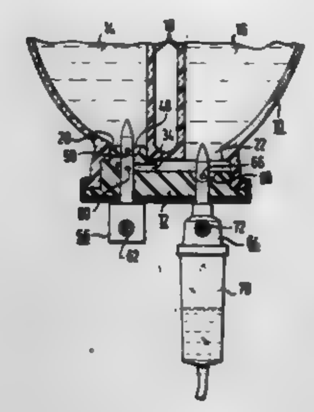
phragm means (operable for allowing) being so constructed that it allows air to flow around its periphery through said air passageway in either direction when the air velocity is at a rate present while breathing normally through said tracheotomy tube and (operable for everting) everts into sealing engagement with said valve seat when air is exhaled through said tracheotomy tube at a rate above that present when breathing normally thereby blocking said air passageway.

4,325,367
IONTOPHORETIC TREATMENT APPARATUS
Robert Tapper, 1935 Armacost Ave., Los Angeles, Calif. 90025
Continuation-in-part of Ser. No. 52,295, Jun. 26, 1979, abandoned, which is a continuation of Ser. No. 806,393, Jun. 13, 1977, Pat. No. 4,164,226. This application Nov. 19, 1979, Ser. No. 95,632
Int. Cl.³ A61N *1/30*
U.S. Cl. 128—207.21 5 Claims



1. A self-contained iontophoretic treatment apparatus comprising: a support structure; a source of electrical power and a control means therefor on said support structure; a pair of electrodes mounted on said support structure in generally close proximity to one another, said electrodes being connected to said source of electrical power through said control means; porous pads on said electrodes, and an insulating member extending between said electrodes, a first of said electrodes being connected to said source of electrical power and arranged to act primarily as a cathode, and the other electrode being connected to said source of electrical power and arranged to act primarily as an anode, said first electrode being formed of stainless steel and said other electrode being formed of substantially pure aluminum, said support structure and said electrodes being sized and arranged so that a surface to be treated can extend across said insulating member and simultaneously contact both of said pads, whereby electric current from said electrodes for effecting iontophoretic treatment will pass only through the surface being treated.

4,325,368
INFUSION DEVICE
Erich Kaemmerer, Steinhagen, Fed. Rep. of Germany, assignor to Ingrid Bernard, Steinhagen, Fed. Rep. of Germany
Filed Dec. 14, 1979, Ser. No. 103,476
Claims priority, application Fed. Rep. of Germany, Dec. 16, 1978, 2854392; Feb. 26, 1979, 2907479; Oct. 22, 1979, 2943586
Int. Cl.³ A61M *5/14, 5/16*
U.S. Cl. 128—214 R 17 Claims



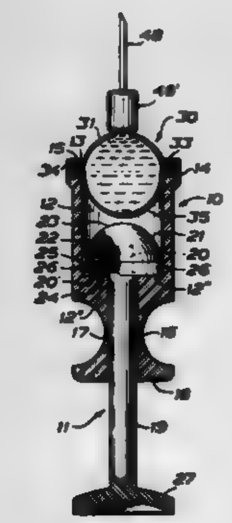
1. An infusion device which is adapted to receive a penetrating cannula for simultaneously infusing a plurality of liquids, comprising:

a container having an orifice on the side which is the underside in the operational position, at least first and second chambers therein for holding a plurality of infusion liquids and first and second openings connecting said first and second chambers with said orifice;

and

a stopper member for inserting into said orifice and sealing said orifice as well as sealing said first and second openings from one another, said stopper member including therein a cavity which lies in the path of a penetrating cannula and which is adapted to provide codispensing communication between said first and second chambers upon insertion of a penetrating cannula for codispensing said plurality of infusion liquids.

4,325,369
DISPOSABLE CONTAINER FOR A SYRINGE
Nils B. Nilson, Mjölby, Sweden, assignor to KeNova AB, Malmo, Sweden
Division of Ser. No. 5,878,267, Feb. 16, 1978, Pat. No. 4,255,122, which is a continuation of Ser. No. 5,684,020, May 7, 1976, abandoned. This application Jul. 16, 1980, Ser. No. 169,429
Int. Cl.³ A61M *5/00*
U.S. Cl. 128—218 D 1 Claim



1. A container adapted to form the end wall of the open discharge end of a barrel of a syringe, the container comprising:

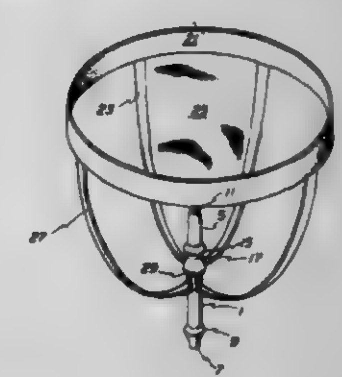
a substantially rigid first wall portion having an inside surface;

a flexible second wall portion introvertible upon the inside surface of the first wall portion;

a nozzle on said first wall portion for attaching a hypodermic needle thereto, said first and second portions being formed into a unitary shell; and

circumferential flange means integral with said shell substantially at the intersection of said first and second wall portions and having a resilient periphery for resiliently interacting with a surface of the open discharge end of the barrel of the syringe for retaining the container thereon.

4,325,370
DISPOSABLE DEVICE FOR FIXATION OF THE BARIUM ENEMA TIP
Ruperto S. Young, Amsterdam, N.Y., assignor to Janis Marie Young, Amsterdam and Roberta H. Wessendorf, Guilderland, both of, N.Y.
Filed Apr. 14, 1981, Ser. No. 254,141
Int. Cl.³ A61M *25/02*
U.S. Cl. 128—245 7 Claims



1. The combination of a barium enema tip and a device for the external fixation of said barium enema tip, said barium enema tip being insertable into a patient's rectum to perform the x-ray procedure whereby a contrast material is introduced through the rectum and the examination is performed after the colon is filled with an adequate amount of barium liquid, said device being of integral, one-piece construction and comprising a waist band, anterior strap, posterior straps and locking ring, said anterior strap being in attached relationship with said waist band, said posterior straps being in attached relationship with said waist band, said anterior and posterior straps being in attached relationship with said locking ring, said barium enema tip having, in circumferential relationship, a locking groove on its external surface, said locking ring being a split ring engageable with said locking groove to effect removable locking engagement therewith during use, said waist band of said device when put on and worn by said patient fitting snugly against the waist, said anterior strap fitting snugly against the body and running from the inner, upper thighs to said waist, and said posterior straps fitting snugly against the body and running around the buttocks area to said waist, said barium enema tip having an hour-glass shaped cuff having a concave portion thereby and whereby, upon said barium enema tip being inserted into the patient's rectum, the patient's anal sphincter will complementally receive and lock upon said concave portion of said cuff to prevent leakage of barium liquid around said barium enema tip.

4,325,371

LOQUAT-LEAF MOXIBUSTION THERAPY AND A MOXA STICK FOR USE IN THE THERAPY

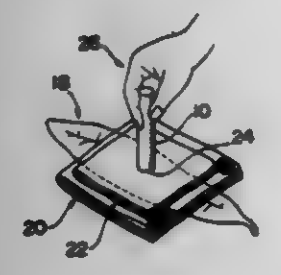
Koukichi Atsumi, No. 2592-2, Koike-cho, Hamamatsu City, Shizuoka Prefecture, Japan

Filed Apr. 5, 1978, Ser. No. 893,717

Claims priority, application Japan, Apr. 8, 1977, 52-44435

Int. Cl.^{2} A61F *7/00*

U.S. Cl. 128—254 30 Claims



1. A loquat-leaf moxibustion therapy comprising setting on the surface of the subject's body skin layers of a loquat leaf placed face down on the surface of the skin and located to cover a selected remedial spot of the subject's body and mattings of vegetable fibers placed on the loquat leaf, applying a moxa stick kindled at one axial end thereof onto said mattings in such a manner that the kindled end of the moxa stick is axially directed to said remedial spot across the layers of the mattings and the loquat leaf, and pressing the moxa stick axially onto the mattings for causing the moxa stick to axially thrust at its kindled end against the subject's body in the region of the remedial spot across the layers of the mattings and the loquat leaf.

4,325,372

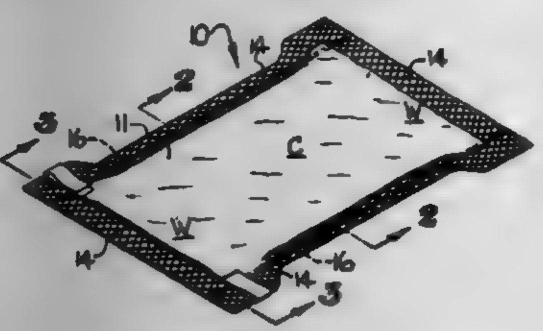
ELASTIC LEG DISPOSABLE DIAPER

Richard K. Teed, Greenwood, S.C., assignor to Riegel Textile Corporation, Greenville, S.C.

Filed Oct. 16, 1979, Ser. No. 85,372

Int. Cl.^{3} A61F *13/16*

U.S. Cl. 128—287 2 Claims



1. An improved elastic leg disposable diaper of generally hour-glass configuration providing longitudinal edge portions on opposite sides and transverse edge portions on opposite ends and defining between said longitudinal edge portions outer waist-fitting areas and a central crotch-fitting area of reduced width, said diaper comprising:

a fluid-permeable top cover sheet;

a fluid-impermeable bottom cover sheet;

a fluid-absorbent interior pad positioned between said top and bottom cover sheets;

an elastic strip extending and being secured to said diaper along the full length of each of said longitudinal edge portions and along said central crotch-fitting area and said waist-fitting areas of said diaper, and wherein each of said elastic strips are secured in said crotch-fitting area in stretched elastically-contractible condition forming gathered and extendible side portions in said crotch-fitting area when said elastic strips are relaxed for elastic conformance with the legs of the wearer and are secured in said waist-fitting areas in less stretched elastically-contractible or substantially relaxed condition than in said crotch-fitting area so as to provide less or no gathering of the side portions in said waist-fitting areas compared to said crotch-fitting area; and

means securing said top cover sheet and said bottom cover sheet to each other along the full length of said longitudinal edge portions and said transverse end portions for effectively sealing said diaper around the periphery thereof to eliminate open passageways which may cause leaking from the interior of said diaper.

4,325,373

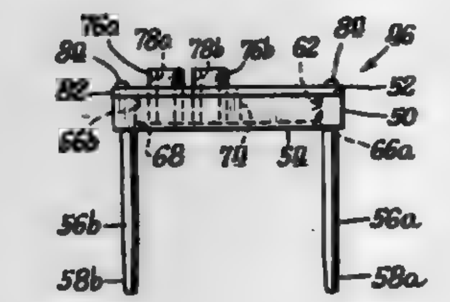
APPARATUS FOR FORMING AN OSTEOTOMY FOR A DENTAL IMPLANT

Victor Slivenko, San Diego, and Jack C. Bokros, Alpine, both of Calif., assignors to Carbo Medics Inc., San Diego, Calif.

Filed Aug. 1, 1978, Ser. No. 930,057

Int. Cl.^{3} A61B *17/00*

U.S. Cl. 128—303 R 4 Claims



1. A drill guide system for preparing a jawbone for implantation of a dental implant, said system comprising a drill guide placement fixture including a unitary body member having a placement locating pin adapted for close fitting insertion into a first locating hole formed in the jawbone, said placement fixture further having a guide bore therethrough having an axis substantially parallel to and coplanar with said locating pin and spaced a predetermined distance therefrom, said guide bore being adapted to receive a dental burr therethrough for forming a second locating hole in the jawbone parallel to said first locating hole, and a drill guide including a housing having a pair of locating pins fixed thereto in generally normal relation, said locating pins having parallel longitudinal axes spaced apart a distance substantially equal to said predetermined distance and being adapted to be received in said first and second locating holes, said drill guide housing defining a retaining recess therein extending between said locating pins, a slide block laterally retained within said recess and adapted for sliding rectilinear movement therealong, said slide block defining a guide bore therethrough moveable therewith and adapted to receive a dental burr to facilitate forming of an elongated slot in the jawbone between said locating pins.

4,325,374

HIGH FREQUENCY ELECTROSURGICAL INSTRUMENT FOR AN ENDOSCOPE

Osamu Komiya, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed May 29, 1980, Ser. No. 154,441

Claims priority, application Japan, Jun. 4, 1979, 54-75744[U]

Int. Cl.^{3} A61B *17/39*

U.S. Cl. 128—303.15 17 Claims

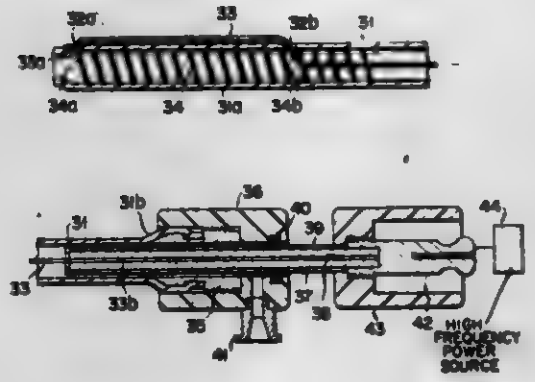
1. A high frequency electrosurgical instrument used in an endoscope, comprising:

a flexible tube having a distal end, a proximal end and a distal end portion adjacent to the distal end;

a first electrode wire guiding hole and a second electrode wire guiding hole formed in the distal end portion of said flexible tube and spaced apart axially of said flexible tube, said first electrode wire guiding hole being located closer to the distal end of said flexible tube than said second electrode wire guiding hole;

a flexible coil having two ends, said flexible coil being inserted in the distal end portion of said flexible tube so as to prevent said distal end portion from being deformed and extending at least between said first and second electrode wire guiding holes with one end of said flexible coil being located near said first electrode wire guiding hole, said flexible coil having at least one pair of adjacent turns which are located adjacent to said second electrode wire guiding hole; and

an electrode wire having first and second ends and an intermediate portion extending between said first and second ends, said electrode wire being reciprocable along said flexible tube, the first end of said electrode wire being



disposed in said flexible tube immovably with respect to said flexible coil, said intermediate portion of said electrode wire extending out of said flexible tube through said first electrode wire guiding hole and extending outside said flexible tube between said first and second electrode wire guiding holes and then entering into said flexible tube through said second electrode wire guiding hole and then passing between the respective turns of said at least one pair of adjacent turns of said flexible coil which are located adjacent to said second electrode wire guiding hole, said intermediate portion of said electrode wire further extending through said flexible tube from said second electrode wire guiding hole to the proximal end of said flexible tube so that the second end of said electrode wire is at the proximal end of the flexible tube, and the second end of said electrode wire is adapted to be connected to a high frequency source.

4,325,375

INSTRUMENT FOR INSERTING AND REMOVING INTRAOCULAR LENS

Herbert J. Nevyas, 1414 Juno La., Narberth, Pa. 19072

Filed May 12, 1980, Ser. No. 149,070

Int. Cl.^{3} A61B *17/28*

U.S. Cl. 128—321 7 Claims

1. An instrument for inserting and removing an intraocular lens of the type having centering strands, said instrument comprising first and second jaws being formed and shaped to grasp and manipulate said intraocular lens and hold said centering strands, a tubular member, said first jaw being fixed to one end of said tubular member, a rod extending through said tubular member, said second jaw being fixedly secured to one end of said rod, a base plate secured to the other end of said tubular member, an actuator connected to the other end of said rod at a location juxtaposed to and overlying said base plate, wherein one of said actuator and base plate is generally flat while the other is curved or angled so that the central portion of the actuator is closer to the base plate as compared with the side edges of the actuator, said actuator and base plate being arranged to facilitate cooperative manipulation by only a pair of

fingers to oscillate said rod about its longitudinal axis and thereby allow said jaws to be opened, closed and manipulated.

4,325,376

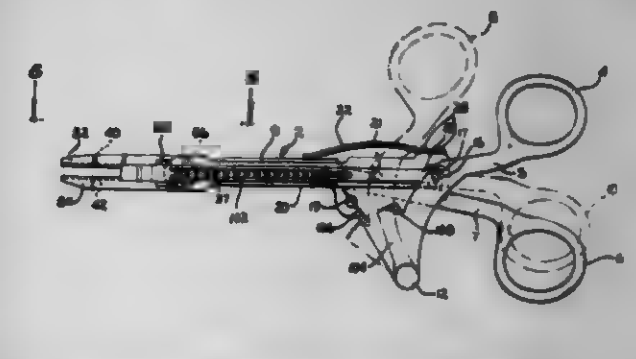
HEMOSTATIC CLIP APPLICATOR

Charles H. Kliemen, 3737 Century Blvd., Lynwood, Calif. 90262, and Richard M. Densmore, South Gate, Calif., assignors to Charles H. Kliemen, Lynwood, Calif.

Continuation of Ser. No. 822,076, Aug. 5, 1977, abandoned. This application Sep. 2, 1980, Ser. No. 183,360

Int. Cl.^{3} A61B *17/12*; B31B *1/00*

U.S. Cl. 128—325 41 Claims



1. A surgical clip applying device comprising:

(i) a main body;

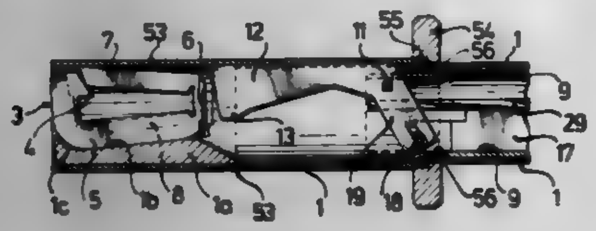
(ii) clip magazine means coupled to the exterior of said main body for holding a plurality of clips;

(iii) clip deforming means coupled to said main body for receiving and deforming said clips;

(iv) a laminated clip feed means slideably disposed within said clip magazine means and adaptd to slide into and out of said clip deforming means for sequentially moving said clips from said clip magazine means to said clip deforming means; and

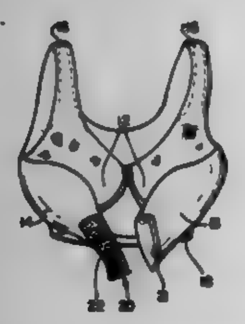
(v) actuating means coupled to said clip feed means and said clip deforming means for sequentially actuating said clip feed means and said clip deforming means, whereby actuation of said actuating means first causes said clip feed means to: (i) engage the clip in said clip magazine which is closest to said clip deforming means, (ii) slide into said deforming means and thereby move said clip from said clip magazine means to said clip deforming means, and (iii) retract from said deforming means while leaving said clip in said deforming means, and then further actuation of said actuating means causes said clip to be deformed by said clip deforming means.

4,325,377
SURGICAL FORCEPS FOR APPLYING CLIPS TO FALLOPIAN TUBES
Manfred Boebel, Oetisheim, Fed. Rep. of Germany, assignor to Richard Wolf GmbH, Knittlingen, Fed. Rep. of Germany
Filed Apr. 25, 1980, Ser. No. 143,949
Claims priority, application Fed. Rep. of Germany, May 3, 1979, 2917783
Int. Cl.³ A61B *17/12*
U.S. Cl. 128—326 2 Claims



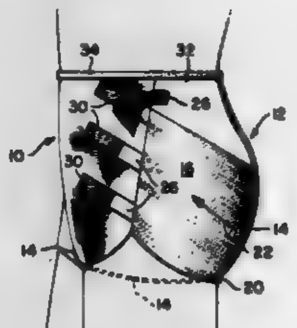
1. In surgical equipment arranged for tubal ligation including a trocar sleeve to be inserted through an incision in the abdominal wall, and also including forceps insertable through the trocar sleeve for applying clips to fallopian tubes, the forceps comprising a stem having an opening at its distal end for insertion of a clip formed by two branches held apart by an elastic connecting strap, and further comprising a closing lever near said opening displaceable in said stem axially with respect to said clip by means of a proximal handle, which lever by actuation of said handle is pivoted into a closed position and brings the free extremities of said clip branches into coupled engagement gripping one behind the other in hook-like manner, the improvement which consists in that a cylindrical sleeve is provided which when positioned over said forceps stem from the distal extremity brings or pivots the unclosed branch of the inserted clip projecting from the periphery of said forceps stem against the other clip branch held fast in said forceps without coupled engagement and into a position in alignment with said forceps stem insertable through a trocar sleeve, the diameters of the two sleeves being so related that with the proximal end of said trocar sleeve axially aligned to the distal end of the cylindrical sleeve when the latter is positioned as aforesaid the forceps stem and the inserted clip thereon may be passed through the trocar sleeve so the uncoupled clip will spring open when it emerges from the distal end of the trocar sleeve inside the abdominal cavity, and wherein said cylindrical sleeve is provided with a split spring ring fitting into an annular groove, which ring engages partially into a shallow outer annular groove of said forceps stem.

4,325,378
SPORTS GARMENT
Margaret Wilkinson, 103 Grant Rd., Lansdale, Pa. 19446
Filed Apr. 21, 1980, Ser. No. 141,869
Int. Cl.³ A41C *3/02*
U.S. Cl. 128—501 6 Claims



1. A sports garment for protecting and supporting the breasts of a person engaged in physical activity, comprising:
a torso encircling inner liner having breast receiving pockets and shoulder straps;
an elastic member disposed along the bottom of the inner liner, the inner liner being so shaped that the elastic member is disposed, in use, against the torso and along the curve of the breasts;
breast supporting flaps attached to the inner liner at points behind each of the breast receiving pockets respectively, the flaps overfitting the breast receiving pockets, the breast receiving pockets being nevertheless independently displaceable relative to the flaps; and,
means for releasably and adjustably cinching the flaps together, the cinched flaps being substantially fixed in position relative to the torso, whereby the flaps provide an inwardly directed pressure for constraining excessive and harmful breast movement and the breast receiving pockets of the inner liner move together with the breasts and provide protection against chafing from breast movement not restrained by the flaps.

4,325,379
DERRIERE EXERCISER
Ahmet M. Ozbey, 3010 Mount Pleasant St. NW., Washington, D.C. 20009
Filed Dec. 17, 1980, Ser. No. 217,432
Int. Cl.³ A41C *1/00*
U.S. Cl. 128—540 12 Claims



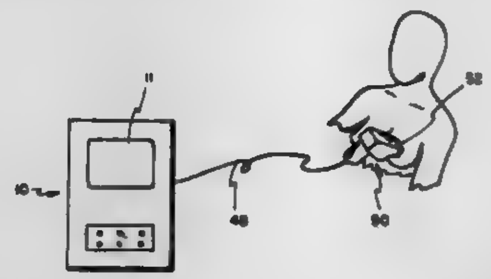
1. Apparatus for exercising the muscles of the wearer's buttocks and pelvic floor including a front section and an adjustable back section, both of said sections extending from approximately the wearer's waist to approximately the top of the wearer's thighs, said apparatus comprising:
(a) buttocks separating means for moving the sections of the buttocks away from each other;
(b) buttocks lifting means for exerting a lifting force on each buttocks section substantially parallel to a line drawn from the wearer's coccyx to the iliac crest; and
(c) fastening means for adjustably securing said buttocks lifting means to the front section of said apparatus.

4,325,380
ORTHOTIC DEVICE FOR THE HEEL OF A PERSON'S FOOT
Howard Malkin, East Brunswick, N.J., assignor to Apex Foot Products Corporation, Englewood, N.J.
Filed Jul. 11, 1980, Ser. No. 168,776
Int. Cl.³ A61F *5/14*
U.S. Cl. 128—581 17 Claims

1. An orthotic device for the heel of a person's foot, the orthotic device comprising:
a flexible, cup-shaped body member adapted to surround the heel and adjacent portions of a person's foot when worn, the cup-shaped body member including a bottom portion extending longitudinally along a portion of the sole of the person's foot when worn by the person;
an integral substantially solid heel cushion disposed on said cup-shaped body member in the vicinity of the heel of the person's foot when worn by the person, said heel cushion being raised relative to the surface of said body member and including side, back and bottom parts for cushioning and protecting the person's heel; and
three substantially solid rib members extending substantially longitudinally along the length of said bottom portion of said body member, each rib member being of a width greater than its height, one of said rib members comprising a central rib member raised from the surface of said cup-shaped body member to be in substantially the same plane

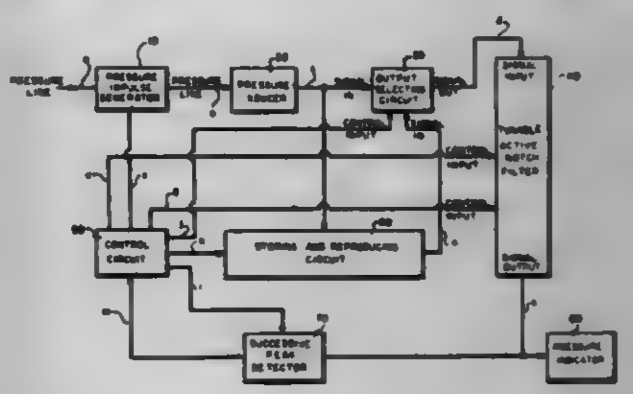
as said bottom part of said heel cushion so that it cooperates with the bottom part of said heel cushion to provide balance and stability against rocking of the orthotic device, and the other of said rib members being raised from the surface of said cup-shaped body member and comprising lateral rib members laterally spaced on opposite sides of said central rib member to stabilize the orthotic device against side to side roll.

4,325,381
ULTRASONIC SCANNING HEAD WITH REDUCED GEOMETRICAL DISTORTION
William E. Glenn, Fort Lauderdale, Fla., assignor to New York Institute of Technology, Old Westbury, N.Y.
Filed Nov. 21, 1979, Ser. No. 96,322
Int. Cl.³ A61B *10/00*
U.S. Cl. 128—660 13 Claims



1. In an apparatus for ultrasonically imaging sections of a body by transmitting ultrasonic energy into the body and determining the characteristics of the ultrasonic energy reflected therefrom, said apparatus including timing means for generating timing signals; energizing/receiving means operative in response to timing signals; and display/record means synchronized with said timing signals for displaying and/or recording image-representative signals from the energizing/receiving means; an improved portable scanning module, comprising:
a fluid-tight enclosure having an ultrasonically-transmissive window which can be placed in contact with the body;
a fluid contained in said enclosure;
transducer means coupled to said energizing/receiving means for converting electrical energy to a beam of ultrasonic energy and for converting reflected ultrasonic energy to electrical signals.
means for focusing the ultrasound beam emanating from said transducer means;
reflective scanning means pivotably mounted in said fluid in the path of said ultrasound beam for effecting scanning of said beam across said body via said window;
said window comprising an acoustic lens for converging the scan of the ultrasound beam incident thereon from within said enclosure, whereby said acoustic lens reduces geometrical distortion of the scan of said ultrasound beam.

4,325,382
PROCESS AND APPARATUS FOR THE REAL TIME ADAPTIVE FILTERING OF CATHETER PRESSURE MEASUREMENTS
Saul Miodownik, New York, N.Y., assignor to Memorial Hospital for Cancer and Allied Diseases, New York, N.Y.
Filed May 15, 1980, Ser. No. 150,014
Int. Cl.³ A61B *5/02*
U.S. Cl. 128—673 18 Claims

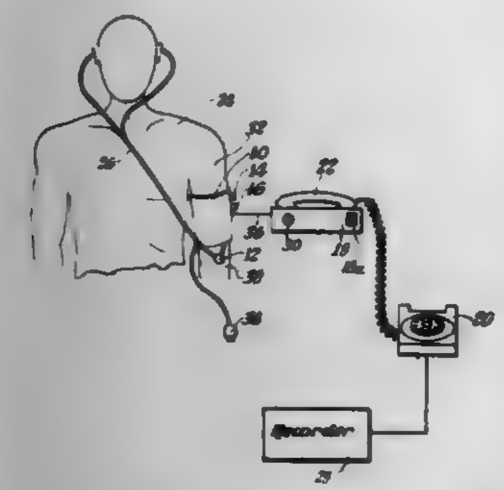


13. A device for effecting the real time adaptive filtering of the electrical signal output of a pressure transducer sensing fluid pressure in a pressure line, comprising:
a. a tunable active notch filter for receiving the output of the transducer at the input thereof;
b. means for periodically applying a negative pressure impulse to the pressure line instead of the fluid pressure to obtain a frequency domain transfer function response to each impulse; and
c. means for adjusting the tunable parameters of the active filter to each impulse response to compensate for the frequency response of the pressure line.

4,325,383
SYSTEM AND METHOD FOR MEASURING AND RECORDING BLOOD PRESSURE
Harold G. Lacks, 200 E. 64th St., New York, N.Y. 10021
Filed Aug. 29, 1980, Ser. No. 182,808
Int. Cl.³ A61B *5/02*
U.S. Cl. 128—677 3 Claims

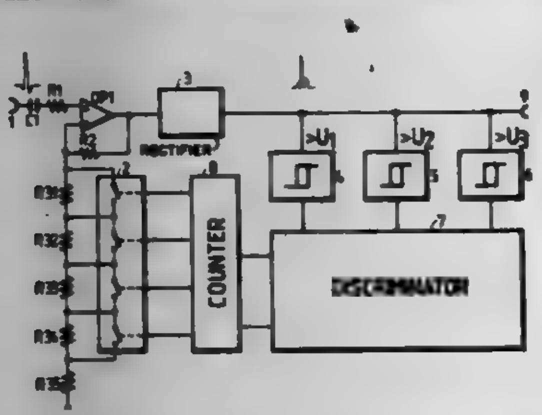
1. A system for measuring the systolic and diastolic blood pressure of a patient comprising:
a pressure means connectable about an extremity of the patient for compression of the extremity to a predetermined maximum compression pressure and decompression of the extremity at a predetermined decompression rate;
a telephone communication system including a telephone accessible by the patient;
a stethoscope connected to a pulse sensing device and to said telephone; and
a prerecorded voice countdown means for generating audi-

ble pressure readings from said maximum compression pressure at said predetermined decompression rate in



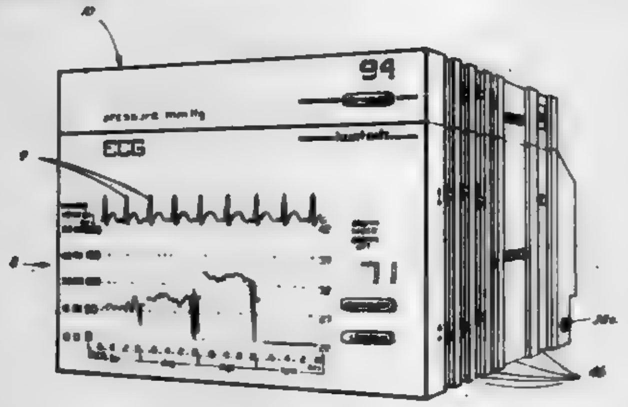
human understandable form, operably connected to said telephone communications system.

4,325,384
DIGITALLY CONTROLLED AMPLITUDE REGULATING DEVICE FOR ELECTROCARDIOGRAPHIC SIGNALS
Reinhard Blaser, Büdingen; Klaus Olach, Berlin, and Max Schaldach, Erlangen, all of Fed. Rep. of Germany, assignors to BIOTRONIK.Mess-und Therapiegeräte GmbH & Co. Ingenieurbüro Berlin, Berlin, Fed. Rep. of Germany
Filed Dec. 10, 1979, Ser. No. 101,495
Claims priority, application Fed. Rep. of Germany, Dec. 9, 1978, 2853642
Int. Cl.[3] A61B *5/04*; A61N *1/36*
U.S. Cl. 128—696 12 Claims



1. A signal processing device comprising: a signal input for receiving an electrocardiographic signal containing a succession of QRS complexes; a signal output; digitally operating means having a transmission factor which is variable in discrete steps and connected between said signal input and output for supplying to said signal output a signal containing representations of the QRS complexes contained in the signal received by said signal input, with the relation between the amplitude of the signal at said signal output and the amplitude of the corresponding portions of the signal received by said signal input being proportional to the existing transmission factor of said digitally operating means; and transmission factor control means including threshold detector means having associated selected first, second and third threshold values and connected to monitor the signal at said signal output for increasing the transmission factor of said digitally operating means by one step in response to each appearance at said signal output of a QRS complex representation having a peak value between the selected first and second threshold values and for reducing the transmission factor by one step in response to each appearance at said signal output of a QRS complex representation having a peak value greater than the selected third threshold value, said second threshold value being higher than said first threshold value, said third threshold value being higher than said second threshold value, and said first threshold value being higher than the amplitude of the signal at said signal output during intervals between QRS complexes in the electrocardiographic signal.

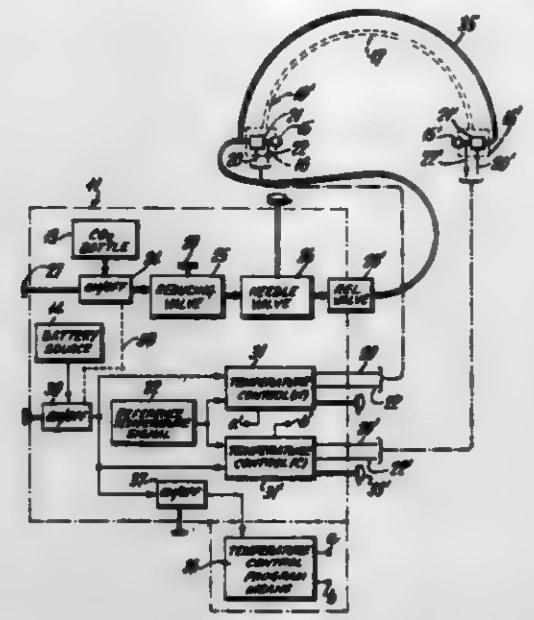
4,325,385
PATIENT MONITORING EQUIPMENT
Bo Holte, Klampenborg, Denmark, assignor to Simonsen & Weel's EFTF. A/S, Albertslund, Denmark
Filed Sep. 19, 1980, Ser. No. 188,909
Int. Cl.[3] A61B *5/04*
U.S. Cl. 128—712 18 Claims



1. Patient monitoring equipment comprising a base unit having an oscilloscope for visual display of signals representative of a plurality of physiological parameters, the base unit having means for connection of a patient derived ECG signal source to be visually displayed, module adapted to be separably associated with the base unit and having means for connection with a second signal source representative of another physiological parameter of the patient, the module being adapted to be assembled with the base unit in stacked relation and with edges generally overlying edges of the base unit, means for physically interlocking the module and the base unit in assembled relation including interengageable means adapted to interlock upon edgewise sliding movement of the module with respect to the base unit in one direction, and means for electrically interconnecting the module and the base unit to provide for visual display of the physiological parameter received from said second signal source, the means for electrically interconnecting the module and the base unit including mating connectors positioned on the base unit and on the module in positions providing for electrical interconnection by edgewise sliding movement of the module with respect to the base unit in the same direction providing for physical interconnection of the module with the base unit, thereby providing for concurrent electrical and physical interconnection of the module with the base unit.

4,325,386
MEANS FOR TREATING SYMPTOMS OF MENIERE'S DISEASE OR THE LIKE
Jay W. Katz, 328 Cove Neck Rd., Oyster Bay, N.Y. 11771
Filed Nov. 27, 1979, Ser. No. 97,707
Int. Cl.[3] A61B *5/04*
U.S. Cl. 128—733 15 Claims

1. Portable caloric gas-flow therapeutic apparatus for treatment of a nystagmus condition in a patient, comprising a first portable unit including a source of pressurized gas and an electric battery source and separate control means for regulating the outputs of said sources, a second portable unit having means for patient-head support at the region of an ear, said second unit including a speculum nozzle having an outlet poised for discharge into the ear when thus supported, conduit means connecting said nozzle to the control means associated with said gas source and including a flexible conduit between said units, said conduit means including at said second unit electrical heating means adjacent the inlet to said nozzle, and flexible conductor means between said units and connecting



said heating means to the control means associated with said battery source.

4,325,387
SEALING APPARATUS FOR INTRAUTERINE PRESSURE CATHETER AND THE LIKE
Joel N. Helfer, Cheshire, Conn., assignor to American Home Products Corporation, New York, N.Y.
Filed Dec. 17, 1979, Ser. No. 103,876
Int. Cl.[3] A61B *5/00, 17/42*
U.S. Cl. 128—748 9 Claims

1. An apparatus for use in measuring the pressure within a body cavity comprising an elongated catheter filled with liquid and having a gauge end adapted to be connected to a transducer and a perforated body end adapted to be inserted into said body cavity; a guide tube adapted to define a path within the body through which said catheter is to be advanced, said guide tube having a gauge end and a body end, the body end of said catheter being positioned within said guide tube; and connector means releasably securing said catheter in a fixed relation to said guide tube, the improvement wherein:

said connector means comprises a first stretchable, tubular member having first and second ends and an inner diameter intermediate the outside diameters of said guide tube and said catheter, said intermediate diameter being further selected so that when said first end of said tubular member is placed around the gauge end of said guide tube, a frictional, fluid tight seal is formed therebetween, and the second end of said tubular member forms a loose fit around said catheter, said tubular member being further adapted to be rolled axially back on a portion of itself at said second end to force said member frictionally against said catheter to hold said catheter and said guide tube in fixed relation, and to form a fluid tight seal therebetween.

4,325,388
APPARATUS FOR COLLECTING AND PROCESSING BODY FLUIDS
Louis Bucalo, 155 Roberts Street, Holbrook, N.Y. 11741
Continuation of Ser. No. 734,049, Oct. 20, 1976, abandoned, which is a continuation-in-part of Ser. No. 603,432, Aug. 11, 1975, Pat. No. 4,232,673, which is a continuation-in-part of Ser. No. 568,139, Apr. 14, 1975, Pat. No. 4,036,214, which is a continuation-in-part of Ser. No. 534,893, Dec. 20, 1974, Pat. No. 3,998,211, which is a continuation-in-part of Ser. No. 499,925, Aug. 23, 1974, Pat. No. 3,934,575, and Ser. No. 499,926, Aug. 23, 1974, Pat. No. 3,924,607, said Ser. No. 499,925, said Ser. No. 499,926, is a division of Ser. No. 329,862, Feb. 25, 1973, Pat. No. 3,842,166. This application Feb. 9, 1979, Ser. No. 10,885
Int. Cl.[3] A61B *17/42*
U.S. Cl. 128—768 6 Claims

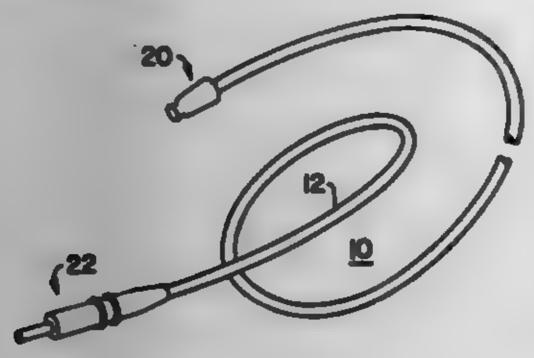
3. In an apparatus for obtaining information pertaining to human beings or other animals having body cavities wherein fluids from which the desired information can be derived are at least temporarily present, collecting means for automatically collecting a body fluid when said collecting means is situated in juxtaposition to a body cavity where the fluid is present, enclosure means for enclosing the collected fluid for transmittal to a laboratory or the like where the collected fluid is to be analyzed, said collecting means and enclosure means being provided with means for causing flow of the fluid from the collecting means to the enclosure means while substantially avoiding flow of the collected fluid by way of the collecting means back to the body cavity, said collecting means operating by capillary action to automatically collect fluid in the body cavity, said collecting means being in the form of a unit such as a wad of filamentary material, and said enclosure means including a container into which said collecting means partly extends for delivering collected fluid thereto, and closure means operatively connected to said enclosure means for closing said enclosure means not later than upon removal of the same from the body cavity so as to prevent contamination of body fluid in the enclosure means.

4,325,389
TIP ASSEMBLY FOR A CARBON FIBER IMPLANTABLE LEAD

Philip Gold, Pompano Beach, Fla., assignor to Cordis Corporation, Miami, Fla.

Filed Sep. 22, 1980, Ser. No. 189,120
Int. Cl.^{3} A61N *1/04*

U.S. Cl. 128—784 6 Claims



1. A tip assembly for an implantable carbon fiber lead having an outer cover disposed about a stylet tube and one or more carbon fiber bundles, each of said bundles having an insulating outer sheath and having an exposed carbon fiber tip at one end, comprising:

A. an electrode having a tip portion at one end, a contact portion, a neck portion interconnecting said tip and contact portions along a central axis, a post portion extending along said central axis from the end of said contact portion opposite to said neck portion, said neck portion having a small cross-sectional area relative to adjacent sections of said tip and contact portions, and said contact portion having a plurality of substantially planar lateral contact surfaces, and

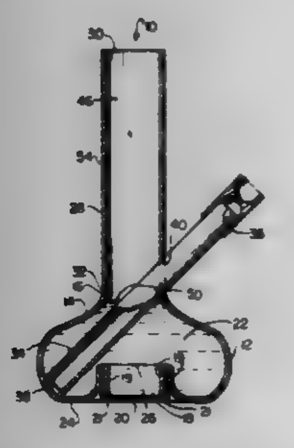
B. an electrically conductive, hollow cylindrical electrode housing member disposed about said post portion, said contact portion, and at least part of said neck portion wherein the interior surface of said electrode housing member includes a lip at its end nearest said post portion, and wherein said housing member includes a means for biasing said lip against said carbon fiber bundles and associated sheathing and said post portion; and for securing said exposed tips between a portion of said housing overlying said neck portion and said neck portion.

4,325,390
STABLE FLUIDIC SMOKING DEVICE

Richard W. Kahler, P.O. Box 1201, Cape Canaveral, Fla. 32920

Continuation-in-part of Ser. No. 699,372, Jun. 24, 1976, abandoned, which is a continuation-in-part of Ser. No. 509,941, Sep. 27, 1974, abandoned. This application Apr. 7, 1980, Ser. No. 137,844
Int. Cl.^{3} A24F *3/00, 3/02*

U.S. Cl. 131—173 13 Claims



1. A self-supporting compact pipe comprising:

a substantially gibbous-like reservoir serving as a stable base member, said gibbous-like reservoir having an uppermost portion to support said pipe in an independently upstanding position and narrowing upwardly so as to form an open neck, a substantially flat bottom wall portion having annular wall means extending inwardly of said reservoir for defining a through-opening extending from the interior of said reservoir and through said bottom wall portion;

said through-opening having a diameter approximating at least one quarter the maximum diameter of said reservoir so as to provide easy access to said interior of said reservoir;

removable sealing means for sealing said through-opening defined within said bottom wall portion of said reservoir so as to permit a fluid to be retained in, or drained from, said reservoir,

a first hollow elongated cylindrical tube having upper and lower open ends, said lower open end being integrally secured to the perimeter of said open neck of said uppermost portion of said reservoir, and means defining an aperture through a sidewall surface of said first tube near the lower end of said first tube;

a second hollow elongated cylindrical tube having upper and lower open ends, said second tube being inserted through said first tube aperture such that said lower end of said second tube is directed downwardly into said reservoir and the upper end of said second tube projects outwardly of said first tube; and

smoking bowl means detachably connected to the top end of said second tube for retaining smoking tobacco and permitting smoke to pass into said second tube;

said smoking bowl and said second tube being detachably removable from said first tube and having outside diameters and lengths, respectively, less than the inside diameter and length of said first tube so as to permit said smoking bowl and said second tube to be inserted and stored within said first tube;

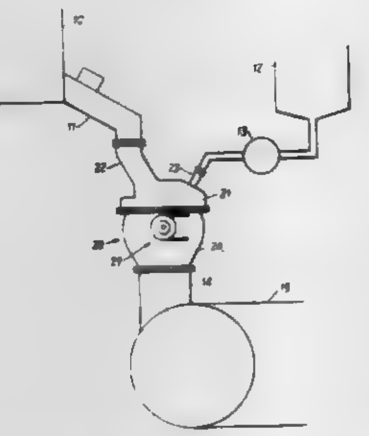
wherein smoke passing into said second tube is drawn through said fluid contained in said reservoir, and further drawn from said reservoir into, through, and out the upper end of said first tube.

4,325,391
INSTANTANEOUS SLURRY PREPARATION ON A CONTINUOUS BASIS

Otto K. Schmidt, South Windsor, Conn., assignor to AMF Incorporated, White Plains, N.Y.

Continuation-in-part of Ser. No. 1,248, Jan. 5, 1979, abandoned. This application Aug. 18, 1980, Ser. No. 179,408
Int. Cl.^{3} A24B *3/14*

U.S. Cl. 131—372 11 Claims



1. Apparatus for making a shapable tobacco/adhesive slurry having a high tobacco solids content, comprising

means for continuously providing a predetermined amount of dry comminuted tobacco;

means for continuously providing a predetermined amount of aqueous adhesive proportional to the tobacco being provided; and

high intensity mixing means having two inlets, one for receiving tobacco and the other for receiving adhesives;

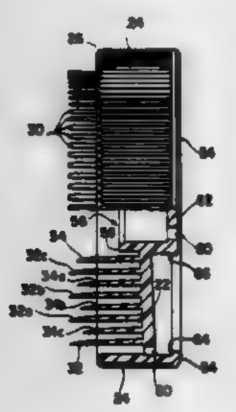
said high intensity mixing means having a slurry discharge, said high intensity mixing means causing a substantially instantaneous homogeneous slurry of the tobacco and adhesive, and rapidly discharging the slurry before it arrives at its equilibrium state.

4,325,392
FACIAL BRUSH FOR CONTROLLING *PSEUDOFOLLICULITIS BARBAE*

Clemens A. Iten, Staunton, Va., and David O. Chase, Skaneateles, N.Y., assignors to American Safety Razor Company, Verona, Va.

Filed Jun. 4, 1979, Ser. No. 45,469
Int. Cl.^{3} A45D *27/22*

U.S. Cl. 132—80 R 10 Claims



1. Facial scrubbing brush for removing ingrown hairs from false follicles, comprising:

a base portion;

peripheral side support means connected to said base portion; and

a plurality of elongated discrete, resilient members connected to said base portion and disposed perpendicular thereto, including first members of a uniform height, each discrete first member being arranged exclusively in first concentric annular rows on said base portion such that said first concentric annular rows exclusively comprise said first members, and second members having a plurality of heights shorter than said uniform height, each discrete second member being arranged exclusively in second concentric annular rows on said base portion such that said second concentric annular rows exclusively comprise said second members, said first annular rows being separate and distinct from said second annular rows and at least one of said first annular rows being interspaced between a pair of said second annular rows, each of said discrete first members being sufficiently resilient and having a cross-sectional dimension sized to curl beneath and into loops of ingrown facial hair, and each of said discrete second members cooperating with said first members to dislodge said ingrown hairs as the brush is moved along the face, wherein said base portion is concave in a direction opposite to said elongated members and includes a plurality of first drainage means distributed about the periphery thereof.

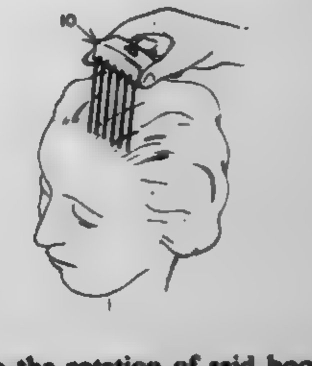
4,325,393
HAIR STRAND SEPARATING IMPLEMENT

Louis N. Thomas, 990 NE. 156 Terrace, North Miami Beach, Fla. 33162

Filed Aug. 25, 1980, Ser. No. 180,693
Int. Cl.^{3} A45D *24/00*

U.S. Cl. 132—160 7 Claims

1. A hair styling implement to facilitate the withdrawal of spaced groups of hair strands from the scalp for separate treatment, comprising, in combination, an elongated, substantially rectangular, hollow body member, a plurality of hook members journalled in spaced relation along one side of said body member, said hook members each being integrally formed with arcuate hook portions movable between withdrawn and outwardly-extended positions with respect to the underside of said



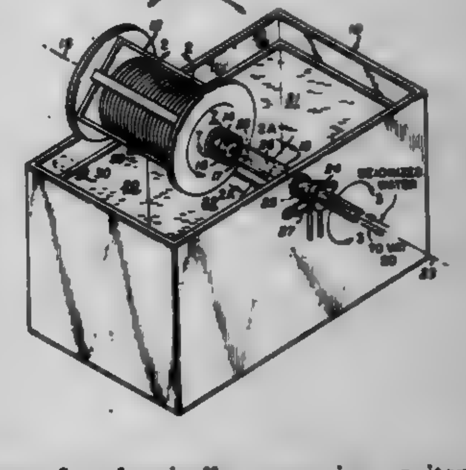
body member upon the rotation of said hook members with respect to said body member, the outer end of said hook portions, when in their withdrawn positions, lying in a plane substantially coincident with the plane of said underside of said body member, and means for simultaneously rotating said hook members for moving said arcuate hook portions between said withdrawn and outwardly-extended positions.

4,325,394
SUBMERSIBLE MOTOR CHEMICAL PROCESSING APPARATUS

Donald J. Reams, San Jose, Calif., assignor to Micro Air Systems, Inc., Santa Clara, Calif.

Filed Aug. 25, 1980, Ser. No. 180,611
Int. Cl.^{3} B08B *3/04*

U.S. Cl. 134—141 28 Claims



1. Apparatus for chemically processing an item in a fluid bath comprising:

retaining means for retaining an item to be chemically processed, the retaining means having openings through which a processing liquid can pass and contact the surfaces of said item to be processed when the retaining means is positioned within a supply of processing liquid;

a continuous-rotation motor coupled to the retaining means for rotationally driving the retaining means about a first axis;

drive means engaged to the motor for supporting and moving the motor and retaining means in unison between a first position and a second position; and

vat means forming at least one vat for supporting a supply of processing liquid, the vat means being positioned relative to the drive means to receive the motor with the retaining means attached thereto within the confines of the vat means when the motor and retaining means are adjacent said first position.

4,325,395

DEVICE FOR CLEANING ROTARY DRUMS, IN PARTICULAR FOR ROTARY DRUM FILTERS

Gaetano Ferrari, Parma, Italy, assignor to Indraces S.r.l., Parma, Italy

Filed Nov. 25, 1980, Ser. No. 210,366

Claims priority, application Italy, Dec. 4, 1979, 29018/79[U]

Int. Cl.³ B08B *3/02, 9/08*

U.S. Cl. 134—152 3 Claims

1. Improved device for cleaning rotary drums, in particular for rotary drum filters, characterized by the fact of comprising: a guide, fixed with respect to said drum (2), situated within the drum and parallel to the generatrix of the drum itself, said guide being of a length approximately equal to the length of the drum; a cursor, sliding along said guide; a nozzle (7), integrally connected to said cursor, situated with its discharging orifice close to the inner surface of said drum; a duct, communicating with the discharging orifice of said nozzle, one end of which protrudes from said drum and is connected to a source of fluid under pressure; and traversing means for sliding said cursor along said guide.

4,325,396

APPARATUS FOR CLEANING A FILTER PRESS

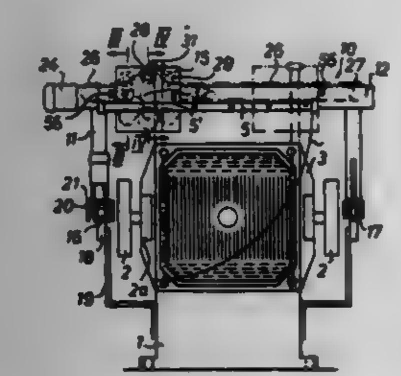
Gerd-Peter Gehrmann, Gerlafingen, Switzerland, assignor to Von Roll AG, Switzerland

Filed Jul. 1, 1980, Ser. No. 165,183

Claims priority, application Switzerland, Jul. 9, 1979, 6309/79

Int. Cl.³ B08B *3/02*

U.S. Cl. 134—181 11 Claims



1. Apparatus for cleaning the plates of a filter press, comprising a support mounted above said press for movement along the longitudinal axis of said press, a trolley mounted on said support for reciprocal movement transversely to the axis of the press from one side to the other, a standpipe mounted on said trolley to swing between a horizontal position and a vertical position, and a unitary drive system for sequentially swinging said standpipe from said horizontal to said vertical position and for moving said trolley from said one side to the other and thereafter reversing the movement of said trolley and the swinging of said standpipe, said standpipe being mounted on a freely-swivelable shaft, journalled in said trolley to be normally dependent from the horizontal position, and said drive system including a motor and a transmission comprising first means mounted on said trolley coupled to said motor for idling therewith, and second means responsive to the displacement of said standpipe from the horizontal position, for securing said first means against idling, said first and second means being cooperable on the movement of said motor, in one direction, to permit said standpipe to be displaced into its vertical position and thereafter on securement of said first means to move said trolley across said support and on the movement of said motor, in the other direction, to maintain said first means secure—to reverse said trolley and thereafter to displace said standpipe in its horizontal position.

4,325,397

METHOD TO REDUCE PRESSURE DROP IN POLYAMIDE PROCESS PIPING

Robert A. Lofquist, Richmond, Va., assignor to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Aug. 15, 1980, Ser. No. 178,319

Int. Cl.³ F17D *1/16*

U.S. Cl. 137—13 3 Claims

1. A method to reduce pressure drop in polyamide process piping comprising

injecting a fluid consisting essentially of linear polyethylene glycol having a molecular weight above 10,000 around the periphery of the piping and

forming a coating of the polyethylene glycol on the internal surface of the piping where it lubricates the flowing polyamide.

4,325,398

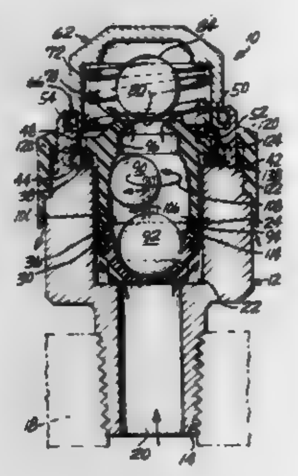
SAFETY AND VENTING VALVES FOR FUEL TANKS CARRIED ON VEHICLES

Charles J. Green, Vashon, Wash., assignor to G. T. Corporation, Seattle, Wash.

Filed Jul. 21, 1980, Ser. No. 170,725

Int. Cl.³ F16K *17/36*

U.S. Cl. 137—39 29 Claims



1. In a tank venting device,

wall means defining a spin chamber having internal generally circular cross sections;

at least one side wall inlet opening into said chamber being tangentially directed with respect to said chamber cross sections, said inlet adapted to be connected to a tank containing liquid;

a circular outlet opening at a normally upper end of said chamber;

a light weight buoyant ball in said chamber, said ball having a larger diameter than said outlet opening; and

means defining said chamber cross sections to prevent said light weight ball from seating in said outlet opening when said gas is venting, whereby gas venting through the spin chamber will spin the light weight ball around the chamber;

said light weight ball being adapted to be lifted to seat on said outlet opening when liquid enters said chamber to a predetermined level to close said outlet opening and block liquid flow out through the outlet opening.

4,325,399

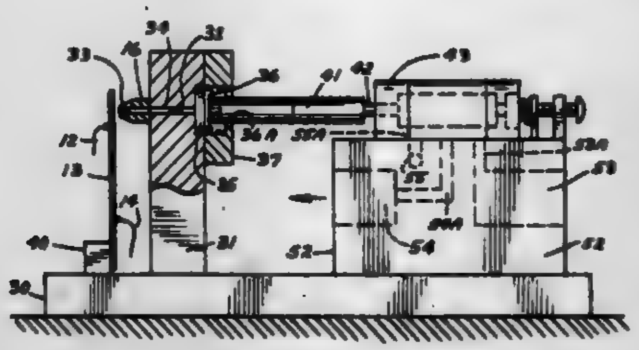
CURRENT TO PRESSURE CONVERTER APPARATUS

Roger L. Frick, Eden Prairie, Minn., assignor to Rosemount Inc., Eden Prairie, Minn.

Filed Nov. 15, 1979, Ser. No. 94,443

Int. Cl.³ G05D *16/00*

U.S. Cl. 137—85 6 Claims



1. A current to pressure converter apparatus including:

means providing an input electrical signal;

circuit means responsive to said input electrical signal to provide an output electrical signal;

a mounting block;

piezoelectric flapper means responsive to said output electrical signal including a flexture element having one end mounted on said block and having one free end, the amount of flexture of the free end being a function of the output electrical signal;

a housing mounted on said block having a movable wall defining a chamber;

a source of controlled fluid under pressure connected to said chamber;

a nozzle leading from said chamber, said free end being adjacent said nozzle to control discharge of fluid through the nozzle and control pressure in the chamber, and thereby control position of the movable wall as a function of the flexture of the flexture element;

fluid amplifier means mounted on said block adjacent said housing and having an outlet and including a valve spool movable to position to adjust the fluid pressure at the outlet of the fluid amplifier means;

bias means to urge the valve spool in a first direction;

means to mechanically couple the movable wall directly to said valve spool so movement of the movable wall in a second direction under changes in pressure causes the valve spool to move against the bias means thus controlling the position of the valve spool as a function of the amount of flexture of the flexture element and therefore of the output electrical signal; and

pressure feedback means connected directly to sense the fluid pressure at the output to provide an electrical feedback signal to said circuit means which is a function of the fluid pressure at the outlet to achieve a balance in the circuit means upon changes in the input signal.

4,325,400

FLUID FLOW EQUALIZING VALVE ARRANGEMENT

John R. Wynne, 10 Firtree Rd., Finchfield, Wolverhampton, West Midlands, England

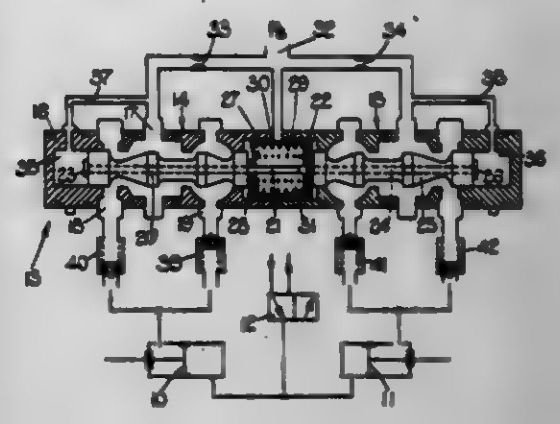
Filed Dec. 5, 1979, Ser. No. 100,295

Claims priority, application United Kingdom, Dec. 16, 1978, 48816/78

Int. Cl.³ F15B *11/02, 13/06*

U.S. Cl. 137—101 6 Claims

1. A fluid flow equalizing valve arrangement comprising first and second valve devices, each said device having first, second and third ports and a control element movable to increase or decrease flow in a flow path which includes said respective first and second ports and simultaneously in an opposite sense to decrease or increase flow in a path which includes said respective first and third ports, coupling means for operatively inter-connecting said control elements for movement in unison in respective opposite directions to increase or decrease flow in a first flow path through one of said valve devices and to decrease or increase flow in a corresponding second flow path through the other of said valve devices, means for connecting said first ports to a fluid pressure source, means for providing first and second intermediate pressures



respectively dependent upon the flows in said first and second flow paths, first and second actuator means responsive to said first and second intermediate pressures respectively, said first and second actuator means being operable to urge said control elements in unison in respective ones of said opposite directions, said coupling means including resilient biasing means for urging said first and second elements to a predetermined relative position and for permitting relative movement between said elements when the pressure on either of said actuators exceeds a predetermined value.

4,325,401

ASEPTIC VALVE

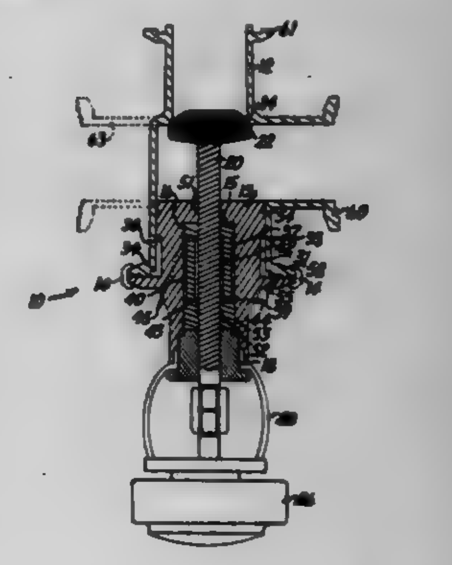
Nobuo Ukai, Machida; Akira Funado, Funabashi, and Tsukuya Yokota, Matsudo, all of Japan, assignors to Kagome Co., Ltd., Japan

Filed Sep. 7, 1979, Ser. No. 73,271

Claims priority, application Japan, Sep. 28, 1978, 53-118622

Int. Cl.³ F16K *31/00*

U.S. Cl. 137—240 7 Claims



1. An aseptic valve for use in regulating supply of a liquid foodstuff comprising, a valve body, a bonnet having a circumferential recess jointly with said valve body defining a first chamber, said bonnet having an axial recess, a bushing snugly fitting in said axial recess and having a circumferential recess jointly with surfaces defining said axial recess defining a second chamber and having an axial bore having a length thereof with a greater diameter between opposite ends of the bore, a valve stem extending axially through said bonnet and said bore

defining with the greater diameter of said bore a third chamber, a part of said bushing providing communication of said third chamber with said second chamber, means in said valve body defining an inlet and an outlet into said first chamber for supplying a sterilizing liquid therethrough, means in said valve bonnet defining an inlet and an outlet to said second chamber for supplying sterilizing liquid therethrough and through said third chamber, a valve disc on said valve stem for opening and closing the valve, and an actuator on said valve stem for actuating the valve stem to actuate the disc to positions for closing and opening the valve.

4,325,402

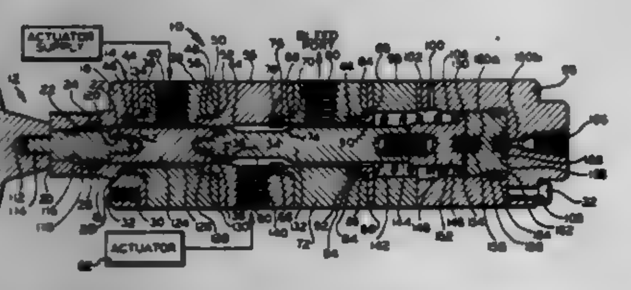
BIMODAL, NON-VENTING PNEUMATIC RELAY

Neil H. Akkerman, Kingwood, Tex., and Bruce D. Christensen, New Orleans, La., assignors to Baker CAC, Inc., Belle Chasse, La.

Filed Apr. 1, 1980, Ser. No. 136,193

Int. Cl.³ F16K *11/07*

U.S. Cl. 137—270 8 Claims



1. A pneumatic control device comprising: a housing including a plurality of aligned, juxtaposed segments defining a centrally disposed bore, a fluid supply passageway, a fluid delivery passageway, a fluid exhaust passageway and a control fluid passageway in communication with said bore; a valve stem disposed within said central bore and translatable between a first position and a second position; means for biasing said valve stem toward said first position; a plurality of annular seals mounted on said housing and disposed about said valve stem; and means for retaining said seals in said housing including a like plurality of channels disposed in the walls of said centrally disposed bore wherein at least one of said channels is defined by a concentrically disposed enlarged diameter portion of said bore in one of said segments and an annulus projecting from the face of an adjacent one of said segments and nesting within said enlarged diameter portion.

4,325,403

SINGLE-CONTROL MIXING COCK WITH PLATES MADE OF HARD MATERIAL

Joachim Uhlmann, Leonberg, Fed. Rep. of Germany, assignor to Gevipi A.G., Triesen, Liechtenstein

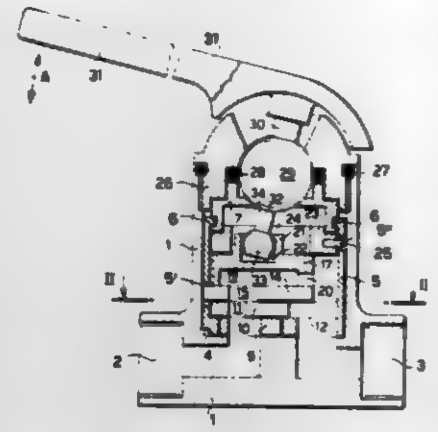
Filed Apr. 30, 1980, Ser. No. 145,236

Claims priority, application Italy, May 4, 1979, 44806 A/79; May 4, 1979, 44807 A/79

Int. Cl.³ F16K *47/00*

U.S. Cl. 137—315 26 Claims

1. A single-control mixing cock for regulating the delivery flow rate and the proportional admixing of hot and cold water comprising a cock body including a wall defining a chamber, first and second port means for introducing hot and cold water respectively into said chamber and third port means for discharging water from said chamber, a unitized replaceable bodily insertable and removable cartridge housed within said chamber, valve means within said cartridge for regulating the delivery flow rate and the proportional admixing of hot and cold water between said first and second port means and said third port means, a cap, means for removably securing said cap to said cock body, a control member for manually operating said valve means, means for mounting said control member upon and for articulate motion relative to said cap, aperture means in said cartridge for gaining access to said valve means, means for coupling said control member to said valve means through said aperture means whereby movement of the control member moves said valve means, and said articulate mounting means being further effective for connecting said control member to said cap for the unitized removal of said cap, control member and at least a portion of said coupling means passing through said aperture means upon the operation



of said removable securing means without destroying the unitized nature of said cartridge whereby upon the unitized bodily removal of said control member, said coupling means portion and said cap from said cock body said unitized cartridge and valve means therein can be likewise bodily withdrawn from said chamber.

4,325,404

VALVE CLAW TO BE SITUATED AT THE END OF A PIPE TO MOUNT A CLOSING VALVE

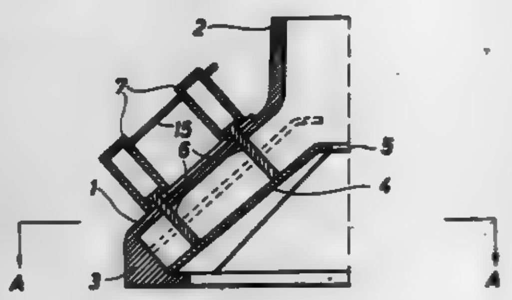
Peder M. Larsen, Hovedvagtsgade 6, 3., DK-1103 Copenhagen K., and Uffe M. Larsen, Soborg Hovedgade 74, DK-2860 Soborg, both of Denmark

Filed Aug. 22, 1979, Ser. No. 68,738

Claims priority, application Denmark, Aug. 30, 1978, 3822/78

Int. Cl.³ F16K *51/00*; F16L *37/28*

U.S. Cl. 137—316 10 Claims



1. A coupling for attachment to the end of a pipe, said coupling comprising: a generally bell-shaped housing open at its larger end so as to be adapted to fit over the end of the pipe; a pipe stub connected to the other end of the housing for receiving a closing valve, said pipe stub being in communication with the interior of the housing; a plurality of circumferentially-arranged radially movable conical segments within the housing which abut each other in edge-to-edge relationship along the whole extent of their edges when in their radially inward position; means for moving the segments radially inwardly to their abutting position; the segments having wide ends in sliding sealing engagement with the inner surface of the housing and each segment having a narrow end provided with at least one circumferentially gripping edge which faces radially inwardly for sealingly engaging and gripping the whole of the circumference of the pipe when the segment is in its radially inward position, there being a space between the inner surface of the housing and the outer surfaces of the segments, which space is in communication with the pipe stub whereby when the housing is secured to the outside of the pipe by the gripping edge on the segments any fluid pressure created by fluid escaping from the pipe will act on the outer surface of the segments so as to hold the gripping edge in engagement with the outside of the pipe.

4,325,405

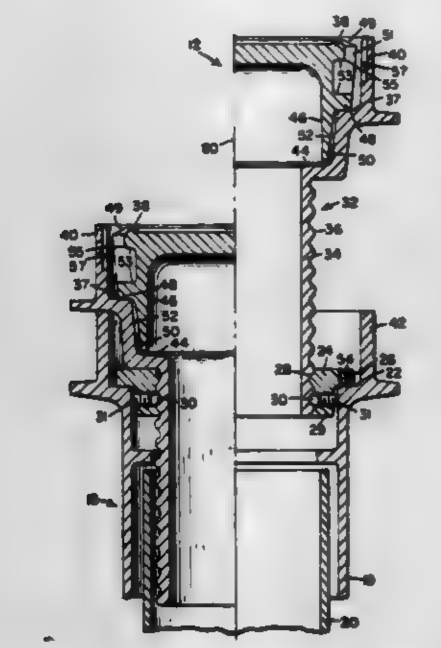
VALVE BOX ASSEMBLY

C. Louis Christo, 24 Hingham Rd., North Grafton, Mass. 01536

Filed Jan. 24, 1980, Ser. No. 115,004

Int. Cl.³ F16L *5/00*; E02D *29/14*

U.S. Cl. 137—371 9 Claims



1. A valve box assembly for plumbing comprising:

(a) a valve box having a vertical tubular portion provided with an upper annular substantially horizontal surface, the valve box having an external annular horizontal flange adjacent the upper horizontal surface thereof,

(b) a nut provided with internal threads and having an annular horizontal flange adapted to rest on the annular upper surface of the valve box,

(c) a riser having an elongated vertical tubular portion provided with external threads for threading into the nut, said riser having an upper annular horizontal surface,

(d) means for locking the nut to the valve box, and

(e) a cover having an annular flange for resting on the upper horizontal surface of the riser, and an annular vertical flange extending downwardly into the riser, the bottom end of the vertical cover flange being spaced from the inside surface of the riser, and

(f) an annular seal attached to the vertical flange and extending in a sealing relationship between the vertical flange and extending in a sealing relationship between the vertical flange and inside surface of the riser.

4,325,406

CONTINUOUS FLUID PRESSURE CONTROL DEVICE AND SYSTEM

Dan Bron, 36 Palmach St., Haifa, Israel

Continuation of Ser. No. 943,852, Sep. 19, 1978, abandoned. This application Jul. 16, 1980, Ser. No. 169,277

Claims priority, application Israel, Sep. 20, 1977, 52,954

Int. Cl.³ F16K *11/07*

U.S. Cl. 137—492.5 5 Claims

1. An adjustable fluid-pressure control system comprising in combination:

a fluid-operated control valve mountable in a fluid line, including obturating means and means movable within a control chamber for displacing said obturating means in response to pressure and,

a continuously acting spool-type pilot valve comprising

a housing having two parts removably inter-connected with each other, and having

a first opening communicating with a downstream portion of said fluid line;

a second opening communicating with an upstream portion of said fluid line;

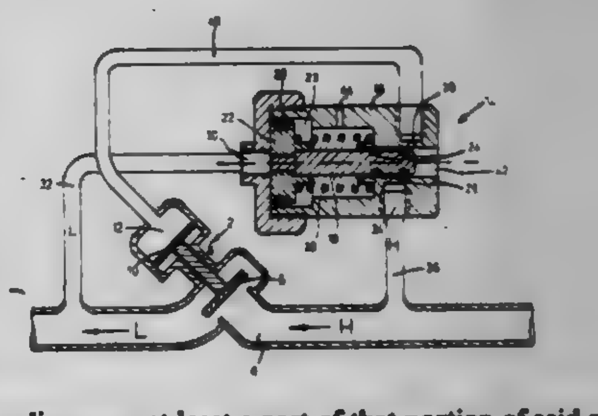
a third opening communicating with the control chamber of said control valve;

a first and a second venting opening leading to the outside of said pilot valve;

a flexible diaphragm clamped along its peripheral edge betweeen said housing parts, dividing the interior of said housing into a first and a second chamber;

a plate member disposed in said second chamber, slidably fitting a portion thereof, and abutting said flexible diaphragm;

an elongated member, one end of which abuts against, and is centered and rotatably supported by said plate member, said elongated member having adjacent to its other end two spaced-apart sealing means defining a fluid-tight third chamber between an outer surface of said member and an inner surface of one of said housing parts, said elongated member being further provided with an external thread



extending over at least a part of that portion of said member which is closer to said first end, and drive means at said second end permitting said member to be rotated from the outside of said pilot valve;

shoulder means disposed in said second chamber, having an internal thread by means of which it is at least partly threaded onto the threaded portion of said elongated member;

a spring disposed in said second chamber and interposed between said shoulder means and an abutment surface of said second chamber, said spring serving as a reference force, which force is adjustable by rotation of said elongated member;

the arrangement being such that when the fluid pressure in the downstream portion of said obturating means exceeds a predetermined value, said elongated member is moved in response to pressure at said first opening to alter the flow path between said third opening and one of the other openings of said housing to effect a change of pressure in said control chamber, whereby a controlled movement of said obturating means is effected to maintain the constancy of the pressure in said line.

4,325,407

PRESSURE CONTROL UNIT

Rolf Weiler, Ffm.-Sindlingen, and Bernd Schopper, Frankfurt am Main, both of Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Filed Jul. 17, 1980, Ser. No. 169,695

Claims priority, application Fed. Rep. of Germany, Jul. 27, 1979, 2930476

Int. Cl.³ B60T *8/26*

U.S. Cl. 137—493.2 17 Claims

1. A pressure control unit comprising:

a housing having a bore therein coaxial of a longitudinal axis;

an inlet chamber disposed in said bore;

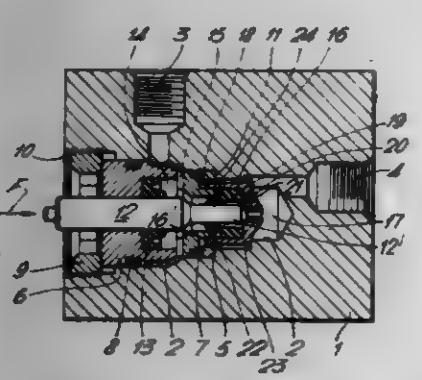
an outlet chamber spaced from said inlet chamber disposed in said bore; and

a valve arrangement disposed in said bore between said inlet chamber and said outlet chamber including a valve to close a first connection between said inlet chamber and said outlet chamber when a predetermined switching pressure determined by a control force applied to said valve is achieved and a check valve to open a second connection between said inlet chamber and said outlet chamber upon a pressure reduction in said inlet chamber relative to pressure in said outlet chamber;

said valve including

a tappet disposed coaxial of said axis biased by said control force toward said outlet chamber to establish said switching pressure,

a substantially cylindrical elastic body disposed coaxial of said axis in an operative association with and surrounding said tappet, the outer surface of said valve body



being spaced from the inner surface of said bore, the outer surface of said tappet and the inner surface of said valve body cooperating to provide at least a portion of said second connection, and

means surrounding said valve body to reinforce the outer surface thereof to prevent deformation of said valve body toward the inner surface of said bore,

said means being a cylinder enclosing said valve body, said cylinder being part of a cup-shaped cap having an open end directed toward said inlet chamber and a bottom in said operative association with said tappet, the end of said open end of said cap being a stop to limit the closing movement of said valve body,

said open end of said cap engaging an annular groove of a sleeve fixed in said bore adjacent said inlet chamber coaxial of said axis, said groove being parallel to said axis.

4,325,408

EXHAUST PRESSURIZATION OF LOAD RESPONSIVE SYSTEM

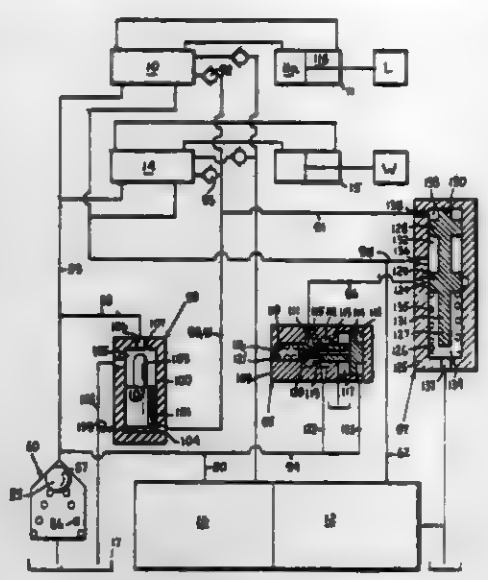
Tadeusz Budzich, 80 Murwood Dr., Moreland Hills, Ohio 44022

Continuation-in-part of Ser. No. 49,660, Jun. 18, 1979, Pat. No. 4,249,570. This application Jan. 26, 1981, Ser. No. 228,683

Int. Cl.³ F15B 13/08

U.S. Cl. 137—596.2 8 Claims

1. A fluid power and control system supplied with pressure fluid by a pump and connected to an exhaust manifold communicable with a reservoir, said fluid power and control system comprising a control valve assembly connected to said pump and said exhaust manifold, said valve assembly having first and second load chambers, positive load pressure sensing means, negative load pressure sensing means, isolating means responsive to pressure in said negative load pressure sensing means and operable to selectively disconnect said control valve assembly from said pump, and fluid replenishing means operable to interconnect for one way fluid flow said load chambers and said exhaust manifold, exhaust manifold pressurizing means, exhaust pressure relief valve means operably connected to said exhaust manifold, pressure reducing valve means interconnect-



ing said pump and said exhaust manifold and deactivating means of said pressure reducing valve means.

4,325,409

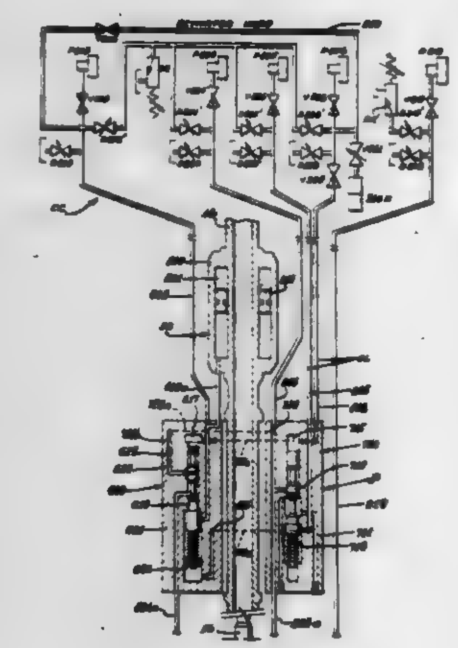
PILOT VALVE FOR SUBSEA TEST VALVE SYSTEM FOR DEEP WATER

William M. Roberts, Deer Park, Tex., assignor to Baker International Corporation, Orange, Calif.

Division of Ser. No. 843,154, Oct. 10, 1977, Pat. No. 4,234,043. This application Nov. 13, 1979, Ser. No. 93,752

Int. Cl.³ E21B 34/16; F15B 11/16

U.S. Cl. 137—596.14 5 Claims



1. A fluid pressure operated valve assembly for sequentially diverting a first fluid flowing therethrough and allowing the flow of a second fluid therethrough; comprising: first valve means having passage means therethrough for a first pressurized fluid and a diverting opening, a first valve member shiftable between a first position closing said diverting opening and a second position establishing communication between said diverting opening and said passage means, means responsive to first and second operating fluid pressures for holding said first valve member in said first position thereof and moving said

first valve member to said second position thereof; and second valve means having passage means therethrough for a second pressurized fluid, a second valve member shiftable between a first position closing said passage means for said second pressurized fluid and a second position opening the same, means responsive to said first and second operating fluid pressures for holding said second valve member in said first position thereof and moving said second valve member to said second position thereof, and means for conducting said first and second operating fluid pressures to said first and to said second valve means.

4,325,410

CONTROL DEVICE FOR A HYDRAULICALLY OPERATED LOAD

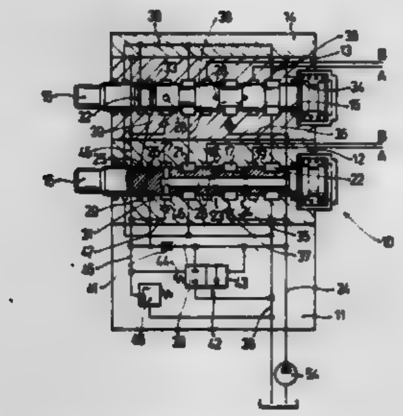
Wolfgang Bernhardt, Tubizer Str. 21, 7015 Korntal-Münchingen; Heinz Kleinschmidt, Bauernstr. 71, 7257 Ditzingen, and Joachim Heiser, Bockelstr. 92A, 7000 Stuttgart 75, all of Fed. Rep. of Germany

Filed Dec. 13, 1978, Ser. No. 969,218

Claims priority, application Fed. Rep. of Germany, Jan. 31, 1978, 2804045

Int. Cl.³ F15B 13/04, 13/08

U.S. Cl. 137—596.13 10 Claims



1. In a load independent flow control device for a hydraulically operated load, including at least one multiway control valve having a housing provided with a bore and a piston movable in said bore, said control valve defining at least one choke channel, a pressure fluid inlet channel connectable to a pump, a return channel connectable to a tank and a load channel connectable to a load, the control valve connecting via the choke channel, in an intermediate position of the piston, the load channel to the inlet channel, and in an end position of the piston, the load channel to the return channel, a combination comprising a manometer valve having a manometer piston biased at one end by a spring and connected at the other end to the inlet channel, a pressure difference across said choke channel being applied to both ends of the manometer piston to maintain a constant pressure difference across said choke channel, a first control conduit including a control choke and being connected to the inlet channel and, through said control choke and said control valve, to the return channel, said first control conduit having a branch conduit connected downstream of said control choke to the spring biased end of the manometer piston; an additional choke channel provided in said control valve and connectable, in said intermediate control position of the control valve piston in which the first-mentioned choke channel is effective and said first control conduit is open, to said branch conduit of said first control conduit to increase the spring bias on the manometer piston, the control valve piston being further movable into said end control position in which the first-mentioned choke channel is ineffective and the first control conduit is interrupted.

4,325,411

SEALS FOR GAS ISOLATORS

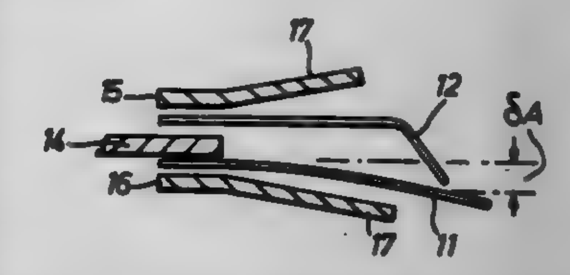
Anton F. Squirrell, Samstagern, Switzerland, assignor to Grovag Grossventiltechnik A.G., Glarus, Switzerland

Filed Sep. 15, 1980, Ser. No. 187,580

Claims priority, application United Kingdom, Oct. 12, 1979, 35497/79

Int. Cl.³ F16K 11/14

U.S. Cl. 137—601 5 Claims



1. A seal for a gas isolator which comprises a cantilever leaf spring to be attached to one of a fixed frame and a movable member of the isolator and a bias spring acting on the leaf spring, wherein the leaf spring is not straight when unstressed whereby in the sealing position of the seal the stress induced in the bias spring will be the same as that induced in the leaf spring where the bias spring and the leaf spring seal have the same section modulus per unit length of seal.

4,325,412

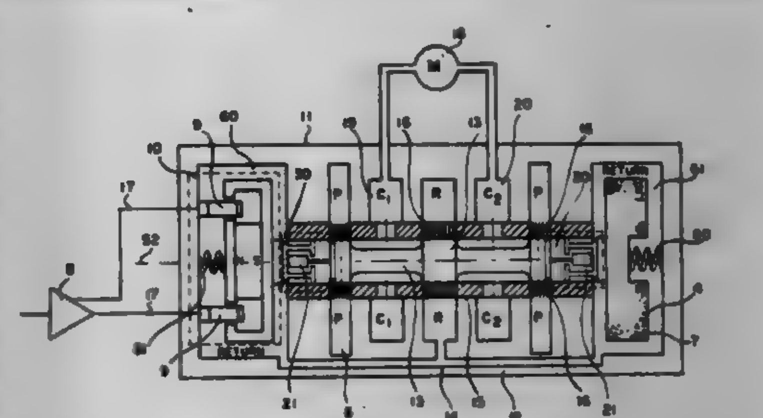
SINGLE STAGE HYDRAULIC VALVE

Paul Hayner, Gilford, N.H., assignor to Sanders Associates, Inc., Nashua, N.H.

Filed Feb. 11, 1980, Ser. No. 120,039

Int. Cl.³ F15B 13/044

U.S. Cl. 137—625.65 16 Claims



1. A single stage hydraulic servo system with hydraulic fluid input, control and return ports, said hydraulic system is responsive to electric input signals, said system comprising:

(a) a valve spool that is positioned within a valve sleeve;

(b) means for moving said valve spool, said moving means being coupled to said spool and said electric signal so that the distance moved by said valve spool will be proportional to said electric signal;

(c) means for stabilizing said system from external accelerations of said system, said stabilizing means being coupled to the end of said spool; and

(d) means for centering said spool within said sleeve, said centering means being on the periphery of each end of said spool to insure that said spool will be centered along an imaginary line that passes through the center of said sleeve.

4,325,413

SUPPORTING SHEATH FOR A LONGITUDINALLY SHIRRED PACKAGING TUBE

Richard Lenhart; Armin Köstner, both of Wiesbaden; Günter Gerigk, Oberursel, and Klaus-Jürgen Bittner, Wiesbaden, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jun. 6, 1980, Ser. No. 157,201

Claims priority, application Fed. Rep. of Germany, Jun. 8, 1979, 2923188

Int. Cl.³ F16L *11/08, 11/10*

U.S. Cl. 138—109 18 Claims

1. A functional unit suitable for the manufacture of sausages, comprising:

a longitudinally shirred packaging tube; and

a supporting sheath surrounding said shirred packaging tube, said supporting sheath including:

a generally tubular shaped supporting sheath comprised of a thermoplastic synthetic resinous material and having an inside diameter slightly larger than the outside diameter of said shirred packaging tube and a length substantially greater than the length of said shirred packaging tube, so that when said shirred packaging tube is placed inside of said supporting sheath, two projecting ends of said supporting sheath remain;

a generally planar disk element on each of the projecting ends of said supporting sheath, each disk element including a central aperture therein, each of said disk elements having an outer diameter which is approximately equal to the diameter of said supporting sheath;

a first of said disk elements being slid with its aperture over one of the projecting ends of said supporting sheath and abutting against a first end of said shirred packaging tube contained in said supporting sheath, said first disk element contacting said supporting sheath at least along its planar surface facing away from said packaging tube and along its outer circumferential edge when said sheath is turned back 180° upon itself forming a first turned-back projecting end;

a second of said disk elements being slid with its aperture over the other of the projecting ends of said supporting sheath and abutting against the second end of said shirred packaging tube contained in said supporting sheath, said second disk element contacting said supporting sheath at least along its planar surface facing away from said packaging tube and along its outer circumferential edge when said sheath is turned back 180° upon itself forming a second turned-back projecting end; and

each of said turned-back projecting ends of said supporting sheath having a permanently form stable configuration produced by heat forming.

4,325,414

HOLLOW BODY ASSEMBLIES

Rudolf Schaefer, Brauerstrasse 35, D-4100 Duisburg 1, Fed. Rep. of Germany

Filed Jul. 7, 1980, Ser. No. 166,562

Claims priority, application Fed. Rep. of Germany, Jul. 4, 1979, 2927040

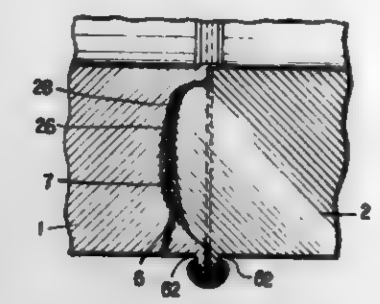
Int. Cl.³ F16L *9/22*

U.S. Cl. 138—155 19 Claims

1. A hollow body assembly comprising:

at least first and second individual elements, having longitudinal axes, adapted for connecting together to form said hollow body, at least one of said elements having a tongue on its connecting surface and the other element having a groove on its connecting surface for mating with said tongue thereby forming an annular cavity between said tongue and the surface of said groove when said individual elements are connected, the axial distance between said tongue and the surface of said groove being greater near the center of said tongue than at the edges thereof;

first and second circumferential flanges disposed on said first and second elements, respectively, at said connecting surfaces, each of said flanges having a transverse outer



face perpendicular to said longitudinal axis and an inner face, said inner face being oblique to said transverse direction so that the width of said flange in the axial direction increases toward the base of said flange; and

a circumferential ring surrounding said first and second flanges and having an inner channel, said ring having side edges for gripping the oblique surfaces of said first and second flanges when said first and second elements are connected, the distance between said side edges when said ring is in its unstressed condition being less than the distance between the base points of the oblique surfaces of the flanges.

4,325,415

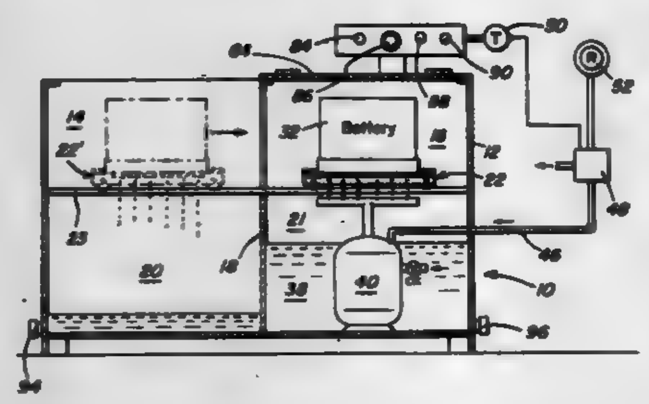
BATTERY CLEANING APPARATUS

Gordon G. Miller, Jr., Richmond, Va., assignor to Gordon G. Miller & Associates, Inc., Richmond, Va.

Filed Apr. 15, 1980, Ser. No. 140,429

Int. Cl.³ B08B *3/02;* B65B *3/02;* B67C *1/00*

U.S. Cl. 141—1 13 Claims



1. An apparatus for cleaning the interior of the cells of an electrolytic battery, comprising:

a wash tank;

a cleaning solution disposed in said wash tank;

battery support means for supporting said battery in an inverted position over said wash tank; and

cleaning fluid spray means for spraying said cleaning fluid and drying air into the individual cells of said battery including,

a pressure tank immersed in said cleaning fluid, valve means for filling said pressure tank with the fluid in the wash tank, spray manifold means connected to said pressure tank for directing the fluid into the cells of the battery and pressure means for applying pressure to said tank forcing said fluid and drying air through said spray manifold means.

4,325,416

APPARATUS FOR DETERMINING AND/OR CONTROLLING A FIXED FILLING LEVEL IN A CONTAINER

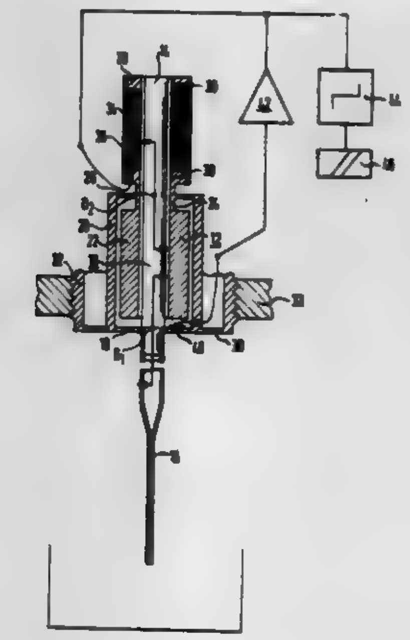
Eberhard F. Hermann, Sonnenweg 3, D7888 Rheinfelden-Eichsel, Fed. Rep. of Germany

Filed May 16, 1980, Ser. No. 150,549

Claims priority, application Fed. Rep. of Germany, Aug. 20, 1979, 2933618

Int. Cl.³ B65B *3/26*

U.S. Cl. 141—95 21 Claims



1. An apparatus for determining the fill level of material in a container, comprising: a vibrating structure having first and second vibrator elements whose vibrations are attenuated when engaging filling material present in the container, one of said vibrator elements being arranged coaxially with respect to the other vibrator element and at least partially surrounding said other element in spaced relation thereto, both of said vibrator elements being flexibly mechanically coupled for individual oscillatory vibration in a common plane about mutually spaced axes, and being so dimensioned and configured to have the same no-load resonant frequency, means for exciting said elements into vibration of mutually opposite directional phase, the first of said vibrator elements extending downwardly and adapted to engage material in the container to implement determining the fill level thereof.

4,325,417

CONNECTOR MEMBER FOR SEALED CONDUITS UTILIZING CRYSTALLINE PLASTIC BARRIER MEMBRANE

Daniel R. Boggs, Vernon Hills; Peter C. Kwong, Palatine, and Dean G. Lauria, Lake Zurich, all of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Apr. 6, 1979, Ser. No. 27,575

Int. Cl.³ B65B *3/04*

U.S. Cl. 141—98 22 Claims

15. A connector element for providing sealed connection with a second connector element of similar design, said connector element comprising a hollow, transparent housing communicating with a conduit member, the hollow interior of said housing being sealable from the exterior, some of the wall of said housing comprising an opaque wall portion separating the hollow housing interior from the exterior and sealable by connection to said second connector element with said opaque wall portion in facing contact with a corresponding opaque wall portion of the second connector element, said facing opaque wall portions being adapted to be openable by exposure to radiant energy from the exterior through said transparent housing, and retention means carried by the connector

element for retention to said second connector element, the improvement comprising, in combination:

said opaque wall portion being made of a significantly crystalline thermoplastic material.

4,325,418

APPARATUS FOR FILLING CONTAINERS

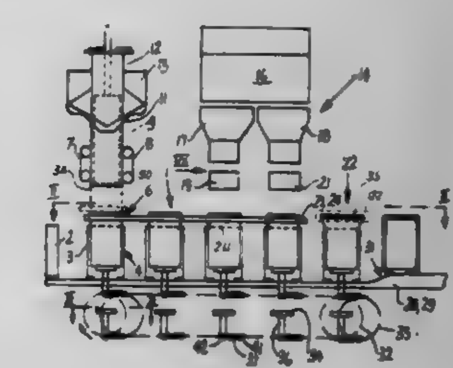
Karl Henle, Reinbek, Fed. Rep. of Germany, assignor to Hauni-Werke Korber & Co. KG., Hamburg, Fed. Rep. of Germany

Filed Feb. 7, 1980, Ser. No. 119,543

Claims priority, application Fed. Rep. of Germany, Feb. 23, 1979, 2907015

Int. Cl.³ B65B *43/42*

U.S. Cl. 141—182 13 Claims



1. Apparatus for transferring a flowable material into successive containers having open ends, comprising means for transporting containers along a predetermined path; a metering device located above a portion of said path and arranged to accumulate and discharge metered quantities of flowable material; a receptacle disposed intermediate said metering device and a container in said portion of said path and having a bottom wall and a material evacuating opening, said receptacle being movable between a first position in which said wall is closely adjacent to said metering device to receive a metered quantity of material and a second position in which said opening is at least closely adjacent to the open end of a container in said portion of said path at a level below said wall and said wall slopes downwardly so that the metered quantity of material enters the container in said portion of said path by sliding off said wall and by passing through said opening; means for moving said receptacle between said positions; a mobile closure for the opening of said receptacle; and means for moving said closure with reference to said bottom wall to a closed position not later than when said receptacle assumes said first position so that the opening is closed during admission of a metered quantity of material and to an open position not later than when said receptacle assumes said second position so that the material which slides off said bottom wall can pass through said opening.

4,325,419

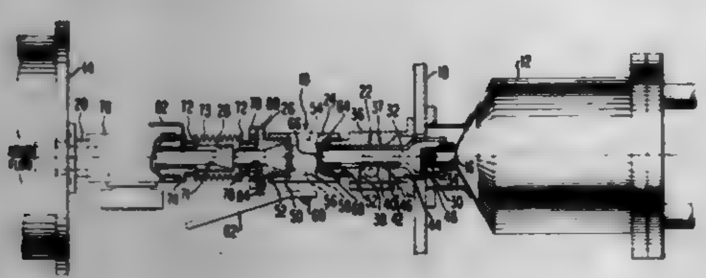
APPARATUS FOR TRANSFERRING PURE ABRASIVE MATERIAL FROM ONE HOPPER TO ANOTHER

Nicholas F. Gubitose, Moosic, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Oct. 20, 1980, Ser. No. 198,591

Int. Cl.³ B65B *1/28*

U.S. Cl. 141—302 10 Claims



1. Apparatus for transferring material from one hopper to another, said apparatus comprising:

first funnel means having a passage therethrough, said first funnel means having a valve member adjacent one end and being adapted to be mounted adjacent to the bottom of the one hopper with the passage in communication with a feed opening in the bottom thereof, said first funnel means being movable between a first position wherein said valve member closes the feed opening and a second position wherein said valve opens the feed opening;

valve means adjacent the other end of said first funnel means, said valve means being movable between a closed position preventing flow from the passage and an open position allowing flow from the passage; and,

collector means between said other end of first funnel means and said valve means, said collector means being movable between a closed position overlying said passage when said valve means is in its closed position and an open position spaced from said passage when said valve means is in its open position.

4,325,420

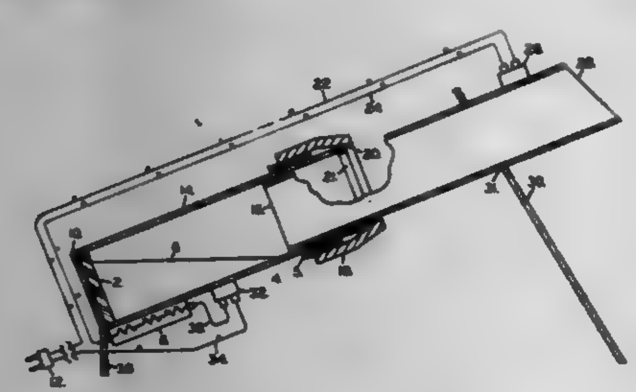
APPARATUS FOR PREPARING WOOD FOR BENDING

Haskel Zeloof, 42 Beatley Ave., Trenton, N.J. 08619

Filed Dec. 3, 1979, Ser. No. 99,859

Int. Cl.³ B27H *1/00*

U.S. Cl. 144—271 9 Claims



1. Improved apparatus for boiling water and steaming wood in preparation for bending, comprising tube means for holding a mass of water, said means having an open and a closed end, a front leg supporting the open end at an elevation above the closed end, heater means positioned in heat transfer relation to said closed end for boiling said water; wherein the improvement comprises means for terminating the action of said heater means on a predetermined reduction of the mass of water.

4,325,421

METHOD AND APPARATUS FOR CUTTING AND TRIMMING SHINGLES

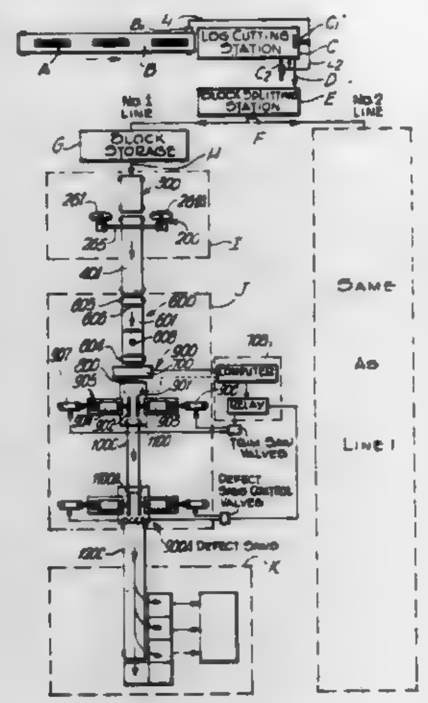
Michael Janovick, P.O. Box 1444, Ladysmith, British Columbia, Canada (V0R 2E0); Donald F. Hammond, P.O. Box 975, and Winston Harvey, both of Lake Cowichan, British Columbia, Canada (V0R 2G0)

Filed Nov. 30, 1979, Ser. No. 98,941

Claims priority, application Canada, Dec. 5, 1978, 317403

Int. Cl.³ B27C *9/00*

U.S. Cl. 144—326 R 28 Claims



1. A method of making tapered shingles comprising:

(a) clampingly holding a block of material to be cut into shingles;

(b) conveying the block, while it is clamped, along a selected path through the clamping mechanism;

(c) causing relative movement between a first cutting means and the clamped block to cut a first shingle from the leading face of the block tapering in thickness in one direction relative to the length of the shingle; and

(d) causing relative movement between a second cutting means and the clamped block to cut a second shingle from the block tapering in thickness in a direction opposite to that of the first shingle, said first and second cutting means cutting respectively along planes inclined relatively to one another and traversing the path of travel of the block.

4,325,422

PNEUMATIC TIRE AND WHEEL RIM ASSEMBLIES

Michael R. Corner, Coventry; Ian Kemp, Tamworth; Barrie J. Allbert, and Tom French, both of Sutton Coldfield, all of England, assignors to Dunlop Limited, London, England

Filed Dec. 13, 1979, Ser. No. 103,390

Claims priority, application United Kingdom, Dec. 29, 1978, 50351/78

Int. Cl.³ B60C *15/02, 3/00;* B60B *21/00*

U.S. Cl. 152—352 R 13 Claims

1. A pneumatic tire and wheel rim assembly comprising:

a tire having a reinforced tread portion, a pair of sidewalls and a pair of axially spaced tire beads each with a substantially inextensible bead reinforcement;

a wheel rim having a pair of axially spaced bead seats defined by grooves in each of which a respective one of said tire beads is located, each groove comprising a base portion and a pair of opposed side portions which extend in a generally radially outwards direction from said base portion;

said reinforced tire tread portion having an axial width greater than the axial distance between the axially outer side portions of said grooves;

each of said side portions projecting radially outwards beyond the radially inner surface of the adjacent inextensible bead reinforcement whereby each tire bead is retained against movement in an axial direction, each rim bead seat having means in engagement with the associated tire bead to restrict rotation of said tire bead relative to said rim bead seat.

4,325,423

PNEUMATIC TIRES, ESPECIALLY BELTED TIRES

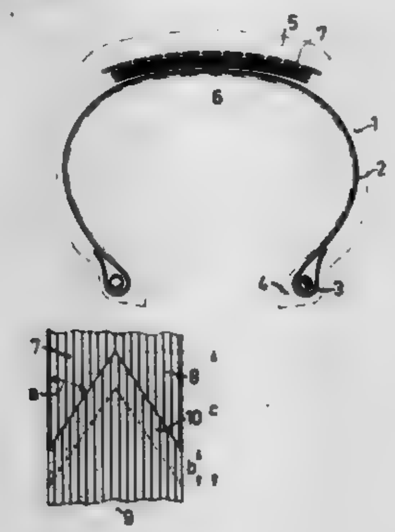
Hans Seitz, Langenhagen, and Heinrich Huinink, Garbsen, both of Fed. Rep. of Germany, assignors to Continental Gummi-Werke Aktiengesellschaft, Hanover, Fed. Rep. of Germany

Filed Apr. 24, 1980, Ser. No. 143,427

Claims priority, application Fed. Rep. of Germany, Apr. 24, 1979, 2916445

Int. Cl.³ B60C *9/22;* B29H *17/10*

U.S. Cl. 152—361 R 10 Claims



1. A pneumatic tire including a belt, having a carcass and a tread, said tire comprising an annular bandage-like reinforcing insert which is pull-resistant in the peripheral direction of said tire, extends essentially over the width of said tread, and is arranged between said tread and said carcass, in position between said tread and said belt, said reinforcing insert including pull-resistant strength carriers in the form of threads, cords, cables, strands, and the like arranged in at least one cord fabric strip and essentially extending in the peripheral direction of said tire, said reinforcing insert having at least one overlapping area constant over the width of said belt and extending at an angle to the peripheral direction of said tire to unite said at least one cord fabric strip into an annular body, said overlapping area including segments inclined to the peripheral direction of said tire on both sides of the center line of said tire in such a way as to be also essentially symmetrical to the center line of said tire both sides of the center line.

4,325,424

SYSTEM AND PROCESS FOR ABATEMENT OF CASTING POLLUTION, RECLAIMING RESIN BONDED SAND, AND/OR RECOVERING A LOW BTU FUEL FROM CASTINGS

Karl D. Scheffer, 121 Governor Dr., Scotia, N.Y. 12302

Filed Mar. 14, 1980, Ser. No. 130,256

Int. Cl.³ B22D *23/00, 27/15*

U.S. Cl. 164—5 11 Claims

1. An improved mold system for no-bake casting mold assemblies comprising a cope, a drag and a no-bake foundry sand composition including an organic binding material, the improvement comprising

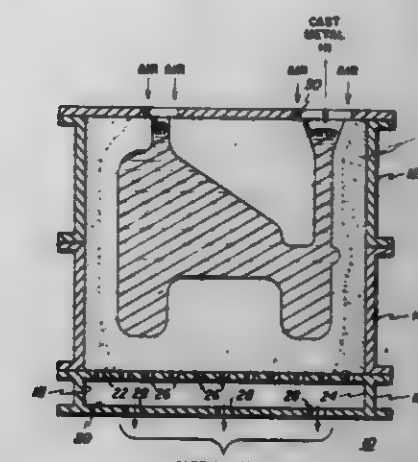
a vacuum plenum member;

a mold assembly disposed on the vacuum plenum and oriented therewith so that the bottom surface of the mold assembly has good air and gas communication means with the vacuum plenum;

a vacuum source means;

conduit means joining the vacuum source means to the vacuum plenum member;

the vacuum source means when operative induces the ambient about the mold assembly to flow through the mold and into the vacuum plenum member;



means for collecting a low BTU content gas comprising gaseous products and condensate matter evolved by the mold assembly into the vacuum plenum member;

means for mixing combustion air with the low BTU content gas to form a combustable mixture, and

means for burning the combustible mixture to generate thermal energy.

4,325,425

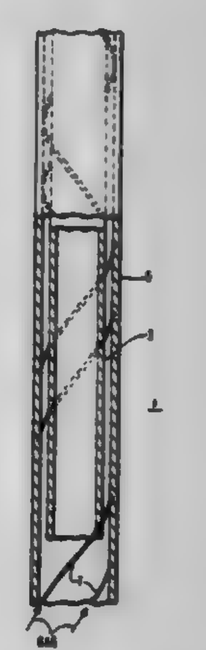
METHOD FOR LIMITING HEAT FLUX IN DOUBLE-WALL TUBES

Jaw-Yeu Hwang, Tampa, Fla., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jul. 28, 1980, Ser. No. 172,999

Int. Cl.³ F28F *27/00*

U.S. Cl. 165—1 4 Claims



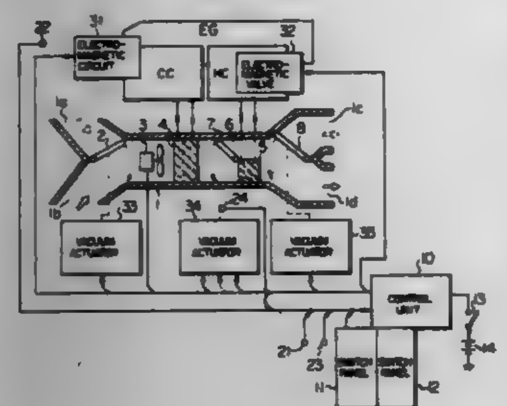
1. A method of limiting the heat flux in a portion of a double-wall tube having an inner and outer wall, said method comprising the steps of:

heat treating the tube so that the outer wall separates from the inner wall as a differential temperature across the tube reaches a predetermined level; and

supplying a mixture of gases between the tube walls;

whereby the greater the differential temperature the greater the separation between the tube walls and the greater the thermal resistance of the tube and gas mixture.

4,325,426
AIR CONDITIONER SYSTEM
Fumio Otsuka, Kariya; Teiichi Nabeta, Okazaki; Yasufumi Kojima, Gifu; Takeo Matsushima; Yasuhiro Fujioka, both of Toyota, and Eiichi Wada, Okazaki, all of Japan, assignors to Nippondenso Co., Ltd., Kariya and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of, Japan
Filed Jun. 5, 1980, Ser. No. 156,797
Claims priority, application Japan, Jun. 12, 1979, 54/74420
Int. Cl.³ F25B *13/00;* G05D *15/00*
U.S. Cl. 165—2 5 Claims

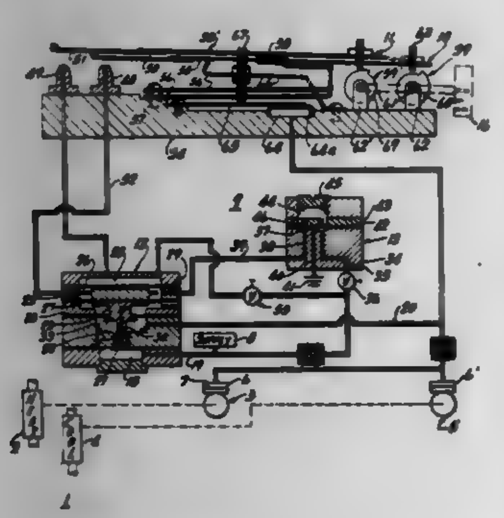


1. In an air conditioner system for an automotive vehicle having means for adjusting the amount of heat radiated into a compartment of an automotive vehicle, means for sensing an actual temperature of said vehicle compartment, means for establishing a desired temperature of said vehicle compartment, and control means for determining an amount of adjustment of said adjusting means in accordance with controlling conditions including said actual temperature sensed by said temperature sensing means and said desired temperature established by said establishing means, the improvement wherein said control means includes:

means for temporarily increasing said amount of adjustment to vary the temperature of said vehicle compartment to exceed said desired temperature; and

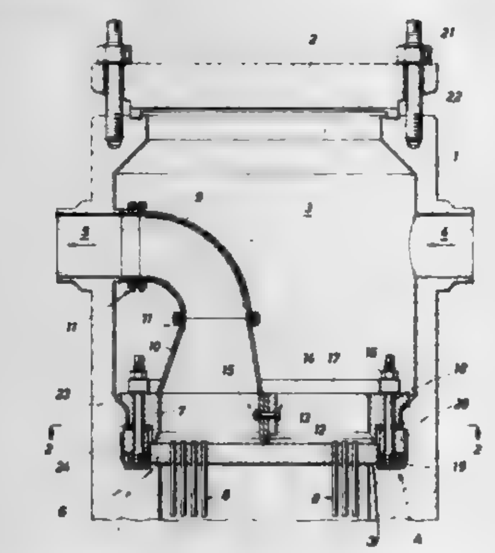
means for terminating said increase in said amount of adjustment after said sensed actual temperature has reached or nearly reached said desired temperature.

4,325,427
DUAL THERMOSTAT CONTROL APPARATUS WITH DEAD BAND RESPONSE
Scott B. Bramow, Oak Creek, and Thomas M. Holloway, Mukwonago, both of Wis., assignors to Johnson Controls, Inc., Milwaukee, Wis.
Filed Nov. 6, 1979, Ser. No. 92,417
Int. Cl.³ F25B *29/00;* G05D *23/00*
U.S. Cl. 165—27 18 Claims



1. A dual thermostatic control apparatus for actuating a heating and cooling apparatus to condition air in a conditioned space, comprising temperature responsive means establishing first and second varying level signals having a level which changes over a signal range with changes in temperature, signal limit means to limit the first of said signals to a selected maximum reference level within said signal range, means coupled to said temperature responsive means and to said signal limit means to compare the level of said signals and establishing an output signal for operating said heating and cooling apparatus and providing heating when one of said signals is to one side of said reference level and cooling when the other of said signals is to the other side of said reference level to produce an automatic switchover between cooling and heating in accordance with the relative level of said signals with respect to said reference level.

4,325,428
HEAT EXCHANGER
Pieter J. Schuurman, The Hague, Netherlands, assignor to Shell Oil Company, Houston, Tex.
Filed Jan. 15, 1980, Ser. No. 112,261
Claims priority, application Netherlands, Jan. 30, 1979, 7900710
Int. Cl.³ F28F *9/02*
U.S. Cl. 165—72 6 Claims



1. A heat exchanger comprising:

an outer shell or housing adapted to be opened at one end for installing a tube bundle therein,

a tube bundle of a plurality of parallel tubes,

a tube plate having the ends of the parallel tubes secured thereto and being of a diameter to be positioned within the shell,

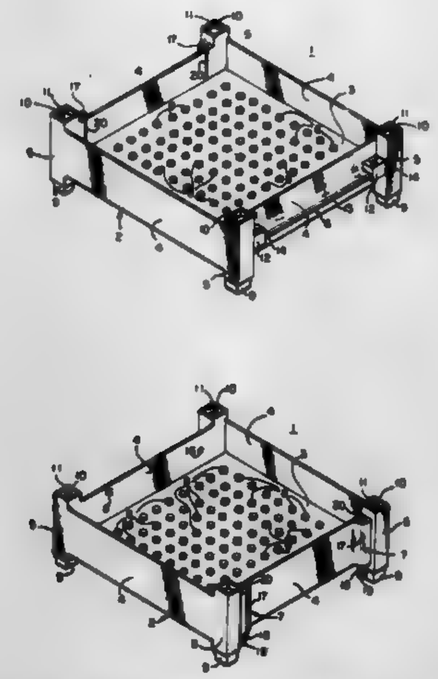
a seating surface formed on the inner wall of said shell and displaced axially from the open end thereof, said seating surface forming stop means against which the tube plate of the tube bundle can be pressed, said seating surface having a diameter less than that of the tube plate,

collar means formed on the inner wall of said shell above or to the open-end side of said seating surface and being displaced axially from the open end thereof a distance less than that of said seating surface, said collar means having a diameter greater than that of said tube plate,

a gland flange positioned against one side of the tube plate while the opposite side of the tube plate is positioned on said seating surface in the shell, and

connector means operatively carried within the outer shell of the heat exchanger for securing the tube plate and land flange to the inner wall of said shell adjacent said collar means.

4,325,429
UNITARY BATTERY FORMATION TUB
William G. Bevan, Birdsboro, Pa., and Larry L. Sterling, Frankfort, Ind., assignors to General Battery Corporation, Reading, Pa.
Filed May 27, 1980, Ser. No. 153,407
Int. Cl.³ F28F *25/02, 9/26*
U.S. Cl. 165—80 E 19 Claims



1. An apparatus for forming a plurality of batteries in a cooling fluid, the apparatus comprising:

(a) a fluid containing body having a base and opposing side walls;

(b) fluid inlet means positioned externally of a first side wall of the fluid containing body and including first manifold means associated with the first side wall and having an orifice which communicates with the fluid containing body; and

(c) fluid outlet means positioned externally of a second side wall of the fluid containing body and including second manifold means associated with the second side wall and having an aperture which communicates with the fluid containing body;

(d) wherein the fluid inlet means includes fluid input means and the fluid outlet means includes fluid drain means; and

(e) wherein the fluid containing body is capable of being stacked with at least another fluid containing body to form a vertical array in which the fluid inlet means of a lower fluid containing body is aligned substantially directly beneath the fluid drain means of an upper fluid containing body.

4,325,430
HEAT RECAPTURE DEVICE
Marlin V. Husa, Liberty, Nebr. 68381
Filed Nov. 17, 1980, Ser. No. 207,253
Int. Cl.³ F28D *7/02;* F28F *13/00;* F24B *7/00*
U.S. Cl. 165—135 7 Claims

1. A device for recapturing heat from a combustion exhaust stack comprising:

(a) a first conduit open at either end to allow the passage of combustion exhaust gases;

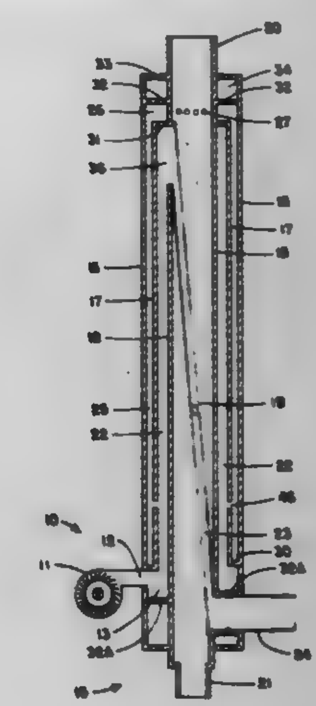
(b) connection means for sealingly connecting said first conduit to the combustion exhaust stack;

(c) a second conduit concentrically positioned around said first conduit, in uniform spaced relation thereto, and sealingly attached to the periphery of said first conduit by second conduit baffle plates positioned at either end of said second conduit, to form a conditioning air chamber;

(d) at least one transverse air duct intersecting and passing transversely through said first conduit and sealingly attached to the walls of said first conduit wherein said transverse air duct has a first end and a second end and wherein said first end is in fluid communication with said conditioning air chamber, and wherein said second end is in fluid communication with a conditioning air dispensing means;

(e) at least one conditioning air intake port in fluid communication with said conditioning air chamber and the ambient air;

(f) air forcing means for producing a conditioning airflow through said intake port, said conditioning air chamber, said transverse air duct and said conditioning air dispensing means said device further comprising a third conduit concentrically positioned around said second conduit in

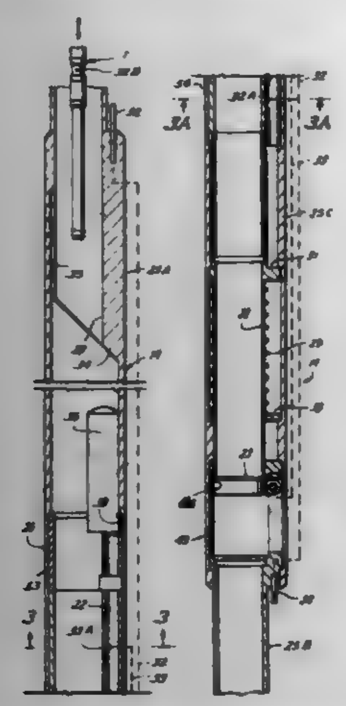


uniform spaced relation thereto, wherein said third conduit extends axially in either direction beyond the ends of said second conduit and wherein the ends of said third conduit are sealingly connected by third conduit baffle plates to the periphery of said first conduit to form an insulating air chamber; and wherein said insulating air chamber is in fluid communication with the ambient air through an insulating air intake means positioned near the lower end of said insulating air chamber and wherein said insulating air chamber is in fluid communication with the combustion exhaust gases through an insulating air exhaust means positioned near the upper end of said insulating air chamber.

4,325,431
FLOW CONTROLLING APPARATUS
Neil H. Akkerman, Kingwood, Tex., assignor to Ava International Corporation, Houston, Tex.
Filed Jul. 10, 1980, Ser. No. 168,435
Int. Cl.³ E21B *23/03, 34/10*
U.S. Cl. 166—117.5 16 Claims

1. A subsurface safety valve, comprising a mandrel having a bore therethrough whose axis is adapted to be substantially aligned with the axis of a tubing string when the mandrel is connected as part of the string, and a pocket to one side of the bore having an end which opens to the bore, a closure member mounted within the mandrel for movement between positions opening and closing the bore, means yieldably urging the closure member to its closed position, a tool adapted to be moved vertically through the tubing string and open end of the pocket into and out of a landed position within the pocket, and including means which is responsive to the supply of control

fluid thereto, when said tool is landed in the pocket, for moving the closure member to open position, and means through



which control fluid may be supplied from a remote source to said closure member moving means.

4,325,432

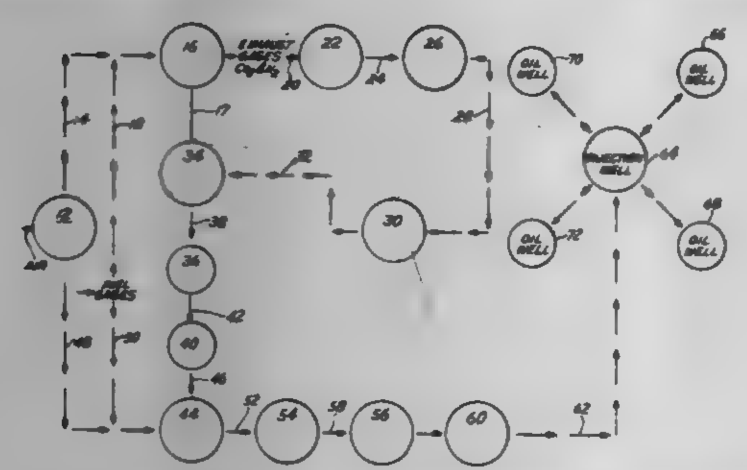
METHOD OF OIL RECOVERY

John T. Henry, 611 E. Market St., Farmer City, Ill. 61842

Filed Apr. 7, 1980, Ser. No. 138,098

Int. Cl.[3] E21B *43/24*; B01D *53/00*

U.S. Cl. 166—245 9 Claims



1. A method of recovering petroleum from a subterranean petroleum-containing formation, comprising: providing an injection well containing a flow path in fluid communication with at least a portion of the petroleum-containing formation, providing combustion byproducts from an internal combustion engine, rendering the combustion byproducts relatively inert by contacting same with manganese and/or manganese dioxide, pressurizing the combustion byproducts to about 1,500 p.s.i., heating the combustion byproducts to a predetermined temperature of at least 400° F., adding fuel gas to the combustion byproducts at the same time that they are heated to a predetermined temperature, and injecting the combined combustion byproducts and fuel gas into the petroleum-containing formation to increase the volume of the petroleum, to heat the petroleum to reduce the viscosity thereof to enhance the flow of the petroleum and to pressurize the petroleum to help force it to the production well so as to increase the recovery of petroleum from the petroleum-containing formation.

4,325,433

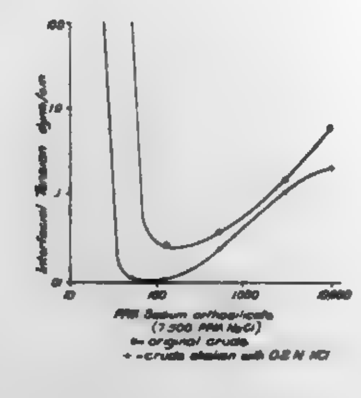
PRE-CAUSTIC FLOOD TREATMENT

Teh Fu Yen, Altadena, and Mankin Chan, Los Angeles, both of Calif., assignors to University of Southern California, Los Angeles, Calif.

Filed Jun. 27, 1980, Ser. No. 163,531

Int. Cl.[3] E21B *43/22*

U.S. Cl. 166—273 21 Claims



1. A process for the recovery of oil from a subterranean oil-bearing formation, penetrated by spaced injection and production wells, comprising:

introducing into said formation an aqueous solution of acid selected from mineral acids and organic acids having less than 5 carbon atoms per molecule, whereby to potentiate at least portions of oil in said formation to recovery by alkaline flooding; and

thereafter introducing floodwater into said formation to displace oil into said production well said floodwater consisting essentially of an aqueous alkaline solution.

4,325,434

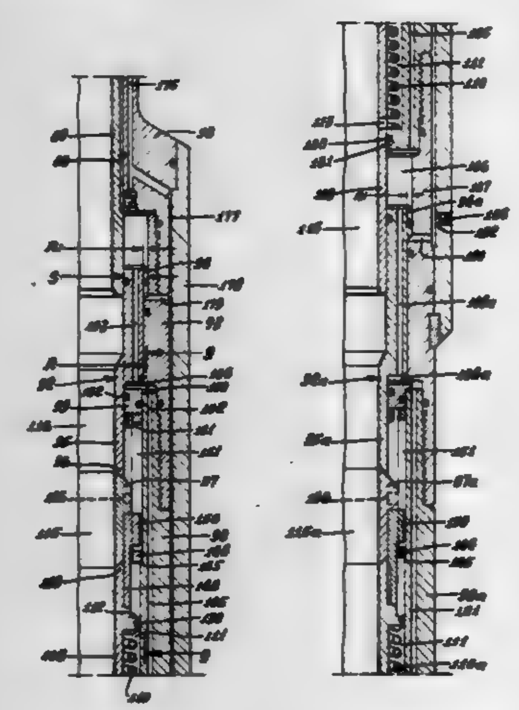
TUBING SHUT OFF VALVE

William M. Roberts, Deer Park, Tex., assignor to Baker International Corporation, Orange, Calif.

Division of Ser. No. 843,154, Oct. 10, 1977, Pat. No. 4,234,043. This application Nov. 13, 1979, Ser. No. 93,749

Int. Cl.[3] E21B *34/10*

U.S. Cl. 166—321 21 Claims



1. A subsea tubing shutoff valve assembly adapted to be connected to a tubular string and lowered and raised from the surface of the water, comprising: a tubular body structure connectible at its upper end to an upwardly extended portion of said tubular string; means at the lower end of said body structure releasably connectible with the upper end of a downwardly extending portion of the tubular string; valve means in said body including a member shiftable between a first position opening said valve means and permitting the flow of fluid through said body and a second position closing said valve means and preventing such flow; control fluid pressure responsive means for holding said valve member in said first position; means for supplying control fluid to said valve means; means for moving said valve member to said second position upon relief of control fluid pressure; means for supplying operating fluid pressure to said valve means; control means comprising subsea pilot valve means for relieving said control fluid pressure and applying said operating fluid pressure; each of said means for supplying control fluid and operating fluid pressure including fluid conduit means extending from the surface of the water to said pilot valve means; and pilot valve control means at the surface of the water for operating said pilot valve means; and accumulator means providing a subsea source of said operating fluid controlled by said valve means.

4,325,435

DRIVE TRANSMISSIONS FOR USE IN AGRICULTURAL IMPLEMENTS

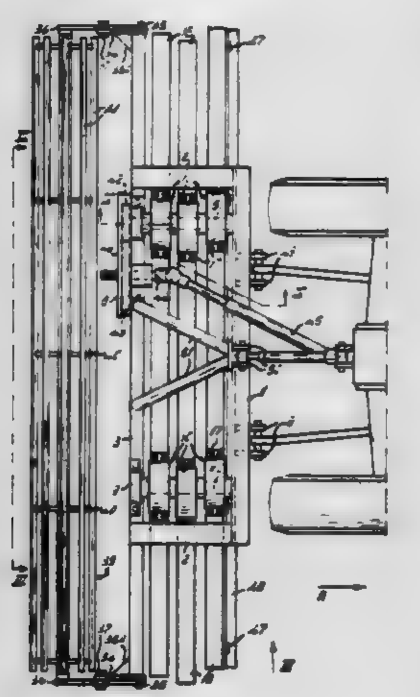
Cornelis van der Lely, 7, Brüschenrain, Zug, Switzerland

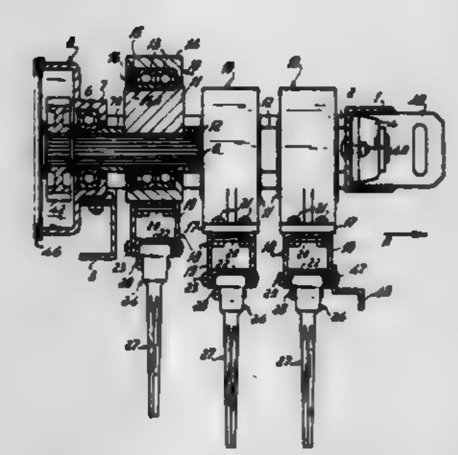
Continuation of Ser. No. 841,976, Oct. 13, 1977, abandoned. This application Jun. 26, 1979, Ser. No. 52,146

Claims priority, application Netherlands, Oct. 15, 1976, 7611396

Int. Cl.[3] A01B *19/06*

U.S. Cl. 172—102 6 Claims





1. A drive transmission for an agricultural implement comprising a frame and a plurality of elongated transverse composite beams supported on said frame and tine means depending from each of said beams, driving means, including a rotary driving shaft and a rotatable driven shaft, connected to each of said beams through respective eccentric mechanisms, each mechanism including an eccenter disc and a bearing, the eccenter discs being mounted along the lengths of the two shafts and said bearings surrounding said eccenter discs, said mechanisms being connected to corresponding beams through said bearings and said driving shaft being positioned for engagement by an input, said driving shaft and its respective eccentric mechanisms being connected to rotate said driven shaft through said beams and the eccentric mechanisms mounted along the length of said driven shaft, said two shafts being spaced apart and extending transverse to said beams, the opposite ends of said shafts being supported by transverse frame members that extend substantially parallel to one another, said members being interconnected to each other by further frame members that extend generally in the direction of implement travel and said further frame members being located laterally of the outer sides of said shafts, said composite beams being positioned below and within an enclosed portion of the frame formed by said frame members and further frame members, each beam comprising two separate beam members of channel-shaped cross-section with limbs, one of said beam members being nested inside the other, the limbs of said beam members projecting downwardly from their bases.

4,325,436

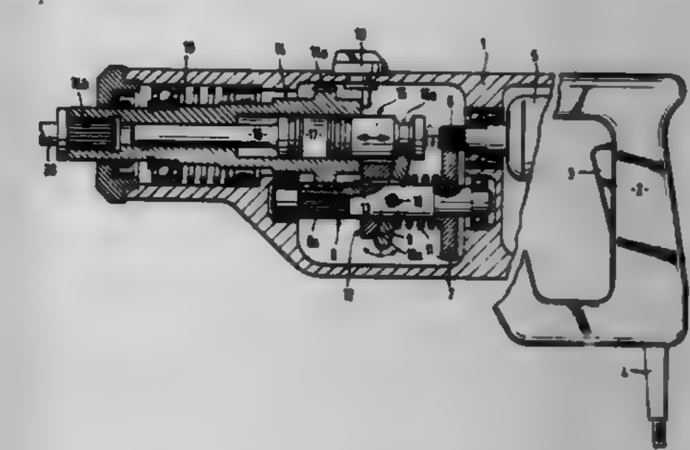
HAMMER DRILL OR CHIPPING HAMMER DEVICE

Martin Richter, Freising, and Wolfgang Regelsberger, Munich, both of Fed. Rep. of Germany, assignors to Hilti Aktiengesellschaft, Schaan, Liechtenstein

Filed May 21, 1980, Ser. No. 143,856

Int. Cl.[3] B25D *11/04*, *11/06*

U.S. Cl. 173—13 9 Claims



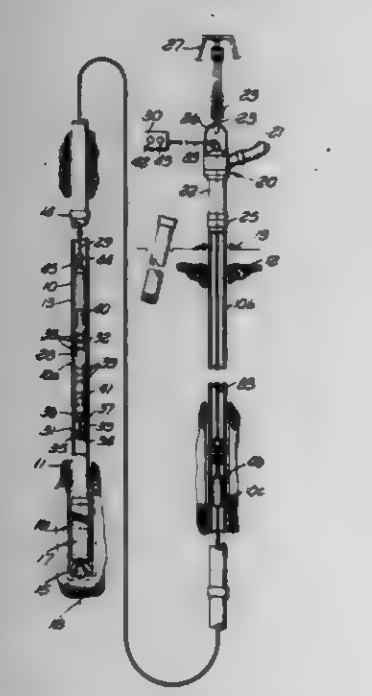
1. A device for use as a hammer drill or chipping hammer including a housing, an axially elongated working cylinder positioned within said housing and having a front end and a rear end, a percussion mechanism located within said working cylinder, means for operating said percussion mechanism, said percussion mechanism comprising an actuating piston mounted and reciprocally movable within said working cylinder, a percussion piston located within said working cylinder between said actuating piston and the front end of said working cylinder, said percussion piston being spaced axially from said actuating piston forming an air cushion therebetween so that the reciprocating action of said actuating piston is transmitted via the air cushion to said percussion piston, said operating means comprising a driving shaft spaced laterally from said working cylinder, and a disk mounted on said driving shaft and disposed in contact with said actuating piston, wherein the improvement comprises that said disk extends transversely of said driving shaft and includes an axle pivotally connecting said disk to said driving shaft so that the plane of said disk relative to the axis of said driving shaft can be angularly displaced for effecting variable axial displacement of said actuating piston within said working cylinder, and a control member positioned on and rotatable with said driving shaft, and said control member being displaceable in the axial direction of said

driving shaft for movement into contact with said disk for pivotally displacing said disk relative to the axis of said driving shaft.

4,325,437
ANVIL WITH TRAPPED FLUID
William S. Swindall, Cambridge, Canada, and Anil Mahyera, Salt Lake City, Utah, assignors to Joy Manufacturing Company, Pittsburgh, Pa.
Filed Apr. 28, 1980, Ser. No. 144,739
Int. Cl.³ B25D *9/04*
U.S. Cl. 173—131 4 Claims

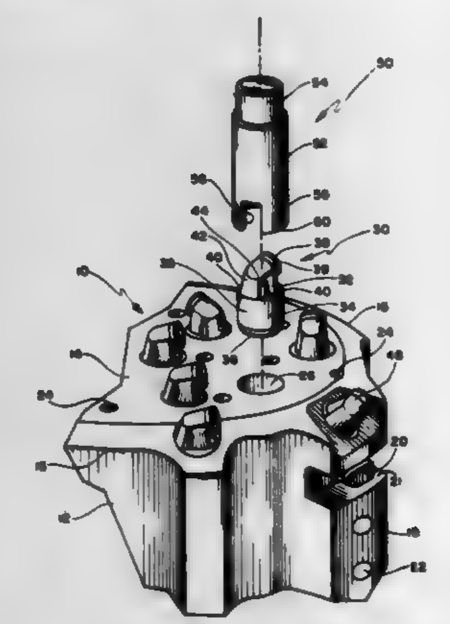
1. In a hydraulic impactor of the type in which a coupling having a stepped through bore transfers energy through a liquid from a reciprocating piston to a driven member by having an extending nose portion of the piston impact upon a liquid within the coupling when the nose portion enters the bore from one end while an extending stem portion of the driven member is slidably received within the other end of the bore the improvement comprising, said nose portion having the cross sectional area of the portion thereof having the largest cross sectional area equal to the cross sectional area of the largest cross sectional portion of said stem portion times the quantity equal to the square root of the weight of said piston divided by the weight of said driven member.

4,325,438
LENGTHENING DRILL STRING CONTAINING AN INSTRUMENT
Bernard R. Zavela, Fountain Valley, Calif., assignor to Scientific Drilling Controls, Irvine, Calif.
Filed Mar. 24, 1980, Ser. No. 133,319
Int. Cl.³ E21B *47/12*
U.S. Cl. 175—50 36 Claims



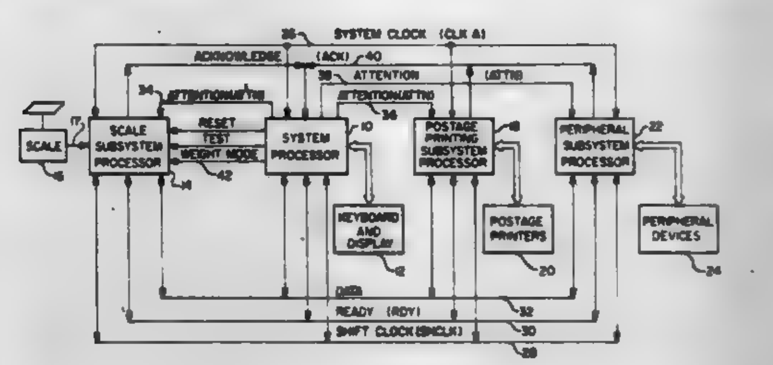
1. Apparatus comprising:
a drill string including a series of interconnected pipe sections;
an instrument contained in said string;
a flexible conductive line connected electrically to said instrument and extending toward the surface of the earth;
a unit at the surface of the earth electrically connected to said flexible line; and
a carrier contained in the string and carrying a portion of said flexible line in the form of a coil of many turns occupying a distance longitudinally of the drill string shorter than the length of the coiled portion of the line;
said coil being so wound as to pay out different turns of said coil successively from the carrier, and from coiled condition to a straightened condition, in response to exertion of a pulling force longitudinally of the drill string between said carrier and line while the carrier is contained in the string, to thereby increase the effective length of the line and compensate for addition of a pipe section to the string.

4,325,439
DIAMOND INSERT STUD FOR A DRAG BIT
Edward Vezirian, Fountain Valley, Calif., assignor to Smith International, Inc., Newport Beach, Calif.
Filed May 2, 1979, Ser. No. 35,371
Int. Cl.³ E21B *9/36;* E21C *13/01*
U.S. Cl. 175—329 2 Claims



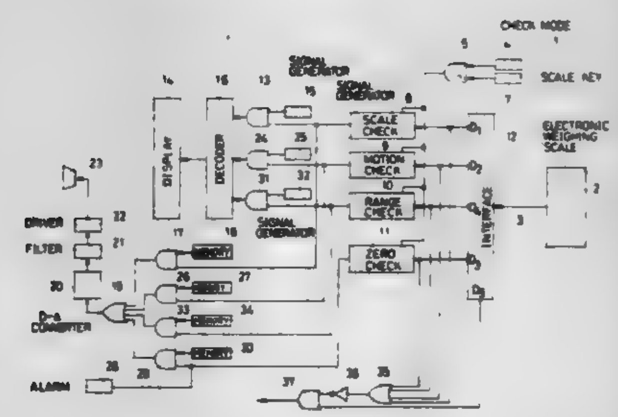
1. A man-made diamond insert stud for a diamond drag bit, said drag bit having a multiplicity of said studs extending from the face of said bit, said stud comprising:
a substantially cylindrical solid insert stud body having a first cutter end and a second base end, and
a circumferential, radially extending shoulder substantially 90° to an axis of said stud is formed in said cylindrical body positioned between said first cutter end and said second base end of said body, said shoulder radially extends beyond any portion of said first cutter end and substantially encircles said cutter end, said shoulder, integral with said stud, serves to provide a contact and datum surface for insert stud alignment and insertion means so that said stud may be inserted in said face of said drag bit without damage to said first cutter end of said insert stud body, said stud body further including an axially aligned female slot formed in said cylindrical body in said radially extending circumferential shoulder between said shoulder and said second base end of said stud, said slot serves as an alignment guide for said stud insertion means.

4,325,440
METHOD AND SYSTEM FOR COMPUTING SPECIAL FEES IN A PARCEL POSTAGE METERING SYSTEM
Raymond R. Crowley, Newtown; Edward P. Daniels, Bridgeport, and Earl B. Holtz, Huntington, all of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.
Filed May 27, 1980, Ser. No. 153,652
Int. Cl.³ G01G *23/22*
U.S. Cl. 177—25 15 Claims



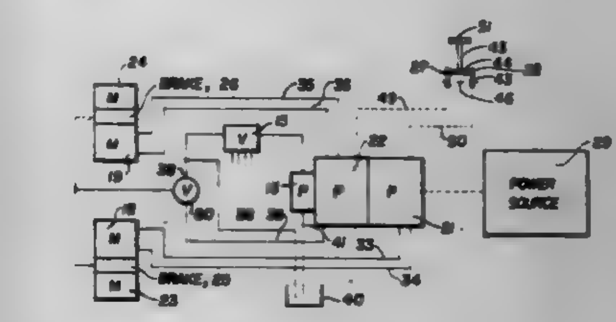
1. A method for calculating a postage value for an article to be mailed, said method comprising the steps of:
(a) selecting postal information indicative of the carrier type, class and destination of an article to be mailed;
(b) obtaining weight information for said article;
(c) selecting special fee information indicative of at least one of a plurality of special fee categories for use with said article;
(d) determining whether two or more of said plurality of special fee categories are mutually exclusive in accordance with a predetermined schedule of charges; and
(e) generating a postage value for said article from said postal information, said weight information and said special fee information.

4,325,441
ERROR ALARM SYSTEM IN A COMBINED ELECTRONIC WEIGHING SCALE AND ELECTRONIC CASH REGISTER
Hiroshi Nakatani; Masahide Ishida, both of Yamatokoriyama, and Hachizou Yamamoto, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed May 6, 1980, Ser. No. 147,271
Claims priority, application Japan, May 7, 1979, 54-56125
Int. Cl.³ G01G *23/22, 23/18, 23/00*
U.S. Cl. 177—25 13 Claims



1. A combined electronic cash register and weighing scale comprising:
an electronic cash register;
an electronic weighing scale for developing weight information data for the electronic cash register, said electronic cash register including,
an interface circuit for receiving said weight information data from said electronic weighing scale and developing an output signal in response thereto;
detection system means responsive to the output signal from said interface circuit for detecting an abnormal condition occurring within said electronic weighing scale and developing a detection output in response thereto; and
an announce system responsive to said detection output for audibly announcing the abnormal condition of said electronic weighing scale in response thereto.

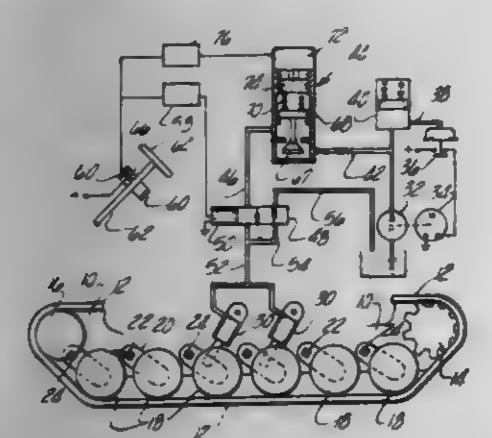
4,325,442
FORK LIFT
Robert E. Groenig, 201 S. 88th Ave., Yakima, Wash. 98902
Filed Dec. 31, 1979, Ser. No. 108,655
Int. Cl.³ B62D *11/04*
U.S. Cl. 180—6.48 4 Claims



1. A fork lift (10) comprising,
a body,
a first wheel (12) and a second wheel (13),
a third caster wheel (14),
said first wheel and said second wheel being independent of each other,
a fork (15) on said body extending forwardly therefrom,
a first hydraulic motor (18), a first torque hub (23) adapted to connect said first motor to said first wheel (12),
a first hydraulic pump means (16) connected to said fork (15) for moving said fork up and down,
a second hydraulic motor (19), a second torque hub (24) adapted to connect said second motor (19) to said second wheel (13),
a third hydraulic motor connected to said fork (15),
a first actuating means (49) connecting said first pump (21) to connect said first motor to said first wheel,
a second actuating means connecting said second pump (22) to said second motor (19),
said first actuating means comprising (a) first control means 27,49 connected to said first pump (21),
said first control means 28,50 connected to said first pump 21, said first control means comprising a second sector of a ring gear swingably connected at its center to said body, and connected to said first valve, said second actuator means comprising,
a first sector of a ring gear (27) swingably connected at its center to said body,
a second sector of a ring gear (28) swingably connected at its center to said body in co-axial relation to said first sector of a ring gear and connected to said first valve,
first teeth on said first sector of a ring gear extending towards said second sector of a ring gear,
second teeth on said second sector of a ring gear extending towards said first sector of a ring gear and a handle swingably connected to the axis of rotation of said first and second sectors of ring gears,
said handle being swingably connected to said body on an axis co-axial to said centers of said first and second sectors of ring gears and a sprocket on said handle,
said sprocket having teeth engaging said first and second ring gear teeth,
said handle being adapted to rotate said sprocket, whereby said first and second sectors of ring gears are rotated

relative to each other and said first valve and said second valve are moved in opposite directions from each other, said handle being adapted to swing said first and second sectors of ring gears together thereby driving said first motor and said second motor selectively both in a first direction or in a second direction or driving said first and said second motors in opposite directions to each other for steering said fork lift.

4,325,443
TURNING ASSISTANCE FOR TRACKED VEHICLES
Frederick C. Fischer, deceased, late of Rochester, Mich., and by Carole M. Fischer, heir, 72 Wimberly Dr., Rochester, Mich. 48063
Filed Jun. 4, 1979, Ser. No. 45,023
Int. Cl.³ B62D *11/02, 55/16*
U.S. Cl. 180—6.54 **2 Claims**



1. In a tracked vehicle having two sets of roadwheels located alongside the vehicle hull; a ground-engaged track trained beneath each set of roadwheels; propulsion means for delivering mechanical power to each track; and a manual steering controller for selectively reducing or increasing the power to each track, to thereby cause the vehicle to turn in the direction of the track that receives the reduced power; each roadwheel being carried on a roadarm that is swingably attached to the hull; each roadarm having resilient force means associated therewith for applying a hull-suspension force to the respective roadwheel: the improvement comprising means responsive to manual operation of the steering controller for temporarily increasing the suspension force that is applied to at least one of the centermost roadwheels in each set of wheels while the vehicle is undergoing a turning maneuver, whereby the other roadwheels are caused to bear lesser hull-suspension forces than would be the case during straight-ahead movement of the vehicle; said force-increasing means comprising a hydraulic cylinder means (30) attached between the hull and one of the centermost roadwheels in each set of wheels, a source of pressurized hydraulic fluid, a valve (50) operable in response to controller movement for communicating the pressurized source with each hydraulic cylinder means, a pressure-regulating valve means (44) interposed between the source of pressurized fluid and the hydraulic cylinder means, and means (72) responsive to movement of the steering controller for adjusting the pressure setting of the regulating valve means inversely in accordance with the vehicle turning radius.

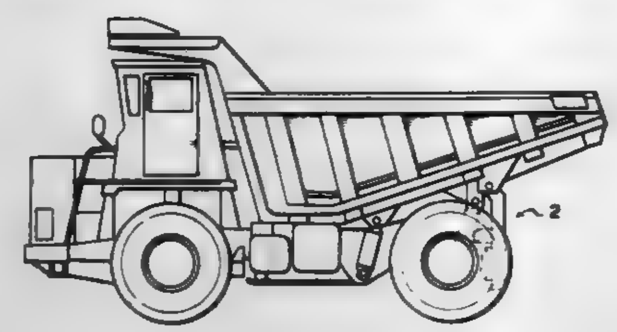
4,325,444
PROTECTOR FOR A DIFFERENTIAL GEAR CASING OF A VEHICLE
Yuichi Asami, Kawasaki, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan
Filed Jun. 24, 1980, Ser. No. 162,439
Int. Cl.³ B60K *17/00*
U.S. Cl. 180—70 R **2 Claims**

1. A protector for a differential gear casing of a vehicle, comprising:

a frame of the vehicle;

a pair of suspension cylinder means for suspending said differential gear casing, one end of each of said suspension cylinder means being pivotally mounted to said frame and the other end of which is coupled to said differential gear casing;

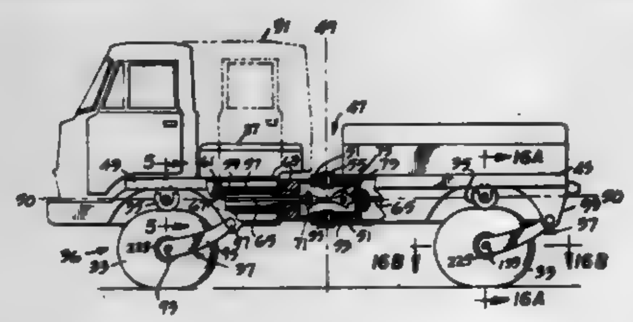
protector means pivotally mounted at its upper end to said frame, said protector means being pivotable about a horizontal axis at right angles with the advancing direction of the vehicle;



first cushion means mounted on said protector means; and

spring means provided between the lower end of said protector means and said differential gear casing for biasing said protector means toward said differential gear casing and thereby contacting said first cushion means with said differential gear casing.

4,325,445
OFF ROAD VEHICLES
William H. Albee, 1524 Spring Brook Rd., Walnut Creek, Calif. 94596
Division of Ser. No. 866,773, Jan. 3, 1978, abandoned. This application Oct. 7, 1980, Ser. No. 194,806
Int. Cl.³ B60K *23/00*
U.S. Cl. 180—74 **9 Claims**



1. A vehicle of the kind having fluid-distensible flexible-walled, ground contacting bag rollers for supporting the vehicle load, said vehicle comprising

a first frame section,

a second frame section,

frame connecting means interconnecting the first and second frame sections and including a hinge mechanism which permits pivoting movement and frame steering of one frame section with respect to the other frame section about a vertically extending axis while preventing bending movement of one frame section with respect to the other frame section from a horizontally extending plane extending perpendicular to said axis so that the connecting means provides a strong back connection between the two frame steered sections and wherein the connecting means include a swivel mechanism which permits one frame section to swivel longitudinally with respect to the other frame section,

one or more flexible-walled, fluid-distensible ground-contacting bag rollers associated with each frame section, wherein each bag roller includes an axle and wherein each axle is mounted for rotation in axle trunnions which are fixed in position with respect to the associated frame section,

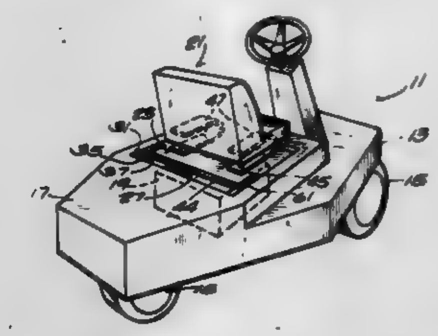
a top roller engaged with the top surface of each bag roller,

top roller mounting means mounting the top roller for rotation about an axis continuously parallel to the fixed axis of rotation of the associated bag roller and allowing relative vertical movement therebetween while maintaining the top roller centered longitudinally above the associated bag roller axle,

biasing means associated with each top roller mounting means and with the vehicle frame for engaging said top roller with said associated bag roller with a selected variable amount of force to thereby assure at least a minimum wraparound of the bag roller on the top roller and to limit the extent of oscillation of the upper surface of the bag roller in a vertical direction, and

snubber means associated with each top roller for snubbing and dampening oscillations of the bag roller.

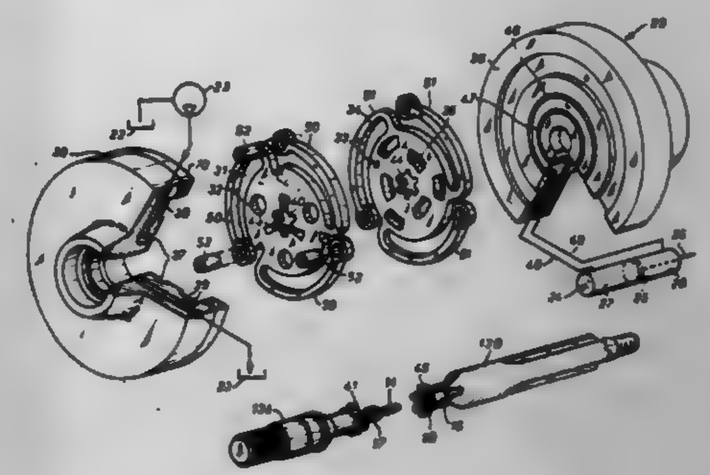
4,325,446
VEHICLE WITH ADJUSTABLE SEAT
John E. Hicks, Lincoln, Nebr., assignor to Outboard Marine Corporation, Waukegan, Ill.
Filed Feb. 4, 1980, Ser. No. 118,537
Int. Cl.³ B62D *23/00*
U.S. Cl. 180—89.17 **5 Claims**



1. A vehicle comprising a frame including a substantially closed engine compartment including an access opening, an engine supported on said frame in said compartment, a seat, and means for removably and adjustably supporting said seat in overlying relation to said engine comprising a pair of spaced elongated parallel guides on said frame and partially defining said access opening, a mounting platform connected to said seat, and means on said mounting platform and on said guides for supporting said platform so as to at least partially close said engine access opening, for guiding movement of said platform in the direction of elongation of said guides, and for removably and adjustably fixedly positioning said platform with respect to said guides.

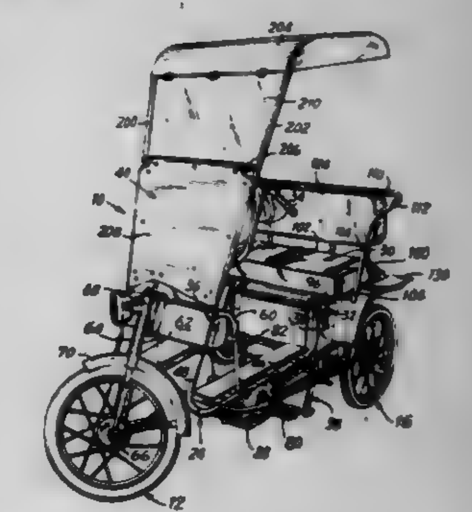
4,325,447
POWER-ASSISTED STEERING DEVICE AND THE MANUFACTURE THEREOF
Jean L. R. Dauvergne, Fosses, France, assignor to Societe Anonyme Francaise du Ferodo, Paris, France
Filed Mar. 20, 1980, Ser. No. 132,159
Claims priority, application France, Mar. 26, 1979, 79 07530
Int. Cl.³ B62D *5/08*
U.S. Cl. 180—132 **13 Claims**

1. A power-assisted steering device for a vehicle, comprising control means acting on steering means, said control means having a transmission element in two parts which are capable of limited relative angular displacement on either side of a neutral position under the action of said control means, said parts being connected to one another by elastic means disposed to return said parts to the neutral position, and assistor means responsive to an angular displacement of said parts, and operable to act on the steering means in the same sense as the control means, the said assistor means comprising a hydraulic power system, a hydraulic jack acting on the said steering means, and a hydraulic distributor interposed between the power system and the jack, the distributor comprising stator means which are fed by the hydraulic power system and which feed the hydraulic jack, and two rotors which are respectively integral in rotation with the two said parts and are provided with hydraulic passages, wherein said elastic means for returning said parts to the neutral position comprise at least one arm on one of the



rotors coupled to the other rotor, the said arm and the said hydraulic passages in the rotors being such that the neutral position of elastic return of the arm coincides exactly with a hydraulic neutral position of the passages in the rotors, in which position the assistor means has no effect on the steering means.

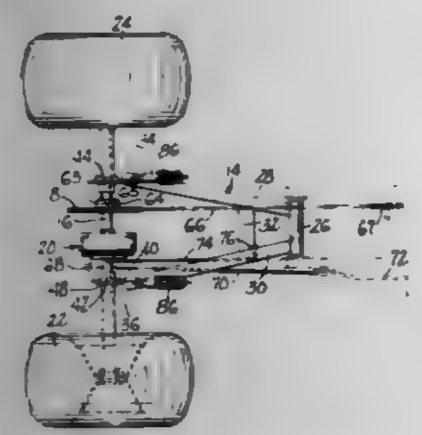
4,325,448
THREE-WHEELED, MOTOR-POWERED, PEDAL-STARTED VEHICLE
Stuart Pivar, New York, N.Y., assignor to American Microcar Incorporated, Farmingdale, N.Y.
Continuation of Ser. No. 963,282, Nov. 24, 1978, Pat. No. 4,237,995. This application Mar. 25, 1980, Ser. No. 133,862
The portion of the term of this patent subsequent to Dec. 9, 1997, has been disclaimed.
Int. Cl.³ B60J *1/06;* **B62D** *61/08;* **B62M** *7/04*
U.S. Cl. 180—215 **19 Claims**



1. A vehicle comprising a frame, three wheels, disposed in triangular relationship on and supporting said frame, seating means on said frame, steering means on said frame and coupled to and adapted for steering at least one of said wheels, motor means on said frame for driving at least one of said wheels, and energy source means on said frame coupled to and enabling activation of said motor means, said seating means being of a breadth to support at least two passengers in side-by-side relation, a rotatable yoke mounted on said frame and straddling and coupled to the wheel which is adapted for being steered, said steering means being coupled to said yoke, said steering means including a steering tube which is adapted for yielding

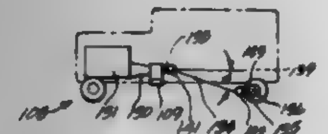
under pressure and is connected to said yoke, and handlebars on said steering tube, said steering tube including first, second and third serially interconnected sections, said first section being connected to said yoke to turn the same, said second section being generally horizontal, said third section extending upward at an angle from the second section and forming a junction therewith constituting a yieldable bend.

4,325,449
ALL-TERRAIN MOTORCYCLE ATTACHMENT DEVICE
Robert S. D'Addie, 19 Leetes Island Rd., Branford, Conn. 06405, and Douglas J. D'Addie, 119 Twin Lake Rd., North Branford, Conn. 06471
Filed Mar. 27, 1980, Ser. No. 134,294
Int. Cl.³ B62K *13/04*
U.S. Cl. 180—217 **29 Claims**



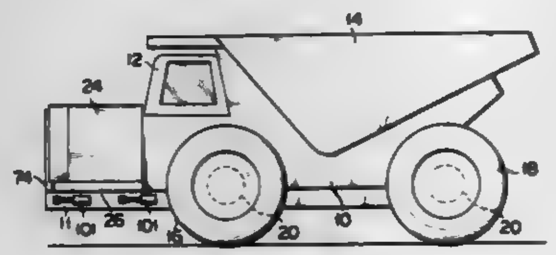
1. An all-terrain motorcycle attachment device comprising:
a swingarm frame having forward and rearward ends, said forward end being adapted for detachable connection to the swingarm pivot bolt assembly of a motorcycle,
said rearward end of said swingarm frame having a pair of spaced apart support members,
an axle rotatably mounted to said support members,
a pair of wheels mounted to said axle,
a drive sprocket connected to said axle,
means for braking said wheels, said braking means being connected to said axle and adapted for detachable connection to the brake rod of a motorcycle, and
means for detachably connecting said swingarm frame to the rear shock absorber means of a motorcycle, said swingarm frame comprising
a transversely disposed tubular member to receive the swingarm pivot bolt of a motorcycle at said forward end, and
a pair of spaced apart rearwardly extending support arms, said arms being connected at one end to said transverse tubular member and each said arm being connected at the other end to a respective support member.

4,325,450
AUTOMOTIVE OVERDRIVE WITH OFFSET INPUT AND OUTPUT SHAFTS
James E. Ward, Glendora, Calif., assignor to Dean Sweeney, Jr., San Marino, Calif., a part interest
Filed Mar. 5, 1980, Ser. No. 127,464
Int. Cl.³ B60K *17/22*
U.S. Cl. 180—247 **14 Claims**



11. In a motor vehicle in which engine torque is transmitted from a drive shaft driven by an engine in the vehicle to a drive axle through a pair of single cardan universal joints operating at an angle to said drive shaft and drive axle, the cardan joints being associated respectively with the drive shaft and the drive axle, the improvement comprising an overdrive mechanism connectible to the drive shaft and comprising shiftable means coupled to the drive shaft for selectively transmitting engine torque, in either of two alternate effective gear ratios,
from the drive shaft to its associated cardan joint, the shiftable means being arranged to cause said associated cardan joint to be so located vertically relative to the other cardan joint to produce a reduction in said angle.

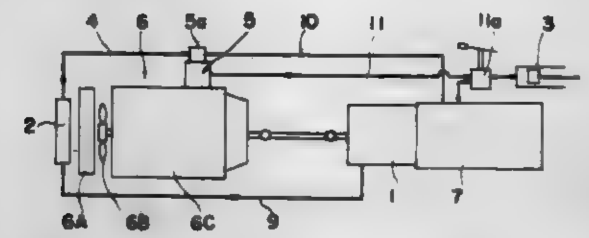
4,325,451
ELECTRIC POWER PLANT FOR VEHICLES
Haruhiko Umeda, Yokohama, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan
Continuation of Ser. No. 35,982, May 4, 1979, abandoned, which is a continuation-in-part of Ser. No. 865,250, Dec. 28, 1977, abandoned. This application Sep. 3, 1980, Ser. No. 183,764
Int. Cl.³ B60K *1/00, 5/10*
U.S. Cl. 180—294 **4 Claims**



1. In a wheel vehicle having front and rear wheels and a body mounted thereon, said vehicle being driven by electric motors and having a power plant enclosure mounted on a removable base, characterized in that said removable base is arranged wholly forwardly of the front wheels and transversely of the vehicle and is formed by a hollow shaped member comprising an upper plate, a lower plate, opposite vertical side plates supportingly connecting the upper and the lower plates, and vertical front and rear plates fixedly connecting the upper and the lower plates also, said removable base being mounted through at least two locking means on a pair of box-like frame units which are integrally secured to the bottom of a vehicle body and extend in parallel to each other along the longitudinal direction of the vehicle body, wherein each of the locking means comprises a pneumatic or hydraulic cylinder within which a piston is slidably accommodated, the cylinder being fixedly secured to a side plate member of each frame unit and the piston being always urged in one direction by a compression spring interposed between the piston and bottom of the cylinder, a piston rod fixedly connected at one end thereof to the piston on the opposite side of the compression spring, the other end of the piston rod extending through a pressure chamber of the cylinder and projecting out thereof, a rockable lever pivotally connected at one end thereof to the said other end of the piston rod and having a spline hole formed at a boss part of the other end of the rockable lever, a spline shaft vertically extending through the spline hole of the rockable lever from a lower plate member of the frame unit to which the lower end of the spline shaft is fixedly secured through a nut and projecting the upper end thereof through a substantially rectangular opening formed in the lower plate of the removable base, into a hollow space thereof, the projected upper end of the spline shaft having a head which is formed in a similar shape in cross section to the rectangular opening, but slightly smaller than the opening, wherein in order to lock the removable base on the frame units, the head of the spline shaft is engaged with an upper surface of the lower plate of the removable base when the spline shaft is rotated through the piston

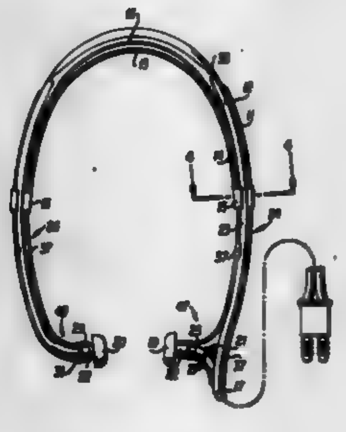
rod and the rockable lever by the resilient force of the compression spring, while in order to remove the removable base from the frame units the head is disengaged from the upper surface of the lower plate of the removable base when the spline shaft is rotated in the opposite direction by a pneumatic or hydraulic pressure counteracted to the resilient force of the compression spring.

4,325,452
WORK VEHICLE
Niro Bando, Sakai; Haruo Watanabe, Izumi, and Junji Miyata, Koaza-yakimachi, all of Japan, assignors to Kubota Ltd., Japan
Filed Feb. 29, 1980, Ser. No. 126,106
Claims priority, application Japan, Mar. 5, 1979, 54-25741
Int. Cl.³ B60K *25/00*
U.S. Cl. 180—306 **2 Claims**



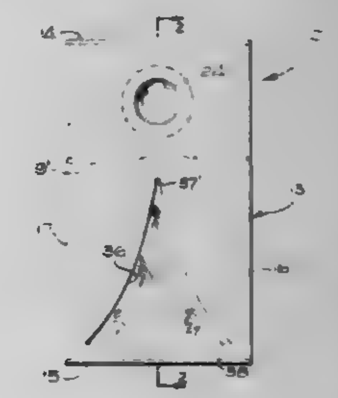
1. A work vehicle comprising a drive motor, a hydraulic stepless speed change apparatus, a transmission housing attached to said stepless speed change apparatus and containing therein a transmission apparatus, said stepless speed change apparatus utilizing lubricating fluid in said transmission housing as actuating fluid therefor, a radiator mounted on the vehicle, a conduit for supplying fluid heated by said stepless speed change apparatus to said radiator, a serially arranged conduit for supplying fluid cooled by said radiator to an inlet of a hydraulic pump driven by said motor, a conduit interposed between said inlet of said hydraulic pump and said transmission housing to return excess fluid to said transmission housing from said inlet or to supply deficient fluid to said inlet from said transmission housing, a conduit for supplying pressurized fluid from said pump to a control valve for a hydraulic working cylinder, and a conduit for returning fluid to said transmission housing from said pump or from said working cylinder via said control valve.

4,325,453
PNEUMATIC HEADSET
Robert A. Moussette, 9C, Chinachem Commercial Centre, 272 Chatham Rd., Kowloon, Hong Kong
Filed Jun. 11, 1980, Ser. No. 158,516
Int. Cl.³ A61B *7/02*
U.S. Cl. 181—135 **12 Claims**



1. A pneumatic headset comprising:
a generally C-shaped frame having an upper portion adapted to pass over a listener's head and leg portions extending from said upper portion, the leg portions supporting respective sound channelling ear pieces at free ends thereof;
a pair of sound tubes entering and commonly supported to one of the free ends of said frame, a first of said sound tubes being acoustically connected at one end thereof with one of said sound channelling earpieces closest to said one free end of said frame and a second of said sound tubes being supported along said frame and acoustically connected at one end thereof with the other of said sound channeling earpieces, such that sounds in said first and second sound tubes respectively pass through said earpieces, said first and second sound tubes extending equally from said one free end of said frame outward of said frame to an acoustic plug, for coupling said sound tubes to a source of acoustic sounds, said first sound tube containing at least one porting hole for balancing the amplitudes of sounds emitted by said earpieces.

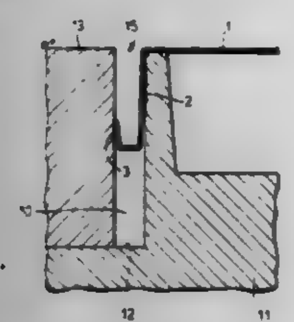
4,325,454
SPEAKER SYSTEM WHICH INVERTS AND REDIRECTS THE SPEAKER BACKWAVE
Theodore J. Humphrey, 3216-21st Ave. W., Seattle, Wash. 98199
Filed Sep. 29, 1980, Ser. No. 192,001
Int. Cl.³ H05K *5/00*
U.S. Cl. 181—145 **4 Claims**



1. A speaker system, comprising:
a speaker housing which includes an air-impermeable first chamber and a second chamber, separated by a common wall;
a first speaker, which includes a diaphragm having a front surface and a rear surface, mounted about an opening in said first chamber and oriented such that the rear surface of the diaphragm faces the interior of said first chamber and the front surface of the diaphragm faces the atmosphere about said first chamber, so that in operation a first pressure wave produced off the front surface of the diaphragm propagates away from said first chamber in a first direction into the atmosphere, and a second pressure wave produced off the rear surface of the diaphragm propagates within said first chamber, tending to produce a varying pressure in said first chamber;
a second speaker, which also includes a diaphragm having a front surface and a rear surface, mounted about an opening in the common wall separating said first and second chambers and oriented such that the rear surface of the diaphragm faces the interior of said first chamber and the front surface of the diaphragm faces the interior of the second chamber, so that in operation, a third pressure wave produced off the front surface of the diaphragm of the second speaker propagates within said second chamber, said first and second speakers being oriented such that their respective axes of vibration are substantially perpendicular, said second speaker being driven in such a manner that the third pressure wave is a substantial replica of and is in phase with the second pressure wave, so that the pressure within said first chamber tends to remain constant; and

a slant board positioned in said second chamber beneath said second speaker, wherein in operation, the third pressure wave, upon striking the slant board, undergoes a phase reversal so that it propagates through an opening in said second chamber into the atmosphere, the first and third pressure waves thus propagating away from the speaker system with substantially the same phase.

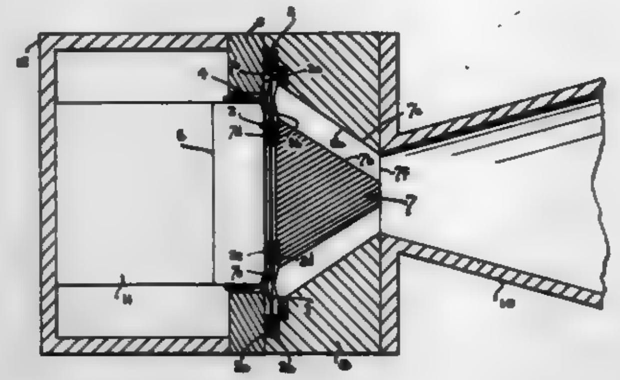
4,325,455
LOUDSPEAKER GRILLE
Maurice Kirkpatrick, High Wycombe, England, assignor to Tannoy Products Limited, High Wycombe and Lenver Products Limited, Brentwood, both of, England
Filed May 10, 1979, Ser. No. 37,847
Claims priority, application United Kingdom, May 12, 1978, 19294/78
Int. Cl.³ H05K *5/00*
U.S. Cl. 181—148 2 Claims



1. A loud speaker grille for covering a speaker positioned in an enclosure having a groove, said grille being formed of a stiffened, resilient, fibrous, grille cloth material and having a central portion suitable for covering the speaker, said grille having at least a major portion of the length of its edge so shaped that, when seen in cross-section, a first part of said edge extends rearwardly of said central portion approximately perpendicularly to the plane of said grille, and a second part of said edge is affixed to the rear edge of said first part and returns forwardly again from said rear edge of said first part to lie at an acute angle with respect to said first part, said first and second parts forming a generally V-shaped configuration, said second part presenting a free edge lying to the rear of the plane of said grille by an amount sufficient to cause said free edge to reside in the groove when said grille is installed on the enclosure, said free edge being spaced from said first part by a distance greater than the width of the groove, said first and second parts being insertable in the groove so that said free edge is forced into engagement with the side of the groove by the resiliency of said material to retain said grille on the enclosure.

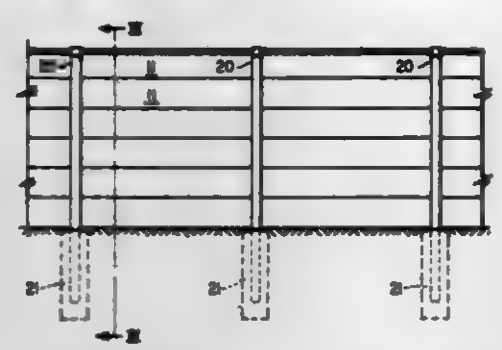
4,325,456
ACOUSTICAL TRANSFORMER FOR COMPRESSION-TYPE LOUDSPEAKER WITH AN ANNULAR DIAPHRAGM
Mark S. Ureda, Woodland Hills, Calif., assignor to Altec Corporation, Anaheim, Calif.
Filed Oct. 10, 1980, Ser. No. 196,074
Int. Cl.³ G10K *11/02*
U.S. Cl. 181—159 6 Claims

4. In a compression-type loudspeaker,
(a) an annular speaker diaphragm having inner and outer supporting rings,
(b) a horn having a substantially planar throat,
(c) a cylindrical member having an aperture formed through its center and having a conically dished portion surrounding said aperture, and
(d) an acoustical transformer for coupling the sound output of said diaphragm to the throat of the horn, said transformer comprising a transformer member having
(1) a substantially truncated conical surface,
(2) a first annular surface substantially conforming to the shape of said diaphragm and located at one end of the conical surface and positioned directly opposite the diaphragm,
(3) an exit surface opposite the first annular surface, said exit surface forming a truncation to the conical surface, and said exit surface being positioned directly opposite the horn throat and substantially in a plane parallel to that of the throat, the conical surface fitting snugly in the conically dished portion of the cylindrical member,
(4) a central core portion extending substantially between the first annular surface and the exit surface, said central core portion having sealing means lying inwardly of the first annular surface for forming an airtight seal with the inner supporting ring,



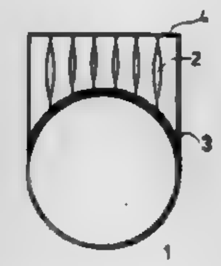
(5) a plurality of channels formed in said transformer member being spaced from each other around the conical surface of said member and extending through the member between the first annular surface and the exit surface thereof, said channels running from said core portion radially outwardly to the outer edges of said transformer member, sections of said transformer member being formed between said channels, the opposing wall surfaces of adjacent sections forming tapered sound channels running between said diaphragm and said horn throat and expanding in cross-sectional area from the first annular surface to the exit surface,
the sound waves generated by the diaphragm being transformed by the transformer to planar wave fronts for coupling to the horn throat.

4,325,457
ACOUSTICAL BARRIER
William G. Docherty, Windsor, and Alys J. Stegmaier, Dundas, both of Canada, assignors to Durisol Materials Limited, Mitchell, Canada
Filed Nov. 13, 1979, Ser. No. 93,420
Claims priority, application Canada, Jul. 19, 1979, 332118
Int. Cl.³ E04B *1/82;* E04H *17/00;* C04B *43/00*
U.S. Cl. 181—210 4 Claims



1. An acoustic panel for use as an external wall acoustical attenuator for sound sources, comprising:
a set of panels, each of said panels including a first layer and a second layer joined as two laminae, said first layer including mineralized fibrous material blended with cement and said second layer including a fine aggregate concrete, wherein a first reinforcing means is located within said first layer, said first reinforcing means comprising reinforcing steel encased in mortar and extending throughout the length of the said panel;
support columns having means for supporting said panels and withstanding wind loads to which said panels are subjected and maintaining the acoustical panel airtight;
each of said panels being oriented with said first layer facing the source of the sound.

4,325,458
APPARATUS FOR REDUCING THE EXHAUST NOISE OF INTERNAL COMBUSTION ENGINES OR THE LIKE
Oskar Bschorr, Munich, and Eckehard Laudien, Holzkirchen, both of Fed. Rep. of Germany, assignors to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung, Munich, Fed. Rep. of Germany
Filed Nov. 14, 1980, Ser. No. 207,088
Claims priority, application Fed. Rep. of Germany, Nov. 23, 1979, 2947256
Int. Cl.³ F01N *7/08, 1/02, 1/24*
U.S. Cl. 181—227 15 Claims

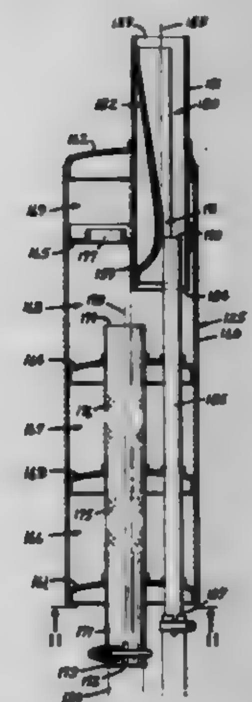


1. An apparatus for reducing the noise of an exhaust gas flow comprising exhaust pipe means, frame or housing means, a plurality of silator means tuned to different frequencies operatively held in rows in said frame or housing means, connecting means operatively securing said frame or housing means to said exhaust pipe means so as to transmit the noise of the exhaust gas flow to the silator means, and heat protection means operatively associated with said silator means for protecting said silator means from any hot exhaust gas, said silator means having a noise impedance selected relative to the noise impedance of the air of the surrounding environment.

4,325,459
MUFFLER DIFFUSER
Mack M. Martin, 7212 Grand Blvd., Houston, Tex. 77054
Filed Sep. 29, 1980, Ser. No. 192,435
Int. Cl.³ F01N *1/10*
U.S. Cl. 181—248 7 Claims

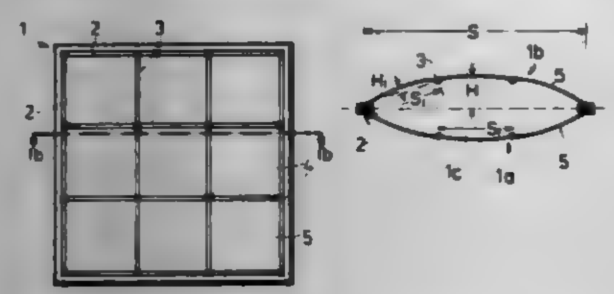
1. A muffler diffuser adapted to be used with a muffler having an inlet end for receiving a noisy, gaseous exhaust comprising:
a diffuser element mountable within the muffler adjacent the inlet end;
said diffuser element having a body portion and a diffuser portion; said body portion being substantially of a tubular configuration and adapted to be longitudinally mounted and aligned with the longitudinal axis of the muffler;
said diffuser portion being of a substantially truncated conical configuration and adapted to be longitudinally aligned with the longitudinal axis of said body portion, with the greatest diameter of said diffuser portion adjacent the inlet end of the muffler and the smallest diameter of said diffuser portion extending downstream towards the exit end of the muffler;
said diffuser portion formed having a plurality of openings for directing the noisy, gaseous exhaust into the muffler;
a baffle body member mountable within the muffler, said baffle body member having a substantially tubular body member and adapted to be aligned with the longitudinal axis of the muffler;
said baffle body member having a plurality of louvers circumferentially disposed along the length of said baffle body member;
said louvers extending inwardly into the bore of said baffle body member towards the inlet end of the muffler so as to divert the noisy, gaseous exhaust to enhance noise diffusion; and,
said diffuser portion is mounted within said baffle body member in longitudinal alignment therewith.

4,325,460
EJECTOR MUFFLER
Bruce B. Hoppenstedt, Richfield, Minn., assignor to Donaldson Company, Inc., Minneapolis, Minn.
Filed Apr. 14, 1980, Ser. No. 140,128
Int. Cl.³ F01N *1/14;* B05B *7/06;* F15D *1/02*
U.S. Cl. 181—259 16 Claims



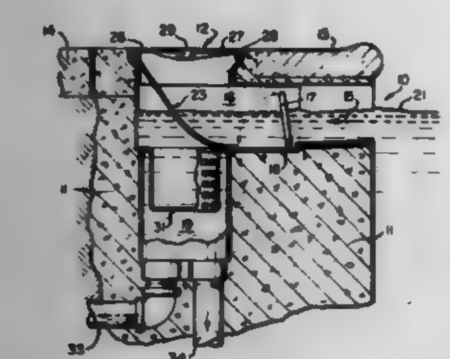
1. A muffler-ejector assembly comprising, in combination:
a muffler having a casing elongated along a first axis between first and second ends, first and second end plates closing said ends, and an exhaust tube extending generally axially through said first end plate to open into said casing;
an ejector including a tubular housing extending along a second axis, offset from said first axis, through said second end plate to open into said casing and an ejector insert secured within said housing and configured for cooperation with a wall of said housing to define a venturi, having a throat offset from said second axis of the tubular housing;
and an air intake tube extending through said casing having an end at said throat of said venturi.

4,325,461
NOISE REDUCING RESONATORS, OR SO-CALLED SILATORS
Oskar Bschorr, Munich, Fed. Rep. of Germany, assignor to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung, Munich, Fed. Rep. of Germany
Filed Nov. 12, 1980, Ser. No. 205,922
Claims priority, application Fed. Rep. of Germany, Nov. 22, 1979, 2947026
Int. Cl.³ G10K *11/16*
U.S. Cl. 181—286 **7 Claims**



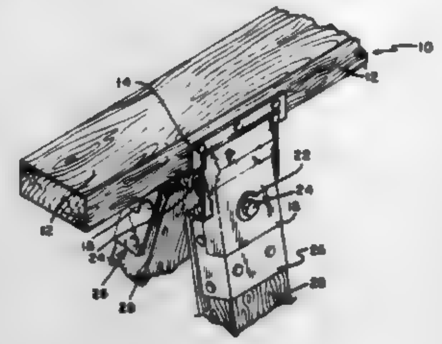
1. A noise reducing apparatus, comprising resonance means including primary strut members (2) forming a main frame having a given span width, a number of secondary strut members (3) forming a plurality of subframes, junction means operatively interconnecting said main frame and said subframes, each of said subframes also having a respective span width, said main frame and said subframes forming vaults having a vaulting height corresponding to "x" times the corresponding span width, wherein x is within the range of 0.005 to 0.05, and vacuum tight cover means operatively supported by said main frame and by said subframes, said cover means enclosing a substantially evacuated inner volume, said primary strut members (2) forming with the cover means a main silator having a given resonance frequency, said secondary strut members (3) with the same cover means forming a plurality of subsilators each having its own resonance frequency, whereby the surface area of said cover means is utilized in a multiple manner.

4,325,462
DEVICE FOR SMALL ANIMAL ESCAPE FROM A POOL
John Gouzos, 451 E. Boston Post Rd., Mamaroneck, N.Y. 10543
Filed Sep. 25, 1980, Ser. No. 190,516
Int. Cl.³ E06C *9/00;* **E04H** *3/20, 3/16*
U.S. Cl. 182—93 **2 Claims**



1. A pool escape device for small animals adapted to be used in pools having a pool walkway border substantially above the water level of the pool and a water chamber positioned below the walkway border which chamber is in communication with the surface of the pool comprising
(a) ladder means positioned in the water chamber between the water level of the pool and the walkway border, said ladder means having one end near enough to the surface of the pool for small animals to climb onto the ladder means and the ladder means having its other end near enough to the walkway border for small animals to climb from the ladder means to said border; and
(b) an aperture in the walkway border to permit animals climbing the ladder means to escape therethrough.

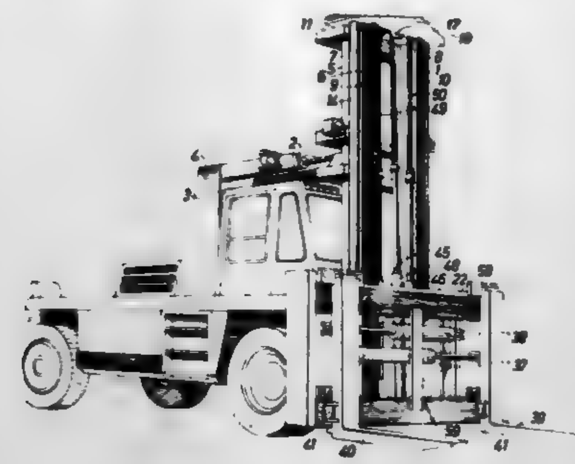
4,325,463
SAWHORSE
Frank E. Taylor, 1440 S. Seneca, Wichita, Kans. 67213
Filed Oct. 6, 1980, Ser. No. 194,586
Int. Cl.³ B27B *21/00;* **F16M** *11/00*
U.S. Cl. 182—155 **7 Claims**



1. A sawhorse or the like comprising:
(a) an elongated support member;
(b) a pair of elongated support rest bracket members, each secured in proximity to an end of said elongated support member;
(c) at least one pair of facing channel members bound to each of said support rest bracket members, each facing channel member having a channel and a structure defining a mounting bolt aperture;
(d) a mounting bolt secured within and between said mounting bolt aperture of each facing channel member;
(e) a pair of sawhorse, or the like, leg bracket members pivotally, slidably disposed to each of said mounting bolts and each securing an end of a sawhorse, or the like, leg;
(f) spring biasing means operatively mounted relative said mounting bolts and between each of said pair of leg bracket members and in the extended supporting/operating position biasing and holding said leg bracket members within the channel of the channel members;
(g) said sawhorse, or the like, being adapted for storage and/or transportation by actuating said spring biasing means by inwardly pivoting each pair of sawhorse, or the like, legs including the attached sawhorse, or the like, leg bracket members until clearing the channels of the channel members and generally aligning the legs in a general planar relationship, and subsequently rotating each pair of legs on each end of said elongated support member towards the underside of elongated support member for folding and lodging said legs thereunder.

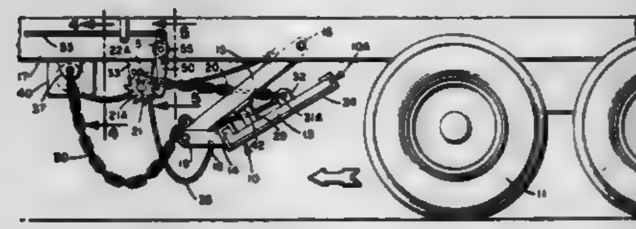
4,325,464
LIFTING STAND OF A MOTOR-DRIVEN TRUCK
Nils-Olof Larsson, Halmstad, Sweden, assignor to Kalmar Last Maskin Verkstad AB, Sweden
Filed Dec. 7, 1979, Ser. No. 101,090
Claims priority, application Sweden, Mar. 9, 1979, 7907303
Int. Cl.³ B66B *9/20*
U.S. Cl. 187—9 E **4 Claims**

1. A telescopically extensible lifting stand of a motor-driven truck comprising an outer frame attached to the truck and an inner frame displaceable between a lower retracted position and an upper projecting position, said inner frame carrying a lifting carriage provided with load-carrying means and displaceably journalled on the inner frame for movement along said frame, said lifting carriage being arranged to be moved along the inner frame by means of force-transmitting means while the inner frame remains immobile in relation to the outer frame, said force-transmitting means comprising an outer pair of hydraulic cylinders attached at one end to the lifting carriage and an inner pair of hydraulic cylinders attached at one end to lower portions of the inner frame, said inner and outer



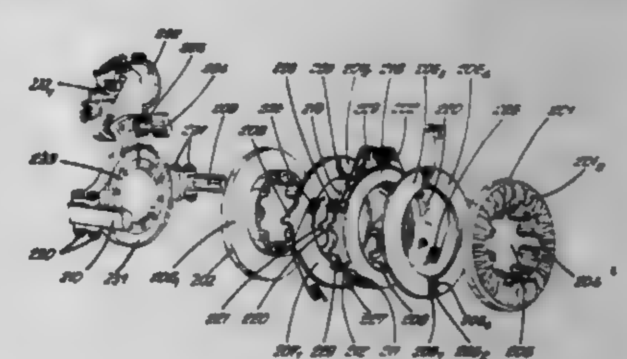
hydraulic cylinders being operatively joined in pairs at their outer ends by chains extending over pulleys journalled at upper portions of the inner frame.

4,325,465
AUXILIARY BRAKE FOR TRACTOR-TRAILER RIG
Ronald Lemon, 4739 Timon, Corpus Christi, Tex. 78402
Filed Apr. 25, 1980, Ser. No. 143,944
Int. Cl.³ B60T *1/00*
U.S. Cl. 188—4 R **7 Claims**



1. An auxiliary braking device for a wheeled vehicle having a frame, said braking device comprising a drag shoe to be disposed transversely across the vehicle and between a wheel on each side of the vehicle and a road surface, and means on each of opposite sides of the vehicle for supporting the drag shoe on said frame, said drag shoe comprising a rigid, substantially flat, metal plate member having leading and trailing edges disposed transversely across the vehicle and supported on the said frame, said plate member spanning the transverse rear wheel base of the vehicle, said plate member having a first surface facing the underlying road surface and a second surface facing said rear wheels when the braking device is in an operative position on the vehicle with the longitudinal axis of the plate member substantially perpendicular to the longitudinal axis of the vehicle, a flange integral with the plate member and upstanding from said second surface substantially parallel to and adjacent to the leading edge of the plate member, an easily removable elastomeric sheet covering said first surface folded about the said leading edge and over said flange, a first series of laterally spaced bolts securing the said sheet to said flange, said sheet being folded about the trailing edge of the plate member and overlapping a portion of said second surface, a second series of laterally spaced bolts securing said overlapping portion of the sheet to the plate member, that portion of the sheet between said series of bolts being substantially taut with the sheet disposed against but not bonded to the plate member whereby the sheet can be removed from the plate member upon removal of said bolts, said means for supporting said drag shoe on said frame in front of said rear wheels in a stored inoperable position and for guiding the drag shoe as a unit to the road surface in the paths of said rear wheels when actuated comprising on each side of the vehicle a first bar pivotably secured at one end to said frame and depending therefrom in front of a rear wheel, a second bar pivotably secured to the first bar and fixed to said leading edge of said drag shoe, a cable for lifting said drag shoe from the road surface to an inoperable folded stored position, means comprising a winch supported on said frame for shortening said cable to lift said drag shoe, means for supporting said drag shoe in its inoperable position comprising a quick release device and chain fixed to the drag shoe and to the quick release device for holding the drag shoe on the frame above the road surface, means for releasing said quick release device to release the chain and the first and second bars to permit the said support means and the drag shoe to unfold and drop the drag shoe to the road surface in the paths of rear wheels, a post-like stop member upstanding from said second surface, and a resilient pad fixed to said first bar and associated with said stop member on said plate member to prevent the first and second bars from folding so tightly they fail to unfold when the said chain is released.

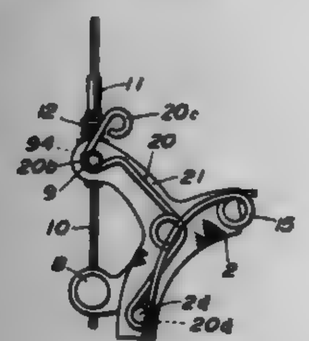
4,325,466
DISK BRAKES
Hermann Klaue, Tour d'Ivoire 24 e, 1820 Montreux, Switzerland
Continuation of Ser. No. 616,191, Sep. 24, 1975, abandoned, which is a division of Ser. No. 470,303, May 15, 1974, Pat. No. 3,952,842, which is a continuation-in-part of Ser. No. 288,287, Sep. 12, 1972, Pat. No. 3,885,650, which is a continuation-in-part of Ser. No. 73,566, Sep. 18, 1970, abandoned. This application is also a continuation-in-part of Ser. No. 415,681, Nov. 14, 1973, abandoned and Ser. No. 457,261, Apr. 2, 1974, Pat. No. 3,942,610
Claims priority, application Fed. Rep. of Germany, Dec. 2, 1969, 19602869; Dec. 27, 1969, 19651708; Dec. 27, 1969, 19651719; Aug. 25, 1973, 23430048; Switzerland, Nov. 17, 1972, 16741
Int. Cl.³ F16D *55/10, 55/12, 55/18*
U.S. Cl. 188—71.4 **10 Claims**



1. A fully lined disk brake and a vehicle wheel assembly comprising
a brake housing comprising an annular member having an annular gap of channel-like cross-section open on its radially exterior side; the opposite inner sides of said channel-like gap providing annular braking surfaces, said brake housing being attached to be rotatable jointly with a wheel of an assembly to be braked;
at least one pair of segmental disk brake shoes disposed from the radially exterior side into the channel-like gap having friction faces facing the adjacent braking surfaces, means for actuating said brake shoes into contact with said braking surfaces and means for non-rotatably supporting each pair of brake shoes in the gap comprising a fixed support means which carries members disposed over the gap and movable from over said gap to uncover a portion of the gap whereby the brake shoes are insertable into the gap without dismantling the brake shoe moving means, said actuating means comprising an annular housing which is rectangular in cross-section and has an open side facing a first brake shoe, a wall facing the second brake shoe, a wall adjacent to the radially inward side of the channel and a wall adjacent the open radially outward side of the channel, a ring piston in the space between the said walls, a heat insulating ring between the housing and each brake

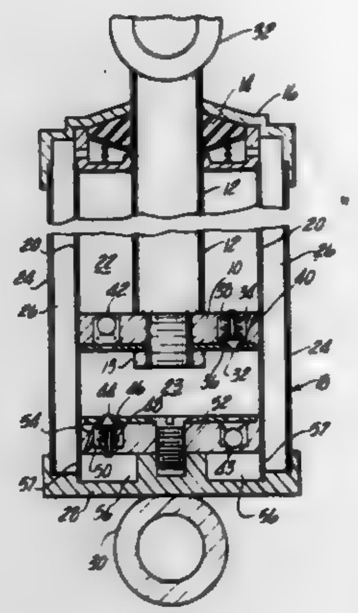
shoe, and a circumferentially spaced resilient means for maintaining the piston and cylinder together.

4,325,467
BICYCLE WHICH FACILITATES WHEEL REMOVAL
Masayoshi Kine, Osaka, Japan, assignor to Shimano Industrial Company Limited, Osaka, Japan
Continuation of Ser. No. 7,706, Jan. 30, 1979, abandoned. This application Nov. 3, 1980, Ser. No. 203,472
Claims priority, application Japan, Feb. 27, 1978, 53-25551
Int. Cl.³ B62L *1/12*
U.S. Cl. 188—24.12 5 Claims



1. A caliper brake comprising:
a pair of first and second brake arms;
a pivot shaft for oscillably supporting said brake arms;
a pair of brake shoes respectively supported by said brake arms, said brake shoes having their braking faces disposed facing one another;
a return spring biasing the braking faces of said brake shoes apart;
a wire fixture for securing one end of a brake operating wire mounted on said first brake arm;
a suport means for an outer pipe guiding said wire mounted on said second brake arm;
a shaft member provided on said support means extending through said second brake arm and detachably mounted on said second brake arm, said shaft member including a shaft portion projecting through a bore in said second brake arm and being provided with a groove on at least a portion of its outer periphery;
a retaining member having a pivotal portion and a bent engaging portion, said retaining member being provided on the brake arm through which said shaft member extends, said pivotal portion and bent engaging portion being disposed in the same plane and in series, said retaining member being pivotally supported by said pivotal portion on said caliper brake and the bent engaging portion of the retaining member being elastically engaged into the groove of said shaft member to prevent said shaft member from being drawn out from said bore, said retaining member comprising an elastic wire curved at its one longitudinal end into a circular shape to provide said pivotal portion and curved at its other longitudinal end into a semicircular shape to provide said bent engaging portion, said bent engaging portion extending at its free end to form a manually manipulatable operation portion, and a connecting portion connecting said pivotal portion and bent engaging portion, said connecting portion having a bend therein such that said bent connecting portion biases the bent engaging portion radially toward and into engagement with said shaft member, said manually manipulatable portion allowing the gripping of said retaining member to bend said retaining member against the biasing of said engaging portion toward said shaft to allow said shaft to be removed from said second brake arm bore.

4,325,468
SUSPENSION CONTROL VALVE USING CONED SPRING DISKS
Richard W. Siorek, Warren, Mich., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Jan. 31, 1979, Ser. No. 8,225
Int. Cl.³ F16F *9/34*
U.S. Cl. 188—282 1 Claim

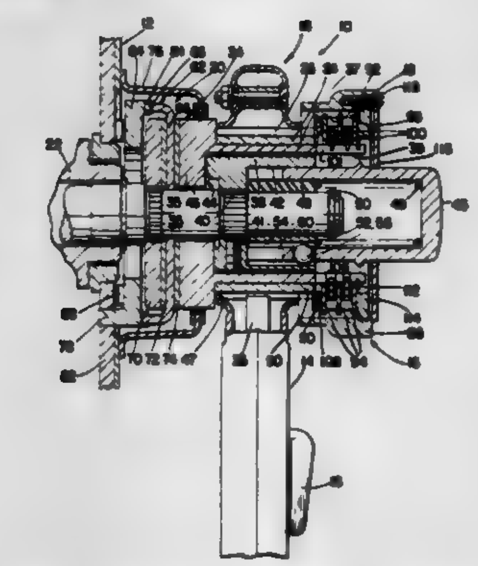


1. In a suspension for a wheeled vehicle, a hydraulic shock absorber of the piston-cylinder type; an insert (52) disposed within the cylinder below the piston; a first check valve (42) carried by the piston permitting substantially unrestricted downflow from the space above the piston to the space immediately below the piston; a second check valve (43) carried by the insert permitting substantially unrestricted upflow to the space immediately below the piston; first metering means carried by the piston permitting controlled flow from the space below the piston to the space above the piston, comprising a first orifice means (36), a first cooperating tapered poppet metering valve, and spring mechanism biasing said poppet valve to a position closing the orifice means; second metering means carried by the insert permitting controlled flow from the space above the insert to the space below the insert, comprising a second orifice means (46), a second cooperating tapered poppet metering valve, and second spring mechanism biasing the second poppet valve to a position closing the second orifice means; each spring mechanism comprising a coil spring (45) having a constant rate load-deflection curve, and a plurality of coned spring disks (47) having convexly humped load-deflection curves; the coil spring and coned spring disks being arranged in series with each other between the associated metering valve and the structure on which the valve is mounted; the coned spring disks being juxtaposed to one another so that the cones of adjacent disks face in opposite directions to enable said disks to undergo overcenter deflections to conditions bottomed against each other; the coned spring disks and constant rate coil spring being selected so that the coned disks are caused to undergo overcenter snap-type deflection before the constant rate coil spring has undergone appreciable deflection; the coned spring disks being dimensioned so that said disks bottom against each other before the associated valve reaches its fully opened condition, whereby the coil spring controls the movement rate of the valve between the point at which the coned disks bottom against each other and the point at which the valve is fully opened.

4,325,469
SOFT LUGGAGE CONSTRUCTION
Martin E. Gurian, Edgewater, N.J., assignor to Burlington Industries, Inc., Greensboro, N.C.
Filed Dec. 5, 1979, Ser. No. 100,326
Int. Cl.³ A45C *3/00*
U.S. Cl. 190—53 24 Claims

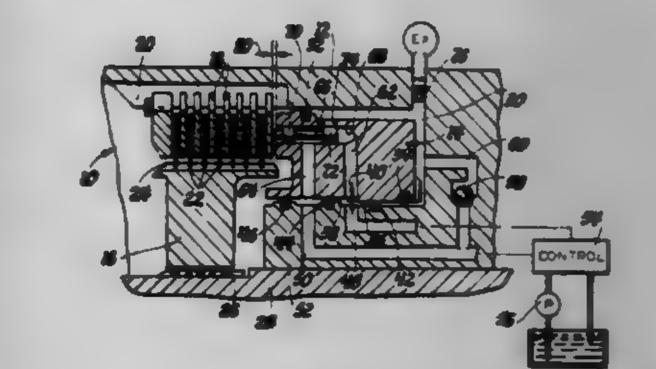
1. A piece of soft luggage having a plurality of highly abrasion resistant fabric walls defining an interior volume; means providing access to the interior volume; and handle means for facilitating carrying of the piece of luggage; and wherein the fabric forming the walls comprises a laminate including an outer layer, a lining layer, and a middle layer sandwiched between said outer and lining layers; and said outer layer comprising a raised effect weave having a raised yarn and a ground yarn, with highly abrasion resistant yarn providing the raised yarn, and the face thereof facing outwardly from the middle layer, and a distinct spun-like yarn providing the ground yarn.

4,325,470
HOIST OVERLOAD CLUTCH
Alan L. Bopp, Lexington, Ky., assignor to Eaton Corporation, Cleveland, Ohio
Filed Feb. 15, 1980, Ser. No. 121,932
Int. Cl.³ F16D *13/30, 67/02*
U.S. Cl. 192—16 5 Claims



1. In a ratchet lever hoist comprisng a housing, a drive hub supported for rotation relative to said housing, an input hand lever mounted for rotation relative to said housing, a load supporting output member mounted for rotation within said housing, means connecting said drive hub and said output member, ratchet drive means operatively connecting said hand lever and said drive hub, and a handwheel operatively connected to said drive hub; the improvement including an input hub member comprising a tube received over a portion of said drive hub and including teeth formed on the outer diameter thereof for engagement by said ratchet drive means; and a clutch assembly received within said handwheel, said clutch assembly comprising a plurality of first clutch disks mounted for rotation with said handwheel, a plurality of second clutch disks mounted for rotation with said drive hub, and a plurality of friction disks interleaved between said first and second clutch disks; said handwheel comprises a cylindrical housing member having a stepped bore comprising a first relatively small diameter and a second relatively large diameter, and internal teeth formed in said first diameter and in engagement with the teeth formed on said tube.

4,325,471
PISTON POSITION CONTROL MECHANISM
David A. Schuster, New Boston, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Sep. 15, 1980, Ser. No. 186,860
Int. Cl.³ F16D *25/12*
U.S. Cl. 192—85 AA 4 Claims

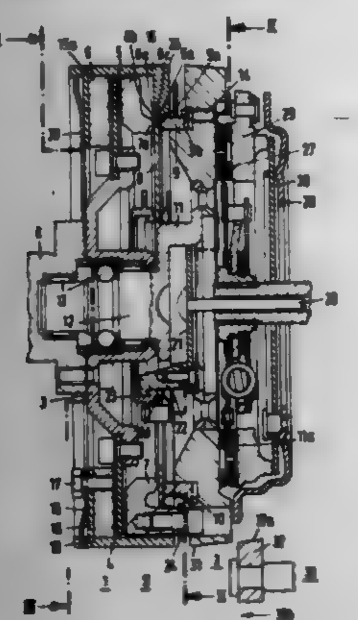


1. An apply piston position control mechanism for a fluid operated piston which is operable in response to fluid pressure in an apply chamber to enforce engagement of a friction device such as a clutch or brake; said control mechanism comprising: a source of fluid pressure; passage means selectively connectable with said source for pressurizing the apply chamber to move said piston when engagement is desired; valve means slidably disposed in said piston and being in fluid communication with said source and said passage means; positioning means on said friction device for selectively abutting said valve means; and pressure responsive differential area means in fluid communication with said source for causing relative movement between said valve means and said piston when said piston is spaced a distance from the engagement position other than a predetermined distance when the friction device is disengaged, said valve means being operable to communicate said source with the apply chamber for moving said piston toward the engagement position until the valve means abuts said positioning means and said piston is spaced the predetermined distance.

4,325,472
FLYWHEEL CONNECTED TO AN INTERNAL-COMBUSTION ENGINE
Klaus Steeg, Bühl, and Oswald Friedmann, Lichtenau, both of Fed. Rep. of Germany, assignors to Luk Lamellen und Kupplungsbau GmbH, Bühl, Fed. Rep. of Germany
Filed Jun. 6, 1979, Ser. No. 46,057
Claims priority, application Fed. Rep. of Germany, Jun. 6, 1978, 2824718
Int. Cl.³ F16D *13/44, 21/08*
U.S. Cl. 192—48.1 24 Claims

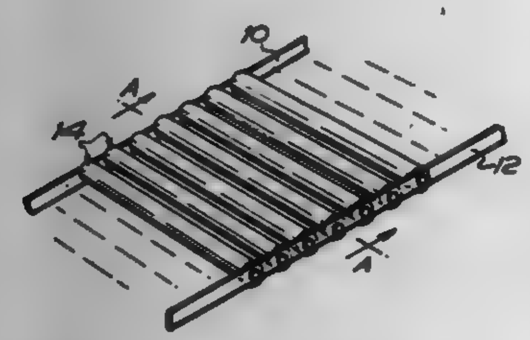
1. The combination, comprising a flywheel couplable to and uncouplable from an internal combustion engine, depending upon specific circumstances, and a clutch for coupling the flywheel to and for uncoupling the flywheel from the internal combustion engine, said clutch comprising an entrainer disc secured to a rotatable part of the internal combustion engine against axial and rotary displacement relative thereto, said entrainer disc having two friction surfaces, a pair of pressure plates each having a respective opposing friction surface located on opposite sides of said entrainer disc, a cup spring

actuatable for positively moving said pressure plates in opposite directions, said cup spring having a radially outer region operatively engageable with one of said pressure plates, and a radially farther inner region operatively engageable with the other of said pressure plates, an axially fixed tilting support of ring-shaped construction being disposed on an axially fixed part of the flywheel, said cup spring having a radial region disposed intermediate said radially outer and inner regions



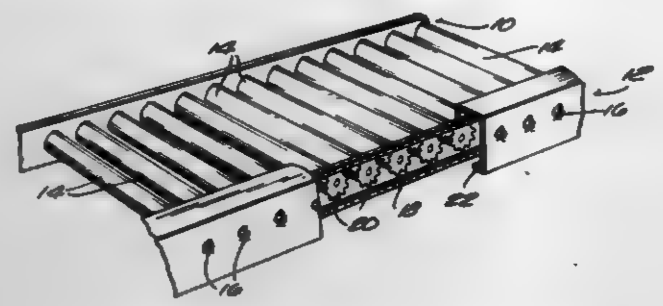
thereof and being tiltable at said intermediate radial region thereof about said axially fixed support, said flywheel part being mounted for relative rotation with the rotatable part of the internal-combustion engine, torque transmission means for transmitting torque between said flywheel part, on the one hand, and the pair of axially movable pressure plates of the clutch, and actuating means engaging said cup spring at radially inner regions thereof.

4,325,473
BEARING ASSEMBLIES FOR USE IN CONVEYOR ROLLER
David M. Garnett, Thorpe Arch Trading Estate, Wetherby, Yorkshire, England (LS23 7BL)
Filed Dec. 26, 1979, Ser. No. 107,201
Claims priority, application United Kingdom, Sep. 8, 1979, 31238/79
Int. Cl.³ B65G *13/00*
U.S. Cl. 193—35 R 5 Claims



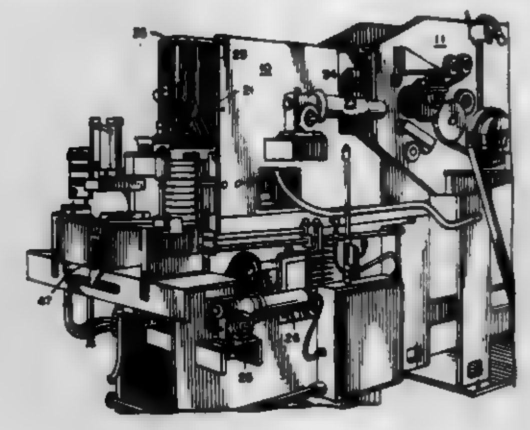
1. A bearing assembly for a conveyor roller comprising a rolling bearing having an inner race and an outer race of which one is adapted to be in operative connection with a sleeve body, whilst the other is in operative connection with a spindle means in the form of a stub shaft which projects from the bearing for engagement in a supporting panel member but is prevented from moving out of the bearing in the direction in which it projects from the bearing by means of a shoulder and stop arrangement, and a blanking panel which rotates with the race which receives the sleeve body to blank off the roller elements from the interior of the sleeve body to prevent inflow of water into said sleeve body, the said spindle being spring loaded in the direction in which it projects from the bearing which is away from the blanking panel but is deflectible towards the blanking panel against spring action.

4,325,474
SLIP FRICTION ROLLER DRIVE
George Rae, Port Hope, Canada, assignor to Rexnord Inc., Milwaukee, Wis.
Continuation of Ser. No. 912,676. This application Jan. 7, 1980, Ser. No. 110,073
Int. Cl.³ B65G *13/071*
U.S. Cl. 198—781 2 Claims



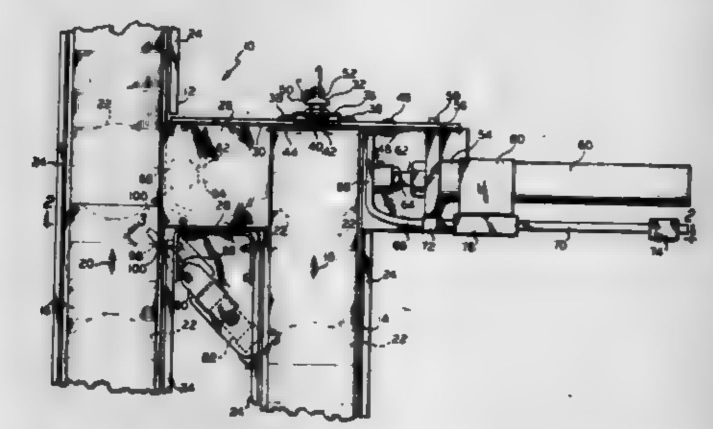
1. A roller conveyor apparatus comprising:
(a) a plurality of hollow, cylindrical rollers mounted for rotary movement about stationary axles fixedly secured to spaced, side-support frames, each of said rollers having a rotary bearing assembly at one end thereof;
(b) a chain driving means for rotating said plurality of rollers; and
(c) a slip friction assembly having associated with each said stationary axle at the other end of its respective said roller:
i. a hollow, elongated inner bearing member surrounding and secured to said stationary axle within said other end of said roller by means preventing rotational movement about, but permitting sliding movement along said axle by said inner bearing, said inner bearing member having a cylindrical outer surface and an annular radial flange outside said roller,
ii. a sprocket drive member having a cylindrical hub with cylindrical inner and outer bearing surfaces, said inner bearing surface rotatably mounted on said inner bearing member with its outside in juxtaposition to said radial flange of said inner bearing member, said sprocket drive member also having a disc portion positioned outside said roller substantially perpendicular to said cylindrical hub with teeth formed on the outer periphery thereof for engagement with said chain and with an annular recess into its inner side in juxtaposition to said outer bearing surface of said hub,
iii. a hollow, elongated cylindrical outer bearing member extending into said other end of said roller in continuous juxtaposition with and secured to the inner side of said roller, said outer bearing member having an inner diameter substantially identical to the outer diameter of the outer bearing surface of said hub and slip frictionally engageable thereon, said outer bearing member having an annular radial flange at its outer end positioned so that its outside is in juxtaposition with the bottom of said annular recess in said sprocket disc portion and slip frictionally engageable thereon and its inside is in juxtaposition with the mouth of said other end of said roller, so that said engagement of said sprocket teeth with said chain is coplanar with the interface of said sprocket disc portion and said flange portion of said outer bearing member, and
iv. adjustable means mounted on said axle on the outside of said radial flange of said inner bearing member for selectively moving said inner bearing member flange relative to said sprocket to cause greater or lesser frictional forces to occur between said sprocket, said outer bearing member flange and said mouth of said roller,
(d) whereby the frictional forces between each said sprocket and roller independent of an external force on said roller can be individually adjusted.

4,325,475
METHOD AND APPARATUS FOR STACKING
Michael H. Spalding, Green Bay, Wis., assignor to Paper Converting Machine Company, Green Bay, Wis.
Filed May 21, 1980, Ser. No. 152,044
Int. Cl.³ B65G *57/09*
U.S. Cl. 198—429 20 Claims



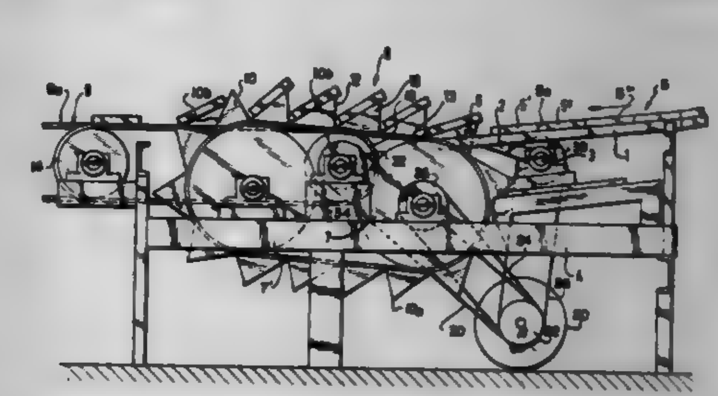
1. In a method of providing stacks of predetermined count product, the steps of providing a closed loop accumulator, serially introducing product at a first point in said loop while periodically removing a product stack adjacent a second point to provide a product-advancing loop portion with said loop portion expanding due to product introduction and the remaining loop portion contracting, periodically contracting the advancing loop portion and immediately thereafter removing said product stack, said advancing loop portion being arranged to expand during stack removal due to further product introduction.

4,325,476
APPARATUS FOR MERGING ARTICLES FROM TWO CONVEYOR LINES INTO ONE CONVEYOR LINE
William R. Eddy, Kansas City, Mo., assignor to Phillips Petroleum Company, Bartlesville, Okla.
Filed Feb. 7, 1980, Ser. No. 119,268
Int. Cl.³ B65G *47/04*
U.S. Cl. 198—448 9 Claims



1. Apparatus for automatically merging articles being conveyed by first and second conveyor lines for conveyance by a single conveyor line, comprising:
article position sensing means disposed adjacent a first position on the first conveyor line and connected in fluid flow communication by first conduit means to a source of pressurized fluid for sensing the presence of an article in said first position and providing a pressurized fluid output signal responsive to the thus sensed presence;
first pressure regulator means interposed in said first conduit means for regulating the pressure of the pressurized fluid between said first pressure regulator means and said article position sensing means to a predetermined value;
article transfer fluid power cylinder means disposed adjacent said first position for extending to thereby transfer an article from said first position to a second position on the second conveyor line, and, alternately, for retracting to permit another article to be conveyed to said first position along the first conveyor line;
article conveyance interrupting fluid power cylinder means disposed adjacent said second position on the second conveyor line for extending to thereby interrupt conveyance of articles past the extended article conveyance interrupting fluid power cylinder means along the second conveyor line, and, alternately, for retracting to permit conveyance of articles past said second position along the second conveyor line;
cylinder actuating valve means connected in fluid flow communication to said article transfer fluid power cylinder means and to said article conveyance interrupting fluid power cylinder means and further connected in fluid flow communication to a source of pressurized fluid by second conduit means for applying pressurized fluid to said article transfer fluid power cylinder means and to said article conveyance interrupting fluid power cylinder means in response to the output signal from said article position sensing means to extend said article transfer fluid power cylinder means and said article conveyance interrupting fluid power cylinder means;
cylinder position sensing means connected to a source of pressurized fluid for sensing the full extension of said article transfer fluid power cylinder means and providing a pressurized fluid output signal responsive to the full extension of said article transfer fluid power cylinder means; and
said cylinder actuating valve means being further adapted for applying pressurized fluid to said article transfer fluid power cylinder means and to said article conveyance interrupting fluid power cylinder means in response to the output signal from said cylinder position sensing means to retract said article transfer fluid power cylinder means and said article conveyance interrupting fluid power cylinder means.

4,325,477
APPARATUS FOR THE FEEDING OF INDIVIDUAL PIECES OF TIMBER FROM A MAT OF A PLURALITY OF TIMBER PIECES
Lennart O. Heikinheimo, Helsinki, Finland, assignor to Plan-Sell Oy, Finland
Filed Dec. 28, 1977, Ser. No. 865,201
Claims priority, application Finland, Jan. 13, 1977, 770095
Int. Cl.³ B65G *47/31*
U.S. Cl. 198—461 5 Claims



1. An apparatus for feeding individual pieces of timber from a mat of a plurality of interconnected or closely adjacent tim-

ber pieces, comprising feed conveyor means for feeding the timber to a feed path, cam means engageable with the foremost edge of the foremost one of the timber pieces to arrest the mat temporarily in the feed path, a second conveyor for individual timber pieces spaced from said feed conveyor, and a transfer conveyor disposed between said feed conveyor and said second conveyor and including an endless member having a plurality of projection members thereon, each including a projection portion engageable in succession with the foremost one of the timber pieces adjacent the trailing edge thereof to facilitate the separation of the foremost piece from the mat, said projection members each having an inclined supporting surface extending forwardly from said projection portion in the direction of movement of said transfer conveyor and engageable beneath one respective foremost piece to support it in a position inclined downwardly in the direction of movement of said transfer conveyor, and drive means connected to said second conveyor, said transfer conveyor and said cam means, to move said second conveyor in a direction away from said transfer conveyor and to move said transfer conveyor in a direction away from said feed conveyor to said second conveyor and to actuate said cam means to move said cam means out of the way of the foremost piece of timber as it is picked up by said projection member and to move it back again to arrest the mat until the next projection member is moved into position to engage the foremost piece.

4,325,478

TRANSPORT BELT INTENDED FOR TRANSPORTING PRODUCTS AT A HIGH TEMPERATURE, AND A TRANSPORT MEANS EQUIPPED WITH THIS BELT

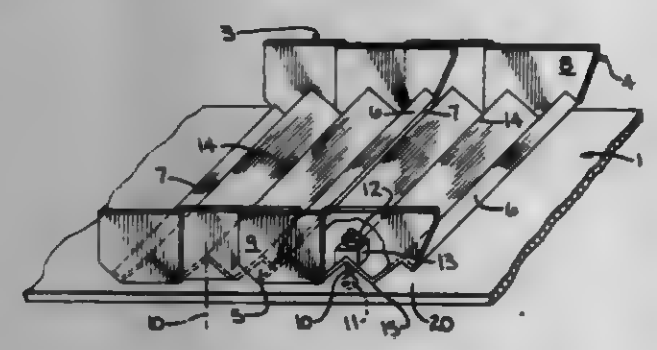
Gerard Y. Richard, Precy sur Oise, France, assignor to Societe d'Applications de Procedes Industriels et Chimiques, France

Continuation of Ser. No. 827,844. This application Oct. 12, 1979, Ser. No. 84,076

Claims priority, application France, Sep. 2, 1976, 76 26441; Nov. 25, 1976, 76 35474

Int. Cl.³ B65G *15/44*

U.S. Cl. 198—699 2 Claims



1. A transport belt for a conveyor useful for the transport of products whose temperature exceeds 200° C. comprising a flexible flat belt and on its outer face metal carrier means having one upper surface adapted to receive or pick up the hot products which are to be transported and a lower outer surface facing the outer face of said belt, means securing said metal carrier means to said belt, the lower outer surface of said metal carrier means being at least partially thermally insulated from the outer face of said belt by at least one cushion of air, said cushion of air being formed at least in part by said lower outer surfaces of said metal carrier means which comprises one or more inverted V's and in part by a transversely extending tubular member having its outer surface contacting the inner surfaces of the inverted V, said tubular member being in line contact with the outer face of said belt and providing a plurality of line contacts with the outer surfaces of said inverted V's.

4,325,479

FEED CONVEYOR

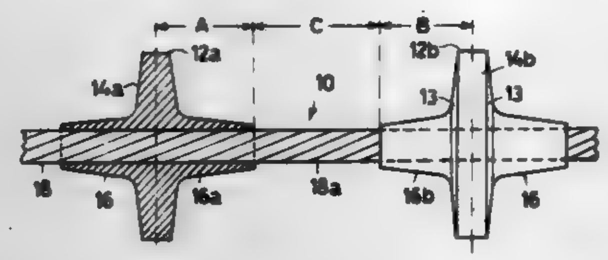
Camillo Pirovano, Via Spluga, Cernusco Lombardone, Como, and Umberto Vergani, Via Marconi, 199 - Merate, Como, both of Italy

Continuation of Ser. No. 756,435. This application Sep. 5, 1978, Ser. No. 939,214

Claims priority, application Italy, Nov. 9, 1976, 29172 A/76

Int. Cl.³ B65G *19/08*

U.S. Cl. 198—733 3 Claims



1. In a feed conveyor of the type wherein a plurality of radially protruding scraping flights are molded on a flexible feed cable, said flights being equidistant from each other, each flight having both a central portion and a pair of tubular sleeve members, said sleeve members extending axially along said feed cable from both sides of said central portion, each of said tubular sleeve members having a support distance associated therewith equal to the length of that sleeve member plus one half the length of said central portion, said flights being spaced apart a distance sufficient to expose a length of cable between confronting tubular sleeve members on adjacent flights, the improvement comprising:

the sums of the support distances of each pair of confronting sleeve members being greater than the length of exposed cable therebetween, said length of exposed cable being greater than the length of either of said adjacent sleeve members.

4,325,480

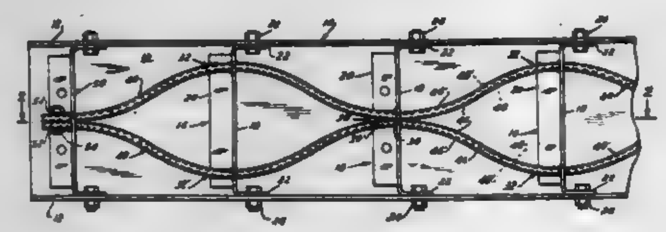
CONVEYOR SUPPORT WAY

William C. Butt, Lynchburg, Va., assignor to Simplimatic Engineering Company, Lynchburg, Va.

Filed Jan. 13, 1977, Ser. No. 758,932

Int. Cl.³ B65G *15/60, 17/00*

U.S. Cl. 198—841 19 Claims



1. A conveyor support way for a table top chain comprising:

(A) a series of alternating first and second cross members in spaced disposition transverse to the axis of said conveyor support way, each of said first cross members containing a first pair of open top spaces and each of said second cross members containing a second pair of open top spaces, said first pair of spaces being disposed laterally inwardly of said second pair of spaces;

(B) a pair of serpentine wear strips, each of said wear strips extending along the length of said series of cross members, alternately through an associated one of said first cross member spaces and through an associated one of said second cross member spaces, and being axially slidably and easily removably mounted on said series of cross members; each of said wear strips is of generally rectangular cross-section with a longitudinally extending groove along each long side thereof to define an "I" cross-section, and each of said spaces of said first and second cross members having a minimum width greater than the maximum width of each said wear strip passing therethrough so that said wear strips sit loosely in said spaces, said wear strips being insertable into and removable from said cross member spaces without the use of tools by displacements of said wear strips relative to said cross members in a direction substantially perpendicular to the axis of said wear strips.

4,325,481

ANCHOR PLATE

Heinrich Kortye, 930 NE. 50th Ct., Pompano Beach, Fla. 33064

Filed Jan. 8, 1981, Ser. No. 223,344

Int. Cl.³ B65D *21/02;* B65G *1/14*

U.S. Cl. 206—503 3 Claims

1. A new and improved anchor plate for maintaining stacked containers in a stable relation, comprising:

a substantially rigid body for placement between adjacent containers;

said body having a plurality of patterns formed therein, said patterns providing a resilient hill and dale surface,

a plurality of rows of teeth on the upper portion of said hill surface for engaging said adjacent containers and a plurality of rows of teeth on the lower portion of said dale surface extending downward for engaging said adjacent container.

4,325,482

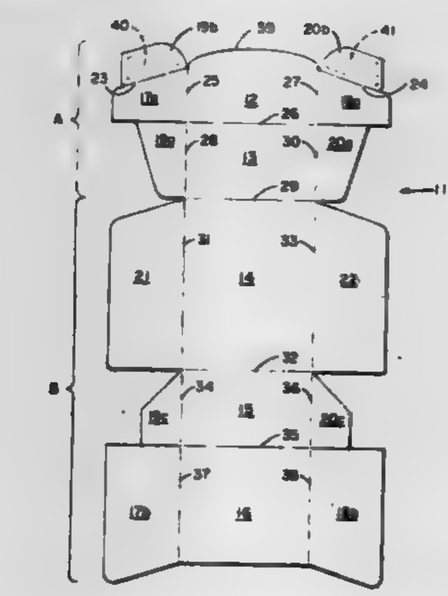
FLIP TOP, RECLOSABLE CARTON

Larry R. Fesser, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Nov. 20, 1980, Ser. No. 208,719

Int. Cl.³ B65D *5/54, 5/66*

U.S. Cl. 206—625 3 Claims



1. A flip top reclosable dispenser carton comprising:

(a) a front wall, back wall, top wall, bottom wall and a pair of opposing side walls;

(b) said front wall including a lower front wall hingedly connected to said bottom wall and an upper front wall tucked behind and held in place by said lower front wall, the upper end of said upper front wall being hingedly connected to said top wall;

(c) each of said side walls including an inner side wall, an outer side wall and an intermediate side wall;

(d) each of said inner side walls being hingedly connected to said back wall and approximately the same height as said back wall along said hinge line;

(e) each of said outer side walls including a lower closure flap hingedly connected to said lower front wall and an upper closure flap hingedly connected to said upper front wall;

(f) each of said intermediate side walls including a top closure flap hingedly connected to said top wall and being adhesively attached to and having the same overall dimension and shape as said upper closure flap of said outer side wall, a lower closure flap hingedly connected to said bottom wall and being adhesively attached to said lower closure flap of said outer side wall, and a glue flap being connected to said upper closure flap of said outer side wall by a line of weakness and further being adhesively attached to said lower closure flap of said outer side wall such that said lines of weakness is in general alignment with the top edge of said lower closure flap of said outer side wall and the lower edge of said top closure flap of said intermediate side wall.

4,325,483

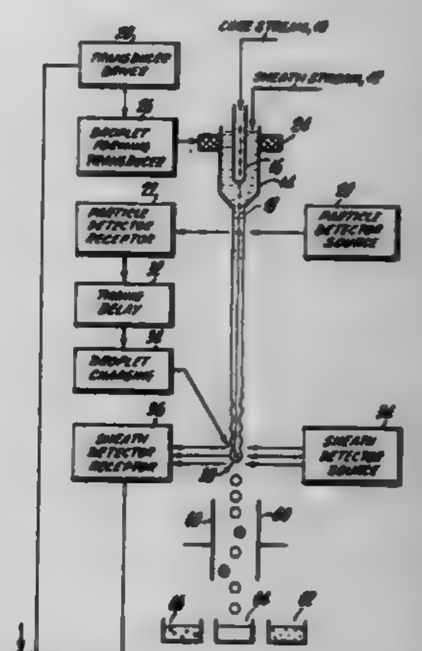
METHOD FOR DETECTING AND CONTROLLING FLOW RATES OF THE DROPLET FORMING STREAM OF AN ELECTROSTATIC PARTICLE SORTING APPARATUS

Igino Lombardo, Sharon; Donald E. Barry, Norwood, and W. Peter Hansen, Middleboro, all of Mass., assignors to Ortho Diagnostics, Inc., Raritan, N.J.

Filed Aug. 20, 1979, Ser. No. 68,231

Int. Cl.³ B07C *5/342*

U.S. Cl. 209—3.1 43 Claims



1. An electrostatic particle sorting system, comprising:

(a) flow means for establishing the flow of a continuous particle containing stream comprising at least a particle containing core stream portion and a surrounding sheath stream portion, said stream having a particle sensing point defined therealong;

(b) optical detection means for optically detecting said particles at least at said particle sensing point;

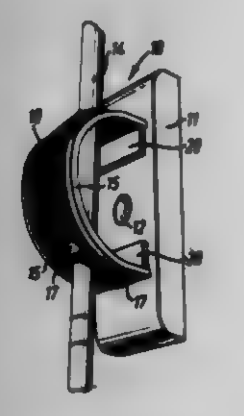
(c) perturbation means for perturbing said stream with at least a preselected frequency and amplitude to cause said stream to form a breakpoint at which said stream becomes a series of discrete droplets;

(d) droplet charging means for relatively charging selected ones of said droplets as they are formed at said breakpoint; and

(e) synchronization means for timing said relative charging

such that said selected droplets contain at least selected particles detected by said optical detection means; said synchronization means comprising:
(i) sheath sensing means for sensing at least the light scatter of said sheath stream portion at a sheath sensing point therealong subsequent to said perturbation and for producing a surface character output signal which is proportional thereto;
(ii) surface character analysis means for producing an output signal which is at least selectively responsive to said sheath sensing means;
(iii) flow rate adjustment means responsive to said surface character analysis means for establishing and maintaining a preselected flow rate of said stream.

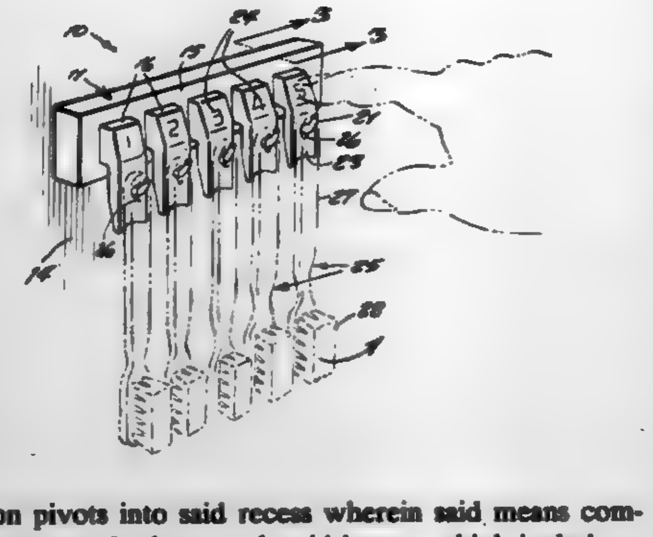
4,325,484
HOLDER FOR ELONGATED ARTICLES
Richard M. Berry, Bristol, England, assignor to Kleeneze Limited, England
Filed Mar. 26, 1979, Ser. No. 24,026
Claims priority, application United Kingdom, Mar. 29, 1978, 12191/78
Int. Cl.³ A47F *7/00*
U.S. Cl. 211—66 8 Claims



1. A holder for elongated articles as herein defined, said holder comprising a base member for attachment to a supporting structure, a pair of strips each having opposite ends attachable to a base member and each having other than a straight configuration between the ends thereof and also being shaped to project out from the base member between the opposite ends of the strip, such that an elongated article disposed between the strips would cross each strip at two spaced apart locations along the strip, the ends of the strips being attached to said base member so that the portions of said strips intermediate their ends extend substantially parallel to each other and project outwardly from said base member, said strips each being of channel section with the channels of said strips extending toward each other, and a resilient bristle strip mounted in the channel of each of said strips, said bristle strips each comprising a plurality of brush fibers, said brush fibers extending from said strips in opposing relationship for holding therebetween an elongated article in a plane spaced from but substantially parallel to that of said base member a resilient pad being attached to the base member between adjacent ends of the pair of strips.

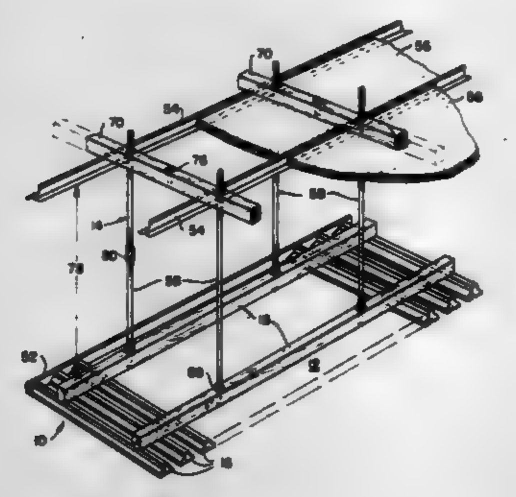
4,325,485
TOOTHBRUSH HOLDER
Octavio U. Pina, c/o George Spector, 3615 Woolworth Bldg., 233 Broadway, and George Spector, 3615 Woolworth Bldg., 233 Broadway, both of New York, N.Y. 10007
Filed Mar. 10, 1980, Ser. No. 128,569
Int. Cl.³ A46B *17/02;* A47G *29/08*
U.S. Cl. 211—66 2 Claims

1. A toothbrush holder for supporting a plurality of toothbrushes, comprising in combination a one-piece main body including a plurality of buttons integral therewith, means on each side button for supporting a toothbrush said buttons being in a horizontal row on a front side thereof, and a recess in said main body behind each said button, and a hinge about which



said button pivots into said recess wherein said means comprises a downward tab on each said button which includes a forward hook on which one of said toothbrushes is hooked.

4,325,486
OVERHEAD GLASS STEMWARE RACK
Edwin S. Neal, 101 E. Boulevard, Charlotte, N.C. 28203
Filed Jan. 7, 1980, Ser. No. 110,219
Int. Cl.³ A47B *73/00;* A47F *7/28;* A47G *29/00*
U.S. Cl. 211—71 12 Claims

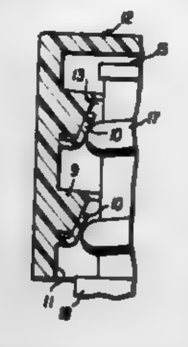


1. An overhead rack for suspending glass stemware in an inverted position comprising at least two spaced elongated support means, suspension means connected to said support means, and a plurality of spaced, elongated support rails connected to said support means and extending substantially perpendicular thereto, each said support rail including a bottom surface, a central crown section having a top surface spaced from said bottom surface, a flat surface extending laterally from either side of said central crown section below the level of said top surface, and a downwardly extending stepped section connecting the outermost longitudinal edge of each said flat surface with the outermost longitudinal edge of said bottom surface, said downwardly extending stepped sections being in the form of a reverse curve in cross section.

4,325,487
SEALING AND LOCKING THREAD SYSTEM
Sidney M. Libit, 441 Lakeside Ter., Glencoe, Ill. 60022
Filed Jun. 2, 1980, Ser. No. 155,406
Int. Cl.³ B65D *41/04*
U.S. Cl. 215—330 3 Claims

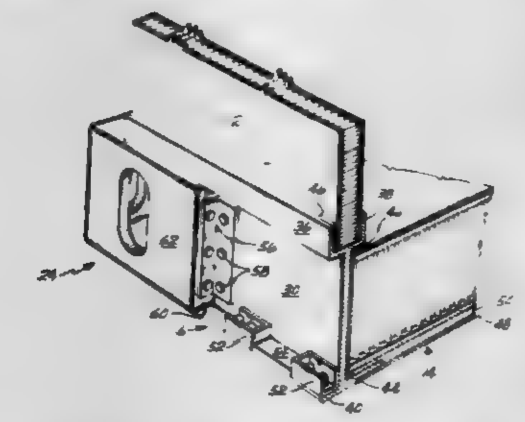
1. A self-locking thread system incorporated in male and female threadedly-engaged parts and to be locked-up in response to relative rotation of the parts, one of the said parts

being provided with a helical thread having a transverse cross-section of substantially trapezoidal configuration to present a camming working face, a helical fin positioned below said thread on said same part and having a width greater than the



thread flight, the pitch of the fin and thread being the same, the other threaded part being so dimensioned and arranged so that relative rotation of the parts will cause the camming surface to deflect the fin into a jamming position between said threaded parts to bind the parts against inadvertent unscrewing thereof.

4,325,488
LIGHTWEIGHT CARGO CONTAINER AND FITTINGS
Clyde R. Ketner, Sumner, Wash., assignor to The Boeing Company, Seattle, Wash.
Filed Aug. 23, 1979, Ser. No. 69,219
Int. Cl.³ B65D *88/12, 90/08*
U.S. Cl. 220—1.5 4 Claims



1. A side rail fitting adapted to secure the walls to the floor in a lightweight cargo container comprising
a rigid upper portion having a substantially U-shaped cross section formed by a generally planar bight and two arms integral with the ends thereof, said arms having substantially smooth facing surfaces and extending substantially perpendicularly with respect to said bight, at least one of said arms being tapered from root to tip in a direction away from said bight such that the distance between said arms increases in said direction;
a rigid, lower, substantially planar base, extending generally parallel with respect to said bight; and
a web integral with and extending substantially perpendicularly between said bight and said base, at least a portion of the surface of said bight opposite that from which said arms extend being tapered away from said base in a direction away from said web, such that the distance between said bight surface and said base increases in said direction away from said web, the integral connection between said bight and said web being located on said bight surface substantially midway between the integral connections of said arms to said bight and the integral connection between said base and said web dividing said base into two base portions; wherein one of said base portions has a recess in the surface thereof opposite that to which the web connects forming one free end of reduced thickness;
a lightweight wall inserted in said upper portion, a lightweight floor inserted substantially between the tapered surface of said bight and one of said base portions, a first wedge inserted between said tapered arm and said wall, a second wedge inserted between the tapered surface of said bight and said floor, and adhesive means for securing said first and second wedges, said wall and said floor within said fitting; and
at least one pair of restraint blocks removably mounted in spaced relation on the other base portion and a rub strip removably mounted between said restraint blocks for providing a hold-down attachment for said container.

4. A protective corner fitting for a lightweight cargo container comprising
a fixed part, adapted to be permanently attached to the container; said fixed part comprising
first and second substantially rectangular walls integrally connected to each other along an edge of each and extending generally at right angles to each other from their connection; a third, substantially rectangular wall integrally connected along two of its edges to said first and second walls and extending generally at right angles to each of said first and second walls,
a removable part, adapted to be removably attached to said fixed part, said removable part comprising
fourth and fifth substantially rectangular walls integrally connected to each other along an edge of each and extending generally at right angles to each other from their connection; a sixth substantially rectangular wall integrally connected along two of its edges to said fourth and fifth walls and extending generally at right angles to each of said fourth and fifth walls; said fourth, fifth and sixth walls having means for handling provided therein; and
means for removably connecting said removable part to said fixed part such that when said parts are connected together, said third wall contacts the edges of said fourth and fifth walls opposite the edges to which said sixth wall is connected and said sixth wall contacts the edges of said first and second walls opposite the edges to which said third wall is connected to form a generally rectangular, hollow, protective corner, said means for connecting said parts comprising
a first flange fixed to each of the edges of said first and second walls opposite the connection therebetween, each first flange extending at substantially a right angle to the wall to which it is attached and each first flange carrying at least one fastening means;
a first fillet on the inside of the connection between said first and second walls, said first fillet having at least one bore therein;
a second flange connected to the inside of said third wall adjacent the corner thereof diagonally opposite said first fillet, said second flange having at least one bore therein;
a recess in the inside of said fourth and fifth walls at the edges thereof opposite the connection therebetween, each said recess being shaped and dimensioned to receive said first flanges and having at least one bore therethrough which is so located to align with the at least one fastening means on a respective one of said first flanges when said parts are connected;
a second fillet on the inside of the connection between said fourth and fifth walls, said second fillet having at least one first pin extending therefrom, said at least one first pin being oriented and dimensioned so as to be received in the at least one bore in said second flange when said parts are connected; and
at least one second pin extending from the corner of said sixth wall diagonally opposite said second fillet; said at least one second pin being oriented and dimensioned to be received in said at least one bore in said first fillet when said parts are connected.

4,325,489

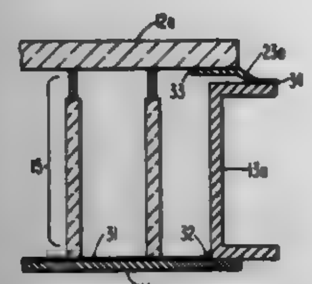
ENVELOPE FOR FLAT PANEL DISPLAY DEVICES

John P. Russell, Pennington, and Charles B. Carroll, Trenton, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Apr. 17, 1980, Ser. No. 140,962

Int. Cl.³ H01K *1/36;* H01J *29/86*

U.S. Cl. 220—2.2 **12 Claims**



1. An envelope for a flat panel display device comprising:

a first envelope portion including a baseplate and a second envelope portion including a faceplate said baseplate and said faceplate being arranged in a spaced substantially parallel relationship;

a plurality of side walls included in at least one of said envelope portions and extending between said baseplate and said faceplate around the periphery of said envelope to maintain said substantially parallel relationship, said side walls having a first predetermined dimension;

a plurality of support walls extending between said baseplate and said faceplate to divide said envelope into a plurality of channels and to support said baseplate and said faceplate against atmospheric pressure, said support walls having a second predetermined dimension greater than said first predetermined dimension,

a flexible seal for hermetically and flexibly coupling said envelope portions, said seal including a first continuous member affixed to said first portion and configured to extend around the periphery of said envelope and dimensioned to extend outwardly past the outside of said side walls to form a first sealable edge surface, a second continuous member affixed to said second portion and configured to extend around the periphery of said envelope and dimensioned to extend outwardly past the outside of said side walls to form a first sealable edge surface, a second continuous member affixed to said second portion and configured to extend around the periphery of said envelope and dimensioned to extend outwardly past the outside of said side walls to form a second sealable edge surface, said edge surfaces meeting along a sealable seam to form a space between said continuous members, said space varying in accordance with any difference between said first and second predetermined dimensions as said seal flexes in response to atmospheric pressure compressing said support walls between said baseplate and said faceplate.

4,325,490

NON-DETACHABLE RING PULL OPENING DEVICE FOR BEVERAGE CANS

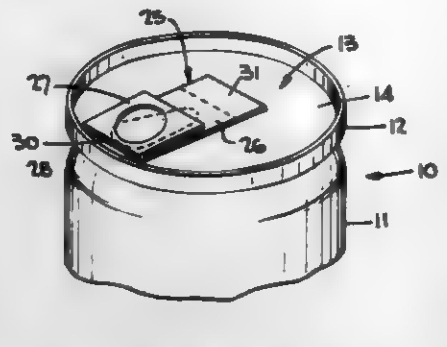
Roger N. Conrad, Matteson, Ill., assignor to The Continental Group, Inc., Stamford, Conn.

Filed Oct. 16, 1980, Ser. No. 197,721

Int. Cl.³ B65D *17/34*

U.S. Cl. 220—269 **3 Claims**

1. An easy opening container assembly comprising a container panel, a line of weakness in said container panel defining a removable panel portion, said line of weakness having a starting portion; the improvement residing in said container panel being fractured along said line of weakness starting portion, said fractured starting portion including jagged edges on said container panel and said removable panel portion disposed in mechanical interlocked relation, an opening tab, said opening tab including a body portion overlying said removable panel portion and being releasably sealed to said container panel surrounding said line of weakness and permanently secured to said removable panel portion radially outwardly of said removable panel portion, said tab including a



grip portion extending from said body portion adjacent said line of weakness starting portion, and said body portion having a terminal part permanently bonded to said container panel remote from said grip portion.

4,325,491

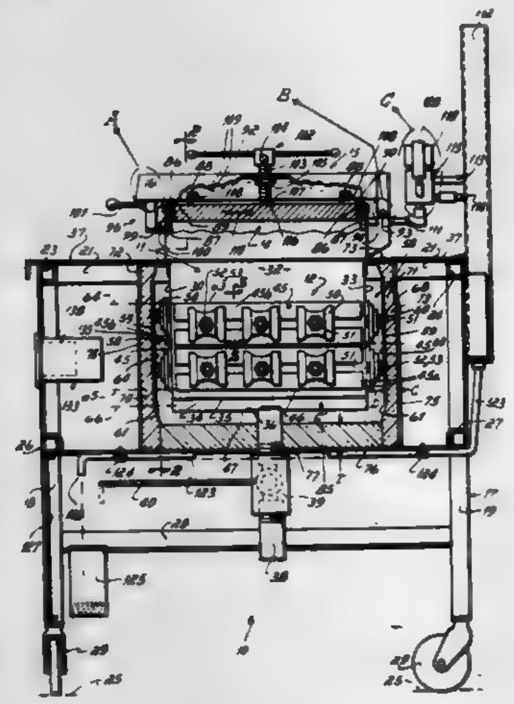
PRESSURE COOKER CLOSURE FASTENING MEANS

Donald R. Barnhill, Hamilton, Ohio, assignor to B&W Metals Company, Inc., Fairfield, Ohio

Division of Ser. No. 98,673. This application Sep. 22, 1980, Ser. No. 189,151

Int. Cl.³ B65D *45/00, 45/28*

U.S. Cl. 220—316 **3 Claims**



1. A cover assembly for a pressure cooker, said cooker including a tank defined by a series of walls and a floor, said cover assembly comprising

a cover adapted to be received in sealing relation with the top of said tank,

a hold-down bar connected to said cooker for movement between tank open and tank closed positions, said hold-down bar cooperating with said cover for restraining said cover in sealing relation with said tank when said hold-down bar is in the tank closed position, and said hold-down bar cooperating with said cover for moving said cover into and out of closure relation with said tank as said hold-down bar is moved between tank open and tank closed positions, and

connector means connecting said cover with said hold-down bar, said connector means comprising at least one bracket mounted on one of said cover and said hold-down bar, and at least one seat mounted on the other of said cover and said hold-down bar, said bracket and seat cooperating to retain said cover and said hold-down bar in assembly during normal use when said hold-down bar is translated between the tank open and tank closed positions, and said bracket and seat also cooperating so that when said hold-down bar is in the tank open position said cover need merely be lifted off said seat without disconnecting any other structural elements when disassembly of said cover from said hold-down bar is desired.

4,325,492

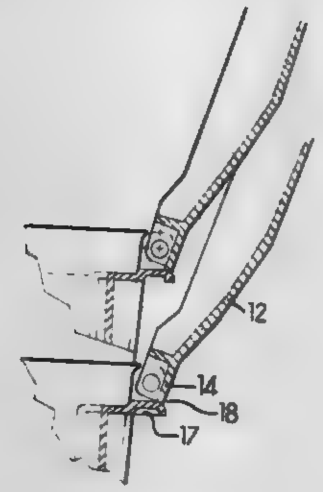
COVERED CONTAINER

Walter A. Kunze, Coraopolis, Pa., assignor to Cities Service Company, Tulsa, Okla.

Filed May 22, 1980, Ser. No. 152,289

Int. Cl.³ B65D *43/24*

U.S. Cl. 220—335 **10 Claims**



1. A receptacle device comprising a cover and a deeply drawn tapered container having an opening having a straight side wherein the cover is pivotally attached to the container at the opening in such a manner that the cover opens and closes the container and wherein the cover is clear of the opening when in the open position.

4,325,493

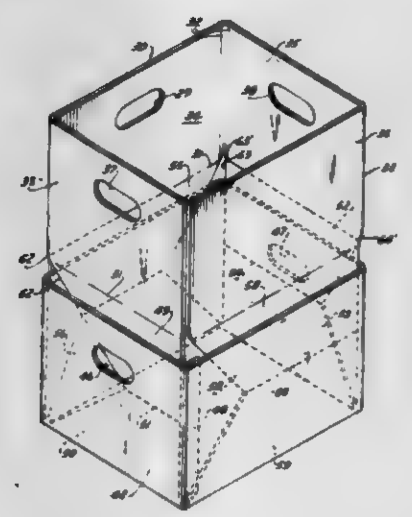
COLLAPSIBLE CARTON

Richard E. Paige, New York, N.Y., assignor to The Paige Company Containers, Inc., New York, N.Y.

Filed Apr. 7, 1980, Ser. No. 137,655

Int. Cl.³ B65D *5/02, 5/36, 5/56*

U.S. Cl. 220—416 **4 Claims**



1. A carton comprising inner and outer snugly nestable tubular shells, each shell including a series of side wall panels hingedly connected together along their side edges, said shells being telescopically adjustable into and out of a set-up relationship in which the overlying side wall panels define a set of double-walled carton sides, a plurality of foldable strips hingedly interconnecting adjacent bottom edges of said overlying side wall panels, said strips being unfolded and parallel to their respective side wall panels when said inner shell is pulled out of said outer shell to its maximum extent and said strips being folded and extending transverse to said side wall panels when said shells are telescoped into the set-up relationship so as to define the carton floor, the lower ends of the side edges of adjacent side wall panels of the inner shell series of such panels being spaced apart when said inner shell is out of said outer shell to its maximum extent to create a gap between said side edges, the lower ends of the inner shell side wall panels being bent inwardly toward each other to close the gaps and reduce the cross-sectional dimensions of the inner shell as the inner shell is telescoped into the outer shell, and each hinge connection between the side wall panels of said inner shell being formed by a pair of parallel hinge lines, the gap between the inner shell side wall panels being between said pair of hinge lines and spaced laterally therefrom.

4,325,494

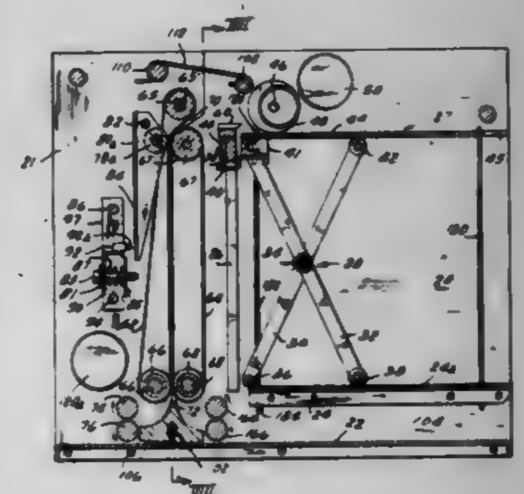
SINGLE-BILL CURRENCY DISPENSER

Leonard A. Fish, Chicago, Ill., assignor to Avco Investment Management Corporation, Greenwich, Conn.

Continuation-in-part of Ser. No. 786,760. This application Jun. 19, 1979, Ser. No. 49,896

Int. Cl.³ B65H *5/06*

U.S. Cl. 221—13 **21 Claims**



1. A dispenser for dispensing sheets of currency one sheet at a time, comprising means for supporting a stack of currency sheets, a feed roller having eccentric means engaged with the topmost sheet in said stack, constant force pressure means for pressing said stack into contact with said feed roller, means for rotating said feed roller for urging said topmost sheet forwardly relative to said stack, means for sensing the advancement of said topmost sheet for de-energizing said feed roller in response to said advancement, and conveyor means for carrying said advanced topmost sheet to an exit port to dispense said sheet.

4,325,495

STORAGE BIN ACTIVATOR DEVICE AND METHOD FOR RESTORING BULK MATERIAL FREE FLOW

Michael M. Mokris, Lakewood, N.J., assignor to Pulsonics Corporation, Lakewood, N.J.

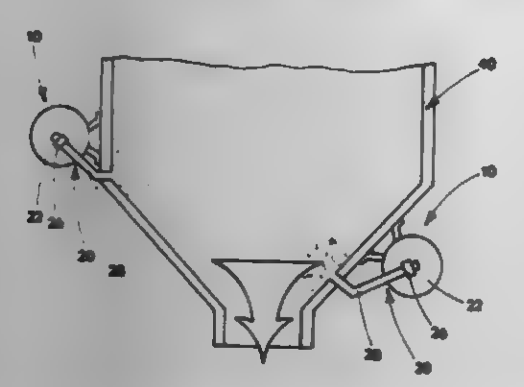
Filed Jul. 16, 1979, Ser. No. 58,051

Int. Cl.³ B65G *69/06*

U.S. Cl. 222—1 **9 Claims**

1. A material activator device to initiate the free flow of material or remove disruptive materials from a containment vessel, comprising at least one injector means for introducing sequential energy bursts of compressed gas into the containment vessel, programmer means for regulating the length of

the energy bursts, the intervals between the energy bursts and the number of the energy bursts in each sequential burst pattern, each said length of the energy bursts and the intervals between the energy bursts being in an adjustable programmer signal range of 20 to 100 milliseconds establishing said sequential burst pattern of multiple linked sequential energy bursts which act on moving particles of material before the moving



particles come to rest, said programmer means also establishing different intervals than the intervals between the energy bursts so as to create separated sequential burst patterns, whereby the sequential energy bursts of compressed gas in each sequential burst pattern provide multiple linked impact, aeration and vibration forces at or near sonic frequency to induce free flow of material or dislodge disruptive materials in the containment vessel.

4,325,496

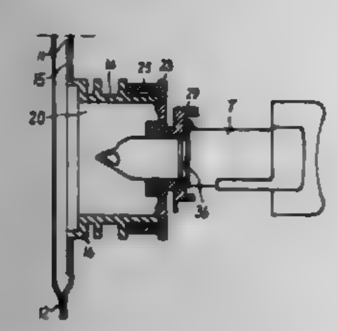
FILLING-DISPENSING CLOSURE FOR A BAG-LIKE CONTAINER

Jon H. Malpas, Ocean Grove, Australia, assignor to Diemoulders Proprietary Limited, Leopold, Australia

Filed Aug. 22, 1980, Ser. No. 180,310

Int. Cl.³ B67B *7/26*

U.S. Cl. 222—83 7 Claims



1. A filling-dispensing neck member (14) and closure member (23) combination for a bag-like container (11), said neck member (14) having a passageway (20) through which liquid may be caused to flow into the bag-like container (11) and through which liquid may be dispensed, said closure member (23) having a socket (30) for the reception of a barrel of a dispensing tap (T), an oxygen impermeable diaphragm (34) across said socket (30), means (35) in said socket (30) for restraining the barrel of the tap (T) against longitudinal movement once the tap (T) is engaged in it and has broken the diaphragm (34), said closure member (23) having a circumferential skirt (25) adapted to fit over and engage with the outer end of the neck member (14) and said skirt (25) having at least one internal circumferential rib (32) for locking engagement with an external complementary bead (19) on the outer end part of the neck member (14).

4,325,497

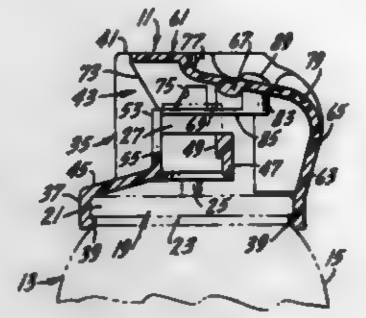
CHILD-RESISTANT SPRAY THROUGH COVER

Ronald F. Ewald, Rolling Meadows, Ill., assignor to Knight Engineering & Molding Co., Arlington Heights, Ill.

Filed Mar. 6, 1980, Ser. No. 127,594

Int. Cl.³ B65D *83/14;* B67D *5/32*

U.S. Cl. 222—153 14 Claims



1. A child-resistant spray through cover for aerosol and similar containers which cover assembly can be applied to a container having a conventional actuator button of the type in which the actuator button discharges through an outlet when the button is depressed, said cover assembly including:

a housing adapted to fit over the actuator button and to be securely attached to the container,

an opening formed in the housing to allow the passage of spray discharged through the discharge outlet of the actuator button,

a flap mounted on the housing and extending over the actuator button with the flap being movable across the actuator button upon the application of force applied thereto by a finger of a user between a first position and a second position,

the flap being positioned out of actuating engagement with the actuator button when located in the first position and being positioned in actuating engagement with the actuator button in the second position,

means operative when the flap is in the first position and inoperative when the flap is in the second position to prevent vertical movement of the flap into actuating engagement with the actuator button,

locking means associated with the flap to restrain the flap in its first position,

finger engaging means for releasing the locking means to permit the flap to be moved to its second position, and

biasing means to return the flap to its first position and the locking means to its flap retaining association when the application of force to the flap is discontinued.

4,325,498

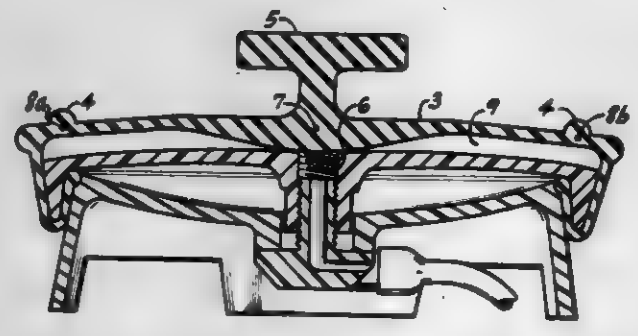
PRESSURIZED PORTABLE ELASTIC MEMBRANE LIQUID CONTAINER

Quentin T. Kelly, Hopewell, N.J., assignor to Pressurized Products, Inc., Princeton, N.J.

Filed Nov. 19, 1979, Ser. No. 95,602

Int. Cl.³ B65D *37/00*

U.S. Cl. 222—210 3 Claims



1. A self pressurized portable container for liquid comprising: a bottom sealing ring plate having a passage therethrough; a pressure plate of substantially circular shape having a bore

therethrough adapted for the passage of liquid therethrough from above and below upper and lower faces thereof, said bottom sealing ring plate being nested and seated against said lower face with said passage substantially aligned with said bore; and an injection molded substantially circular elastic membrane having a continuous upper wall positioned above said upper face and having circumscribing edges thereof mounted and sealably anchored between said pressure plate and said bottom sealing ring plate at the circumscribing peripheries thereof, said circular elastic membrane having an integrally molded handle extending upwardly from a first central location on a top surface of said circular elastic membrane; the improvement comprising a boss extending downwardly from a second central location on a lower surface of said circular elastic membrane, further comprising a second boss in a form of a circular ridge located at injection points of said circular elastic membrane such that the circular ridge at substantially all points is equidistant from and circumscribes said second central location thereby providing for equal expansion and stress on the circular elastic membrane during expansion thereof; whereby rupture cracks are avoided.

4,325,499

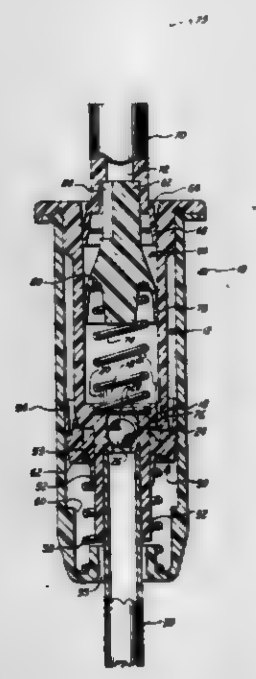
EXTENDED SPRAY PUMP

Joseph J. Shay, Manchester, N.H., assignor to Ethyl Products Company, Richmond, Va.

Filed Oct. 31, 1980, Ser. No. 202,567

Int. Cl.³ B05B *11/02*

U.S. Cl. 222—321 10 Claims



1. A finger operated extended spray pump comprising:

a. an outer cylindrical housing having an upper end and a lower end;

b. an inner cylindrical housing fitted inside the upper end of said outer cylindrical housing, said inner cylindrical housing having an inlet channel means in the lower end thereof for admitting liquid into the interior of said inner cylindrical housing and a valve means for preventing backflow of liquids through said inlet channel means of said inner cylindrical housing;

c. upper piston means slidably fitted in the upper end of said inner cylindrical housing, said upper piston having a stem connected thereto which has a stem channel therein through which liquids can flow;

d. middle piston means connected to said upper piston means and slidably fitted in said inner cylindrical housing beneath said upper piston means;

e. a first spring fitted inside said inner cylindrical housing to urge said middle piston upwardly;

f. port means located in said inner cylindrical housing for allowing liquids to flow from the inside to the outside of said inner cylindrical housing;

g. lower piston means slidably fitted around the outside of the lower end of said inner cylindrical housing, said lower piston forming a sliding seal with the interior of said outer cylindrical housing and said lower end of said inner cylindrical housing;

h. a second spring fitted inside the lower end of said outer cylindrical housing to urge said lower piston upwardly;

i. nib means located on the inside wall of said inner housing for deflecting the edge of said middle piston to allow air or liquid beneath said middle piston to flow upwardly around the outside edges of said piston; and,

j. side channel means in said middle piston means aligned with said stem channel means in said upper piston for permitting liquids under pressure to flow upwardly through said stem.

4,325,500

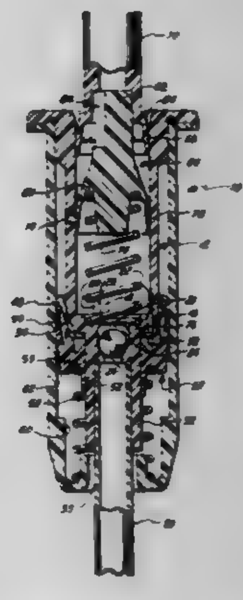
EXTENDED SPRAY PUMP

Joseph J. Shay, Manchester, N.H., assignor to Ethyl Products Company, Richmond, Va.

Filed Oct. 31, 1980, Ser. No. 202,612

Int. Cl.³ B05B *11/02*

U.S. Cl. 222—321 10 Claims



1. A finger operated accumulative spray pump comprising:

a. an outer cylindrical housing having an upper end and a lower end;

b. an inner cylindrical housing fitted inside the upper ends of said outer cylindrical housing, said inner cylindrical housing having an inlet channel means in the lower end thereof for admitting liquid into the interior of said inner cylindrical housing, and a first valve means for preventing backflow of liquids through said inlet channel means of said inner cylindrical housing;

c. upper piston means slidably fitted in the upper end of said inner cylindrical housing, said upper piston having a stem connected thereto which has a stem channel therein through which liquids can flow;

d. middle piston means connected to said upper piston means and slidably fitted in said inner cylindrical housing beneath said upper piston means;

e. a first spring fitted inside said inner cylindrical housing to urge said middle piston upwardly;

f. port means located in said inner cylindrical housing for allowing liquids to flow from the inside to the outside of said inner cylindrical housing;

g. lower piston means slidably fitted around the outside of the lower end of said inner cylindrical housing, said lower

piston forming a sliding seal with the interior of said outer cylindrical housing and said lower end of said inner cylindrical housing;

h. a second spring fitted inside the lower end of said outer cylindrical housing to urge said lower piston upwardly;

i. an orifice means located in the sidewall of said inner cylindrical housing for admitting liquids located on the outside of said inner cylindrical housing into the interior of said inner cylindrical housing between said upper piston and said middle piston; and,

j. side channel means in said middle piston means aligned with said stem channel means in said upper piston for permitting liquids under pressure to flow upwardly through said stem.

4,325,501

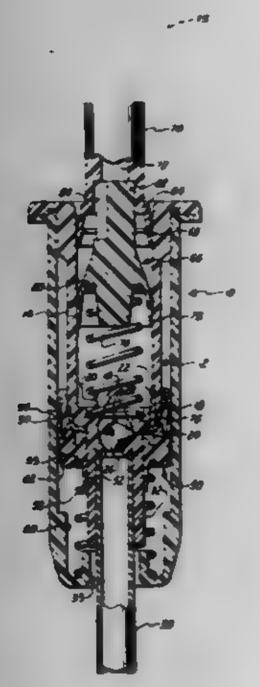
EXTENDED SPRAY PUMP

Joseph J. Shay, Manchester, N.H., assignor to Ethyl Products Company, Richmond, Va.

Filed Oct. 31, 1980, Ser. No. 202,761

Int. Cl.³ B05B *11/02*

U.S. Cl. 222—321 10 Claims



1. A finger operated extended spray pump comprising:

a. an outer cylindrical housing having an upper end and a lower end;

b. an inner cylindrical housing fitted inside the upper end of said outer cylindrical housing, said inner cylindrical housing having an inlet channel means in the lower end thereof for admitting liquid into the interior of said inner cylindrical housing and a first valve means for preventing backflow of liquids through said inlet channel means of said inner cylindrical housing;

c. upper piston means slidably fitted in the upper end of said inner cylindrical housing, said upper piston having a stem connected thereto which has a stem channel therein through which liquids can flow;

d. middle piston means connected to said upper piston means and slidably fitted in said inner cylindrical housing beneath said upper piston means;

e. a first spring fitted inside said inner cylindrical housing to urge said middle piston upwardly;

f. port means located in said inner cylindrical housing for allowing liquids to flow from the inside to the outside of said inner cylindrical housing;

g. second valve means for preventing backflow of liquid through said port means;

h. lower piston means slidably fitted around the outside of the lower end of said inner cylindrical housing, said lower piston forming a sliding seal with the interior of said outer cylindrical housing and said lower end of said inner cylindrical housing;

i. a second spring fitted inside the lower end of said outer cylindrical housing to urge said lower piston upwardly;

j. an orifice means located in the sidewall of said inner cylindrical housing for admitting liquids located on the outside of the inner cylindrical housing into the interior of said inner cylindrical housing between said upper piston and said middle piston; and,

k. side channel means in said middle piston means aligned with said stem channel means in said upper piston for permitting liquids under pressure to flow upwardly through said stem.

4,325,502

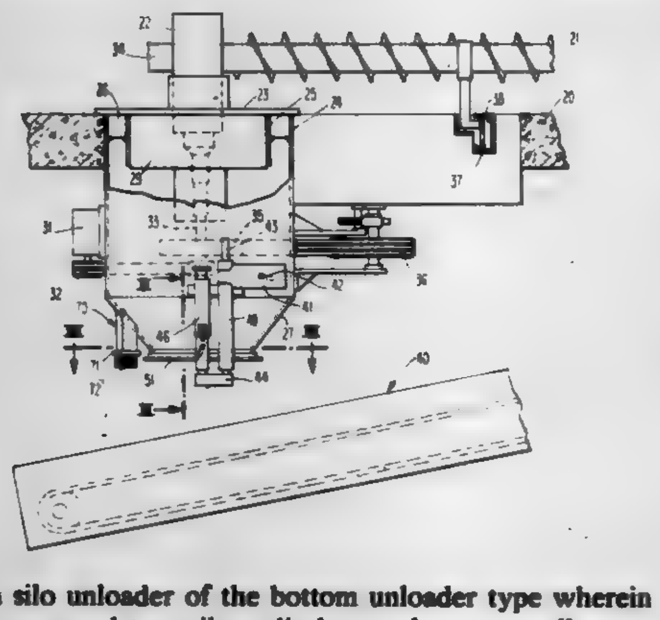
DISCHARGE CLOSURE FOR SILO UNLOADER

Richard L. Weaver, R.D. 4, Myerstown, Pa. 17067

Filed Sep. 26, 1980, Ser. No. 191,072

Int. Cl.³ B67D *5/01*

U.S. Cl. 222—504 8 Claims



1. In a silo unloader of the bottom unloader type wherein silage is conveyed to a silage discharge chute generally centrally disposed at the lower end of the silo; said discharge chute having a discharge opening at the lower end thereof, and an openable single closure in closing relation to said discharge opening, the improvement comprising means for driving said closure in a single compound opening motion, both generally vertically downwardly and laterally transverse of the direction of silage flow through said opening, to open said opening, and in a single compound returning motion both laterally transverse and generally vertically upwardly, to close said opening, said means for driving said closure serving to maintain said closure in a substantially horizontal attitude throughout its motion.

4,325,503

PAINTER'S BELT-ON BRUSH AND BUCKET HOLDER AND CARRIER

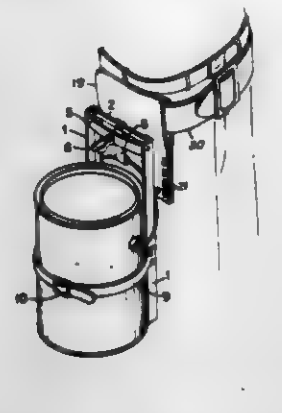
Glen E. Swinney, Rte. 1, Box 234-A, Axton, Va. 24054

Filed Jan. 21, 1981, Ser. No. 225,971

Int. Cl.³ A46B *17/00*

U.S. Cl. 224—148 5 Claims

1. A holder for carrying a paint can on the person of the painter comprising (1) a rack directly attachable to said can for securely holding it, comprising: a pair of parallel upright elements, strap means for firmly attaching the can against said elements, support means at the lower part of said rack provided with an upwardly directed lip adapted to fit under and retain the circular rim at the bottom of the paint can, (2) a supporting member adapted to be carried by a belt and held thereby against the side of the painter, having thereon an outwardly extending member attached by hinge means for limited movement on a horizontal axis disposed paralled to the side of the painter, and (3) a connecting link pivotally connected to an upper portion of the rack for free frictionally inhibited rotational movement of the rack about a horizontal axis under the influence of gravity and also pivotally connected to said hinged element of said supporting member for adjustably positioning said can forwardly or rearwardly about a vertically disposed axis.



4,325,504

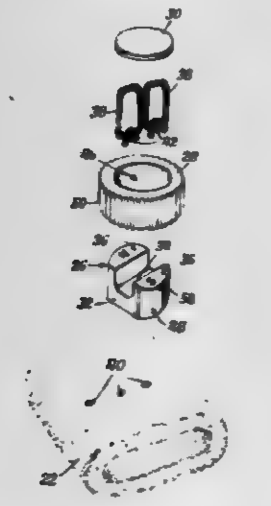
MAGNETIC DEVICE ADAPTED TO BE WORN ON THE ARM OR WRIST FOR HOLDING NAILS AND THE LIKE

Nader Amani, 1122 S. Highland Ave., Oak Park, Ill. 60304

Filed Dec. 16, 1980, Ser. No. 216,797

Int. Cl.³ A45F *5/00*

U.S. Cl. 224—183 3 Claims



1. In a magnetic device adapted to be worn on the arm or wrist for holding magnetizable items such as nails and the like, said device comprising in combination:

a bracelet band adapted to encircle the user's arm or wrist; and

a circular magnet of U-shaped cross-section supported on the bracelet band and having bare coplanar north and south poles in a plane generally parallel to the bracelet band facing outwardly to attract nails and the like and to retain them readily available to the user;

the improvement comprising a relatively soft annular collar of rubberlike cushioning material encircling and coplanar with the magnet below its outer face to protect the magnet from striking external objects.

4,325,505

FLAP HOLSTER

Chester K. Hillman, P.O. Box 1272, Twin Falls, Id. 83301

Filed Jun. 2, 1980, Ser. No. 155,510

Int. Cl.³ F41C *33/02*

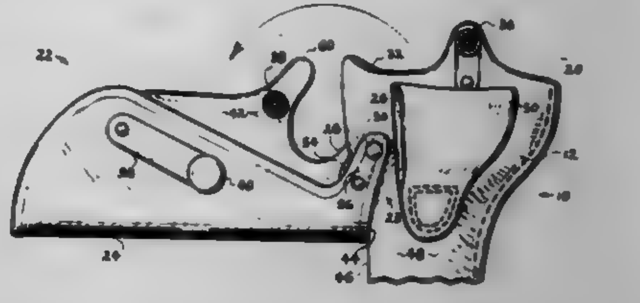
U.S. Cl. 224—238 5 Claims

1. A holster for a handgun comprising:

a case member for the handgun having a barrel receiving portion having a longitudinal surface that overlies the top of the barrel when the handgun is holstered;

a flap member having a closed position which substantially covers the top of said case member, said flap member having an end part including portions lying adjacent to and on either side of said longitudinal surface when said flap member is in said closed position;

an offset hinge member for mounting said flap member to said case member and comprising a pair of laterally spaced-apart pivot arms adjacent to and including said portions of said end part to downwardly depend from said flap member in said closed position, said spaced-apart pivot arms having an imaginary horizontal axis of rotation extending therebetween;



pivot means for mounting said pivot arms to said case member adjacent said longitudinal surface with said imaginary horizontal axis extending through said longitudinal surface, said pivot means providing for a swingable movement of said pivot arms to a position downwardly depending from said horizontal axis and generally forward of said case member to concurrently position said flap member in an overcenter position below said horizontal axis of rotation and to the front of said case to substantially maintain said flap member in an open position.

4,325,506

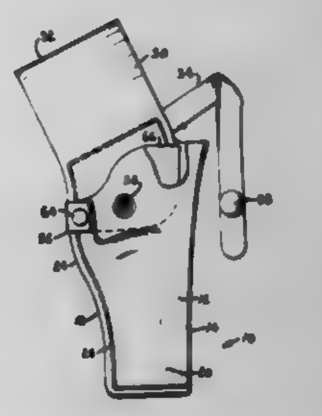
REINFORCING ARRANGEMENT FOR IMPROVING THE STRENGTH AND DURABILITY OF A FIREARM HOLSTER

James W. Lindell, 10600 E. 109th St., Kansas City, Mo. 64134, and Arthur F. Barnett, 12005 E. 55th Terr., Kansas City, Mo. 64133

Continuation-in-part of Ser. No. 43,360. This application Mar. 31, 1980, Ser. No. 136,102

Int. Cl.³ F41C *33/02*

U.S. Cl. 224—243 7 Claims



1. In a gun holster having a tubular shaped body structure with an open uppermost end, said tubular shaped body structure being formed by an inner wall with a back edge and an outer wall with an inner surface, an outer surface and a back edge wherein the back edge of the inner wall is attached to the back edge of the outer wall to provide a back seam, the improvement therein of a reinforcing arrangement for strengthening said back seam and outer face, said reinforcing arrangement comprising:

a reinforcing piece having a body portion and a protruding arm portion;

said reinforcing piece being attached to said outer wall such

that the body portion of said reinforcing piece is in proximity to the open uppermost end of said body structure and such that the protruding arm portion of said reinforcing piece is arranged to extend around the back edge of said outer wall; and

a fastener for effectively securing said outer wall to said inner wall.

4,325,507

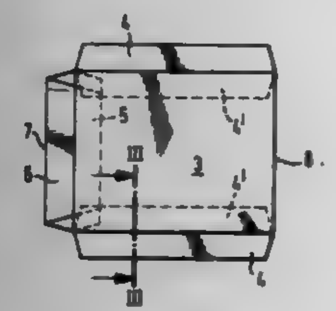
PACKAGE CARTON AND PROCEDURE FOR ITS MANUFACTURE

Veikko I. Janhonen, Langvik, Jorvas, 02420 Kirkkonummi, Finland

Filed Aug. 25, 1980, Ser. No. 180,985

Int. Cl.³ B65D *33/02*

U.S. Cl. 229—55 5 Claims



1. Package for books, cassettes and equivalent flat goods, comprising an inner, double folded supporting member having front and back portions and secured to an outer cover of a thin flexible material having a flap extending along each free edge of said front and back portion, each of the two flaps along opposite edges of said member adjacent to the back portion thereof being inserted between the front portion of said member and said cover secured thereto and secured to said member front portion, and the other two of said flaps along the opposite edges of said front portion being folded over the cover of the back portion of said member and secured to said cover.

4,325,508

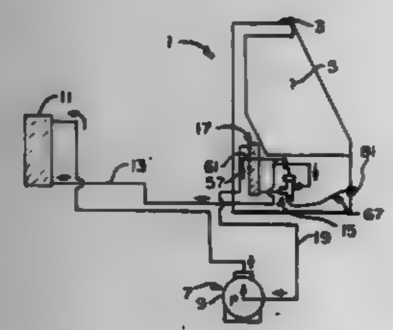
THERMOSTATIC EXPANSION VALVE WITH REMOTE ADJUSTMENT

Bernard L. Kunz, Madison, Ill., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Apr. 2, 1980, Ser. No. 136,442

Int. Cl.³ F25B *41/04*

U.S. Cl. 236—92 B 1 Claim



1. In a thermostatic expansion valve for a refrigeration system, said valve comprising a valve housing having a flow path therethrough, said flow path having an inlet, an outlet, and an expansion valve seat constituting an expansion port between said inlet and said outlet, said inlet and said outlet being adapted to be connected to a liquid line of the refrigeration system for the passage therethrough of pressurized refrigerant, a valve member movable toward and away from said valve seat thereby to regulate the flow of refrigerant through said flow path, a compression coil spring for biasing said valve member toward a closed position in which said valve member cooperates with said valve seat thereby to regulate the flow of refrigerant through said flowpath, expansion bulb and diaphragm means operatively connected to said valve member responsive to the load on said refrigeration system, said expansion bulb and diaphragm means and said spring operating on said valve member so as to maintain the flow of refrigerant through said flow path within a desired superheat range, and means for adjusting the superheat range of the thermal expansion valve, this last-said adjustment means comprising a spring compression member engageable with one end of said spring and being selectively movable thereby to compress or relax said spring and thereby to vary the superheat range of said thermostatic expansion valve, wherein the improvement comprises: an adjustment stem rotatable with respect to said valve housing and being engageable with said spring compression member thereby to effect axial movement of said spring compression member upon rotation of said adjustment stem, an elongate flexible shaft, one end of said flexible shaft being coupled to said adjustment stem, said flexible shaft having a drive member on its outer end, rotation of said drive member effecting corresponding rotation of said adjustment stem thereby permitting convenient adjustment of the superheat range of said thermal expansion valve from a location remote from said thermal expansion valve, said adjustment means further comprising seal means for sealing said adjustment stem with respect to said valve housing and for permitting rotation of said adjustment stem by said flexible shaft, said seal having a groove therein facing toward the pressurized refrigerant, the latter acting on portions of said seal to positively force the seal into sealing engagement with the stem.

4,325,509

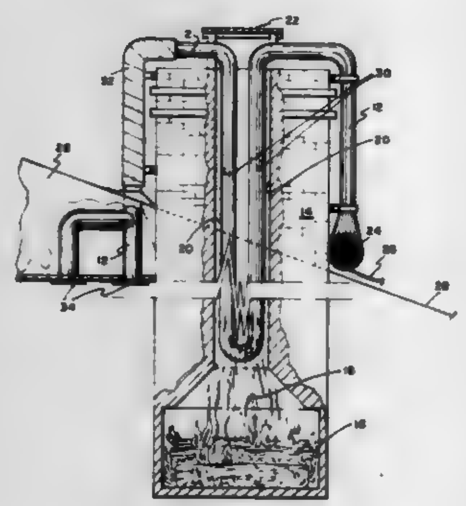
HOME HEATING APPARATUS

Leonard C. Base, Rte. #3, Kingman, Kans. 67068

Filed Oct. 9, 1979, Ser. No. 82,610

Int. Cl.³ F24B *7/00*

U.S. Cl. 237—51 3 Claims



1. A heating apparatus for a dwelling having a fireplace with a flue comprising a conduit having an inlet terminating in the exterior of the dwelling and a discharge terminating within the dwelling, said conduit communicating with said flue; an exterior air intake blower attached to said exterior to enhance circulation; said conduit has a structure defining a U-shaped section within said flue, said conduit extending down said flue to be in close proximity with any heating means within said fireplace, said conduit exiting out of said fireplace into the atmosphere in proximity to the point of entry of said conduit into said fireplace and enters said dwelling at a place remote from said fireplace; and insulation means surrounding said conduit between said fireplace and said dwelling.

4,325,510

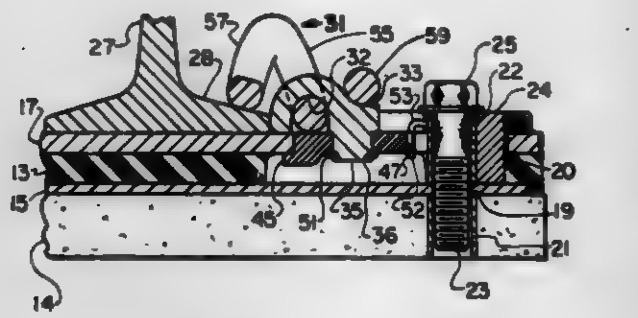
ADJUSTABLE SPRING CLIP

James W. Sherrick, Edinboro, Pa., assignor to Lord Corporation, Erie, Pa.

Filed Jun. 23, 1980, Ser. No. 162,239

Int. Cl.³ E01B *9/30, 9/46*

U.S. Cl. 238—341 4 Claims



1. In a base assembly for removeably mounting a rail on a support structure, said base assembly including a layer of resilient elastomeric material disposed between and attaching to a base plate and a top plate, said base assembly having anchoring means adjacent each end for attaching said base assembly in a fixed position to said support structure, said rail being positioned on said top plate and being secured thereto by a pair of resilient rail clips disposed on opposite sides of said rail, said rail clips having an anchoring section and first and second bearing sections, said top plate having a cut-out on opposite sides of said rail, a pair of grooves being formed in said top plate about the circumference of said cut-out, the improvement comprising laterally adjustable rail clip fastening means, said rail clip fastening means including:

- a pair of sections of rigid material each having a curved portion at one end and a straight portion, said sections having a shaft attached to the underside of said straight portion at a point offset from the center thereof;
- a pair of discs for insertion into said cut-outs of said top plate on opposite sides of said rail and being rotatable therewithin, said discs being formed with a bore offset from the center and having a plurality of teeth along a portion of the circumference thereof, said shaft of said sections of rigid material being inserted into said bore of said discs and being held thereto by retaining means, said disc being inserted within said cut-outs such that said teeth align with the grooves of said cut-outs whereby rotation of said discs within said cut-outs moves said sections of rigid material laterally along said top plate, said discs being rotatable to move said sections of rigid material into contact with said rail for resisting lateral movement thereof; and
- a pair of locking means insertable within said groove and extending outwardly into engagement with said teeth of said discs on opposite sides of said rail, said locking means preventing rotation of said discs within said cut-outs and thus securing said sections of rigid material from lateral movement along said top plate, whereby said anchoring section of each of said rail clips is inserted within said curved portion of said sections of rigid material on each side of said rail to securely hold said rail clips in a position wherein said first bearing section contacts said rail, and in cooperation with said rail clip fastening means prevents movement of said rail relative to said base assembly.

4,325,511

METHOD FOR FORMING RAIL CLIPS

Hartley F. Young, Melton, Australia, assignor to Ralph McKay Limited, Victoria, Australia

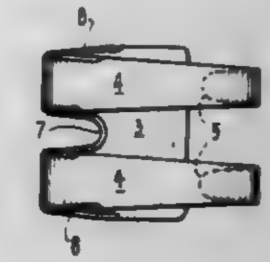
Filed May 4, 1979, Ser. No. 36,148

Claims priority, application Australia, May 8, 1978, PD4318

Int. Cl.³ E01B *9/28;* B21D *53/36*

U.S. Cl. 238—349 5 Claims

1. A method of forming integral rail clips of the kind in which one portion of the clip is secured by clip holding means to a rail tie and a second portion overlies the foot of a rail comprising a blanking a generally U-shaped clip having tapered arms from metal plate, forming the blank into a three dimensional shape wherein the arms of the U curve over the base and terminate beyond the base, and coining the edges of



said clip adjacent the base of the U where said clip is subjected to maximum stress during use, said base corresponding to the portion of the clip which is secured by the clip holding means and the ends of the arms correspond to the portion which overlies the foot of the rail.

4,325,512

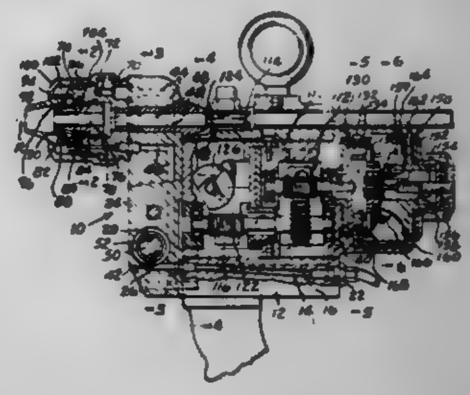
FLAME SPRAY GUN

Kenneth W. Kensbol, Berkeley, Ill., assignor to Norton Company, Worcester, Mass.

Filed Feb. 4, 1980, Ser. No. 118,472

Int. Cl.³ B05B *7/18*

U.S. Cl. 239—84 25 Claims



1. A flame spray gun having a gun body including a base portion, a front wall portion supporting a combustion head including a flame spray nozzle and an air blast cap, and a housing portion supporting adjustable drive means including a turbine, a gear train, speed control means and feed rolls for engaging and feeding a wire or rod of material through a guideway opening in the combustion head and nozzle to be melted by a flame and sprayed by a blast of air onto a substrate and conduit means for supplying air to the air cap and turbine and an oxidant and fuel gas to the flame spray nozzle from regulatable sources of supply under pressure, wherein the improvement comprises:

valve means connected to the conduit means and the gun body for selectively and simultaneously either cutting off or supplying air to the air blast cap and turbine and the oxidant and fuel gas to the flame spray nozzle from the regulatable sources of supply under pressure comprising:

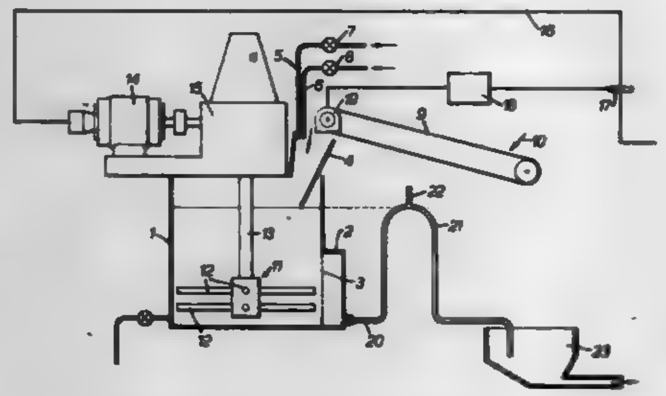
- a bore;
- air, oxidant and fuel gas inlet chambers axially spaced in the bore and connected to respective air, oxidant and fuel gas inlet passages of the conduit means connectable with the sources of supply;
- air, oxidant and fuel gas outlet chambers adjacent the respective air, oxidant and fuel gas inlet chambers in the bore and connected to respective air, oxidant and fuel gas outlet passages of the conduit means connectable with the air cap and flame spray nozzle;

seal retaining grooves between and adjacent each side of the air, oxidant and fuel gas inlet and outlet chambers;
a continuous seal in each of the seal retaining grooves; and
a valve shaft including axially spaced slots of predetermined axial length and radial depth axially moveable within the bore and the continuous seals to an ON position whereby the slots simultaneously connect the air, oxidant and fuel gas inlet and outlet chambers.

4,325,513
GUN FOR DISPENSING A PLURAL COMPONENT SYSTEM
Robert L. Smith, 2012 Summer Wind, Santa Ana, Calif. 92704, and Gary L. Smith, 1287 Conway Ave., Costa Mesa, Calif. 92026
Filed Mar. 20, 1980, Ser. No. 132,251
Int. Cl.³ B05B *7/04, 7/12, 15/02*
U.S. Cl. 239—112 11 Claims

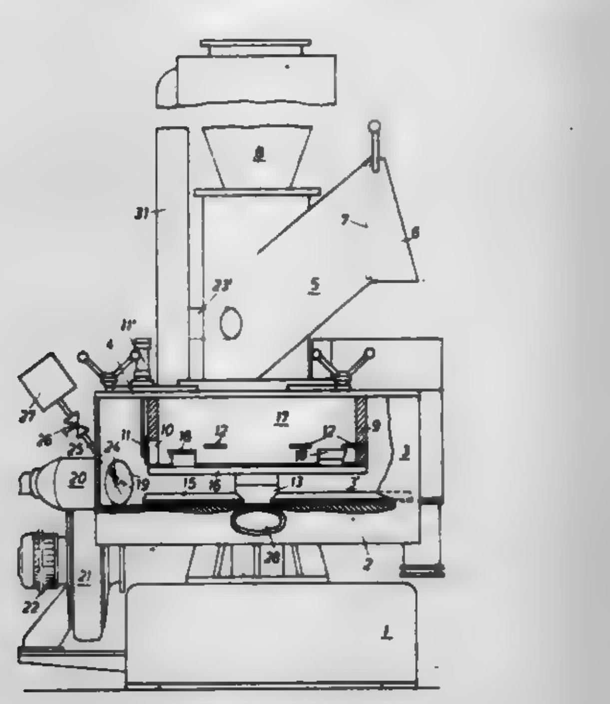
1. A gun for dispensing a plural component system which comprises:
a housing including a first component receiving means, a second component receiving means and a gas receiving means, said first component receiving means connectable to a pressurized source of a first component of said plural component system, said second component receiving means connectable to a pressurized source of a second component of said plural component system and said gas receiving means connectable to a source of pressurized gas;
a first component feed port means connected to said first component receiving means and receiving a pressurized supply of said first component of said plural component system from said first component receiving means;
a second component feed port means connected to said second component receiving means and receiving a pressurized supply of said second component of said plural component system from said second component receiving [illegible]
a first valve means located in said first component feed port [illegible]
a second valve means located in said second component feed port means;
a valve carrier means movably located in said housing;
said first valve means and said second valve means operatively connected to said valve carrier means and movable within said first and said second component feed port means respectively in response to movement of said valve carrier means;
a gas passage means connected to said gas receiving means and receiving a supply of pressurized gas from said gas receiving means, said gas passage means including a gas valve means, said gas valve means operatively connected to said valve carrier means and moving in response to movement of said valve carrier means;
a static mixing chamber means attaching to said housing and including a mixing chamber, a discharge outlet connecting to said mixing chamber, a first component inlet means connecting to said mixing chamber, a second component inlet means connecting to said mixing chamber and a gas inlet means connecting to said mixing chamber, said gas inlet means operatively connected to said gas passage means, said first component inlet means operatively connected to said first component feed port means and said second component inlet means operatively connected to said second component feed port means;
trigger means movably mounted on said housing, said valve carrier means operatively associated with said trigger means, said valve carrier means moving between a first position and a second position;
biasing means associated with said valve carrier means biasing said valve carrier means from said second position to said first position, said trigger means moving said valve carrier means against the bias of said biasing means from said first position to said second position;
said first and said second valve means prohibiting the flow of said first and said second component from said first and said second component feed port means respectively into said first and said second inlet means respectively and said gas valve means allowing flow of said pressurized gas from said gas passage means into said mixing chamber through said gas inlet means when said valve carrier means is in said first position and said first and said second valve means allowing flow of said first and said second components from said first and said second component feed port means into said first and said second component inlet means respectively and into said mixing chamber and controlling the flow of said pressurized gas from said gas passage means into said gas inlet means when said valve carrier means is in said second position;
said first and said second components flowing into said mixing chamber and being discharged out of said discharge outlet when said valve carrier means is in said second position and said pressurized gas flowing into said mixing chamber and discharging the contents of said mixing chamber out of said discharge outlet when said valve carrier means is in said first position.

4,325,514
COMMINUTION OF MINERALS
Herbert Hemingsley, Marina-di-Carrara, Italy, assignor to English Clays Lovering Pochin & Company Limited, St. Austell, England
Continuation of Ser. No. 880,875, is a continuation-in-part of Ser. No. 747,107, Dec. 3, 1976, abandoned. This application Sep. 10, 1979, Ser. No. 73,880
Claims priority, application United Kingdom, Dec. 5, 1975, 50112/75
Int. Cl.³ B02C *25/00*
U.S. Cl. 241—16 6 Claims



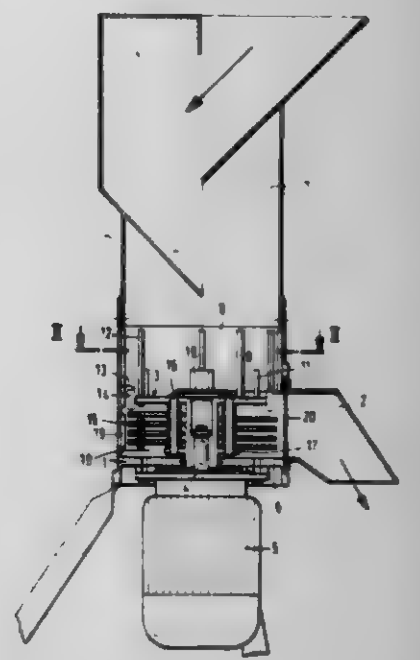
1. A method for comminuting a mineral using essentially an autogenous grinding technique, which method comprises the following steps:
(i) breaking any large lumps of mineral present to obtain a product substantially all of which consists of pieces not larger than 20 mm;
(ii) introducing into a grinding chamber which has an internal, rotatable impeller driven by an electric motor, water, a dispersing agent and the product of step (i) to form slurry;
(iii) agitating the slurry in said grinding chamber;
(iv) continuously withdrawing from the grinding chamber a slurry of comminuted mineral;
(v) maintaining the volume of slurry in said grinding chamber substantially constant; and
(vi) maintaining the power consumed by the electric motor between upper and lower limits by controlling the amount of the product of step (i) introduced into the grinding chamber;
wherein there is present in said grinding chamber during the agitation of said slurry no particulate solid material other than that added as the product of step (i); and wherein the rates of introducing said water, said dispersing agent and said product of step (i) into said grinding chamber and the rate of withdrawing the slurry of comminuted mineral from the grinding chamber are such that the slurry of comminuted mineral withdrawn from the grinding chamber contains at least 50% by weight of solids.

4,325,515
MIXING APPARATUS AND METHOD FOR CONDENSING, MIXING AND GRANULATING THERMOPLASTIC MATERIALS
Friedrich W. Herfeld, Wall 1, 5982 Neuenrade, Fed. Rep. of Germany
Filed Apr. 12, 1979, Ser. No. 29,304
Claims priority, application Fed. Rep. of Germany, Apr. 13, 1978, 2815935
Int. Cl.³ B02C *18/12, 18/22, 21/00*
U.S. Cl. 241—57 7 Claims



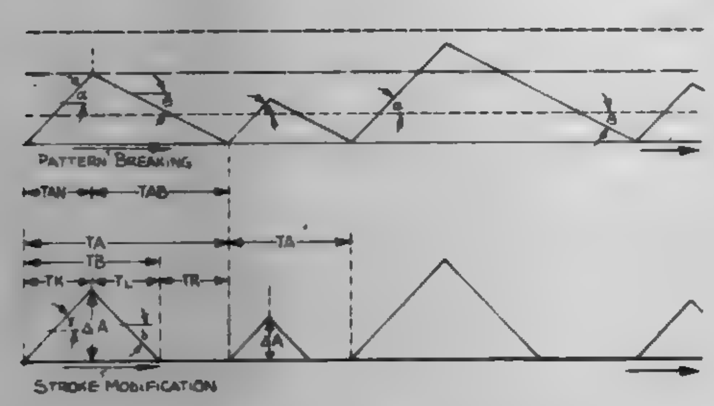
1. In mixing apparatus for condensing, mixing and granulating thermoplastic materials, especially scrap of foils, fibres, ribbons and hollow pieces, having a mixing container, a feed hopper mounted on the mixing container, a discharge slide valve, a vertical agitator shaft in said container which near the bottom carries stirring wings extending radially close to the container wall and at its upper end carries crushing knives, a crushing chamber defined by the upper portion of said container and surrounded by a ring wall and having its bottom defined by an end plate, said ring wall having fixed counterknives thereon, the improvement comprising the arrangement wherein the agitator shaft (**13**) extends through said end plate (**16**) of the crushing chamber (**17**), and wherein said ring wall (**9**) is provided with at least one shuttable port (**10**) leading from said crushing chamber portion (**3'**) of the mixing container (**2**) into the mixing portion of said container.

4,325,516
APPARATUS FOR THE GRINDING OF SURPLUS BREAD
Theodor Ismar, Cologne, Fed. Rep. of Germany, assignor to Ismar GmbH, Cologne, Fed. Rep. of Germany
Filed Sep. 14, 1979, Ser. No. 75,731
Claims priority, application Fed. Rep. of Germany, Sep. 15, 1978, 7827589[U]
Int. Cl.³ B02C *13/26*
U.S. Cl. 241—73 5 Claims



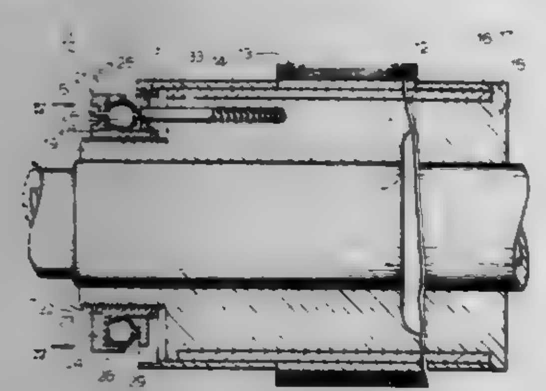
1. A grinding mill for grinding surplus bread comprising:
an upright cylindrical housing;
a single rotor disc centrally rotating within said housing and having an upper side, a lower side, and a rim;
a plurality of paired pre-cutting knives arranged at right angles to a radius of said rotor disc and mounted on said upper side of said rotor disc;
a plurality of mill hammers attached to the lower side of the rotor disc;
a plurality of breaker strips mounted on the inner wall of the cylindrical housing adjacent the precutting knives and forming a preliminary grinding device in a preliminary grinding chamber;
a plurality of breaker strips mounted on the inner wall of the cylindrical housing adjacent the mill hammers and forming a hammermill in a grinding chamber;
said cylindrical housing and said rotor disc rim forming an annular gap therebetween and connecting said preliminary grinding chamber and said grinding chamber;
a plurality of feeding teeth rotatably mounted within said annular gap on the rim of said rotor disc at an inclined angle to the horizontal such that a top edge portion of said plurality of feeding teeth comprises a leading edge; and
a strainer operatively associated with said cylindrical housing through which finished ground stock is communicated from the grinding mill.

4,325,517
METHOD AND APPARATUS FOR WINDING TEXTILE YARNS
Heinz Schippers; Gerhard Martens, both of Remscheid, and Karl-Werner Frolich, Wuppertal-Langerfeld, all of Fed. Rep. of Germany, assignors to Barmag Barmer Maschinenfabrik, Remscheid, Fed. Rep. of Germany
Filed Jun. 5, 1980, Ser. No. 156,568
Claims priority, application Fed. Rep. of Germany, Sep. 18, 1979, 2937601
Int. Cl.³ B65H *54/38*
U.S. Cl. 242—18.1 27 Claims



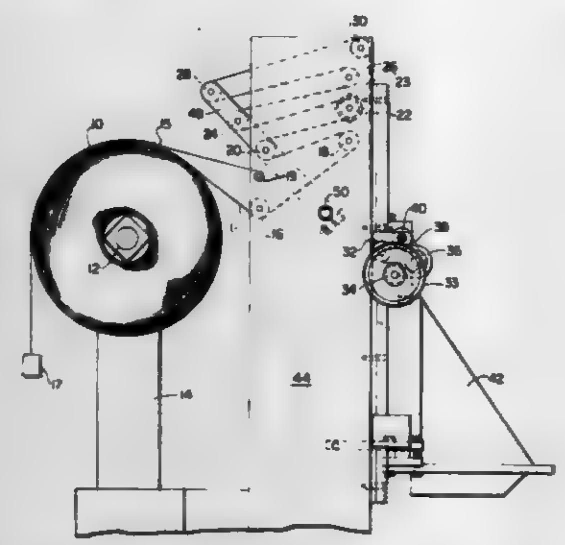
1. In a method of winding textile yarns into core-supported packages in which the yarn is wound about the core at a substantially constant rate while the yarn is guided onto the core by a traversing yarn guide, the improvement therein comprising controlling the traverse of the yarn guide in a recurrent series of stroke modification cycles in each of which the length of the strokes of the yarn guide is progressively decreased at each end of the stroke up to a maximum differential range and progressively increased again at each end of the stroke up to a maximum constant stroke length during one portion of the cycle and is constant at that maximum stroke length during another portion of the cycle, and in which the maximum differential range by which the length of the strokes of the yarn guide is decreased is changed from one stroke modification cycle to another to prevent the formation of thickened and hardened places in the yarn package at opposite ends thereof.

4,325,518
REEL SPOOL PNEUMATIC CORE CLAMP
Gerald W. Kerr, South Beloit, and Robert E. Page, Davis, both of Ill., assignors to Beloit Corporation, Beloit, Wis.
Filed Nov. 6, 1980, Ser. No. 204,604
Int. Cl.³ B65H *17/02*
U.S. Cl. 242—68 14 Claims



1. Apparatus for clamping a hollow core on a rotatable shaft comprising:
a hub member having attachment means for securing said hub member on said shaft,
a hollow, resilient tube mounted on said hub member,
means for inflating said tube with pressure,
a sleeve means slideably received on said shaft for having one end abut with a free end of said core, and
a locking means, positioned between said tube and sleeve means and having corresponding surfaces engageable with respective regions on said tube and sleeve means,
whereby said tube, upon inflating, presses against said locking means to cause said sleeve means to grippingly engage said core.

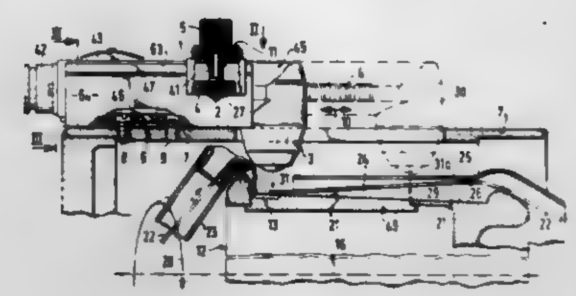
4,325,519
SHEET MATERIAL DISPENSING MECHANISM
John R. McLean, Richmond, Va., assignor to Reynolds Metals Company, Richmond, Va.
Filed Sep. 29, 1980, Ser. No. 192,009
Int. Cl.³ B65H *23/08*
U.S. Cl. 242—75.41 4 Claims



1. An apparatus for dispensing sheet material from a roll comprising a reel upon which said roll is mounted, brake means for preventing overcoast of said roll during dispensing therefrom, a plurality of free-wheeling, fixedly mounted rollers, a plurality of free-wheeling, pivotally mounted rollers, said fixedly mounted rollers and said pivotally mounted rollers forming a sheet material accumulator, a mounting for said pivotally mounted rollers comprising a pair of bars between which said pivotally mounted rollers are mounted and a rotatable rod upon which said bars are mounted, an air cylinder connected to said mounting for said pivotally mounted rollers for pivoting said pivotally mounted rollers to accumulate sheet material in said accumulator, a spring connected to said mounting for said pivotally mounted rollers and acting to oppose the action of said air cylinder to maintain low tension in said sheet material during holding thereof in said accumulator and means for preventing pull back of said sheet material into said apparatus after dispensing therefrom.

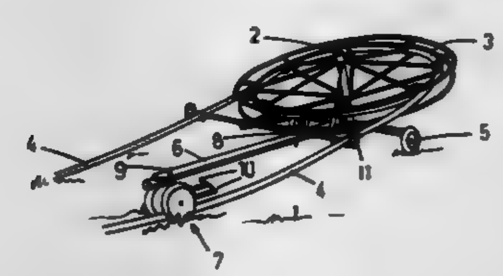
4,325,520
APPARATUS FOR STORING FILAMENTARY MATERIAL
Otto Hintsch, Wallisellen, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland
Continuation of Ser. No. 6,915, Jan. 26, 1979, abandoned. This application Oct. 6, 1980, Ser. No. 194,423
Claims priority, application Switzerland, Jan. 31, 1978, 1024/78
Int. Cl.³ B65H *51/20*
U.S. Cl. 242—47.01 3 Claims

1. An apparatus for storing filamentary material, said apparatus comprising
a substantially cylindrical bobbin for receiving a plurality of windings of filamentary material thereon;
a frame extending over said bobbin;
means for controlling the axial extent of the windings of filamentary material on said bobbin, said means including
a sensing element for detecting the presence of a winding at a predetermined point on said bobbin;
a guide beam of U-shaped cross-section secured to said frame and having a pair of outstanding limbs positioned over said bobbin;
a support slidably mounted in said guide beam between and within said limbs and having said sensing element secured thereto in depending relation, said support being movable in and along said guide beam to adjust said sensing element relative to said bobbin whereby to adjust said point; and



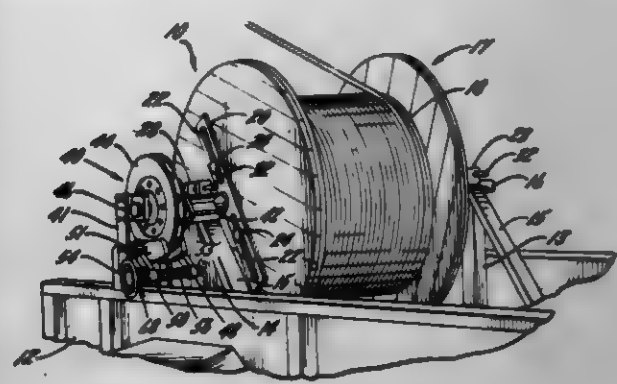
an adjustment means for adjusting said support longitudinally of said guide beam, said adjustment means including a plurality of teeth on one of said guide beam and said support and a gear wheel on the other of said guide beam and said support, said gear wheel being mounted for rotation on a fixed axle and in engagement with said teeth and a nut threaded on said axle for locking said gear wheel in place upon tightening of said nut towards said gear wheel.

4,325,521
HOSE LOOP CARRIER
Brian R. Homersham, 17 Victoria Park Rd., Christchurch, New Zealand
Filed Sep. 3, 1980, Ser. No. 183,823
Claims priority, application New Zealand, Dec. 12, 1979, 192380
Int. Cl.³ B65H *75/40*
U.S. Cl. 242—86.2 11 Claims



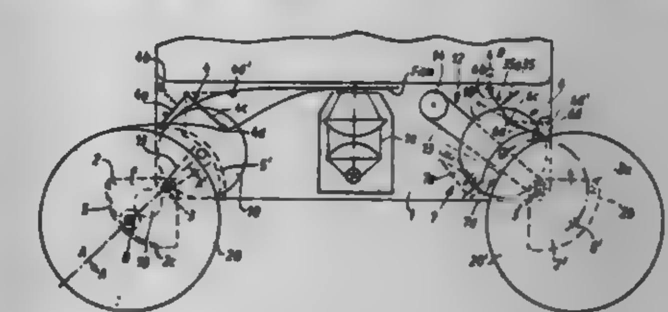
1. An irrigation hose loop support apparatus suitable for supporting the trailable loop of an irrigation hose in an irrigation system where a hose trailing irrigator moves towards and usually past a source of water to such a trailed hose, said support apparatus comprising
a trailable carriage,
means mounted on said carriage capable of receiving such a hose from a direction substantially in which said carriage is trailable, supporting the loop of said hose and allowing the return of said hose in a direction also substantially in the direction in which said carriage is trailable, said means being capable of allowing upon the pulling of the length of said hose in use in advance of said carriage to said irrigator, the movement of the hose of the loop about and or through said means, and
guide means capable of guiding th trailing locus of said carriage from at least one of the lengths of hose of said hose in advance of said carriage with respect to its trailable direction.

4,325,522
REEL BRAKE CLAMPING ASSEMBLY
Charles J. Sauber, 10 N. Sauber Rd., Virgil, Ill. 60182
Filed Oct. 27, 1980, Ser. No. 201,252
Int. Cl.³ B65H *59/04, 75/40*
U.S. Cl. 242—86.7 4 Claims



1. In a cable reel support and brake device such as may be used in connection with stringing power transmission lines, the combination comprising, spaced upright column means, a reel support shaft having provision to fixedly receive a cable reel for rotation therewith bridging the column ends, brake device means mounted on spaced supporting members, a friction disc mounted on a shaft that is journalled to said supporting members and removably coupled to the reel support shaft, a pair of spaced brake clamping arms having brake shoe means at their ends facing the sides of the disc, said arms being carried by a shaft means having a wheel at its outboard end and a threaded end engaging nut means at its inboard end, spring means carried by said shaft between the said arms, said wheel adapted to move the arms toward one another upon rotation in one direction and the spring means moves the arms away from one another when rotated in the opposite direction, clamping means carried by said shaft and comprising a pair of spaced dish shaped members having a resilient ring member therebetween, and said clamping means being disposed such that rotation of said wheel in the direction that moves the brake shoe means at the ends of the clamping arms into engagement with the sides of the friction disc urges said spaced dish shaped members toward one another and compresses the resilient ring thereby providing positive settings of "drag" on said cable reel through the friction brake device.

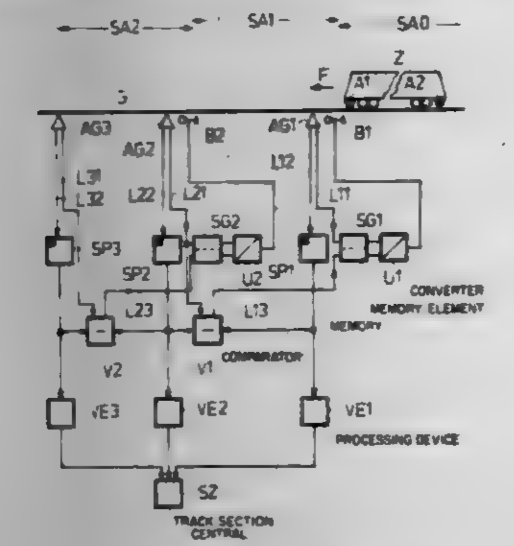
4,325,523
FILM ADVANCING ARRANGEMENT
Peter Ungnadner, Unterhaching; Peter Blöckinger, Neuried; Friedrich Winkler, Unterhaching, and Peter Lermann, Naring, all of Fed. Rep. of Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany
Filed May 13, 1980, Ser. No. 150,408
Claims priority, application Fed. Rep. of Germany, May 16, 1979, 2919710
Int. Cl.³ G03B *1/04*; G11B *15/32*
U.S. Cl. 242—205 9 Claims



1. A film advancing arrangement for a film projector of the type having a housing and an optical system, comprising a first spool support having an axis for carrying a supply spool and a second spool support having an axis for carrying a takeup

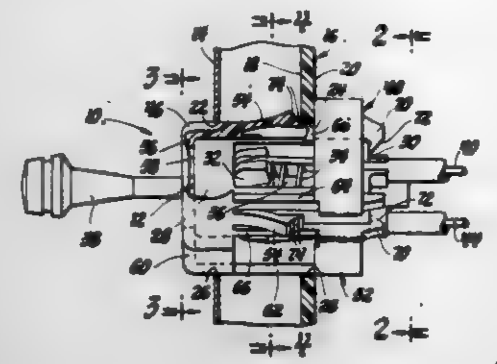
spool, said spool supports being pivotally movable from an outside position to an inside position with respect to the housing of the projector so that spools mounted on said axes be disposed inside of said housing when spools of small diameters are utilized and the spools be positioned outside of said housing when spools of large standard diameters are used in the projector; two pivots mounted at lower corners of said housing and connected to said supports, respectively to provide said pivoting of said supports through 180° between the inside and outside positions; and first adjusting means and second adjusting means to arrest said first support and said second support, respectively in their stationary positions within said housing when said supports reach their final positions for operation with the spools of small diameters.

4,325,524
TRACK MONITORING DEVICE
Adolf Krug, Braunschweig, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany
Filed Jan. 24, 1980, Ser. No. 115,009
Claims priority, application Fed. Rep. of Germany, Mar. 19, 1979, 2910770
Int. Cl.³ B61L *25/00, 27/00*
U.S. Cl. 246—34 R **4 Claims**



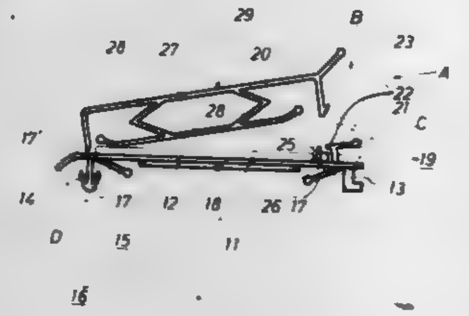
1. In a track monitoring device in which individual interrogation devices are provided at the respective boundaries between succeeding track sections, which interrogation devices respectively trigger the release of an occupied or release report for the track section which, in the direction of travel, lies ahead of or behind the train involved, on the basis of the reception of data respectively coded in a response device at the head and at the rear end of each train regularly traversing the track sections, the combination of each response device having allocated thereto one data part of a plurality of predetermined data parts, which plurality is at least twice as great as the plurality of regular trains, switching means responsive to the respective interrogation devices for triggering an occupied report of the track section respectively lying directly ahead, in the direction of travel of the train, allocated to each interrogation device, a memory for each interrogation device for storing data respectively received last, and a comparison device for comparing the memory contents of adjacent triggered memories for triggering a release report upon coincidence of the currently received data with the last received data at the last boundary between two track sections, which boundary lies rearward in the direction of travel.

4,325,525
MOUNTING MEMBER
John E. Iafret, Grand Blanc, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Nov. 13, 1980, Ser. No. 206,614
Int. Cl.³ G12B *9/00*
U.S. Cl. 248—27.3 **2 Claims**



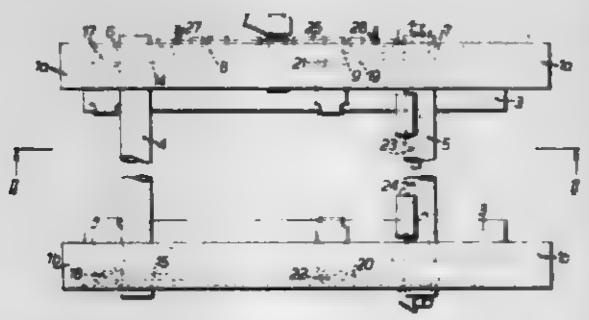
1. In combination with an actuator having a body portion with one end thereof supporting a control member and the other end thereof formed with an end cap, a mounting member for housing said actuator and connecting said actuator to a support panel having an opening formed therein, said mounting member comprising a front section for supporting one end of said actuator; a plurality of cantilevered sections integrally formed with and connected to said front section and surrounding said body portion of said actuator at substantially equally spaced intervals thereabout; each of said cantilevered sections having a pair of circumferentially spaced ribs, one of said pair of circumferentially spaced ribs being formed with a radially inwardly extending tab which is hook-shaped and serves to engage the other end of said actuator for maintaining said actuator within said mounting member; said pair of circumferentially spaced ribs extending rearwardly from said front section and being interconnected at their rear ends by a connector member; and a plurality of flexible spring arms integrally formed with said front section, said spring arms being movable radially inwardly towards said actuator when said mounting member is inserted into said opening in said support panel and being adapted to move radially outwardly to engage one surface of said support panel while said connector member engages the other surface of said support panel to thereby secure said mounting member in said opening.

4,325,526
FLAT CABLE CLAMP
Hiroji Kitagawa, Nagoya, Japan, assignor to Kitagawa Industries Co., Ltd., Nagoya, Japan
Filed Jan. 7, 1980, Ser. No. 110,018
Claims priority, application Japan, Jan. 23, 1979, 54/7348[U]
Int. Cl.³ B65D *63/14;* **F16L** *3/08*
U.S. Cl. 248—73 **4 Claims**



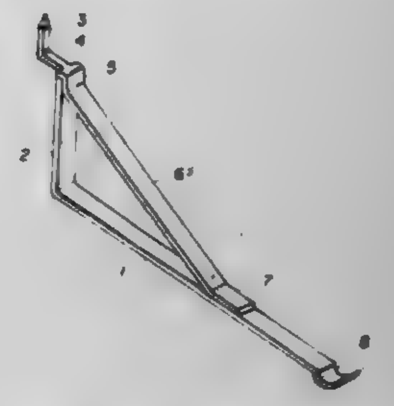
1. A clamp for flat cables which comprises a synthetic resin board having engaging means for instantly securing said clamp to an object, a rockingly movable press board formed integrally with the base board at one of the longitudinal ends thereof, which can be engaged with and disengaged from the other longitudinal end of the base board, a contact board in combination with resilient members formed integrally with said press board, said resilient members being in combination in the form of a pantograph, the contact board being capable of being resiliently displaced by means of said resilient members in the repulsive direction of the flat cables which are mounted on the base board and brought into contact with said contact board.

4,325,527
VEHICLE SEATS
Hans-Jürgen Berneking, Porta Westfalica, Fed. Rep. of Germany, assignor to P. A. Rentrop, Hubbert & Wagner Fahrzeugausstattungen GmbH & Co. KG, Stadthagen, Fed. Rep. of Germany
Filed Nov. 29, 1979, Ser. No. 98,892
Claims priority, application Fed. Rep. of Germany, Nov. 29, 1978, 2851562
Int. Cl.³ A45D *19/04*
U.S. Cl. 248—394 **9 Claims**



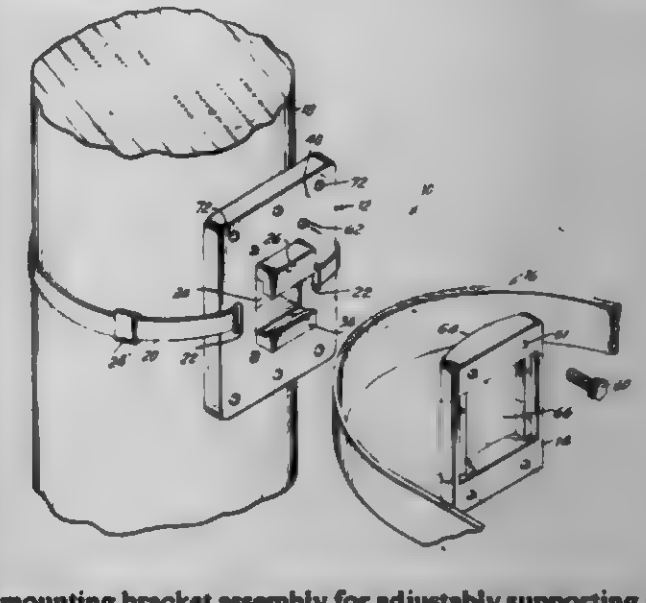
1. In a vehicle seat,
a seat support for carrying a seat portion,
an elongate subframe for mounting on the vehicle floor,
a device lifting the seat support relative to the subframe in discrete steps and simultaneously moving the seat support longitudinally of the subframe, the lifting device comprising,
a pair of pivotal levers located one at each longitudinal end of the subframe,
spring means mounted at one longitudinal end of the subframe, the spring means being so arranged as to be tensioned upon movement of the seat support from the raised to the lowered position,
a pair of toothed segments located one at each longitudinal end of the subframe and at least one of which is pivotally connected to a corresponding one of the pivotal levers to form a pivotable linkage, with opposite ends of the linkage being pivotally connected respectively to the seat support and subframe, whereby relative movement between the members of the pivotable linkage causes the lifting of the seat support and simultaneously its movement longitudinally of the subframe,
a pair of toothed pawls each located adjacent a corresponding one of the segments and biased into engagement with a corresponding segment whereby when engaged with the segment it locks the two members of the linkage against relative movement, and
release means operable to disengage the toothed pawls from their corresponding segments and so allow the spring means to effect the simultaneous lifting and longitudinal movement of the seat support relative to the subframe, the release means comprising
a pivotal two-arm lever, and
a pair of pivotal control levers associated with each said pawl, one of each set of associated pawl and lever defining a slot and the other of each set carrying a pin slidably engaging the slot whereby when the pivotal two arm lever is pivoted in one sense, one arm thereof displaces one of the control levers to effect disengagement of the associated pawl with its corresponding segment and when the two arm lever is pivoted in the opposite sense the other arm thereof displaces the other control lever to effect disengagement of its associated pawl from its corresponding segment.

4,325,528
BRACKET MOUNTING
Jack T. Martin, 85 Leonard Ave., Washington, Pa. 15301
Filed Mar. 13, 1980, Ser. No. 130,011
Int. Cl.³ F16M *13/00;* **E04G** *5/06*
U.S. Cl. 248—217.2 **4 Claims**



1. A wall bracket of substantially right triangular shape comprising a horizontally extending base portion, a vertically extending portion of substantially smaller length and adapted to lean against a sidewall, and a brace portion forming the hypotenuse of the right triangular shape, and an extension which extends horizontally and vertically from the top of said vertically extending portion, said extension terminating in a point to enable penetrating a wall while said base portion is held vertically and thereafter pulling on the end of said base portion and rotating said bracket 90°.

4,325,529
MOUNTING BRACKET ASSEMBLY
Frederick L. Seebinger, Kinnelon, N.J., assignor to American Trading and Production Corp., Pine Brook, N.J.
Filed Apr. 25, 1980, Ser. No. 143,951
Int. Cl.³ A47F *5/00*
U.S. Cl. 248—298 **2 Claims**



1. A mounting bracket assembly for adjustably supporting an object comprising:
a base, said base having two hooked portions extending from one face thereof, said two hooked portions being vertically displaced and opposed to each other to form a C-shape with said base, said base including an opening in said one face, said opening diverging away from said one face, said opening being partially obstructed by said vertically displaced hooked portions, the distance between said opposed hooked portions enlarging towards said one face

of said base, the opposed face of said upper hooked element being substantially perpendicular to said one face;

means for fixedly attaching said base to a mounting surface;

a bracket, said bracket including means for attachment to said supported object, a curved segment, a portion of said curved segment being slidably constrained between said two hooked portions and said one face of said base, said opening in said one face providing clearance with said curved segment, said curved segment when tilted being adapted to pass between said opposed hook portions to be constrained between said base and said hook portions, said curved segment when not tilted being unable to pass between said opposed hooked portions;

clamping means, said clamping means being removably attached to said base and, adjustably urging said curved segment against at least a portion of said one face of said base such that relative motion between said base, said curved segment and said two hooked portions is prevented, said clamping means including a curved surface, said curved surface mating with said curved segment, said curved segment being sandwiched between said base and said clamping means, said clamping means including an opening, said two hooked portions extending through said opening in said clamping means,

said supported object being constrained from separation from said base by said hooked elements and supported without said urging into a fixed position by said clamping means, said curved segment being slidable while constrained from separation until said clamping means is adjusted to fix the relative positions of said base and said curved segment.

4,325,530

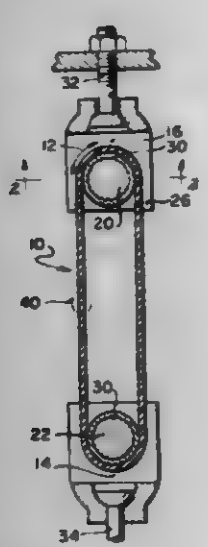
CRYOGENIC STRUCTURAL SUPPORT

Ralph C. Niemann, Downers Grove; Karl F. Mataya, Lemont, and John D. Gonczy, Oak Lawn, all of Ill., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 2, 1978, Ser. No. 882,726

Int. Cl.³ A47H *1/10*

U.S. Cl. 248—317 2 Claims



1. Tensile support member for use in a cryogenic environment, comprising:

an endless link formed of an epoxy glass laminate with at lease one ply of said laminate having fibers aligned circumferentially about said link; and

at least one intermediate heat sink positioned on one side of said link between couplings of said link, said heat sink including at least one heat conductive metal strip contained within the plies of said laminate and extending out therefrom to form a heat conductive path.

4,325,531

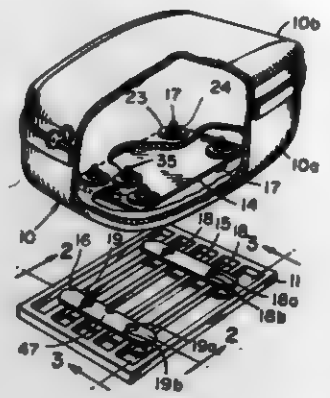
APPARATUS FOR REMOVABLY SECURING A CONTAINER TO A CARRIER RACK

Bruce D. Omholt, 2117 Richmond, N.W., Grand Rapids, Mich. 49504

Filed Feb. 11, 1980, Ser. No. 120,672

Int. Cl.³ F16M *13/00*

U.S. Cl. 248—553 3 Claims



1. Apparatus for removably securing a container having a bottom to a vehicle rack comprising: a plate; plate mounting means for securing said plate to the bottom of said container; a locator pin secured to said plate; feet means on said plate having an enlarged distal portion and a reduced proximal portion; front mounting assembly means including means adapted to be secured to the forward portion of said rack; rear mounting assembly means including a top plate and a bottom plate adapted to be located respectively above and beneath said rack, and threaded fastener means for securing said top and bottom plates together and to the rear portion of said rack; at least one of said mounting assembly means defining slot means in register with and adapted to receive associated feet means on said plate; said top plate including a locator slot adapted to receive the locator pin on said plate when said container is moved rearwardly such that said feet means are in securing relation with associated slot means; and latch means for latching said plate to one of said mounting assembly means when said reduced portions of said feet means are received in associated reduced portions of said slot means, said enlarged portions of said feet means preventing said plate from being removed vertically, and said latch means including a latch member having a latch portion engaging said locator pin when the same is received in the locator slot of said top plate of said rear mounting assembly means, for maintaining said locator pin in said locator slot to prevent lateral motion of said container relative to said rack and preventing said feet means for being dislodged from said slot means.

4,325,532

FORMWORK SYSTEM

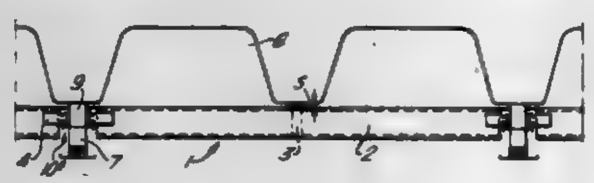
Wilhelm W. A. O. Blank, Nettetal, Fed. Rep. of Germany, assignor to SGB Group Limited, Surrey, England

Filed Jul. 9, 1980, Ser. No. 167,375

Claims priority, application Fed. Rep. of Germany, Jul. 14, 1979, 2928480; United Kingdom, Feb. 18, 1980, 05417/80

Int. Cl.³ E04G *11/48, 11/50, 17/16*

U.S. Cl. 249—26 10 Claims



1. A support assembly for a concrete form comprising support frames having bracket means mounted at each end

engaging longitudinal support members disposed generally transversely of said support frames,

said bracket means being located such that the level of the uppermost surface of the support frames relative to the uppermost surface of the longitudinal support members can be adjusted by inverting either the support frame or the longitudinal support members,

each of said support frames having plural substantially parallel spaced beams connected by means including said bracket means, and

each said bracket means having at least one recess on each of two opposite sides for engaging a cooperating element on said longitudinal support members in one of at least two different relative positions.

4,325,533

HOUSING DEVICE FOR ISOLATING CONNECTING REINFORCEMENTS AT JOINTS BETWEEN FIRST AND SUBSEQUENTLY POURED CONCRETE STRUCTURES

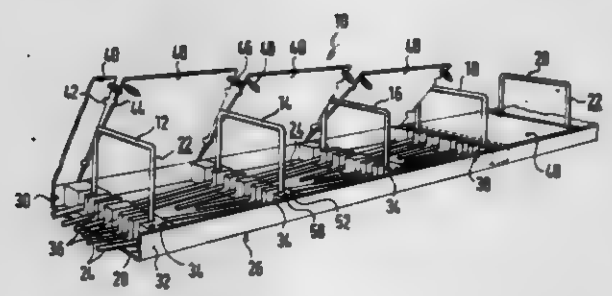
Lothar Tiletschke, and Hellmuth Feldmann, both of Bielefeld, Fed. Rep. of Germany, assignors to Sigma Bauelemente GmbH, Bielefeld, Fed. Rep. of Germany

Filed Aug. 15, 1980, Ser. No. 178,618

Claims priority, application Fed. Rep. of Germany, Aug. 23, 1979, 2934189

Int. Cl.³ E04C *1/00;* E04B *1/41*

U.S. Cl. 249—188 16 Claims



1. In a device for housing steel reinforcements in areas where joints are made between first and subsequently poured concrete structures and having an elongated, essentially box-shaped for isolating connecting portions of the steel reinforcements having anchoring portions during pouring of the first concrete structure, the improvement comprising a housing having an open box, a cover therefore, and anchoring strips disposed in the transverse direction of the box at intervals along its length and at the bottom thereof, said anchoring strips having transverse slots in the upper portion thereof to receive and support the connecting portions of the steel reinforcements, and said cover being capable of being locked to said box and passing the anchoring portions therethrough.

4,325,534

MANUALLY OPERATED BLOWOUT PREVENTER AND HYDRAULIC OPERATOR THEREFOR

James T. Roark, and Steven R. Hayter, both of Dallas, Tex., assignors to Otis Engineering Corporation, Dallas, Tex.

Continuation of Ser. No. 962,806, Nov. 21, 1978, abandoned. This application Oct. 10, 1980, Ser. No. 195,995

Int. Cl.³ E21B *33/06*

U.S. Cl. 251—1 A 5 Claims

1. A blowout preventer comprising

a body having a bore therethrough and guideways intersecting said bore from opposite sides thereof,

a ram positioned in each of said guideways,

means closing the outer end of each of said guideways,

an operating stem having flats on its outer end, being connected to each of said rams at its inner end and threadedly engaging with and extending through said closing means whereby rotation of said stem in one direction moves the stem and its ram toward closed position in said bore and rotation of said stem in the opposite direction retracts the stem and said ram in its guideway away from its closed position,

a hydraulic motor having a shaft and a housing,

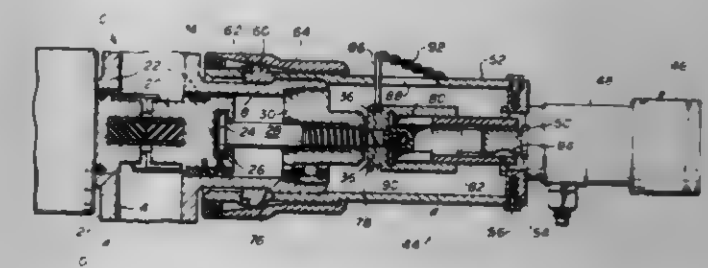
means for operatively connecting the shaft of said motor to said operating stem for rotating said stem as it moves axially,

means for quickly connecting said housing of said motor to said body while said blowout preventer is under pressure, and

means for supplying hydraulic fluid to said motor to selectively rotate said shaft and said stem in both directions,

said means for connecting said housing of said motor to said body including

a plurality of latch dogs,



a plurality of recesses in the exterior of said body surrounding the exterior of each of said guideways,

a cylinder having windows in which said latch dogs are positioned,

resilient means positioned between said latch dogs and said cylinder urging said latch dogs away from said recesses, and

means for securing one end of said cylinder to the motor housing,

a sleeve threadedly connecting to said cylinder,

said sleeve having an inner cam surface engaging the exterior of said latch dogs whereby as said sleeve is moved in one direction on said cylinder, it moves said latch dogs into said recesses to connect the motor housing to said body.

4,325,535

ACTUATOR MECHANISM FOR A ROTARY VALVE OR THE LIKE

Stephen R. Foster, New Orleans, La., assignor to Baker CAC, Inc., Belle Chasse, La.

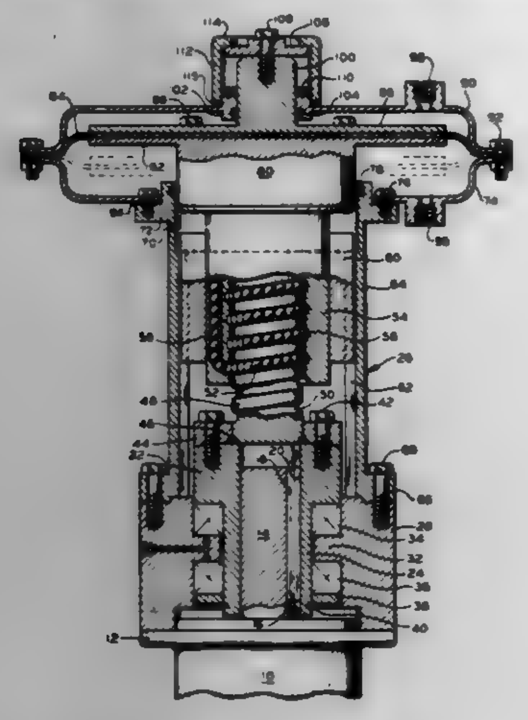
Filed Mar. 26, 1980, Ser. No. 134,391

Int. Cl.³ F16K *31/126*

U.S. Cl. 251—58 1 Claim

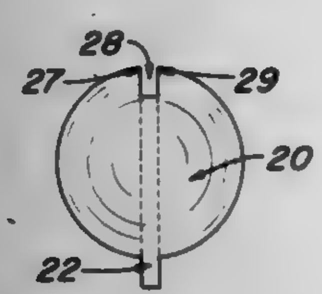
1. An actuator mechanism for a rotary valve comprising: means providing a diaphragm receiving chamber; a reciprocable diaphragm within said chamber; pressure fluid intake means on each side of said diaphragm for actuating said diaphragm in one direction or the other; means for limiting the reciprocal movement of said diaphragm comprising independent externally adjustable means on one side of said diaphragm to limit its movement in each direction; an elongate driving member having a head secured to said diaphragm for reciprocal movement therewith; a housing secured at one end to said chamber means; key means between said driving member and said housing for restricting movement of said driving member to linear reciprocal movement; a driven ball screw shaft rotatable within said reciprocal driving member; a continuous ball nut screw between said shaft and driving member and including opposing helical grooves in the shaft and driving member and a ball passage in said driving member connecting opposite ends of said grooves; a rotatable sleeve rigidly secured to the end of said driven ball screw shaft and adapted to receive the stem of the rotary valve to impart rotary movement thereto; and thrust bearings between said rotatable sleeve and said housing for receiving the thrust in opposite directions whereby

reciprocal movement of said diaphragm in either direction will effect rotary movement of said valve within predetermined



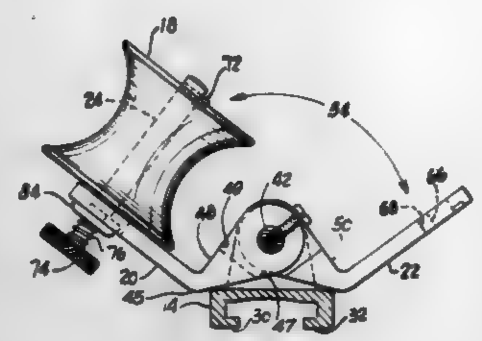
limits according to the adjustment of said reciprocal movement limiting means of said diaphragm.

4,325,536
BUTTERFLY VALVE WITH SELF LOCKING DISC
Arthur E. Garrett, Rte. 10, P.O. Box 204, Caldwell, Id.
Filed Jun. 8, 1981, Ser. No. 271,511
Int. Cl.³ F16K *1/22*
U.S. Cl. 251—308 **4 Claims**



1. A butterfly valve comprising:
a tubular housing having a pair of oppositely disposed apertures;
a shaft provided with a longitudinal slot opening at one end of said shaft and extending a preselected length to define a closed end of said shaft; said shaft further provided with a pair of oppositely disposed grooves continuous with and in alignment with the slot; said shaft adapted for placement through the apertures of said housing; and
a disc having a slot contact portion adapted for slidable reception in the slot of said shaft; said disc having a notch of predetermined length on one end, the notch defining a pair of ears; and said disc having a tab projecting a predetermined length on an opposing end, the ears operable to slidingly engage respective grooves of said shaft and said tab adapted to engage the interior walls defined by the slot of said shaft and to be held in alignment therewith.

4,325,537
SNATCH BLOCK
Robert A. Winter, and David J. Steger, both of Mentor, Ohio, assignors to Merriman Holbrook, Inc., Grand River, Ohio
Filed Nov. 8, 1979, Ser. No. 92,576
Int. Cl.³ B66D *1/36*
U.S. Cl. 254—405 **6 Claims**



1. A snatch block particularly suitable for marine use comprising:
(a) an elongated base body having a longitudinal axis and having on the underside thereof underturned oppositely inwardly directed flanges disposed parallel to said axis and adapted to slidably engage a track, and a pair of axially spaced upstanding shoulders on the upper side thereof;
(b) a longitudinally extending pin carried by and extending between said shoulders;
(c) first and second spaced side cheeks hingedly mounted on said longitudinally extending pin, said cheeks extending upwardly from said base and each having a normally upstanding portion and a laterally extending foot portion defining an L-shape, the free extremity of said foot portion including a bore for rotably mounting said cheeks on said pin, said foot portion having upper and lower diverging walls from the juncture with said upstanding leg portion to accommodate said bore, the lower diverging wall coacting with said base body when said cheek is rotated outwardly to limit its rotation about said pin to hold said cheeks, respectively, in an open, flared position, and each of said cheeks having a bore extending through the upstanding leg portion;
(d) a sheave pin extending between said side cheeks and through said bore through each upstanding leg portion when said cheeks are in the normally closed position, said sheave pin being mounted on said first side cheek for limited axial movement with respect thereto, and having an extremity thereof projecting beyond the outside surface of said second cheek;
(e) means located on said projecting extremity for selectivity manually rotating said sheave pin;
(f) means coacting between the second cheek and said sheave pin for selectively locking and unlocking said second cheek in its normally upright position; and
(g) a sheave rotatably mounted on said sheave pin.

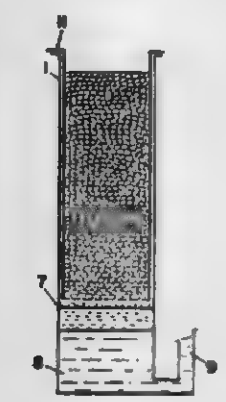
4,325,538
SMELTING FURNACE FOR DIRECT OBTAINING OF COPPER FROM ORE CONCENTRATES/AND COPPER ORES
Wlodzimierz Wozniczko; Adam Lukasik; Jozef Marczynski, all of Katowice; Witold Kowal, Glogow; Edward Plaskacewicz, Bytom; Slawomir Pasierb, Chorzow, and Norbert Langner, Katowice, all of Poland, assignors to Biuro Projektow Przemyslu Metali Niezelaznych "Bipromet", Katowice, Poland
Filed Dec. 27, 1979, Ser. No. 107,680
Int. Cl.³ F27B *3/24*; C21B *15/04*
U.S. Cl. 266—190 **6 Claims**

1. A furnace for directly obtaining copper during smelting from ore concentrates and/or copper ore which comprises:
a hearth lining having an integral bottom and side wall formed of first, second and third layers of materials each

having a good heat conductivity with each layer having a different resistance to heat transfer through the layer and a good resistance against any destructive action of copper and slag during a smelting process;

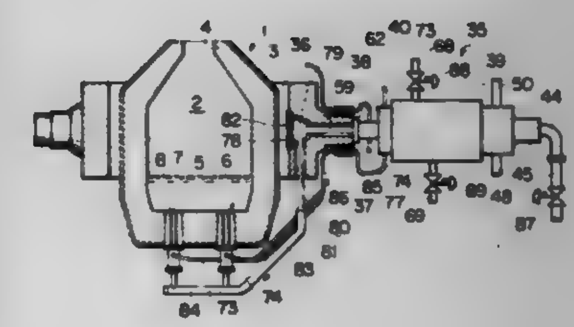
a metal jacket surrounding said hearth, said metal jacket including channels through which a coolant may flow;
said layers being adjacent each other with said third layer closest said metal jacket.

4,325,539
DEVICE FOR TREATING A MOLTEN METAL OR ALLOY USING LIQUID AND SOLID FLUX
Jean-Marie Hicter, Coublevie-Voiron, and Pierre Guerit, Chambery, both of France, assignors to Societe de Vente de l'Aluminium Pechiney, Paris, France
Division of Ser. No. 61,023, Jul. 26, 1979, Pat. No. 4,295,884. This application Feb. 19, 1980, Ser. No. 122,520
Claims priority, application France, Jul. 31, 1978, 78 23197
Int. Cl.³ C22B *9/02*
U.S. Cl. 266—207 **7 Claims**



1. A device for the treatment of a molten metal by means of solid and liquid metal halide-based flux, comprising:
a vertical column having an upper inlet end and a lower outlet end and containing a complex treatment bed comprising a packing of granules, at least in part comprising solid flux, immersed in a bath of liquid flux, the melting point of the solid flux being higher than the melting temperature of the liquid flux and the temperature of the metal which is to be treated;
means supporting said complex bed upstream of the column outlet end for providing a molten metal droplet coalescene zone therebeneath;
means provided at the upper end of the column for introducing molten metal to be treated into the column;
a molten metal extraction siphon in communication with the outlet end below said support means; and
said siphon having a cross-section smaller than that of the cross-section of the column, said siphon having an outlet orifice intermediate the lower and upper ends of the complex bed, said positioning of said siphon outlet having a difference of level relative to the level of the inlet of the column whereby the volumetric capacity of the siphon is at least equal to the volumetric loss of charge undergone by the molten metal as it passes through the column.

4,325,540
APPARATUS FOR SUPPLYING FLUIDS TO A CONVERTER
Masahiko Seki, and Yukito Io, both of Kitakyushu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan
Filed Nov. 10, 1980, Ser. No. 205,597
Claims priority, application Japan, Nov. 10, 1979, 54-144949
Int. Cl.³ C21C *5/42*
U.S. Cl. 266—243 **15 Claims**



1. A fluids supply apparatus for a converter having a plurality of tuyeres at the bottom thereof and supported by a tiltable trunnion ring having an axially projecting trunnion shaft, each tuyere having a refining gas injection nozzle and an annular protective gas injection nozzle coaxially extending around the refining gas injection nozzle, said supplying apparatus comprising:
a rotary joint having a non-rotatable casing member and a rotary assembly coupled to the trunnion shaft;
said rotary assembly having a cylindrical member axially extending within said casing member and sealingly and rotatably positioned with respect thereto;
a refining gas supply conduit having one end connected to the tuyeres for supplying refining gas to the refining gas injection nozzles thereof and having the other end connected to said rotary assembly;
a plurality of protective gas supply conduits, each having one end respectively connected to one tuyere for supply protective gas to the protective gas injection nozzle thereof and having the other end connected to said rotary assembly;
said rotary assembly having a plurality of passageways, each respectively communicating with one of said protective gas supply conduits;
said members having a groove and port communication means for respectively communicating said passageways with the outside surface of said casing member;
a plurality of protective gas supply pipes, each respectively connected to the outside surface of said casing member and communicating with said groove and port communication means for respectively supplying protective gas to one of said passageways;
a refining gas supply pipe connected to said casing member; and
said casing member and said rotary assembly having a channel communication means for communicating said refining gas supply conduit with said refining gas supply pipe.

4,325,541

SPRING LEG WHICH HAS A LOAD PROPORTIONALLY LIMITED DAMPING, CONSISTING OF AN AIR SUSPENSION AND A TELESCOPIC SHOCK ABSORBER FOR MOTOR VEHICLE

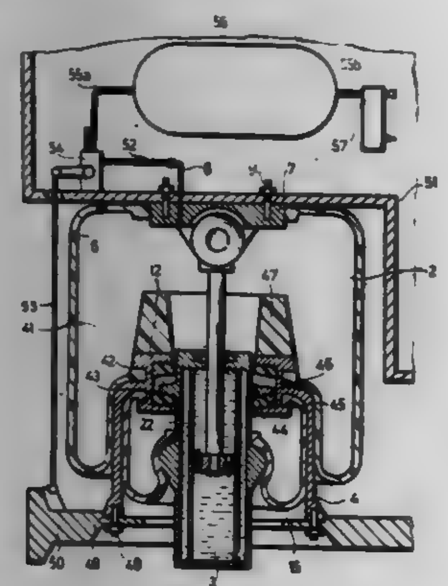
Jozsef Koroseladanyi; Sandor Szabo; Jeno Madi, all of Budapest; Laszlo Vad, Visgrad, and Otto Farkas, Budapest; all of Hungary, assignors to Autoipari Kutato Intezet and Taurus Gumiipari Vallalat, both of Budapest, Hungary

Continuation of Ser. No. 919,942, Jun. 28, 1978, abandoned. This application Apr. 9, 1980, Ser. No. 138,495

Claims priority, application Hungary, Jun. 30, 1977, AU 337

Int. Cl.³ F16F *9/08*

U.S. Cl. 267—8 R 6 Claims



1. In a spring leg with load proportional limited damping for use on a vehicle, including a telescoping shock absorber including a piston and cylinder and a load bearing air suspension connected to a gas pressure system and having walls surrounding the air space thereof comprising two rigid walls fixed to the body and the axle of the vehicle and an elastic jacket connected to the two rigid walls, the improvement comprising means mounting the cylinder for movement relative to one of the two rigid walls comprising an auxiliary diaphragm having an inner rim fixed to the cylinder of the shock absorber and an outer rim fixed to said one of the two rigid walls of the air suspension to define the auxiliary diaphragm as one of the bordering walls of the air space of the air suspension, means for limiting the outward movement of the cylinder of the shock absorber from the air space of the air suspension, the limiting means comprising a pilot bushing fixed to the one rigid wall bearing the outer rim of the auxiliary diaphragm and wherein the piston rod of the shock absorber is fixed to the other rigid wall of the air suspension, wherein both the elastic jacket of the air spring and the auxiliary diaphragm comprise rolling diaphragms and the one rigid wall has fixing elements connected to the axle and a stop collar for the shock absorber and wherein the outer rim of the auxiliary diaphragm is sealingly fixed to the one rigid wall of the air suspension and in which there is a slot bearing elastic stopping rings which encircle the stop collar of the shock absorber and limit the displacement of the shock absorber cylinder and wherein the shock absorber cylinder has a rim including a channel which connects the air spaces divided by the rim of the air suspension cylinder.

4,325,542

SEAT CONSTRUCTION

Stephen E. Muzzell, Ferndale, Mich., assignor to Gulf & Western Manufacturing Company, Southfield, Mich.

Filed Aug. 1, 1980, Ser. No. 174,643

Int. Cl.³ F16F *3/02*

U.S. Cl. 267—85 9 Claims

5. For use in a seat construction,

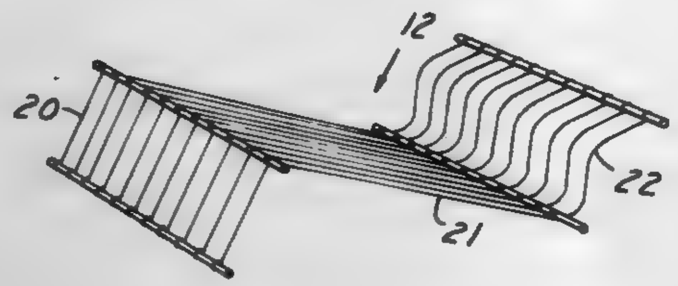
a seat suspension mat comprising covered first and second coated border wires and a plurality of longitudinally spaced transversely extending spaced wires having their ends attached to said border wires,

said first border wire being adapted to be attached to a first rail of a frame and said second border wire being adapted to be attached to a second rail of a frame,

first and second auxiliary coated wires extending longitudinally and generally parallel to said border wires,

each said transversely extending wire being wound around each of said auxiliary longitudinal wires,

thereby defining a first portion extending upwardly from said first border wire to said first auxiliary wire,



a second portion extending from said first auxiliary wire to said second auxiliary wire,

and a sinuous portion extending from said second auxiliary wire to said second border wire such that when a load is applied generally perpendicular to the general plane of the suspension mat, the wrapped portions of the wire about the auxiliary longitudinal wires are wound to varying degrees about the auxiliary longitudinal wires and the sinusoidal portions of the wires extend to provide continued resilient suspension.

4,325,543

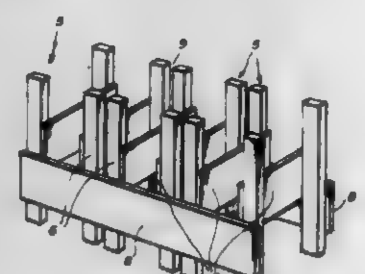
SAW BUCK

Floyd R. York, North Rd., Yarmouth, Me. 04096

Filed Jun. 23, 1980, Ser. No. 161,697

Int. Cl.³ B23Q *3/00*

U.S. Cl. 269—295 5 Claims



1. A wooden saw buck said saw buck including a series of H-shaped holders for use in sawing with a chain saw lengths of logs, split sections of logs or limbs, each holder consisting of a pair of straight uprights and a straight transverse supporting member connected approximately at right angles to said upright, the lower ends of said uprights the legs of the saw buck and their upper ends confining wood lengths when supported by said transverse members, and connecting members, one for each of the corresponding uprights of the supports and connected thereto below the upper edges of said transverse members and above the lower ends of said uprights and spacing said supports from each other in a manner depending on the wanted lengths into which said wood lengths are to be cut and the number of cuts necessary for such wanted lengths, said spacing such that for each cut that is to be made there is a pair of holders so closely spaced as to establish transversely aligned slots of a width such as to freely receive the chain and bar of a chain saw, with the upper edges of said connecting members below the upper edges of the transverse members, the distance

between the upper edges of the transverse supporting members and of the connecting members such that the connecting members are so far below wood lengths held in the saw buck that the user of the chain saw can readily control the use thereof to prevent contact of the chain with either connecting member.

4,325,544

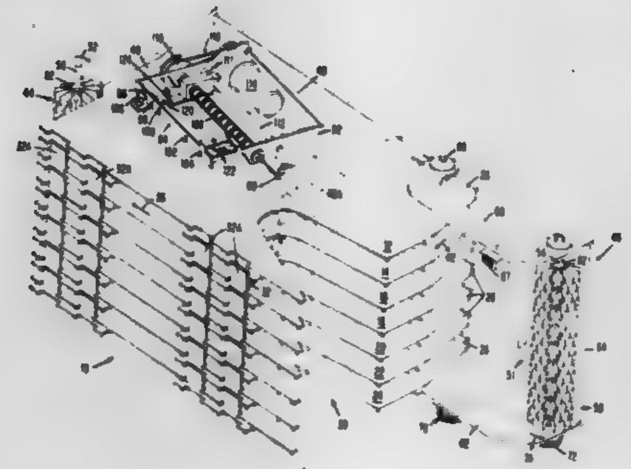
COLLATOR WITH ADJUSTABLE SHEET ALIGNER

Robert Magno; Donald C. Roller, both of Boulder, and Allan J. Rood, Longmont, all of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 2, 1980, Ser. No. 146,948

Int. Cl.³ B65H *31/38, 31/24*

U.S. Cl. 271—221 8 Claims



4. In a sheet accumulating device such as a collator having at least one horizontally disposed bin and means for aligning sheets entering the bin, the improvement comprising:

a fixed and a movable position drive roller disposed in a vertical orientation and adjacent opposite sides of the bin;

each drive roller having a plurality of flaps thereon, said flaps being operable to contact the sheets on the edge and top surface to allow alignment of undersized sheets;

an adjustment device operable to adjust the position of the movable position roller to enable the bin to accommodate variable size sheets; and

a locking device operable to lock the movable position roller following its adjustment.

4,325,545

METHOD AND APPARATUS FOR ALIGNING STACKED PAPER SHEETS OR THE LIKE

Paul Fabrig, Neuffen, Fed. Rep. of Germany, assignor to Womako Maschinenkonstrucktionen GmbH, Nürtingen, Fed. Rep. of Germany

Filed Jun. 4, 1980, Ser. No. 156,634

Claims priority, application Fed. Rep. of Germany, Dec. 15, 1979, 2950616

Int. Cl.³ B65H *31/34*

U.S. Cl. 271—221 34 Claims

1. A method of aligning the sheets of a stack which includes aligned and misaligned relatively small first sheets and at least one relatively large second sheet having a first marginal portion extending beyond the corresponding first marginal portions of the first sheets, wherein the first marginal portions of misaligned first sheets extend beyond the first marginal portions of aligned first sheets, and wherein the sheets have second marginal portions located opposite the respective first marginal portions and the second marginal portions of aligned first sheets extend beyond the second marginal portions of misaligned first sheets, comprising the steps of locating one side of the stack against a first surface; placing the second marginal portions of aligned first sheets against a second surface which is inclined with reference to the first surface whereby the first marginal portions of the misaligned first sheets extend beyond the first marginal portions of first sheets whose second marginal portions contact the second surface; deforming the first marginal portion of the second sheet so as to move at least one section of the thus deformed first marginal portion of the second sheet away from the neighboring section of the first marginal portion of the nearest first sheet, at least at one side of the second sheet; and shifting the misaligned first sheets with reference to the aligned first sheets to move the second marginal portions of misaligned first sheets into contact with the second surface, including applying against the first marginal portions of misaligned first sheets a force acting in a direction toward the second surface in the region of said section of the first marginal portion of said nearest first sheet.

9. Apparatus for aligning the sheets of a stack which includes aligned and misaligned relatively small first sheets and at least one relatively large second sheet having a first marginal portion extending beyond the corresponding first marginal portions of the first sheets, wherein the first marginal portions of misaligned first sheets extend beyond the first marginal portions of aligned first sheets, and wherein the sheets have second

marginal portions located opposite the respective first marginal portions and the second marginal portions of aligned first sheets extend beyond the second marginal portions of misaligned first sheets, comprising locating means having a first surface arranged to contact one side of the stack to be treated in said apparatus and a second surface which is inclined with reference to said first surface and is arranged to contact the second marginal portions of aligned first sheets; abutment means; means for shifting said abutment means from a first end position, against the first marginal portions of misaligned first sheets, and toward said second surface on to a second end position to thereby move the second marginal portions of misaligned first sheets into contact with said second surface; and means for moving said abutment means into deforming engagement with the first marginal portion of the second sheet in the stack one side of which contacts said first surface before said shifting means moves said abutment means againt the first marginal portions of misaligned first sheets.

4,325,546

MODULAR ATHLETIC PLAYING SURFACE WITH TUNED COMPLIANCE

Thomas A. McMahon, 65 Crest Rd., Wellesley, Mass. 02181, and Peter R. Greene, 77 Lanark Rd., Brookline, Mass. 02146

Continuation-in-part of Ser. No. 947,101, Sep. 29, 1978, which is a continuation-in-part of Ser. No. 826,335, Aug. 22, 1977, abandoned. This application Jan. 9, 1980, Ser. No. 110,671

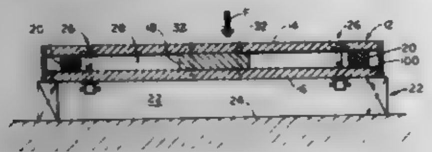
Int. Cl.³ A63C *19/00*

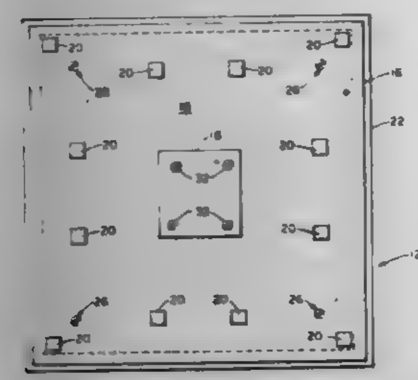
U.S. Cl. 272—3 25 Claims

1. An athletic playing surface that receives impacts on its upper surface comprises an array of modules in side by side, closely spaced relationship, each of said modules comprising

an upper plate and a lower plate, said plates being stiffly

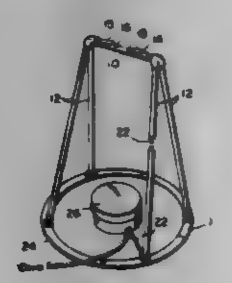
resilient and in a generally parallel, spaced apart relationship,
spacer means coupled between said upper and lower plates in a face abutting relationship, the abutting faces of said spacer means having an area that is substantially smaller than that of either of said plates, said spacer means having a flexural stiffness at least roughly comparable to the flexural stiffness of said plates, and
a plurality of resilient members disposed between said upper and lower plates, said resilient members being substan-

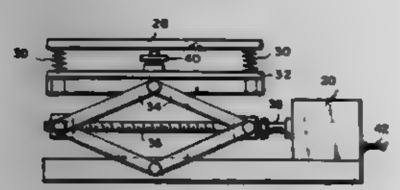




tially more resilient than said plates and spacer means, and spaced horizontally from and arranged in a pattern substantially circumscribing at least two sides of each said spacer means,
said module having a large vertical compliance and presenting a low effective vertical mass to said impacts, and
said spacer means and resilient members having their dimensions and their locations with respect to said plates selected to provide a compliance response to said impact that is substantially uniform over said upper plate and substantially independent of the area of the impact.

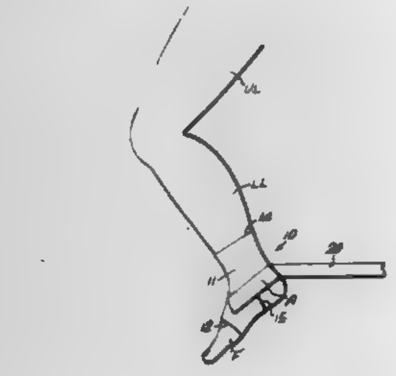
4,325,547
BACK STRENGTHENING DEVICE
Russell P. Cook, 58 Boulder Rd., Wellesley, Mass. 02181
Filed Mar. 17, 1980, Ser. No. 130,869
Int. Cl.³ A63B *23/02*
U.S. Cl. 272—144 7 Claims

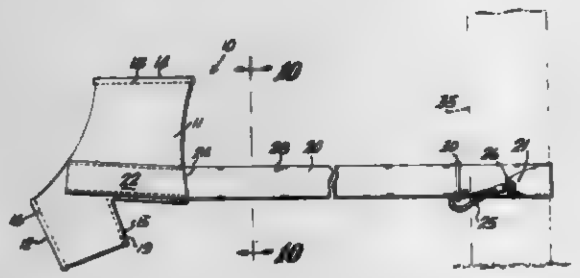




1. A back strengthening apparatus comprising:
a. support means to support the upper body of a patient;
b. a foot platform associated with said support means;
c. means resiliently supporting said foot platform for selectively lowering said foot platform, said supporting means for sensing a predetermined amount of the patient's weight on said platform and adapted to regulate the extent said platform is lowered in response to the weight of the patient on said platform;
d. actuating means on said support means operatively connected with said platform supporting means for selectively lowering said platform; said actuating means being actuated by being grasped by the patient; whereby, when the patient is supported by said support means with a predetermined amount of the patient's weight supported by said platform and sensed by said sensing means, said actuating means is actuated by the patient causing said platform supporting means to lower said platform wherein said actuating means is adapted to regulate the extent the platform is lowered.

4,325,548
KICKING DEVICE
Silvio D. Piccini, 13620 SW. 74th Ct., Miami, Fla. 33158
Filed Feb. 1, 1980, Ser. No. 117,538
Int. Cl.³ A63B *69/00, 23/04, 21/12*
U.S. Cl. 273—55 B 2 Claims





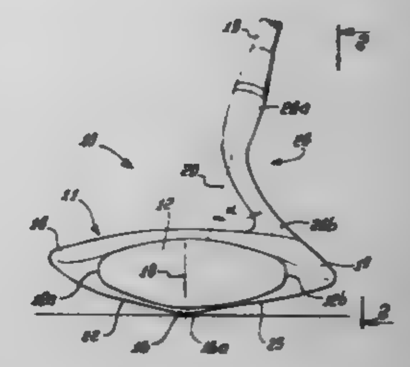
1. An apparatus for improving the skills and strength of a kicker comprising,
an elastic sock-like band to engage the kicking foot and ankle of said kicker, said band having portions cut out to expose the toes and heel of said foot and ankle,
an elastomeric strap between 1 inch and 2 inches wide, one end portion of said strap sewn to said band so that said strap joins said band in the area covering the Achilles heel of said foot and ankle, and the other end of said strap containing securing means,
said strap having a length and stiffness selected so that when said band is engaged by said foot and ankle and when said strap is anchored by employing said securing means to a fixed object in a spaced relationship to said kicker, said kicker can move his kicking foot and ankle through his complete and normal kicking motion while under the restraining force of the stretching of said strap and thereby exercise the muscles that are involved in said kicking motion,
said securing means comprising a swivel clip attached to the remote end of said strap together with a ring, slideably surrounding said other other end of said strap, for engagement with said clip, whereby said other end of said strap may be wrapped around a fixed object and said clip engaged with said ring so as to secure said strap to a fixed object.

4,325,549
TENNIS RACKET WITH SELECTIVELY MOVABLE WEIGHT
Joseph P. Vasselli, 112 Battle Hill Ave., Springfield, N.J. 07081
Filed Mar. 10, 1980, Ser. No. 128,890
Int. Cl.³ A63B *49/04*
U.S. Cl. 273—73 R 3 Claims

1. An improved tennis racket having a weight which is selectively movable toward and to the head of the racket to increase a force for driving and/or returning a ball, said tennis racket including:
(a) a head portion including stretched strings supported and secured thereto;
(b) a throat portion, adjacent said head portion, merging into a handle portion, said handle portion terminating in a handle;
(c) a tubular passageway extending substantially centrally of said throat portion, said handle portion and said handle;
(d) a weight located in said tubular passageway, said weight being normally freely slidable throughout said tubular passageway and with each end of said tubular passageway having a closure to limit the travel of said weight;
(e) vent means operatively associated with said tubular passageway to prevent air cushioning and slowing of the movement of the weight in said tubular passageway; and
(f) weight stop means located adjacent the upper end of said handle and being exposed on the outer surface of said handle portion for selective engagement by the racket user, said stop means being normally out of engagement with said weight so as to permit said weight to be freely slidable in said passageway, said stop means including means for engaging said weight within said passageway upon the user pressing inwardly on said stop means so as to temporarily restrict movement of said weight.

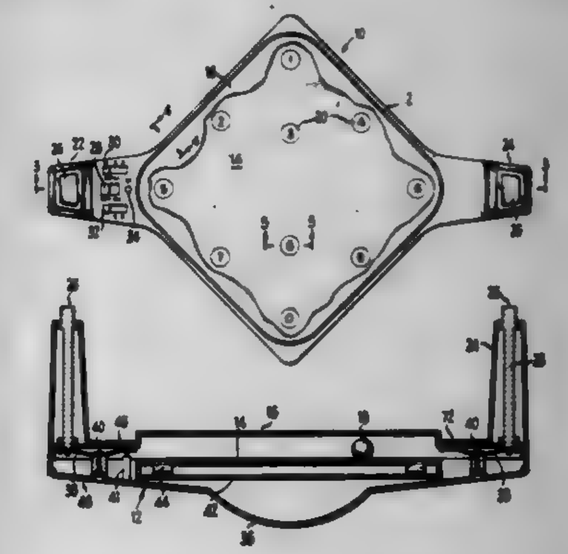
4,325,550
PUTTER WITH SHAFT AXIS FOCUSSED AT BLADE KEEL
Stanley C. Thompson, Playa del Rey, and Glenn H. Schmidt, Glendale, both of Calif., assignors to Stan Thompson Golf Club Company, Culver City, Calif.
Filed Aug. 1, 1980, Ser. No. 174,625
Int. Cl.³ A63B *53/04*
U.S. Cl. 273—80 C 5 Claims

1. In a golf putter, the combination comprising
(a) a generally horizontally and laterally elongated head having a ball striking front face, a heel and a toe,
(b) the head having an integral and downwardly projecting keel at the underside thereof, the keel located intermediate the toe and heel and extending in a rearward direction relative to the front face, and
(c) an elongated generally upright shaft having an axis, the shaft connected to said head,
(d) the shaft axis directed to intersect the keel,
(e) and a hosel interconnecting the shaft and head, the hosel having an upper portion extending in the direction of said axis, and a lower portion extending at a substantial angle to said axis and spaced therefrom to join the head near said heel,
(f) said keel including a lowermost portion which is locally downwardly convex and located directly beneath the



center of the front face, said front face being angled slightly upwardly and rearwardly relative to vertical when the keel lowermost portion is flatly engageable with the green turf,
(g) said axis angled in relation to said head to pass in spaced relation to said face center and to intersect the lowermost extent of said keel, and the remainder of the head being located above the level of said keel lowermost portion, whereby the keel lowermost portion intersected by said axis is the only portion of the head engageable with the turf during stroking of a ball on a green,
(h) the underside of the head being downwardly concave at opposite sides of the keel.

4,325,551
ELECTRONICALLY CONTROLLED GAME APPARATUS WITH PLAYING ARRAY POSITIONS ACTUATABLE BY A PLAYER CONTROLLED MOVABLE OBJECT
Ralph J. Kulesza, Chicago; Jeffrey D. Breslow, Highland Park; Howard J. Morrison, Deerfield; Gunars Licitis, Jr., Lombard, and Rex M. Harper, Chicago, all of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.
Filed Feb. 8, 1980, Ser. No. 119,752
Int. Cl.³ A63F *7/38*
U.S. Cl. 273—110 16 Claims



1. Game apparatus comprising:
a housing defining a playing surface and including means for selectively altering the orientation of said playing surface;

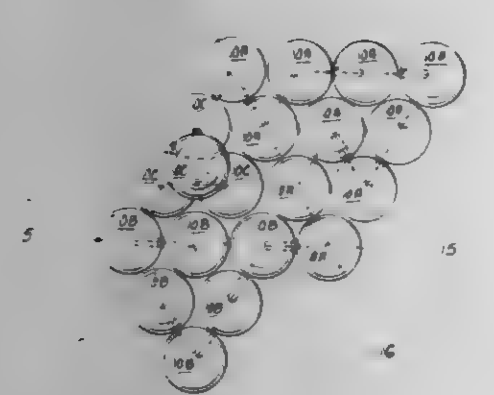
a movable object disposed and being movable on said playing surface in response to the orientation of said playing surface;

a plurality of playing field array positions defined on said playing surface, each of said playing field array positions comprising means responsive to said movable object for sensing the presence or absence of said movable object and providing an output indicative thereof, each of said playing field array positions further comprising illumination source means for illuminating a respective one of said playing field array positions;

electronic control means responsive to said outputs of said sensing means and controlling the illumination state of said illumination source means, said electronic control means comprising means for selectively actuating on a random basis one or more of said illumination source means and deactuating each of said actuated illumination source means in response to said respective sensing means outputting an indication of the presence of said movable object; and

player actuable means for contacting said movable object and applying an actuating force directly downward through said movable object to said field array positions to actuate said sensing means when said movable object is directly over one of said array positions and said player actuable contacting means is operated, said player actuable contacting means comprising a movable, transparent cover disposed generally parallel to the plane of said playing surface and a manually actuable player actuator control for moving said cover between a raised position and a lowered movable object contacting position.

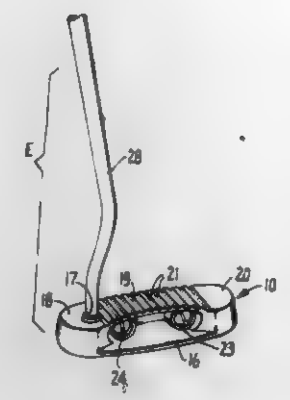
4,325,552
MANIPULATIVE TOY
Michael O. Glasheen, Lot 6, Lower Colo Rd., Lower Portland, New South Wales, 2756, Australia
Filed Mar. 31, 1980, Ser. No. 135,336
Int. Cl.³ A63F *9/08; G09B 23/04*
U.S. Cl. 273—153 P 4 Claims



1. A manipulative toy comprising:

a plurality of spheres, each sphere being connected to two other spheres to form a closed loop, each connection between any two spheres being at a fixed point at the surface of each sphere, each such connection maintaining the connected sphere substantially in contact at the point of connection while allowing relative rotation of adjacent connected spheres about a common axis through the centers of the adjacent spheres, the sequence of the angles of intersection of the connection axes of successive spheres being chosen such that the spheres may be manipulated, by relative rotation of successive spheres into a polyhedron.

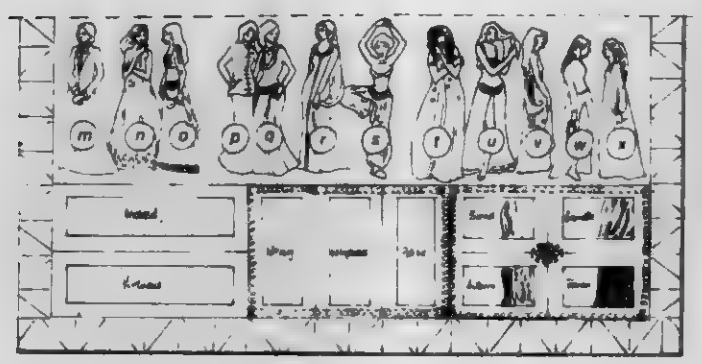
4,325,553
LOW ANGULAR ACCELERATION PUTTER AND METHOD
Dale W. W. Taylor, P.O. Box 245, Carmel Valley, Calif. 93924
Continuation-in-part of Ser. No. 873,109, Jan. 30, 1978, abandoned. This application Mar. 1, 1979, Ser. No. 16,436
Int. Cl.³ A63B *53/04*
U.S. Cl. 273—167 F 13 Claims



1. In a method of making a putter having equalized components of effective mass so as to minimize angular acceleration imparted to the ball during the period of impact, said putter including a head and a shaft, the steps of preparing said head with a striking face, toe, heel and central portions, removing portions of the mass of material immediately behind said central portion of said head to form a rearward opening cavity, determining the effective mass of of the toe portion of said head in relation to a vertical plane extending through a point at the center of said striking face, determining the effective mass of the heel portion of said head plus that portion of the shaft extending upward from said heel portion which feels the shock waves during the period of impact of the club head with the ball, said last determination also being in relation to said vertical plane extending through said point at the center of the striking face, removing material from the heel portion of said head so that the effective mass of said heel portion plus said shaft portion equals the effective mass of said toe portion to thereby balance the effective mass components on either side of said vertical plane through said point at the center of said striking face and, also, the moments of inertia of said effective mass components with respect to said vertical plane, to thereby effectively minimize angular acceleration imparted to the ball by said putter throughout the period of impact.

8. A golf putter having a shaft and a head with a striking face, said putter being constructed to have a predetermined precisely balanced effective mass which is operable during the putting stroke, said effective mass constituting those portions of the head and shaft of the putter within which shock waves are felt during an impact period related to the putting stroke which commences with contact of the ball with the striking face and extends until the ball leaves the striking face, said putter being particularly constructed to provide balanced components of said effective mass with respect to a vertical plane extending through a point in the center of said striking face and which bisects said face, said balanced components of said effective mass consisting of a first effective mass component toeward of the plane vertically bisecting the face and of a second effective mass component heelward of said plane bisecting said face, said second effective mass component also including a substantial portion of the shaft less than the full length thereof within which said shock waves are felt during the impact period of said putting stroke, said balanced components of the effective mass including club head portions which are of unequal mass in that the mass of the toeward portion of the head is greater than the mass of the heelward portion of the head, the greater mass of said toeward portion being balanced as part of said effective mass during the impact period of the putting stroke by the mass of that portion of the shaft which feels the shock waves during said impact period, whereby the moments of inertia of said first and second effective mass components are at all times equal and balanced about said point at the center of the striking face during the impact period of said putting stroke.

4,325,554
GAME WITH BOARD AND TOKENS
James C. Broom, The Hermitage, Burtenshaw Rd., Thames Ditton, Surrey, England
Division of Ser. No. 958,412, Nov. 7, 1978, Pat. No. 4,272,081. This application Feb. 26, 1981, Ser. No. 238,580
Int. Cl.³ A63F *3/00*
U.S. Cl. 273—274 3 Claims



1. Game equipment comprising a set of 24 cards and a game board, each card in the set depicting a different girl in a Sultan's harem and, being unique with regard to its selection of one of each of three different attributes of the girls, a first attribute of which there are two alternatives, a second attribute of which there are three alternatives and a third attribute of which there are four alternatives, the game board reproducing the 24 girls depicted on the cards and also including separate areas marked to represent the different alternatives of the nine attributes found in the set of cards.

4,325,555
GAME USING AIR BLOWERS TO MOVE OBJECT
Douglas S. Marling, 2511 Elizabeth St., Janesville, Wis. 53545
Filed Apr. 17, 1980, Ser. No. 141,208
Int. Cl.³ A63F *9/02*
U.S. Cl. 273—355 5 Claims

1. A game apparatus comprising:

a source of pressurized air;

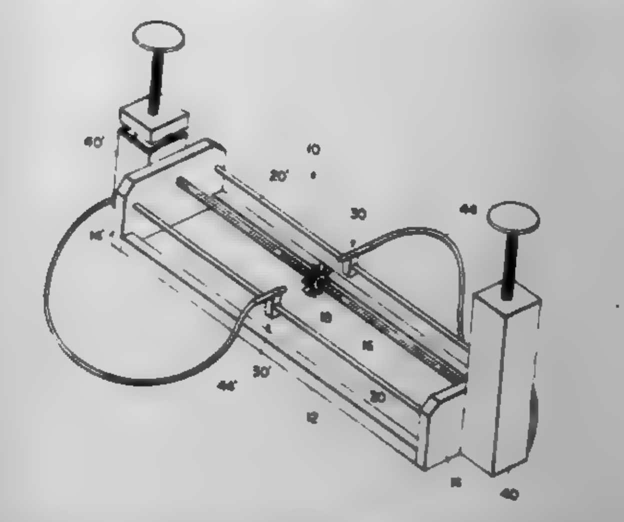
a pair of air blowers disposed in opposed relationship to each other and each having nozzles for projecting pressurized air in a jet;

means for connecting said source of pressurized air with said pair of air blowers;

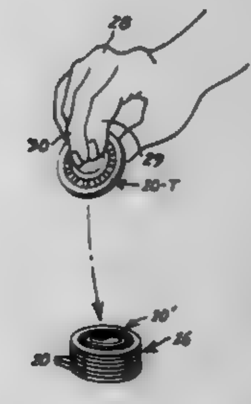
an object located between said air blowers and movable responsive to a jet of air projected thereon from said air blowers;

means for guiding and constraining the movement of said object so as to be equidistant from and in front of said pair of air blowers; and

a pair of substantially rigid elongate guide means for mounting respective ones of said pair of air blowers so that said pair of air blowers are freely movable therealong and pivotable only in a plane perpendicular to the longitudinal axis of a respective guide means and for guiding the movement of said air blowers such that the air blowers are constrained to move along said guide means and are positionable directly in front of said object as said object moves.



4,325,556
PLAYING DISC
Joseph F. DeCanto, and Deborah L. Griffey, both of 141 Neese Dr., E-30, Nashville, Tenn. 37211
Filed Jul. 14, 1980, Ser. No. 167,934
Int. Cl.³ A63F *9/02*
U.S. Cl. 273—393 2 Claims



1. A playing disc adapted to be stacked with other like discs for playing a game in which another like playing disc is thrown at the stack, comprising:

(a) a solid disc body of homogenous thermoplastic material having parallel top and bottom faces, a circular edge, and a generally uniform thickness,

(b) said bottom face being continuously coplanar,

(c) a central depressed area in said top face defining a bottom wall portion having a thickness less than said uniform thickness of said body,

(d) said bottom wall portion being more flexible than the remaining portions of said disc body, said bottom wall portion being adapted to flex under the impact of a playing disc thrown edge-wise against said bottom wall portion,

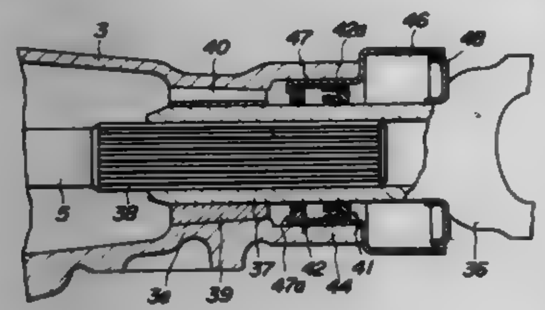
(e) said top face comprising an annular, continuously coplanar, rim, adjacent said edge, no portion of said body projecting from said top face beyond the plane of said annular rim,

(f) a plurality of circumferentially spaced recesses in said top face between said central depressed area and said annular rim,

(g) an annular wall of said uniform thickness separating said recesses and said central depressed area, the top of said annular wall and said coplanar rim are adapted

to seat flush against the bottom face of an adjacent upper stacked playing disc to form air pockets between the bottom face of an adjacent upper stacked playing disc and said central depressed area and said recesses.

4,325,557
APPARATUS FOR PREVENTING OIL LEAKAGE FROM A VEHICLE POWER TRANSMISSION
Tamio Kawamoto, Sagamihara, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan
Filed Jan. 29, 1980, Ser. No. 116,637
Claims priority, application Japan, Jan. 30, 1979, 54-9863
Int. Cl.³ F16J *15/18*
U.S. Cl. 277—65 **3 Claims**



1. In a vehicle power transmission having one end of a sleeve yoke protruding into a casing, said sleeve yoke end being rotatably supported by an oil-lubricated bearing contained by said casing and being connected to an axially aligned output shaft extending through said casing, apparatus for preventing oil leakage between said casing and said sleeve yoke end comprising:

a non-rotatable dust cover surrounding said sleeve yoke end, said dust cover having a cylindrical protrusion received in said casing,

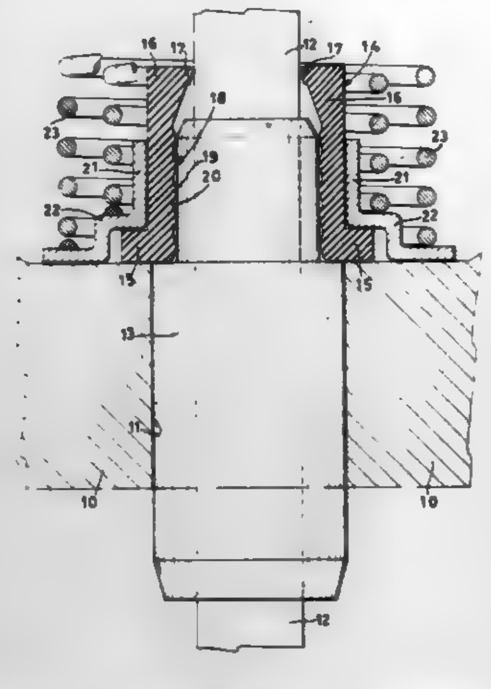
a flexible oil seal arranged within said cylindrical protrusion to surround and sealingly engage said sleeve yoke end on the outer side of said bearing,

a baffle plate having a ring-shaped portion arranged within said cylindrical protrusion to surround said sleeve yoke end between and in an axially opposed position relative to both said oil seal and said bearing,

said dust cover, oil seal and baffle plate being fixedly interconnected for attachment to said casing as an integral unit.

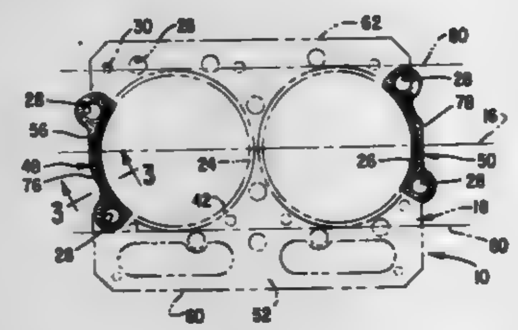
4,325,558
ASSEMBLY CONSISTING OF A SEAL GASKET FOR VALVE STEMS AND A SPRING SUPPORT CAP
Mario Poggio, Leini, Italy, assignor to SAIAG S.p.A., Cirie, Italy
Filed Apr. 10, 1980, Ser. No. 138,844
Claims priority, application Italy, May 7, 1979, 67950 A/79
Int. Cl.³ F16J *15/00*
U.S. Cl. 277—189 **5 Claims**

1. In combination with the cylinder head of an internal combustion engine having a valve and valve guide extending through the head and a coil compression spring acting between the valve and the cylinder head, a gasket surrounding the valve guide and sealing against the valve stem, the gasket having a radially outwardly extending flange on its end adjacent the cylinder head, and a spring support cap surrounding the gasket and having an interference fit with the gasket and resting on the cylinder head, the valve spring pressing the support cap



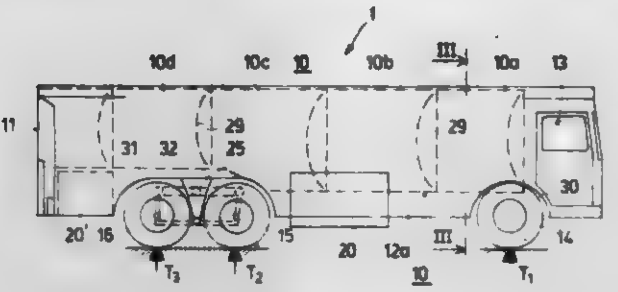
against the cylinder head, the support cap having an annular recess in which said gasket flange is disposed.

4,325,559
EROSION RESISTANT GASKET
Daniel E. Czernik, Hinsdale, and Donald J. McDowell, Riverside, both of Ill., assignors to Felt Products Mfg. Co., Skokie, Ill.
Filed May 12, 1980, Ser. No. 149,120
Int. Cl.³ F16J *15/06*
U.S. Cl. 277—235 B **4 Claims**



1. An abrasive-erosion resistant, elongated gasket assembly adapted to be positioned between an engine block and head, said engine defining at least two combustion chambers disposed along a longitudinal axis of said engine, said gasket comprising a main body portion including a gasket base providing a first surface and a second surface and a composite facing material on each said surfaces, said gasket assembly defining at least two combustion openings arranged in a line and a substantially uniform layer of an abrasive-erosion resistant material of from about 0.002 to 0.012 inch in thickness deposited only on a selected portion of said facing material at each of the two opposite longitudinal ends of said gasket base and within the areas bounded by lines tangential to the peripheries of the combustion openings, the sides of the combustion openings and the ends of said gasket base, thereby to resist abrasive-erosion of said gasket assembly.

4,325,560
TANK TRUCK VEHICLE FOR TRANSPORTING FLUID OR PULVEROUS MATERIAL, PARTICULARLY OIL
Reijo Hirvonen, Mähkönkatu 12 A, 81720 Lieksa 2, Finland, assignor to Hollming Oy and Reijo Hirvonen, both of, Finland
Filed Mar. 14, 1979, Ser. No. 20,412
Claims priority, application Finland, Mar. 14, 1978, 780799; Apr. 17, 1978, 781162; Mar. 1, 1979, 790707
Int. Cl.³ B60P *3/22*
U.S. Cl. 280—5 D **4 Claims**



1. A land vehicle, such as a tank truck, for transporting fluid, pulverous, granular and/or chipped material and, in particular, for transporting oil, in a transporting container, said vehicle having an engine, power transmission means and front and rear wheels, comprising:

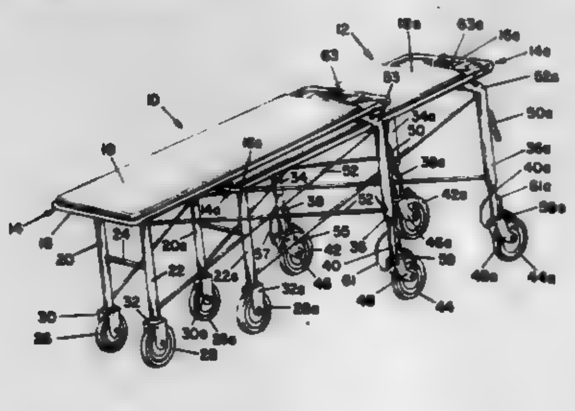
a longitudinally extending substantially tubular shell defining said transporting container having a transverse dimension at least as great as the wheel base of said vehicle, and a longitudinal dimension essentially as long as the vehicle, said shell having a structure which is sufficiently rigid such that said shell comprises both the sole means for defining said transporting container as well as the sole means for defining the supporting frame of the vehicle so that the vehicle supporting frame does not include any supporting frame structure separate from said tubular shell;

an engine and power transmission means substantially directly supported by said tubular shell beneath the same; and

wherein said front wheels are connected to a front axle and said front axle is substantially directly supported by said tubular shell in substantial alignment with the forward end of said shell;

whereby by virtue of said vehicle being devoid of any supporting frame structure other than said tubular shell, said vehicle has a smaller overall height and lower center of gravity than conventional vehicles of this type.

4,325,561
NESTING PATIENT TRANSPORT TABLES
Gary S. Lynn, 8119 Forest Ave., Munster, Ind. 46215
Filed Mar. 17, 1980, Ser. No. 131,204
Int. Cl.³ B62D *39/00*
U.S. Cl. 280—33.99 R **20 Claims**



1. A transport table for being nested together with like transport tables for storage, comprising:

a generally planar table top having first and second opposing ends;

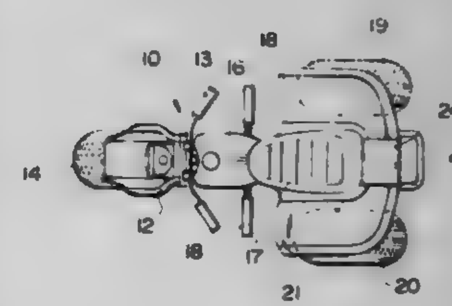
first leg structure extending downwardly from the first end of said table top for supporting said table top above the floor;

second leg structure extending downwardly from the second end of said table top for supporting said table top above the floor;

adjustment means for selectively adjusting the relative lengths of said first and second leg structures to adjust the position of the table top between a generally horizontal service position and a tilted nesting position, the second end of said table top being above the first end of said table top when in the tilted nested position; and

said second leg structure being adapted to receive said first leg structure of a like transport table when in the tilted nesting position so that the like transport table may be nested within and beneath said transport table by inserting the first end of said table top of the like table top of the like transport table through said second leg structure of said transport table.

4,325,562
THREE-WHEELED VEHICLE WITH A CONTAINER
Kozo Yamada, Asaka; Yasuhiro Ohba, Kamifukuoka, and Seiichi Matsui, Tokyo, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 9, 1980, Ser. No. 157,387
Claims priority, application Japan, Jun. 11, 1979, 54-79207[U]
Int. Cl.³ B62D *61/08;* **B60R** *11/00*
U.S. Cl. 280—62 **7 Claims**



1. A three-wheeled vehicle, comprising:

a vehicle frame;

a front wheel rotatably mounted on said frame;

a pair of parallel rear wheels rotatably mounted on said frame;

a container disposed rearwardly of said frame between said rear wheels;

a pair of parallel spaced bars extending rearwardly from said frame, said bars supporting said container therebetween;

a U-shaped guard mounted on said bars and extending rearwardly of said container; said container being provided thereon with first and second spaced resilient means;

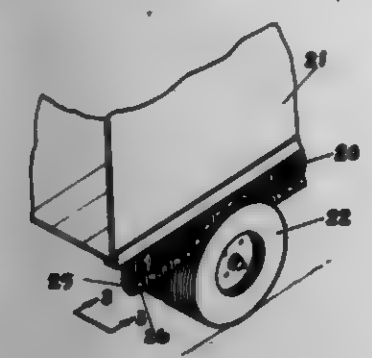
said bars being provided thereon with first locking means held in locking engagement with said first resilient means; and

said guard being provided thereon with second locking means held in locking engagement with said second resilient means.

4,325,563
VEHICLE SPRAY REDUCTION
Ronald E. Brandon, 1734 Lenox Rd., Schenectady, N.Y. 12308, and James W. Winger, 5728 E. Glen Carla Dr., Huntington, W. Va. 25705
Filed May 2, 1980, Ser. No. 146,013
Int. Cl.³ B62D *25/16*
U.S. Cl. 280—154.5 R **2 Claims**

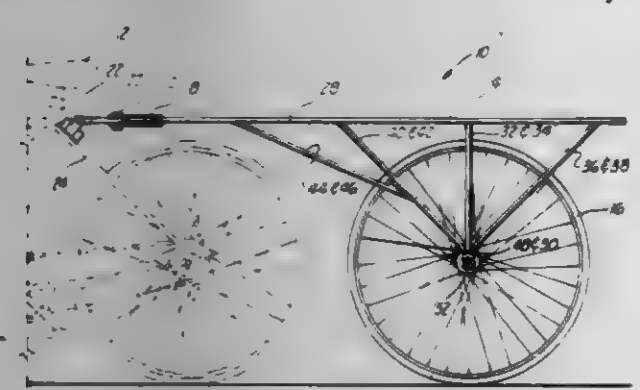
1. An apparatus for collecting wet spray from the tires of

vehicle trucks operating on wet roads comprising a plurality of wiggle plates adapted to be mounted on the underside of a vehicle truck body along its lateral edge above the vehicle tires, said wiggle plate comprising a plurality of vertical plates which are mounted transversely with respect to the centerline of the vehicle axis, each of said wiggle plates having a plurality of angular bends and a vertical member secured to the plate at each bend to form a water cavity, wherein said wiggle plates



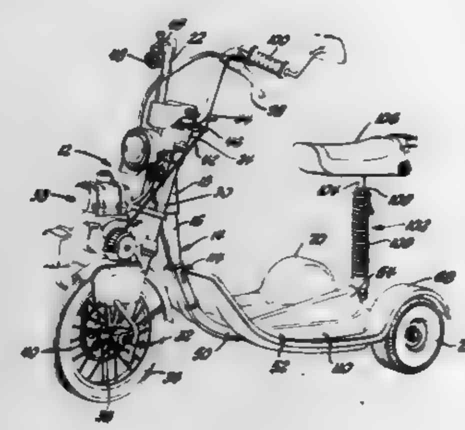
are mounted in a parallel relationship to form therebetween flow passages having a plurality of curved turns for separating the water droplets in the air flowing transversely outward from the truck centerline in the vicinity of the tires through said flow passages and collecting the water droplets at each turn in said water cavity, and a gutter mounted at the bottom of said wiggle plates for collecting water from said water cavities, said gutter having openings for discharging the collected water to the rear and side of the vehicle.

4,325,564
BICYCLE TRAILER
Roger N. Phipps, Star Route, Box 3215, Wasilla, Ak. 99687
Filed Mar. 27, 1980, Ser. No. 134,540
Int. Cl.³ B62D *63/08*
U.S. Cl. 280—204 5 Claims



1. Apparatus for trailing behind a standard bicycle having a pair of opposite rear fork members, comprising:
first and second connector means each secured to a respective one of said opposite rear fork members;
hitch assembly means consisting of bifurcated plate means having a hitch support portion and laterally spaced hitch arms;
a first bearing rod having the rod end secured to one of said hitch arms and having the bearing end vertically pivotally secured to said first connector means;
a second bearing rod having the rod end secured to the opposite hitch arm and the bearing end vertically pivotally secured to said second connector means;
elongated, horizontal frame means having forward and and rearward ends;
fork support means secured beneath said frame means;
a bicycle wheel and axle rotatably secured between said fork support means;
tongue plate means integrally formed with the forward end of said frame means; and
pin securing means for pivotally affixing said tongue plate means over said hitch assembly means hitch support portion.

4,325,565
CAMBERING VEHICLE
Frank J. Winchell, Orchard Lake, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Mar. 3, 1980, Ser. No. 126,877
Int. Cl.³ B62K *5/02*
U.S. Cl. 280—282 3 Claims

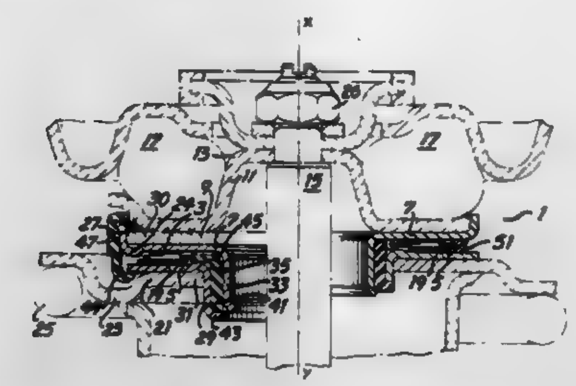


1. A cambering vehicle for transporting a vehicle operator along a support surface, said vehicle comprising a centralized main frame having an upwardly extending forward frame member and a lower tubular frame member extending along the longitudinal axis of the vehicle rearwardly from the lower end of said forward frame member to the rear of said vehicle, steerable front wheel means supported by said forward frame member for contacting said support surface, manual steering means operatively connected to said steerable front wheel means, a seat for a vehicle operator attached to said lower frame member, a one-piece support platform extending to the rear of said vehicle from said forward frame member and laterally across said lower frame member for receiving the feet of the vehicle operator, bearing means operatively connecting said lower frame member to said platform for supporting said frame on said platform for free cambering movement about a longitudinal roll axis coplanar with the longitudinal axis of said platform, transverse axle means rotatably supporting the central frame secured to said platform, rear wheel means underlying said seat means and supported on opposite outboard ends of said axle means for contacting said support surface to support said platform in fixed angular relationship with respect to said support surface while allowing the operator when seated to impart balancing moments through his feet while cambering said central frame and said front wheel means.

4,325,566
COMBINED THRUST AND RADIAL BEARING AND THE ASSEMBLY OF SUCH A BEARING WITH A SUPPORT STRUCTURE
Gerard Stephan, Croissy, France, assignor to Nadella, France
Filed May 12, 1980, Ser. No. 148,679
Claims priority, application France, May 25, 1979, 79 13336
Int. Cl.³ B60G *11/14*
U.S. Cl. 280—668 10 Claims

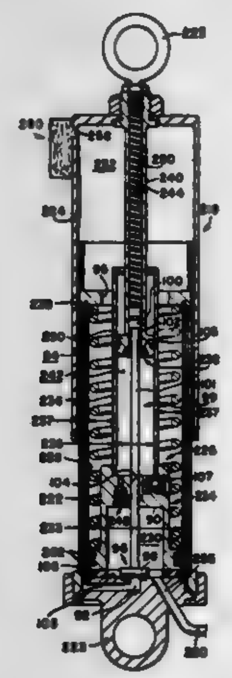
1. An assembly comprising a structure defining two axially extending support surfaces and a combined thrust and radial bearing which is combined with said structure and comprises two coaxial radially extending annular bearing plates, a set of rolling elements disposed between said bearing plates, a first of said plates having a first flange extending axially from an inner peripheral edge of said first plate and a second of said plates having a second flange extending axially from an inner peripheral edge of said second plate, the flanges being concentric

with each other, a radial bearing interposed between said flanges, said first plate having a third flange which extends axially from an outer peripheral edge of said first plate and engages a first of said support surfaces so as to be radially



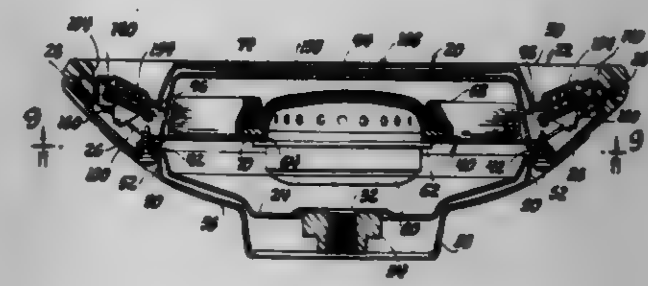
located relative to said structure, and said second plate having axially extending means which engage a second of said support surfaces and radially locates said second plate relative to said structure.

4,325,567
LOAD-LEVELING AIR PUMP
Richard T. Hendrickson, South Bend, Ind., assignor to The Bendix Corporation, Southfield, Mich.
Filed Oct. 15, 1979, Ser. No. 85,087
Int. Cl.³ B60G *17/00*
U.S. Cl. 280—711 1 Claim



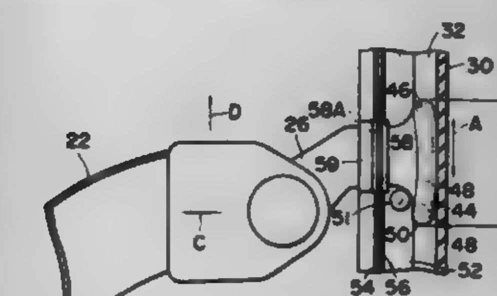
1. In a vehicle having an unsprung mass, a sprung mass supported from the unsprung mass, and a fluid-receiving device for controlling the relative position of said masses, said masses having a variable neutral separation depending upon the amount of fluid within said fluid-receiving device and upon the weight of the sprung mass, a fluid pump for pumping fluid into said fluid-receiving device and powered by the relative motion of said masses in response to vehicle movement, said pump comprising:
a first housing portion fixedly connected to one of said masses, pressure-responsive means slidably and sealingly received by said first housing portion and a pump piston fixedly connected to the other of said masses and slidably and sealingly received by said pressure-responsive means, said pump piston and said pressure-responsive means cooperating to define a compression chamber therebetween, said pump piston moving relative to said pressure-responsive means to transfer fluid from said compression chamber into said fluid-receiving device, and said pressure-responsive means being movable in response to increasing fluid pressure in said fluid-receiving device to decrease the volume of said compression chamber so that the amount of fluid transfered to said fluid receiving device varies in response to the fluid contained therein.

4,325,568
MODULAR OCCUPANT RESTRAINT SYSTEM
Herbert D. Clark, Kettering; Larry L. Katz, Dayton, and Thomas L. Knoepfle, Kettering, all of Ohio, assignors to General Motors Corporation, Detroit, Mich.
Filed Jul. 28, 1980, Ser. No. 172,516
Int. Cl.³ B60R *21/08*
U.S. Cl. 280—731 4 Claims



1. In combination with a vehicle steering wheel including a hub portion and at least one spoke portion connecting the hub portion to a rim portion, a modular occupant restraint system including a support member overlying the hub portion and including spaced arms overlying the spoke portion, a container for an occupant restraint cushion over the support member and including spaced extensions, each overlying and respective to a support member arm, a cover overlying the container and including an extension portion overlying and covering the container extensions and underlying the support member arms while leaving the space between the arms open to permit access to such space, switch means located in the space between the support member arms, means removably securing the switch means to the arms, and manually depressable means on the cover extension engageable with the switch means through the container extensions.

4,325,569
EMERGENCY LOCKING DEVICE
Ichiro Suzuki, Nagoya; Masanao Motonami, and Hisashi Ogawa, both of Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan
Filed Sep. 8, 1980, Ser. No. 184,881
Claims priority, application Japan, Sep. 13, 1979, 54-126811
Int. Cl.³ A62B *35/02*
U.S. Cl. 280—804 10 Claims

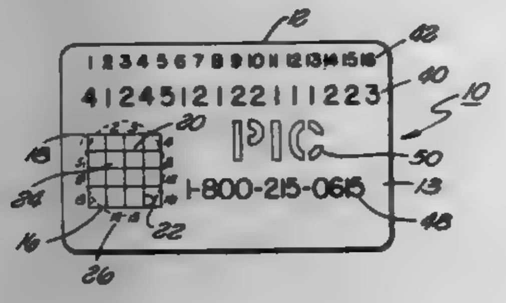


1. An emergency locking device used in a seatbelt system of a vehicle for locking the movement of an occupant restraining webbing in the event of an emergency situation, comprising:
(a) a guide rail laid on the vehicle body and provided therein in the longitudinal direction with a guide groove;
(b) a slider, which is engaged with the occupant restraining webbing and having a flat head which is inserted into said guide groove;
(c) driving means for moving said slider along the guide rail

so as to automatically fasten the webbing to the occupant when seated; and

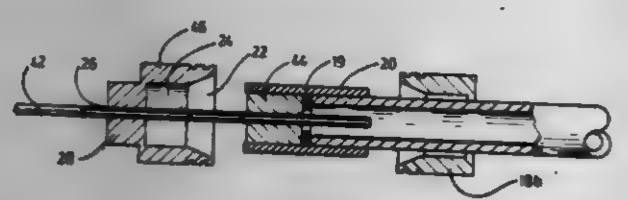
(d) a shoe secured to the head of said slider for aligning the head of the slider in its longitudinal direction with the guide groove of the guide rail and being damaged under a predetermined value of load to make said head rotatable in the guide groove, whereby the head of said slider is pressed against the guide groove to prevent the slider from moving in the guide groove in the longitudinal direction.

4,325,570
IDENTIFICATION SYSTEM
Carlos I. Estrada, 3540 City Terrace Dr., Los Angeles, Calif. 90063
Filed May 5, 1980, Ser. No. 146,484
Int. Cl.³ B42D *15/00*; G06K *9/00*
U.S. Cl. 283—7 7 Claims



1. An identification card comprising:
a base;
a fingerprint on said base;
a grid made up of a plurality of squares arranged in rows and columns superimposed over said fingerprint; and
an identifier imprinted on said base, said identifier being a series of individual symbols, each individual symbol representing a fingerprint characteristic, with different individual symbols representing different fingerprint characteristics, said individual symbols of said series being arranged in an order corresponding to a preselected order of said squares of said grid, each of said individual symbols representing a selected fingerprint characteristic appearing in the respective square of said grid, whereby a comparison for identity can be made between said identifier and said fingerprint.

4,325,571
TUBE UNION AND METHOD FOR FORMING A JOINT BETWEEN ADJACENT END PORTIONS OF MALLEABLE TUBING
John E. Funderburg, 36712 Cloverleaf; Franklin H. Stafford, 12334 Gabor Way, both of Madera, Calif. 93637, and Donald R. Funderburg, 220 S. Madera Ave.- No. 18, Kerman, Calif. 93630
Filed May 30, 1980, Ser. No. 154,617
Int. Cl.³ F16L *13/14*
U.S. Cl. 285—177 5 Claims



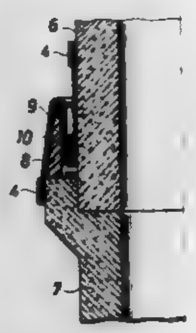
1. A tube union for forming a joint between adjacent end portions of lengths of malleable tubing comprising:

A. a cylindrical sleeve formed from malleable stock for telescopically receiving adjacent end portions of lengths of malleable tubing in a mutually opposed relationship, the inside diameter of said sleeve being substantially equal to the outside diameter of the end portions of said lengths of tubing;

B. a resilient O-ring so shaped and dimensioned as to be adapted to be received concentrically within said sleeve in interposed relation with the end surfaces of said lengths of tubing; and

C. a pair of rigid push rings, each push ring of said pair having an axial bore characterized by an inwardly tapering frusto-conical first end section, a cylindrical midsection, an annular second end section, the largest diameter of said first end section being substantially greater than the outside diameter of said sleeve, the smallest diameter of said first end section being slightly less than the outside diameter of said sleeve, the inside diameter of said midsection being equal to the smallest diameter of said first end section, whereby the push-rings of said pair are adapted to be forceably displaced axially along said sleeve into opposed contiguous relation for diametrically expanding the adjacent end portions of said lengths of tubing and said sleeve into an interlocked relationship within the contigiously related first end sections of the push rings of said pair.

4,325,572
ARRANGEMENT IN RAIN-WATER DRAINS OR MANHOLES
Oscar S. Arntyr, Wallingatan 37, S-111 24 Stockholm, and Thord I. Engström, S-950 18 Bensbyn, both of Sweden
Filed May 14, 1980, Ser. No. 149,880
Claims priority, application Sweden, Nov. 8, 1979, 7904515
Int. Cl.³ F16L *27/10*
U.S. Cl. 285—229 4 Claims



1. A pipe joint seal, comprising:

(a) two vertically oriented pipe sections disposed one atop the other in axial alignment to define an annular joint therebetween and adapted to be installed in an in-ground environment wherein the external pressure surrounding the pipe sections exceeds the internal pressure within the sections,

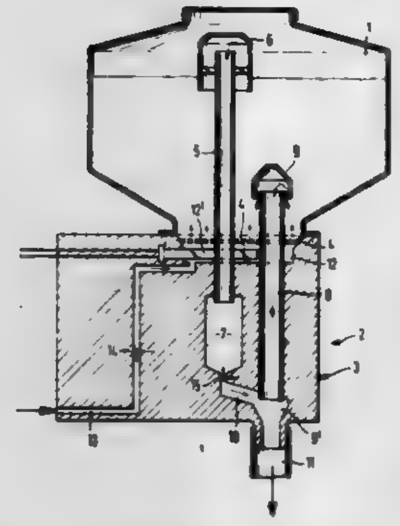
(b) the joint including a stepped annular recess in one of the pipe section ends slidingly accommodating a mating end portion of the other pipe section to enable a limited degree of axial movement between the two sections,

(c) an annular sealing cuff surrounding the joint and overlying an external interface zone thereof whereat the two pipe sections meet,

(d) means individually clamping an upper edge of the sealing cuff to the outer periphery of an upper one of said pipe sections and a lower edge thereof to the outer periphery of a lower one of said sections, and

(e) a rigid tubular sleeve surrounding said external interface zone for preventing said sealing cuff from being forced into an open gap of said joint by external pressure upon the axial separation of the pipe sections, said rigid tubular sleeve being disposed beneath the sealing cuff, and the sealing cuff being folded in an S configuration forming two folds and trapping said sleeve in one of the folds and the other fold being between the outer cylindrical surface of one of the pipe sections and said sleeve, and said sleeve sealing cuff and pipe sections being so proportioned and arranged that said sleeve is constantly held in abutting engagement with said one of the pipe section ends.

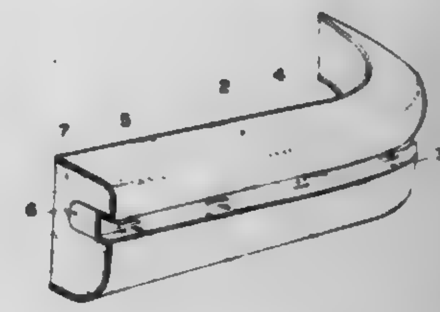
4,325,573
DEVICE FOR REGULATING DISCHARGE OF SAND FROM A VEHICLE SANDER
Erik Hefter, Eichenau, and Rolf Baumgarth, Neufahrn, both of Fed. Rep. of Germany, assignors to Knorr-Bremse GmbH, Munich, Fed. Rep. of Germany
Filed Mar. 21, 1980, Ser. No. 132,615
Claims priority, application Fed. Rep. of Germany, Mar. 21, 1979, 2911075
Int. Cl.³ B61C *15/10*
U.S. Cl. 291—3 24 Claims



1. In a device for regulating the discharge of sand from a vehicle sanding apparatus particularly on rail vehicles, a sealed container for sand and having a bottom wall which is penetrable by air, a sand discharge pipe extending into said container through said bottom wall and having one end positionable in front of a vehicle wheel, an air supply line connected to a source of air under pressure and having an end opening to said bottom wall, an exhaust air line having one end extending into said container above the sand when the container is full and having another end connected to said sand discharge pipe, and means in said air supply line and said exhaust air line for controlling the flow of air therethrough such that at a predetermined pressure of supplied air a portion of the supplied air flows through said sand discharge pipe at a rate to discharge a predetermined quantity of sand per unit time from said sand discharge pipe.

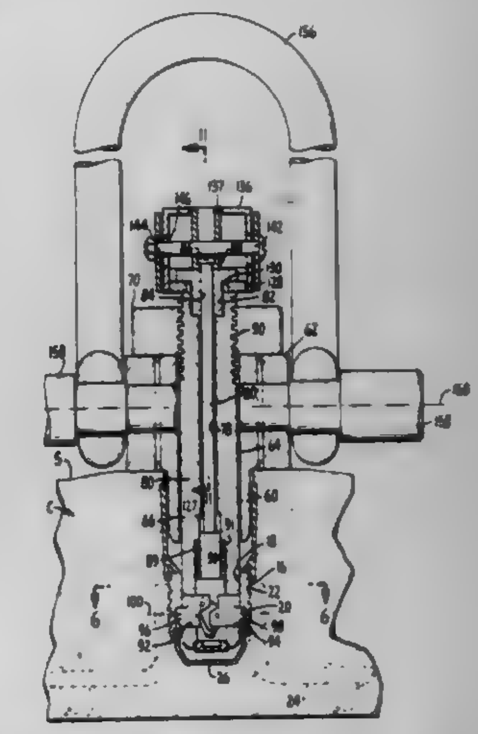
4,325,574
SHOCK ABSORBING BUMPER OF A VEHICLE
Yoshiro Umemoto, Nagoya; Yasuhiro Mishima; Shuichiro Takao, both of Toyota; Kazunori Sawada, Aichi, and Nobuo Kobayashi, Okazaki, all of Japan, assignors to Toyota Jidosho Kogyo Kabushiki Kaisha, Toyota, Japan
Filed Jul. 1, 1980, Ser. No. 165,216
Claims priority, application Japan, Sep. 26, 1979, 54-131973[U]
Int. Cl.³ B60R *19/02*
U.S. Cl. 293—120 7 Claims

1. A shock absorbing bumper of a vehicle, comprising:
a flexible, elastic compressible core member having a front side and a rear side, and an elongated horizontal groove extending along the front side of said core member along the length thereof;
an elastic external member overlying the front side of said core member and shaped to provide an elongated horizontal recess overlying said horizontal groove of said core member, said external member having a series of holes passing therethrough spaced along the length of said horizontal recess; and
an elastic facing base having a rear wall and a front wall and shaped so that its said rear wall fits within said horizontal recess while its said front wall projects therefrom, said front wall carrying a decorative facing and said rear wall



carrying a plurality of hooks interengaging with the holes of said horizontal recess, each of said hooks being provided with undercuts extending in at least three different directions.

4,325,575
HOISTING COUPLING FOR CONCRETE SLABS
Jack A. Holt, Belmont; Robert L. Lathrop, San Jose, both of Calif., and Philip A. Torbet, Port Washington, N.Y., assignors to The Burke Company, San Mateo, Calif.
Filed Mar. 28, 1977, Ser. No. 781,696
Int. Cl.³ B66C *1/66*; E04B *1/00*
U.S. Cl. 294—89 11 Claims



1. A remotely releasable hoisting coupling for selective engagement with a concrete slab having a surface, a passage formed in the slab in generally perpendicular relationship to the surface and opening therethrough, and an annular abutment within the passage below the surface, said coupling comprising: a body sized for entry into said passage, said body having a longitudinally extending bore formed therein; a single pair of lugs engageable with said abutment and supported in said body for movement relative thereto between a position protruding laterally from said body at which said lugs engage the abutment and a position retracted into said body at which said lugs are disengaged from the abutment, said lugs being rockable relative to the body about a common diametric axis extending normal to the body when engaged with the abutment; an actuator rod axially moveable within said bore; means operatively connecting said lugs to said actuator rod so that in response to axial movement of the actuator rod in one direction relative to said body said lugs are moved to the protruding position and, in response to axial movement of the actuator rod

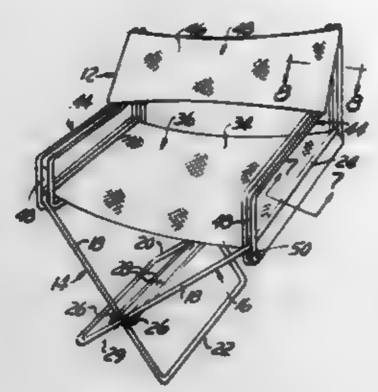
in an opposite direction relative to said body, said lugs are moved to the retracted position; means carried by said body for selectively moving said rod axially relative to said body to move the lugs between the protruding and retracted positions; and, a lifting bail carried by said body so as to be disposed to the exterior of a slab engaged by the coupling, said bail being pivotal about an axis extending parallel to the diametric axis about which the lugs are mounted for rocking movement.

4,325,576
ADJUSTABLE WHEELCHAIR HOLDING DEVICE
Dale H. Guthrie, High Point, N.C., assignor to REB Manufacturing, Inc., Carey, Ohio
Filed Sep. 29, 1980, Ser. No. 191,385
Int. Cl.³ B60N *1/02;* B60P *7/08;* B61D *45/00*
U.S. Cl. 296—65 R **10 Claims**

1. A holddown device for the two wheels of a wheelchair comprising:
(A) a horizontal bar anchored to said vehicle,
(B) a first U-shaped bracket having its legs extending horizontally and orthogonally to said bar for engaging one wheel of a wheelchair, which bracket is fixed to said bar,
(C) a second U-shaped bracket similar and parallel to said first U-shaped bracket but slidable along said bar and having means for clamping it to said bar so that its legs will engage the other wheel of the wheelchair,
(D) a separate pin means for each bracket that is horizontally slidable to close and open the open ends of the "U" of said bracket so that the wheels of the wheelchair may enter said U-shaped brackets and thereafter be locked therein by said pins,
(E) a vertical lever pivoted intermediate its ends to said bar intermediate said brackets,
(F) a first link means pivoted between said lever and said pin in said first fixed U-shaped bracket, and
(G) a second link means pivoted to said pin in said second U-shaped bracket, and to said lever opposite the pivot of said lever from said first link means, said second link means being adjustable longitudinally, whereby said lever simultaneously slides said pins in opposite directions.

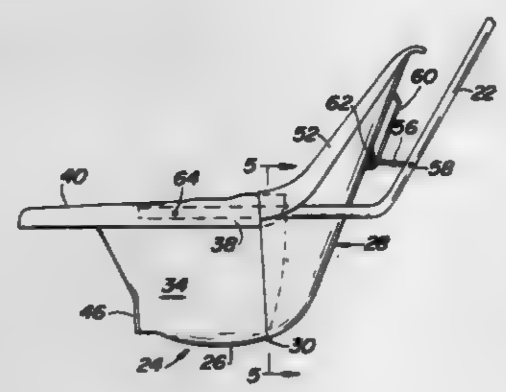
4,325,577
FOLDABLE CHAIR
Sacha Thebaud, P.O. Box 446, Port-Au-Prince, Haiti
Filed May 22, 1980, Ser. No. 152,520
Int. Cl.³ A47C *4/28*
U.S. Cl. 297—45 **5 Claims**

1. A foldable chair comprising a pair of substantially rectangular similar support frames disposed such that the plane of one of said support frames intersects the plane of the other of said support frames in the form of a figure X as viewed from the front, pivot means enabling one of said support frames to pivot relative to the other at the line of intersection of said support frames, each of said support frames being made of a single piece of rod material defining a front leg, a rear leg disposed substantially parallel to said front leg, a longitudinally extending foot cross-member disposed substantially parallel to said pivot line and a first lateral cross-member disposed substantially parallel to said longitudinal foot cross-member, at least one second lateral cross-member attached to said support frame in close proximity to said first lateral cross-member



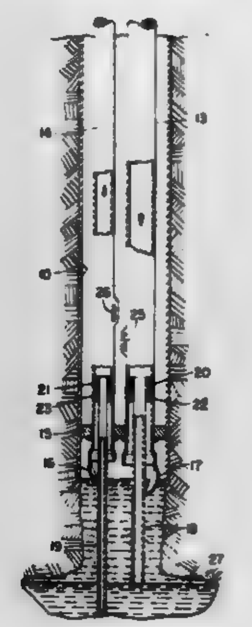
substantially parallel thereto, and a single length of pliable material forming a seat portion for a person sitting in said chair, said length of pliable material having each lateral edge portion frictionally attached to at least said second lateral cross-members, wherein said pivot means are a pair of longitudinal rods disposed parallel to said cross-members and each attached to a single one of said support frames and having a portion at each end projecting beyond the front and rear legs of said single one of said support frames, said end portions abutting respectively against the front leg and the rear leg of the other of said support frames.

4,325,578
SWING SEAT ASSEMBLY
Robert L. Borucki, Jenkintown, Pa., assignor to Graco Metal Products, Inc., Elverson, Pa.
Filed May 19, 1980, Ser. No. 151,087
Int. Cl.³ A63G *9/16*
U.S. Cl. 297—281 **8 Claims**



1. A swing seat assembly comprising a back portion adjustably connected to a seat portion, said portions having overlapping downwardly curved flanges and mating upper edges thereby defining a tunnel on each side of the seat portion, and a hanger supported for suspending the seat portion from above, said hanger support including a pair of arms, each arm being connected to said seat portion.

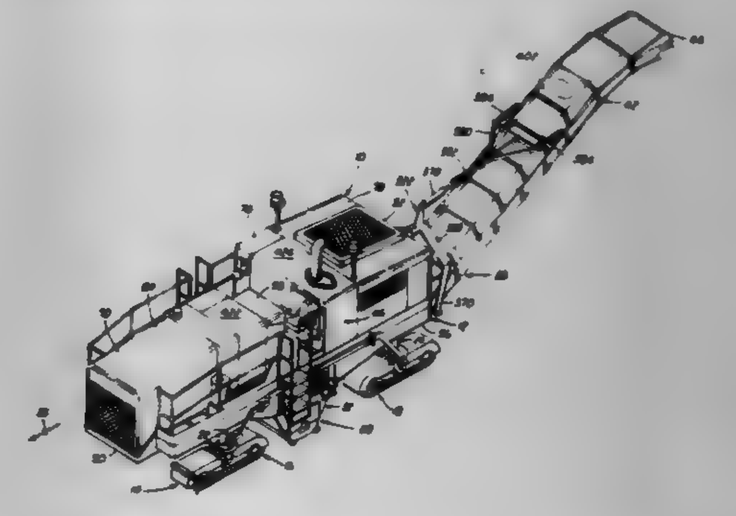
4,325,579
WELL FOR THE SOLUTION MINING OF SALT FROM AN UNDERGROUND SALT FORMATION AND A METHOD FOR OPERATING SAID WELL
Cornelis Kwantes; Michael Mansell, and Bob P. Stor, all of Sappemeer, Netherlands, assignors to Shell Internationale Research, The Hague, Netherlands
Filed Dec. 11, 1979, Ser. No. 102,494
Claims priority, application Netherlands, Jan. 12, 1979, 7900249
Int. Cl.³ E21B *43/28*
U.S. Cl. 299—5 **6 Claims**



1. A well for the solution mining of salts from an underground salt formation, comprising a borehole extending from the earth's surface downwards into the formation, a casing that is cemented in said borehole down to the upper level of said formation, two parallel tubing strings of effective lengths extending through said casing downwardly beyond said casing for introducing leaching water into the salt formation and withdrawing pregnant leach liquor from said formation, each of said strings carrying a tail pipe of a diameter smaller than the diameter of the string, which tail pipe is axially telescopic in said string, can extend downwardly beyond said string and carries a liner assembly at its upper part that can engage the inner wall of said string at any desired location above the bottom end of the string, at least one of said tubing strings being provided at its lower extremity with a valve that can be automatically closed if the tail pipe is raised into the string; the well additionally being provided with plug means that can be lowered onto the upper extremity of at least one of the tail pipes in order to seal the flow passage of liquid and with pumping means for pumping liquid via the tubing string and the tail pipe having the unrestricted flow passage into the salt formation in order to increase the hydraulic pressure therein to cause or provide substantial assistance in raising the sealed tail pipe.

4,325,580
ROADWAY PLANING APPARATUS
George W. Swisher, Jr., Oklahoma City; Donald W. Smith, Edmond, and Carl D. Parker, Yukon, all of Okla., assignors to CMI Corporation, Oklahoma City, Okla.
Filed May 7, 1979, Ser. No. 36,447
Int. Cl.³ E01C *23/09*
U.S. Cl. 299—39 **33 Claims**

1. An improved planer apparatus for removing a top portion of a paved roadway to form a roadway surface having a predetermined grade and cross-slope, comprising:
a main frame;
drive means, disposed in contact with the roadway, for supporting and moving the main frame;
means for selectively varying the spatial orientation of the main frame with respect to the drive means; and
planing means supported by the main frame for cutting the top portion of the roadway comprising:
rotatable cutter drum means having a first end and a second end and having an axis fixed with respect to the main frame, for cutting the top portion of the roadway; and
cutter drive means for powering rotation of the cutter drum means, the cutter drive means comprising:
rotating hub means having a first end and a second end, with the first end engaged with the first end of the cutter drum means for driving rotation of the cutter drum means;
first cutter power means for driving rotation of the rotating hub means; and
hub support means for supporting the rotating hub means

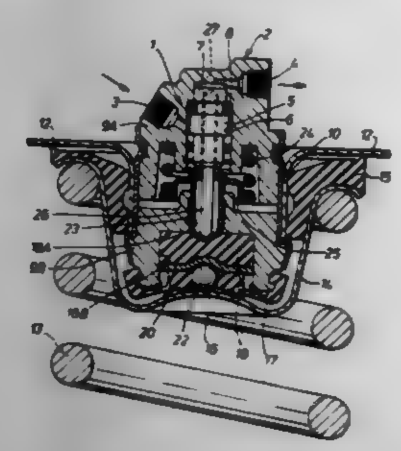


and for bearing the bending load applied to the rotating hub means by the first cutter power means, the hub support means comprising:
a first hub support surface carried by the main frame, disposed in a plane normal to the rotational axis of the rotating hub means, adjacent the first end of the rotating hub means;
a second hub support surface carried by the main frame, disposed in a plane normal to the rotational axis of the rotating hub means, adjacent the second end of the rotating hub means; and
bearing means mounted on the first and second hub support surfaces for rotatably engaging the rotating hub means at the first end and at the second end thereof.

4,325,581
VEHICLE LOAD SENSING ARRANGEMENT
John F. Pickering, The Green Broadwell, near Rugby, England, assignor to Lucas Industries Limited, Birmingham, England
Filed Jan. 15, 1980, Ser. No. 112,330
Claims priority, application United Kingdom, Jan. 16, 1979, 01606/79
Int. Cl.³ B60T *8/22*
U.S. Cl. 303—22 R **8 Claims**

1. A load sensing arrangement comprising force-reduction means, input means for transferring a force from a road spring to the force-reduction means, a control valve having a valve operating member which is movable to control the flow of fluid pressure through the valve, the force-reduction means being arranged to apply a proportion of the road spring force directly to the valve operating member and through it directly to said control valve, and the remainder of the road spring force to the sprung part of the vehicle, and a resilient control means acting in opposition to the said proportion of the road spring force, the effective force acting directly on the valve operating member being the difference between the said pro-

portion of the road spring force and the force of the resilient control means, said force-reduction means, said input means,



said control valve and said resilient control means all being arranged coaxially with respect to one another.

4,325,582

HYDRAULIC PRESSURE CONTROL VALVE ASSEMBLY FOR AUTOMOTIVE HYDRAULIC BRAKE SYSTEM

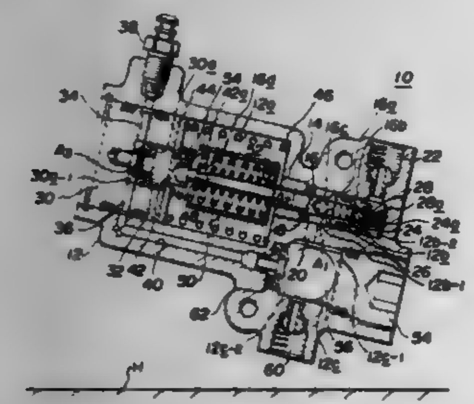
Hitoshi Kubota, and Kazuaki Shimizu, both of Fujisawa, Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Apr. 26, 1979, Ser. No. 33,348

Claims priority, application Japan, Apr. 28, 1978, 53/51041

Int. Cl.³ B60T *8/14*; 303 *24 C;24 F;6 C*

U.S. Cl. 303—24 F 7 Claims



1. A hydraulic pressure control valve assembly for a hydraulic brake system of a wheeled vehicle, the control valve comprising:

a proportioning valve arranged between a brake master cylinder and a wheel brake cylinder of the rear wheels of the vehicle and provided with a plunger which is axially movable in a first direction against a certain spring in response to a hydraulic pressure applied to an inlet port to control the magnitude of the hydraulic pressure at an outlet port;

a deceleration sensing valve which responds when the deceleration of the vehicle exceeds a predetermined value and which is associated with a piston sealingly and slideably disposed in a chamber to define a working chamber which communicates with said inlet port, said piston supporting one end of said certain spring and said working chamber being isolated from said inlet port when the deceleration of the vehicle exceeds the predetermined value;

means, including a pre-loaded spring, for rendering said pre-loaded spring effective to act on said plunger in a direction opposite to said first direction when the pressure acting on the piston exceeds a predetermined value and thus moves said piston beyond a predetermined distance against the force of said certain spring.

4,325,583

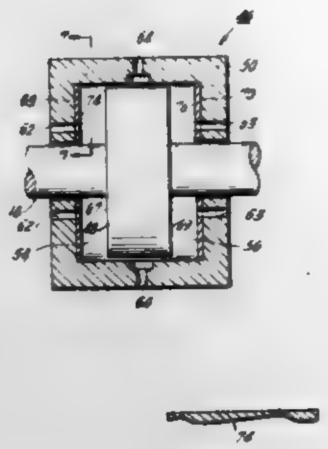
LOW AXIAL STIFFNESS THRUST BEARING

James D. McHugh, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jan. 30, 1980, Ser. No. 164,071

Int. Cl.³ F16C *32/06*

U.S. Cl. 308—9 2 Claims



1. A low axial stiffness thrust bearing comprising:

a housing having a generally cylindrical space formed therein;

a generally cylindrical thrust collar located coaxially within said cylindrical space, the axial length of said cylindrical space being significantly greater than the axial length of said thrust collar such that said thrust collar may be moved axially within said cylindrical space over a predetermined distance and such that first and second fluid chambers are formed on opposite sides of said thrust collar when said thrust collar is located centrally within said cylindrical space;

fluid circuit means for supplying fluid under pressure to said first and second chambers in such a manner that said fluid attempts to maintain said thrust collar at a predetermined axial location within said cylindrical space even when external thrust forces are placed on said thrust collar and wherein the axial force placed on said thrust collar by said bearing in a first axial direction is determined by the fluid pressure in said first fluid chamber and wherein the axial force placed on said thrust collar by said bearing in a second opposite axial direction is determined by the fluid pressure in said second fluid chamber;

the axial length of said first fluid chamber being defined between a first axial end of said thrust collar and a first axial end of said cylindrical space and the axial length of said second fluid chamber being defined between a second axial end of said thrust collar and a second axial end of said cylindrical space;

said fluid pressure in said first and second fluid chambers varying as a function of the axial position of said thrust collar with respect to said predetermined location as long as the axial length of said first and second fluid chambers remains greater than a predetermined value; and

pressure variation means for causing said fluid pressure in said first and second fluid chambers to vary as a second function of the axial position of said thrust collar with respect to said predetermined location whenever the axial length of the respective chamber falls below said predetermined value but is still greater than zero, said pressure variation means comprising first and second means for producing a hydrodynamic film pressure support in said first and second fluid chambers, respectively, whenever the respective axial length of said first and second chambers falls below said predetermined volume.

4,325,584

MOUNTING FOR A ROTOR

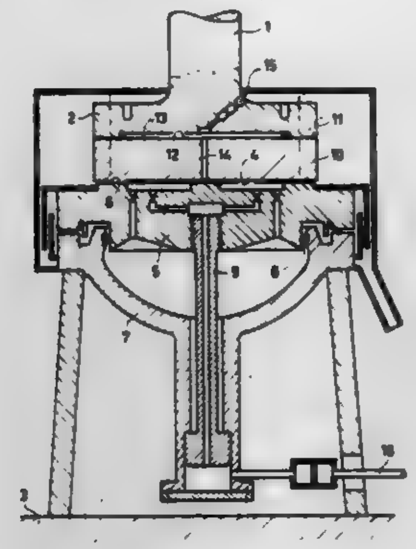
Alfred Christ, Zurich, Switzerland, and Mario Peron, Schio, Italy, assignors to Escher Wyss Limited, Zurich, Switzerland

Filed Oct. 28, 1980, Ser. No. 201,432

Claims priority, application Switzerland, Nov. 2, 1979, 9851/79

Int. Cl.³ F16C *32/06*

U.S. Cl. 308—9 5 Claims



1. Mounting for a rotor relative to a base; said rotor having a sliding surface; a mounting member mounted relative to the base; said mounting member comprising a support surface cooperating with said sliding surface; the improvement that the rotor comprises a plate which is connected to the rotor at a point so as to be immovable in the direction of support but tiltable relative to the rotor; said plate having, on its one side, the sliding surface of the rotor; a pressure cushion the cross sectional surface of which is formed on the other side of said plate; the cross sectional surface of the pressure cushion and the support surface of the mounting member being located opposite each other; the effective portion of said support surface and the cross sectional surface of said pressure cushion being substantially the same size; and the pressure in the pressure cushion and the pressure in the space located between said sliding surface and said effective portion of the support surface being kept substantially the same as each other.

4,325,585

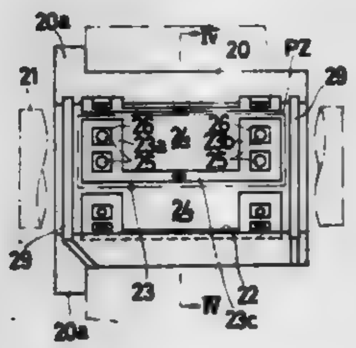
FLUID BEARING

Kazuhiko Sugita, Anjo, Japan, assignor to Toyoda Koki Kabushiki Kaisha, Kariya, Japan

Filed Oct. 8, 1980, Ser. No. 195,179

Int. Cl.³ F16C *32/06*

U.S. Cl. 308—9 3 Claims



1. A fluid bearing for rotatably supporting a rotary shaft comprising:

a bearing member having an internal bore which forms a bearing surface;

a plurality of U-shaped fluid pockets formed in a circumferential direction on said bearing surface;

each of said U-shaped fluid pockets being defined by a pair of axially spaced rectangular fluid pockets and a supply groove formed in parallel relationship with the axis of said bearing member for fluidically communicating said pair of fluid pockets;

a plurality of first land portions formed between said pair of fluid pockets;

a supply port formed in each of said supply grooves for admitting pressurized fluid;

at least one second land portion formed in each of said fluid pockets;

an exhaust port formed in each of said second land portions for discharging pressurized fluid;

each of said supply grooves being located at a lower position in a gravitational direction in its associated U-shaped fluid pocket;

said plurality of U-shaped fluid pockets being arranged symmetrically with respect to a vertical plane which includes the axis of said bearing member.

4,325,586

ELECTROMAGNETIC PROCESS FOR CONTROLLING ORIENTATION OF A PLATFORM AND PLATFORM FOR CARRYING OUT SAID PROCESS

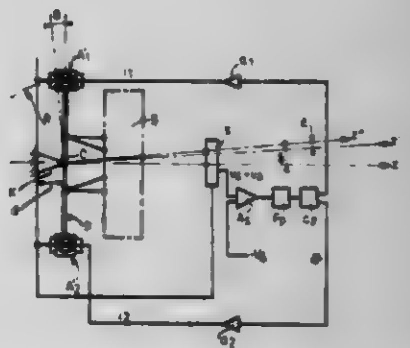
Bernard Hubert, Le Cannet, and Pierre Poubeau, Le Pecq, both of France, assignors to Societe Nationale Industrielle Aerospatiale, France

Filed Feb. 27, 1980, Ser. No. 125,058

Claims priority, application France, Feb. 28, 1979, 79 05283

Int. Cl.³ F16C *39/06*

U.S. Cl. 308—10 9 Claims



1. Apparatus for electromagnetically controlled orientation of a platform in a system with a stationary plane comprising

a platform spaced relative to a stationary plane and having at least three reference points for inclination movement of said platform with respect to said stationary plane,

said reference points including, located at said reference points,

a flexible connection means pivotally connecting said platform to said stationary plane,

at least one electromagnetic means located between said platform and said stationary plane with each said electromagnetic means including

permanent magnet means fixed to said platform,

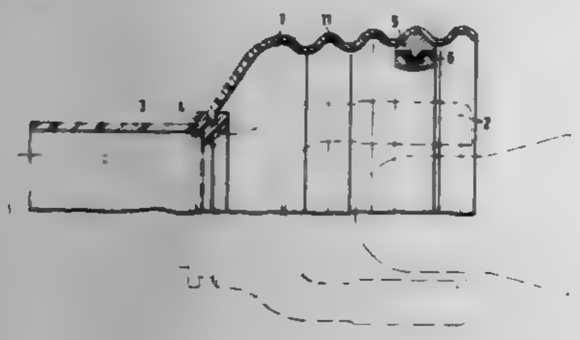
a coil fixed to said stationary plane;

detection means for detection of the deviation of said platform with respect to its orientation with said stationary plane, said detection means located relative to said platform to supply a voltage approximately proportional to said deviation;

a control loop means to amplify said deviation voltage and to apply resulting current to said coil fixed to said stationary plane, said control loop means electrically connected to said detection means and said coil with the resulting electromagnetic forces generated between said magnet means and said coil by said current produc-

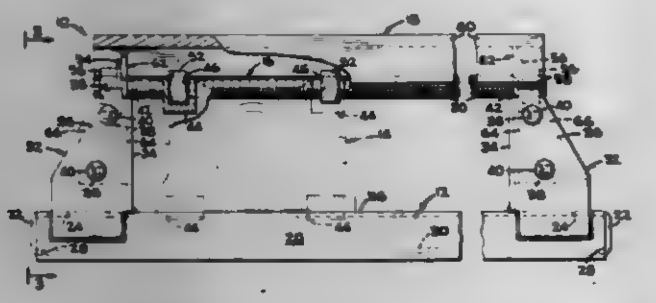
ing an angular motion of said platform with respect to said stationary plane.

4,325,587
PROTECTIVE DEVICE FOR UNIVERSAL JOINTS
Peter Seigert, Lohmar, Fed. Rep. of Germany, assignor to Jean Walterscheid GmbH, Lohmar, Fed. Rep. of Germany
Filed Mar. 26, 1980, Ser. No. 133,986
Claims priority, application Fed. Rep. of Germany, Mar. 31, 1979, 2912939
Int. Cl.³ F16C *1/06;* **F16D** *3/84*
U.S. Cl. 308—36.1 **7 Claims**



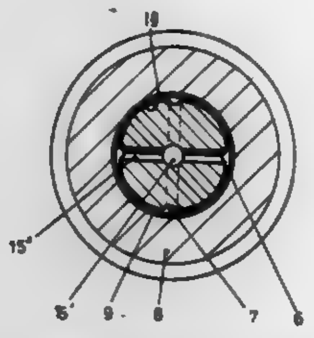
1. A protective device for a universal joint particularly for agricultural implements comprising: a hollow protective member having a generally frusto-conical configuration and consisting essentially of resilient material, said protective member being supported to surround said universal joint; an annular support member fixedly connected to the interior of said hollow protective member approximately in the region of the bending center of said universal joint; and a bearing ring concentrically mounted within said support member and arranged to be rotatable relative thereto; said bearing ring being normally spaced from said universal joint and located to abut against parts of said universal joint upon axial deflection of said joint thereby to support said protective member against said joint parts while enabling relative rotative movement between said protective member and said joint parts.

4,325,588
BEARING TAKE-UP APPARATUS
James R. Elliott, Jr., Indianapolis; Kathy L. Layne, Greenwood; Donald W. Hitch, Lizton, and Larry G. Marshall, Lebanon, all of Ind., assignors to P T Components, Inc., Indianapolis, Ind.
Filed May 30, 1980, Ser. No. 154,749
Int. Cl.³ F16C *35/00*
U.S. Cl. 308—59 **11 Claims**



1. In a take-up apparatus for adjustable mounting of a bearing housing, comprising:
a base;
a pair of end walls attached to the base;
a threaded adjustment screw;
screw anchoring means rigidly secured to both ends of said adjustment screw and positioned adjacent corresponding sides of said end walls with said adjustment screw supported on upper surfaces of said end walls for precluding both longitudinal and downward movement of said adjustment screw;
slotted end brackets receivable over said adjustment screw for allowing rotation while precluding both upward and transverse movement thereof relative to said base;
means for releasably connecting said brackets to said base; and a cover carried by said brackets.

4,325,589
SUPPORT OF A MACHINE PART WHICH ROTATES ON A BOLT OR THE LIKE
Manfred Hirt, Cravinhos, Brazil, assignor to Carl Hurth Maschinen- und Zahnradfabrik GmbH & Co., Munich, Fed. Rep. of Germany
Continuation-in-part of Ser. No. 88,792, Jun. 12, 1980, abandoned, which is a continuation of Ser. No. 870,413, Jan. 18, 1978, abandoned. This application Jun. 12, 1980, Ser. No. 158,745
Claims priority, application Fed. Rep. of Germany, Jan. 21, 1977, 2702321
Int. Cl.³ F16C *3/02, 3/14*
U.S. Cl. 308—101 **11 Claims**

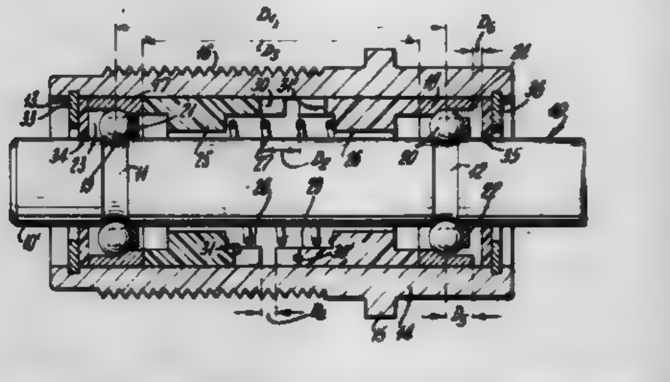


1. A multi-surface friction bearing construction for a machine part, for example a planet gear, which rotates on a stationary pin or the like, the rotating machine part having a loading direction which is stationary relative to the pin, wherein the improvement comprises
several bearing surfaces on the circumference of said stationary pin and formed by pitch circles each having a cylindrical surface, the rotating machine part having a circular cylindrical bore, the radius of each cylindrical surface differing from the radius of said cylindrical bore of said rotating part and forming points of intersection with the radii of the adjacent cylindrical surfaces, said stationary pin in addition having axially extending grooves arranged in the surface thereof, said rotating part at least in the carrying area of its circular cylindrical bore being of a material having good sliding characteristics and a higher heat-expansion coefficient than that of the other portions of the rotating part.

4,325,590
SELF-CONTAINED PRE-LOADED ANTIFRICTION BEARING ASSEMBLY
James J. Pethis, Farmington, Conn., assignor to Textron Inc., Providence, R.I.
Filed May 22, 1980, Ser. No. 152,374
Int. Cl.³ F16C *19/08, 25/08, 27/04*
U.S. Cl. 308—184 R **11 Claims**

10. In a textile or the like spindle assembly, a spindle shaft having a circumferential ball-raceway at each of two longitudinally spaced locations, two ball retainers each having a complement of retained balls with the balls of one complement in one of said raceways and the balls of the other complement in the other of said raceways, an angular-contact outer race ring assembled to each complement of balls in the axial direction for loaded ball contact within the axial space between the planes of ball centers of the respective complements, axially spaced adjacent means associated with adjacent axial ends of said outer race rings and characterized by angularly spaced axially extending dog and dog-slot formations, and spring means in axially compressionally loaded relation to said outer race rings via said axially spaced adjacent means, there being at least one relative angular positioning relation of said axially spaced adjacent means wherein said formations register to permit axially compressed displacement of said axially spaced adjacent means toward each other to a first extent which exceeds their axially compressed displaceability when said formations are not in such registration, said first extent being at least substantially the axial extent to which the radial plane of the locus of centers of curvatures of the raceway of one of said outer race rings is offset from the axially outer end of said one outer race ring.

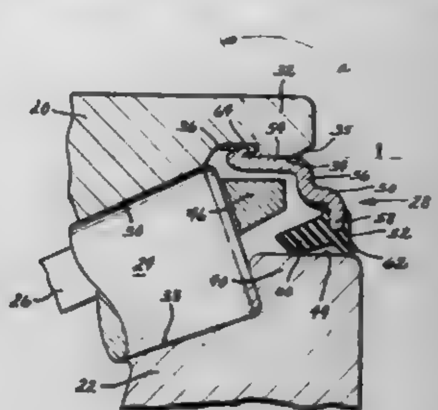
11. As an article of manufacture, an elongate spindle-mounting bushing having external formations for mounting the same to a textile-machine mounting rail or the like, said bushing having a straight cylindrical bore, and a unitary spindle and pre-loaded bearing assembly of external cylindrical contour adapted for removable reception in the bushing bore; said bearing assembly comprising a spindle shaft of length exceeding that of said bushing and having near one end a circumferential ball-raceway at each of two locations which are longitudinally spaced to an extent less than the length of the bushing



bore, an angular-contact outer race ring and an associated ball complement assembled to each of said spaced raceways in the axial direction for loaded ball contact within the axial space between the planes of ball centers of the respective complements, axially spaced adjacent means associated with adjacent axial ends of said outer race rings and characterized by angularly spaced axially extending dog and dog-slot formations, and spring means in axially compressionally loaded relation to said outer race rings via said axially spaced adjacent means; said outer race rings fitting the bushing bore, and removable axial locating means coacting between spaced bushing-bore locations and the axially outer ends of the outer race rings of said assembly for axially retaining the inserted bearing assembly, there being at least one relative angular positioning relation of said axially spaced adjacent means wherein said formations register to permit axially compressed displacement of said axially spaced adjacent means toward each other to a first extent which exceeds their axially compressed displaceability when said formations are not in such registration, said first extent being at least substantially the axial extent to which the radial plane of the locus of centers of curvatures of the raceway of one of said outer race rings is offset from the axially outer end of said one outer race ring.

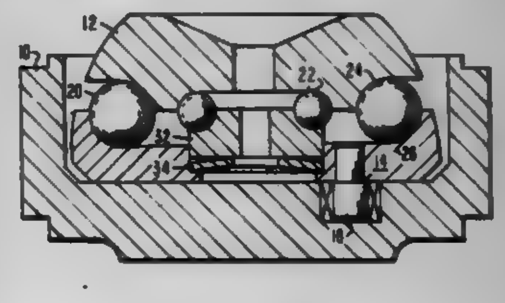
4,325,591
SEALED AND UNITIZED BEARING
Dennis L. Otto, Malvern, Ohio, assignor to The Timken Company, Canton, Ohio
Filed Sep. 25, 1980, Ser. No. 190,513
Int. Cl.³ F16C *33/78*
U.S. Cl. 308—187.2 **19 Claims**

1. A bearing arrangement comprising: inner and outer races having opposed raceways between which a space exists, a retention surface at the end of one of the races and an undercut opening out of the retention surface; rolling elements arranged in a row between the raceways of the two races to enable the races to rotate relative to each other; closure means for generally closing the space between the two races, the closure means including a metal element having a wall that is frictionally engaged with the retention surface at the end of said one race



and a locking lip that extends from the wall and is doubled back with respect to the wall, the locking lip being located within the undercut.

4,325,592
AXIAL THRUST BEARING ASSEMBLY
Charles E. Kraus, Austin, Tex., assignor to Excelermatic Inc., Austin, Tex.
Filed Jan. 19, 1981, Ser. No. 189,066
Int. Cl.³ F16C *19/10, 19/52, 27/08*
U.S. Cl. 308—219 **5 Claims**

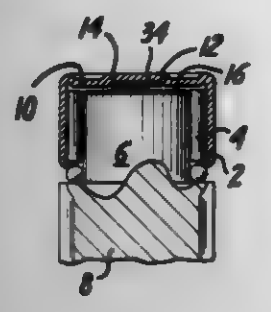


1. An axial thrust bearing assembly for supporting an axial load on a load support member, said bearing assembly comprising: a main antifriction axial support bearing disposed between said load support member and said load; an auxiliary antifriction bearing arranged between said load support member and said load and concentrically within said main bearing; and spring means disposed axially adjacent said auxiliary bearing and acting between said load support member and said load through said auxiliary bearing, said spring means being so positioned and selected such that a predetermined axial load is taken up by said auxiliary antifriction bearing while any additional load is taken up by said main bearing.

4,325,593
COMPOSITE BEARING HAVING DEFORMABLE WASHER
Bernard Mallet, Limay, France, assignor to Nadella, France
Filed Jun. 25, 1980, Ser. No. 162,749
Claims priority, application France, Jun. 27, 1979, 79 16516
Int. Cl.³ F16C *19/32, 27/08*
U.S. Cl. 308—163 **9 Claims**

1. In a composite bearing of the type comprised of a cup having a set of antifriction bearing elements, and a deformable washer disposed at the bottom of the cup for bearing against the end face of a shaft during use of the composite bearing, the improvement wherein said washer comprises a body portion having a stud projecting outwardly from one side thereof and having a recess in the other side thereof opposite said stud, said

stud and recess being configured so that said stud deforms inwardly and is pushed in towards said body portion to at least



partly fill said recess during mounting of the composite bearing and shaft.

4,325,594

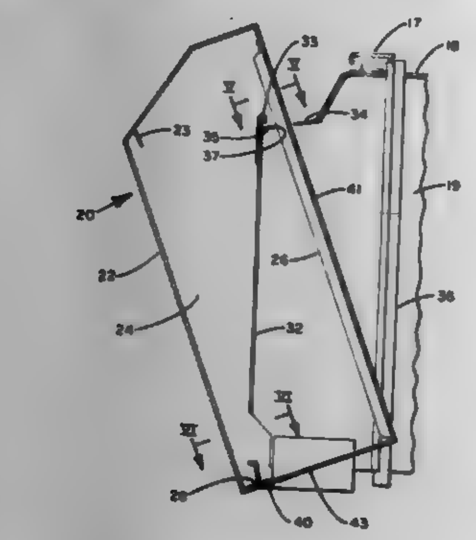
APPARATUS FOR SECURING A COVER TO AN AIR CONDITIONING UNIT

Richard D. Lang, Chittenango, and Theodore S. Bolton, Liverpool, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed May 19, 1980, Ser. No. 151,041

Int. Cl.³ A47B *43/00, 81/00;* H05K *5/00*

U.S. Cl. 312—100 **6 Claims**



1. Apparatus for securing a cover to an air conditioning unit such that the cover has a closed position and a service position which comprises:

a cover including a front panel portion and at least one side portion, said front panel portion serving to cover at least a portion of the unit and said front panel portion having both latching means and pivot means associated therewith, and said side portion having an inwardly extending flange; and

an air conditioning unit assembly including a front support adapted to be concealed by the front panel portion of the cover, said front support including a latching element for coacting with the latching means of the cover, pivot projection means extending from the assembly for coacting with the pivot means of the cover, and a control panel extension extending to engage the side portion of the cover to properly position the cover and to engage the flange of the cover to secure the cover in the service position.

4,325,595

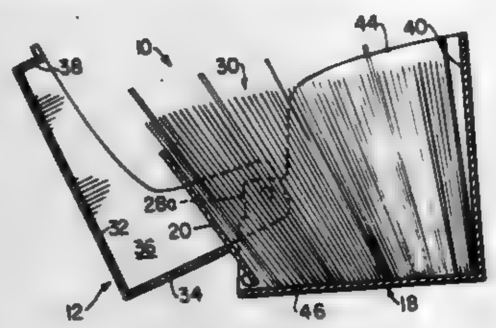
CARD FILE

Jack Solomon, Long Beach, N.Y., assignor to Oxford Pendaflex Corp., Garden City, N.Y.

Filed Nov. 24, 1978, Ser. No. 963,190

Int. Cl.³ A47B *63/00;* B65D *43/24*

U.S. Cl. 312—183 **11 Claims**



1. In an index or file card storage device of the type having a compartment including a bottom wall, two side walls and a front wall all extending vertically and rigidly therefrom, the improvement comprising:

a rear wall mounted near said bottom wall for rearward pivotal movement away from said vertically extending walls;

cover means mounted to at least one of said vertically extending walls for rearward pivotal movement from a closed position in which said cover substantially covers the uppermost ends of said vertically extending walls, said cover means having a depending member at its rear; and

travel circumscribing means disposed in a fixed position on said depending member of said cover means and contacting said rear wall for limiting the rearward travel of said rear wall, said travel circumscribing means maintaining said rear wall in an upright position when said cover means is in said closed position but permitting increased rearward pivoting of said rear wall as said cover is pivoted away from said closed position.

4,325,596

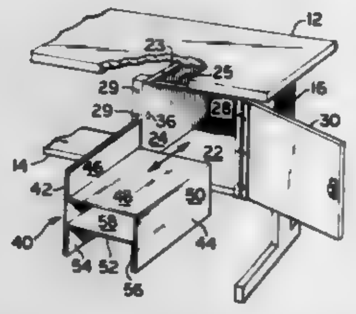
SUPPLY CABINET PARTITION

Joseph M. Bell, Conway, Ark., assignor to Tiffany Industries, Inc., St. Louis, Mo.

Filed Aug. 13, 1980, Ser. No. 177,780

Int. Cl.³ A47B *27/00, 83/04*

U.S. Cl. 312—194 **10 Claims**



1. A cabinet and partition assembly comprising:

(a) a cabinet including:

1. a pair of substantially vertical side panels disposed in spaced parallel relation,
2. a lower panel extending between said side panels,
3. a rear closure panel, and
4. said side panels and said lower panels defining a front end access opening,

(b) a removable partition including:

1. opposed side members,
2. at least one perpendicular member extending substantially uninterruptedly between said side members, and
3. the overall height of said side members and the overall width of said side members defining a square having a side dimension substantially the same as the width of the access opening, said access opening optionally receiving said partition in a front access shelf mode in which the opposed side members are parallel to said opposed cabinet side panels and the perpendicular member provides an intermediate shelf and also receiving said partition in a front access divider mode in which the opposed side members are perpendicular to said side panels and the perpendicular member provides an intermediate divided, when the partition is withdrawn, rotated through ninety degrees (90°) and re-inserted within the cabinet.

4,325,597

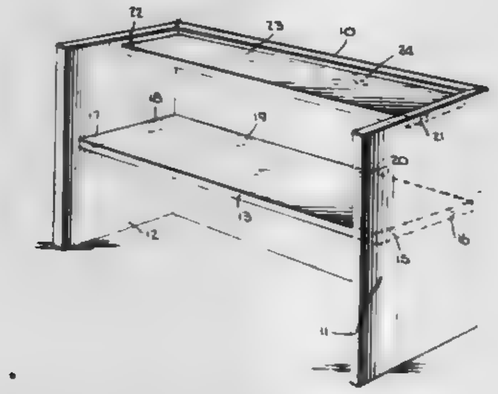
FURNITURE SYSTEMS

Andrew I. Morrison, Setauket, N.Y., assignor to Knoll International, Inc., New York, N.Y.

Filed Mar. 27, 1980, Ser. No. 134,437

Int. Cl.³ A47B *43/00*

U.S. Cl. 312—258 **18 Claims**



1. A furniture system comprising:

A. a multi-section module constituted by a plurality of core panels in side-by-side relation, the adjacent edges of the side-by-side core panels being mitered at an angle whereby when the sections, when folded in, are at right angles to each other, and facing layers formed of textile material laminated to the inner and outer faces of said panels to define interconnecting hinges therefor, formed by both facings, whereby the section of the module may be folded over to provide a flat state structure for storage and shipment, said module being erected by folding in sections thereof to define a structure having at least a vertical rear wall and two vertical side walls hinged to the ends of the rear wall to form an alcove, said facing layers having a compressible fuzzy surface to close any gaps in the hinged junctions between said walls; and

B. at least one removable horizontal component receivable within the alcove to bridge the side walls and connected thereto by fastening elements.

4,325,598

GROUND CLAMP FOR GROUNDING COAXIAL CABLE

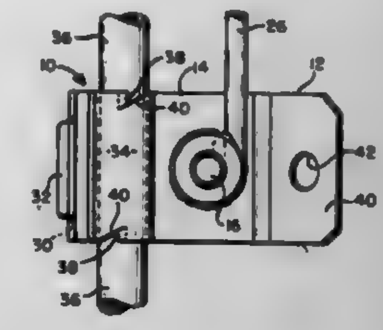
Ignazio Leonardo, Mountainside, N.J., assignor to Diamond Communication Products, Inc., Garwood, N.J.

Filed Dec. 21, 1979, Ser. No. 105,965

Int. Cl.³ H01R *4/66*

U.S. Cl. 339—14 L **3 Claims**

1. A grounding clamp including in combination a generally rectangular first plate, a generally rectangular second plate, part of which has a flat surface that is adjacent to the first plate and another part that is shaped to form a nest for an electrical conductor, a bolt through adjacent flat portions of said plates for loosely and swingably retaining said plates and for clamping said plates together, said nest (a) in one angular relation of said plates confronting part of said first plate for clamped closure of said nest and (b) in another angular relation of said plates being exposed for reception of a conductor inserted therein, one or more inwardly directed prongs integrally formed from the nest and extending only substantially normal to and in the direction of the geometric plane of said flat surface and to an extent to contact with the periphery of a conductor located in the nest, an integrally formed upstanding lug



along the edge of said first plate and remote from said bolt when said plates are in said one angular relation, said lug having a slot aperture therein, and said second plate at its edge remote from said bolt having a tab enterable into the slot aperture in the course of swing rotation of said plates from said second angular relation into said first angular relation.

4,325,599

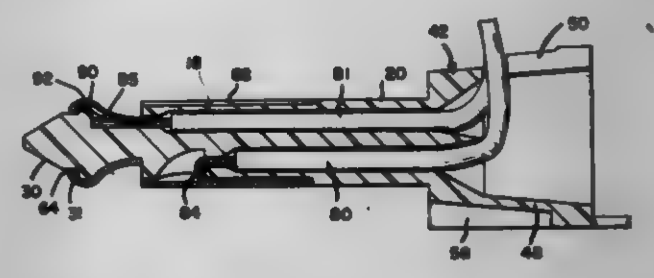
PHONE PLUG

Steven Feldman, Seminole, Fla., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Dec. 5, 1979, Ser. No. 100,667

Int. Cl.³ H01R *11/08*

U.S. Cl. 339—103 R **8 Claims**



1. Phone plug components for the coaxial in-tandem termination of first and second conductors, said phone plug components comprising:

a dielectric body having a first end, a second end, and a shaft lying between said ends, said shaft having a first cylindrical surface thereon, said shaft having a shoulder which converges sharply radially inward from the first cylindrical surface to a neck which is proximate to said second end, said neck diverging radially outward to a nose which forms said second end and is of substantially the same diameter as the first cylindrical surface, said dielectric body further having first and second bores extending into said first end of said shaft, said first bore communicating with said first cylindrical surface, said second bore communicating with said neck;

an electrically conductive tubular sleeve having an inside diameter substantially equal to the outer diameter of the first cylindrical surface, said sleeve having apertures therein proximate to one end thereof; whereby

upon locating said first and second conductors through said first and second bores respectively, and locating said tubular sleeve over said shaft until said apertures are proximate to said neck, and compressing said sleeve until it shears at said converging shoulder and collapses about said neck, electrically isolated first and second conductive surfaces are formed, said first conductive surface around said first cylindrical surface and in contact with said first conductor, said second conductive surface around said neck and in contact with said second conductor.

4,325,600
PIGTAIL ASSEMBLY
Charles R. Nestor, Niles, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed Mar. 6, 1980, Ser. No. 127,870
Int. Cl.³ H01R *13/52*
U.S. Cl. 339—116 C 4 Claims

1. In a pigtail assembly which includes an end connector having a plurality of insulated lead wires extending therefrom, a terminal attached to the end of each lead wire having a contact for assembly to and retention on a respective ring contact of a multiple ring contact post terminal, an insulator sleeve slidably mounted on a first of the lead wires for isolating the terminal attached to the first lead wire, and a splash guard slidably carried on the lead wires for covering the terminals after attachment to the post terminal,

the improvement comprising said insulator sleeve having an integral radial boss adjacent an end of the insulator sleeve which is toward the end connector,

said boss having a plurality of guide holes for the respective remaining lead wires, and

said insulator sleeve having a pair of circumferentially spaced slots at an end opposite said boss, which are aligned with respective ones of said guide holes, said spaced slots cooperating with respective ones of the terminals attached to the remaining lead wires to assure their proper seating on the post terminal and location relative to each other when the insulator sleeve is seated on the post terminal.

4,325,601
OPTICAL SCANNING DEVICE
Hiroyoshi Funato, Chigasaki, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan
Filed Mar. 3, 1980, Ser. No. 126,698
Claims priority, application Japan, Mar. 2, 1979, 54-24316
Int. Cl.³ G02B *27/17*
U.S. Cl. 350—3.71 7 Claims

1. An optical scanning device comprising:

a hologram recording medium having a photo sensitive hologram surface which is rotatable about an axis;

a scanning surface adjacent said hologram recording medium;

first light source means for directing a principal ray of an object light onto said hologram surface at an angle α with respect to a plane normal to said hologram surface; and

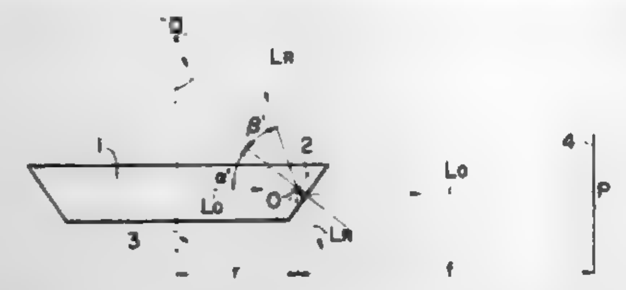
second light source means for directing a principal ray of a reference light onto said hologram surface at an angle β with respect to a plane normal to said hologram surface,

wherein angles α and β are selected such that:

$$\cos\beta = \cos\alpha(1+(r/f)\cos^2\alpha)$$

where:

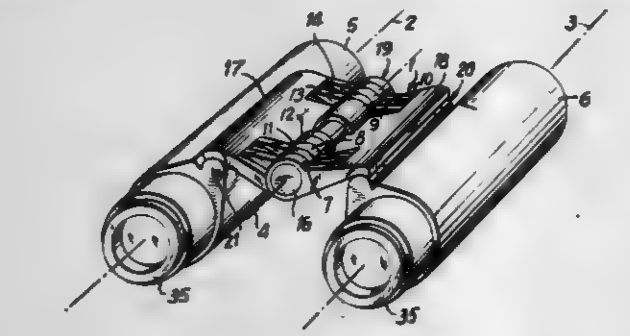
r = distance between said axis and said hologram surface



f = distance between said scanning surface and said hologram surface,

whereby a shift in the position of a spot of said principal ray of said object light on said scanning surface in response to a shift of said axis is minimized.

4,325,602
BINOCULAR TELESCOPE
Karl H. Lange, Bünde, Fed. Rep. of Germany, assignor to Balda-Werke Photographische Gerate & Kunststoff GmbH & Co. K.G., Bünde, Fed. Rep. of Germany
Filed Jan. 8, 1979, Ser. No. 1,576
Claims priority, application Fed. Rep. of Germany, Jan. 7, 1978, 2800667
Int. Cl.³ G02B *23/18*
U.S. Cl. 350—36 14 Claims



1. A folding binocular telescope comprising:

a pair of optically aligned telescope bodies;

a segmented bridge connecting said bodies, each of said bodies being hingedly attached to one segment of said bridge by a side hinge, said side hinges having their pivoting axes aligned with but offset from the optical axes of said telescope bodies;

a bridge hinge joining said bridge segments, the pivoting axis of said bridge hinge being aligned with the optical axes of said telescope bodies, said side hinges, said bridge hinge, said pair of aligned telescope bodies, said segments, folding together in an accordion-type hinge, said binocular telescope when fully folded having a height substantially equaling the height of said telescope bodies and a width not exceeding three times said telescopic body height.

4,325,603
ELECTRO-OPTIC ANALOG-TO-DIGITAL CONVERTER
Emanuel Marom, Pacific Palisades, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.
Filed Oct. 10, 1978, Ser. No. 949,717
Int. Cl.³ G02B *5/14*
U.S. Cl. 350—96.14 11 Claims

10. An electro-optic analog-to-digital converter for digitizing an applied analog signal comprising:

a source of an analog signal;

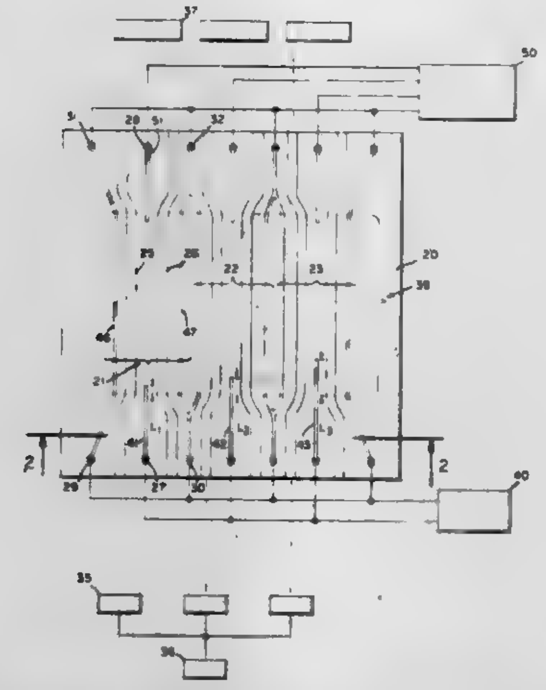
an electro-optic crystal substrate;

a plurality of closely-spaced parallel optical waveguide pairs disposed in said substrate;

a laser source;

means for simultaneously applying laser energy from said laser source to one waveguide of each of said waveguide pairs;

electrical conductors disposed on said substrate and connected to said source of an analog signal for simultaneously applying said analog signal across a coupling region of each of said plurality of waveguide pairs so as to induce coupling of laser energy between said one wave-

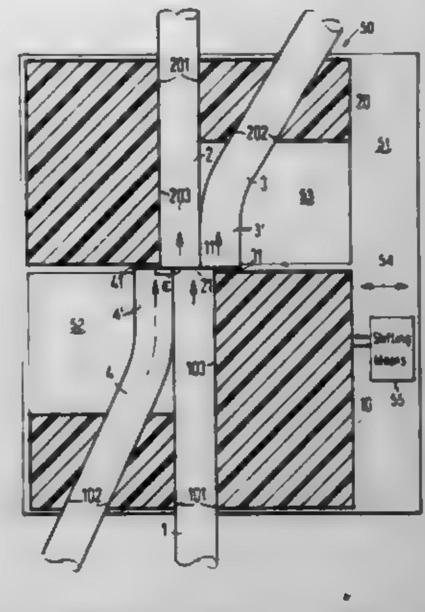


guide and the other waveguide of each of said waveguide pairs, the lengths of said coupling regions being determined by the relationship $L_n = 2^{n-1}L_1$, where L_1 is the coupling region length for a first waveguide pair and $n = 1, 2, 3 \ldots$, identifies a specific pair of said plurality of waveguide pairs, said coupling being proportional to said applied analog signal and to the lengths of said coupling regions; and

means responsive to the output of said waveguide pairs for comparing the output of both waveguides of said waveguide pairs and providing a digitized signal therefrom.

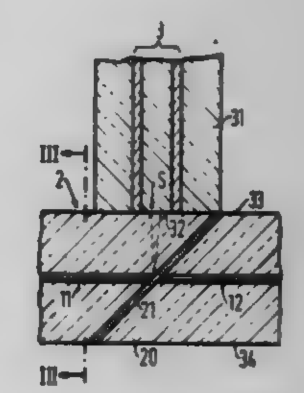
4,325,604
INPUT AND OUTPUT COUPLER DEVICE
Hans-H. Witte, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany
Filed Aug. 20, 1979, Ser. No. 68,218
Claims priority, application Fed. Rep. of Germany, Sep. 28, 1978, 2842276
Int. Cl.³ G02B *5/14*
U.S. Cl. 350—96.15 9 Claims

1. A coupler for use with light conducting fibers to couple-out and couple-in a light signal to the fibers, said coupler comprising at least first, second and third optical fibers; and first and second means for holding said fibers in a plane, said first means having first and second guide channels extending toward each other in a carrier body and not merging, said first means having a stop surface adjacent an end of the first guide channel and aligned with a side thereof, said first and second fibers being disposed in said channels with an end portion extending therefrom and the first and second fibers converging together with the second fiber holding the first fiber against said stop surface with the first fiber being straight and to have a portion of ech of said fibers adjacent the end faces extending in axis parallel side-by-side relationship due to the elastic fiber deformation and with the end faces being flush, and said second means for holding at least having a carrier body with a third guide channel for the third fiber, said third fiber being disposed in the guide channel with its end face at least partially opposite the end faces of the first and second fibers, each of



said guide channels being a groove in a surface of the respective carrier body.

4,325,605
BRANCHING ELEMENT FOR MONOMODE LIGHT WAVEGUIDES AND THE METHOD OF MANUFACTURE
Gerhard Winzer, and Franz Auracher, both of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany
Filed Nov. 1, 1979, Ser. No. 90,357
Claims priority, application Fed. Rep. of Germany, Nov. 29, 1978, 2851667
Int. Cl.³ G02B *5/172*
U.S. Cl. 350—96.15 3 Claims



1. A branching element for the purpose of coupling out a light component from a monomode light waveguide, said branching element comprising a structure including two monomode light waveguides each being a monomode fiber with a light conducting part and having an end surface, a first member mounting said monomode waveguides in axial alignment with the end surfaces being separated by a semi-transmissive reflective layer provided in the member and extending obliquely to the axis of said waveguides; and a multi-mode light waveguide being a multimode fiber having an end surface and having a light conducting part with a cross-section being considerably greater than the cross-section of the light conducting part of the monomode fibers, said multimode waveguide being received in an additional member, said additional member being mounted directly on the first member with the end face of the multimode waveguide being directly positioned on a surface of the first member in a location for receiving light decoupled from one of the pair of monomode waveguides by the semi-transmissive reflective layer, said additional member positioning the multimode waveguide to extend at an angle to said monomode waveguides with said angle being bisected by a surface normal of the reflective layer.

4,325,606

CONNECTOR FOR A LIGHT GUIDE CABLE OF AN ENDOSCOPE

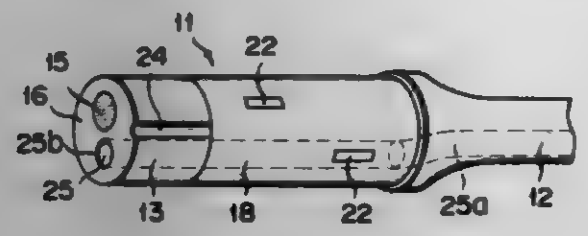
Yuji Ikuno, Hino; Kunio Kinoshita, and Katsuyuki Kanehira, both of Hachioji, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Nov. 28, 1979, Ser. No. 98,055

Claims priority, application Japan, Dec. 8, 1978, 53/151679

Int. Cl.³ G02B *7/26*

U.S. Cl. 350—96.20 25 Claims



1. A connector for a light guide cable of an endoscope, comprising a connector body received in that hole of a receptacle which has a complementary shape to the connector body and having two ends, one end being connected to a light guide cable of an endoscope and the other end being flush with a light-receiving face of a light guide which is inserted in the connector body and extends through the light guide cable; an electrically insulating member surrounding the connector body and having an outer periphery; and contacts embedded in the insulating member, having each an outer surface substantially flush with the outer periphery of the insulating member and connected to lead wires which axially extend in the insulating member and through the light guide cable, and wherein at least one fluid passage extending parallel to said light guide is formed in said connector body.

4,325,607

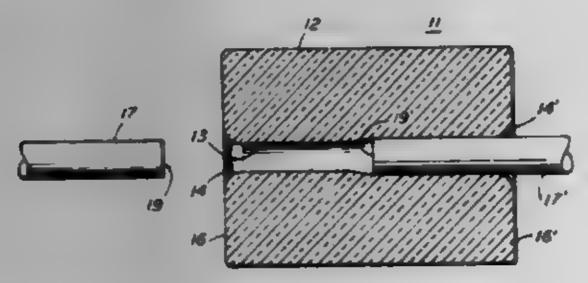
APPARATUS FOR CONNECTING OPTICAL FIBERS

W. John Carlsen, Natick, Mass., assignor to GTE Laboratories Incorporated, Waltham, Mass.

Filed Mar. 26, 1979, Ser. No. 23,862

Int. Cl.³ G02B *7/26*

U.S. Cl. 350—96.21 18 Claims



1. In combination,
a first optical fiber having a first outer diameter;
a second optical fiber having a second outer diameter; and
a molded cylindrical piece of elastic material having an axial hole of a third diameter from one end of said piece to another end thereof;
said first fiber being inserted part-way through said axial hole of said piece from said one end thereof;
said second fiber being inserted part-way through said axial hole of said piece from said another end thereof;
wherein, prior to insertion of said fibers, said third diameter is smaller than said first diameter and said second diameter.

4,325,608

OPTICAL SYSTEM OF A COPYING MACHINE

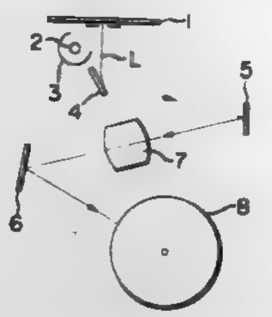
Osamu Kamiya, Machida, and Nobuyuki Sekimura, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 8, 1979, Ser. No. 92,509

Claims priority, application Japan, Nov. 10, 1978, 53/138442

Int. Cl.³ G02B *1/10, 5/28*

U.S. Cl. 350—165 9 Claims



1. An optical system for use in a copier comprising:
a lamp for illuminating an original;
a Cds photosensitive member; and
a transmitting type projection lens system comprising a lens surface including a multi-layered interference coating formed on a substrate, said interference coating being a 5- or 7-layered structure composed of alternately superposed high refractive layers and low-refractive layers each having a basic optical thickness equal to ¼ of a design wavelength λ_o and, including therein, two and one adjusting layers at the substrate side and the air side, respectively, of said coating to prevent transmission in the near-infrared wavelength region to thereby match the spectral characteristics of the light reflected from an original with the spectral sensitivity of said photosensitive member, wherein the optical thickness ND_i of an ith layer (from 1 to k), counted from the substrate side, satisfies the following relation:

$$ND_1 = ND_k > ND_2 > ND_3 = ND_4 = ND_{k-1}$$

where k represents the number of layers of said multi-layered interference coating.

4,325,609

VEHICLE SAFETY MIRROR

Steven D. Alford, 426 Birch Rd., Wyoming, Minn. 55092

Filed Mar. 7, 1980, Ser. No. 128,110

Int. Cl.³ G02B *5/10;* B60R *1/08*

U.S. Cl. 350—293 15 Claims

1. A two-way exterior mirror device for a motor vehicle comprising;
a substantially open frame for holding mirrors, including mounting means for mounting said frame on the exterior of the vehicle;
a semi-transparent plane mirror mounted in said frame and positioned to permit viewing through said mirror and reverse reflected off said mirror;
a semi-transparent convex mirror mounted in said frame and positioned to permit viewing through said mirror and an enlarged field of view reverse reflected off said convex mirror; and
transparent backing means attached to said frame for holding said plane mirror and said convex mirror such that viewing through said mirror is through said backing

means, said backing means being made of a high impact resistant transparent plastic material.

4,325,610

SEALING AGENT FOR PLASTIC LIQUID CRYSTAL DISPLAY PANELS

Hiroshi Inoue, Ena, Japan, assignor to Ricoh Watch Co., Ltd., Aichi, Japan

PCT No. PCT/JP80/00013, § 371 Date Sep. 30, 1980, § 102(e) Date Sep. 30, 1980, PCT Pub. No. WO80/01613, PCT Pub. Date Aug. 7, 1980

PCT Filed Jan. 29, 1980, Ser. No. 214,003

Claims priority, application Japan, Feb. 1, 1979, 54-10909; Aug. 16, 1979, 54-104417; Oct. 12, 1979, 54-131984

Int. Cl.³ G02F *1/13*

U.S. Cl. 350—343 6 Claims

1. A method of sealing a liquid crystal display panel comprising:
applying sealant to at least one of separated upper and lower transparent plastic panel substrates, drying said sealant to effect preliminary solidification of said sealant,
depositing a liquid crystal within one of the panel substrates,
hot press sealing the two panel substrates and curing the sealed portion at a temperature above the melting point of the plastic substrates but below the thermal deformation temperature of the substrates.

2. The sealing method of claim 1, wherein the sealant for the plastic liquid crystal display panels comprises the following three components:
(a) nylon and/or a linear saturated polyester;
(b) an epoxy resin and/or an isocyanate compound; and
(c) a solvent which can dissolve the components (a) and (b), and can also dissolve said transparent plastic panel substrates.

4,325,611

ELECTROCHROMIC MATERIAL AND ELECTRO-OPTICAL DISPLAY USING SAME

Robert A. Huggins, Stanford, and Ian D. Raistrick, Menlo Park, both of Calif., assignors to Stanford University, Stanford, Calif.

Filed Dec. 26, 1979, Ser. No. 106,547

Int. Cl.³ G02F *1/17, 1/23;* C09K *3/00*

U.S. Cl. 350—357 12 Claims

1. An electro-optical device comprising
an optically transparent substrate,
an optically transparent electrode formed on a surface of said substrate,
a second electrode in spaced alignment with said optically transparent electrode, said second electrode comprising an electro-active material,
an electrochromic material supported by said substrate and positioned between said electrodes, said electrochromic material comprising an oxide of at least one transition metal having the hexagonal tungsten bronze crystal structure,
an electrolyte between and contacting said electrochromic material and said second electrode, said electrolyte being conductive of ions of said electroactive material between said second electrode and the crystal structure of said electrochromic material, and
an ionic species in said crystal structure of said electrochromic material whereby said electrochromic material changes color when ions of said electroactive material are in said crystal structure.

4,325,612

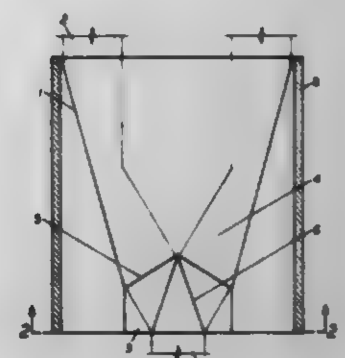
REFLECTIVE BEAM CONCENTRATOR

John E. Clegg, 2320 Keystone Dr., Orlando, Fla. 32806

Filed May 6, 1981, Ser. No. 260,982

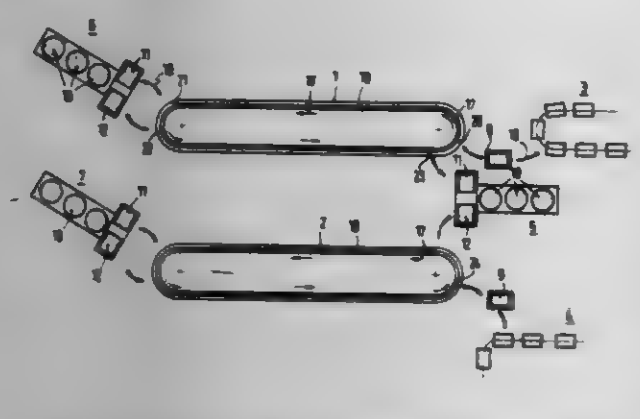
Int. Cl.³ G02B *13/18, 17/08*

U.S. Cl. 350—432 1 Claim



1. A reflective beam concentrator consisting of an annular concave mirror and a conical lens mounted inside a casing and aligned on a common axis which is parallel to light rays entering and exiting the concentrator, with all surfaces of the mirror and lens not used for the reflection, transmission and refraction of light rays being opaque;
(a) with the annular concave conical mirror having a concave reflective surface which receives parallel solar rays and reflects these rays inward to the conical lens,
(b) with the conical lens having a convex conical section which receives parallel rays reflected from the concave reflective surface of the annular concave conical mirror and transmits these rays in a straight line through the conical lens,
(c) with the conical lens having a concave conical section which receives parallel rays transmitted from the convex conical section of the conical lens and refracts these rays out of the conical lens in a direction parallel to the common axis of the annular concave conical mirror and conical lens.

4,325,613
ARRANGEMENT FOR MAKING COLOR-PICTURE TUBES
Robert Friedrich, Hochdorf, and Peter Schmidt, Denkendorf, both of Fed. Rep. of Germany, assignors to International Standard Electric Corporation, New York, N.Y.
Filed Oct. 9, 1980, Ser. No. 195,509
Claims priority, application Fed. Rep. of Germany, Oct. 13, 1979, 2941590
Int. Cl.^{3} G03B *41/00;* **H01J** *9/00*
U.S. Cl. 354—1 **5 Claims**

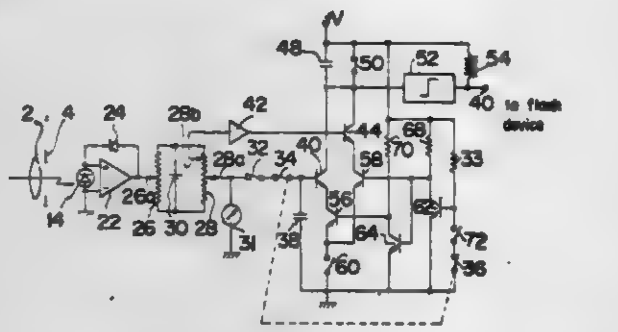


1. A self-contained exposing module for use with an arrangement for depositing photosensitive coatings on color picture tube faceplates, developing said coatings after exposure to light through masks, and conveying said faceplates and masks between a plurality of said modules, wherein said module is removable as a unit from said arrangement and comprises:
inserting means for assembling a color picture tube faceplate having a photosensitive coating thereon and a mask, delivered to said module from said arrangement, into a faceplate-mask assembly;
exposing means for exposing said faceplate-mask assembly to light;
removing means for disassembling said exposed faceplate and mask for delivery thereof to said arrangement; and
transporting means for transporting said faceplate mask assembly between said exposing means and said inserting and removing means.

4,325,614
EXPOSURE CONTROL SYSTEM WITH SHUTTER OPERATION CONTROLLED BY A MICROCOMPUTER
Donald L. Grimes, Milford, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Filed Dec. 16, 1980, Ser. No. 216,831
Int. Cl.^{3} G03B *7/097*
U.S. Cl. 354—23 D **5 Claims**

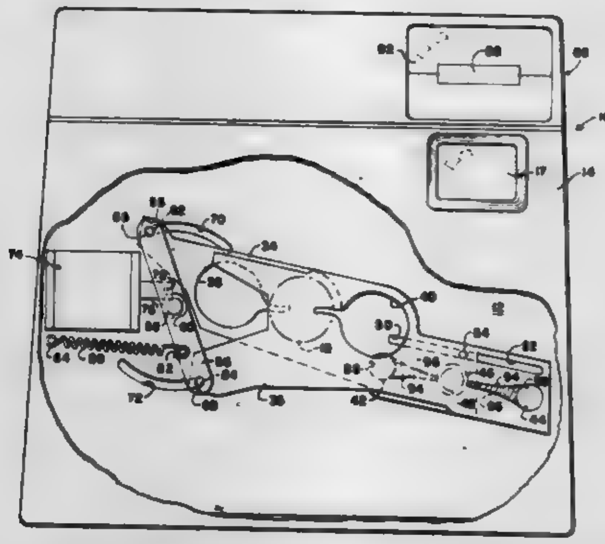
1. An exposure control system usable in photographic apparatus for controlling transmission of image-forming light rays from a scene to a film unit in a film plane, said system comprising:
a blade mechanism;
means for mounting said blade mechanism for displacement between a first arrangement wherein it blocks transmission of scene light to the film plane and a second arrangement wherein it defines a maximum aperture, said blade mechanism serving to define a range of progressively increasing sized apertures as it moves from its said first arrangement towards its said second arrangement and then a range of progressively decreasing sized apertures as it returns to its said first arrangement for unblocking transmission of scene light to the film plane during an exposure interval;
means including a stepper motor responsive to a program of trajectory signals for driving said blade mechanism in a manner whereby its operation is characterized by an aperture size versus time trajectory curve defined by said program of trajectory signals;
means for storing at least characterizing elements of a plurality of different trajectory signal programs defining corresponding trajectory curves that are appropriate for differing photographic conditions, including at least one trajectory signal program that causes the rate of blade mechanism drive to vary during the course of an exposure interval so that the corresponding trajectory curve has at least one non-linear portion; and
electrical circuit means responsive to one or more electrical input signals indicative of pre-exposure photographic conditions or of photographic conditions ascertained during the course of an exposure interval for selecting appropriate characterizing elements from said storage means and therefrom developing and feeding a correlated program of trajectory signals to said blade mechanism driving means.

4,325,615
EXPOSURE CONTROL SYSTEM FOR SINGLE LENS REFLEX CAMERAS
Seiji Yamada, Sakai, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan
Continuation of Ser. No. 62,507, Jul. 31, 1979, Pat. No. 4,284,341. This application Apr. 27, 1981, Ser. No. 258,027
Claims priority, application Japan, Aug. 9, 1978, 53-96847
Int. Cl.^{3} G03B *7/083, 7/099, 15/05*
U.S. Cl. 354—24 **8 Claims**



1. In a single lens reflex camera, the combination comprising:
a reflex mirror movable between viewing and photographic positions and having a portion enabling light passage;
light receiving means for receiving scene light through said reflex mirror portion with said reflex mirror in said viewing position and receiving scene light reflected from the film in the camera with said reflex mirror in said photographic position;
a light measurement means for generating a light measurement signal output as a function of the scene light received by said light receiving means;
flash control means for controlling the termination of electronic flash tube firing in accordance with the light measurement signal generated with said reflex mirror in said photographic position;
storage means for storing said light measurement signal output;
means for causing the storing operation of said storage means in response to an arbitrary manual operation independent of camera actuating operation, with said reflex mirror in said viewing position; and
exposure time control means for controlling exposure time in accordance with the light measurement signal stored in said storage means.

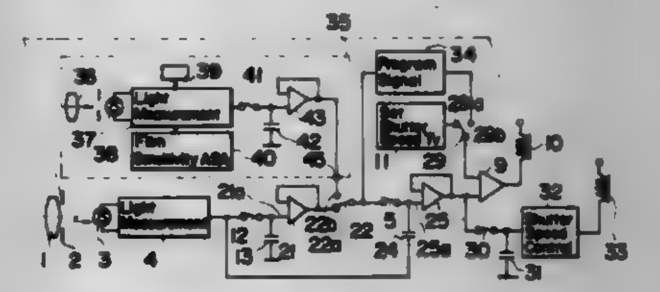
4,325,616
APPARATUS FOR VARYING THE SPECTRAL FILTER OVER THE PHOTOCELL AS A FUNCTION OF BLADE POSITION
Milton S. Dietz, Lexington, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Filed Jan. 10, 1980, Ser. No. 110,811
Int. Cl.^{3} G03B *7/14, 7/18*
U.S. Cl. 354—27 **12 Claims**



1. In a photographic camera apparatus including means for mounting photographic film material at a given focal plane; a light exposure opening for allowing passage of light to the film; detecting means for evaluating scene light; a blade mechanism mounted for displacement between a first and second position; said blade mechanism precluding passage of scene light through said exposure opening when in said first position and defining changing primary aperture values over said exposure opening and changing secondary aperture values over said detecting means as said blade mechanism moves toward said second position; and drive means actuatable for initially displacing said blade mechanism from said first position toward said second position and, in response to the amount of scene light detected by said detecting means, for returning said blade mechanism to said first position, the improvement comprising:
filtering means responsive to displacement of said blade mechanism for automatically precluding transmission of selected frequencies of scene light to said detecting means during at least one portion of said displacement of said blade mechanism toward said second position while transmitting other spectral frequencies thereto and for transmitting said selected frequencies to said detecting means during another portion of said displacement, said filtering means includes a spectral filter coupled to said blade mechanism so as to be operatively positioned over said detecting means during said one portion of said displacement and inoperatively spaced away from said detecting means during said other portion thereof.

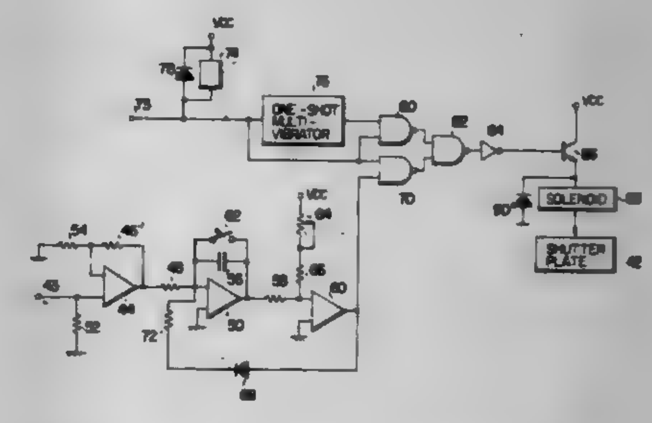
4,325,617
CAMERA EXPOSURE CONTROL DEVICE
Masayoshi Sahara, Sennan, and Nobuyuki Taniguchi, Sakai, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan
Filed Apr. 14, 1980, Ser. No. 139,683
Claims priority, application Japan, Apr. 18, 1979, 54/48298
Int. Cl.^{3} G03B *7/087*
U.S. Cl. 354—31 **13 Claims**

1. In a camera which includes an objective and a diaphragm capable of being stopped-down from its fully open aperture in response to a camera release operation, an exposure control device comprising:
first light measuring means for measuring light having passed through said objective and the aperture of said diaphragm and generating an output commensurate with the intensity of the measured light, said output generated at a desired time prior to a camera release operation being a first signal S_1, said output generated immediately prior to commencement of stopping-down operation of said diaphragm being a second signal S_2, and said output generated in the course of stopping-down operation of said diaphragm being a third signal S_3 wherein said third signal S_3 varies as said diaphragm is stopped-down;
means for generating a fourth signal S_4 commensurate with a preselected shutter speed;
means for arresting said diaphragm;



diaphragm control means for calculating with said first to fourth signals S_1 to S_4 and generating an actuating signal for actuating said arresting means when said first to fourth signals S_1 to S_4 satisfy the general formula of $S_4=S_1-S_2+S_3$ as a result of the variation of said third signal due to the stopping-down operation of said diaphragm, said diaphragm arresting means having a delayed response to complete the arresting of said diaphragm from the time of generation of said actuating signal by said diaphragm control means; and
shutter speed control means for calculating with said first and second signals S_1, S_2 and output S_3' of said first light measuring means generated after completion of the arresting of said diaphragm and controlling a shutter speed in accordance with the calculation results $S_1-S_2+S_3'$.

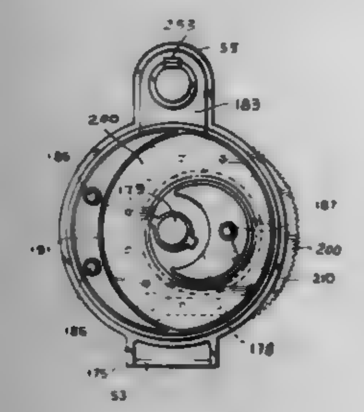
4,325,618
LIGHT SOURCE APPARATUS
Seiichi Hosoda, Fuchu, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan
Filed Aug. 27, 1980, Ser. No. 181,840
Claims priority, application Japan, Sep. 17, 1979, 54-17867
Int. Cl.^{3} G03B *7/16, 29/00*
U.S. Cl. 354—33 **16 Claims**



1. In a light source apparatus for a camera for photographing a dark scene, producing a synchronizing signal during the shutter operation of the camera, receiving light reflected from the scene and producing a light reception signal corresponding to the received light,
the improvement comprising the combination of:

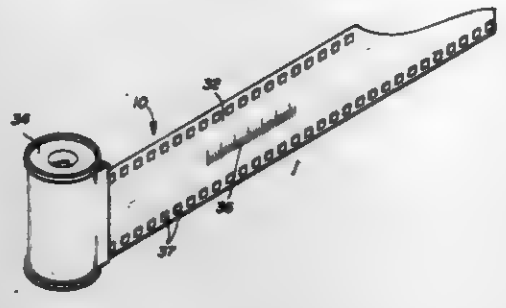
a synchronizing terminal for receiving said synchronizing signal from the camera;
a light reception terminal for receiving said light reception signal from the camera;
light source means coupled to said synchronizing terminal and producing light for illuminating the scene responsive to said synchronizing signal;
integrating means coupled to said synchronizing terminal and to said light reception terminal for calculating the received light dose by integrating said light reception signal according to said synchronizing signal to produce an integration signal corresponding to said received light dose at an output of the integrating means;
comparator means coupled to said integrating means for comparing said integration signal and a predetermined signal, and to produce a comparison signal according to the result of comparison at an output thereof;
positive feedback means coupled between the output of said comparator means and the input of said integrating means; and
shutter means coupled to said comparator means for blocking light from said light source means responsive to said comparison signal.

4,325,619
CAMERA
Bernard A. Seckendorf, Flushing, and Jack W. Kalbfeld, Old Bethpage, both of N.Y., assignors to Wrist-A-Matic, Ltd., Elmhurst, N.Y.
Filed Nov. 7, 1980, Ser. No. 205,209
Int. Cl.³ G03B *19/02, 17/26, 9/10*
U.S. Cl. 354—121 **25 Claims**



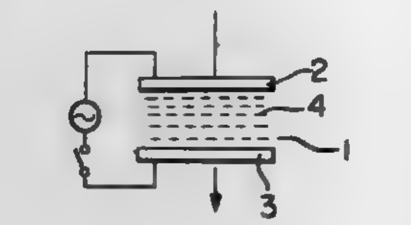
1. In a camera having a housing and a film cassette rotatably mounted therein, said cassette having means for holding a disc-shaped film therein in a plane perpendicular to the axis thereof, said camera further comprising a shutter assembly for enabling exposure of film in said cassette, and means for rotating said cassette from externally of said housing, said housing including a cassette housing having a chamber for receiving the cassette and a front housing coupled to the cassette housing so as to enable the loading and unloading of said cassette in said cassette housing, said front housing having lens means with an optical axis parallel to and displaced from the axis of the cassette, the shutter assembly being mounted in said front housing to selectively block the passage of light between said lens means and said cassette; the improvement wherein said cassette has an element with gear teeth, and said means for rotating said cassette from externally of said housing comprises an internal ring gear having internal teeth engaging the teeth of the element of said cassette, the rim of said internal ring gear extending, on at least one side of said camera, beyond said cassette housing.

4,325,620
FILM AND METHOD FOR TESTING CAMERAS
Gary R. Holley, 220 Bryan Pl., Mesquite, Tex. 75149
Filed Oct. 28, 1980, Ser. No. 202,016
Int. Cl.³ G03B *15/02, 17/26*
U.S. Cl. 354—127 **10 Claims**



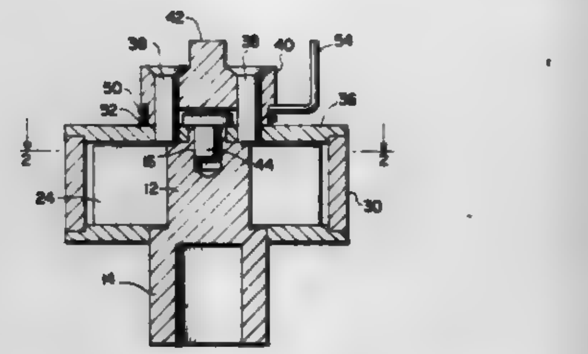
1. A test film for use in reflex cameras for testing the operation of the camera with respect to focus and picture image quality comprising a translucent and fully reusable film material dimensioned and adapted for loading into the camera, the translucent film material being contained in a standard film cartridge for the reflex camera.

4,325,621
ELECTRONIC FLASH DEVICE
Hiroshi Iwata, Nara, and Tetsuo Yamaoka, Osaka, both of Japan, assignors to West Electric Co., Ltd., Osaka, Japan
Filed May 14, 1981, Ser. No. 263,580
Claims priority, application Japan, May 16, 1980, 55/65593
Int. Cl.³ G03B *15/03, 17/00*
U.S. Cl. 354—145 **4 Claims**



1. An electronic flash device of the type in which a liquid crystal plate is disposed in front of a flash unit comprising a flash bulb for converting the energy stored on a main flash capacitor into a flash of light and a reflector, characterized by the provision of
a voltage application control device comprising a photographic lens detection means for detecting the type; that is, the focal length of a photographic lens attached to a camera body and generating an output signal representative of said type of said photographic lens attached,
a switching means whose state is controlled in response to the output signal from said photographic lens detection means, and
a driving voltage generator for generating a voltage for driving said liquid crystal plate, comprising
a voltage detector for detecting a voltage generated in said electronic flash device,
a voltage conversion means for converting the voltage into a driving voltage for driving said liquid crystal plate,
whereby the application of said driving voltage to said liquid crystal plate is controlled by said switching means.

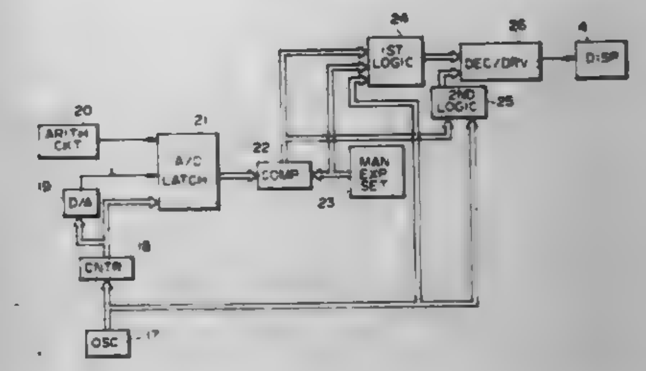
4,325,622
COUPLING FILM ADVANCE AND SHUTTER RELEASE FOR A STILL CAMERA
Hansjürgen Hartung, Wolfenbüttel, Fed. Rep. of Germany, assignor to Rollei-Werke Franke & Heidecke GmbH & Co. KG, Brunswick, Fed. Rep. of Germany
Filed Nov. 18, 1980, Ser. No. 207,881
Claims priority, application Fed. Rep. of Germany, Dec. 1, 1979, 2948525
Int. Cl.³ G03B *1/12, 1/00*
U.S. Cl. 354—170 **17 Claims**



1. A coupling connecting a drive motor to a still camera to facilitate automated cocking and actuation of said camera, said camera including a film transport advance drum, a shutter release and a shutter release mechanism and a drive motor, said coupling comprising:
cam means, rotatable with one of said drive motor and said film transport advance drum in a drive direction;
cam biassing means, rotatable with the other of said drive motor and said film transport advance drum, said cam biassing means includes means for transmitting torque from said drive motor to said film transport advance drum, said transmitting means rotating with said cam means until a predetermined maximum torque is reached, said transmitting means driving said cam biassing means a predetermined distance in a direction opposite to said drive direction when said maximum torque is exceeded, said predetermined distance determined by said cam means; and
shutter coupling means, responsive to said cam biassing means movement in said direction opposite to said drive direction, for actuating said shutter release mechanism, said actuating means freely rotatable in said drive direction with respect to said cam biassing means and fixed against rotation in said direction opposite to said drive direction with respect to said cam biassing means.

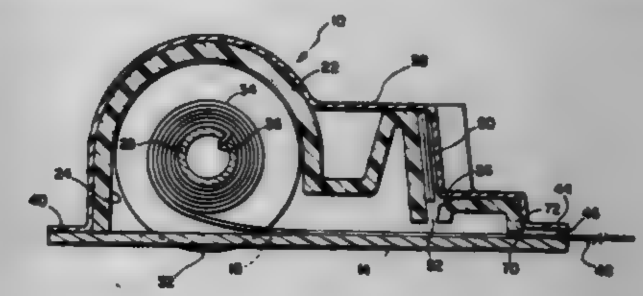
4,325,623
SHUTTER SPEED DISPLAY DEVICE
Koji Suzuki, Asaka, and Eiichi Tano, Kamifukuoka, both of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 21, 1980, Ser. No. 198,997
Claims priority, application Japan, Nov. 30, 1979, 54/155174
Int. Cl.³ G03B *17/20*
U.S. Cl. 354—289 **8 Claims**

1. A shutter speed display device for a camera comprising: a display unit having a plurality of light emitting display elements, each having an anode and a cathode, which are provided respectively corresponding to a plurality of shutter speed indicating numerals in a viewfinder of said camera, said light emitting elements being divided into a predetermined number of groups of ordered light emitting elements, one of said anodes and cathodes of said light emitting elements in each group being connected together, the other of said anodes and cathodes of said light emitting elements in each of said groups being connected to the other of said anodes and cathodes of like-ordered ones of said light emitting elements in the other of said groups; a decoder and driver circuit means for driving said display unit; oscillator circuit means providing a periodic clock signal alternating between a first state and a second state; and logic circuit means, coupled between said oscillator circuit means and said decoder and driver circuit means, responsive to said clock signal for alternately applying to said decoder and driver circuit means in a time division manner (1) a first signal representing a manually set shutter speed and (2) a second comparison signal representing the value of said set shutter



speed relative to a calculated correct value of shutter speed, whereby a corresponding one of a first set of said display elements indicates the set shutter speed when said first signal is applied, and whereby, when said second signal is applied, another one of a second set of two predetermined display elements indicates whether the set shutter speed value is above or below said calculated value.

4,325,624
SELF-DEVELOPING TYPE FILM PROCESSOR KIT
Walter E. Pedroli, Lexington, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Filed Sep. 2, 1980, Ser. No. 183,014
Int. Cl.³ G03D *5/02, 5/06*
U.S. Cl. 354—304 **22 Claims**



1. A kit adapted for use in a film processor wherein it is adapted for use with an exposed roll of instant type film to initiate the formation of visible images in the film, comprising:
means for housing a supply of flexible sheet material,
means for defining a reservoir for containing a supply of processing liquid;
a supply of processing liquid located in said reservoir;
means for supporting said housing and said reservoir;
means for substantially enclosing said housing and said reservoir, said enclosing means cooperating with said supporting means to define an opening through which an end of a flexible sheet material may extend to the exterior of said kit; and
a supply of flexible sheet material supported within said housing with one free end of said sheet material extending between said supporting means and said reservoir, whereat a coating of said processing liquid is adapted to be applied to said sheet material, and then to the outside of said kit via said opening, whereby said free end may be used to progressively withdraw said sheet material from said kit in a coated condition such that it may be superposed with an exposed strip of photographic film so as to initiate the formation of visible images in the film.

4,325,625
ELECTROPHOTOGRAPHING METHOD

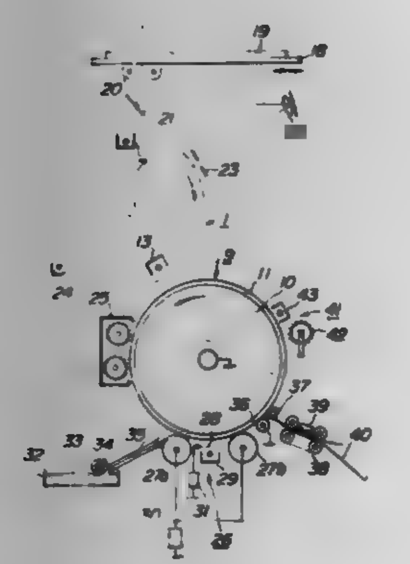
Toshio Nakatsubo; Kaoru Ohyoshi; Masaji Nishikawa, all of Hachioji; Eiichi Sato, Tama; Norio Mizukami; Akira Shimizu, both of Tokyo; Kazuhisa Yanagisawa, Mitaka; Kenichi Oinoue, Tokyo; Naotsune Tsuda, and Yoshiro Suzuki, both of Hachioji, all of Japan, assignors to Olympus Optical Company Limited, Tokyo, Japan

Continuation of Ser. No. 883,258, Mar. 3, 1978, abandoned. This application Sep. 13, 1979, Ser. No. 75,834

Claims priority, application Japan, Mar. 7, 1977, 52/23744

Int. Cl.[3] G03G *15/00*

U.S. Cl. 355—3 SC 7 Claims



1. An improved method of electrophotographing, employing an apparatus having a sensitizing screen with a great number of fine apertures and a transferring member including a conductive base plate and at least one charge storage layer formed on said base plate and made of material selected from a group consisting of highly insulating glass, polyurethane, acrylic resin, epoxy resin, polyethylene, polystyrene, vinyl chloride resin, nylon, polyimide resin, silicone resin, fluorine plastics, allyl diglycol carbonate resin and mixtures thereof, comprising

(a) a step of forming on said sensitizing screen a primary electrostatic latent image corresponding to an image of a document to be copied;

(b) a step of forming on said transferring member a secondary electrostatic latent image corresponding to said primary latent image by projecting through said sensitizing screen a corona ion flow modulated by said primary latent image onto said transferring member;

(c) a step of developing said secondary latent image with toners to form a toned image;

(d) a step of transferring said toned image onto a recording sheet to form a duplicated copy;

(e) a step of repeatedly conducting said steps (c) and (d) in succession by a number M of times to form a number M of duplicated copies, said number M being the maximum number of copies which can be formed from one and the same secondary latent image;

(f) a step of erasing said secondary latent image; and

(g) a step of repeatedly conducting said steps (b) to (f) in succession by a number N of times to form a total of M×N number of duplicated copies from one and the same primary latent image once formed on said sensitizing screen.

4,325,626
ELECTROSTATIC COPYING APPARATUS

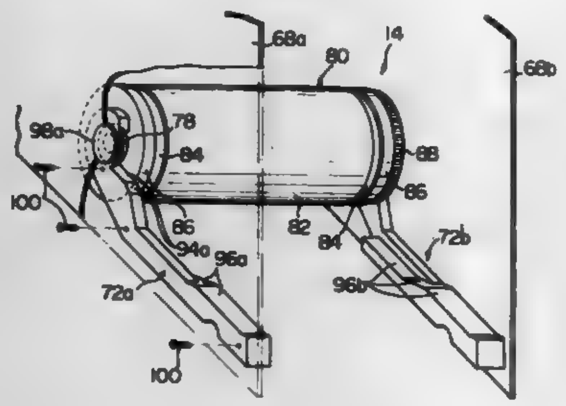
Naoaki Murata, Takarazuka; Masahiro Yoshioka, Matsubara; Kiyoshi Hayashi, Takatsuki, and Yasusuke Tohi, Sakai, all of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Dec. 3, 1979, Ser. No. 99,720

Claims priority, application Japan, Dec. 13, 1978, 53-153203; Feb. 2, 1979, 54-10304; Mar. 29, 1979, 54-41643[U]; Apr. 5, 1979, 54-40302; May 25, 1979, 54-70992[U]; May 25, 1979, 54-70993[U]; May 25, 1979, 54-70994[U]; May 25, 1979, 54-70995[U]

Int. Cl.[3] G03G *15/00*

U.S. Cl. 355—3 DR 4 Claims



1. An electrostatic copying apparatus of the type in which a rotary drum having a photosensitive member on its surface is rotatably and detachably disposed at a predetermined location within a housing, said apparatus comprising a pair of inner side plates spaced apart from each other in the direction of the central axial line of rotation of said rotary drum, a guide and support member mounted at a predetermined location on the inside surface of each of said side plates, and formed in each said guide and support member, a bearing hole having a recess opened in a direction substantially perpendicular to said central axial line of rotation and at least one guide surface extending from said recess of said bearing hole in a direction substantially perpendicular to said central axial line of rotation, whereby when a selected site of each of both side portions of said rotary drum is moved along each said guide surface, each of said side portions of said rotary drum is positioned within each said bearing hole through each said recess to mount, said rotary drum rotatably and detachably in the direction substantially perpendicular to said central axial line of rotation.

4,325,627
METHOD AND APPARATUS FOR LIQUID-DEVELOPING LATENT ELECTROSTATIC IMAGES

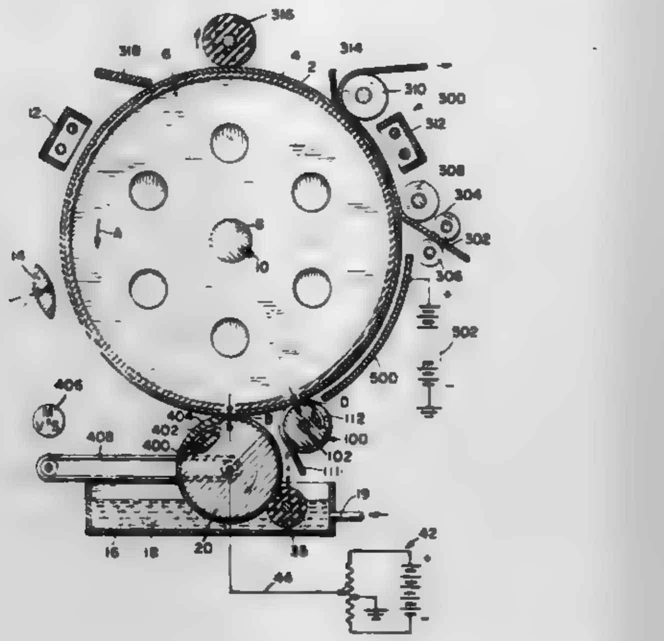
Ronald Swidler, Palo Alto, and Kenneth W. Gardiner, Menlo Park, both of Calif., assignors to Savin Corporation, Valhalla, N.Y.

Filed Dec. 19, 1979, Ser. No. 105,030

Int. Cl.[3] G03G *15/10*

U.S. Cl. 355—10 3 Claims

3. In an apparatus for making copies of a document by electrophotography, a rotatable conductive drum, a photoconductor carried by said drum, means for charging the photoconductor, exposing means for subjecting the charged photoconductor to a light image of a document to be copied to form a latent electrostatic image on said drum; the improvement comprising a tank for holding developer carrier liquid having charged toner particles disseminated therethrough, a rotary electrode, means for mounting said rotary electrode with its lower segment immersed in said carrier liquid and for spacing its uppermost segment from the photoconductor to form a gap therewith of between three and six mils at its closest approach to the photoconductor, means for biasing said rotary electrode to prevent toner deposition on the non-image areas of the latent electrostatic image formed on the photoconductor, means for controlling the speed of rotation of said rotary electrode to control the volume of developer liquid carried thereby from the tank to said gap, a reversely rotating metering roller for removing a portion of the carrier liquid from the developed image on the photoconductive surface, means for transferring



the developed image to a carrier sheet, an arcuate field electrode closely spaced from the photoconductive surface and positioned between said metering roller and said transferring means, and means for biasing said field electrode to a polarity having a sign opposite to the polarity of the charge of said charged toner particles.

4,325,628
CLEANING DEVICE FOR AN IMAGE FORMING APPARATUS

Akiyoshi Torigai, Machida; Teruo Morikawa, Sagamihara; Masaki Nakaoka, Tokyo; Shinji Murata, Tokyo, and Yoshiaki Sone, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 27, 1979, Ser. No. 97,867

Claims priority, application Japan, Nov. 30, 1978, 53-147215

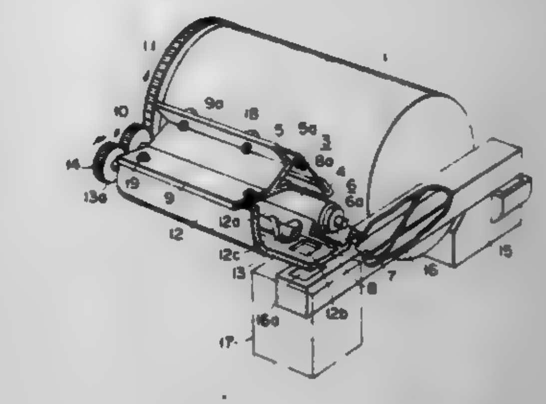
Int. Cl.[3] G03G *21/00*

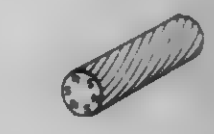
U.S. Cl. 355—15 4 Claims

2. A cleaning device for an image forming apparatus, wherein a magnetic developer image formed on the surface of an image bearing member is transferred onto an image transfer material, said device comprising:

cleaning means to remove the magnetic developer remaining on the surface of the image bearing member after transfer;

transfer means for conveying the developer removed by said cleaning means to a removed developer collecting zone, wherein said developer transfer means comprises a non-





magnetic screw and a magnetic roll in the interior of said screw.

4,325,629
IMAGE FORMING METHOD AND APPARATUS THEREFOR

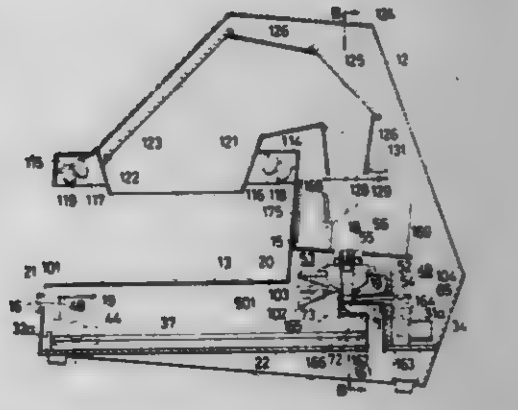
Takashi Ogata; Makoto Gonmori, and Kenji Matsuo, all of Fuji, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Dec. 4, 1980, Ser. No. 212,966

Claims priority, application Japan, Dec. 7, 1979, 54-158156

Int. Cl.[3] G03B *27/32, 27/42*

U.S. Cl. 355—27 30 Claims



1. An image forming method for forming an image, using an image forming sheet which has on an organic substrate a heat-developable image forming layer that is normally non-photosensitive but is rendered photosensitive by preheating prior to exposure and forms therein a latent image by exposure and then provides a visible image by heat development, characterized in that, in order to prevent an image forming area of the image forming sheet from heat deformation by heating for the preheating or heat development, the image forming area is heated by heating means, holding the opposite side from the image forming layer corresponding to the image forming area in close contact with a flat portion of an image forming area

support member in a manner to extend over the entire area of the flat portion; after the heating, the image forming area is cooled down to a temperature below the glass transition point of the organic substrate, still holding the opposite side from the image forming layer corresponding to the image forming area in close contact with the flat portion of the image forming area support member; and after the cooling, the image forming area support member is brought out of contact with the image forming area.

4,325,630

AUTOMATIC MASKING DEVICE INCLUDING AN APERTURE EXTENSION MEANS

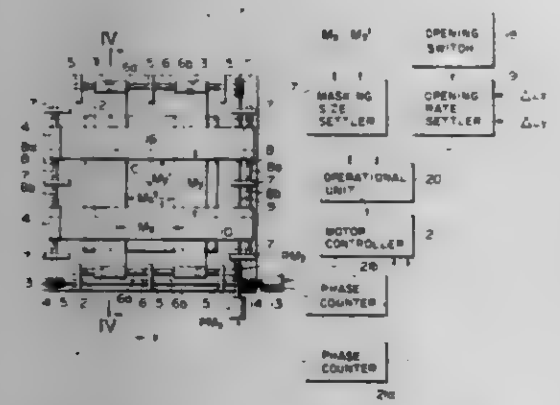
Yoshikazu Kimura, Kusatsu, and Kenjiro Tanabe, Hikone, both of Japan, assignors to Dainippon Screen Seizo Kabushiki Kaisha, Kyoto, Japan

Filed Mar. 7, 1980, Ser. No. 128,035

Claims priority, application Japan, Mar. 19, 1979, 54-32086

Int. Cl.³ G03B *27/58*

U.S. Cl. 355—74 **6 Claims**



1. An automatic masking device for use in a printer, comprising:

a photosensitive film sheet holder on which a photosensitive film sheet is to be held;

a pair of masking plates which are arranged in front of the photosensitive film sheet holder, and are adapted to be movable over the surface of the holder so as to open and close an aperture between the masking plates, and which are adapted to be set to form an aperture of a predetermined size; and

an aperture extending means which is capable of temporarily extending the aperture beyond the predetermined size to enable the operator to visually check the marginal area surrounding said aperture of predetermined size prior to making the exposure, and of then automatically returning the aperture to the predetermined size.

4,325,631

METHOD OF COLOR PRINTING

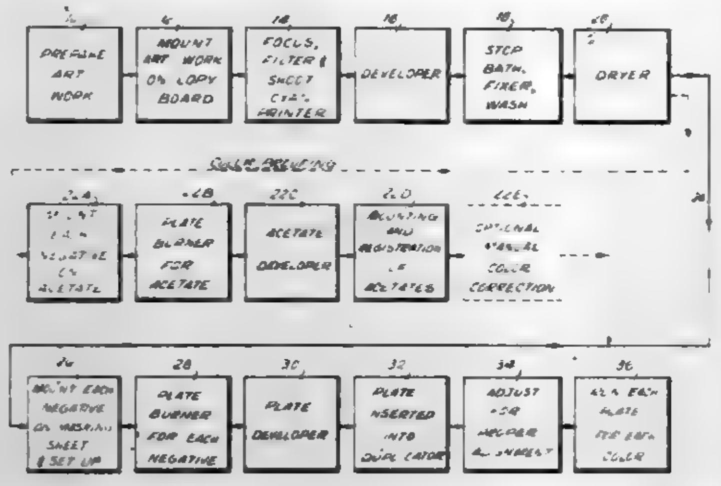
Francis E. McCallion, Jr., Colts Neck, N.J., assignor to Cymaticolor Corporation, Edison, N.J.

Filed Nov. 7, 1980, Ser. No. 204,959

Int. Cl.³ G03B *27/32*

U.S. Cl. 355—77 **11 Claims**

1. A method of reproducing on stock a color original having multiple basic color components, including the steps of mounting said original on a movable surface, focusing a lens system on said original, inserting a selected filter into said lens system for allowing the transmission therethrough of respective subtractive colors in said original, inserting a film member into said lens system for each of said basic color components, exposing each said film member through a respective one of said filters, preparing a film negative for each of said subtractive colors and corresponding to each said exposure, mounting each said negative in conjunction with a corresponding plate member, exposing said plate member to light through each corresponding negative to selectively prepare said plate member for reproduction of a component image portion of said original, sequentially inserting each said plate member into a duplicator machine, applying water and correspondingly colored ink to the plate cylinder of said duplicator with each said



respective plate member inserted therein, operating said duplicator to apply respective color components of said original to said stock in sequence and collecting said stock after said reproduction has been completed.

4,325,632

METHOD OF PHOTOGRAPHIC PRINTING AND A PHOTOGRAPHIC ORIGINAL PLATE FOR USE THEREIN

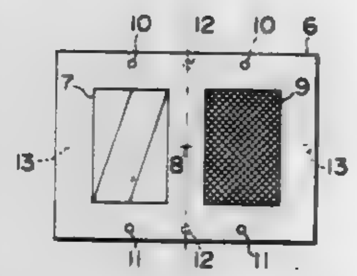
Kikuro Tsuji, Joyo, and Masaya Ishigaki, Kyoto, both of Japan, assignors to Dainippon Screen Seizo Kabushiki Kaisha and Kabushiki Kaisha Dai-ichi Shiko, both of Kyoto, Japan

Filed Dec. 8, 1980, Ser. No. 213,719

Claims priority, application Japan, Dec. 18, 1979, 54-163516

Int. Cl.³ G03B *27/04*

U.S. Cl. 355—86 **6 Claims**



1. A method for photographically printing an identical picture on each of two areas defined on a photosensitive material such that these two areas are located 180 degrees apart from each other about a point of symmetry, comprising:

a first printing step in which the photosensitive material is exposed to light with a transparent sheet, carrying thereon an original picture image and a light shielding area, closely overlayed thereon in such a manner that the original picture image and the light shielding area are generally registered over the two areas defined on the photosensitive material 180 degrees apart from each other about a point of symmetry, respectively, and

a second printing step in which the photosensitive material is exposed to light with the transparent sheet closely overlayed thereon after changing the positions of the original picture image and the light shielding area one another in such a manner that each of the original picture image and the light shielding area is registered over the other one of the two areas on the photosensitive material.

4,325,633

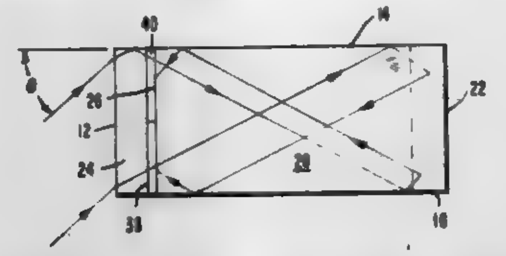
APPARATUS FOR DETERMINING OF ANGLE OF INCIDENCE OF ELECTROMAGNETIC ENERGY

Leland V. Gardner, Buellton, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Jun. 2, 1980, Ser. No. 155,887

Int. Cl.³ G01B *11/26;* G02B *5/14*

U.S. Cl. 356—141 **10 Claims**



1. A receiver for providing an electrical signal corresponding to the angle of incidence of electromagnetic energy comprising:

a first planar surface for producing an input aperture;

second and third planar surfaces extending normally from said first planar surface so as to partially define a chamber therebetween, said second and third surfaces providing reflective interior side walls for said chamber;

a fourth planar surface extending substantially normally from said first, second and third surfaces which defines the interior ceiling of said chamber;

a fifth planar surface extending substantially normally from said first, second and third surfaces which defines the floor of said chamber;

a sixth surface joining said second, third, fourth and fifth surfaces to define the rear wall of said chamber, said sixth surface having a reflective side and being curved about an axis perpendicular to said second and third surfaces whereby electromagnetic energy which passes through said input aperture is reflected and focused by said sixth surface to a line image along which the radiant power distribution is proportional to the angle of incidence of said energy relative to said first surface; and

detector means mounted on one of said surfaces parallel to said line image so as to measure the radiant power distribution thereof and thereby develop an electrical signal corresponding to the angle of incidence of electromagnetic energy.

4,325,634

SLIT WIDTH CALIBRATOR FOR MONOCHROMATOR

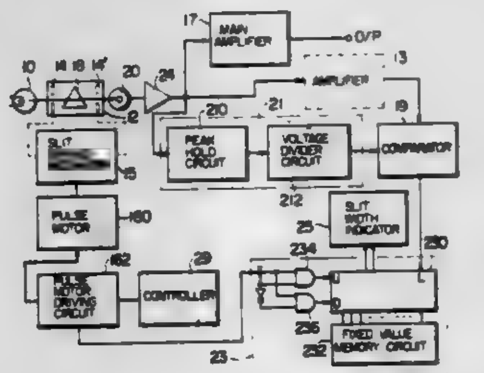
Shigeo Tohyama, Katsuta, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 29, 1979, Ser. No. 89,084

Claims priority, application Japan, Nov. 2, 1978, 53-134561

Int. Cl.³ G01J *3/12, 3/18*

U.S. Cl. 356—331 **16 Claims**



1. A slit width calibrator for a monochromator having a light source and a slit having a variable slit width for picking up a monochromatic light of a desired wavelength from the light generated from said light source, comprising:

a light detector for detecting the light emitted through said slid, said light detector providing a maximum value output corresponding to a maximum slit width;

controlling means for changing the width of said slit and generating pulses in a number corresponding to the change in slit width;

counting means for counting the pulses generated from said controlling means; and

calibrating means for calibrating the content of said counting means to a fixed value corresponding to a predetermined width of said slit at the time when a ratio of the output of said light detector to the maximum value thereof reaches a predetermined value dependent of said predetermined slit width while changing the slit width by said controlling means.

4,325,635

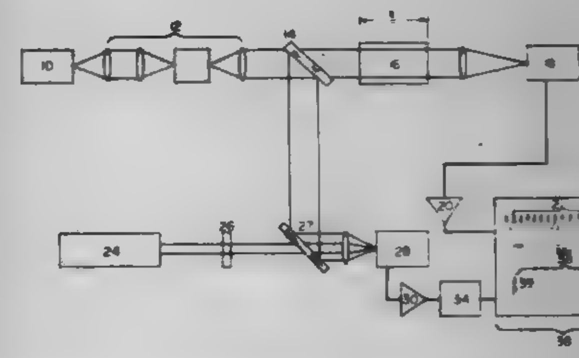
HETERODYNE INDICIAL REFRACTOMETER

Joseph P. Sattler; Terrance L. Worchesky, both of Silver Spring, and Kenneth J. Ritter, Adelphi, all of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 7, 1980, Ser. No. 194,736

Int. Cl.³ G01B *9/02*

U.S. Cl. 356—349 **12 Claims**



1. A method of measuring the index of refraction of a material which comprises the steps of:

obtaining a first beam of radiation by continuously tuning a first source of radiation through a selected range of frequencies;

determining the channel spectra of the material by directing a portion of the first beam of radiation through a known length of the material;

obtaining heterodyne marker beats by heterodyning a portion of the first beam of radiation with a second beam of radiation from a second source of radiation; and

determining the index of refraction by comparing the channel spectra to the heterodyne marker beats.

4,325,636

INTERFEROMETER WITH A SINGLE-MODE WAVEGUIDE COIL

Gerhard Schiffner, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jan. 11, 1979, Ser. No. 2,537

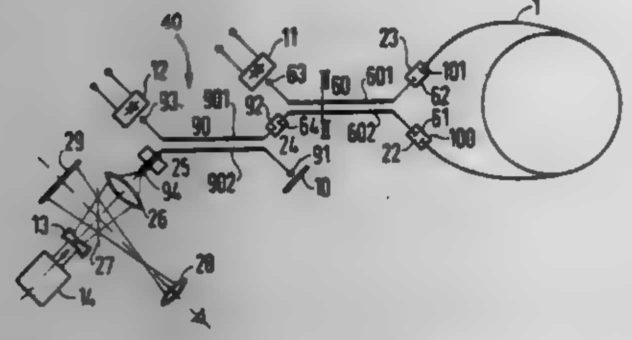
Claims priority, application Fed. Rep. of Germany, Jan. 31, 1978, 2804119

Int. Cl.³ G01B *9/02;* G02B *5/14*

U.S. Cl. 356—350 **5 Claims**

1. In an interferometer having a light source and a single-mode optical waveguide wound into a coil, said coiled waveguide having a surface at each end for acceptance of light into the waveguide and for the displaying of light in the waveguide, the improvements comprising a first optical directional coupler and an additional optical directional coupler, each of said

optical directional couplers having four input/output ends with a pair of input/output ends at each end of the coupler, said first coupler having one input/output end of one pair of ends being axially coupled to one of said end surfaces of said coiled waveguide and a second input/output end of the one pair being coaxially coupled to the other of said end surfaces of said coiled waveguide, said first coupler having one end of the other pair of ends being coupled to a first light sensitive element and the other end of the other pair of ends being coupled to one end of a first pair of ends of the additional optical directional coupler, the other end of the first pair of ends of the



additional directional coupler being closed by a light absorber, said additional optical directional coupler having one end of a second pair of ends being coupled to a second light sensitive element; and means for coupling said light source to a second end of the second pair of ends of the additional optical directional coupler, said means for coupling including imaging means for forming a real image of the light source on said second end said imaging means including imaging optics, and said means for coupling including means for making a magnified observation of the input coupling of light into the second end of the additional coupler.

4,325,637

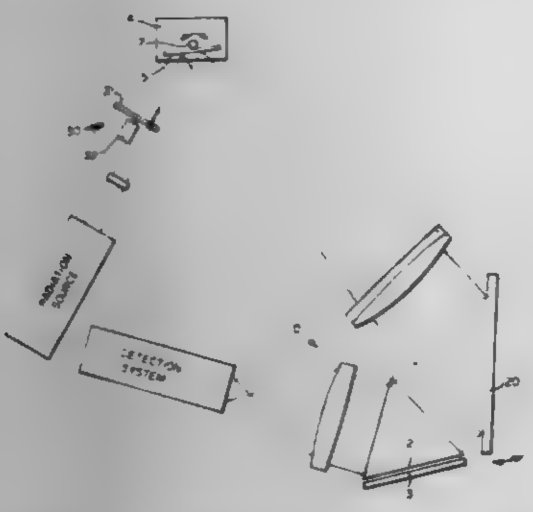
PHASE MODULATION OF GRAZING INCIDENCE INTERFEROMETER

Robert C. Moore, Rochester, N.Y., assignor to Tropel, Inc., Fairport, N.Y.

Filed Jun. 2, 1980, Ser. No. 155,203

Int. Cl.³ G01B ***11/24***

U.S. Cl. 356—359 8 Claims



1. A method of modulating phase in a grazing incidence interferometer having a light beam generating means, a reference surface, and a test surface, said method comprising:
   a. modulating the angle of incidence of said light beam onto said reference surface; and
   b. spacing said test surface far enough from said reference surface so that said modulation of said angle of incidence of said light beam onto said reference surface changes the phase relationship between the interferring beam reflected from said test surface and the reference beam reflected from said reference surface substantially more than it changes the sensitivity of said interferometer to surface variations between said reference and test surfaces.

4,325,638

ELECTRO-OPTICAL DISTANCE MEASURING APPARATUS

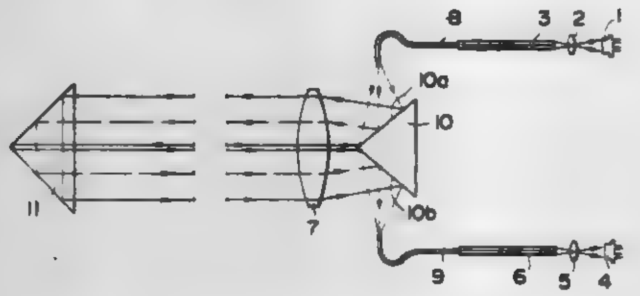
Harumi Takeda; Kiichi Furuya; Susumu Takahashi, and Hiroshi Tamaki, all of Tokyo, Japan, assignors to Tokyo Kogaku Kikai Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 21, 1980, Ser. No. 142,229

Claims priority, application Japan, Apr. 27, 1979, 54-52238

Int. Cl.³ G01B ***11/14;*** **G02B** ***5/17***

U.S. Cl. 356—375 3 Claims



1. A distance measuring apparatus comprising objective lens means having a focal point and at least one photoelectric light-emitting element, optical fiber means between said objective lens means and said photoelectric element and comprising at least one first optical fiber having one end arranged to receive a light beam from said light-emitting element and at least one second optical fiber having one end which is an end abutting relationship with the other end of the first optical fiber so that light is transmitted between said first and second optical fibers, said first optical fiber being at said other end larger in area than said one end of the second optical fiber so that the light beam transmitted through the first optical fiber is partially prevented from entering the second optical fiber, the other end of said second optical fiber being at said focal point of the objective lens means so that the light beam which has passed through the second optical fiber and the objective lens means is emitted in the form of a parallel light beam, light receiving means arranged to receive the light beam which has been projected from the objective lens means and reflected by a reflector located at a measuring point.

4,325,639

METHOD FOR MEASURING DISTANCES AND APPARATUS FOR PERFORMING THE METHOD

Hans Richter, Augsburg, Fed. Rep. of Germany, assignor to H. A. Schlatter AG, Schlieren, Switzerland

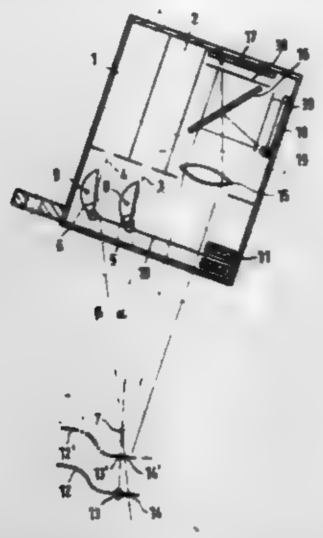
Filed Feb. 4, 1980, Ser. No. 117,994

Int. Cl.³ G01B ***11/24***

U.S. Cl. 356—376 11 Claims

1. A method for measuring distances and for determining the three-dimensional contour of a workpiece comprising directing two light beams of different wavelengths onto the workpiece, pivoting the beams in their common plane, pivoting the common plane around an axis which is common to said plane, measuring the angles of inclination of the lightpoints produced

by the beams on the workpiece surface in the different wavelengths, determining the position of the image of each light



point and calculating the distances and the contour using the angles of inclination and the positions of the images.

4,325,640

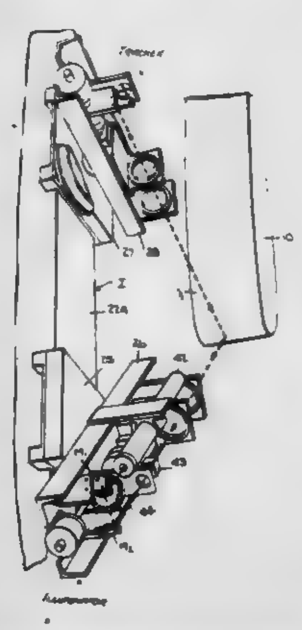
ELECTRO-OPTICAL TRIANGULATION RANGEFINDER FOR CONTOUR MEASUREMENT

Marc G. Dreyfus, 4 Arnold St., Old Greenwich, Conn. 06870, and Arnold Pellman, 30 Colony Ct., Stamford, Conn. 06905, assignors to Marc G. Dreyfus, Old Greenwich and Arnold Pellman, Stamford, both of, Conn.

Division of Ser. No. 14,855, Feb. 23, 1979, Pat. No. 4,226,536. This application Apr. 29, 1980, Ser. No. 144,873

Int. Cl.³ G01B ***11/24;*** **G01C** ***3/10***

U.S. Cl. 356—376 1 Claim



1. In a system for measuring the surface contour of a shaped object, a triangulation range-finder assembly comprising:
   A. a supporting beam at a position facing the surface to be measured;
   B. a light-beam illuminator pivotally mounted on said beam; said light beam being generated by a laser beam source; and a beam expander including an anamorphic lens to spread out said laser beam to create a luminous spot on said surface having a fine line formation which is parallel to the longitudinal axis of said object;
   C. an automatic tracker pivotally mounted on said beam at a point thereon spaced from the illuminator pivot point to exactly define a triangulation baseline having a known value extending between the pivot points; and said tracker having a two state readout whose output is the algebraic sum of a course angle and a fine angle tracker measurement;
   D. means to cause said illuminator to swing through a sector wherein said light beam impinges on a said surface to produce a luminous spot thereon that scans in a path extending from one edge of said object to the other and to cause said tracker in response to light reflected from said surface to follow said scanning spot, said illuminator and said tracker having counterbalanced structures to maintain fixed centroids on said beam, said system further including means operatively associated with said illuminator and said tracker to determine the changing angular values assumed thereby in the course of a tracked scan; and a computer having said baseline value stored therein and responsive to said changing angular values to compute by triangulation the changing location of said spot in the course of said tracked scan and to thereby provide a reading of the contour of said object in the path of the scan.

4,325,641

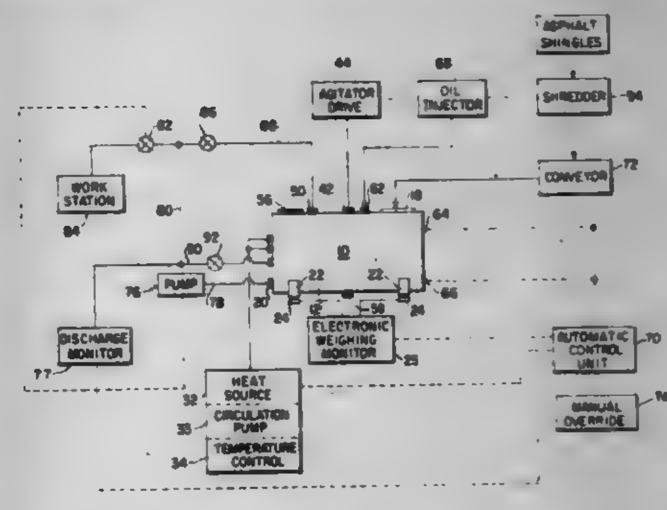
CONVERSION TANK FOR RECYCLING ASPHALTIC SHINGLE TABS

Stephen R. Babus, Cliffwood Rd., Chester, N.J. 07930, and George T. Tucker, 25 Robinhood La., Chatham, N.J. 07928, assignors to Stephen R. Babus, Chester and George T. Tucker, Chatham, both of, N.J.

Filed Nov. 8, 1979, Ser. No. 92,346

Int. Cl.³ B29C ***7/04;*** **B01F** ***15/02, 15/04, 15/06***

U.S. Cl. 366—18 23 Claims



1. An apparatus for recycling asphaltic waste material comprising:
   a. a tank having an inlet and an outlet, said inlet allowing for passage into said tank of the asphaltic waste material;
   b. means for initially injecting a predetermined amount of weight of an asphaltic oil into said tank, said asphaltic oil having a grade of penetration greater than the asphaltic content of the waste material when in a substantially liquified form;
   c. means for monitoring the weight of the contents of said tank such that a predetermined ratio of the amount by weight of asphaltic waste material to that of asphaltic oil is achieved upon selective admission of the amount of asphaltic waste material into said tank;
   d. means for heating said asphaltic oil and the asphaltic waste material within said tank to form a slurry, the asphaltic waste material being dissociated into substantially liquified asphaltic waste material and substantially solid asphaltic waste material;
   e. means for agitating said slurry within said tank so as to intermix said asphaltic oil and substantially liquified and solid asphaltic waste material; and
   f. means for discharging said slurry from said tank through said outlet.

4,325,642

STORAGE AND HOMOGENIZING TANK FOR KAOLIN SUSPENSIONS

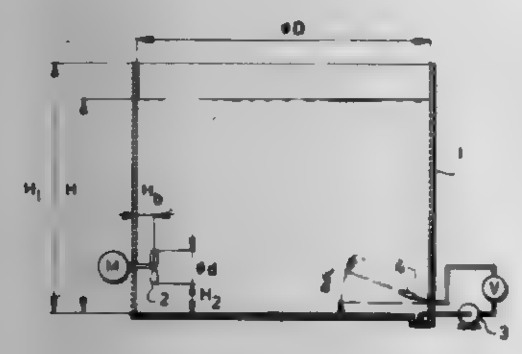
Jiri Kratky; Ivan Fort, both of Prague; Petr Havel, Pilsen; Vaclav Machacek, Pilsen; Bohuslav Masek, Pilsen, and Konstantin Hruban, Slapanice u Brna, all of Czechoslovakia, assignors to Vysoka skola chemicko-technologicka, Prague, Czechoslovakia

Filed Sep. 4, 1980, Ser. No. 184,025

Claims priority, application Czechoslovakia, Sep. 11, 1979, 6155-79

Int. Cl.^{3} B01F *15/02, 5/04*

U.S. Cl. 366—137 6 Claims



1. An arrangement for homogenizing and storing a kaolin-suspension, comprising in combination;
a storage tank having a horizontal bottom and vertical side walls;
at least one agitating device mounted on said side walls, said agitating device comprising a rotatable shaft, driving means for rotating said shaft, and an impeller blade coaxially mounted on said shaft, said impeller blade having a diameter equalling 1/5 to 1/30 of the inside diameter of said storage tank; and the blade tip velocity of said impeller blade ranging from 6 to 12 m/s.

4,325,643

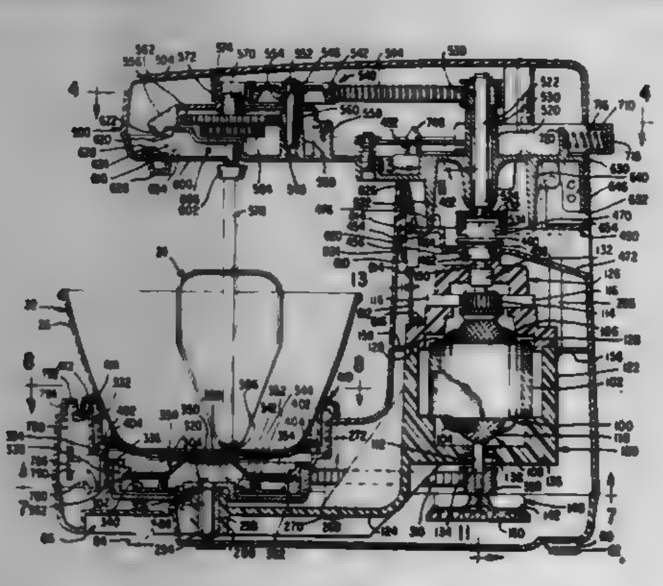
FOOD-MIXING APPARATUS COMPRISING A DRIVING UNIT AND A SEPARABLE ARM

William H. Scott, Lombard, and Mohamed K. Wagdy, Des Plaines, both of Ill., assignors to Sunbeam Corporation, Chicago, Ill.

Filed Jul. 11, 1980, Ser. No. 167,503

Int. Cl.^{3} A47J *43/044*

U.S. Cl. 366—200 16 Claims



1. In a food-mixing apparatus comprising
(a) a console, which has a transverse portion and an upright portion,
(b) a mixing bowl, which is supported on the transverse portion,
(c) a motor, which is mounted in the console,
(d) an arm, which is mounted pivotally to the upright portion, for pivotal movement through positions including a lowered position, wherein the arm extends transversely over the mixing bowl supported on the transverse portion, and a raised position,
(e) a mixing tool, which is mounted operatively to the arm,
(f) a power train, which is carried by the arm so as to be coupled to the mixing tool mounted operatively to the arm, and
(g) a coupler, which is driven by the motor, and which cooperates with the power train so as to couple the motor to the power train upon pivotal movement of the arm to the lowered position, and so as to uncouple the motor from the power train upon pivotal movement of the arm from the lowered position,
an improvement wherein the apparatus comprises
(h) a latching and pivoting mechanism, which connects the arm to the console, which comprises a first means latching automatically so as to prevent relative movement of the arm and the console, until the first means is unlatched, upon pivotal movement of the arm either to the lowered position or to the raised position, and so as to prevent relative movement of the arm and the console except for pivotal movement of the arm, until the first means is unlatched, upon pivotal movement of the arm to a pivotal position between the lowered position and the raised position, and which comprises a second means being arranged to be actuated manually and unlatching the first means when actuated manually so as to permit pivotal movement of the arm from any pivotal position, and so as to permit the arm to be removed from the console upon further movement of the arm from the raised position, in a sense opposite to pivotal movement of the arm from the raised position toward the lowered position.

4,325,644

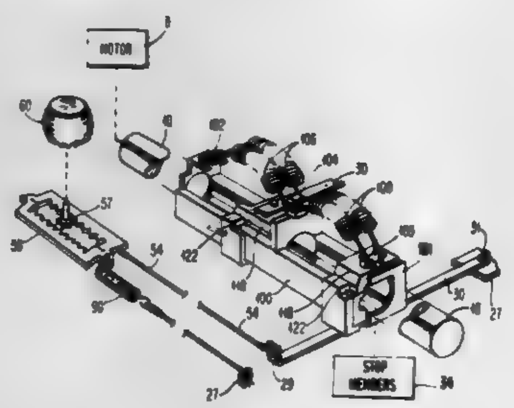
WORK EQUALIZER AND LOADING FOR A SINGLE ELEMENT PRINTER SELECTION SYSTEM

Steven A. Curry, Lexington, Ky., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 30, 1980, Ser. No. 173,589

Int. Cl.^{3} B41J *1/60*

U.S. Cl. 400—161.4 4 Claims



1. A selection system for a single print element printer comprising a frame, a print element, rack and pinion means for rotating said print element, linkage means for moving said rack with respect to said pinion, a movement multiplier arm having two ends, and connected to said linkage means at one end thereof, said multiplier arm having at the opposite end thereof a grounded pivot and connected at a point intermediate said ends to a controlled displaceable member, powered means for effecting reciprocal movement of said controlled displaceable member, at least a stop member, first spring bias means urging said controlled displaceable member into engagement with said stop member, the improvement comprising:
a second bias means urgingly engaged with said rack in the same direction of movement as said displaceable member is spring biased by said first spring bias means, whereby said second bias means increases the engagement force between said controlled displaceable member and said stop member through said multiplier arm without increasing required power of said powered means during any portion of the cycle, above the highest level of power provided to said powered means, without said improvement.

4,325,645

INKED RIBBON CARTRIDGE HAVING A GUIDE PLATE

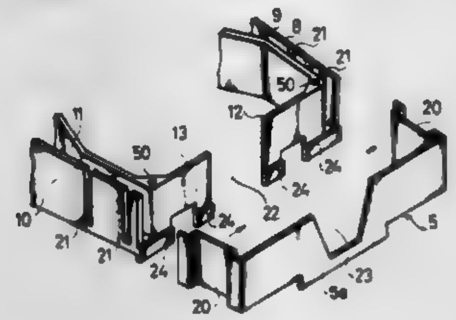
Mikio Miyajima, Nishine; Kohsaki Yanata, Morioka; Fujio Sasaki; Fumihisa Hori, both of Tamajama, and Hideki Fujimoto, Tokyo, all of Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan

Filed Jan. 23, 1980, Ser. No. 114,511

Claims priority, application Japan, Jan. 24, 1979, 54/7571

Int. Cl.^{3} B41J *33/10*

U.S. Cl. 400—196.1 8 Claims



1. An inked ribbon cartridge comprising:
a chamber containing an inked ribbon therein;
a first guide arm extending outwardly from said chamber and including an inner and outer side wall spaced from one another to define a passageway receiving ribbon leaving said chamber;
a second guide arm extending outwardly from said chamber at a location spaced from said first guide arm and including an inner and outer side wall spaced from one another to define a passageway receiving ribbon returning to said chamber; and
means extending between the outer end portions of said first and second guide arms for guiding said ribbon past a printing position while exposing said ribbon at said printing position only, said guiding means including first and second rear guide plates extending towards one another from the end portion of the respective inner side wall of said first and second guide arms and having a space therebetween defining said printing position, a front guide plate lying along said first and second rear guide plates and having an opening at said printing position, said front guide plate being formed of a resilient metallic material and having angled end portions having fastening portions thereon, and engaging means formed on the outer side wall of said first and second guide arms for receiving said fastening portions as said angled end portions are flexed towards one another and holding said angled end portions against their outward resilience whereby said ribbon may be positioned in said printing position and thereafter said front guide plate may be assembled to said first and second guide arms to simplify assembly.

4,325,646

INKRIBBON CARTRIDGE

Masao Sasaki, Tokyo, Japan, assignor to Oki Electric Industry Co., Ltd., Tokyo, Japan

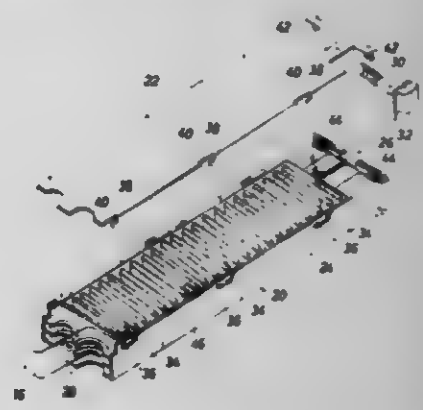
Filed Feb. 8, 1980, Ser. No. 119,831

Claims priority, application Japan, Feb. 16, 1979, 54-017731[U]

Int. Cl.^{3} B41J *32/02*

U.S. Cl. 400—196.1 3 Claims

1. In an inkribbon feed mechanism of a printer for successively feeding an inkribbon by a feeding mechanism, comprising a box member having opposite sidewalls and comprising a storing portion whose depth is substantially equal to the width of said inkribbon and has exit and inlet means for said inkribbon and a planar lid member which engages with said box member to complete the inkribbon cartridge, wherein the improvement comprises a plurality of spaced apart recesses formed in the outside of said sidewalls and extending from the top of said sidewalls downwardly and forwardly, a plurality of spaced apart projections formed between the forward portions of each



of said recesses and the top of said sidewalls and projecting above the top of said sidewalls, said planar lid member comprising a plurality of hooks extending from said lid member which are inserted into said recesses bearing against the recessed portions of said sidewalls to prevent outward deformation of said sidewall, said planar lid member further comprising a plurality of cutouts which engage with said projections to prevent inward deformation of said wall, said inkribbon cartridge maintaining its form when said box member and lid member are engaged together.

4,325,647

ELEMENT AND METHOD FOR CONNECTING CERAMIC AND METALLIC PARTS

Horst R. Maier; Axel Krauth; Hans-Juergen Pohlmann; Horst Nink, all of Selb; Helmut Brobeck, Hessheim; Ingo Cropp, Frankenthal, and Dieter Bergmeier, Heidelberg, all of Fed. Rep. of Germany, assignors to Rosenthal Technik A.G., Selb and Aktiengesellschaft Kuehnle, Kopp & Kausch, Frankenthal, both of, Fed. Rep. of Germany

Filed Nov. 23, 1979, Ser. No. 96,615

Claims priority, application Fed. Rep. of Germany, Nov. 29, 1978, 2851507

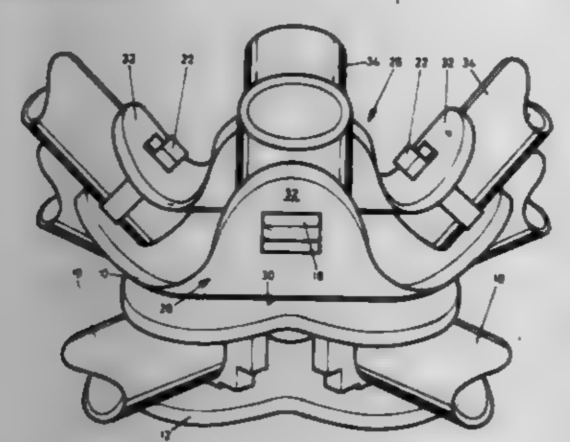
Int. Cl.^{3} F16C *9/00;* F16D *1/00;* F16G *11/00*

U.S. Cl. 403—29 13 Claims

1. An elastic connection between ceramic and metallic structural elements, comprising
a ceramic structural element;
a metallic structural element having thermal and elastic properties different from those of said ceramic structural element; and
a connecting element connecting said ceramic and metallic structural elements, said connecting element comprising an insulating resilient body of ceramic material having a thermal conductivity of between about 0.02 and 0.25 W/cmK at a temperature difference between said ceramic and metallic structural elements of from about 100 to 1500 Centigrade degrees, an elastic modulus of between about

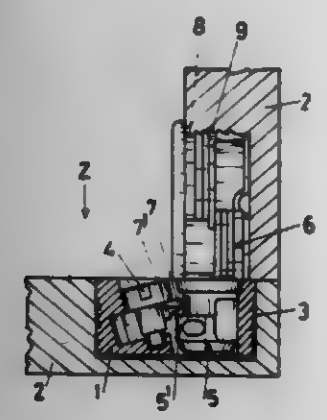
5000 and 150,000 N/mm^2 and being substantially free of plastic deformation.

4,325,648
TUBE CLAMP
Michael C. De Bliquy, Orange Grove, and Branko Nikolic, Norwood, both of South Africa, assignors to Design Research Marketing (Proprietary) Limited, Johannesburg, South Africa
Filed Mar. 17, 1980, Ser. No. 131,243
Int. Cl.^{3} F16B *1/00*
U.S. Cl. 403—218 5 Claims



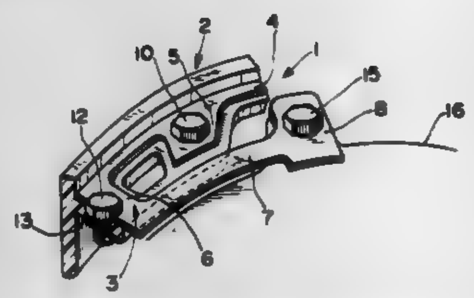
1. In a space frame, the combination of:
a node consisting of two juxtaposed clamping plates, with the ends of said frame members sandwiched between them, each said frame member terminating in a formation providing two diametrically opposed nibs projecting normally to the axis of the member, the plates including apertures for the nibs;
the end of each said frame member terminating in a collar having opposed nibs which pass through opposed apertures in the plates, and shoulders against which the plates bear; and
means to clamp the plates together.

4,325,649
JOINING DEVICE FOR CONNECTING TWO FURNITURE PARTS
Erich Röck, Höchst, Austria, assignor to Julius Blum Gesellschaft m.b.H., Höchst, Austria
Filed Mar. 10, 1980, Ser. No. 128,922
Claims priority, application Austria, Mar. 12, 1979, 1811/79
Int. Cl.^{3} B25G *3/00*
U.S. Cl. 403—231 1 Claim



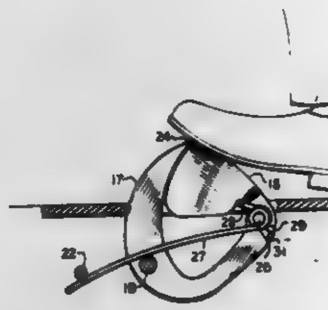
1. A joining device for connecting two flat furniture parts, said joining device comprising:
a dowel-shaped first housing adapted to be rigidly fixed within a hole in a side wall of a first flat furniture part, said first housing having therein an outwardly facing opening;
a dowel-shaped second housing adapted to be rigidly fixed within a hole in a side wall of a second flat furniture part, said second housing having a planar edge surface adapted to be in coplanar alignment with the plane of an end surface of the second flat furniture part when said second housing is fixed within the hole in the side wall of the second flat furniture part, the diameter of said first housing being equal to the diameter of the said second housing and said second housing having a stop flange at one end thereof;
a connecting pin integral with and extending outwardly from said planar edge surface of said second housing, said connecting pin extending into said opening in said first housing, said connecting pin including a projection; and
locking means rotatably mounted in said first housing for, upon rotation thereof, acting upon said projection and moving said connecting pin axially inwardly of said opening and for thereby moving the end surface of the second flat furniture part into abutment with the side wall of the first flat furniture part.

4,325,650
CONNECTION MEANS FOR COOLING FAN ASSEMBLIES
Hiroto Masai, Toyota, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan
Filed Oct. 20, 1980, Ser. No. 199,008
Claims priority, application Japan, Oct. 26, 1979, 54-149214[U]
Int. Cl.^{3} F16D *3/66*
U.S. Cl. 403—372 3 Claims



1. A connection means for a cooling fan assembly including a plate spring made of a single metal plate, said plate spring comprising an annular base, a plurality of projections extending radially inward of said base, said projections being distributed around said base, a plurality of tongues projecting radially inwardly from said base, and circumferential extensions axially resiliently deformable and each projecting from an individual one of said tongues and having an enlarged tip portion, said projections, said tongues and said tip portions being provided with holes through which bolts pass, respectively.

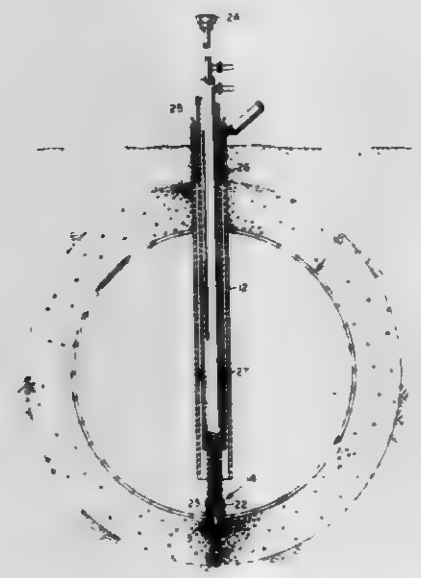
4,325,651
PROTECTED TRAFFIC CONTROLLER SPIKES
Alexander Szegi, 3915 Calle Cita, Santa Barbara, Calif. 93110
Filed Oct. 14, 1980, Ser. No. 196,214
Int. Cl.^{3} E01F *13/00*
U.S. Cl. 404—6 8 Claims



4. An assembly of a pivoted traffic control spike in an automobile roadway and a guard for the spike, comprising:

(a) a spike normally projecting above the roadway and having an upper tip;
(b) pivot means for the spike allowing rotation in one direction from a projecting position to a flattened position;
(c) means limiting rotation of the spike in the other direction;
(d) an upwardly inclined guard having an upper end disposed adjacent to the spike's upper tip;
(e) means mounting the guard on the spike for rotation relative to the spike;
(f) means for limiting the upward rotation of the guard;
(g) and spring means urging the guard to a projecting position and having a strength to support a pedestrian on the guard, but deflecting under the weight of an automobile wheel,
whereby the spike rotates in said one direction when struck by an exiting vehicle and the guard rotates toward a horizontal position when an automobile enters the other direction, to expose the spike's upper tip.

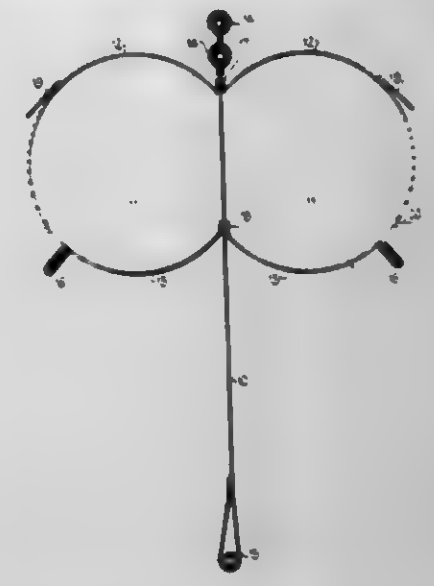
4,325,652
APPARATUS AND PROCESS FOR REPAIRING UNDERGROUND GASOLINE TANKS
John A. Kirschke, P.O. Box 125, Boerne, Tex. 78006
Division of Ser. No. 917,729, Jun. 21, 1978, Pat. No. 4,222,975. This application Apr. 7, 1980, Ser. No. 137,579
Int. Cl.^{3} B65G *5/00*
U.S. Cl. 405—57 3 Claims



1. In an apparatus for sealing and repairing underground gasoline storage tanks the subcombination of a drilling and injecting tool comprises:
a. a drill bit secured to,
b. a collar having a multiplicity of injection holes,
c. an elongated, outer pipe secured to said collar, said elongated outer pipe adapted to rotate said bit, and
d. an elongated, inner pipe positioned interior of said outer pipe,
e. at least one of the said injector holes communicating with the said outer pipe and at least one of the said injector holes communicating with the said inner pipe,
f. a first tank connected to the said outer pipe, and
g. a second tank connected to the said inner pipe.

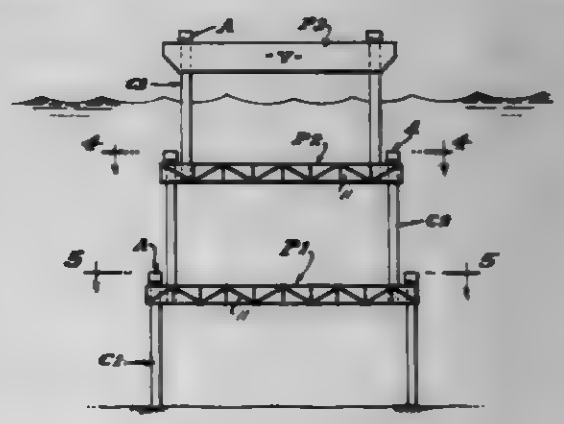
4,325,653
OIL CONTAINMENT BOOMS
Raymond G. Teasdale, Bath, England, assignor to National Research Development Corporation, London, England
Filed Jan. 10, 1979, Ser. No. 2,304
Claims priority, application United Kingdom, Jan. 12, 1978, 1318/78
Int. Cl.^{3} E02B *15/04*
U.S. Cl. 405—68 21 Claims

1. An oil containment boom comprising double side by side buoyancy chambers, a central skirt member depending upwardly and downwardly from the buoyancy chambers, and having longitudinally extending upper and lower pockets accommodating respectively and air pressurising hose member



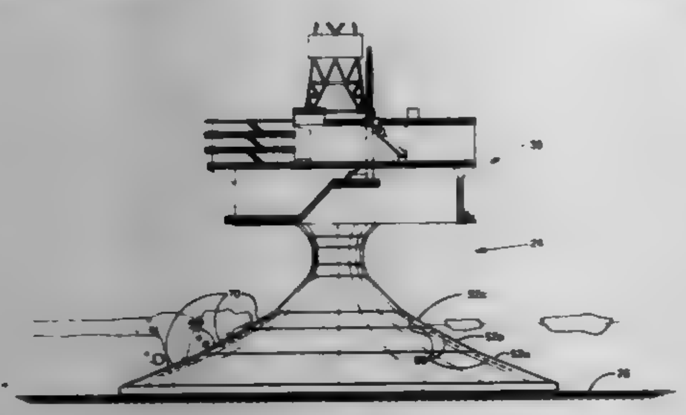
communicating internally with the interior of said side by side buoyancy chambers and a wire member extending longitudinally of the boom.

4,325,654
COLUMN SUPPORTED PLATFORM AND LIFT WITH PRESTRESSED DAMPING SYSTEM
Milton Meckler, 16348 Tupper St., Sepulveda, Calif. 91348
Filed Nov. 7, 1979, Ser. No. 92,174
Int. Cl.^{3} E02B *17/04*
U.S. Cl. 405—196 31 Claims



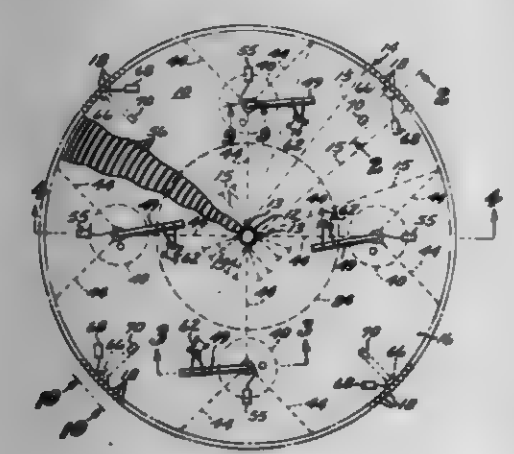
1. A self erecting column supported platform and load compensating system therefor, and including;
a vertically disposed primary structural column means adapted to be strengthened with the application of internal fluid pressure thereto,
a secondary structural member depending parallel to the primary structural column means from a load bearing header,
a platform of substantial weight to be elevated along said column,
an elevating means supporting the platform and to transport and thereby elevate the platform relative to said column means by supporting the same along said secondary structural member,
and a translator means to convert the weight force of the platform into fluid pressure applied internally of said column means to tension and thereby strengthen the same, and comprising means carrying the weight of the platform through the load bearing header of the elevating means support with the secondary structural member suspended therebetween and transfering fluid at commensurate pressure into said primary structural column means.

4,325,655
MULTIPLE SLOPE STRUCTURE
Hans O. Jahns, and Richard T. Weiss, both of Houston, Tex., assignors to Exxon Production Research Company, Houston, Tex.
Filed Jan. 16, 1980, Ser. No. 112,501
Int. Cl.³ E02B *17/00*
U.S. Cl. 405—217 9 Claims



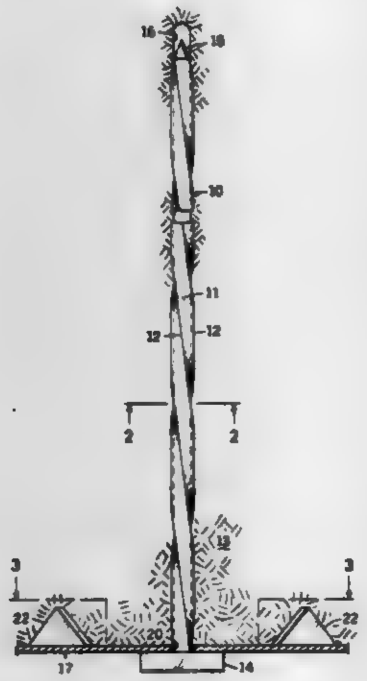
1. An offshore structure suitable for placement on the sea floor in a body of water having moving ice masses of various thicknesses, said structure comprising:
a superstructure located above the waterline for conducting working operations; and
a transportable substructure supporting said superstructure, said substructure including a foundational base, an internal frame assembly, and an inwardly and upwardly sloping outer wall to engage the ice masses, said wall having three ice-engaging wall sections with slopes arranged so that the slopes of said wall sections become progressively steeper towards the upper end of said substructure, the uppermost ice-engaging wall section having a slope not exceeding 70° to the horizontal, the middle ice-engaging wall section, adapted to lie completely below the waterline, having a slope of about 30° to the horizontal and the lowermost ice-engaging wall section having a slope of between 10° and 30° to the horizontal,
whereby thicker ice masses initially contact the middle and lowermost wall sections and thinner ice masses initially contact the uppermost and middle wall sections.

4,325,656
APPARATUS AND METHOD FOR FORMING OFF-SHORE ICE ISLAND STRUCTURE
Gilbert H. Bishop, 800 E. Ocean Blvd. Ste. 801, Long Beach, Calif. 90802
Continuation-in-part of Ser. No. 85,001, Oct. 15, 1979, abandoned. This application Jul. 14, 1980, Ser. No. 167,931
Int. Cl.³ E02D *19/04;* E02B *3/00*
U.S. Cl. 405—217 23 Claims



1. Apparatus for forming an ice island structure comprising:
a peripherally continuous, vertically oriented outer wall means defining a bounded space, at least the lowermost tier of said outer wall means including a plurality of separate, elongated buoyant elements, each having a hollow lower portion and air vent and blow means openings into said lower portion for allowing sea water to flood said lower portion to aid in vertically orienting each said element in the water, and for pressurizing said lower portion to blow said lower portion; and
means for introducing water into said bounded space for freezing by the elements whereby the mass of frozen water accumulates to form an ice island adapted to descend of its weight toward the substrate surface.

4,325,657
ROOF SUPPORT PIN
Gerald W. Elders, 38 Yakashba Estates, Prescott, Ariz. 86301
Filed Dec. 5, 1979, Ser. No. 100,449
Int. Cl.³ E21D *21/00, 20/00*
U.S. Cl. 405—259 10 Claims



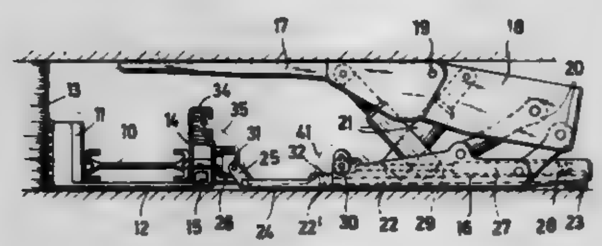
1. A roof support assembly for a roof, comprising:
(a) roof support pin including an elongate rod having a non-circular cross-section to provide corners, the rod being twisted in one direction so that the corners provide longitudinal substantially helical fins, and
(b) a roof support plate held stationary relative to the roof and provided with an aperture in which the rod is received, the aperture having a cross-section with corners that engage corners of the rod cross-section for positively turning the rod and rod corners into the roof strata as the rod is moved relatively longitudinally through the aperture.

4,325,658
SILICATE COMPOSITIONS AND USE THEREOF
Brian Baker, Middlesbrough, England, assignor to Imperial Chemical Industries Limited, London, England
Filed Nov. 21, 1979, Ser. No. 96,301
Claims priority, application United Kingdom, Nov. 30, 1978, 46639/78
Int. Cl.³ C09K *17/00;* E02D *3/12;* B28B *7/34;* C08J *3/02*
U.S. Cl. 405—264 9 Claims

1. A gelling composition which comprises:
(a) 10 to 50 wt% alkali metal silicate (as solid),
(b) 1 to 15 wt% of an ester of C_1 to C_6 monobasic alkanoic acid with C_1 to C_5 alkanol or a diester of a C_2 to C_{10} dibasic alkanoic acid with a C_1 to C_5 alkanol,
(c) 0.01 to 10 wt% of rosin, a rosin ester or salt, or a rosin acid or a rosin acid ester or salt,
(d) the balance of the composition being water.

7. A gelling composition according to claim 1 which comprises:
(a) 10 to 50 wt % sodium silicate (as solid) with a molar ratio SiO_2:Na_2O in the range 2.0 to 5.0;
(b) 1 to 15 wt % of ethyl acetate, isopropyl acetate or a mixture of the methyl and/or ethyl diesters of two or three acids selected from the group consisting of adipic, succinic and glutaric acids;
(c) 0.01 to 10 wt % rosin or an ester of rosin with a C_1 to C_5 alkanol;
(d) the balance of the composition being water.
8. A method of stabilising the ground or of sealing a surface or of forming a foundry sand mould by contacting the ground, surface or sand with a composition according to claim 7.

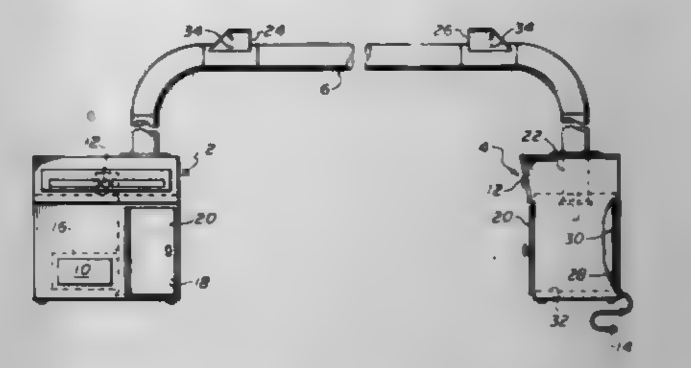
4,325,659
MINERAL MINING INSTALLATION
Lubomir Plevak, Lunen-Horstmar, and Walter Weirich, Dortmund, both of Fed. Rep. of Germany, assignors to Gewerkschaft Eisenhutte Westfalia, Lunen, Fed. Rep. of Germany
Filed Mar. 6, 1980, Ser. No. 127,768
Claims priority, application Fed. Rep. of Germany, Mar. 8, 1979, 2909165
Int. Cl.³ E21D *23/16*
U.S. Cl. 405—299 13 Claims



1. A mineral mining installation comprising a conveyor, a plurality of hydraulically-operated roof support units positioned side-by-side at one side of the conveyor, hydraulic supply lines running along said one side of the conveyor, and a plurality of elongate, flat, plate-like intermediate members positioned at said one side of the conveyor, the intermediate members each being provided with a plurality of longitudinally-extending internal bores for feeding hydraulic fluid from the supply lines to the roof support units, wherein each internal bore is provided with a port at each end thereof, one of said ports being hydraulically connected to one of said hydraulic lines by a flexible hose, the other of said ports being hydraulically connected to one of said roof support units by another flexible hydraulic hose, and wherein the ports are sockets projecting from the upper surfaces of the intermediate members.

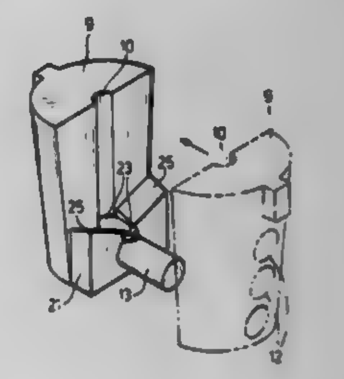
4,325,660
SINGLE LINE PRESSURE-PRESSURE PNEUMATIC TUBE SYSTEM
William W. Jones, Houston, Tex., assignor to C. K. Kelley and Sons, Inc., Houston, Tex.
Filed Feb. 26, 1980, Ser. No. 124,897
Int. Cl.³ B65G *51/08*
U.S. Cl. 406—84 4 Claims

1. A single line pneumatic tube system comprising; a first end terminal having a power unit therein; a second end terminal having a power unit therein; a single line of tubing connecting the first terminal to the second terminal; two inline valves in the tubing line, one adjacent each terminal; a carrier for travel in the tubing from one terminal to the other terminal upon pressurization of a terminal; the valve adjacent the pressurized terminal closing after passage of the carrier, while the valve adjacent the other terminal opens after the passage of the carrier whereby the pressure propelling the carrier is reduced slowing the travel of the carrier to the other terminal, wherein each inline valve is comprised of a valve body formed of a length of tubing, a longitudinal opening in the tubing, a housing positioned over the opening, an exhaust port in the top of the housing, a pivot member in the housing, a valve member pivoted on the pivot member, a seal member of the valve



member, the valve member moving to an open position as air flows in one direction and to a closed position where the seal member is in engagement with the exhaust port with air flow in the opposite direction.

4,325,661
DRILL BIT END PROTECTORS
Jack J. Tickins, R.R. 3, Caledon East, Ontario, Canada
Filed Jun. 15, 1979, Ser. No. 48,705
Int. Cl.³ B23B *31/10, 39/00, 5/22*
U.S. Cl. 408—239 A 6 Claims



1. A cutting end protector adapted to be clampingly engaged in a drill chuck for receiving a cutting end of a double ended flattened track bit in which the cutting end consists of a pair of cutting edges bordered by trailing surfaces and meeting at a cutting point, said cutting end protector comprising a thin, flat body portion which is apertured to receive a chuck pin for locating and restricting movement of the protector and which is provided with a cutting end receiving face having a central recess for receiving the cutting point of the cutting end and a pair of aligned chamfered face portions diverging outwardly and forwardly of the body portion, one on either side of the central recess, said chamfered face portions being slanted in opposing directions for fitting flushly with the cutting edge trailing surfaces.

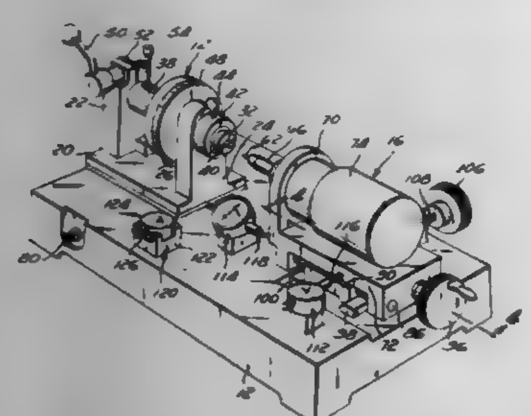
4,325,662
TUBULAR KEY CUTTING MACHINE
Mark Evans, Shavertown, Pa., assignor to Henry Barton, Dallas, Pa.
Filed Apr. 4, 1980, Ser. No. 137,517
Int. Cl.³ B23C *3/35*
U.S. Cl. 409—82 7 Claims

1. A tubular key cutting machine comprising:
a base;
first means for retaining a tubular key blank to be cut, a shaft, said first means includes a chuck fixed to said shaft, said tubular key blank being fixedly held by said chuck establishing a longitudinal center axis for said tubular key blank, a stanchion assembly, said shaft being rotatably

mounted on said stanchion assembly, said stanchion assembly being fixedly mounted on said base;

a cutter for cutting a plurality of grooves within the exterior surface of the tubular key blank, said cutter being rotatably driven by a motor, said motor being mounted on a mounting assembly, said mounting assembly being separately lineally movable along both a first direction and a second direction, said first direction being parallel to said longitudinal center axis, said second direction being perpendicular to said first direction;

measurement means for accurately determining the position of said cutter in respect to said tubular key blank along



said first and second directions, said measurement means comprising a plurality of separate dial indicator devices, each said dial indicator device being mounted between said base and said mounting assembly to thereby sense the position of said mounting assembly in respect to said base; and

said first means being pivotally mounted on said base, said first means to be located into a single key cutting position during cutting of said tubular key blank, an alignment pin and opening located between said first means and said base which matingly cooperate when said first means is in said single key cutting position.

4,325,663

ARRANGEMENT FOR CLEANING CUTTING FLUID

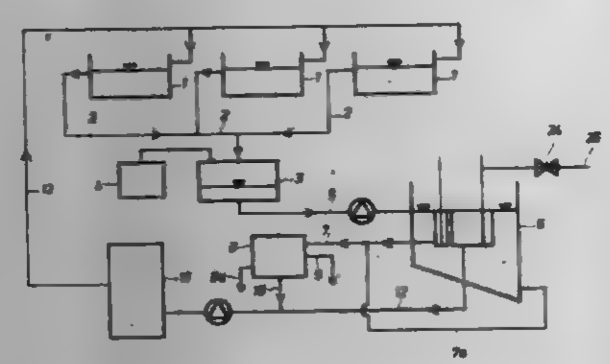
Hyosong M. Lee, Tumba, Sweden, assignor to Alfa-Laval AB, Tumba, Sweden

PCT No. PCT/SE78/00056, § 371 Date Jun. 11, 1979, § 102(e) Date Jun. 8, 1979, PCT Pub. No. WO79/00192, PCT Pub. Date Apr. 19, 1979

PCT Filed Oct. 9, 1978, Ser. No. 116,675

Int. Cl.³ B23Q *11/10*

U.S. Cl. 409—136 **7 Claims**



1. The combination of a series of collecting tanks for respective metal cutting machines, a cutting liquid in each said tank for use in metal machining, a first pipeline having inlet branches opening into said tanks in position to remove therefrom only an upper layer of cutting liquid, a container into which the outlet end of said pipeline leads, a vacuum pump connected to said container for creating a vacuum therein to draw cutting liquid from said tanks into said container, means connected to said container for receiving cutting liquid therefrom and cleaning said liquid, and a second pipeline for returning cutting liquid from said cleaning means to said collecting tanks.

4,325,664

CUTTING TOOL

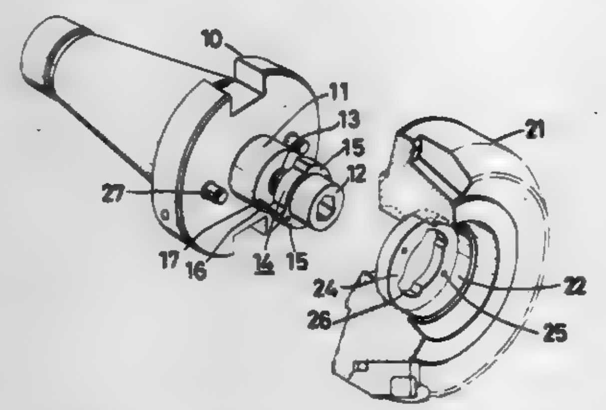
Yoshikatsu Mori, Itami, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Jun. 2, 1980, Ser. No. 155,090

Claims priority, application Japan, Jun. 30, 1979, 54-91684[U]

Int. Cl.³ B23B *31/44;* **B23C** *5/26*

U.S. Cl. 409—234 **3 Claims**



1. A cutting tool comprising an arbor head having a protuberance provided in the central part of said arbor head coaxially therewith, a bolt adapted to be screwed into said protuberance, a collar fitted on the shank of said bolt, the periphery of said collar being provided with two enlarged portions symmetrical about the axis of said collar, said collar being adapted to follow the axial movement of said bolt but not to rotate on its own axis, two guide pins, one end of each of said two guide pins being fixed to each of said two enlarged portions of said collar, the other end thereof being slidably inserted in each of two holes provided in said protuberance in parallel with the axis thereof, a cutter provided with a center hole having a shoulder midway of the depth thereof, and a ring fixed to said shoulder and provided with a hole having a shape similar to, but slightly larger than, the shape of said collar.

4,325,665

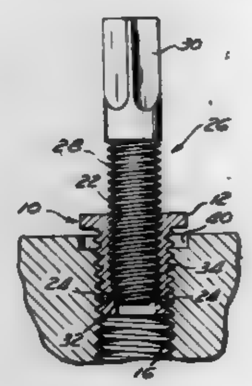
THREADED METAL INSERT

John A. Jukes, 680 Napa Court, Claremont, Calif. 91711, assignor to John A. Jukes, Claremont and George Mavriks, San Francisco, both of, Calif., a part interest

Continuation-in-part of Ser. No. 60,765, Jul. 26, 1979, abandoned. This application Mar. 17, 1980, Ser. No. 130,621

Int. Cl.³ F16B *39/22, 13/06*

U.S. Cl. 411—176 **25 Claims**



1. A self-locking threaded insert having a tubular body which is threaded into a tapped hole in a base member comprising:

an exterior of said body having threads that mate with threads of said tapped hole;

an interior of said body having a portion which is threaded and a portion which is incompletely threaded; and

means for locking said insert to the walls of said hole, said locking means being discrete from said insert and positioned in the exterior of said insert outwardly from the incompletely threaded interior portion, so that said locking means will be forced outwardly to engage the wall of said hole when said incompletely threaded interior portion is threaded while in said hole.

4,325,666

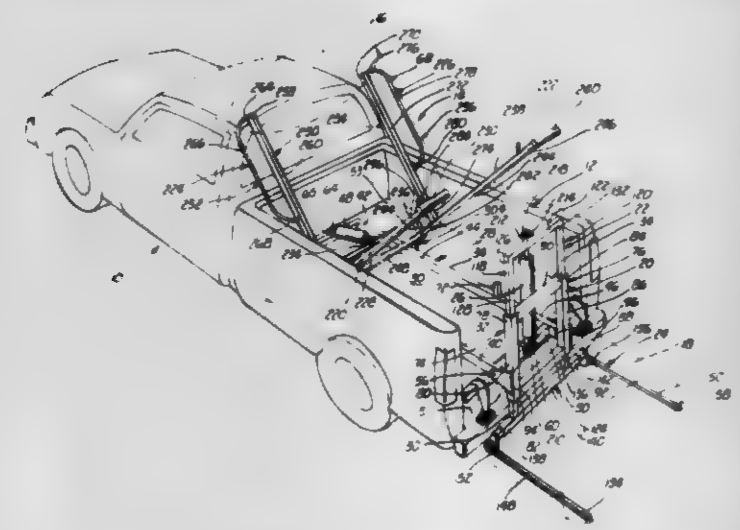
MATERIALS HANDLING DEVICE

Franklin O. Chain, Rte. 1, Box 40, and John P. Myers, Box 193, both of Oakwood, Okla. 73568

Filed May 5, 1980, Ser. No. 146,451

Int. Cl.³ A01D *87/12;* **B60P** *1/34*

U.S. Cl. 414—24.5 **51 Claims**



1. A materials handling device for selectively loading and unloading material on a support structure, the materials handling device adapted for mounting on the support structure and comprising:

a housing assembly pivotally connected to the support structure and disposed substantially adjacent one edge portion of the support structure, the housing assembly movable between a first position wherein the housing assembly is substantially vertically disposed and a second position wherein the housing assembly is substantially horizontally disposed on the support structure;

a frame having a first end portion and a second end portion, the frame slidably positioned within the housing assembly and movable between a vertically lowered position and a vertically raised position;

material engaging means mounted on the first end portion of the frame for engaging and supporting the material as same is selectively loaded and unloaded from the support structure, the material engaging means mounted on the first end portion of the frame so as to extend in a direction away from the support structure; and

frame and housing actuator means for selectively moving the frame between the vertically lowered position and the vertically raised position and for selectively moving the housing assembly between the vertically disposed first position and the horizontally disposed second position, the actuator means disposed between and pivotally connected to the support structure and to the second end portion of the frame such that upon activation of the actuator means, when the frame is in the vertically lowered position and the housing assembly is in the first position the frame is movable between the vertically lowered position and the vertically raised position and continued activation of the actuator means selectively moves the housing assembly between the first position and the second position.

4,325,667

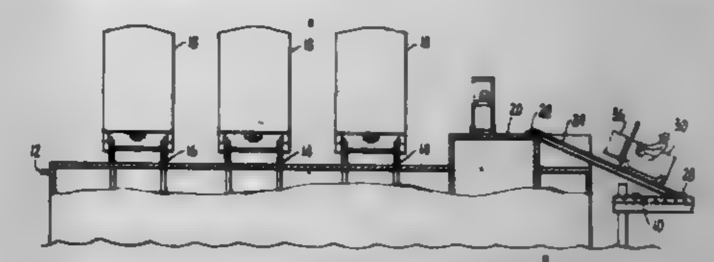
FREIGHT HANDLING MEANS

James W. Freeman, San Pablo, Calif., assignor to Naylor, Neal & Uilkema, San Francisco, Calif., a part interest

Division of Ser. No. 690,978, May 28, 1976, Pat. No. 4,055,265. This application Aug. 10, 1977, Ser. No. 823,276

Int. Cl.³ B65G *63/00*

U.S. Cl. 414—139 **3 Claims**



1. A railroad car carrier vessel comprising a rail deck and a loading deck, said rail deck having rails to support at least one row of freight cars, said loading deck being disposed at substantially the level of the freight-supporting floors of said cars and extending for substantially the length of said rails, ramp means to connect said loading deck with a dock to enable freight carrier vehicles to move from said dock onto said deck, and runway means to connect said loading deck with said floors of said cars to enable said vehicles to move from said loading deck onto said floors.

4,325,668

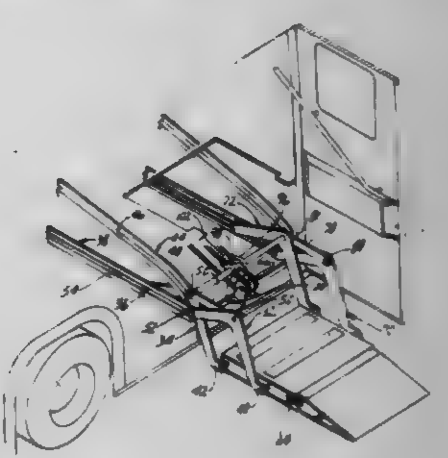
POWERED PLATFORM LIFT SYSTEM FOR PERSONS IN WHEELCHAIRS

Ernest L. Julian, Tustin, and Phyllis S. Gaylard, Huntington Beach, both of Calif., assignors to Pinetree Service Corporation, Westminister, Calif.

Filed Sep. 18, 1978, Ser. No. 943,477

Int. Cl.³ B60P *1/00*

U.S. Cl. 414—546 **7 Claims**



1. A wheelchair lifting system comprising:

a housing including means for supporting wheelchairs therein;

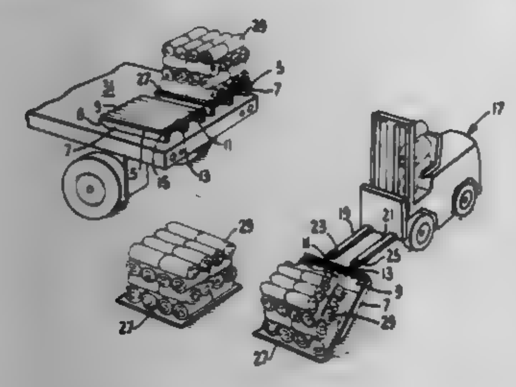
guide means for the lifting system, said guide means including two pairs of tracks mounted in and secured to the housing, each pair of said tracks including a horizontal track and an arcuate track curving downwardly, each of said arcuate tracks being positioned above the horizontal track of its respective pair;

a support linkage for the lifting system mounted on the tracks of the guide means, the said linkage including two pairs of opposed, horizontally, spaced apart generally right-angle-shaped support arms and a linking bar disposed parallel to and extending between each pair of arms, said support arms defining upper and lower extremities and a knee at the location of the right angle;

a wheelchair platform mounted on and pivotally secured between the respective pairs of linking bars and support arms at the upper extremities thereof;

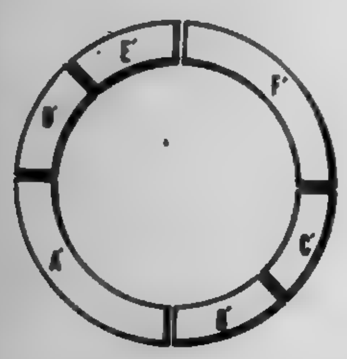
a roller attached to the exterior side of the knee and the lower extremities of each of the support arms, said rollers on said extremities being mounted on the horizontal tracks of the guide means and said rollers on said knees being mounted on the arcuate tracks of the guide means;
chocking means located on the wheelchair platform for bracing the wheels of a wheelchair placed on said platform; and
drive means for extending and retracting the support linkage and the platform relative to said housing whereby said platform moves in an outward and downward motion during extension and in the reverse of said motion during retraction.

4,325,669
PALLET LOADING AND UNLOADING METHOD
George Schafer, 845 White Rd., Watsonville, Calif. 95076
Filed Aug. 4, 1980, Ser. No. 175,311
Int. Cl.³ B66F *9/00*
U.S. Cl. 414—786 3 Claims



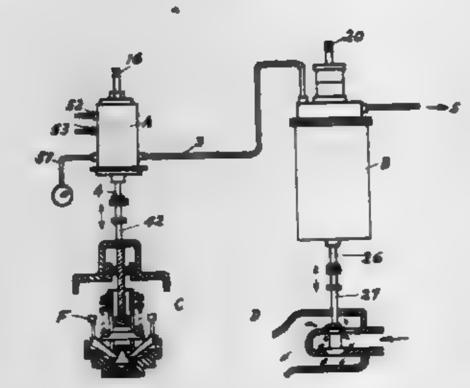
1. The method of loading and unloading a pallet comprising:
a. providing a pallet having a low friction bearing surface,
b. said pallet having fastening means at one end thereof,
c. placing a thin tough plastic sheet on the bearing surface of said pallet,
d. placing a load on said plastic sheet,
e. engaging said fastening means and raising one end of said pallet,
f. moving said pallet in the direction of said fastening means whereby,
g. said load and said plastic sheet slide off said pallet, assisted by gravity allowing said pallet to be retrieved to reuse.

4,325,670
METHOD FOR ADMITTING STEAM INTO A STEAM TURBINE
George J. Silvestri, Jr., Upper Chichester, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Aug. 27, 1980, Ser. No. 181,566
Int. Cl.³ F01D *17/18*
U.S. Cl. 415—1 1 Claim



1. A method for incrementally admitting steam into a steam turbine through at least first and second nozzle chambers wherein said second nozzle chamber is larger than the said first nozzle chamber, said method comprising:
increasingly activating the first nozzle chamber with increasing load on the turbine;
increasingly activating the second nozzle chamber with increasing load on the turbine after the first nozzle chamber has been completely activated;
increasingly deactivating the first nozzle chamber during increasing activation of the second nozzle chamber, the deactivation of said first nozzle chamber being initiated when the steam flow rate through the second nozzle chamber is less than the maximum steam flow rate therethrough at complete activation by a flow rate equal to the steam flow rate through the first nozzle chamber during complete activation thereof;
increasingly reactivating the first nozzle chamber after it has been completely deactivated and the second nozzle chamber has been completely activated.

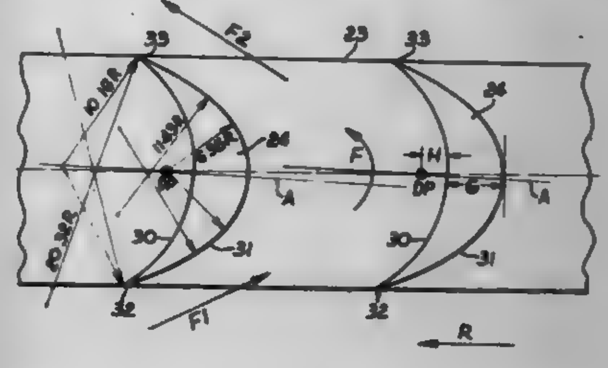
4,325,671
SIGNAL WAVE LOADED PRESSURE OIL REMOTE CONTROLLER AND GOVERNOR
Nei-Ho Chiang, Kaohsiung, Taiwan, assignor to Yin-Lung Yang, Kaohsiung, Taiwan, a part interest
Filed Oct. 30, 1978, Ser. No. 956,188
Int. Cl.³ B23B *39/16*
U.S. Cl. 415—43 1 Claim



1. An engine speed governor for use on a steam turbo-generator, comprising:
a steam turbo-generator engine crankshaft speed measuring device,
a transmitter for converting axial movement of the speed measuring device into a signal wave oil pressure and transmitting oil pressure from the steam turbo-generator engine lubricating system through a pressure reducing valve of any known type as a base pressure to combine with said signal wave oil pressure as a working pressure for the present invention, comprising:
a cylindrical body having four ports on the side wall of the cylindrical body, said ports are connected by means of tubings to an oil pressure indicator, a return to the said lubricating system, a pressure line from the said lubricating system through said pressure reducing valve which is in between the transmitter and the steam turbo-generator engine lubricating system, and a pressure line to a receiver respectively,
a control valve consisting of two pistons axially spaced apart and fixedly connected together by a short central rod, said piston one above the other are axially movable in the cylindrical body dividing the cylindrical body into three chambers, the upper, the middle and the lowest chambers, oil passages provided on the lower one of the said piston communicating the lowest chamber to the middle chamber of the cylindrical body,
a spring means acting on the bottom face of the lower piston, other end of the spring being seated on a stem wich is mechanically connected to the said steam turbo-generator engine crank shaft speed measuring device,
two concentrical springs means are provided thereon the top face of the upper piston, the inner one of the two springs being adjustable to vary the base pressure by an adjusting screw which is protruded from the top center of the cylindrical body,
means for moving the piston of the control valve to a balanced position by said springs on the top face of the upper piston against the oil pressure in the lowest chamber of the cylindrical body plus the spring tension on the bottom face of the lower piston which is compressed by axially movement of the speed measuring device, at the moment of this balanced condition said port connecting to the return line and the other port connecting to the pressure line from the pressure reducing valve are both shut off by the pistons of the control valve simultaneously,
means for converting the axial movement of the speed measuring device into oil pressure by changing the balance force on the pistons of the control valve, the more compression of the spring on the bottom face of the lower piston by the axial movement of the speed measuring device, the less oil pressure in the lowest chamber of the cylindrical body of the transmitter will be transmitted to the receiver,
a steam turbo-generator engine main control valve for either increasing or decreasing of steam pressure to the steam turbo-generator engine,
a receiver for use to convert said working pressure from the transmitter into axially movement of a spindle to actuate the engine main control valve, the receiver is also used to provide a feed back motion to bring the control valve of the transmitter to its neutral balanced position hydraulically, comprising:
a cylindrical body having a top cover, two ports on the top cover are connected by means of tubings, one of them leading the oil pressure from the lowest chamber of the cylindrical body of the transmitter, the other one being connected to a return line to the said lubrication system,
a power piston axially movable in the cylindrical body of the receiver being fixedly connected with a spindle to the engine main control valve,
a pilot valve consisting of four pistons axially spaced apart being axially movable in the power piston,
oil passages drilled in the power piston and in the pilot valve for directing the oil pressure from the transmitter to the bottom end of the power piston as the pressure is increased from the lowest chamber of the transmitter which occurs when the speed of the steam turbo-generator engine drops, this movement results in the power piston moving up to open the engine main control valve and bringing back the engine speed, vice versa,
spring means provided between the piston and the pilot valve, and between the power piston and the top cover, a conical spring on the top of the pilot valve being adjustable by an adjusting pin which is protrude from the center of the top cover for speed drop adjustment,
means provide in the receiver to give a feed back action to the transmitter by the said springs and said oil passages hydraulically.

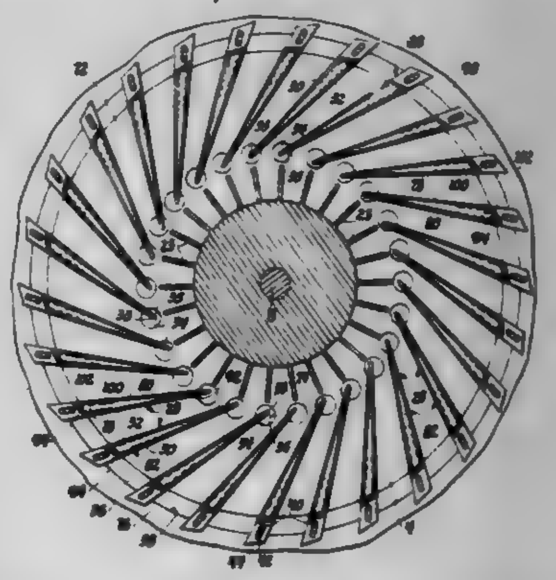
4,325,672
REGENERATIVE TURBO MACHINE
Herbert Sixsmith, Oxford, and Robert E. Poole, Wilby, England, assignors to The Utile Engineering Company Limited, Northamptonshire, England
Filed Dec. 11, 1979, Ser. No. 102,578
Claims priority, application United Kingdom, Dec. 15, 1978, 48621/78
Int. Cl.³ F04D *5/00*
U.S. Cl. 415—53 T 18 Claims

1. A fluid dynamic machine including a rotor; a peripheral part of which is provided with a set of blades, and a stator including structure defining an annular channel accommodating said peripheral part, the walls of said channel being spaced from the set of blades to form a continuous toroidal passage extending angularly around a major portion of said periphery between inlet and outlet ports of the stator and the remaining angular extent of said channel having minimum clearance about said blades, said blades having a concave face leading in the direction of operative rotation of the rotor and a convex trailing face of substantially greater overall curvature than that of said leading face to provide each blade with an aerofoil cross-section, the curvature of said faces causing fluid flow passing between the blades to be subjected to a change of direction through a turning angle of at least 100° measured from entry of said flow between entry tips of a pair of adjacent



blades at an angle mid-way between tangents to the curvature at said entry tips of the convex trailing face of the leading one of the pair and of the concave leading face of the trailing blade respectively to exit of said flow between exit tips of said pair at an angle mid-way between like tangents to the curvature of the respective blade faces at said exit tips, fluid transmitted through said toroidal passage co-acting with said blades to follow a substantially spiral path passage through the set of blades more than once as the rotor rotates in use.

4,325,673
VARIABLE VANE SEAL
Beauford C. Hall, Jr., Clermont, Ind., assignor to General Motors Corporation, Detroit, Mich.
Filed Mar. 10, 1980, Ser. No. 129,042
Int. Cl.³ F04D *29/08*
U.S. Cl. 415—113 4 Claims



1. In a variable configuration diffuser for a gas compressor having means for forming spaced diffuser walls defining a diffuser region having an entrance and an exit for diffusion of flow from a compressor rotor to an outlet and an annular cascade of variable vanes with each of the vanes extending between said walls and including a leading edge adjacent the entrance to the diffuser region and a trailing portion adjacent the exit therefrom and means for positioning each of said vanes in a variable relationship with respect to said diffuser region the improvement comprising: means forming a space in each of said vanes having side openings therefrom, an inflatable member located within said space, said inflatable member having spaced walls located in spaced relationship with respect to the

inner surface of the diffuser walls to reduce vane drag during adjustment of said vanes with respect to the diffuser region to control the ratio of flow area at the diffuser entrance to the flow area at the diffuser exit, and means for inflating said inflatable member to cause the spaced walls thereof to be biased into sealed engagement with the spaced diffuser walls within the diffuser region thereby to prevent leakage from the pressure-to-suction side of each of the vanes.

4,325,674

WIND TURBINE OF CROSS-FLOW TYPE

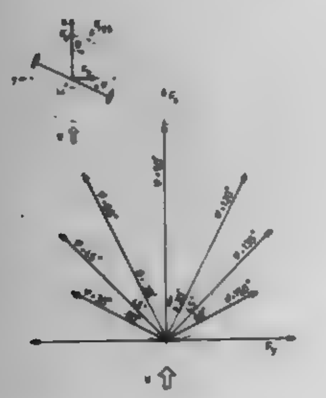
Olle Ljungström, Sälgstigen 12, S-181 62 Lidingö, Sverige, Sweden

Filed Oct. 5, 1979, Ser. No. 82,051

Claims priority, application Sweden, Oct. 6, 1978, 7810503

Int. Cl.³ F03D *3/06*

U.S. Cl. 416—19 **4 Claims**



1. In a wind turbine of the cross flow type including a rotor shaft and vanes mounted to said rotor shaft,
the improvement comprising:
only two vanes being mounted to said rotor shaft,
each of said only two vanes being mounted to said rotor shaft so that each vane extends from said rotor shaft in a direction that is substantially perpendicular to the direction from which the other vane extends from said rotor shaft.

4,325,675

BLADE PROFILE FOR ROTARY WING OF AN AIRCRAFT

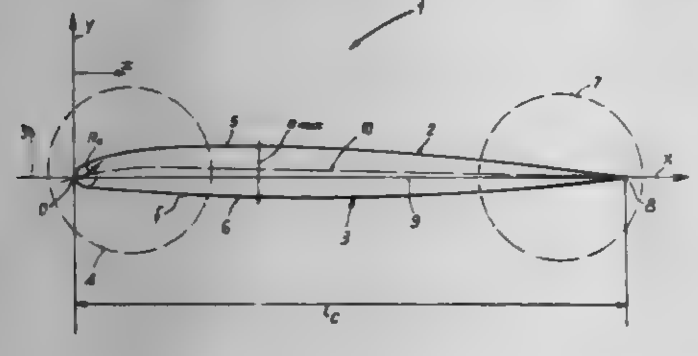
Jacques Gallot, Sausset les Pins; Georges Vingut, Marseilles; Michel V. de Paul, Senlis, and Jean-Jacques Thibert, Verriere-le Buisson, all of France, assignors to Societe Nationale Industrielle Aerospatiale, Paris and Office National d'Etudes etc., Chatillon, both of, France

Filed Dec. 5, 1979, Ser. No. 100,350

Claims priority, application France, Aug. 10, 1979, 7920454

Int. Cl.³ B64C *27/46, 3/14*

U.S. Cl. 416—223 R . **9 Claims**



1. A blade profile for rotary wing of an aircraft, comprising between the leading edge and the trailing edge, a convex upper surface and a non-concave lower surface, wherein at the point of maximum curvature of the leading edge, the radius of curvature Ro is approximately defined by the expression $Ro = 1.7\ C.\ e_{max}^2$, in which C represents the chord and e_{max} the maximum relative thickness of said profile, and the portion of lower surface adjacent said leading edge comprises a first lower surface zone immediately adjacent the leading edge and extending to a few percent of the chord C, in which the curvature decreases rapidly in the direction of the trailing edge and a second lower surface zone prolonging the first and extending up to about 20% of the chord from said leading edge, this second lower surface zone having a very small general curvature decreasing continuously in the direction of the trailing edge up to the point of minimum curvature of the lower surface which is located at the end of said second zone.

4,325,676

LIQUID FUEL PUMPING APPARATUS

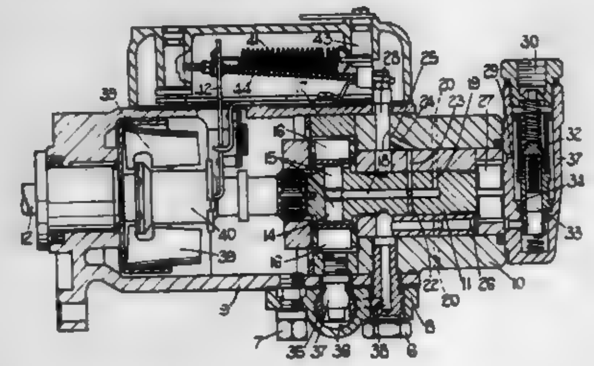
Ivor Fenne, Greenford, and Richard J. Andrews, Guildford, both of England, assignors to Lucas Industries Limited, Birmingham, England

Filed Nov. 28, 1979, Ser. No. 98,043

Claims priority, application United Kingdom, Jan. 16, 1979, 01595/79

Int. Cl.³ F04B *23/10, 23/12*

U.S. Cl. 417—206 **6 Claims**



1. A fuel pumping apparatus for supplying fuel to an internal combustion engine and of the kind comprising a housing, a distributor member rotatable within the housing, an injection pump including a rotary part rotatable with the distributor member, a bore formed in said rotary part, a pumping plunger located in said bore, a cam ring located in the housing, said cam ring having spaced cam lobes which can impart inward movement to the plunger as the rotary part and distributor member rotate, a plurality of outlet ports formed in the housing and which in use, are connected to fuel injection nozzles respectively of an associated engine, a delivery passage in the distributor member, said delivery passage communicating with said bore and being positioned to register with the outlet ports in turn during successive periods of inward movement of the plunger, fuel supply means in the housing and distributor member through which fuel can flow to said bore at least during part of the time the delivery passage is out of register with an outlet port, said fuel supply means including a supply passage in the housing, a source of fuel under pressure for supplying fuel to said supply passage, throttle means for controlling the flow of fuel through said supply passage and means operable in association with said throttle means for allowing the bore to be vented to a low pressure when the throttle means is set to prevent fuel flow from said source to the bore.

4,325,677

ARRANGEMENT FOR THE REGULATION OF THE OUTPUT AND FOR LIMITING THE OUTPUT FLUID PRESSURE OF AN ADJUSTABLE PUMP

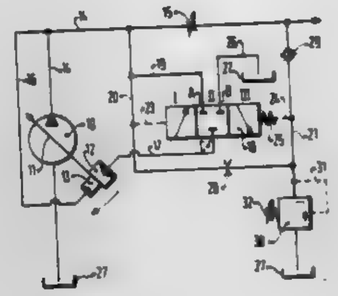
Gerhard Nonnenmacher, Korntal, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Aug. 29, 1979, Ser. No. 70,884

Claims priority, application Fed. Rep. of Germany, Sep. 19, 1978, 2840687

Int. Cl.³ F04B *49/00*

U.S. Cl. 417—218 **5 Claims**



1. A control arrangement for regulation of the output flow and output pressure of a working fluid delivered by an adjustable pump having an outlet end and an adjusting member, comprising actuating means coupled to said adjusting member for adjusting the delivery of the pump; an outlet conduit connected to said outlet end; a first throttle in said outlet conduit; a branch conduit connected to said outlet conduit upstream of said first throttle; a second throttle in said branch conduit; a one-way valve connecting said branch conduit downstream of said second throttle to said outlet conduit downstream of said first throttle; a fluid flow regulating valve having ports connected for controlling said actuating means by working fluid upstream of said first throttle, said regulating valve being biased at one end thereof by a biasing spring and attacked at the other end thereof by a differential pressure resulting in said branch conduit upstream of said first and second throttles; a normally closed overpressure control valve connected between said branch conduit downstream of said second throttle and a tank, said overpressure control valve cooperating with said one-way valve to open the same in response to a pressure increase downstream of said second throttle; said regulating valve being a three port-three position valve movable in response to said differential pressure from a neutral position to two working positions located to opposite sides of said neutral position; said actuating means including at least one piston-and-cylinder means operatively connected to said adjusting member of said pump tending to move it in one direction for changing the output of the pump, and means counteracting said one cylinder-and-piston means, said regulating valve in said neutral position preventing flow of fluid into and out from said one cylinder-and-piston means, and connecting in one of said working positions said one cylinder-and-piston means to a tank so that said counteracting means moves said adjusting member in unloading direction, and connecting in the other working position said cylinder-and-piston means to said outlet conduit upstream of said first throttle so as to move said adjusting member against said counteracting means in a loading direction; and wherein one control conduit connects said branch conduit upstream of said second throttle to said other end of said regulating valve, and another control conduit connects said branch conduit downstream of said second throttle to said spring-biased one end of said regulating valve.

4,325,678

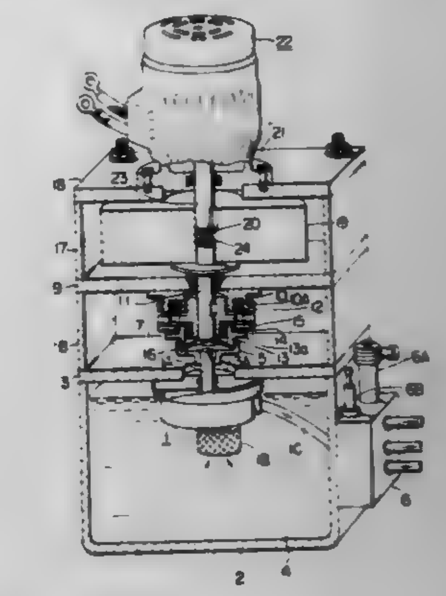
HYDRAULIC PRESSURE PRODUCING SYSTEM FOR A HYDRAULIC PRESS

Hisanobu Kanamaru, Katsuta; Moisei Okabe, Tokyo; Akira Tohkairin, Katsuta; Hideo Tatsumi, Mito, and Takuzo Kurosawa, Hitachi, all of Japan, assignors to Hitachi, Ltd. and Kawamura Co., Ltd., both of Tokyo, Japan

Filed Dec. 12, 1979, Ser. No. 102,844

Int. Cl.³ F04B *21/00*

U.S. Cl. 417—313 **4 Claims**



1. A hydraulic pressure producing system for a hydraulic press comprising:
a rotary pump for producing hydraulic pressure having a suction port opening in a liquid within a liquid tank, and a rotary shaft arranged to rotate about an axis perpendicular to the liquid level in the liquid tank;
first support means having said rotary pump secured thereto in a manner to allow said rotary shaft to extend upwardly therethrough;
a clutch rotary shaft journaled for rotation about the same axis as the pump rotary shaft by second support means secured in place in spaced-apart relation to said first support means;
clutch means interposed between said clutch rotary shaft and said rotary shaft of said rotary pump and operative to be engaged and disengaged electromagnetically;
a motor secured in upright position to upper support means located in spaced-apart relation to said second support means, said motor having an output shaft that is rotatable about said axis; and
a flywheel mounted between said output shaft of said motor and said clutch rotary shaft.

4,325,679

OIL PUMP FOR HERMETIC COMPRESSOR

Roger W. Smith, Grove City, Ohio, assignor to White Consolidated Industries, Inc., Clevleand, Ohio

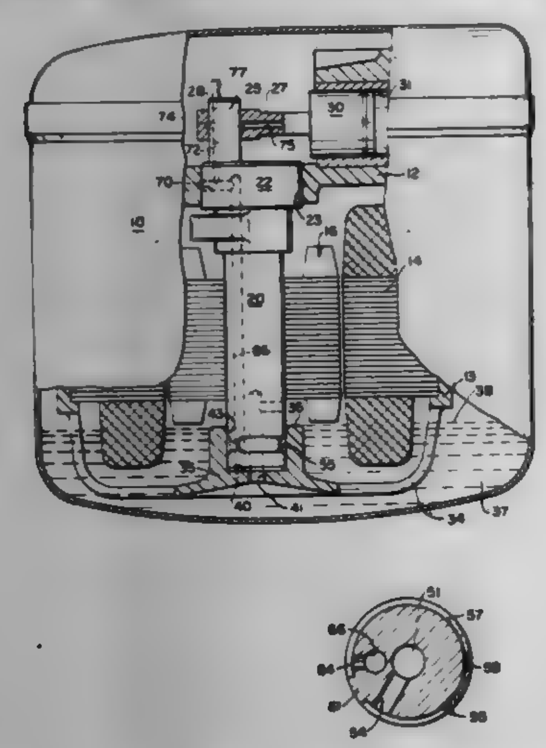
Filed Jul. 22, 1980, Ser. No. 171,195

Int. Cl.³ F04B *39/02*

U.S. Cl. 417—372 **6 Claims**

1. A hermetic refrigeration compressor comprising a case, a motor compressor unit inside said case and a body of lubricating oil in the bottom of said case defining an upper surface, said unit including a motor having a crankshaft rotatable about a vertical axis, said unit including a bearing member at the lower end of said crankshaft below said oil upper surface, said bearing member including a thrust surface normal to said axis, said crankshaft having an end surface engaging said thrust surface, said bearing member having a cylindrical surface extending upward from said thrust surface coaxially with said vertical axis, said crankshaft having a cylindrical journal surface in close bearing contact with said bearing cylindrical surface, said bearing member having a vertical axially positioned bore to

conduct oil to said crankshaft end surface, said crankshaft having an axial bore in communication with said bearing member bore, said crankshaft having a first radial passage communicating at its inner end with said vertical axial bore and at its outer end with said crankshaft cylindrical bearing surface, said crankshaft cylindrical bearing surface having a partial annular groove extending from said first radial passage in a direction opposite the direction of rotation of said crankshaft partially around said cylindrical bearing surface, the opposite ends of said annular groove being spaced apart by a portion of said crankshaft cylindrical bearing surface, said crankshaft having a second bore therein parallel to the said axis and spaced therefrom to communicate with the upper end of said crankshaft, said crankshaft having a second radial bore extending from the

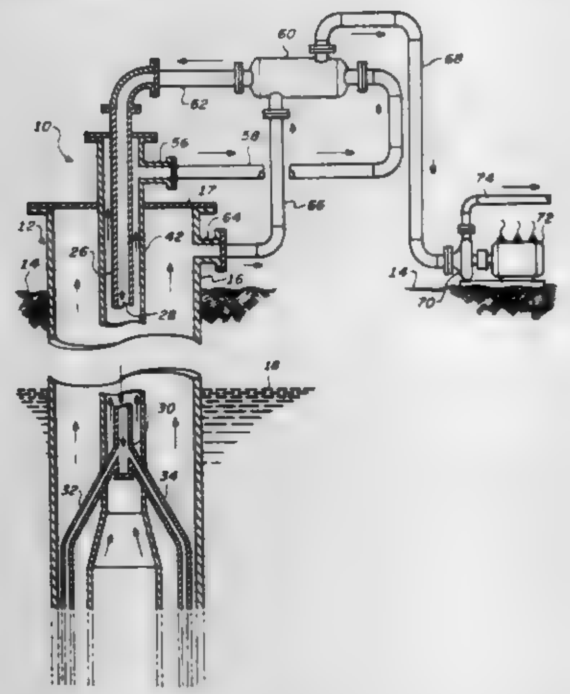


other end of said annular groove away from said first radial bore and communicating at its inner end to said second crankshaft bore, said second radial passage having a shorter length than said first radial passage, whereby oil entering said first axial bore passes upward and radially outward through said first radial passage to said partial annular groove to produce a first stage pumping as a result of centrifugal force, said oil passing around said annular groove whereby the friction between said annular groove and said bearing cylindrical surface provides increased pumping force on said oil, said oil passing inward from said other end of said partial annular groove through said second radial passage to said second vertical bore and upward in said second bore to the upper portion of said crankshaft.

4,325,680
VALVE SYSTEM FOR ENCAPSULATED MOTOR-COMPRESSOR UNITS
Alfredo Bar, Pavia, Italy, assignor to NECCHI Societa per Azioni, Pavia, Italy
Filed Dec. 9, 1980, Ser. No. 214,767
Claims priority, application Italy, Jan. 23, 1980, 42902 A/80
Int. Cl.³ F16K *15/14*
U.S. Cl. 417—569 1 Claim

1. A valve sytem for encapsulated motor-compressor units comprising a cylinder, a piston moving with reciprocating motion in said cylinder, a valve plate which upperly closes said cylinder, a head fixed on to said valve plate, said valve plate defining therein two delivery ports having cross-sections of different size, and a delivery valve positioned over said delivery ports, said delivery valve comprising two pins attached to said valve plate, two laminae, a stop plate for said laminae, a crosspiece and retention spring, said laminae, stopplate, crosspiece, and retention spring being retained by said pins, said two delivery ports creating an asymmetric elastic deformation which favors gradual impact of said valve against said valve plate at the end of the compression cycle.

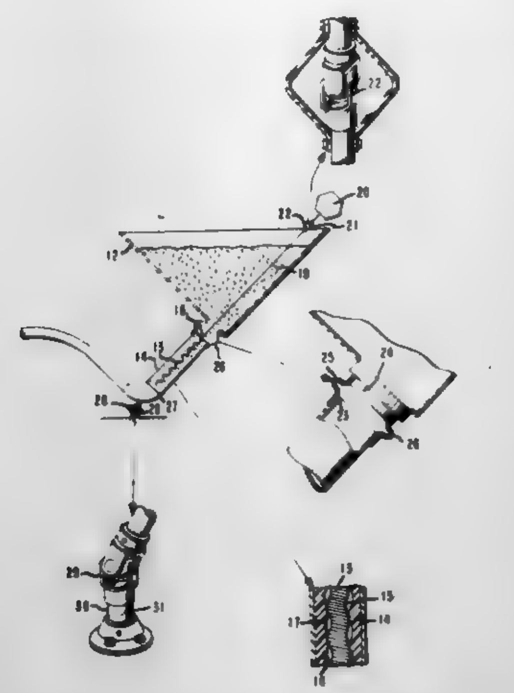
4,325,681
GEOTHERMAL IRRIGATION PUMP
Hugh B. Matthews, Worcester, Mass., assignor to Sperry Corporation, New York, N.Y.
Filed Mar. 17, 1980, Ser. No. 130,952
Int. Cl.³ F03G *7/00*
U.S. Cl. 417—379 8 Claims



1. Apparatus for use in a well in order to pump a source of underground water to the earth's surface utilizing the thermal energy of a source of geothermal fluid, comprising:
first conduit means, disposed in said well, for conveying said underground water and a relatively small amount of said geothermal fluid to the earth's surface,
second conduit means, disposed within said first conduit means, having a heat transfer section for pressurizing and for conveying a working fluid therethrough in heat transfer relation with said source of geothermal fluid,
pump means disposed in said well and operatively coupled to said first conduit means for pumping the underground water and the relatively small amount of geothermal fluid to the earth's surface,
motive means operatively coupled to said pump means and responsive to said heated and pressurized working fluid in said second conduit for driving said pump means, and
means for condensing the working fluid exhausted from said motive means and for reinjecting the working fluid into said second conduit means.

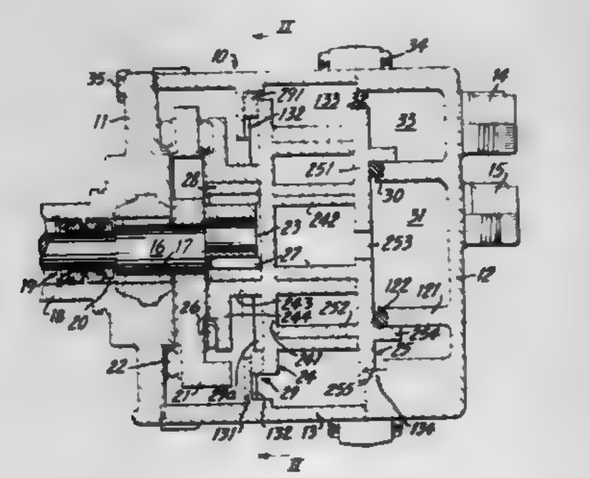
4,325,682
APPARATUS FOR DISCHARGING MATERIAL
Frank M. Willis, Wenonah, N.J., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Filed Dec. 12, 1979, Ser. No. 102,903
Int. Cl.³ F04C *2/107, 5/00, 13/00*
U.S. Cl. 418—48 10 Claims

1. A progressing cavity pump for discharging material from a hopper including an orbitable rigid stator connected to the hopper by a connecting means made of a flexible material and



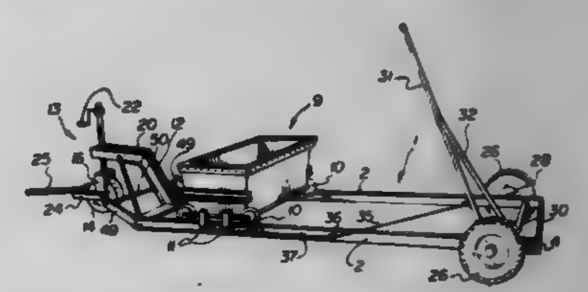
an orbitable and rotatable rotor driven through a flexible joint positioned above the material to be discharged.

4,325,683
SCROLL-TYPE COMPRESSOR WITH ROTATION PREVENTION AND ANTI-DEFLECTION MEANS
Kiyoshi Miyazawa, Annaka, Japan, assignor to Sankyo Electric Company Limited, Isesaki, Japan
Filed Oct. 26, 1979, Ser. No. 88,583
Claims priority, application Japan, Oct. 30, 1978, 53-134173; Oct. 30, 1978, 53-134175
Int. Cl.³ F04C *18/02;* F16D *3/04*
U.S. Cl. 418—55 7 Claims



1. In a scroll-type fluid compressor unit of the type having a compressor housing with a front end plate and a rear end plate, a fixed scroll member fixedly disposed within said compressor housing and having first end plate means to which first wrap means are affixed, an orbiting scroll member orbitably disposed within said compressor housing and having second end plate means to which second wrap means are affixed, said first and second wrap means interfitting at a predetermined angular relationship at a plurality of line contacts to define at least one sealed off fluid pocket, a drive mechanism connected to said orbiting scroll member for transmitting the orbital motion to said orbiting scroll member, means for preventing rotation of said orbiting scroll member, and means for supporting a thrust force, the improvement which comprises: said drive mechanism including a drive shaft supported by a single first radial bearing means in said front end plate and extending outwardly through said front end plate, a disk rotor member mounted on an inner end of said drive shaft and supported by first thrust needle bearing means on an inner surface of said front end plate, and a drive pin axially projecting from a rear surface of said disk rotor member and being radially offset from said drive shaft, said orbiting scroll member being provided with an axial boss which is integrally formed on a surface of said second end plate member opposite said second wrap means and rotatably mounted on said drive pin which is fitted into said boss through second radial bearing means, and a radial flange portion being integral with and radially extending from, the projecting end of said axial boss and being supported by second thrust needle bearing means on the rear surface of said disk rotor member, whereby the axial force is supported on the inner surface of said front end plate through said radial flange portion, said second thrust needle bearing means, said disk rotor member and said first thrust needle bearing means so that deflection of the axis of said orbiting scroll member as well as said drive shaft is prevented, and said rotation preventing means are disposed around said axial boss.

4,325,684
BRICK MOLDING MACHINE
Rodger Blackwood, and John G. Medway, both of P.O. Box 1210, High River, Alberta, Canada
Filed Feb. 12, 1979, Ser. No. 11,128
Claims priority, application Canada, Oct. 31, 1978, 315610
Int. Cl.³ B28B *13/00*
U.S. Cl. 425—62 2 Claims

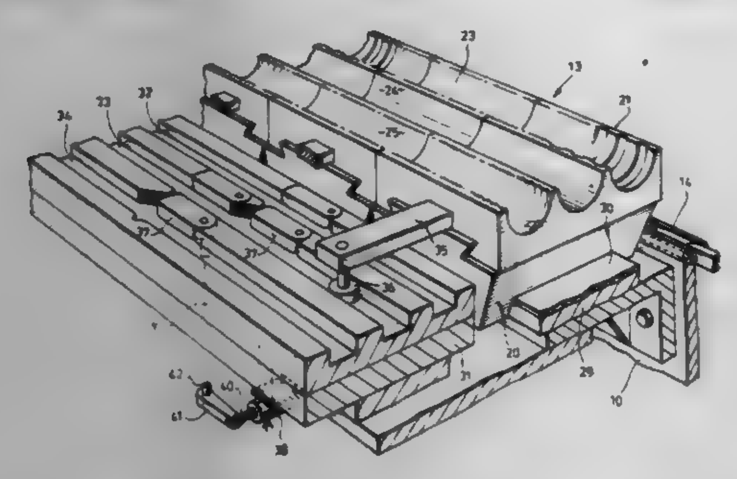


1. A mobile brick molding machine comprising a frame having an open bottom end;
mold means mounted in said frame for vertical movement therewith;
hopper means movably mounted on said frame means for filling said mold means with brick forming composition;
first wheel means for directly supporting one end of said frame for vertical movement with respect thereto, said first wheel means including
jack means for raising and lowering said one end of said frame, and
a ground engaging supporting wheel connected to said jack means;
second wheel means for directly supporting the other end of said frame for vertical movement with respect thereto, said second wheel means including
lever means for raising and lowering said other end of the frame,
ground engaging supporting wheels rotatably mounted on said lever means, and
linkage means interconnecting said jack means and said lever means for operating said lever means such that raising said one end of said frame by said jack means results in simultaneous movement of said lever means and its wheels and raising of said other end of said frame by said lever means thereby moving said frame and said mold means from a first lower molding position to a second upper mold releasing position.

4,325,685
APPARATUS FOR PRODUCING THERMOPLASTIC TUBING HAVING INTERCHANGEABLE MOLD BLOCKS

Manfred A. A. Lupke, 35 Ironshield Crescent, and Gerd P. H. Lupke, 46 Stornoway Crescent, both of Thornhill, Ontario, Canada

Filed Sep. 12, 1980, Ser. No. 186,625
Int. Cl.³ B29C *17/07*
U.S. Cl. 425—183 **8 Claims**



1. In an apparatus for producing thermoplastic tubing, the apparatus comprising a frame structure and a pair of complementary mold assemblies mounted thereon, each mold assembly comprising an endless chain of articulately interconnected mold units which are recirculated along an endless path defining a forward run and a return run, the mold units providing respective half molds cooperating in pairs along said forward run to define a longitudinally extending mold cavity, the improvement in which each mold unit comprises a rigid support member and a die member mounted thereon, the die member providing a plurality of transversely separated half molds, and said members providing respective interengaging guide means permitting transverse displacement of the die member for selectively moving the half molds thereof to a predetermined operative position, the apparatus further comprising selectively operable cam means mounted on said frame structure, said cam means being engageable with said die members along said return runs for displacing said die members thereby to bring the selected half molds thereof to the operative position, said frame structure further providing, for each mold assembly, a longitudinally extending guide member engaging said support members along the return run thereof, and a rigid support structure adjacent said guide member transversely spaced therefrom, said cam means comprising respective first cam means extending transversely from said die members, and selectively operable second cam means mounted on said support structure, said second cam means being selectively engageable with said first cam means for displacing said die members during such engagement.

4,325,686
APPARATUS FOR DENSIFYING POWDERS OF SUB-MICRON PARTICLE SIZE

Gonzalo S. Leon; John E. Fraize, both of Sudbury, Mass., and Richard C. Fortier, University City, Mo., assignors to Cabot Corporation, Boston, Mass.

Filed Nov. 28, 1980, Ser. No. 211,379
Int. Cl.³ B29D *7/14*
U.S. Cl. 425—371 **13 Claims**

1. Powder densifying apparatus comprising: A plurality of densifying stations positioned about a common axis, each said station being defined by a pair of spaced-apart, parallel opposed support rolls, the gap between the rolls of each said station being sequentially decreased from station to station;

a gas permeable belt reeved over and supported spanwise by the support rolls positioned to the other side of said common axis, said reeved and supported belts together defining a convergent densifying zone;

means to enclose said convergent densifying zone whereby escape of powder material therefrom is prevented;

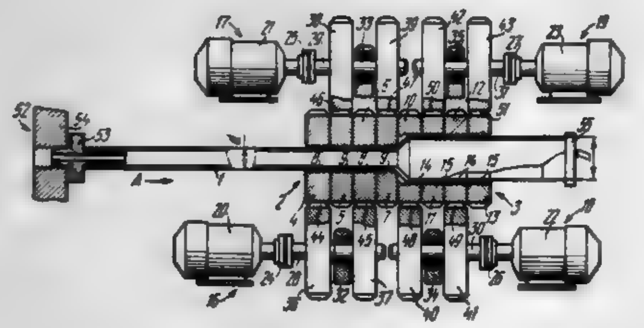
means to drive said gas permeable belts at substantially equal speeds toward the convergent end of said densifying zone; and

means to supply powder material into the divergent end of said convergent densifying zone at a rate sufficient to maintain a substantially complete fill thereof.

4,325,687
DEVICE FOR EXPANDING HEAT-SHRINKABLE POLYMER TUBES

Modest S. Akutin, B. Tishinsky pereulok, 26, korpus 16, kv. 16, Moscow; Sergei K. Dimakov, p/o Vozdvizhenskoe, poselok 1"A", Moskovskaya oblast, Zagorsky raion; Stanislav V. Ostapchuk, ulitsa Eletskaya, 9, korpus 3, kv. 415, Moscow; Boris P. Pashinin, Leningradskoe shosse, 112/1, korpus 4, kv. 1032, Moscow, and Vitaly P. Perepelkin, ulitsa Lobachevskogo, 10, kv. 60, Moscow, all of U.S.S.R.

Filed Jul. 1, 1980, Ser. No. 165,011
Int. Cl.³ B29C *17/07;* **B29D** *23/03*
U.S. Cl. 425—387.1 **1 Claim**



1. A device for expanding heat-shrinkable polymer tubes comprising:

an inlet chamber including adjoining bushes provided with threads at the inner surface thereof, adjacent pairs of said bushes having threads of opposite direction;

a first independent drive kinematically linked with said bushes having threads of a common direction to rotate said bushes;

a second independent drive kinematically linked with said bushes having threads of a direction opposite to the direction of the threads of said bushes driven by the first drive to rotate said bushes;

an outlet cooling chamber disposed coaxially and consecutively after said inlet chamber in the direction of advancement of said polymer tube and having a larger inner diameter than that of said inlet chamber, said outlet cooling chamber including adjoining bushes provided with threads at the inner surface thereof, adjacent pairs of said bushes having threads of opposite direction;

a third independent drive kinematically linked with said bushes of said outlet cooling chamber having threads of a common direction to rotate said bushes;

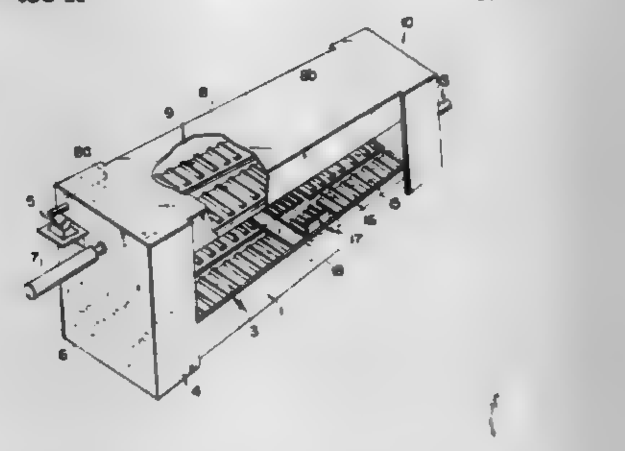
a fourth independent drive kinematically linked with said bushes of said outlet cooling chamber having threads of a direction opposite to the direction of said bushes driven by the third drive to rotate said bushes; and

means for creating overpressure inside said polymer tube.

4,325,688
MOLD EQUIPMENT

Sadao Kumasaka, Tanashi; Satomi Tada, Tokyo; Goro Yoneyama, Kawagoe, and Junichi Seki, Kiyose, all of Japan, assignors to Toyo Rubber Chemical Industrial Corporation, Tokyo, Japan

Filed Jul. 10, 1980, Ser. No. 168,282
Claims priority, application Japan, Jul. 16, 1979, 54-90011
Int. Cl.³ B29D *27/04*
U.S. Cl. 425—436 R **15 Claims**



1. A mold equipment using a metal mold, comprising:

a water tub for cooling a metal mold, said water tub having a metal mold transfer conveyor therein, said mold transfer conveyor having an inlet and an outlet side;

a first lift chamber having an inlet coupled to the outlet side of said mold transfer conveyor for receiving the metal mold and including a first lift in the first lift chamber for lifting the received metal mold to an upper outlet stage of the first lift chamber;

a ceiling oven including a conveyor and means for maintaining a hot curing atmosphere therein, said ceiling oven having an inlet coupled to said outlet stage of the first lift chamber for receiving a metal mold from the first lift chamber, said ceiling oven having an outlet side;

a first push-in cylinder coupled to the first lift chamber for transferring the metal mold from the upper outlet stage of the first lift chamber onto said conveyor of said ceiling oven;

a second lift chamber having an inlet coupled to the outlet side of said ceiling oven for receiving the metal mold from said ceiling oven, after being conveyed through said ceiling oven, and including a second lift in the second lift chamber for lowering the received metal mold to a lower outlet stage of the second lift chamber;

a mold release work station coupled to receive the metal mold from the lower outlet stage of the second lift chamber, said mold release work station including a conveyor receiving and conveying the metal mold received from the second lift chamber and means for releasing and removing a cured item from the received metal mold;

a second push-in cylinder coupled to said second lift chamber, for transferring the metal mold from the lower outlet stage of the second lift chamber onto said conveyor of said mold release work station;

a third lift chamber for receiving the empty metal mold from the conveyor of the mold release work station, said third lift chamber having an outlet and including a third lift for lowering the empty metal mold to the outlet of the third lift chamber which is at a position corresponding to the position of the mold transfer conveyor in the water tub; and

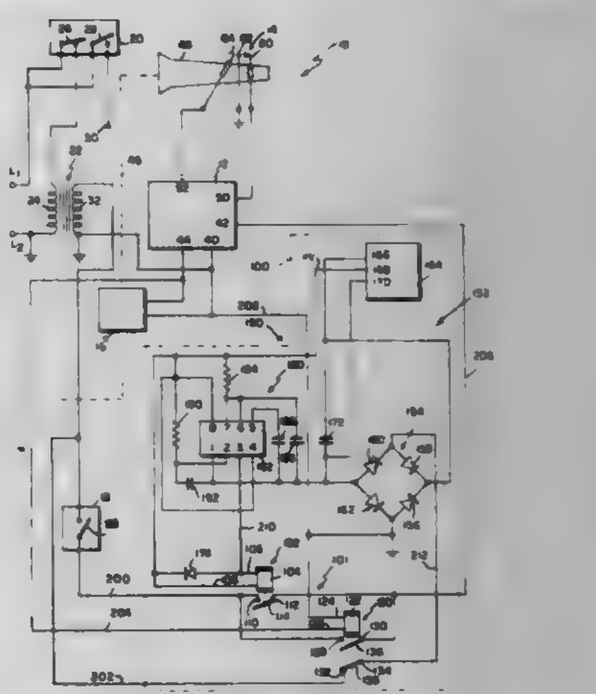
a third push-in cylinder for transferring the empty metal mold onto the mold transfer conveyor of the water tub from said outlet of the third lift chamber for cooling of the metal mold in said water tub;

said conveyors of said water tub, of said ceiling oven and of said mold release work station being separate from each other and independent of each other.

4,325,689
AUTOMATIC RESET CONTROL FOR DIRECT SPARK IGNITION SYSTEMS

James E. Burke, Indianapolis, Ind., assignor to Harold A. Teschendorf, Indianapolis, Ind.

Filed Mar. 28, 1980, Ser. No. 134,969
Int. Cl.³ H01M *2/40*
U.S. Cl. 431—70 **19 Claims**



1. In a fuel ignition system for a heating apparatus including a burner connected to a fuel supply, a fuel regulating valve, an electrode assembly, and a system control module for operating the fuel regulating valve and electrode assembly, the system control module being activated in response to a heat demand switch to open the valve and produce a spark for ignition of the burner during a predetermined time period and deactivated if the burner fails to ignite within such time period, the improvement comprising: reset means for automatically reactivating the system control module when the burner fails to ignite within the predetermined time period to again open the valve and produce a spark for the predetermined time period in response to the heat demand switch, the reset means including timing means for determining a time-delay period between deactivation and reactivation of the system control module, and function control means for activating the timing means when the system control module is deactivated and for activating the system control module after the time-delay period in response to a signal produced by the timing means.

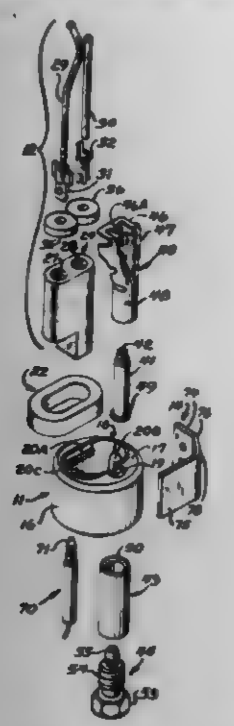
4,325,690
GAS PILOT ASSEMBLY FOR UNIVERSAL APPLICATION AND METHOD OF MAKING SAME

Thomas E. Hayes, Goshen, Ind., assignor to Johnson Controls, Inc., Milwaukee, Wis.

Filed Sep. 17, 1979, Ser. No. 76,519
Int. Cl.³ F23H *5/00;* **F23Q** *7/06, 9/00*
U.S. Cl. 431—78 **9 Claims**

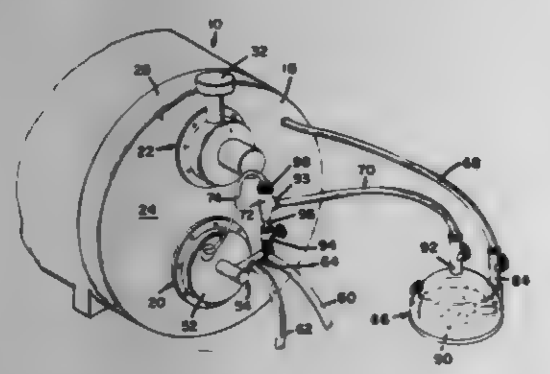
1. A gas pilot assembly comprising: a base having a curved side wall portion and defining an opening in a surface transverse of said side wall; an electrode subassembly received in said opening of said base and including a ceramic body, at least one electrode received in said body and secured thereto by fused glass, and a connector on said electrode; fused glass means connecting said ceramic body to said base about said opening; a pilot tip and orifice subassembly secured to said base and including a tip extending upwardly of said base adjacent said electrode, means defining an orifice connected to said tip,

and means for connecting a source conduit to said orifice-defining means; and a mounting bracket including a mounting plate and a flat connecting flange, said flange being welded to the exterior of said curved side wall of said base and characterized in that the angular orientation and axial displacement of



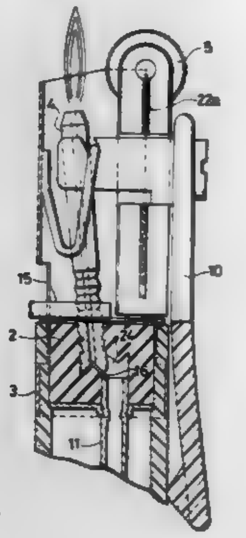
said curved wall relative to said connecting flange and the angular orientation of the axis of said curved wall and said mounting bracket may be adjusted over a continuous range prior to welding said connecting flange to said side wall portion.

4,325,691
FURNACE INDUCTION SYSTEM
Alyce D. Evans, Shiremanstown, and John R. Hilty, Thomasville, both of Pa., assignors to Testco, Inc., Camp Hill, Pa.
Filed Mar. 10, 1980, Ser. No. 128,913
Int. Cl.³ F23L *9/00*
U.S. Cl. 431—190 **8 Claims**



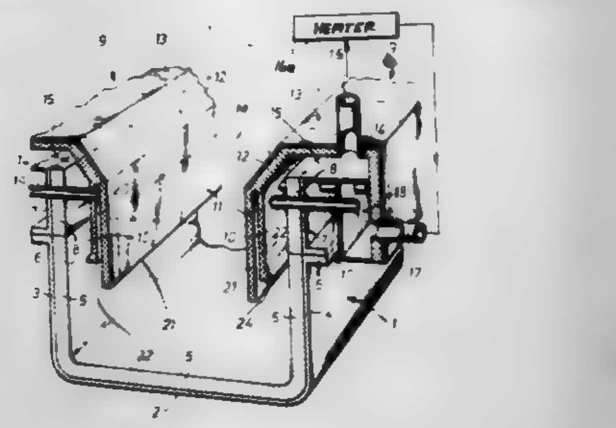
1. An induction system for injection of a treated combustion gas into the combustion zone of a furnace having a combustion chamber, a fuel burner within the combustion chamber and a source of air having a pressure greater than the pressure within the combustion chamber during firing, the system comprising an air flow line extending from the source of air to the combustion chamber and having an end opening into the combustion chamber adjacent the combustion zone; a bubble chamber for bubbling air through a liquid to form a treated output gas, the bubble chamber including an inlet port and an outlet port; a venturi located within the air flow line adjacent the end of the line opening into the combustion chamber, the venturi including an inlet port, an outlet port and a low-pressure port, the inlet and outlet ports both located within the air flow line with the outlet port located closely adjacent the end of the line opening into the combustion zone so that air flows from the source through the venturi and into the combustion zone; a flow control device located in said line upstream of the venturi operable to restrict the flow of air through the line and venturi to the combustion chamber; and a gas flow line connecting the outlet port of the bubble chamber with the low-pressure port of the venturi whereby the flow of air from the source and through the venturi lowers the pressure at the low pressure port and pressure-draws the treated output gas from the bubble chamber into the venturi to mix nonmechanically with the flow of air delivered to the combustion zone and thereby improve combustion.

4,325,692
THROWAWAY TYPE GAS LIGHTER
Seiichi Kitabayashi, No. 919-12, Oaza Koshikiya, Ageo-shi, Saitama, Japan
Filed Jul. 9, 1979, Ser. No. 55,954
Int. Cl.³ F23Q *1/02;* F17C *13/00*
U.S. Cl. 431—254 **6 Claims**



1. A pen-shaped gas lighter comprising:
a hollow elongated body formed with a fuel tank terminating at one end in an opening;
an igniter mounted on said body;
a resilient outer valve member received in said opening and formed with a first port leading from said tank;
a rigid standpipe mounted on one end in said outer valve member and terminating at its lower extremity in a second port normally out of communication with said first port and selectively communicatable with said first port upon said standpipe being shifted from its upright position to a predetermined angle, said standpipe terminating at its upper extremity in a burner nozzle disposed adjacent said igniter;
a clip carriage movably mounted on said body for movement from an inoperative to an operative position, said carriage including pusher means coupled with said standpipe for shifting of said standpipe to said predetermined angle upon shifting thereof to said operative position;
a resilient clip carried on one end from said carriage and projecting along said body to yieldingly engage said body on its opposite end for selective receipt between said second end and body of a piece of clothing, said clip being further formed to serve as a thumb holder for pressing thereof to said carriage to said operative position; and,
biasing means connected with said standpipe for biasing said standpipe to said normal position whereby said clip may be utilized to clip said lighter to the pocket of a user's shirt for storage and when said lighter is to be used, it may be removed from said pocket and the user's thumb engaged with said clip to press said clip and shift said carriage to said operative portion to angle said standpipe to said predetermined angle and said igniter actuated to ignite fuel emitting from said burner nozzle.

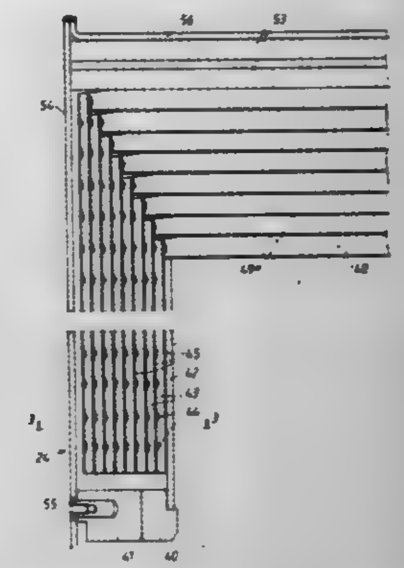
4,325,693
DEVICE FOR HEATING OPEN MELTING BATHS
Werner Ackermann, Siegen-Trupbach, and Frohmut Vollhardt, Siegen-Bürbach, both of Fed. Rep. of Germany, assignors to SAG Siegener AG, Siegen-Gesweid, Fed. Rep. of Germany
Filed May 18, 1979, Ser. No. 40,435
Claims priority, application Fed. Rep. of Germany, May 22, 1978, 2822253
The portion of the term of this patent subsequent to Jun. 10, 1997, has been disclaimed.
Int. Cl.³ F27B *3/00;* F26B *3/00*
U.S. Cl. 432—195 **9 Claims**



1. A device for heating open melting baths, especially galvanizing baths, enameling baths, lead coating baths, metal baths, and glass baths, which comprises:
a container having walls and adapted to receive a melting bath;
distributor chamber means arranged laterally of said container and passage means for communicating said distributor chamber means with a bath in said container;
inlet conduit means leading into said distributor chamber means for conveying a gas thereto;
withdrawal channel means also arranged partially within said container for receiving cooled gas from a bath in said container, said withdrawal channel means comprising at least one vertical ceramic partition spaced inwardly from said container walls and a wall overlying said container walls and attached to said partition, at least a portion of said passage being defined within said partition;
a heater in communication with said inlet conduit means; and
withdrawal conduit means for communicating said withdrawal channel means with said heater.

4,325,694
CYLINDRICAL FURNACE FOR TREATING MATERIALS AT HIGH TEMPERATURES AND PRESSURES
Carl Bergman, Vesteras, Sweden, assignor to ASEA Aktiebolag, Vesteras, Sweden
Filed Nov. 24, 1980, Ser. No. 209,683
Claims priority, application Sweden, Dec. 5, 1979, 7910022
Int. Cl.³ F27D *1/00;* F67B *5/04*
U.S. Cl. 432—247 **4 Claims**

1. A vertical furnace for isostatic hot pressing, comprising a pressure chamber formed by a high pressure cylindrical cylinder and end closures extending thereinto, means for taking up axial forces exerted by a pressure medium acting against the end closures, and insulation means defining a furnace compartment and located within the interior of the pressure chamber, the improvement wherein said insulation means comprises a tubular insulating portion and a cover closing the upper end of said tubular portion, said insulating portion comprising an inner support tube of graphite material, a plurality of outer layers of heat insulating material surrounding said tube, means pressing said outer layers against one another and against the outer surface of said tube, first foils of graphite material having low gas permeability surrounding said tube and each of said layers, and said cover comprising a plurality of cover discs covering said tube and each of said layers, second foils of



graphite material being disposed on one of the sides of said discs.

4,325,695
DENTAL SALIVA EJECTOR
Bo Sundelin, 7, Södra Lundagatan, 667 00 Forshaga; Bengt R. A. Wahlin, 8, Pejlingsgatan, 421 76 Västra Frölunda, and B. Göran Johansson, 19, Sövdebergsvägen, 275 00 Sjöbo, all of Sweden
Filed Oct. 14, 1980, Ser. No. 196,981
Claims priority, application Sweden, Oct. 11, 1979, 7908449
Int. Cl.³ A61C *17/04*
U.S. Cl. 433—91 **4 Claims**

1. A dental saliva ejector, comprising:
a substantially tubular element having a straight part connected to a flexible hose or the like and extending outside the mouth of the patient and continuing in a suction part introduced in the mouth of a patient, said suction part having an upper portion substantially flowing in the active position of the ejector of the upper surface of the teeth of the mandible, and having a lower portion at the lower surface thereof provided to extend at least in part of its extension in close proximity to the mouth bottom of the patient, a suction opening in an upper surface of said lower and/or in the transition between said lower portion and said upper portion, a plurality of thin ribs bridging the distance between the upper and said lower portion, some of said ribs being located in a plane in front of a central plane through the section part and some of them behind said plane, said ribs being spaced and located to allow minor particles to pass between them and reach said suction opening but to prevent muceous membranes of the patient from coming in contact with said suction opening.

4,325,696

DENTAL HANDPIECE ARRANGEMENT

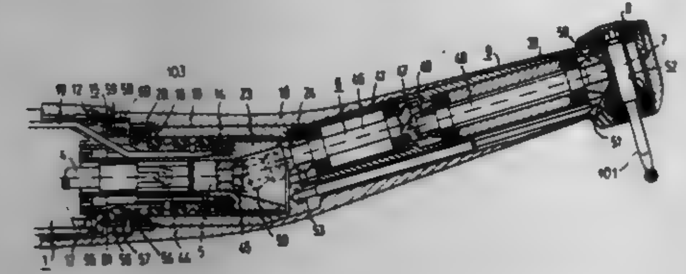
Otto Rosenstatter, Seeham, Austria, and Reinhard Straihammer, Einhausen, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Oct. 30, 1980, Ser. No. 202,138

Claims priority, application European Pat. Off., Nov. 29, 1979, 79104766

Int. Cl.³ A61C *1/12*

U.S. Cl. 433—133 7 Claims



1. An angled handpiece arrangement being detachably connected to a housing of a drive motor and having a drive transmission for transmitting rotational motion of the drive motor to a chuck which rotatably supports a dental tool in a head of the dental handpiece arrangement, said handpiece arrangement comprising a sleeve member having means for forming a detachable connection to the housing of the drive motor, said sleeve member having a first portion for supporting a first drive shaft for rotation, said first drive shaft having a pair of coaxially arranged drive gears mounted on one end with each gear having a different number of teeth, said sleeve member having a second portion extending at an angle to the first portion and receiving a shank of a head of the dental handpiece arrangement, said shank and second portion having means for releasably connecting the shank in the second portion without any twisting therebetween, a second drive shaft being composed of two drive shaft sections interconnected in driving relation by two drive gears having a different number of teeth so that a change in the speed of rotation occurs between the two drive shaft section; and said second drive shaft being disposed in said shank with an end being engaged with one of the coaxial gears of the first shaft so that the axis of rotation for said pair of drive shaft sections lies on an axis extending at an angle to the axis of the first drive shaft.

4,325,697

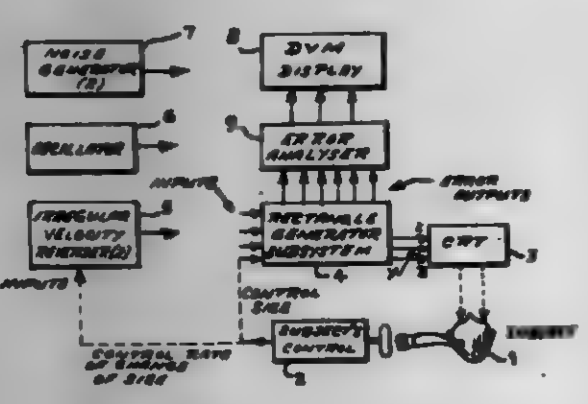
METHOD AND APPARATUS FOR MEASURING HAND-EYE COORDINATION WHILE TRACKING A CHANGING SIZE IMAGE

David M. Regan, and Kenneth I. Beverley, both of Halifax, Canada, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Oct. 2, 1980, Ser. No. 193,048

Int. Cl.³ G09B *5/00*

U.S. Cl. 434—258 19 Claims



1. The method of measuring a person's hand-eye coordination in tracking a changing-size image comprising the steps of

generating an image on a screen within the view of a person being tested,

varying the size of said image,

providing tracking means whereby said person, as a test procedure, tracks the changes in size of said image by effecting cancellation of image size change, and

comparing the resultant tracking response with image size change whereby the difference therebetween provides a measure of the person's hand-eye coordination.

4,325,698

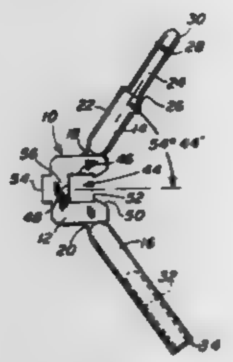
MOLECULAR MODEL FOR CHEMISTRY

Stephen D. Darling; Aloysius A. Jendrisak, both of Silver Lake, and David J. Bokmiller, Akron, all of Ohio, assignors to Tacoma Products, Inc., Tallmadge, Ohio

Filed Jan. 8, 1980, Ser. No. 110,363

Int. Cl.³ G09B *23/26*

U.S. Cl. 434—278 10 Claims



1. A molecular model building member comprising a main portion with two arms connected to and emanating outwardly from said main portion, said member being formed of relatively flexible material permitting said arms to be bendable relative to said main portion, one of said arms being comprised of a first section connected to said main portion and a second section connected to said first section so that said first section is interposed between said main portion and said second section, said second section of said one of said arms having an annular rib around the periphery thereof and having a smaller cross-section than said first section so as to form a first annular shoulder at their intersection, the other of said arms having a bore therein to receive the second section of said one of said arms of another of said molecular model building members and to frictionally engage the annular rib provided thereon.

4,325,699

SUCTION DEVICE FOR JET PROPULSION UNITS FOR A WATERCRAFT AND JET PROPULSION UNITS COMPRISING THE SAME

Luigi Castoldi, Abbiategrasso, Italy, assignor to Societa' Castoldi S.p.A., Milan, Italy

Filed Nov. 21, 1979, Ser. No. 96,560

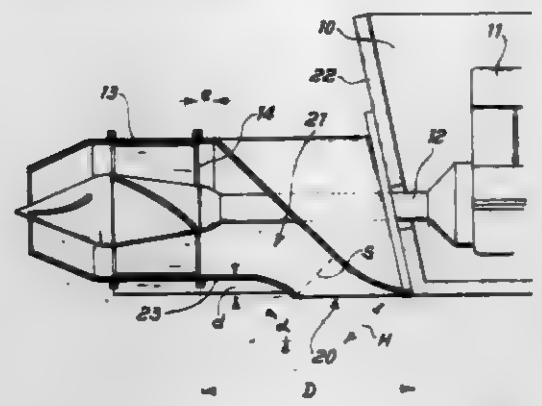
Claims priority, application Italy, Nov. 29, 1978, 30331 A/78

Int. Cl.³ B63H *11/02*

U.S. Cl. 440—47 20 Claims

1. A suction device for use in a boat jet propeller assembly of the type including a motor to be mounted forward of a stern transom of a boat, a pump assembly to be mounted aft of the stern transom, and a transmission connecting said motor to said pump assembly for rotation thereof to cause pumping of water and jet discharge thereof, said suction device comprising:

a suction conduit for conveying water to the pump assembly upon operation thereof, said suction conduit having a suction inlet adapted to be positioned substantially aft of the stern transom of the boat and a suction outlet adapted to be connected to an inlet cross-section of the pump assembly, said suction inlet adapted to be located in a generally horizontal plane substantially level with the bottom of the hull of the boat, said suction conduit having a minimum height cross-section having a minimum dimension in a vertical plane passing through the axis of the boat, said minimum height cross-section being rectangular



and lying in a plane passing through the rear edge of said suction inlet and extending perpendicular to the axis of said suction conduit, and the ratio of width to height of said minimum height cross-section being between 3 and 6.

4,325,700

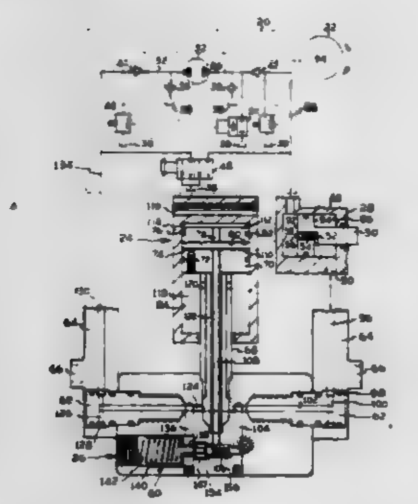
POSITION-RETENTIVE VALVE SEAT FOR HYDRAULIC CYLINDER

Calvin V. Kern, Maumee, and Lawrence P. Zepp, Bowling Green, both of Ohio, assignors to Eltra Corporation, Toledo, Ohio

Filed May 5, 1980, Ser. No. 146,891

Int. Cl.³ B63H *5/12*

U.S. Cl. 440—61 24 Claims



12. A hydraulic cylinder, wherein:

said cylinder is provided with a bore therein;

a piston is slidably disposed inside said bore and separates said bore into a first chamber and a second chamber;

said piston being attached to a rod;

said rod protruding through said second chamber and outside said cylinder;

first and second valve means in said piston interconnecting said first and second chambers;

said first valve means preventing a flow of fluid in a first direction and allowing a flow of said fluid in second direction therethrough;

said second valve means preventing a flow of said fluid in a second direction and allowing a flow of said fluid in a first direction therethrough;

said first valve means and said second valve means being concentrically disposed in said piston.

4,325,701

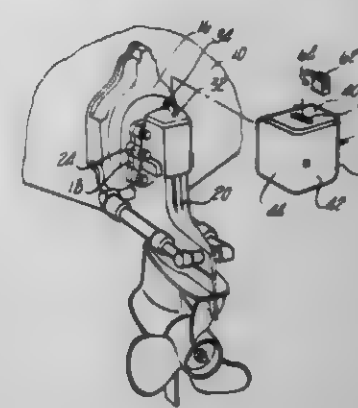
PROTECTIVE DEVICE

James K. Peters, II, 4472 Toledo, Detroit, Mich. 48209, and Gus Metros, 21150 W. Outer Dr., Dearborn, Mich. 48124

Filed Oct. 29, 1979, Ser. No. 89,141

Int. Cl.³ B63H *21/26*; F16F *15/00*

U.S. Cl. 440—113 5 Claims



1. For use in conjunction with a marine vessel having an engine, transmission means operatively connected with the engine and having a portion which extends exteriorly of the vessel, and an out drive having a housing with a propeller rotatably mounted in the housing, said out drive housing having a mounting flange which registers with a mounting flange on the exteriorly extending portion of the transmission, said out drive being secured to said transmission means by removable fasteners extending through one of said mounting flanges and into the other mounting flange, said out drive having a mooring eye protruding from its top, a device to prevent the unauthorized removal of the out drive from the transmission means, said device comprising:

a housing comprising a plurality of walls fixedly secured together, one of said walls including a slot dimensioned to receive the mooring eye therethrough, said housing adapted to be positioned on the top of said out drive so that said mooring eye protrudes through said slot and so that at least a portion of the removable fasteners are positioned in between at least two of said walls and covered by said housing to thereby prevent the removal of the fasteners, and

means for removably locking said housing to said mooring eye against unauthorized removal.

4,325,702

ADJUSTABLE PULLEY

Kurt A. G. Jacobsson, Ulricehamn; Lars H. G. Tholander, Huskvarna, and Ulf-Erik Wide, Asunden, all of Sweden, assignors to Aktiebolaget IRO, Ulricehamn, Sweden

Filed Oct. 24, 1979, Ser. No. 87,832

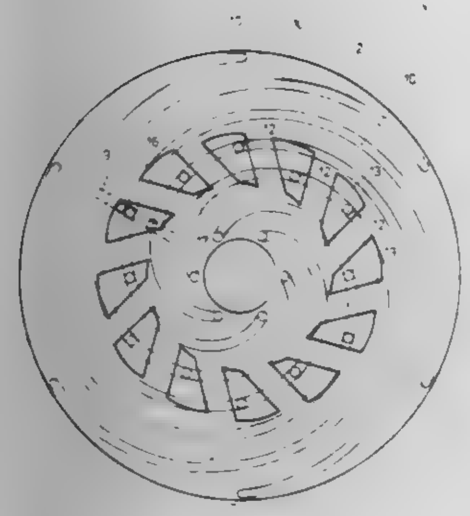
Claims priority, application Fed. Rep. of Germany, Oct. 24, 1978, 2846279

Int. Cl.³ F16H *55/54*

U.S. Cl. 474—56 11 Claims

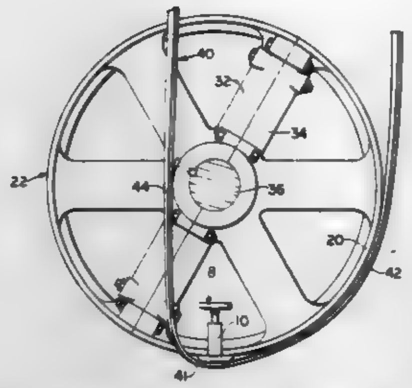
1. A pulley with a variable working diameter, in particular a driving disk for the belt of a thread-delivery mechanism in textile machines, preferably knitting machines, including two coaxial disks which are rotatable relative to one another, of which the one has a radial guide groove and the other has at least one spiral-shaped guide groove, and a plurality of support members with a segment-like form which can be clamped between the disks in different positions so that their radially outer peripheral areas define a polygonal path which is similar to a circle, the support members having projections engaged in the guide grooves of both disks so that relative rotation of the disks moves the support members radially for changing the respective circle diameter, the improvement wherein each support member—viewed in the direction of the axis of rotation of the disks—has the shape of an asymmetrical circular-ring segment, the segment having a radially outer peripheral

surface which is adapted for engagement with the belt, the segment—when viewed in the direction of the axis of rotation—having longer and shorter diagonals which extend from the circumferentially opposite ends of the outer peripheral



surface, and wherein an extension of the longer diagonal is spaced from but passes by on the same side of the axis of rotation of the disks as a perpendicular to a tangent on the spiral-shaped guide groove in the area of the support member.

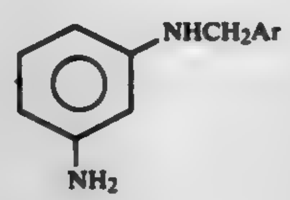
4,325,703
BELT GUIDING DEVICE
Charles O. Phillips, 1440 Alberta Dr., Hamilton, Ohio 45013
Filed May 15, 1980, Ser. No. 149,976
Int. Cl.³ F16H *7/08*
U.S. Cl. 474—130 **1 Claim**



1. A device for guiding a belt during mounting of the belt on a pulley which comprises a body having slot means for receiving an edge portion of a belt supporting wall of the pulley and a face portion adjacent the slot means and substantially parallel with the slot means for receiving and supporting the belt, means for releasably attaching the device to the pulley with the edge portion of the pulley in the slot means and with the face portion adjacent to and outboard of a belt supporting pulley face of the belt supporting wall of the pulley, the face portion having an open end for discharging the belt from the device onto the belt supporting pulley face, side walls of the face portion converging toward the free end thereof to direct the belt toward the belt supporting face of the pulley, and lug means on the device limiting sliding of the belt on the face portion away from the open end thereof.

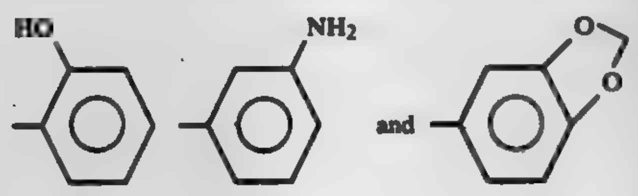
4,325,704
HAIR DYES
Günther Konrad, Hilden, and Edgar Lieske, Düsseldorf, both of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Düsseldorf, Fed. Rep. of Germany
Filed Aug. 19, 1980, Ser. No. 179,436
Claims priority, application Fed. Rep. of Germany, Aug. 24, 1979, 2934330
Int. Cl.³ A61K *7/13*
U.S. Cl. 8—407 **16 Claims**

1. A composition of the developer-coupler type for the dyeing of human hair, consisting essentially of, as coupler, at least one N-benzyl-m-phenylenediamine derivative of the general formula



(I)

wherein Ar is a radical selected from the group consisting of



(II) (III) and (IV)

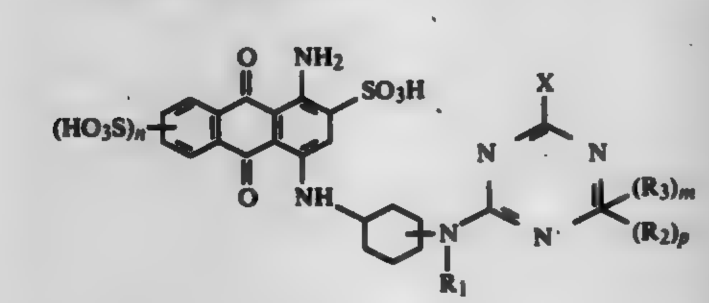
of a salt thereof, and, as developer component, one or more of the conventional developer components used in oxidation dyes, the molar ratio of the coupler to the developer being from about 2:1 to 1:2.

6. The composition of claim 1 which additionally contains conventional additives selected from the group consisting of conventional couplers and conventional directly absorbing dyes.

7. A process for the dyeing of hair comprising applying to said hair, at temperatures ranging substantially from about 15° C. to 40° C. for a time sufficient to effect dyeing through oxidation, an effective amount of the developer-coupler composition according to claim 1 in an aqueous medium.

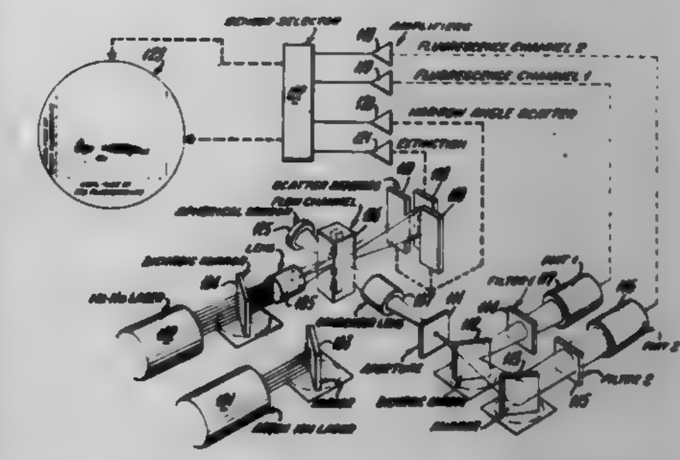
4,325,705
ANTHRAQUINONE REACTIVE DYESTUFFS
Wolfgang Harms; Klaus Wunderlich, both of Leverkusen, and Klaus von Oertzen, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany
Filed Dec. 10, 1979, Ser. No. 101,614
Claims priority, application Fed. Rep. of Germany, Dec. 16, 1978, 2854482
Int. Cl.³ C09B *1/34;* **C07D** *251/38;* **C07C** *143/665*
U.S. Cl. 8—676 **6 Claims**

1. A dyestuff of the formula



wherein
n is 0 or 1,
m and p are 0 or 1 and m+p=1.
X is Cl or Br,
R_1 is H or C_1–C_4-alkyl optionally substituted by —OH, —OSO_3H, —COOH or —SO_3H,
R_2 is NH_2 or alkylamino, dialkylamino or aralkylamino which contains at least one SO_3H, OSO_3H or COOH group, and
R_3 is the same as R_2 or is optionally substituted arylamino and
when n is 0, p is 1 and when n is 1, m is 1.

4,325,706
AUTOMATED DETECTION OF PLATELETS AND RETICULOCYTES IN WHOLE BLOOD
Russell J. Gershman; W. Peter Hansen, both of Middleboro; Alan M. Hochberg, Cambridge, and J. Garland O'Connell, Waltham, all of Mass., assignors to Ortho Diagnostic Systems Inc., Raritan, N.J.
Filed Aug. 15, 1980, Ser. No. 178,486
Int. Cl.³ G01N *1/30, 21/25, 33/50*
U.S. Cl. 23—230 B **7 Claims**



1. A method of identifying and enumerating platelet and reticulocyte cells in whole blood comprising the steps of:
(a) providing an aliquot from the blood to be studied;
(b) staining at least the reticulocyte and platelet cells of said aliquot with an acridine orange reagent;
(c) passing at least a portion of said aliquot, substantially a cell at a time through an area of focused optical stimulation, said area having a cross-sectional dimension comparable to the expected dimension of red cells;
(d) detecting light scattered by, and fluorescent light stimulated from cells in said area;
(e) identifying platelet identification criteria as a linear function of detected scattered light and detected fluorescent light;
(f) discriminating platelets from reticulocytes and red blood cells based on said identification criteria;
(g) providing an orthogonality correction at least as to fluorescent light detected from individual cells, based on scatter and fluorescent light detected from the cells;
(h) defining fluorescent light threshold criteria separating red cells from reticulocytes; and
(i) identifying as reticulocytes those cells, platelets excluded, detected as issuing fluorescent light greater than said threshold criteria.

4,325,707

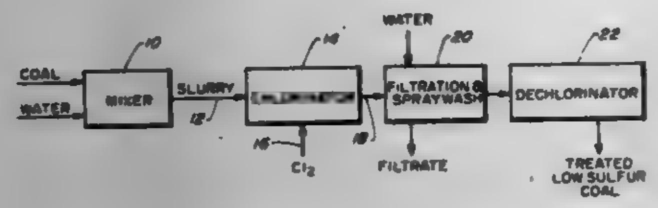
COAL DESULFURIZATION BY AQUEOUS CHLORINATION

John J. Kalvinskas, South Pasadena; Nick Vasilakos, Pasadena; William H. Corcoran, San Gabriel; Karel Grohmann, San Dimas, and Naresh K. Rohatgi, West Covina, all of Calif., assignors to California Institute of Technology, Pasadena, Calif.

Filed May 12, 1980, Ser. No. 156,790

Int. Cl.³ C10L *9/02*

U.S. Cl. 44—1 SR 9 Claims



1. A method of desulfurizing coal comprising the steps of:
suspending the coal in an aqueous medium consisting essentially of water to form a slurry;
chlorinating the coal slurry at a temperature below 130 degrees C. by bubbling chlorine gas into the slurry to form water soluble sulfur compounds; and
separating the chlorinated coal from the aqueous medium.

4,325,708

FUEL DETERGENT COMPOSITIONS CONTAINING LUBRICATING OIL

Lucien J. Bagnetto, Jr., Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sep. 9, 1977, Ser. No. 832,057

Int. Cl.³ C10L *1/22*

U.S. Cl. 44—58 6 Claims

1. In combination (a) a motor fuel and (b) a fuel additive composition comprising (1) an amino succinimide fuel detergent and (2) a substantially paraffinic lubricating oil wherein the detergent composition is about 50 to about 80 percent by weight of the additive composition and the lubricating oil is about 50 to about 20 percent by weight of the additive composition wherein said total additive composition comprising detergent composition and lubricating oil is in an amount within a range of about 3 to about 215 g/m³ of motor fuel.

4,325,709

METHOD FOR THE OPERATION OF GASIFICATION PLANTS FOR PULVERIZED FUELS

Peter Göbler, Freiberg; Peter Jaschke, Oesling; Horst Kretzschmer, Freiberg; Claus-Otto Kuhlbrodt, Freiberg; Klaus Lucas, Freiberg; Berthold Neumann, Hoyerswerda; Manfred Schingnitz; Hans-Joachim Schweigel, both of Freiberg; Friedrich Berger, Brand-Erbisdorf, and Dieter König, Freiberg, all of German Democratic Rep., assignors to Brennstoffinstitut Freiberg, Freiberg, German Democratic Rep.

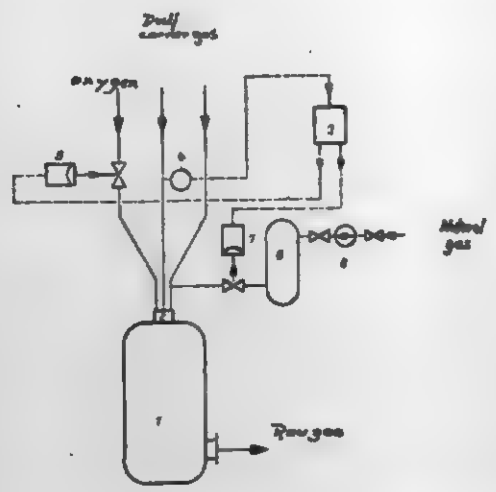
Filed May 17, 1979, Ser. No. 40,052

Claims priority, application German Democratic Rep., May 31, 1978, 205679

Int. Cl.³ C10J *3/46*

U.S. Cl. 48—197 R 10 Claims

1. Method for the operation of gasification plants for pulverized fuels, of the type wherein pulverized fuel is supplied to a reactor by mechanical means or suspended in a combustible or non-combustible gaseous or liquid medium, and reacted, in a flame reaction with a gasifying agent containing free oxygen, into a combustible gas containing CO and H_2, the improvement comprising storing in a suitable reservoir a well-flowing additional fuel at a pressure higher than the operating pressure of the gasification plant; and transferring within a short time, in case of malfunctions in the supply of the pulverized fuel, said well-flowing fuel stored in the reservoir by the pressure within the reservoir into the reaction chamber of the gasification plant, wherein introduction of the aforenamed well-flowing fuel is made near the inlet location for the free-oxygen containing gasifying agent and wherein pressure, storage volume of the reservoir, and flow resistance of the connection between reservoir and the reaction chamber of the gasification reactor



are in such relation that the quantity of well-flowing additional fuel transferred into the reaction chamber during the time interval between the start of a malfunction causing a shut off and the complete cut off of the supply of free oxygen will be greater than the quantity that is stoichiometrically required for the bonding of free oxygen flowing into the reaction chamber during this time interval.

4,325,710

SINTERED CERAMICS FOR CUTTING TOOLS AND MANUFACTURING PROCESS THEREOF

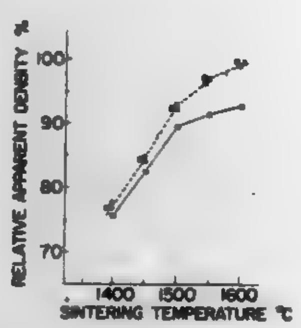
Hiroshi Tanaka, and Yoshihiro Yamamoto, both of Iwakura, Japan, assignors to NGK Spark Plug Co., Ltd., Nagoya, Japan

Filed Mar. 11, 1980, Ser. No. 129,318

Claims priority, application Japan, Mar. 19, 1979, 54-33050

Int. Cl.³ B24D *3/16*; C04B *35/10, 35/52, 35/58*

U.S. Cl. 51—309 30 Claims



1. Vacuum-sintered ceramics having a mean alumina grain size of not exceeding 2 microns and a relative apparent density of not less than 98.5% of theoretical density for cutting tools obtained by sintering a pressed mixture substantially consisting of 80–95% by volume of alumina and the balance of titanium nitride and one or more zirconium-containing components selected from the group consisting of zirconium, zirconium carbide and zirconium nitride, wherein the volumetric ratio of titanium nitride/zirconium-containing component(s) ranges between 95/5 and 50/50, inclusively, under vacuum or vacuum inert atmosphere without applying pressure on said pressed mixture.

4,325,711

METHOD OF CONDITIONING FLUE GAS AND SEPARATING THE PARTICLES THEREFROM

Alfred E. Kober, Bridgewater, and Dennis F. Mahoney, Three Bridges, both of N.J., assignors to Apollo Technologies, Inc., Whippany, N.J.

Filed May 15, 1980, Ser. No. 149,961

Int. Cl.³ B03C *3/01*; B01D *51/10*

U.S. Cl. 55—5 30 Claims

1. A method of conditioning a particle-laden gas and minimizing the formation of deposits as a result thereof which comprises:
(1) Forming, at a temperature above 600° F., a mixture of the particle-laden gas and a conditioner comprising diammonium phosphate and urea, the urea being present in the conditioner in an amount by weight between 20% and 80% of the combined solids content of diammonium phosphate and urea, and
(2) Thereafter passing said mixture through a particle collector and separating said gas from the particles therein.

4,325,712

METHOD AND DEVICE FOR CONVEYING AN ESSENTIALLY GASEOUS FLUID THROUGH A PIPE

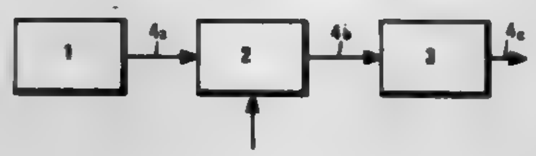
Marcel Arnaudeau, Paris, France, assignor to Institut Francais du Petrole, Rueil Malmaison, France

Filed Feb. 13, 1979, Ser. No. 11,818

Claims priority, application France, Feb. 14, 1978, 78 04331

Int. Cl.³ B01D *47/00*

U.S. Cl. 55—48 24 Claims



15. A method for pressurizing and conveying a substantially gaseous fluid through a pipe, which comprises the steps of:
(a) equalizing the pressure of said substantially gaseous fluid with the pressure of a liquid with which it is to be mixed;
(b) mixing said pressure equalized substantially gaseous fluid with said liquid to produce a diphasic fluid comprising a mixture of a gas and a liquid, and simultaneously controlling the flow rate of the mixed liquid relative to the gas flow rate to obtain said diphasic fluid, with sufficient liquid being added so that a diphasic fluid is produced having a gas-to-liquid volumetric ratio substantially equal to the maximum value capable of being pumped by a pump capable of pumping and increasing the pressure of diphasic fluids;
(c) pumping and increasing the pressure of the diphasic fluid from step (b) with the pump capable of pumping and increasing the pressure of diphasic fluids for producing a pressurized diphasic fluid; and
(d) conveying the pressurized diphasic fluid from step (c) through the pipe.

4,325,713

AIR POLLUTION CONTROL PROCESS AND APPARATUS

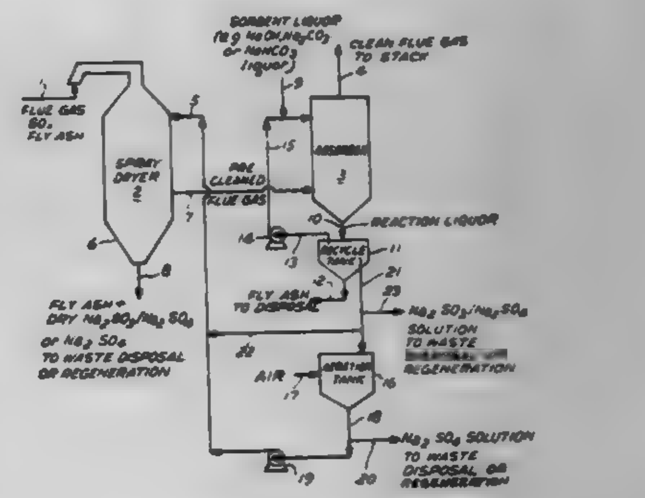
Harvey S. Rosenberg, Columbus, Ohio, and Joseph M. Genco, Orono, Me., assignors to Industrial Resources, Inc., Chicago, Ill.

Continuation of Ser. No. 519,634, Oct. 31, 1974, abandoned. This application Jul. 31, 1978, Ser. No. 930,296

Int. Cl.³ B01D *53/14*; C01F *1/74*

U.S. Cl. 55—73 6 Claims

1. Method of removal of SO_x and fly ash particulates from hot flue gases comprising:
(a) passing said hot flue gases through a flue gases pretreatment and waste products dry collection zone;
(b) introducing an aqueous reaction products liquor containing ammonium or sodium sulfur oxide salts and at least a portion of said fly ash in a slurry form into said hot flue gases in a first portion of said pretreatment-dry collection zone in a finely divided condition and at a solids content sufficient to permit evaporation of substantially all of the water content of said liquor and produce dried particles of ammonium and sodium sulfur oxide salts;
(c) removing a first, major portion of said dried salts particles in association with fly ash in a second portion of said pretreatment-dry collection zone to produce a partially cleaned flue gas containing a minor portion of said dried salts particles, and said fly ash;
(d) introducing said partially cleaned flue gas containing said fly ash into a reaction zone;



(e) contacting said partially cleaned flue gas containing said fly ash in said reaction zone with an aqueous ammonium or sodium alkali SO_x sorbent liquor selected from NH_4OH, $(NH_4)_2CO_3$, NH_4HCO_3, NaOH, Na_2CO_3, $NaHCO_3$ and mixtures thereof for a time sufficient:
(i) to react SO_2 and SO_3 in said partially cleaned flue gas therewith to form said reaction products liquor and fly ash slurry;
(ii) to collect dried salts particles and said fly ash from said partially cleaned flue gas, and
(iii) to form substantially clean flue gas;
(f) exhausting said clean flue gas from said reaction zone; and
(g) passing reaction product liquor containing at least a portion of said fly ash in slurry form from said reaction zone to said pretreatment-dry collection zone.

4,325,714

MOUNTING ARRANGEMENT FOR ELECTROSTATIC PRECIPITATOR

James E. Wooldridge, Louisville, Ky., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

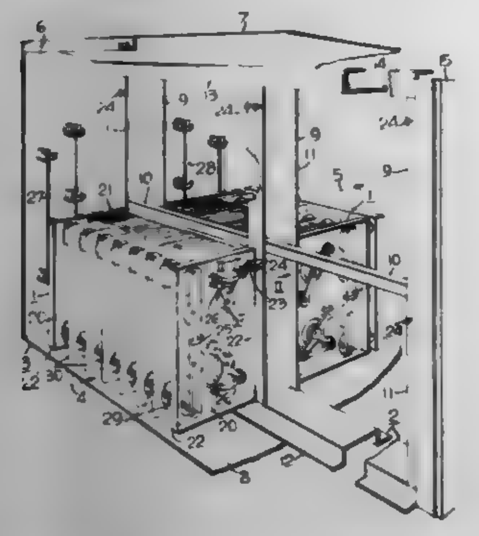
Filed Jan. 2, 1981, Ser. No. 222,039

Int. Cl.³ B03C *3/08, 3/12*

U.S. Cl. 55—143 6 Claims

1. In an electrical precipitator for removing particulate materials from a dirty gas stream including a housing having an upstream gas inlet and a downstream gas outlet for the gas stream flowing through the precipitator, the improvement comprising:
electrode plate assembly means;
mounting means for supporting said electrode plate assembly means within the precipitator spanning the interior of the housing across the dirty gas stream, said mounting means having an opening accommodating gas flow through the precipitator between the gas inlet and the gas outlet;

a pair of pins projecting from said mounting means on opposite sides of the opening; and



a pair of slots in said plate assembly means receiving said pins to suspend the plate assembly means in flow-through alignment with the opening.

4,325,715

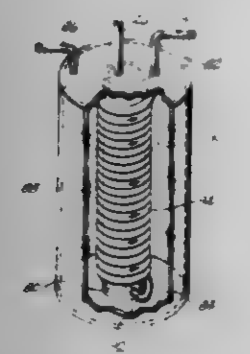
APPARATUS FOR DEGASSING HEMODIALYSIS LIQUID

Donald B. Bowman, 7635 NW. McDonald Cir.; Charles J. Filz, and James G. Osborn, both of 1930 SE. Stone St., all of Corvallis, Oreg. 97330

Filed Mar. 24, 1976, Ser. No. 669,903

Int. Cl.³ B01D *19/00, 31/00*

U.S. Cl. 55—158 **3 Claims**



1. Apparatus for removing gases from a hemodialysis liquid prior to introduction of such liquid into a hemodialyzer, comprising:

first wall means forming an inner fluid chamber having an inlet for receiving said gas-containing hemodialysis liquid;

second wall means forming, in conjunction with said first wall means, an outer fluid chamber surrounding said inner fluid chamber;

an elongated length of tubing coiled around said first wall means, with one end of said tubing being in fluid receiving communication with said inner fluid chamber, said tubing being formed from a filter material that is not wetted by liquid and includes pores which normally remain open for passage of gas;

outlet means for degassed hemodialysis liquid connected to the second end of said tubing; and

a gas outlet leading outwardly from said outer chamber, for exhausting released gases therefrom.

4,325,716

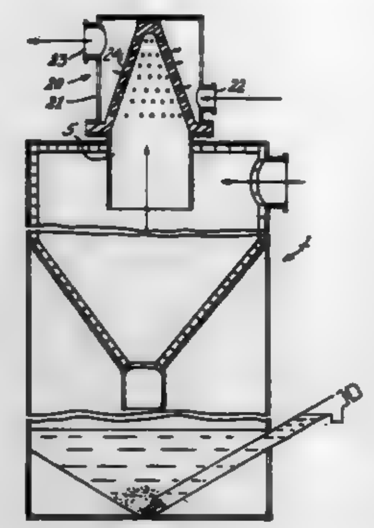
MIXING CHAMBER IN COMBINATION WITH A DUST CYCLONE SEPARATOR

Gerald S. V. Livemore, 121 Holt St., Parkmore, Transvaal, South Africa

Filed Aug. 15, 1980, Ser. No. 178,333

Int. Cl.³ B01D *51/00;* **B01F** *3/02;* **C10K** *1/02*

U.S. Cl. 55—265 **4 Claims**



1. A bottom gas cyclone dust separator having a clean gas outlet adapted to receive the bottom gas from a gas producer and separate the dust from the bottom gas, in combination with a mixing chamber, said mixing chamber comprising a housing having a top gas inlet connected to a line conveying top gas from said gas producer, a bottom gas inlet connected to the clean gas outlet so that the clean bottom gas exiting therefrom enters said mixing chamber through said bottom gas inlet, a perforated hollow hood positioned inside said housing substantially covering said bottom gas inlet wherein bottom gas entering said housing is distributed directly into the gas fed into said mixing chamber through said bottom gas inlet.

4,325,717

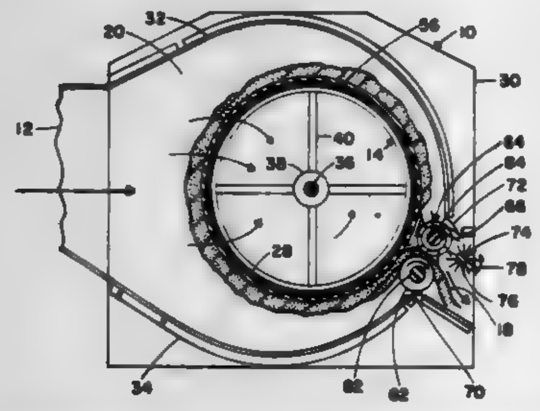
SEAL PROTECTOR FOR AIR FILTERING APPARATUS

John E. Crowley, Jr., Charlotte, N.C., assignor to Continental Conveyor & Equipment Co., Winfield, Ala.

Filed Mar. 30, 1981, Ser. No. 248,146

Int. Cl.³ B01D *33/10, 46/04*

U.S. Cl. 55—290 **3 Claims**



1. Apparatus for filtering air including a chamber having an air inlet and an air outlet,

a drum mounted for rotation within said chamber,

filtering media secured to the cylindrical surface of said drum,

means to cause a flow of particle ladened air into said chamber from said air inlet and into contact with said filtering media and to cause a flow of clean air from within said drum to exterior of said drum and said chamber through said air outlet,

seal means mounted on said chamber adjacent said drum to

preclude the flow of particle ladened air to exterior of said chamber other than through said filtering media,

means to remove bat formed of filtered particles from the filtering media on the surface of said drum, said last-mentioned means including a compression seal roller mounted for rotation out of contact with said drum and a doffing roller having flexible flights and mounted for rotation in contact with said drum to assist in removing bat from said drum and

means for protecting said seal means formed of durable material fixedly positioned between said seal means and the flights of said doffer roller adjacent the edge of said drum to eliminate wear on said seal means by the edges of the flights of said doffing rollers when rotating there adjacent.

4,325,718

SNAP TOGETHER POCKET FILTER ARRANGEMENT

Robert B. Burkhead, Shepherdsville, Ky., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed May 4, 1981, Ser. No. 260,126

Int. Cl.³ B01D *46/02*

U.S. Cl. 55—378 **6 Claims**

1. A pocket filter cartridge for removing particulate solids from a dirty gas stream, comprising:

a plurality of relatively flat, sheath-like filter bags open at one end;

a generally rectangular bag mounting frame adapted to be secured across the dirty gas stream;

said frame having outwardly projecting bead portions and inwardly projecting filter clamping portions extending about its periphery;

a plurality of generally rectangular clamping collars sized to be positioned across the frame in adjacent side-by-side relation;

each of said collars fitting in the open end of one of the filter bags and including inwardly projecting bead portions and outwardly projecting filter clamping portions disposed about its perimeter; and

clip means slidably engaged about the oppositely projecting bead portions of the adjacent collars and the frame in spring clamping fashion to secure each of the filters to the frame between the respective clamping flanges of the collars and the frame.

4,325,719

PROCESS FOR RECOVERING NITROGEN UNDER PRESSURE IN AIR SEPARATION APPARATUS

Masahiro Yamazaki, Kudamatsu, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

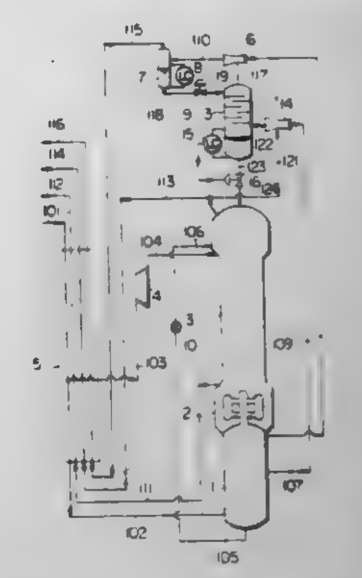
Filed Sep. 17, 1980, Ser. No. 188,097

Claims priority, application Japan, Sep. 19, 1979, 54-119424

Int. Cl.³ F25J *3/04*

U.S. Cl. 62—30 **2 Claims**

1. In a process fo recovering nitrogen under pressure in an air separation apparatus comprising a duplex type rectification tower having a lower column and an upper column, wherein air is separated into oxygen and nitrogen by a cryogenic process, and the separated oxygen and nitrogen are recovered, the improvement which comprises increasing the pressure of the pure nitrogen gas withdrawn from the upper column by withdrawing the pure nitrogen gas by an ejector receiving pure liquid nitrogen directly from the top of the lower column, introducing the resulting gas-liquid mixture into a liquid gas-separator unit, recovering pure nitrogen gas at the increased pressure by liquid-gas separation in the separator unit, and



returning liquid nitrogen from the separator unit to the upper column as a reflux.

4,325,720

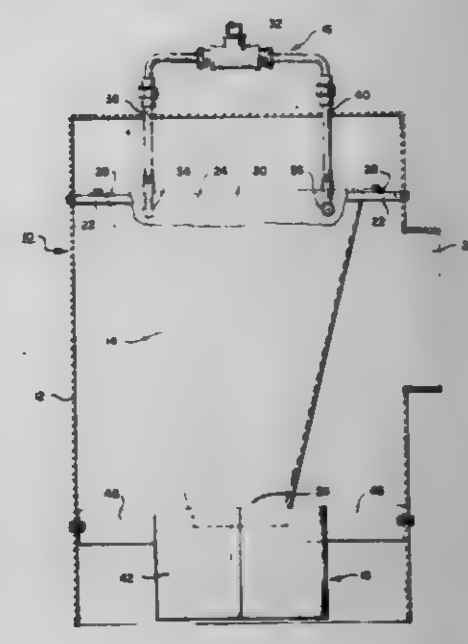
SHAPER NOZZLE FOR A CARBON DIOXIDE SNOW CYCLONE SEPARATOR

Peter A. Students, West Chester, Ill., assignor to Chemetron Corporation, Pittsburgh, Pa.

Filed Feb. 6, 1981, Ser. No. 232,110

Int. Cl.³ F25J *1/00*

U.S. Cl. 62—35 **6 Claims**



1. A nozzle for shaping the violently swirling carbon dioxide snow discharge from a carbon dioxide snow cyclone separator to form a non-diverging, unidirectional flow, said nozzle comprising:

an elongate body adapted to be disposed in a longitudinally upright position beneath said cyclone separator; and

a passage extending lengthwise through said body for receiving the carbon dioxide snow discharge from said separator, said passage having a scalloped transverse cross-section for reshaping said discharge as the latter flows through said passage,

the lateral boundary of said passage being defined by an annular series of elongate, transversely concave, juxtaposed cylindrical surfaces formed in said body,

each of said surfaces extending through an arc of predetermined radians,

the sum of the arcs of all the surfaces in said series being greater than 2π radians.

4,325,721

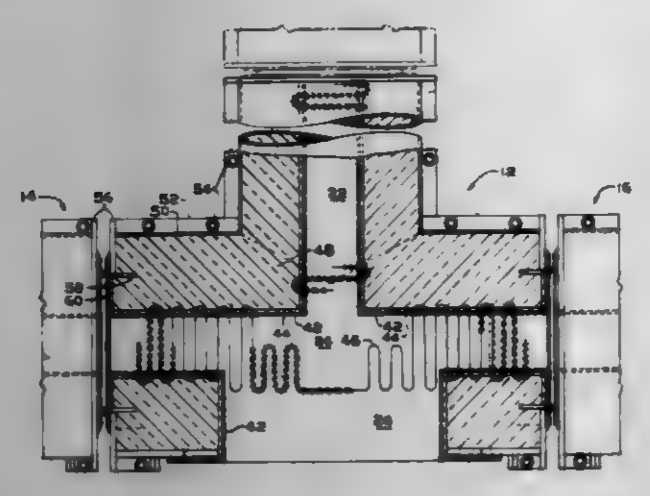
HIGH PRESSURE MODULAR FOREHEARTH

Thomas H. Jensen, Murrysville, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Oct. 2, 1980, Ser. No. 193,201

Int. Cl.³ C03B *37/025*

U.S. Cl. 65—1 **13 Claims**



1. A modular forehearth for use in supplying molten glass from a pressurized source of molten glass to a plurality of pressurized glass fiber forming bushings comprising a transition module having a glass conduit therein connected at one end to a glass canal positioned in said transition module, said canal extending horizontally in at least two directions to provide at least two arms for said canal in said transition module, insulation surrounding said transition module, means to control the temperature of said transition module, means on the bottom of said transition module to connect a glass fiber forming bushing thereto and to establish fluid communication from said canal to said bushing, means to connect the ends of each of said arms of said glass canal to horizontally disposed first and second forehearth modules, each of said forehearth modules being provided with a horizontally disposed glass canal constructed to communicate with the transition module canal when the forehearth modules are connected thereto, each of said forehearth module canals being insulated and being provided with means to control the temperature thereof, means on the bottom of each of said forehearth modules to connect a fiber forming bushing thereto and to establish fluid communication between the forehearth canal and said bushing and means at the other end of said glass conduit to connect said glass conduit to a pressurized source of glass.

4,325,722

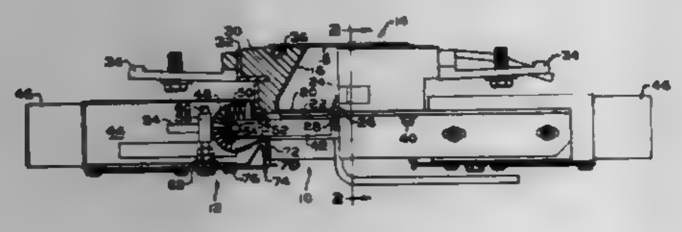
BUSHING ENVIRONMENT CONTROL ASSEMBLY

Thomas H. Jensen, Murrysville, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jan. 8, 1981, Ser. No. 223,525

Int. Cl.³ C03B *37/025*

U.S. Cl. 65—12 **9 Claims**



1. A bushing environment control assembly for controlling the environment in the attenuation zone of a glass fiber filament forming bushing, said bushing environment control assembly comprising:

a fin cooler assembly secured beneath said bushing in the direction of travel of the filaments being formed, said fin cooler assembly having a plurality of spaced fin plates extending into the attenuation zone;

a plenum chamber adjacent said attenuation zone, said fin plates having first ends positioned in said plenum chamber;

means for supplying a coolant gas to said plenum chamber;

means for allowing flow of a first portion of said coolant gas into said attenuation zone; and

means for allowing flow of a second portion of said coolant gas in the direction of travel of the filaments being formed.

4,325,723

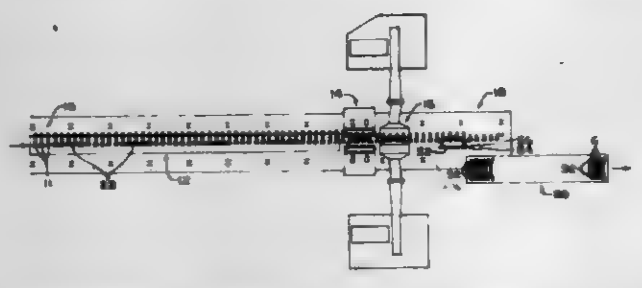
TRANSFERRING RIGID SHEETS FROM ONE CONVEYOR TO ANOTHER

John D. Kellar, Pontypool, and Gordon F. Pereman, Columbus, both of Canada, assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Nov. 26, 1980, Ser. No. 210,711

Int. Cl.³ C03B *23/03, 27/00*

U.S. Cl. 65—104 **10 Claims**



1. A method of treating rigid sheets comprising conveying a series of said sheets in end to end relation while suspended from tongs along a first path extending through a hot atmosphere for sufficient time to heat each sheet in turn to an elevated temperature sufficient for tempering and then through a first cooling area, applying cold tempering medium toward said conveyed sheet at a rate sufficient to impart at least a partial temper to said sheet, while the sheet is conveyed through said first cooling area at the downstream end of said first path,

clamping said sheet after it is conveyed through said first cooling area,

relaxing said tongs to release said sheet from said tongs,

lowering said clamped sheet so that its upper edge is below said tongs,

pivoting said clamped sheet approximately 90 degrees about a vertical axis outside said sheet,

transferring said clamped sheet onto a second path whose upstream end is transverse to the downstream end of said first path and which extends parallel to said first path through a second cooling area,

releasing said clamped sheet so that it is supported on its bottom edge for conveyance along said second path in a direction approximately parallel to that of said first path, and

conveying said released sheet in a broadside direction along said second path for further cooling in said second cooling area,

the total length of said first path and said second path required to handle a predetermined number of sheets being less than that required for conveying said sheets in the same end to end relation through both said paths.

4. Apparatus for treating rigid sheets comprising:

a first conveyor extending from its upstream end to its downstream end to define said first path,

a second conveyor extending approximately parallel to said first conveyor from its upstream end to its downstream end to define said second path,

the upstream end of said second conveyor being transversely aligned with the downstream end of said first conveyor,

sheet transfer and pivot means for transferring at least one of said sheets from the downstream end of said first conveyor to the upstream end of said second conveyor,

a plurality of tong-supporting carriages arranged for movement along said first conveyor,

tongs supported by said carriages adapted to engage the upper portion of at least one of said sheets,

said sheet transfer and pivot means comprising sheet clamping means, means to disengage said tongs from said upper portion after said sheet clamping means clamp said sheet, means to lower said sheet clamping means to move the upper edge of said sheet to a position below that occupied by said disengaged tongs,

means to pivot said sheet approximately 90 degrees about a vertical axis offset from the position occupied by said sheet at said sheet transfer and pivot means and simultaneously transfer said sheet from the downstream end of said first path at an orientation parallel to said first path to the upstream end of said second path at an orientation transverse to said second path while said sheet is clamped between said clamping means,

means to release said clamping means to support said sheet with its lower edge engaged by said second conveyor, and

means for moving said glass sheet broadside of said second path while supported on said second conveyor.

4,325,724

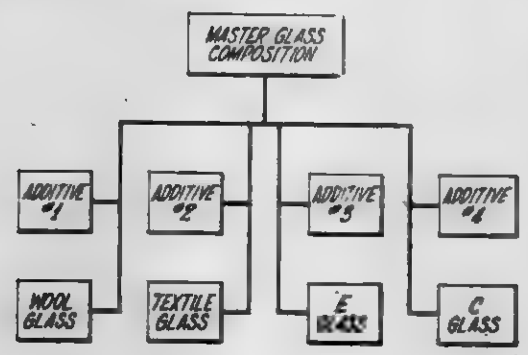
METHOD FOR MAKING GLASS

Magnus L. Froberg, Granville, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Continuation of Ser. No. 680,841, May 5, 1976, abandoned, which is a continuation-in-part of Ser. No. 624,616, Oct. 23, 1975, abandoned, which is a continuation-in-part of Ser. No. 526,876, Nov. 25, 1974, abandoned. This application Oct. 6, 1977, Ser. No. 841,860

Int. Cl.³ C03B *5/16*

U.S. Cl. 65—121 **7 Claims**



1. A process for forming a borosilicate glass fiber of a predetermined chemical composition containing 5–15% B_2O_3 comprising:

(a) separating the batch ingredients for said predetermined fiber composition into ingredients for forming a host glass and for forming a B_2O_3-containing additive glass, said host glass having a higher liquidus than said additive glass and said additive glass being more corrosive than said host glass;

(b) melting said ingredients for forming said host glass in a horizontally disposed, continuous flow, main-melter;

(c) flowing said molten host glass from said main melter to a location where said fibers are formed;

(d) separately melting said additive glass and combining, with forceful mechanical mixing, said molten additive glass with a larger portion of said molten host glass prior to said fiber forming location to form a fiberizable borosilicate glass, and

(e) forming said borosilicate fiber at said fiber forming location from said fiberizable glass, at least a major proportion of the B_2O_3 content of said fiber being supplied by said additive glass, said melter exhibiting longer life and the volatilization losses of B_2O_3 being substantially less than that obtained when melting the ingredients of said additive and host glass together in said melter.

4,325,725

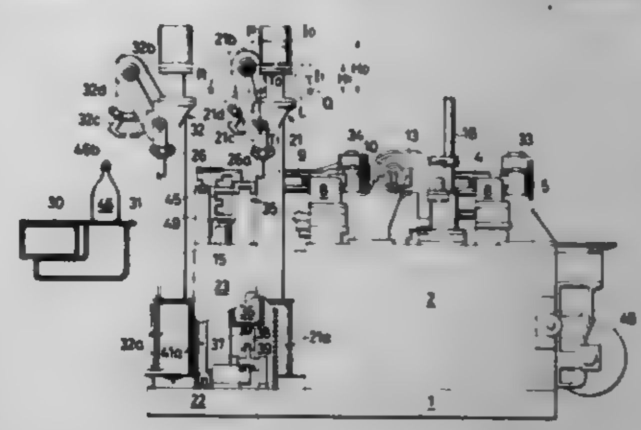
APPARATUS FOR PRODUCING GLASS BOTTLES

Masami Fujimoto, Nishinomiya, Japan, assignor to Yamamura Glass Kabushiki Kaisha, Nishinomiya, Japan

Filed Oct. 7, 1980, Ser. No. 194,905

Int. Cl.³ C03B *9/44*

U.S. Cl. 65—230 **3 Claims**



1. In an apparatus for producing glass bottles including,

parison forming means for forming a gob into a parison, the forming means being provided with a parison forming mold openable for taking out the parison,

reheating and intermediate forming means for receiving the parison from the forming means and reheating, or reheating and intermediately forming the parison, the reheating means having an intermediate forming member provided for enclosing the parison in a confined space,

final shaping means for receiving the reheated parison or intermediately formed piece from the reheating and intermediate forming means and shaping the same into a bottle, the shaping means having a finishing mold openable for removing the bottle,

a transfer assembly for transferring the parison from the parison forming means to the reheating and intermediate forming means,

a takeout for transferring the reheated parison or intermediately formed piece from the reheating and intermediate forming means to the final shaping means, and

a takeout for removing the finished bottle from the final shaping means, the improvement comprising at least said first-mentioned takeout being a rotatably movable arm pivotally mounted on said apparatus, a holder for said parison or formed piece mounted on said arm at a support point, the pivotal axis of said arm being located below a straight line through two points between which said support point of said holder on said arm moves for transferring said parison or formed piece, and means to rotate said arm.

4,325,726

DOUBLE JAWED SHAPING TOOL FOR GLASS VIALS

Ralston G. Edwards, Newfield; Albert S. Goffredi, Vineland; John Lisi, Newfield, and Gregory Murphy, Erial, all of N.J., assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed Sep. 11, 1980, Ser. No. 186,056

Int. Cl.³ C03B *23/09*

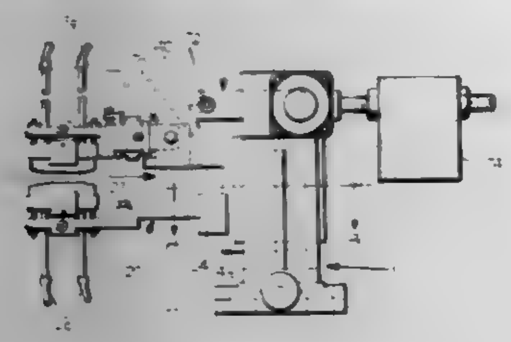
U.S. Cl. 65—298 **8 Claims**

1. Apparatus for forming the external contour of a heated tubular glass element comprising, in combination:

(1) means for concurrently rotating the tubular element and moving same in a linear path;

(2) a pair of forming tools constructed and arranged to engage opposite sides of the rotating glass element to form a desired external contour thereon;

(3) a support arm assembly for each forming tool;
(4) a plate element mounted for vertical movements adjacent said linear path;
(5) each said support arm assembly being secured to said plate element to position said forming tools respectively above and below said linear path and to move vertically concurrently with said plate element, and



(6) adjustable means operatively connected to said plate element to counter balance the total weight of said plate element, arm assemblies and said forming tools so that said forming tools are freely concurrently vertically movable by a rotating glass element moving therebetween.

4,325,727

PLANT GROWTH REGULANT PHOSPHONOACETALS

David Vofsi; Martin M. Halmann, and Shaul Yanai, all of Rehovot, Israel, assignors to Yeda Research and Development Company, Ltd., Rehovot, Israel

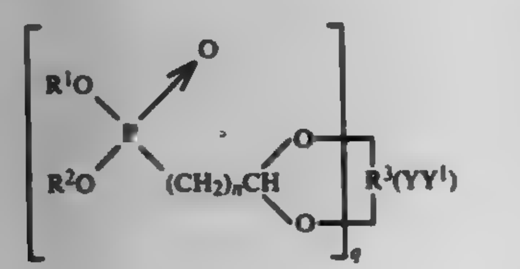
Continuation-in-part of Ser. No. 858,901, Aug. 12, 1977, Pat. No. 4,207,417. This application May 8, 1979, Ser. No. 37,111

The portion of the term of this patent subsequent to Jun. 10, 1997, has been disclaimed.

Int. Cl.[3] **A01N** *57/16;* **C07H** *13/00;* **C07D** *319/04, 317/12*

U.S. Cl. 71—86 **15 Claims**

1. A phosphonoacetal of the formula



wherein

R^1 is an alkyl group having from 1–3 carbon atoms;

R^2 is selected from the group consisting of hydrogen and the cations NH_4^+, Na^+, K^+, Ca^{2+}, Cu^{2+}, and R^1;

n is an integer from 0 to 2;

q is an integer from 1 to 3;

R^3 is a residue of a polyhydric alcohol having from 2–6 carbon atoms;

Y and Y^1 are each hydrogen hydroxyl, carbinol, methyl halogen, or methyl carbamoyl.

13. A plant growth regulating composition containing or agricultural carrier and as active ingredient an effective quantity of a compound defined in claim 1.

4,325,728

HERBICIDAL COMPOSITIONS CONTAINING N-(3-TRIFLUOROMETHYL-1,2,4-THIADIAZOLYL-5)-N'-METHYL-N'-METHOXY UREA AND α-[4-(3'-5'-DICHLOROPYRIDYL-2'-OXY)-PHENOXY]-PROPIONIC ACID PROPARGYL ESTER FOR CONTROL OF WEEDS IN WHEAT CULTURES

Marco Quadranti, Brugg; Willy Maurer, Riehen, and Kurt Maag, Pfeffingen, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 56,669, Jul. 11, 1979, Pat. No. 4,272,281. This application Oct. 6, 1980, Ser. No. 194,093

Claims priority, application Switzerland, Jul. 20, 1978, 7837/78

Int. Cl.[3] **A01N** *43/02, 43/40*

U.S. Cl. 71—90 **2 Claims**

1. A herbicidal composition for the selective post-emergence control of weeds in wheat cultures which consists essentially of an effective amount of the mixture of (1) N-(3-trifluoromethyl-1,2,4-thiadiazolyl-5-)-N'-methyl-N'-methoxyurea and α-[4-(3'-5'-dichloropyridyl-2'-oxy)-phenoxy]-propionic acid propargyl ester, in which the ratio of the urea to the ester is from 1:10 to 5:10, and (2) an inert carrier.

4,325,729

HERBICIDAL AND PLANT GROWTH REGULATING PYRIDYLOXY-PHENOXY-PROPIONIC ACID DERIVATIVES

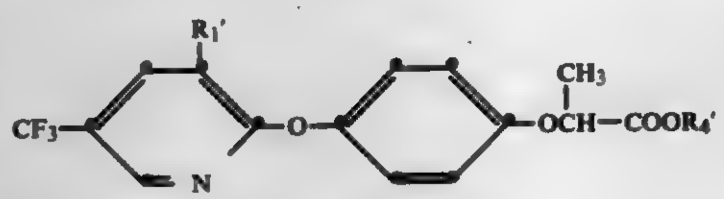
Hermann Rempfler, Ettingen; Rolf Schurter, Binningen, and Werner Föry, Basel, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 860,409, Dec. 13, 1977. This application Nov. 13, 1980, Ser. No. 206,518

Int. Cl.[3] **A01N** *43/40;* **C07D** *213/64*

U.S. Cl. 71—94 **17 Claims**

1. A compound of the formula



wherein R_1' is hydrogen or halogen; and R_4' is C_1–C_{18}-alkyl substituted by cyano.

13. A method for selectively combating weeds in cultivated crops which comprises applying to the area to be treated a herbicidally effective amount of a compound according to claim 1.

4,325,730

PROCESS FOR CONDITIONING SLAG DURING THE REFINING OF A METAL BATH

Francois Schleimer, Dudelange; Romain Henrion, Esch, Alzette; Ferdinand Goedert, Dudelange; Lucien Lorang, Differdange, and Jean Baumert, Esch, Alzette, all of Luxembourg, assignors to Arbed S.A., Luxembourg, Luxembourg

Filed Nov. 6, 1980, Ser. No. 204,537

Claims priority, application Luxembourg, Nov. 7, 1979, 81859

Int. Cl.[3] **C21D** *11/00;* **C21C** *5/32, 5/34*

U.S. Cl. 75—52 **6 Claims**

1. In a process for refining an iron melt in a crucible overlain by a slag layer tending upon oxidation of the slag to assume a frothy nonfluid consistency, the improvement which comprises, in combination, the steps of:

(a) blowing oxygen onto the top of said melt from a lance head disposed thereabove;

(b) continuously measuring the flowability of said layer of slag and the level of said layer and the speed of decarburization of the bath; and

(c) bubbling an inert gas into said melt from the bottom of said crucible at a rate of flow controlled in response to the measurements obtained in step (b) to maintain the level of the slag at a predetermined distance from said head of said lance while preventing said slag from frothing and the decarburization at a maximum under the condition of maintaining the level of said slag at said predetermined distance from said head and said slag in a nonfrothy character.

4,325,731

PROCESS OF PRODUCING REDUCING GAS FROM SOLID FUELS

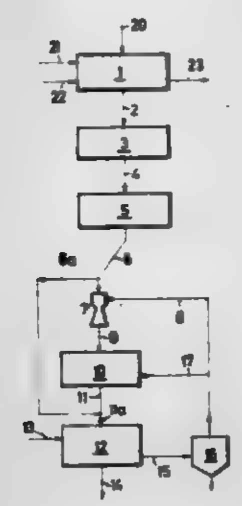
Paul Becker, Eschborn; Heinz Jockel, Büttelborn; Paul Rudolph, Bad Homburg, and Manfred Kühn, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Mar. 21, 1980, Ser. No. 132,576

Claims priority, application Fed. Rep. of Germany, Mar. 24, 1979, 2911692

Int. Cl.[3] **C21B** *13/00*

U.S. Cl. 75—91 **4 Claims**



1. A process for reducing an ore which comprises:

(A) at a pressure of 5 to 50 bars gasifying a solid carbonaceous granular fuel by contacting the same in a fixed bed with oxygen and steam fed into the lower portion of said fixed bed;

(B) scrubbing the gas produced from said gasification and cooling it to temperature of about 150° to 200° C., said cooled gas containing hydrogen, carbon monoxides, methane, water vapor and tar, subjecting said gas to shift conversion in order to adjust the residual carbon monoxide content to 1 to 10 percent by volume of dry gas;

(C) scrubbing the gas from shift conversion to remove sulfur compounds and to reduce the CO_2 content to no more than 3 percent by volume whereby to provide a scrubbed gas containing more than 70 percent by volume hydrogen and carbon monoxide which gas contains more than 6 percent by volume methane;

(D) admixing at least part of the so-scrubbed gas with reduction process exhaust gas formed by reduction of ore;

(E) reforming the resultant mixture of gases at a pressure of 1.5–10 bars at a temperature of 800° to 1500° C. thereby producing a reformed gas predominantly containing hydrogen and carbon monoxide;

(F) feeding at least a portion of said reformed gas containing up to 3 percent by volume CO_2 and up to 5 percent by volume methane as a reducing gas at 700°–1000° C. to an ore-reducing plant, therein contacting said ore therewith and withdrawing exhaust gas from said plant and feeding at least part of said exhaust gas into step D.

4,325,732

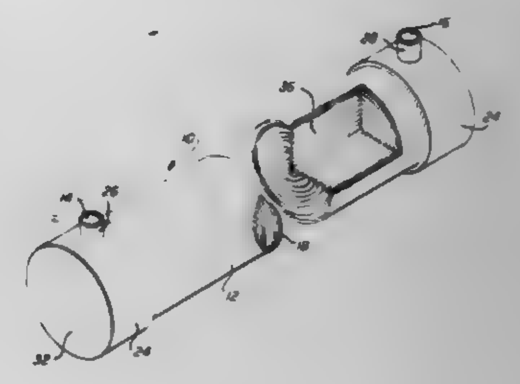
PRECIOUS METAL RECOVERY CARTRIDGE AND METHOD

Manfred J. Woog, 1960 B St., Craig, Colo. 81625

Filed Dec. 29, 1980, Ser. No. 220,692

Int. Cl.[3] **C22B** *11/04*

U.S. Cl. 75—109 **22 Claims**



1. An apparatus for the recovery of a metal in a recovery-metal bearing solution by reaction with a replacement metal of higher electromotive force, comprising;

a housing having inlet and outlet means spaced apart thereon; and

an exchange mass carried in said housing at least between said inlet and outlet means, wherein said exchange mass comprises a resilient fibrous support structure in generally spiral configuration and capable of flexing under fluid pressure to prevent clogging by deposited recovered metal, and a plurality of finely divided particles of replacement metal carried in dispersed relationship within said support structure and generally following the spiral configuration of the support structure;

wherein said housing defines an inlet cavity immediately adjacent to said inlet means at a first axial end of the housing and further defines an outlet cavity immediately adjacent to said outlet means at a second and opposite axial end of said housing, and wherein said exchange mass is carried within the housing between said inlet and outlet cavities with the axis of said spiral support structure substantially parallel with the axis of the housing, whereby, in use, flow of recovery-metal bearing solution between said inlet and outlet cavities is in a flow path substantially entirely parallel to said spiral layers of support structure and replacement metal particles for exposure of replacement metal to recovery-metal bearing solution substantially continuously, and, whereby, said support structure is capable of resilient flexing in response to obstruction of said flow path.

18. The method of recovering a metal from a recovery metal-containing solution, comprising:

providing a mat of resilient fibrous material;

dispersing finely divided particles of a replacement metal over the surface of said mat, wherein the replacement metal is higher in the electromotive force series than the recovery metal;

adhesively attaching said particles to the mat;

rolling said mat into a spiral;

inserting said spiral roll into a housing having an inlet communicating with one axial end of the spiral roll and an outlet communicating with the second axial end of the spiral roll;

directing a recovery metal-containing solution into the housing through said inlet for axial passage through the spiral roll and replacement reaction recovery of recovery metal by exchange with said replacement metal particles; and

discharging the resultant solution from said outlet.

4,325,733

AMORPHOUS CO-TI ALLOYS

Joseph A. Aboaf, Peekskill, N.Y., and Erik Klokholm, Stamford, Conn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 28, 1979, Ser. No. 108,113

Int. Cl.³ C22C *19/00*

U.S. Cl. 75—170 **13 Claims**

1. In a cobalt titanium metallic alloy, the improvement consisting of an amorphous metallic alloy having between about 14 and 30 atomic percent of titanium in the alloy, with the remainder of said alloy consisting of cobalt.

4,325,734

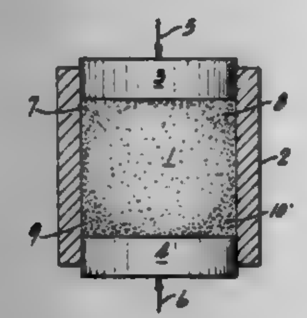
METHOD AND APPARATUS FOR FORMING COMPACT BODIES FROM CONDUCTIVE AND NON-CONDUCTIVE POWDERS

Lawrence M. Burrage, S. Milwaukee, Wis., and Jacques P. Guertin, Cupertino, Calif., assignors to McGraw-Edison Company, Rolling Meadows, Ill.

Filed Mar. 27, 1980, Ser. No. 134,645

Int. Cl.³ B22F *3/14*

U.S. Cl. 75—225 **52 Claims**



1. The method of forming a compact body of powdered material comprising the steps of at least partially filling a die cavity with powdered material, while retaining said die cavity in a protective inert atmosphere, locating the die cavity including the powdered material within a vacuum chamber, forming a predetermined vacuum in said chamber sufficiently high to remove essentially all free gases from within said powdered material, slowly heating the die cavity and powdered material to less than the melting temperature of the powdered material, to a sintering temperature, and closing the die cavity to incrementally compress the powdered material, while maintaining said predetermined vacuum and said sintering temperature, thereby to form said compact body.

4,325,735

RECORDING LIQUID COMPOSITION

Tokuya Ohta, Yokohama; Tsuyoshi Eida, Chiba; Yasuhiro Yano, Naka; Yohji Matsufuji, Tokyo, and Masahiro Haruta, Funabashi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

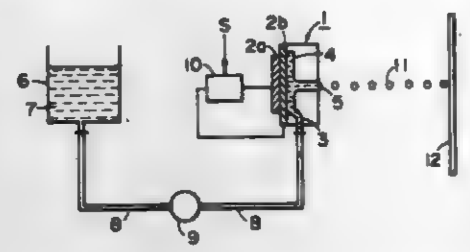
Filed Jun. 13, 1980, Ser. No. 159,247

Claims priority, application Japan, Jun. 22, 1979, 54-78954; Jun. 27, 1979, 54-82086; Jun. 27, 1979, 54-82087

Int. Cl.³ C09D *11/02*

U.S. Cl. 106—22 **19 Claims**

1. A recording liquid composition comprising an aqueous liquid medium containing a water-soluble dye, which comprises a nitrogen-containing heterocyclic ketone compound



and a member selected from the group consisting of urea and thiourea.

4,325,736

PROCESS FOR PREPARATION OF AE CONCRETE OR AE MORTAR

Eisaburo Okada, Wakayama, and Koji Sakagami, Kainan, both of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

Filed Jan. 7, 1980, Ser. No. 110,061

Claims priority, application Japan, Jan. 17, 1979, 54-4111

Int. Cl.³ C04B *21/00*

U.S. Cl. 106—88 **12 Claims**

1. A process for the preparation of AE concrete or AE mortar, which comprises incorporating in a hydraulic cement composition (A) a high-range water-reducing agent for concrete and (B) a foaming substance consisting essentially of a mixture of (1) 85 to 93% by weight of a reaction adduct of (a) an α,β-unsaturated dicarboxylic acid having 4 to 12 carbon atoms or an anhydride thereof and (b) an alkene having 6 to 18 carbon atoms, or a salt thereof, and (2) 7 to 15% by weight of a polymer of said α,β-unsaturated dicarboxylic acid or an anhydride thereof, and said alkene having 6 to 18 carbon atoms, or a salt thereof.

4,325,737

METAL-DOPED ORGANIC FOAM

James A. Rinde, Livermore, Calif., assignor to The United States Department of Energy, Washington, D.C.

Division of Ser. No. 26,505, Apr. 3, 1979, Pat. No. 4,261,937. This application Oct. 16, 1980, Ser. No. 197,465

Int. Cl.³ C08L *1/12, 1/08*

U.S. Cl. 106—122 **2 Claims**

1. A metal-doped organic foam of cellulose acetate or polyacrylonitrile having a density in the range of about 0.05 to about 0.4 gm/cm³, a cell size of about 2 to 10 micrometers, and metal loading of up to about 1.0 gm of metal per cm³ of foam, said metal being selected from the group consisting of RbF, NaCl, and KCl.

4,325,738

TERTIARY NITROGEN HETEROCYCLIC MATERIAL TO REDUCE MOISTURE-INDUCED DAMAGE IN ASPHALT-AGGREGATE MIXTURES

Henry Plancher, and Joseph C. Petersen, both of Laramie, Wyo., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jan. 15, 1981, Ser. No. 225,219

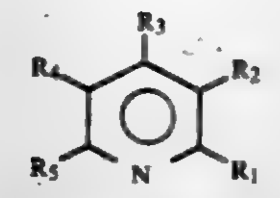
Int. Cl.³ C09D *3/24*

U.S. Cl. 106—273 N **15 Claims**

1. An improved bituminous binder composition, comprising:

a bituminous material; and

a minor amount of a moisture damage inhibiting agent selected from compounds having the formula:



wherein R_1, R_2, R_3, R_4 and R_5 groups are hydrogen, organic radicals or organic radicals having chemical constituents substituted thereon and wherein any two or more of said R_1, R_2, R_3, R_4 and R_5 groups may be chemically bonded one to another, and acid salts of said compounds.

4,325,739

MAGNETIC METAL AND ALLOY PIGMENTS

Hans-Peter Biermann, Krefeld; Helmut Steinberger, Leverkusen; Artur Botta, Krefeld; Rolf Naumann, Krefeld; Lutz Leitner, Krefeld, and Heinrich Heine, Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 5, 1980, Ser. No. 204,682

Claims priority, application Fed. Rep. of Germany, Nov. 13, 1979, 2945687; Jul. 22, 1980, 3027757

Int. Cl.³ C04B *31/28*; B22F *1/02*

U.S. Cl. 106—290 **9 Claims**

1. A pigment of a magnetic metal or alloy thereof carrying, in about 0.2 to 30% of the weight of the metal or alloy, a coating of at least one member selected from the group consisting of an ortho-silicic acid ester, a hydrolyzate thereof and a condensation product thereof.

3. A pigment according to claim 1, wherein the ortho-silicic acid ester is of the formula

$$(RO)_nSi(OR')_{4-n}$$

in which

R is an alkyl, cycloalkyl or alkenyl radical having from 1 to 20 C-atoms, possibly branched and/or interrupted by at least one oxygen bridge, an aryl radical, or an aralkyl radical,

R' is an alkyl radical having from 1 to 4 C-atoms, and

n is from 0 to 4.

4. A pigment according to claim 1, wherein the coating additionally contains a corrosion inhibitor in about 0.01 to 5% by weight of the metal or alloy.

4,325,740

POLYMERIC AMINE METALLATE COATINGS

Howard W. Jacobson, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

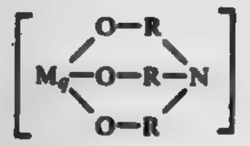
Continuation-in-part of Ser. No. 27,026, Apr. 4, 1979, abandoned, which is a continuation-in-part of Ser. No. 188,989, Sep. 22, 1980, abandoned. This application Dec. 29, 1980, Ser. No. 218,681

Claims priority, application Mexico, Apr. 1, 1980, 181806

Int. Cl.³ C04B *31/02*

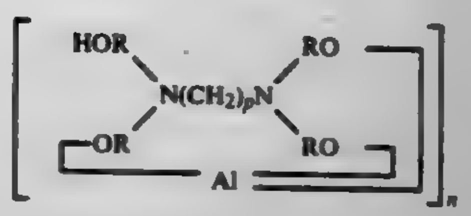
U.S. Cl. 106—300 **14 Claims**

1. A solid particulate rutile TiO_2 pigment substrate having a coating consisting essentially of (a) a polymeric amine metallate of the general formula



where R is an alkylene radical of from 2–6 carbon atoms, n is an integer of 4–6, q is 1 when M is aluminum and q is 3/2 when M is zinc and M is aluminum or zinc or (b) a polymeric amine metallate of the general formula

or (c)



where p is an integer from 2–5, n is an integer of 4–6, R is as defined above and the amount of aluminum or zinc expressed as an oxide is 0.17–2% by weight based on the weight of substrate.

4,325,741

FIBROIN-COATED PIGMENT AND PROCESSES FOR PRODUCING SAME

Kiyoshi Otoi, Nagano, and Toshihiro Nasuno, Odawara, both of Japan, assignors to Kanebo, Ltd., Tokyo, Japan

Filed Sep. 17, 1980, Ser. No. 187,899

Claims priority, application Japan, Sep. 20, 1979, 54-121121

Int. Cl.³ C04B *31/40*; C08J *7/18*; C09C *3/00*

U.S. Cl. 106—308 N **21 Claims**

1. A fibroin-coated pigment comprising a carrier pigment in the form of finely divided particles whose surfaces are substantially coated with a film of regenerated fibroin, the regenerated fibroin having a degree of crystallinity of at least 10%, the amount of the regenerated fibroin being in the range of 2 to 100% by weight based on the weight of the carrier pigment, at least 50% by weight of the regenerated fibroin being constituted of hot-water-insoluble fibroin having the β-configuration.

9. A process for producing a fibroin-coated pigment which comprises the steps of dissolving a degummed silk material in at least one solvent selected from the group consisting of an aqueous cupri-ethylenediamine solution, an aqueous ammoniacal solution of cupric hydroxide, an aqueous alkaline solution of cupric hydroxide and glycerol, an aqueous lithium bromide solution and an aqueous solution of the chloride or nitrate of calcium, magnesium or zinc, and an dialyzing the resulting fibroin solution; dispersing a carrier pigment in the resulting aqueous fibroin solution having a fibroin concentration of from 3 to 20% by weight; subjecting the pigment-loaded aqueous fibroin solution to at least one treatment for coagulating and precipitating the fibroin, the treatment being selected from the group consisting of the addition of a coagulating said, aeration, exposure to ultrasonic waves, and agitation at high shear rate; dehydrating and drying the resulting coagulum; and then pulverizing the dried product.

4,325,742

RARE EARTH CATION EXCHANGED ADSORBENTS FOR CARBOHYDRATE SEPARATIONS

Blaise J. Arena, Des Plaines, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Feb. 5, 1981, Ser. No. 231,705

Int. Cl.³ C13D *3/12, 3/14*

U.S. Cl. 127—46.2 **17 Claims**

1. A process for separating a carbohydrate from a feed stream comprising a mixture of carbohydrates which process comprises contacting at adsorption conditions said feed stream with an adsorbent comprising a crystalline aluminosilicate or cation exchange resin, the exchangeable cationic sites of said

adsorbent being exchanged with cations of a rare earth metal, thereby selectively adsorbing said carbohydrate from said feed stream, and then removing the feed stream from contact with said adsorbent.

4,325,743

PROCESS FOR THE ENHANCEMENT OF CARAMEL COLORANT

Merrick S. Tibbetts, South Salem, N.Y., and Gareth J. Templeman, Lewisville, Tex., assignors to PepsiCo, Inc., Purchase, N.Y.

Filed May 1, 1981, Ser. No. 259,701
Int. Cl.³ C13D *3/12*

U.S. Cl. 127—46.2 **5 Claims**

1. A process for enhancing the colorant properties of caramel colorant comprising passing an aqueous liquid containing caramel colorant through a size exclusion chromatographic material while subjecting the liquid to centrifugal force of about 10 G to about 2000 G and then collecting the caramel containing liquid having enhanced colorant properties.

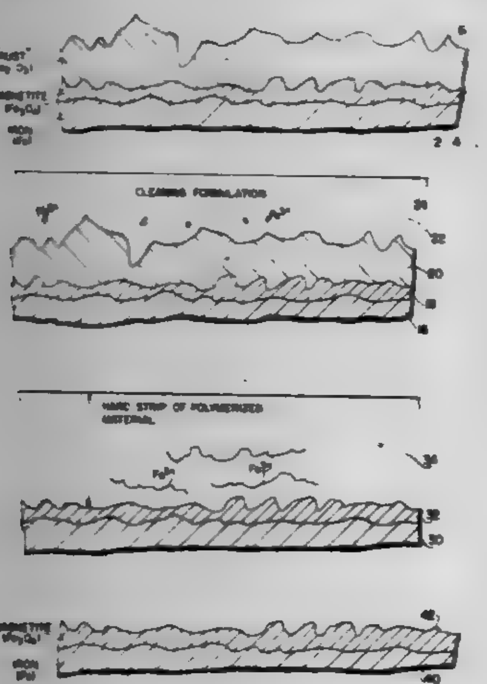
4,325,744

METHOD AND COMPOSITION FOR CLEANING METAL SURFACES WITH A FILM-FORMING COMPOSITION

Ramanathan Panayappan, Potomac, Md., and David L. Venezky, Alexandria, Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 25, 1980, Ser. No. 172,348
Int. Cl.³ B08B *7/00;* C11D *3/37, 7/32;* C23G *5/00*

U.S. Cl. 134—4 **7 Claims**



1. A method of cleaning a metal surface of deposit containing a metal oxide comprising:
forming an aqueous solution of a polyvinylpyrrolidone with an average molecular weight from about 10,000 to about 500,000, said solution having a polymer concentration at least sufficient to form a polymeric layer capable of removing said deposit and a chelating agent in an amount from about 1 to about 10 weight percent of said solution;
applying said solution onto said metal surface to be cleaned, whereby said solution forms a thick film layer which encapsulates said deposit on the metal surface;
allowing said layer to harden while cleaning occurs; and
removing the said layer along with corrosion products said deposit from the said metal surface.

4,325,745

PAINT REPELLENT COMPOSITION AND METHOD

Tome Milevski, 267 E. Burlington St., Riverside, Ill. 60546

Filed Feb. 5, 1981, Ser. No. 231,827
Int. Cl.³ C03C *23/00;* C09D *5/20*

U.S. Cl. 134—4 **4 Claims**

1. A paint repellent composition which comprises, from about 15 to 25 parts by weight of a liquid hydrocarbon oil, from about 1 to 5 parts by weight of sucrose, from about 5 to 15 parts by weight silicon dioxide, from about 2 to 8 parts by weight acetic acid, from about 1 to 5 parts by weight sodium chloride, and from about 50 to 70 parts by weight aluminum silicate.

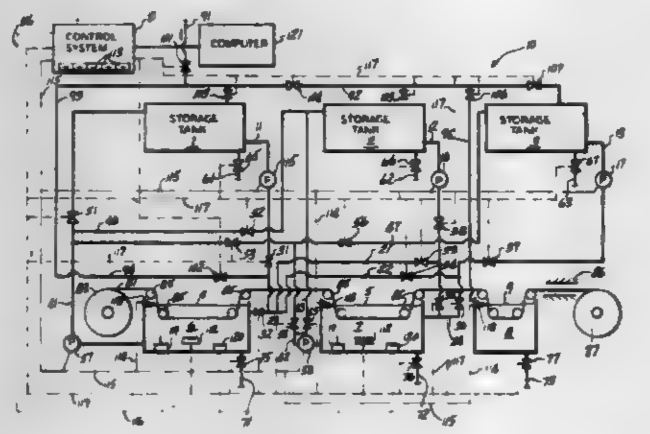
4,325,746

SYSTEM FOR CLEANING METAL STRIP

James M. Popplewell, Guilford, and Martin H. Dempsey, Stratford, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Continuation of Ser. No. 80,400, Oct. 1, 1979, abandoned. This application Feb. 19, 1981, Ser. No. 235,813
Int. Cl.³ B08B *7/04;* C23G *3/02*

U.S. Cl. 134—10 **33 Claims**



18. A process for cleaning a continuous strip of metal or metal alloy comprising the steps of:
providing a system having a plurality of off-line storage tanks and a cleaning line comprising at least two on-line cleaning tanks;
maintaining a plurality of cleaning solutions in said storage tanks;
providing said cleaning line with a first mode for cleaning said strip comprising a first set of cleaning solutions;
providing said cleaning line with a second mode for cleaning said strip comprising a second set of cleaning solutions different from said first set of cleaning solutions;
selecting at least one of said first and second sets of cleaning solutions in accordance with the type or composition of metal or metal alloy comprising said strip;
generating a signal indicative of said selected set;
automatically conditioning said system in response to said signal for delivering said selected set of cleaning solutions to said cleaning tanks from said storage tanks; and
passing said strip through said cleaning tanks.

4,325,747

METHOD OF MAKING A MESFET HAVING SAME TYPE CONDUCTIVITY FOR SOURCE, DRAIN, AND GATE REGIONS

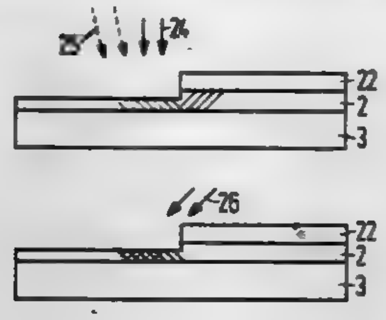
Dietrich Ristow, Neubiberg, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed May 14, 1979, Ser. No. 38,895
Claims priority, application Fed. Rep. of Germany, May 19, 1978, 2821975
Int. Cl.³ H01L *21/20, 21/306*

U.S. Cl. 148—1.5 **7 Claims**

1. A method for manufacturing a metal-semiconductor field

effect transistor have gate, drain, and source zones, comprising the steps of: providing a semiconductor layer; applying a mask covering a portion of a surface of the semiconductor layer where the drain zone is to be formed; removing a portion of the semiconductor layer adjacent the covered surface portion; implantation doping the semiconductor layer at said surface from a first direction where the mask covers the drain zone but



not the source and gate zones so as to permit a doping of the source and gate zones; and from a second direction at which a shadow is provided by the mask edge so as to dope the source zone but not the gate and drain zones; and providing the source zone with a greater doping than the gate zone and the gate zone with a greater doping than the drain zone by said implantation doping in the first and second directions utilizing the mask and the shadowing effects of the mask edge.

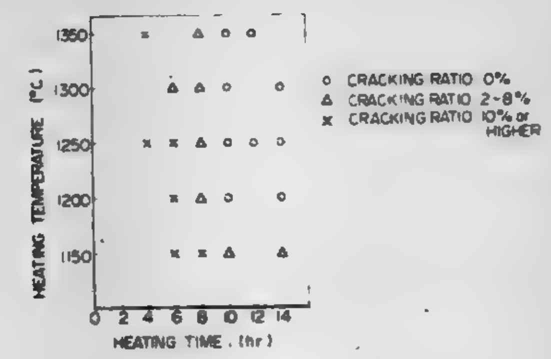
4,325,748

METHOD FOR PRODUCING STEEL PLATE HAVING EXCELLENT RESISTANCE TO HYDROGEN INDUCED CRACKING

Hajime Nashiwa, Sakai; Toshihiko Kawai, Wakayama; Muneyoshi Takeyama, Wakayama; Youzi Yamaguchi, Wakayama; Tsuneaki Kobayashi, and Tsutomu Nagahata, both of Osaka, all of Japan, assignors to Sumitomo Metal Industries, Ltd., Osaka, Japan

Filed Mar. 27, 1980, Ser. No. 134,579
Claims priority, application Japan, Mar. 28, 1979, 54-37593
Int. Cl.³ C21D *8/00*

U.S. Cl. 148—2 **5 Claims**



1. A method for producing a steel plate having resistance to hydrogen induced cracking, comprising the steps of:
providing a continuously cast steel slab containing 0.01 to 0.30% by weight of C, 0.05 to 0.60% by weight of Si, 0.40 to 2.50% by weight of Mn, 0.005 to 1.00% by weight of Sol Al, up to 0.003% by weight of S, and Ca in an amount such that the weight ratio of Ca/S is 2 to 10, the remainder being substantially iron;
subjecting said slab to hot primary reduction rolling at a temperature of from 1100° to 1300° C. to reduce the thickness of said slab to 50% or less of its original thickness;
heating the rolled slab at a temperature of 1200° C. or higher for 10 hours or longer; and
hot rolling the thus heated slab.

4,325,749

METHOD OF TREATING WELDING ROD FOR CORROSION RESISTANCE

Loren E. Barlet, 58100 Romeo Plank Rd., Mt. Clemens, Mich. 48044

Filed Nov. 4, 1980, Ser. No. 203,960
Int. Cl.³ C23F *7/04;* B23K *35/365*

U.S. Cl. 148—6.14 R **2 Claims**

1. A method of manufacturing ferrous base welding rod or wire comprising the steps of drawing steel alloy stock to a finished diameter and subsequently treating said welding rod to generate a black oxide coating, said treatment including the step of immersing said welding rod in an aqueous alkali-nitrate solution, to produce a thickness of black oxide coating on the order of 0.0001 inches.

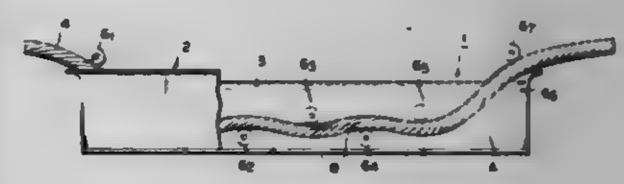
4,325,750

METHOD FOR MANUFACTURING A STRANDED CONDUCTOR FOR AN ELECTRIC POWER CABLE

Michio Takaoka, Chiba; Tsuneaki Mohtai, Yachiyo; Syotaroh Yoshida, and Kazuo Watanabe, both of Tokyo, all of Japan, assignors to The Fujikura Cable Works, Limited, Tokyo, Japan

Continuation-in-part of Ser. No. 134,996, Mar. 28, 1980, abandoned, which is a division of Ser. No. 41,334, May 22, 1979, abandoned. This application May 7, 1981, Ser. No. 261,473
Claims priority, application Japan, Nov. 9, 1978, 53-138066
Int. Cl.³ C23F *7/02*

U.S. Cl. 148—6.14 R **2 Claims**



1. A method for manufacturing a stranded conductor for an electric power cable, comprising the step of: advancing a stranded conductor constituted by a plurality of stranded uninsulated conductive strands through a bath of oxidizing liquid in a predetermined path, while said conductor is curved in a wavy fashion at an angle of 3° to 10° to said path, thereby coating and forming an oxide film on each of said strands while maintaining the elasticity of the conductor.

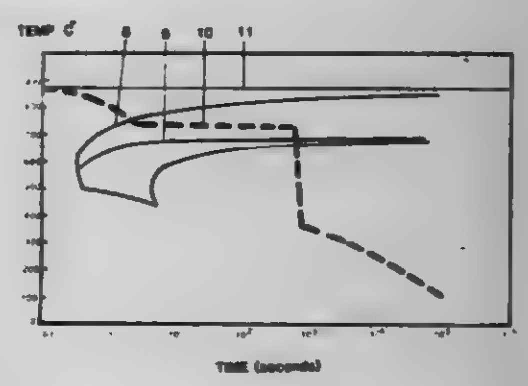
4,325,751

METHOD FOR PRODUCING A STEEL STRIP COMPOSED OF A DUAL-PHASE STEEL

Erik A. A. Josefsson, Borlänge, Sweden, assignor to SSAB Svenskt Stal Aktiebolag, Stockholm, Sweden

Filed May 12, 1980, Ser. No. 148,942
Claims priority, application Sweden, May 9, 1979, 7904053
Int. Cl.³ C21D *8/02*

U.S. Cl. 148—12 F **6 Claims**



1. A method of forming a steel strip which displays high strength and formability properties, the steel in said steel strip

comprising a dual-phase steel containing mostly fine-grained ferrite with grains of martensite dispersed therein, which method comprises

(a) processing an initial steel which comprises 0.05–0.20% carbon, 0.50–2.0% silicon, 0.50–1.5% manganese, 0–1.5% chromium, 0–0.15% vanadium, 0–0.15% molybdenum, 0–0.04% titanium, 0–0.02% niobium, balance of iron and normal impurities through a hot-strip mill so as to form a hot steel strip,
(b) cooling the hot steel strip of step (a) to a temperature of between 800° and 650° C.,
(c) coiling the steel strip of step (b),
(d) maintaining the temperature of the coiled steel strip of step (c) within the range of 800° and 650° C. for a time period of more than one minute,
(e) uncoiling the steel strip of step (d), and
(f) cooling the steel strip from step (e) to a temperature of below 450° C. at a rate exceeding 10° C./second.

4,325,752

METHOD FOR MAKING SHADOW MASKS

Toyoharu Suda, Kawasaki; Katsuhiko Tayama, Yokohama; Kenji Araki, Yokohama; Masayuki Kurata, Yokohama, and Hideo Yamana, Kawasaki, all of Japan, assignors to Nippon Kokan Kabushiki Kaisha and Nippon Mining Co., Ltd., both of Tokyo, Japan

Filed Aug. 13, 1980, Ser. No. 177,924
Claims priority, application Japan, Aug. 22, 1979, 54-107024
Int. Cl.³ C21G *9/00*
U.S. Cl. 148—12.1 **5 Claims**

1. A method for making shadow masks comprising, making an Al killed cold rolled steel sheet which consists essentially of

C: less than 0.01%, Mn: 0.10–1.00%, S: less than 0.025%, Sol.Al: 0.010–0.12%, N: less than 100 ppm, the remainder being Fe and unavoidable impurities, where N and Sol. Al have the relationship of Sol.Al/N $\times$ 14/27 $\geqq$ 1.5 and most of the N is fixed as AlN,

re-rolling the said sheet to a thickness below 0.2 mm, photo-etching the steel to bore holes through it, and final annealing the sheet in a decarbonizing atmosphere at temperatures in the range of 650°–850° C. for 1–30 minutes, then leveling the steel and press forming it.

4,325,753

PROCESS FOR DEGREASE ANNEALING THIN STRIP AND FOIL MADE OF ALUMINUM AND ALUMINUM ALLOYS

Rudolf Baur, Kreuzlingen, Switzerland, assignor to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Sep. 22, 1980, Ser. No. 189,174
Claims priority, application Switzerland, Oct. 18, 1979, 9355/79
Int. Cl.³ C22F *1/02*
U.S. Cl. 148—20.3 **5 Claims**

1. Process for degrease annealing of thin strip or foil made of aluminum or aluminum alloys in an annealing furnace which comprises:

providing said aluminum strip or foil containing lubricating oil residue thereon, and degrease annealing said aluminum strip or foil in an annealing furnace containing ozone at an elevated temperature, thereby obtaining reduced sticking tendency and accelerated removal of lubricating oil residue with ability to achieve degreasing in approximately 30% shorter time than in ozone-free atmosphere.

4,325,754

FLEXIBLE BRAZING ALLOY TAPE AND METHOD OF MAKING SAME

Howard Mizuhara, San Mateo, and Ronald W. Cox, Menlo Park, both of Calif., assignors to GTE Products Corporation, Stamford, Conn.

Filed Dec. 15, 1980, Ser. No. 216,239
Int. Cl.³ B23K *35/22;* C23C *1/12*
U.S. Cl. 148—22 **3 Claims**

1. A brazing alloy composition comprising a binder consisting of a low viscosity polyacrylic acid polymer and glycerol and the balance a nickel-base alloy powder.

2. A flexible brazing alloy composition comprising a binder consisting essentially of 0.87 to 1.15% by weight of a low viscosity polyacrylic acid polymer and 0.5% to 0.6% by weight glycerol, and the balance substantially all a nickel-base alloy powder.

3. The method of preparing a self-supporting flexible tape for use in brazing, consisting of the steps of

preparing a mixture consisting of an aqueous solution of low viscosity polyacrylic acid polymer, glycerol and a metal brazing powder selected from the group consisting of nickel-base alloys, copper-base alloys, and copper,
casting said mixture into a tape,
drying the tape so that the tape will consist of from about 0.87 to 1.15% by weight of polyacrylic acid polymer, 0.5% to 0.6% glycerol and the balance said brazing powder.

4,325,755

FORMABLE ALUMINUM ALLOY SHEET PRODUCT

John C. Blade, Banbury; John Ridley, Newport, and Geoffrey C. Wood, Bloxham, all of England, assignors to Alcan Research and Development Limited, Montreal, Canada

Filed Aug. 25, 1980, Ser. No. 180,859
Claims priority, application United Kingdom, Aug. 30, 1979, 30003/79
Int. Cl.³ C22C *21/02*
U.S. Cl. 148—32 **12 Claims**

1. A cold-rolled aluminium alloy sheet product formed of an alloy consisting essentially of

Fe 0.6–1.0%
Si 0.5–0.9%
Cu 0.3–0.5%
Mn up to 0.3%
Ti+B in conventional grain refining amount (Ti+B 0.006–0.06%)
Others up to 0.15% total and 0.05% each
Al balance,

said sheet product being characterized by a combination of a thickness in the range of 15 microns to 3 mms, a grain size of less than 100 microns and a U.T.S. of at least 150 MPa.

4,325,756

FATIGUE RESISTANT NICKEL SUPERALLOY

Edgar E. Brown, South Windsor, and Duane L. Ruckle, Glastonbury, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Continuation of Ser. No. 970,779, Dec. 18, 1978, abandoned. This application Jan. 28, 1980, Ser. No. 115,655
Int. Cl.³ C22C *19/03*
U.S. Cl. 148—32.5 **6 Claims**

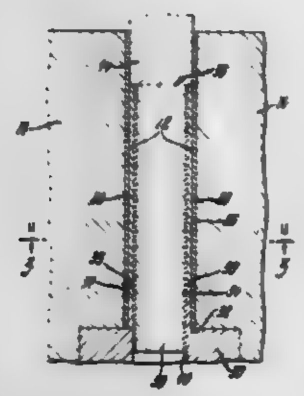
1. As an article of manufacture, a gas turbine disc having improved fatigue resistance in the 550°–750° C. range, said disc being formed of a gamma-gamma prime fatigue resistant nickel base alloy consisting essentially by weight percent of 0.25–9 Al, 1–4 Ti, 2–6 Cb, 0.01–0.1 C, and at least one material comprising 5–13 weight percent, said material selected from the group consisting by weight percent of 0–6 Co, 0–6 Mo, 2–7.5 Cr, 0–2.5 Hf and mixtures thereof balance nickel, the article further having a composition and heat treatment which provides between 10 and 45 volume percent gamma prime.

4,325,757

METHOD OF FORMING THIN CURVED RARE EARTH-TRANSITION METAL MAGNETS FROM LIGHTLY COMPACTED POWDER PREFORMS

William F. Jandeska, Jr., Rochester, and Charles F. Netherton, Marine City, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Sep. 4, 1979, Ser. No. 72,081
Int. Cl.³ H01F *1/02*
U.S. Cl. 148—103 **3 Claims**



1. A method of forming rare earth-transition metal powder into a thin, curved, permanent magnet metallurgically bonded to a ferromagnetic backing, the method comprising:

inserting into a tubular ferromagnetic sheath member a cylindrical composite mandrel having a highly magnetically permeable ferromagnetic core that is slidably retained within a non-magnetic sleeve sized to closely fit against the inner surface of the tubular sheath, said mandrel having at least one axial slot in its peripheral surface which in combination with the inner wall of the tubular sheath forms a cavity in the magnet shape;
filling said cavity with rare earth-transition metal powder in which the powder particles have single magnetic domains;
applying a magnetic field to align the easy axis of the powder particles radially with respect to the cavity curvature, the magnetically permeable mandrel core providing a low reluctance path for the field flux and a high flux density in the powder cavity;
pressing the powder in the axial direction to a density of at least about 50% of the rare earth-transition metal density to fix the powder particles in the magnetically aligned state,
removing the magnetic field, the particles thereafter having sufficient residual magnetism to adhere to adjacent ferromagnetic material;
withdrawing the ferromagnetic core portion from the mandrel, and thereafter withdrawing the non-magnetic sleeve portion without disturbing the particle alignment such that said the rare earth-transition metal powder is retained against the sheath in a cohesive mass in the shape of the magnet by residual magnetic attraction; and
heating the powder mass to promote densification to at least about 90% of the density of the rare earth-transition metal.

4,325,758

HEAT TREATMENT FOR HIGH CHROMIUM HIGH CARBON STAINLESS STEEL

Edward J. Milligan, Marion County, Ind., assignor to Western Electric Company, Inc., New York, N.Y.

Filed Oct. 2, 1980, Ser. No. 193,237
Int. Cl.³ C21D *1/32*
U.S. Cl. 148—135 **13 Claims**

1. A process for softening hard, as cast, high chromium, (>12% Cr), high carbon (>1% C) steel, which comprises:

(a) pre-heating the steel to a temperature somewhat below its critical point for a suitable period of time;
(b) raising the temperature of the steel for a given period of time to a temperature in excess of that necessary to dissolve chromium carbide into the steel grain matrix without substantially increasing grain size of the matrix, thereby homogenizing the steel;
(c) isothermally annealing the homogenized steel at a temperature and for a time so as to form a substantially spheroidized structure; and
(d) cooling the annealed steel.

9. A process for softening as cast steel having a Rockwell hardness of C60 to C65 and a composition of 2% carbon, 16% chromium, 1.75% molybdenum, 1% silicon and the balance being substantially iron, comprising the steps of:

(a) pre-heating the steel at a temperature of from 1450° F. to 1500° F. for a least 1 hour in a partial vacuum;
(b) homogenizing the steel at a temperature of about 1950° F. for a least 3 hours in a vacuum of from about 500 to 1000 microns;
(c) isothermally annealing the homogenized steel at a temperature of from 1300° F. to 1350° F. for a time of at least 4 hours in a vacuum of from 500 to 1000 microns; and
(d) cooling the annealed steel by means of a gas quench.

4,325,759

PREPARATION OF TNT-THERMOPLASTIC POLYMER GRANULES READILY SOLUBLE IN A TNT MELT

H. William Voigt, Jr., Wharton, and Bernard R. Banker, Mine Hill, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 17, 1979, Ser. No. 104,499
Int. Cl.³ C06B *45/10*
U.S. Cl. 149—19.92 **20 Claims**

1. A process for preparing a composition essentially of 2,4,6-trinitrotoluene (TNT) and a thermoplastic organic polymer containing up to about 35% of said polymer, in the form of granules rapidly soluble in molten TNT, which comprises preparing a solution of the TNT and the polymer in a water-soluble organic solvent consisting essentially of at least one saturated aliphatic ketone containing 3 to 5 carbon atoms, and diluting the solution with water in amount sufficient to precipitate the TNT-polymer composition in granular form.

13. A process for preparing a solution of a thermoplastic polymer in TNT, which comprises:

dissolving a mixture of the thermoplastic polymer and TNT containing up to about 35% of said polymer in a water-soluble organic solvent consisting essentially of at least one saturated aliphatic ketone containing 3 to 5 carbon atoms,
diluting the solution with water in amount sufficient to precipitate the TNT-polymer mixture in granular form, and dissolving the TNT-polymer granules in molten TNT.

4,325,760

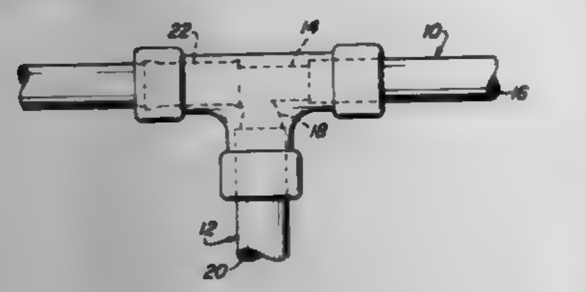
METHOD OF MAKING A CABLE SPLICE

Victor J. Julian, Westchester, and Kenneth A. Julian, Oak Brook, both of Ill., assignors to Julian Electric Inc., Westmont, Ill.

Filed Apr. 21, 1980, Ser. No. 142,094

Int. Cl.³ B21F *15/02*

U.S. Cl. 156—49 2 Claims



1. A method of splicing a first metallic conductor to a second metallic conductor comprising the steps of
providing a first conductor having an exposed stranded wire conductive portion,
providing a second conductor having an exposed stranded wire conductive portion,
inserting said conductive portions into a metallic tubular member,
then forging said tubular member onto said conductive portions to mechanically and electrically interconnect said conductive portions,
then bending one of said conductors at a predetermined angle relative to the other of said conductors at a location in proximity to said other of said conductors and said tubular member after said step of forging,
then soldering said conductive portions together at the location where said one of said conductors was bent, and
then molding a plastic cover over said tubular member and the soldered portions of said conductive portions of said conductors.

.4,325,761

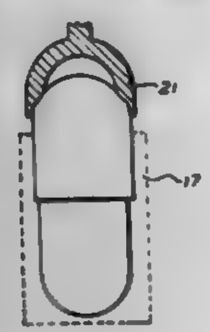
TWO-PIECE HARDSHELL, SOLUBLE AND DIGESTIBLE LIQUID CONTAINING GELATIN CAPSULE

Joseph A. Pace, Bethlehem, Pa., assignor to R. P. Scherer Corporation, Troy, Mich.

Division of Ser. No. 89,772, Oct. 31, 1979, Pat. No. 4,281,763. This application Aug. 14, 1980, Ser. No. 178,381

Int. Cl.³ B29C *27/08;* B65D *83/04*

U.S. Cl. 156—69 3 Claims



1. A method of forming a two-piece hardshell, soluble and digestible gelatin capsule, said method comprising the steps of:
forming a U-shaped body member having a closed lower end and an open free end terminating in an upper edge;
forming a cap member for receiving the open free end of said U-shaped body member, said cap member including a continuous interior rim therein;
abuttingly engaging said upper edge of said U-shaped body member against said interior rim formed in said cap member; and,
applying ultrasonic energy to the region where said upper edge of said U-shaped body member abuts said interior rim so as to form a substantially continuous interior ultrasonic weld between said upper edge and said interior rim, said interior ultrasonic weld extending continuously 360° around said upper edge of said U-shaped body member.

4,325,762

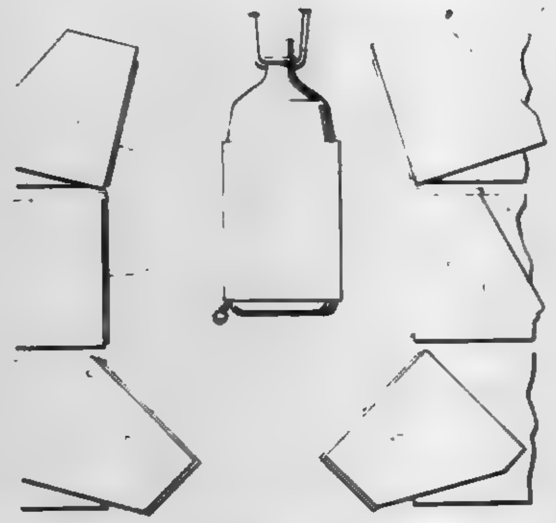
METHOD AND APPARATUS FOR APPLYING PLASTIC SLEEVES TO CONTAINERS

Robert J. Burmeister, Toledo; Russell W. Heckman, Perrysburg, and Robert C. Miller, Whitehouse, all of Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed Jun. 16, 1980, Ser. No. 159,721

Int. Cl.³ B29C *27/20;* B32B *31/26*

U.S. Cl. 156—86 18 Claims



1. In the method of labeling containers such as glass or plastic bottles, and the like, which includes the steps of providing a tubular sleeve of heat-shrinkable, thermoplastic material, retaining the said container in upright, vertical relation by grasping the upper portion of said container, transporting the said container and sleeve simultaneously in vertically-aligned relation, telescoping the said sleeve upwardly over the body portion of said container during their simultaneous transport in vertical alignment, the improvement comprising the steps of rotating the container about its axis whie bearing said sleeve, retaining the lower edge of said sleeve to maintain the sleeve in alignment with respect to the body portion of said container, and transporting said rotating container and sleeve along a path between at least two sources of heat while maintaining said sleeve a greater distance from the at least one source of heat on one side of said path than from the at least one source of heat on the opposite side of said path to thermally contract the sleeve into snug engagement with said container.

4,325,763

METHOD OF MANUFACTURING CERAMIC CAPACITORS

Kazuaki Utsumi; Masatomo Yonezawa, and Tomeji Ohno, all of Tokyo, Japan, assignors to Nippon Electric Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 32,403, Apr. 23, 1979, abandoned. This application Nov. 3, 1980, Ser. No. 203,700

Claims priority, application Japan, Apr. 25, 1978, 53/49490; Apr. 25, 1978, 53/49491

Int. Cl.³ C03B *29/00;* C04B *33/34, 43/00;* H01G *4/10*

U.S. Cl. 156—89 5 Claims

1. A method of manufacturing a ceramic capacitor comprising the steps of coating an electrode paste on only an outer layer of the opposite surfaces of a green ceramic body, said electrode paste containing silver as a major ingredient, and a binder having 1 to 50% by weight of an inorganic binder having the same composition as said green ceramic body and sintering said green ceramic body concurrently with the baking of said electrode paste, wherein said green ceramic body is prepared by dispersing a powder consisting essentially of a mixture of $Pb(Fe_{2/3}W_{1/3})O_3$ and $Pb(Fe_{1/2}Nb_{1/2})O_3$, or a mixture of $Pb(Fe_{2/3}W_{1/3})O_3$ and $Pb(Zn_{1/3}Nb_{2/3})O_3$ in a solvent together with an organic binder to form a slurry and then forming the slurry into said green ceramic body.

4,325,764

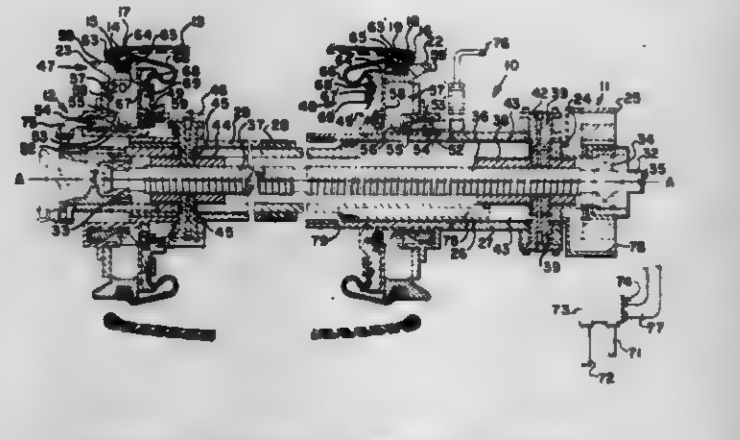
DRUM AND METHOD OF SHAPING A RADIAL TIRE

Paul E. Appleby, Cuyahoga Falls; Henry D. Broyles, Akron; John E. Hill, Akron, and Arland A. Peck, Akron, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Jun. 19, 1980, Ser. No. 161,055

Int. Cl.³ B29H *17/26*

U.S. Cl. 156—123 R 11 Claims



9. A method of building a radial tire comprising:
A. fabricating at a first location a first stage tire carcass including at least one radial ply in generally cylindrical form extending between a pair of annular inextensible beads located at spaced-apart bead portions;
B. placing said carcass about tire shaping means at a second location with said bead portions being supported on a pair of supporting surfaces having bead seats;
C. positioning said bead seats coaxially and at a spaced-apart distance less by a predetermined amount than the distance between said spaced-apart bead portions of said first stage tire carcass;
D. expanding said supporting surfaces radially by fluid pressure to engage circumferentially said bead portions;
E. moving said supporting surfaces axially apart by a distance sufficient to register said bead portions on said bead seats and exert an axial tension on said radial ply;
F. expanding said bead seats radially to a predetermined diameter by increasing said fluid pressure to secure said bead portions on said bead seats in the registered positions;
G. moving said bead seats and said bead portions together while radially expanding said radial ply therebetween for the application of a belt ply and tread; and
H. retracting said bead seats and removing said fabricated and shaped tire from said tire shaping means.

4,325,765

HIGH SPEED SPINNING OF LARGE DPF POLYESTER YARN

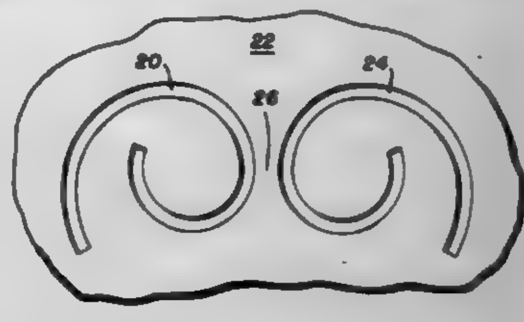
Jing-peir Yu, and James E. Bromely, both of Pensacola, Fla., assignors to Monsanto Company, St. Louis, Mo.

Continuation of Ser. No. 868,093, Jan. 3, 1978, abandoned, which is a continuation-in-part of Ser. No. 778,913, Mar. 18, 1977, Pat. No. 4,176,150. This application Jun. 20, 1980, Ser. No. 161,716

Int. Cl.³ D04H *3/16*

U.S. Cl. 156—167 8 Claims

1. A process for melt spinning a non-round polyester filament having a denier of at least 10 comprising
a. extruding a first molten polyester stream through a first non-round spinneret orifice;
b. extruding a second molten polyester stream through a second orifice, said second orifice being located sufficiently close to said first orifice that said first and second molten polyester streams unite to form a composite stream;



c. quenching said composite stream to form a filament having a denier of at least 10; and
d. withdrawing said filament from said composite stream at a spinning speed of at least 4000 meters per minute.

4,325,766

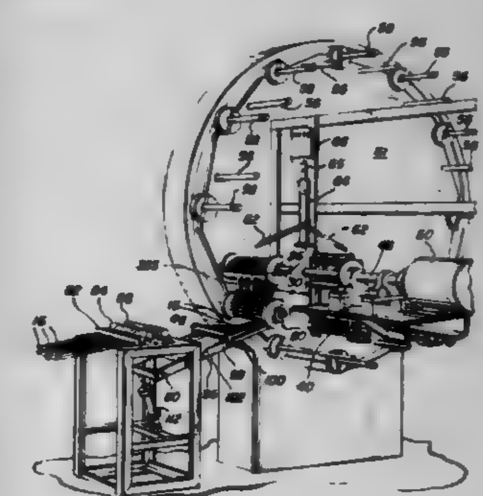
METHOD FOR THE FORMATION OF CORROSION-RESISTANT BODIES AND APPARATUS FOR FORMING THE SAME

Vesta F. Michael, Big Spring, Tex., assignor to Fiber Glass Systems, Inc., Big Spring, Tex.

Filed Apr. 2, 1980, Ser. No. 136,628

Int. Cl.³ B65H *81/00*

U.S. Cl. 156—171 10 Claims

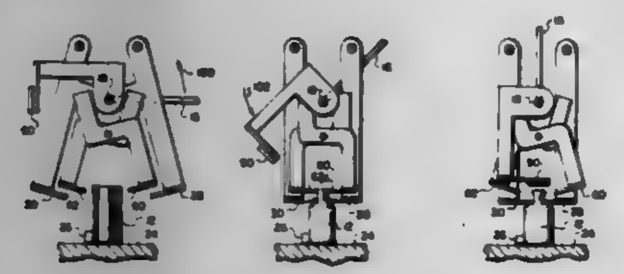


1. In a method for forming a filament-reinforced, corrosion-resistant body of predetermined length about a rotatable form, the steps comprising winding a web of substantially parallel filaments having a width substantially equal to said predetermined length about a first rotatable form at a first station; said filaments extending substantially axially of said form; saturating said web with a hardenable resin at said first station; winding the saturated web from said first rotatable form about a second rotatable form for said body at a second body-forming station; simultaneously applying reinforcing filaments spirally about said second form with said saturated web whereby longitudinal and transverse spiral reinforcing filaments are applied to said second form simultaneously moving filaments forming said spirals over a guide surface prior to engaging said second rotatable form; said guide surface having hardenable resin thereon whereby said filaments forming said spirals are saturated with hardenable resin prior to engaging said rotatable form.

4. In combination a plurality of rotating shafts for mounting forms for forming filament-reinforced resin bodies; a plurality of means for mounting saturated reinforcing filaments for use in forming said reinforced resin bodies; said reinforcing filaments being arranged substantially axially of the mounting

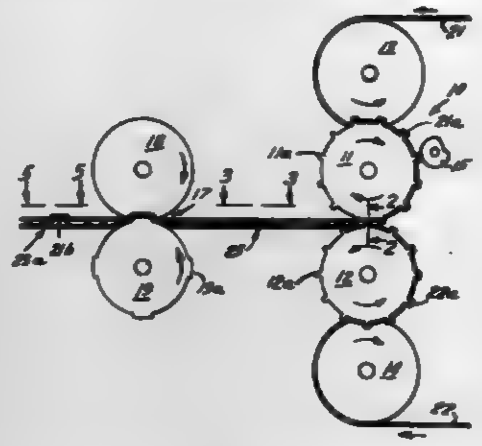
means on which disposed; each of the mounting means comprising a resin coating assembly for coating filaments mounted thereon; each mounting means being disposed adjacent one of said rotating shafts whereby said rotating shafts and mounting means are arranged in associated pairs; means for moving said associated pairs seriatim through a body-formation station whereat saturated filaments mounted on one of said mounting means are pulled from one of said mounting means by its associated rotating shaft and wound about said rotatable shaft; means at said formation station for feeding resin-saturated filaments to the latter associated shaft transversely to said saturated filaments received from said one mounting means simultaneously with said saturated filaments received from said mounting means until a filament-reinforced resin body of desired size has been formed.

4,325,767
METHOD FOR HEAT SEALING
Daniel G. Graves; Vernard L. Graves, both of Duncanville, and Ernest W. Knudsen, Jr., Arlington, all of Tex., assignors to Universal Precision Machining Co., Dallas, Tex.
Division of Ser. No. 72,648, Sep. 5, 1979, Pat. No. 4,265,696. This application Mar. 6, 1981, Ser. No. 241,414
Int. Cl.³ B32B *31/02, 31/20, 31/26*
U.S. Cl. 156—196 **6 Claims**



1. A method for manually sealing heat sealable material by gripping, heating and sealing said material in a single actuation bi-directional drive train and in a manner requiring the use of only one hand of an operator, said method comprising:
provide a manually operable drive shaft rotatably mounted within a support frame for heat sealing material;
provide a heat sealing element for sealing said material;
couple said heat sealing element directly to said drive shaft for rotation therewith;
provide means for positioning said material adjacent said drive train for the sealing thereof, in a seond rotatable position;
provide means for gripping said material relative to a first rotatable position of said drive shaft;
provide means for squeezing said material relative to a third rotatable position of said drive shaft;
dispose said material adjacent said drive train with said drive shaft in an initial rotatable position for receiving material for sealing;
rotate said drive shaft in a first direction to a first position of arcuate displacement and grip said material relative to said drive shaft;
rotate said drive shaft in said first direction to a second position of greater arcuate displacement and wherein said heat sealing element is adjacent said material;
rotate said drive shaft in a second opposite direction to a third position between said first and second positions wherein said heat sealing element is displaced from said material and said heated material is being squeezed; and
rotate said drive shaft in said second direction to its initial rotational position.

4,325,768
METHOD OF MANUFACTURING FIBROUS SHEET STRUCTURE
Galyn A. Schulz, Appleton, Wis., assignor to American Can Company, Greenwich, Conn.
Division of Ser. No. 21,915, Mar. 19, 1979, abandoned. This application Dec. 14, 1979, Ser. No. 103,653
Int. Cl.³ B32B *31/20*
U.S. Cl. 156—206 **1 Claim**

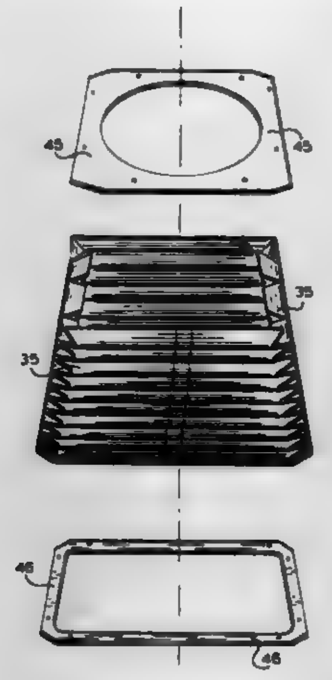


1. In the manufacture of multi-ply fibrous sheet structure, the method comprising: embossing each of a pair of fibrous webs with a plurality of crest and depressions of a first pattern on a surface of each; disposing said webs with said surfaces facing each other and with the crests on each web positioned between the crests on the other web, and extending beyond the crests on the other web toward the depressions on the other web; portions interconnecting crests and depressions of one web being laterally spaced from portions interconnecting crests and depressions of the other web; adhesively joining at least some of said crests of one web to the depressions of the other web, to join said webs to form a sheet; and embossing said sheet with a plurality of registered crests and registered depressions of a second pattern in each said web fitted compactly within one another throughout the extents of said crests and depressions, so that crests of the second pattern in one of the webs extend beyond and are spaced from the plane of the portion of said one web having said first pattern of crests and depressions, the crests and depressions of said first pattern being more closely spaced than the crests and depressions of said second pattern.

4,325,769
METHOD OF MAKING BELLOWS
Richard J. Moyse, Sea Coast La., Port Washington, N.Y. 11050, and Clarence L. Moyse, 103-88 Monarch Dr., Largo, Fla. 33540
Filed Jan. 14, 1980, Ser. No. 111,731
Int. Cl.³ B23P *19/04;* **F16J** *3/04;* **G03B** *17/04*
U.S. Cl. 156—217 **8 Claims**

1. In a method for making an axially extendable and contractable camera and enlarger bellows of the type including a plurality of sides defining a hollow body having a generally polygonal cross-section and an open front and rear end, each side of which has a multiplicity of pleats forming successive ridges and valleys with each ridge and valley being formed by relatively rigid planar surfaces separated by a relatively flexible joint, the improvement comprising:
moving a single web of a dielectric sheet material past at least one die having die edges arranged in a predetermined pattern for producing a separable bellows blank having parallel fold lines formed therein for forming said multiplicity of pleats;
die forming said bellows blank by heating said die with rf heating and effecting contact between said die and a portion of said web;
separating said blank from said web and folding said blank

on a form so that one longitudinal edge thereof overlaps another longitudinal edge thereof so as to produce a seam;
bonding said seam by a resistance heated seaming device to produce a welded seam; and
manually compressing said hollow body along the longitudinal axis thereof and along said fold lines so as to produce

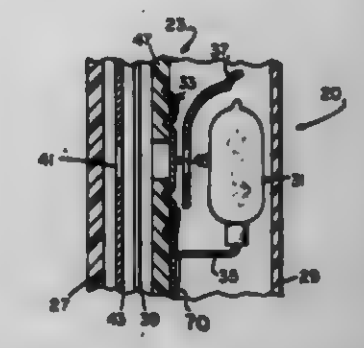


a polygonal bellows body having said ridges and valleys in each of the sides thereof.
8. The method according to claim 1, additionally including the step of inserting a rigid hollow frame into each end of said front and rear open ends of said body and securing the marginal edges of said body and said frames together.

4,325,770
PROCESS FOR PRESSURE-SENSITIVE ADHESIVE COATED PRODUCTS
Ralf Korpman, Bridgewater, N.J., assignor to Permacel, New Brunswick, N.J.
Filed Jun. 27, 1980, Ser. No. 163,606
Int. Cl.³ B41M *3/12*
U.S. Cl. 156—230 **6 Claims**

1. A process for making a pressure-sensitive adhesive coated product comprising:
(a) cooling a thermoplastic elastomer to below minus 20° C. and pulverizing the cool polymer to a size sufficiently fine to pass through a 60 mesh screen to obtain an elastomer powder, said elastomer being an A-B-A block copolymer having a softening temperature maximum of no greater than about 233° C.,
(b) pulverizing a tackifying resin of softening point in the range of about 85° C. to about 150° C. to a size sufficiently fine to pass through a 60 mesh screen to obtain a tackifier powder,
(c) dry blending at ambient temperature or below, said tackifier powder and elastomer powder in a weight ratio of about 50 to about 125 parts of tackifier powder to 100 parts of elastomer powder to obtain a blend of powders,
(d) dry coating said powder blend onto the surface of a substrate,
(e) heating the powder coated substrate to a temperature of at least about 177° C. until the powder particles melt into union with each other to form a homogeneous molten coating, and
(f) allowing to cool to ambient temperature.

4,325,771
METHOD OF MAKING A DIE-STAMPED CIRCUIT BOARD ASSEMBLY FOR PHOTOFLASH DEVICES
Boyd G. Brower, Williamsport; David R. Broadt, Lewisburg, and John W. Shaffer, Williamsport, all of Pa., assignors to GTE Products Corporation, Stamford, Conn.
Filed Mar. 19, 1980, Ser. No. 131,711
Int. Cl.³ B32B *31/18;* **F21K** *5/02;* **H05K** *3/04*
U.S. Cl. 156—261 **10 Claims**



1. A method of making a circuit board assembly for use in a photoflash device wherein said assembly includes a dielectric substrate, at least one switching element, and at least one electrical conductive member, said method comprising:
positioning said switching element at a predetermined location on a first surface of said substrate;
positioning said dielectric substrate on a base member;
orienting a thin strip of electrically conductive material over said dielectric substrate and said switching element;
engaging said thin strip of conductive material with a metal die member so as to press preselected portions of said conductive material and said switching element into said dielectric substrate such that said preselected portions of said conductive material effect electrical contact with said switching element without severing said element, said preselected portions of said conductive material defining said conductive member; and
removing the remainder of said electrically conductive material from said substrate member.

4,325,772
METHOD OF INTERNALLY LINING AN INSTALLED PIPE
Tetsui Suetoshi, Kawachinagano; Munetaka Kinugasa, Nishinomiya; Koichi Hosoya, Ashiya, and Mitsuo Yamamoto, Minamikawachigun, all of Japan, assignors to Osaka Gas Kabushiki Kaisha, Osaka, Japan
Continuation-in-part of Ser. No. 932,981, Aug. 9, 1978, abandoned. This application Nov. 24, 1980, Ser. No. 209,919
Claims priority, application Japan, Aug. 18, 1977, 52-99898; Nov. 30, 1977, 52-144775
Int. Cl.³ B29C *27/16*
U.S. Cl. 156—294 **9 Claims**

1. A method of installing an internal-lining in a cleaned and prepared installed pipe surface including an upper portion and a lower portion, comprising the steps of;
(a) placing a flexible liner tube having an outer and an interior surface in said pipe along its lower portion with said liner tube extending the length of said pipe,
(b) introducing a selected quantity of liquid adhesive agent into one end portion of said pipe between a portion of said upper portion of the inner surface of said pipe and a por-

tion of the upper portion of the outer surface of said liner tube, in a sufficient amount to secure the entire length of said flexible liner to said inner surface of said liner pipe,

(c) passing an object having a cross-sectional diameter substantially the same as that of said inner surface of said pipe through the interior of said liner tube from said one end portion in a direction to thereby distribute said introduced liquid adhesive agent evenly and positively in the peripheral and longitudinal directions along said inner surface of said pipe and along the outer surface of said flexible liner as said object passes through said liner tube thereby causing said liner tube to expand into overlying engagement with the inner surface of said pipe and to adhere thereto.

4,325,773

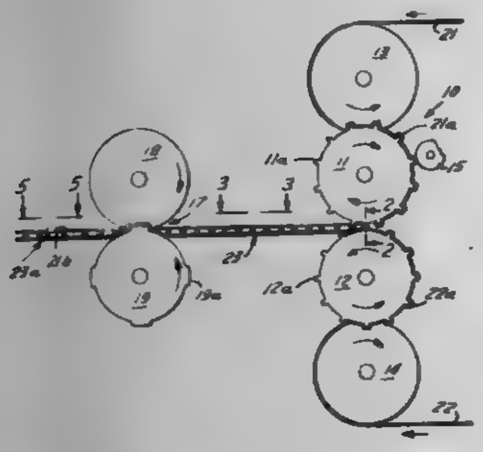
APPARATUS FOR MANUFACTURING FIBROUS SHEET STRUCTURE

Galyn A. Schulz, Appleton, Wis., assignor to American Can Company, Greenwich, Conn.

Division of Ser. No. 21,915, Mar. 19, 1979, abandoned. This application Dec. 14, 1979, Ser. No. 103,652

Int. Cl.³ B31F *1/10*

U.S. Cl. 156—471 **1 Claim**



1. An apparatus for manufacturing embossed sheet structure of fibrous material, comprising:

first embossing means at a first station operative to emboss each of a pair of webs of fibrous material with a plurality of relatively closely spaced crests and depressions of the first pattern;

means operative to position the crests on each web between the crests on the other web so that the crests on each web extend beyond the crests on the other web toward the depressions on the other web and so that portions interconnecting crests and depressions of one web are laterally spaced from portions interconnecting crests and depressions of the other web;

means operative to adhere at least some of the crests of one web to the depressions of the other web, whereby to join said webs together to form a sheet; and

second embossing means at a second station, separate from the first embossing means at the first station, operative to emboss said formed sheet with a plurality of relatively widely-spaced registered crests and registered depressions of a second pattern in said webs fitted compactly within one another throughout the extent of said crests and depressions, wherein said last recited crests of one of said webs extend beyond and are spaced from the plane of the portion of said one web in the sheet structure having said first pattern of crests and depressions.

4,325,774

CORRECTION LABEL APPLYING DEVICE FOR PORTABLE LABEL PRINTING MACHINE

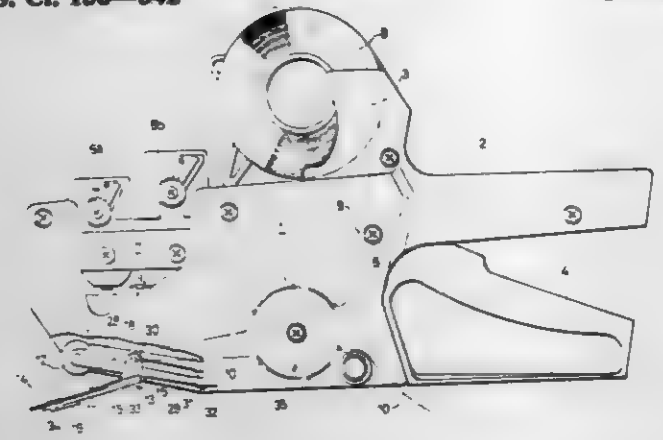
Yo Sato, Tokyo, Japan, assignor to Kabushiki Kaisha Sato Kenkyusho, Japan

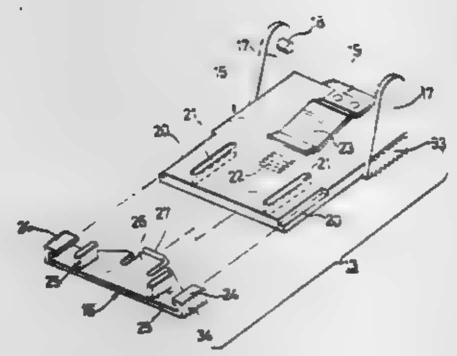
Filed Dec. 11, 1980, Ser. No. 215,319

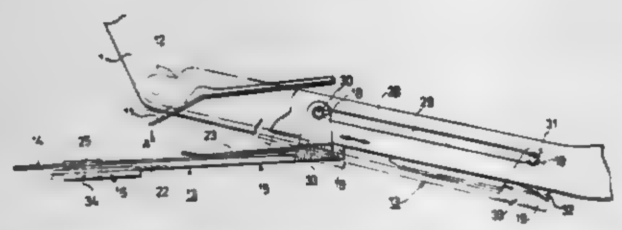
Claims priority, application Japan, Dec. 28, 1979, 54-183457[U]

Int. Cl.³ B41F *13/24;* **B23K** *27/00;* **B31F** *5/04;* **B32B** *31/00;* **B65C** *9/34*

U.S. Cl. 156—542 **14 Claims**







1. A correction label applying device for use in conjunction with a label applicating machine, said device comprising:

price tag holding means for holding a price tag or the like which is to be corrected; and

mounting means for mounting said price tag holding means on a label applicating machine for permitting said price tag holding means to be moved between a first and a second position; in said first position, said price tag holding means being adapted to hold a price tag or the like in an applicating position relative to the label applicating machine so that the price tag or the like will receive a label piece fed out by the label applicating machine; in said second position, said price tag holding means being located remote from said applicating position; and when said correction label applying device is mounted on the label applicating machine, said second position being sufficiently remote from said applicating position that said price tag holding means, when in said second position, will not block the application by the label applicating machine of a label to an article other than a price tag or the like held on said price tag holding means.

4,325,775

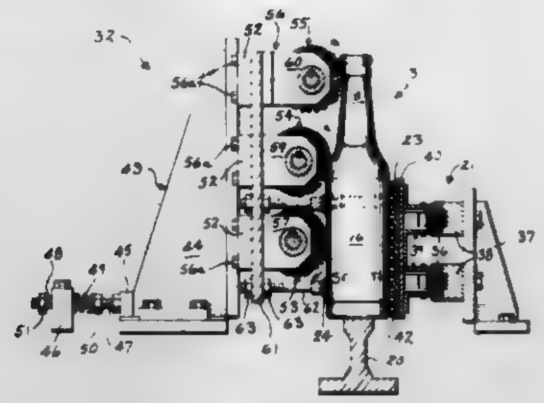
DELABELER

Horst Moeller, W224 N4915 West View Dr., Sussex, Wis. 53809

Filed Feb. 4, 1980, Ser. No. 118,197

Int. Cl.³ B32B *31/18;* **B67C** *1/08*

U.S. Cl. 156—584 **18 Claims**



1. A delabeler for removing one or more labels and associated adhesive from a container, comprising means to move a series of the containers through a plurality of processing stations, a strip brush station including a plurality of first brushes each including a plurality of circumferentially spaced, radially extending coarse bristles rotating about an axis spaced adjacent to said moving means and support means connected to said first brushes to position said coarse bristles against each moving container to remove the label, and a scrub brush station including a plurality of second brushes each including a plurality of circumferentially spaced, radially extending fine bristles having a greater flexibility than said coarse bristles and rotating about an axis spaced adjacent to said moving means and support means connected to said second brushes to position said fine bristles against each moving container to remove the adhesive.

4,325,776

METHOD FOR PREPARING COARSE-CRYSTAL OR SINGLE-CRYSTAL METAL FILMS

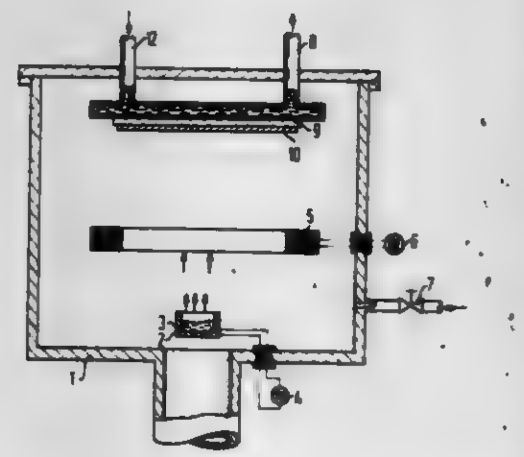
Günter Menzel, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Continuation of Ser. No. 917,381, Jun. 20, 1978, abandoned. This application Jun. 9, 1980, Ser. No. 157,890

Claims priority, application Fed. Rep. of Germany, Jun. 20, 1977, 2727659

Int. Cl.³ C30B *23/06*

U.S. Cl. 156—610 **1 Claim**



1. A method for producing coarse-crystal or single-crystal films, comprising:

(a) providing a cooled substrate maintained at a temperature below about −90° C.;

(b) precipitating as a layer on said cooled substrate by vapor deposition or atomizing a metal selected from the group consisting of tantalum, tungsten, copper, cobalt, aluminum, aluminum alloys and titanium-vanadium alloys having a vanadium content of greater than about 70 atom percent, said metal layer being present on said substrate in the amorphous phase;

(c) heating said substrate having said metal layer deposited thereon to about room temperature to produce crystals, the diameter of which is larger than about 50 μm.

4,325,777

METHOD AND APPARATUS FOR REFORMING AN IMPROVED STRIP OF MATERIAL FROM A STARTER STRIP OF MATERIAL

John C. Yarwood, Madison; Derek E. Tyler, Cheshire, and Joseph Winter, New Haven, all of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Aug. 14, 1980, Ser. No. 178,063

Int. Cl.³ C30B *13/18*

U.S. Cl. 156—620 **26 Claims**

1. In an apparatus for reforming an improved strip of material from a starting strip of material comprising:

electromagnetic means for maintaining a floating molten zone of said material in said starting strip of said material and for forming said floating molten zone into said improved strip, the improvement wherein said apparatus includes:

susceptor means arranged contiguous to the starting strip and operatively associated with said electromagnetic means for initially radiating and conducting heat to said starting strip whereby said starting strip is sufficiently conductive to be directly heated by said electromagnetic means, and

means for providing relative movement between said susceptor means and said electromagnetic means by positioning said susceptor means in and out of the field of the electromagnetic means.

4,325,778

HIGH CAPACITY ETCHING PROCESS

Martin P. Lepselter, Summit, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Division of Ser. No. 65,185, Aug. 9, 1979, Pat. No. 4,268,374. This application Jan. 16, 1981, Ser. No. 225,466

Int. Cl.³ C23C *15/00*

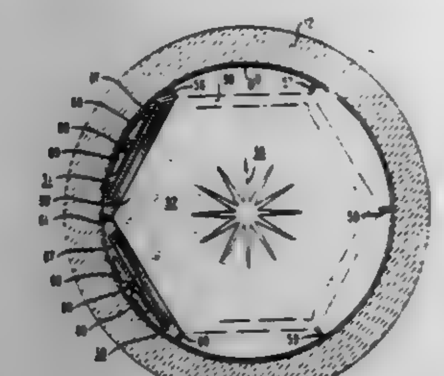
U.S. Cl. 156—643 **4 Claims**

1. A uniform high-throughput dry etching process for delineating fine-line patterns in multiple workpieces simultaneously by sputter etching or reactive sputter etching in the space between a small-surface-area conductive cylindrical cathode element and a large-surface-area anode element centrally mounted within said cathode element, said process comprising the steps of

mounting the workpieces to be etched on the inner surface of said cathode element in a symmetrical cylindrical array,

establishing a predetermined gaseous atmosphere within said anode-to-cathode space,

and capacitively coupling said cathode element to a source of a-c power and connecting said anode element to a point of reference potential to form a generally symmetrical annular dark space in the immediate vicinity of said work-



pieces and to form a generally symmetrical annular plasma between said dark space and said anode element, thereby to cause uniform etching of said multiple workpieces to occur.

4,325,779

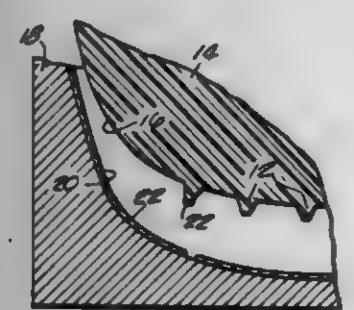
METHOD FOR SHAPING AND FINISHING A WORKPIECE

James J. Rossetti, Palmyra, Wis., assignor to Beatrice Foods Co., Chicago, Ill.

Continuation-in-part of Ser. No. 30,802, Apr. 17, 1979, abandoned. This application Nov. 17, 1980, Ser. No. 207,826

Int. Cl.³ C23F *1/02*

U.S. Cl. 156—651 34 Claims



1. A process for shaping a workpiece and for producing a workpiece surface contour complementary to the surface contour of a model desired to be reproduced, the process comprising the steps of:

(a) providing a non-planar template which is a negative image of the workpiece surface contour to be reproduced;
(b) applying a coating of an etchant resistant masking material to at least a portion of the surface of said workpiece, said masking material being adapted to protect said workpiece surface from the effects of etchant;
(c) pressing said template against said workpiece surface;
(d) withdrawing said template from said workpiece surface to selectively adhere the masking material to the template and correspondingly selectively remove masking material from those portions of said workpiece surface contacted by said non-planar template surface;
(e) applying etchant to said workpiece surface to etch portions of said workpiece surface not covered by said masking material; and
(f) repeating steps (b) through (e) until the surface contour of the workpiece conforms to the nonplanar surface contour of the model.

4,325,780

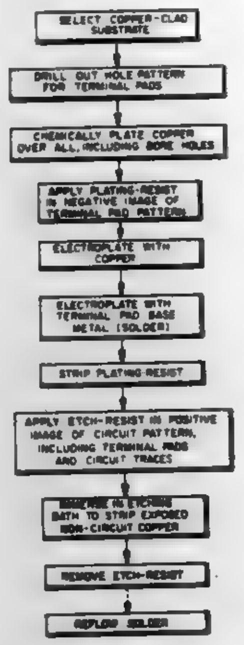
METHOD OF MAKING A PRINTED CIRCUIT BOARD

Robert M. Schulz, Sr., 737 N. Albany Ave., Chicago, Ill. 60612

Filed Sep. 16, 1980, Ser. No. 187,811

Int. Cl.³ C23F *1/02*

U.S. Cl. 156—659.1 8 Claims



1. The method of making a printed circuit board which comprises the steps of: preparing a dielectric substrate having electrically conductive material surfacing at least one side thereof, including perforating the substrate with a pattern of holes corresponding with the terminal pad pattern of the intended electrical circuit; coating portions of the electrically conductive surface of the substrate with plating-resist material in a negative image of the terminal pad pattern; plating terminal pad base metal on the exposed, conductive surfaces of the substrate corresponding with the terminal pad pattern, including the walls of said holes; removing the plating-resist material; applying a layer of etch-resist material over selected portions of the electrically conductive surface of the substrate in a positive image of the circuit pattern, said etch-resist material extending over said terminal pad pattern areas to protect said areas against etching chemicals; immersing the substrate in a chemical etching bath to remove the exposed, non-circuit conductive material; removing the etch-resist material and thermally reflowing the terminal pad base metal after removal of the etch-resist material.

4,325,781

CO-CURRENT EVAPORATOR

GerhardProske; Rolf Van der Piepen, and Hans-Joachim Bittner, all of Butzbach, Fed. Rep. of Germany, assignors to Luwa AG, Zürich, Switzerland

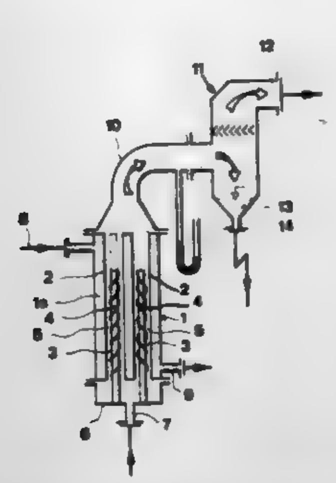
Filed Jul. 21, 1980, Ser. No. 170,539

Claims priority, application Switzerland, Jul. 26, 1979, 6912/79

Int. Cl.³ B01D *1/22*

U.S. Cl. 159—13 A 5 Claims

1. A co-current evaporator having a plurality of evaporator tubes adapted to be heated on the exterior thereof, each evaporator tube having a displacement body disposed interiorly thereof and cooperating therewith to define a flow channel, each displacement body having a smooth wall which forms a gap with the surrounding evaporator tube, said gap having a width which is constant or variable over the length of the evaporator tube, said displacement bodies having a hollow



interior and means for supplying heat to the hollow interior of the displacement bodies.

4,325,782

APPARATUS FOR REGENERATING ABSORBENT AND METHOD OF OPERATING THE APPARATUS

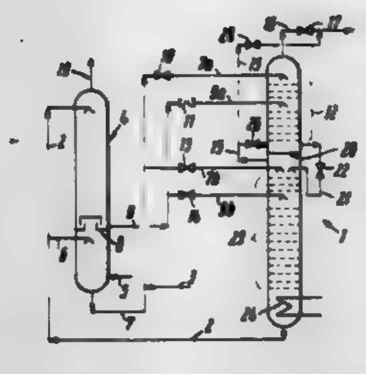
Gerhard Grünewald, Mainz-Gonzenheim, and Manfred Kriebel, Frankfurt am Main, both of Fed. Rep. of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Oct. 29, 1980, Ser. No. 201,861

Claims priority, application Fed. Rep. of Germany, Nov. 17, 1979, 2946433

Int. Cl.³ B01D *1/00*

U.S. Cl. 159—47 R 8 Claims



1. In an apparatus for regenerating absorbent which is withdrawn from a gas purification zone and is laden with gaseous impurities and is regenerated in a regenerating zone, which contains mass transfer-promoting elements and is included in a regenerating column, in which the absorbent to be regenerated is conducted at temperatures of 30° to 300° C. in a countercurrent to rising stripping vapor, which takes up and carries off the impurities, the improvement wherein said regenerating column comprises an upper regenerating zone, which can be shut down and is provided with at least one shutoff valve-controlled inlet for laden absorbent, and a lower second regenerating zone provided with a second shutoff valve-controlled inlet for the same laden absorbent, the volume ratio of the second regenerating zone to the upper regenerating zone being at least about 1.5 to 1, the upper regeneration zone positioned above the lower regeneration zone in a single structure and means for withdrawing the absorbent from the purification zone to direct the absorbent in parallel paths to the respective regeneration zones.

4,325,783

BLEACHING PROCEDURE USING CHLORINE DIOXIDE AND CHLORINE SOLUTIONS

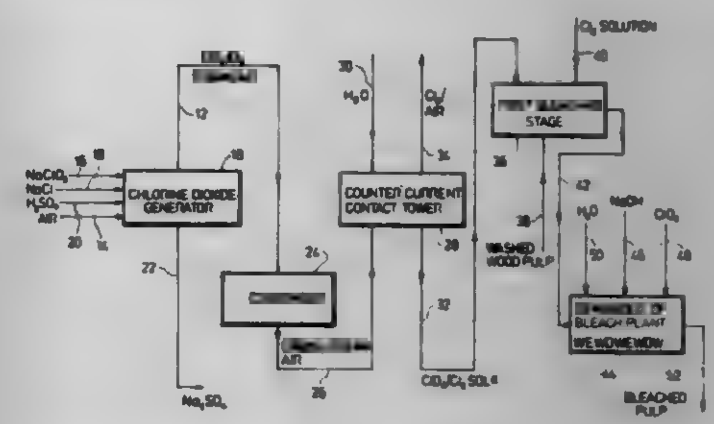
Douglas W. Reeve, Orton, and W. Howard Rapson, Scarborough, both of Canada, assignors to Erco Industries Limited, Islington, Canada

Continuation-in-part of Ser. No. 23,845, Mar. 26, 1979, abandoned. This application Nov. 27, 1979, Ser. No. 98,190

Claims priority, application United Kingdom, Mar. 30, 1978, 12433/78

Int. Cl.³ C01B *11/02;* D21C *9/14*

U.S. Cl. 162—88 12 Claims

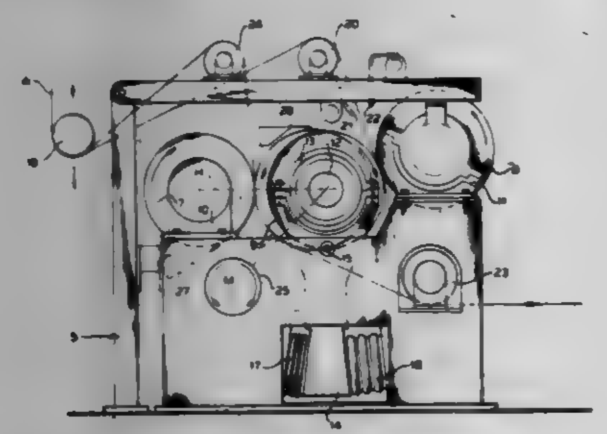


1. A method of bleaching pulp using chlorine dioxide, which comprises:

(a) continuously forming a gaseous mixture of chlorine dioxide, chlorine and steam by:
(i) continuously feeding a sodium chlorate solution to an aqueous acid reaction medium present in a unilocular reaction zone,
(ii) continuously feeding sulphuric acid to said aqueous reaction medium in an amount to maintain the total acid normality of the reaction medium in the range of about 2 to about 4.8 normal,
(iii) continuously feeding sodium chloride, hydrochloric acid or a mixture of sodium chloride and hydrochloric acid to said aqueous reaction medium,
(iv) continuously maintaining said reaction medium at a temperature of about 55° to about 85° C. while maintaining said reaction zone under a subatmospheric pressure of about 80 to about 300 mm Hg to cause the formation of chlorine dioxide and chlorine and the evaporation of water from the reaction medium,
(v) continuously depositing anhydrous neutral sodium sulphate from the reaction medium in said reaction medium in said reaction zone once the reaction medium becomes saturated thereby after start up, and
(vi) continuously removing the gaseous mixture of chlorine dioxide, chlorine and steam from the reaction zone;
(b) continuously cooling said gaseous stream to a temperature of about 15° to about 55° C. to cause condensation of at least a substantial proportion of the steam therefrom to provide a chlorine dioxide- and chlorine-containing gas stream;
(c) continuously contacting the latter gas stream with water having a temperature of about 3° to about 10° C. at a flow rate sufficient to form an aqueous solution of chlorine dioxide and chlorine containing about 8 to about 9 grams per liter of chlorine dioxide and about 1.5 to about 1.8 grams per liter of chlorine, and a gaseous chlorine stream; and
(d) bleaching a cellulosic fibrous material pulp for about 10 to about 60 minutes at a temperature of about 35° to about 70° C. in an aqueous suspension having a consistency of about 2 to about 16% by weight of pulp and containing dissolved organic material in an amount of about greater than 2 to about 10% by weight TOC on pulp at an overall

equivalent chlorine concentration of about 2 to about 10% by weight of the pulp, by:
(i) subjecting said suspension to a first bleaching step at an acid pH value using at least part of said aqueous solution of chlorine dioxide and chlorine formed in step (c), and
(ii) without an intermediate washing step, subjecting the suspension to a second bleaching step at an acid pH using a chlorine solution and commencing about 5 seconds to about 10 minutes after commencement of said first bleaching step, the chlorine dioxide in said aqueous solution of chlorine dioxide and chlorine constituting about 20 to about 90% of the total available chlorine used in said first and second bleaching steps.

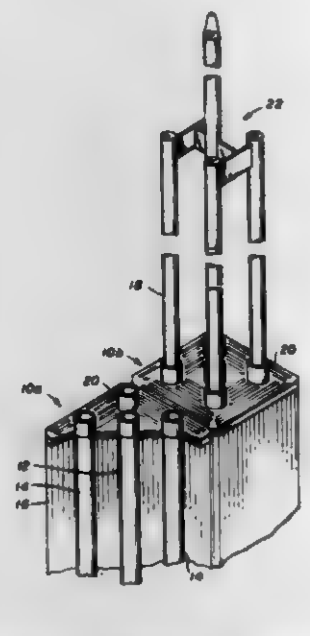
4,325,784
COMBINED SIZE PRESS AND BREAKER STACK AND METHOD
George L. Dreher, Beloit, Wis., assignor to Beloit Corporation, Beloit, Wis.
Filed Mar. 20, 1980, Ser. No. 132,126
The portion of the term of this patent subsequent to Mar. 11, 1997, has been disclaimed.
Int. Cl.^{3} D21H *1/10*
U.S. Cl. 162—135 17 Claims



1. In a paper web processing apparatus, wherein a paper web travels continuously from a supply to a disposition point, the combination comprising:
supporting structure;
a rotary breaker roll mounted in an operatively stationary location on said supporting structure;
a rotary coating press roll mounted in an operatively stationary location on said supporting structure substantially spaced from said breaker roll;
a rotary intermediate roll located between, and of a diameter less than the spacing between, said breaker roll and said press roll;
means shiftably mounting said intermediate roll on said supporting structure within alternate nipping range relative to said breaker roll and said press roll;
means for guiding the paper web to run selectively through the nip of said breaker and intermediate rolls or through the nip of the press and intermediate rolls;
means for actuating said mounting means for selectively alternately shifting said intermediate roll into nipping relation with either said breaker roll or said press roll;
and means for applying coating material to the paper web while running through the nip of said intermediate and coating press rolls.

11. A method of processing a paper web traveling continuously from a supply to a disposition point, through apparatus including a rotary breaker roll and a rotary coating press roll mounted in relatively stationary and spaced relation to one another and having between them an intermediate roll of a diameter less than the spacing between the breaker and press rolls and alternately shiftable into nipping relation selectively with either the breaker roll or the press roll, the method comprising:
selectively shifting said intermediate roll into nipping relation to the breaker roll and guiding the paper web to travel through the resulting nip for breaking action on the web;
alternately selectively shifting the intermediate roll into nipping relation to said press roll and guiding the paper web through the resulting coating nip;
and applying coating material to the paper web while traveling through the nip of the intermediate and press rolls.

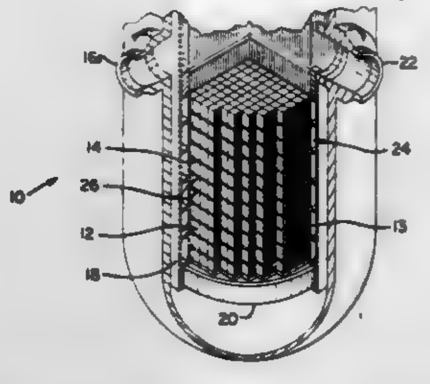
4,325,785
METHOD AND APPARATUS FOR MEASURING THE REACTIVITY OF A SPENT FUEL ASSEMBLY
Robert J. Klotz, Simsbury, and Donald W. Stephen, West Suffield, both of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.
Filed May 18, 1979, Ser. No. 40,266
Int. Cl.^{3} G21L *17/00*
U.S. Cl. 376—154 10 Claims



1. An apparatus for sequentially comparing the subcritical multiplication of a plurality of nuclear fuel assemblies having an identical array of at least two longitudinally extending, spaced apart, hollow tubes contained within the assembly, comprising:
a first rod adapted to reciprocate within a first tube of an assembly;
a second rod adapted to reciprocate within a specific second tube of the assembly;
a neutron source fixedly positioned relative to the first rod and movable therewith into the first tube;
a neutron flux detector fixedly positioned relative to the second rod and movable therewith into the second tube;
means for accurately fixing the elevation of the detector relative to the source when the detector and source are within the same assembly; and
means for receiving the output signal of the detector and for converting the output signal to a flux measurement.

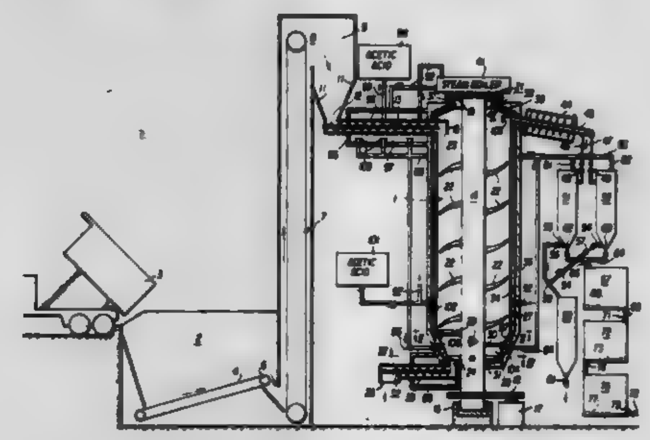
4,325,786
SPACER GRID FOR REDUCING BOWING IN A NUCLEAR FUEL ASSEMBLY
William D. Wohlsen, East Granby, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.
Filed Nov. 29, 1979, Ser. No. 98,463
Int. Cl.^{3} G21C *3/30*
U.S. Cl. 376—442 8 Claims

1. In a nuclear fuel assembly including a plurality of elongated parallelly spaced fuel rods and a plurality of metal grids axially separated along said fuel rods, each grid having a plurality of oppositely facing perimeter plates forming a perimeter strip closely surrounding all said fuel rods and a plurality of interlaced straps extending between said perimeter plates, said straps defining openings through which said fuel rods traverse the grids and carrying means thereon for spacing the fuel rods in the assembly, wherein the improvement comprises:
at least one of said grids being located near the assembly



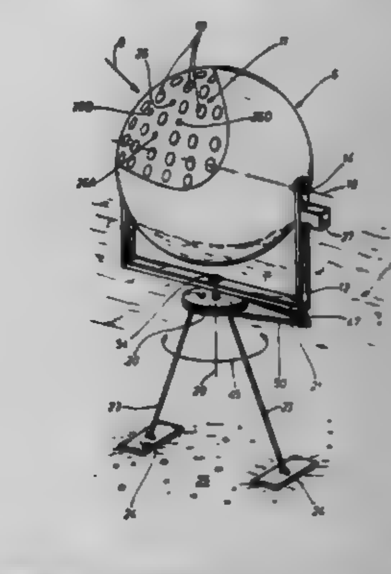
midplane and further including a cross member made of a second material having a higher coefficient of thermal expansion than said straps and interposed between oppositely facing perimeter plates such that when the assembly thermally expands said one grid will be larger in transverse section than the other grids in the assembly.

4,325,787
APPARATUS FOR RETORTING COMMINUTED OIL SHALE
Louis Stramskis, Ocala, Fla., assignor to Georgia Oil and Gas Company, Ocala, Fla.
Filed Jul. 31, 1980, Ser. No. 173,944
Int. Cl.^{3} C10B *1/04, 53/06, 57/06, 57/12*
U.S. Cl. 202—106 13 Claims



1. A continuously operable retort-type processing system for recovery of petroleum products from comminuted oil shale and like solid particulate oil-yielding raw material, comprising in combination: a heat exchange jacket for heating the retort by indirect heat exchange; insulation means for insulating the retort; feed means for the introduction of a continuous stream of particulate solid raw material into the upper portion of the retort; heat exchanger preheating means associated with the feed means for indirectly preheating the stream of particulate solid material before it enters the retort; discharge means for discharging spent solids from the bottom portion of the retort; means for discharging gaseous products from the retort; condenser means for condensing volatilized liquids from the gaseous products discharged from the retort; stirring means, mounted on a driven shaft and disposed at spaced intervals in a radially projecting array located along the length of the shaft, and on longitudinally separated axially disposed vertical portions of the shaft, adapted for stirring of particulate solid material in the retort and enhancing migration of the material from the intake to the spent solids outlet; heating means for supplying a heated fluid to the lower portion of the heat exchange jacket and withdrawing the fluid from the upper portion thereof, whereby a stream particulate material in the retort is indirectly heated therewith to progressively increasing temperatures as the particulate material passes downwardly through the retort; steam injection means for admixing steam with the stream of particulate material both in the heat exchanger preheating means and in the retort before reaching the bottom of the retort; and acetic acid injection means wherein said acetic acid injection means comprises a source of acetic acid and means for admixing acetic acid with the stream of particulate material in the retort before the latter reaches the bottom of the retort.

4,325,788
DISTILLATION APPARATUS WITH SOLAR TRACKER
Wesley L. Snyder, 1103 Forest Home Dr., Houston, Tex. 77094
Division of Ser. No. 880,882, Mar. 16, 1978, Pat. No. 4,276,122.
This application Dec. 30, 1980, Ser. No. 221,373
Int. Cl.^{3} C02F *1/14*; G01J *1/20*
U.S. Cl. 202—234 9 Claims



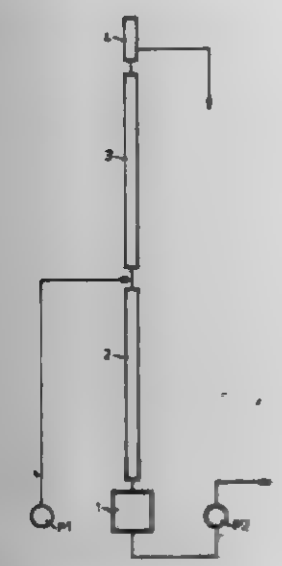
1. A solar distillation apparatus to remove impurities from salt water or contaminated fresh water comprising:
an enclosed shell;
at least one heating element mounted within said shell;
at least one light focussing system supported by said shell for focussing solar radiation onto said heating element;
a control system for detecting the solar radiation and orienting the light focussing system with the path of the sun;
means for introducing salt water or contaminated fresh water into a heat transfer relationship with the heating element to vaporize said water within said shell;
a condensation surface comprising an inner surface of said shell for liquifying said vapor into potable fresh water condensate;
means for cleaning and reshaping said heating element; and,
tracking means for orienting said light focussing system so as to be incident with said solar radiation.

4,325,789
PROCESS FOR SEPARATING OFF PHENOL FROM A MIXTURE THEREOF WITH A CRESOL
Alfredo Wust, Leverkusen, and Knut Hammerström, Berg.-Gladbach, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany
Filed Jan. 31, 1980, Ser. No. 117,171
Claims priority, application Fed. Rep. of Germany, Feb. 8, 1979, 2904831
Int. Cl.^{3} B01D *3/36*
U.S. Cl. 203—67 8 Claims

1. A process for separating phenol from the mixture of the same with ortho cresol which comprises adding to the mixture a component selected from the group consisting of:
A. A halogenated, saturated or unsaturated aliphatic hydrocarbon or a non-halogenated saturated or unsaturated aliphatic hydrocarbon with a dipole moment of 0 to 0.5 Debye and a boiling point, under 1 bar, of 120° to 220° C.;

B. A cycloaliphatic hydrocarbon with a dipole moment of 1 to 2 Debyes which has a boiling point, under 1 bar, of 150° to 190° C.;

C. A halogenated alkyl benzene or a non-halogenated alkyl benzene with a dipole moment of 0 to 2.5 Debyes which has a boiling point, under 1 bar, or 150° to 190° C.; and



D. A alkylated halogenophenol or a non-alkylated halogenophenol with a dipole moment of 0 to 2.5 Debyes which has a boiling point, under 1 bar, of 150° to 190° C. and distilling off phenol together with said component to leave behind said ortho cresol.

4,325,790

PROCESS FOR MANUFACTURING ELECTRO-GALVANIZED STEEL STRIP

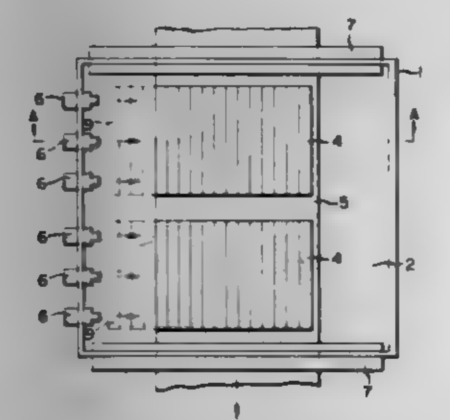
Takeshi Adaniya, and Masaru Ohmura, both of Fukuyama, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 3, 1981, Ser. No. 231,131

Claims priority, application Japan, Feb. 22, 1980, 55-20632

Int. Cl.³ C25D *3/56, 5/08, 7/06, 21/10*

U.S. Cl. 204—27 **1 Claim**



1. In a process for manufacturing an electro-galvanized steel strip, which comprises:

moving a steel strip in an acidic electro-galvanizing bath at a temperature within the range of from 35° C. to 60° C. containing cobalt and chromium in parallel with the plane of at least one anode plate and flowing said electro-galvanizing bath between said steel strip and said anode plate in a direction at right angles to the moving direction of said steel strip, and passing an electric current between said anode plate and said steel strip to provide an electro-galvanizing treatment, thereby forming, on at least one surface of said steel strip, an electro-galvanized layer having excellent bare corrosion resistance and excellent corrosion resistance after chromating;

the improvement characterized by:

keeping the cobalt content in said electro-galvanizing bath within the range of from 8 to 30 g/l, as converted into metallic cobalt, and the chromium content in said electro-galvanizing bath within the range of from 0.1 to 1.5 g/l, as converted into metallic chromium;

and, flowing said electro-galvanizing bath between said steel strip and said anode plate at a flow velocity of at least 0.35 m/sec.

4,325,791

METHOD FOR PROVIDING URANIUM ARTICLES WITH A CORROSION RESISTANT ANODIZED COATING

Forrest B. Waldrop, Powell, and Charles A. Washington, Oak Ridge, both of Tenn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jan. 7, 1981, Ser. No. 222,865

Int. Cl.³ C25D *11/34*

U.S. Cl. 204—32 R **6 Claims**

1. A method for providing a uranium article with a corrosion-resistant anodized oxide coating comprising the steps of providing an aqueous solution of electrolytes selected from the group consisting of potassium phosphate, potassium hydroxide, ammonium hydroxide, and a mixture of potassium tetraborate and boric acid, maintaining the solution at a pH value in the range of about 2 to 11.5 and at a temperature of at least 75° C., immersing the uranium article into the electrolyte and maintaining a current density of less than about 0.036 A/cm² between electrodes for a duration sufficient to provide an equilibrium in the thickness of the oxide coating.

4,325,792

PURIFICATION PROCESS

Daniel J. Vaughan, 36 Paxon Dr., Wilmington, Del. 19803

Filed Mar. 9, 1981, Ser. No. 241,520

Int. Cl.³ C25D *21/18*

U.S. Cl. 204—151 **3 Claims**

1. In the electrolytic purification of an aqueous solution of chromic acid contaminated with dissolved metallic cations by passing electric current through an electrodialysis cell comprising

(a) a catholyte compartment containing a cathode and a catholyte

and

(b) an anolyte compartment containing an anode and an anolyte comprising a contaminated chromic acid solution the anolyte and catholyte compartments being separated by a cation-permeable membrane, the improvement comprising employing as the catholyte an aqueous solution of an inorganic carbonate or bicarbonate which forms carbon dioxide and water on contact with the anolyte, whereby a high-capacity, efficient electrodialytic purification can be carried out without adversely affecting the oxidation state of the chromium ions in the anolyte.

4,325,793

CATALYSIS OF PHOTOCHEMICAL PRODUCTION OF HYDROGEN FROM WATER

Horst Kisch, Mulheim, Fed. Rep. of Germany, assignor to Studiengesellschaft Kohle m.b.H., Mulheim, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 127,013, Mar. 4, 1980, abandoned. This application May 26, 1981, Ser. No. 266,865

Claims priority, application Fed. Rep. of Germany, Mar. 6, 1979, 2908663

Int. Cl.³ B01J *19/12*

U.S. Cl. 204—157.1 R **14 Claims**

1. Process for the catalytic splitting of water to provide hydrogen, comprising irradiating with actinic light an aqueous solution containing a catalyst comprising a complex compound of a metal of the group I_b, II_b, IV_b, V_b, VI_b, VII_b and VIII of the periodic system or magnesium, having ligands linked to the metal atom via two sulfur atoms or via one sulfur atom and one nitrogen atom, thereby to split the water and form hydrogen.

4,325,794

COMBINED VISIBLE LIGHT AND THERMALLY ACTIVATED CONTINUOUS POLYMERIZATION PROCESS

Wood E. Hunter; Kenneth A. Kun, and Wallace B. Ramsey, all of Pittsburgh, Pa., assignors to Calgon Corporation, Pittsburgh, Pa.

Filed Jun. 2, 1980, Ser. No. 155,268

Int. Cl.³ C08F *2/48*

U.S. Cl. 204—159.23 **9 Claims**

1. A continuous polymerization process for preparing water-soluble polymers of ethylenically unsaturated water-soluble monomers which comprises:

(a) casting upon a continuous belt apparatus to form a film having a thickness of ⅛ inch to 1 inch an aqueous monomer solution having a monomer concentration of 25 percent to 75 percent by weight, said monomer solution also containing a photoreducible dye in a concentration of 1×10^{-7} to 1×10^{-4} moles/liter, a mild reducing agent in a concentration of 1×10^{-5} to 1×10^{-2} moles/liter and a thermal initiator in a concentration of 1×10^{-5} to 1×10^{-2} moles/-liter;

(b) passing the solution under a series of lights which emit visible light at an intensity of 1000- to 10,000-foot candles and controlling the temperature of the monomer solution in the range of 5° C. to 45° C.;

(c) allowing polymerization to initiate in an atmosphere of air or an inert gaseous substance;

(d) shutting off the lights when the exotherm has increased the temperatures of the partially converted monomer solution to a level sufficient to activate the thermal initiator; and

(e) allowing the polymerization to be completed to a high degree of conversion.

4,325,795

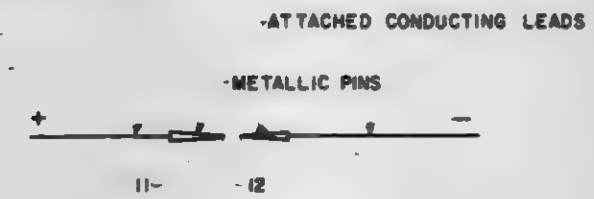
PROCESS FOR FORMING AMBIENT TEMPERATURE SUPERCONDUCTING FILAMENTS

Ronald C. Bourgoin, 18 Woodfern Cir., Greenville, S.C. 29615

Filed Oct. 31, 1980, Ser. No. 202,680

Int. Cl.³ C25B *7/00*

U.S. Cl. 204—180 R **11 Claims**



1. The process of forming filaments which exhibit properties associated with superconductivity at ambient temperatures comprising: suspending a conductor material within a fluid insulator material; heating at least the conductor material to reduce particulate size to colloidal dimensions; providing at least two electrodes within said conductor/insulator fluid; applying a voltage across said electrodes whereby conductor filaments are formed therebetween; and linearly moving said electrodes apart while continuing to apply voltage thereacross whereby extended filament length can be obtained.

4,325,796

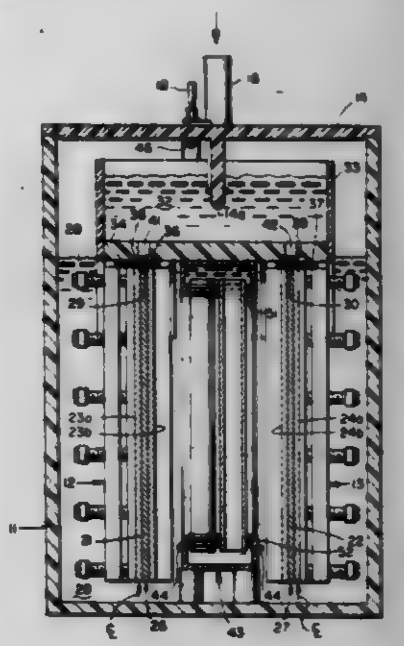
VERTICAL GEL SLAB ELECTROPHORESIS APPARATUS AND METHOD THEREFOR

Peter S. Hoefer, San Francisco, and Michael G. Whitesides, Daly City, both of Calif., assignors to Hoefer Scientific Instruments, San Francisco, Calif.

Continuation-in-part of Ser. No. 121,288, Feb. 13, 1980, Pat. No. 4,290,871, which is a division of Ser. No. 714, Jan. 3, 1979, Pat. No. 4,224,134. This application Jan. 30, 1981, Ser. No. 229,957

Int. Cl.³ B01D *57/02;* **G01N** *27/26*

U.S. Cl. 204—180 G **8 Claims**



6. A vertical gel slab electrophoresis method using a pair of sample units each including a pair of clamped together spaced plates for containing gel and with open top and bottom slots and including a casting stand for holding said units vertical, and an upper buffer solution container having a pair of apertures, said method comprising the following steps: locking said sample units in said stand in a vertical position to seal said bottom slots to prevent leakage of gel; filling at least one sample unit with gel and polymerizing; locking said upper buffer solution container to said sample units and sealing said upper slots against said apertures to provide liquid communication with an upper buffer solution; and unlocking and removing said casting stand-container combination from said sample units whereby electrophoresis may be accomplished.

4,325,797

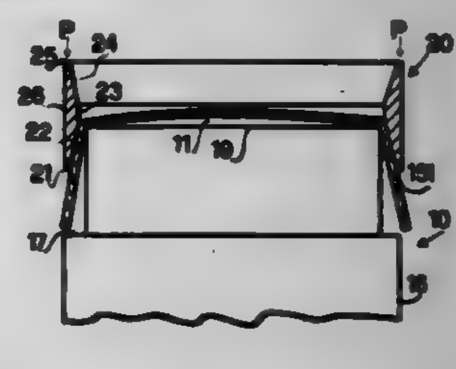
MEMBRANE MOUNTING METHOD AND MEMBRANE-ENCLOSED AMPEROMETRIC CELL

John M. Hale, Meinier, and Eugen Weber, Hinwil, both of Switzerland, assignors to Orbisphere Corporation Wilmington, Succursale de Collonge-Bellerive, Collonge-Bellerive, Switzerland

Filed Jun. 30, 1980, Ser. No. 164,291

Int. Cl.³ G01N *27/30*

U.S. Cl. 204—195 P **31 Claims**



1. In the method of mounting and securing a membrane formed of a flexible polymer film on an amperometric cell

having a substantially cylindrical cell end frontally provided with an electrolyte-bearing sensor face by means of a removable annular holding member; the improvement consisting of using as said holding member a substantially non-resilient and creep-resistant die ring having (a) a cylindrical inner surface slidingly fitting onto said cylindrical cell end and (b) at least one tapered inner surface portion outwardly extending from said cylindrical inner surface toward a leading end portion of said die ring; moving said leading end portion of said die ring over a predetermined length of said cylindrical cell end for deep-drawingly shaping said polymer film between said die ring and said cylindrical cell end and irreversibly forming a cup-shaped membrane portion extending over said electrolyte-bearing sensor face and an adjacent portion of said cylindrical cell end, said cup-shaped membrane portion being sealingly held by said die ring on said cylindrical cell end during operation of said amperometric cell.

17. In a membrane-enclosed amperometric cell having a substantially cylindrical cell end frontally provided with an electrolyte-bearing sensor face, a membrane formed of a flexible polymer film extending over said sensor face and having a circumferential portion in contact with said cylindrical cell end; and a removable annular holding member around said circumferential portion of said membrane for sealingly pressing said circumferential portion of said membrane onto said cell end; the improvement wherein said annular holding member is a substantially non-resilient and creep-resistant die ring having (a) a cylindrical inner surface slidingly fitting onto said cylindrical cell end and (b) at least one tapered inner surface portion outwardly extending from said cylindrical inner surface toward a leading end portion of said die ring; and wherein said membrane has a permanently formed cup-shaped portion extending over said electrolyte-bearing sensor face and an adjacent portion of said cylindrical cell end, said cup-shaped membrane portion being sealingly held by said die ring on said cylindrical cell end during operation of said amperometric cell.

4,325,798

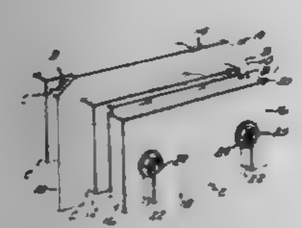
SELF-ENERGIZING WATER TREATMENT ACCESSORY

Michael H. Mack, 1511 Pipeline Rd., #188, Chino, Calif. 91710

Filed Jun. 27, 1980, Ser. No. 163,436

Int. Cl.³ C25B *9/00, 11/04*

U.S. Cl. 204—248 **3 Claims**



1. A self energizing water treatment assembly that includes:

a. a first generally rectangular copper plate having upper and lower edges and a pair of end edges, with at least one transverse slot that extends upwardly from said lower edge;

b. a plurality of generally rectangular second copper plates and magnesium plates that have lower edges from which transverse slots extend upwardly that may be laterally aligned with said slot in said first copper plate;

c. a metal electrical conducting bolt having a head and a free threaded end that may be inserted in said slots;

d. a plurality of spacers on said bolt that hold said first and second copper plates and magnesium plates in laterally spaced relationship;

e. a nut that engages said threads on said bolt, said bolt when tightened holding said assembly together as an integral unit, said nut when loosened permitting a desired one or all of said plates to be lifted from said bolt and replaced by plates that have not been subjected to water.

4,325,799

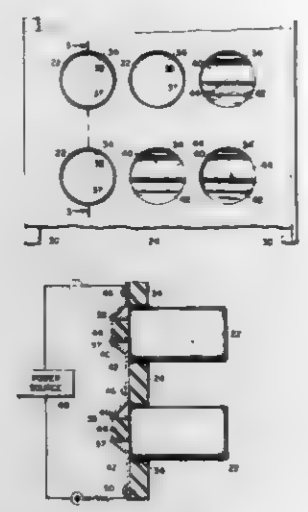
FORMATION APPARATUS FOR ELECTROLYTIC CELL

Lester A. Gordy, and David A. Poff, both of Gainesville, Fla., assignors to General Electric Company, Gainesville, Fla.

Continuation of Ser. No. 145,736, May 1, 1980, abandoned. This application Mar. 11, 1981, Ser. No. 242,544

Int. Cl.³ C25D *17/08*

U.S. Cl. 204—297 W **14 Claims**



1. A system for electrical activation of a set of electrochemical cells each of which is formed with an end wall having first and second terminals protruding therefrom and asymmetrically positioned relative to the center of said end wall, said system comprising:

a panel having a row of apertures, each of said apertures being configured for admitting the end wall of a cell and the terminals thereof;

first and second strip conductors having corresponding edges parallel to said row of apertures and positioned for engagement with said terminals of said cells upon insertion of the end walls of said cells into respective ones of said apertures, said corresponding edges being asymmetrically positioned relative to said row of apertures in correspondence with the asymmetry in the location of said terminals of a cell for keying the orientation of a cell inserted through one of said apertures, thereby keying the engagement of said first terminal with said first conductor.

4,325,800

TWO-STAGE COAL LIQUEFACTION PROCESS WITH INTERSTAGE GUARD BED

Joel W. Rosenthal, El Cerrito, and Christopher W. Kuehler, Larkspur, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 943,586, Sep. 18, 1978, Pat. No. 4,283,268. This application Sep. 26, 1980, Ser. No. 191,455

The portion of the term of this patent subsequent to Aug. 11, 1998, has been disclaimed.

Int. Cl.³ C10G *1/00, 1/06, 45/00, 25/00*

U.S. Cl. 208—8 LE **9 Claims**

1. A process for the liquefaction of coal comprising the steps of

(a) substantially dissolving subdivided coal in a dissolving stage with a solvent the presence of hydrogen to form a first effluent mixture containing solvent, dissolved coal, and insoluble solids;

(b) passing solvent, dissolved coal and insoluble solids from said first effluent mixture with hydrogen through a guard bed of solid porous contact material to substantially reduce the metals content of said first effluent by hydrogenation, to provide a second effluent containing solvent, dissolved coal, and insoluble solids;

(c) passing a slurry-containing solvent, dissolved coal and insoluble solids from said second effluent to a hydrocracking stage containing hydrocracking catalyst and operating under hydrocracking conditions.

4,325,801

THREE-STAGE COAL LIQUEFACTION PROCESS

Christopher W. Kuehler, Larkspur, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 106,580, Dec. 26, 1979. This application Sep. 10, 1980, Ser. No. 183,114

The portion of the term of this patent subsequent to Nov. 17, 1998, has been disclaimed.

Int. Cl.³ C10G *1/06, 1/00*

U.S. Cl. 208—10 **3 Claims**

1. A three-stage process for liquefying coal which comprises:

forming a coal-solvent slurry by mixing subdivided coal with a solvent;

passing said slurry through a dissolving stage to substantially dissolve said coal and produce an effluent comprising dissolved coal, solvent, insoluble solids, and heptane insolubles;

passing effluent containing the dissolved coal and the insoluble solids from said dissolving stage with added hydrogen through a first catalytic reaction stage containing a catalyst having a selectivity for converting heptane insolubles to lower molecular weight compounds, to convert heptane insolubles in said effluent from said dissolution stage to lower molecular weight compounds;

recycling a portion of the effluent from said first catalytic reaction stage for use as solvent; and

passing remaining effluent from said first catalytic reaction stage through a second catalytic reaction stage containing hydrocracking catalyst and operating under hydrocracking conditions.

4,325,802

METHOD OF LIQUEFACTION OF CARBONACEOUS MATERIALS

Clifford R. Porter, Arvada, Colo., and Herbert D. Kaesz, Los Angeles, Calif., assignors to Pentanyl Technologies, Inc., Arvada, Colo.

Filed Nov. 17, 1980, Ser. No. 207,714

Int. Cl.³ C10G *1/06, 17/00;* **C10B** *43/00*

U.S. Cl. 208—10 **37 Claims**

1. A method of producing or converting hydrocarbon liquids from carbonaceous materials, comprising:

contacting the carbonaceous material with a liquefaction facilitating agent selected from the group consisting of metal carbonyls, other low valent metal complexes of the transition metals, derivatives thereof, and mixtures thereof, and water gas to form a reaction mixture,

maintaining the pH of the reaction mixture greater than about 7.5, and

heating the reaction mixture to a sufficient temperature and pressure to obtain liquids from the carbonaceous material.

4,325,803

PROCESS FOR HYDROGENATION/EXTRACTION OF ORGANICS CONTAINED IN ROCK

Marvin I. Green, Oradell, and Abraham P. Gelbein, Morristown, both of N.J., assignors to Chem Systems Inc., New York, N.Y.

Filed Aug. 7, 1980, Ser. No. 176,008

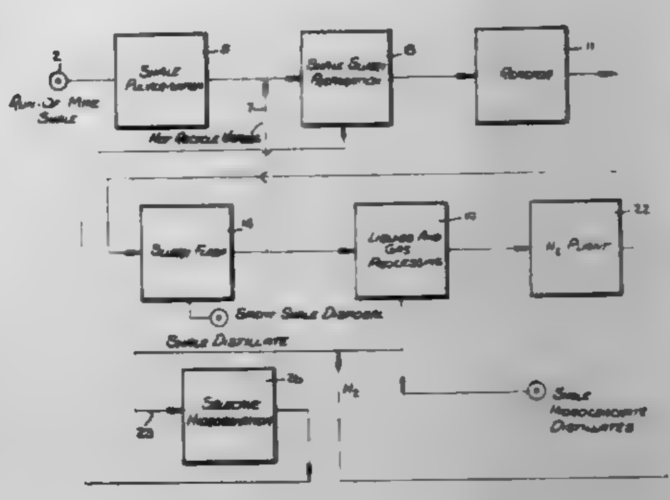
Int. Cl.³ C10G *1/04*

U.S. Cl. 208—11 LE **29 Claims**

1. In a method for the separation and recovery of organic material from rock, the improvement comprising the steps of:

(a) forming a slurry comprising rock containing organic material and a hydrogen transfer agent that is liquid at standard conditions;

(b) subjecting said slurry to elevated temperature and pressure; and



(c) subjecting the product of step (b) to adiabatic flash vaporization.

4,325,804

PROCESS FOR PRODUCING LUBRICATING OILS AND WHITE OILS

Gary L. Everett, Chicago Heights, and William C. Hu, Chicago, both of Ill., assignors to Atlantic Richfield Company, Philadelphia, Pa.

Filed Nov. 17, 1980, Ser. No. 207,574

Int. Cl.³ C10G *65/12*

U.S. Cl. 208—58 **24 Claims**

1. A process for preparing a white mineral oil from a mineral hydrocarbon oil feedstock of lubricating oil viscosity, comprising the steps of:

(a) contacting the mineral hydrocarbon oil feedstock with molecular hydrogen, under hydrocracking conditions, in the presence of a hydrocracking catalyst, to form a hydrocracked oil having an increased viscosity index relative to that of said feedstock;

(b) contacting the product hydrocracked oil of lubricating oil viscosity from step (a) with molecular hydrogen, under hydrogenation conditions to avoid undue cracking in the presence of a sulfur-resistant, non-precious metal hydrogenation catalyst to produce a product suitable for use as a lubricating oil base stock, said base stock having a minor amount of aromatic hydrocarbons, said product hydrogenated oil from step (b) having an aromatic hydrocarbon content greater than about 3% by weight;

(c) contacting at least a portion of the product hydrogenated oil from step (b) with molecular hydrogen, under hydrogenation conditions in the presence of a sulfur-resistant, non-precious metal hydrogenation catalyst, to produce a product having reduced aromatic hydrocarbon content; and

(d) contacting the product hydrogenated hydrocarbon oil of lubricating oil viscosity from step (c) with molecular hydrogen, under selective hydrogenation conditions in the presence of a selective, precious metal hydrogenation catalyst.

4,325,805

LUBRICATING OIL STABILIZATION

Stephen J. Miller, San Francisco, Calif., assignor to Chevron Research Company, San Francisco, Calif.

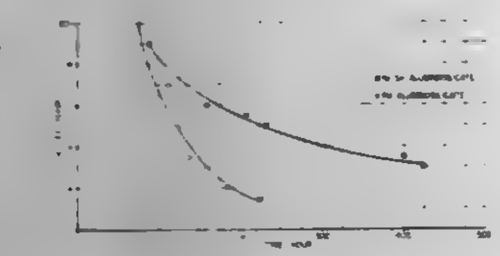
Filed Dec. 18, 1980, Ser. No. 217,889

Int. Cl.³ C10G *45/06, 45/36, 65/02*

U.S. Cl. 208—58 **9 Claims**

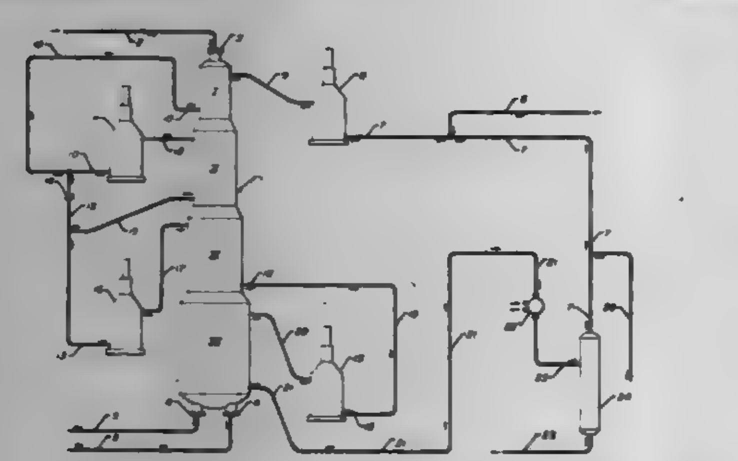
1. A process for producing lubicating oil stocks having good ultraviolet stability, comprising:

(a) hydrocracking in a hydrocracking zone a hydrocarbonaceous feedstock;
(b) catalytically dewaxing in a dewaxing zone at least part of the effluent of said hydrocracking zone with a dewaxing catalyst comprising an intermediate pore size zeolite;



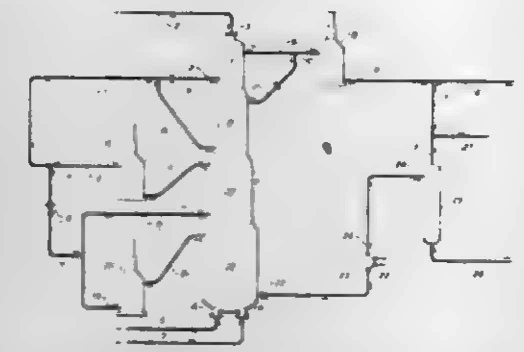
(c) catalytically hydrogenating in a catalytic hydrogenation zone at least part of the effluent of said dewaxing zone by contacting at least part of said dewaxing zone effluent with a stabilizing catalyst comprising nickel or a compound thereof, tin or a compound thereof, and a siliceous matrix.

4,325,806
MULTIPLE STAGE HYDROCARBON CONVERSION WITH GRAVITY FLOWING CATALYST PARTICLES
Kenneth D. Peters, Elmhurst, Ill., assignor to UOP Inc., Des Plaines, Ill.
Filed Jan. 5, 1981, Ser. No. 222,468
Int. Cl.³ C10G *35/04*
U.S. Cl. 208—64 7 Claims



1. In a multiple stage catalytic conversion system wherein (1) a heated hydrocarbonaceous charge stock and hydrogen flow serially through a plurality of catalytic reaction zones, (2) reaction product effluent is subjected to interstage heating between successive reaction zones, and (3) catalyst particles are movable through each reactive zone via gravity flow, the method of effecting the conversion of said charge stock which comprises the sequential steps of:
(a) heating said charge stock and hydrogen, and introducing the heated mixture into a first reaction zone maintained at hydrocarbon conversion conditions;
(b) heating a first portion of the effluent stream from said first reaction zone and introducing said first portion into a second reaction zone maintained at hydrocarbon conversion conditions;
(c) restricting the flow of a second portion of the effluent stream from said first reaction zone and combining said second portion with the effluent stream from said second reaction zone;
(d) heating the combined effluent streams, and introducing said combined streams into a third reaction zone maintained at hydrocarbon conversion conditions;
(e) separating the effluent stream from the last reaction zone in said system to provide a normally liquid product stream and a hydrogen-rich vaporous phase, and recycling at least a portion of said vaporous phase to said first reaction [illegible]
(f) at least periodically withdrawing catalyst particles from the last reaction zone in said system; and,
(g) at least periodically introducing fresh or regenerated catalyst particles into the first reaction zone of said system.

4,325,807
MULTIPLE STAGE HYDROCARBON CONVERSION WITH GRAVITY FLOWING CATALYST PARTICLES
Kenneth D. Peters, Elmhurst, Ill., assignor to UOP Inc., Des Plaines, Ill.
Filed Jan. 5, 1981, Ser. No. 222,467
Int. Cl.³ C10G *35/04*
U.S. Cl. 208—64 11 Claims

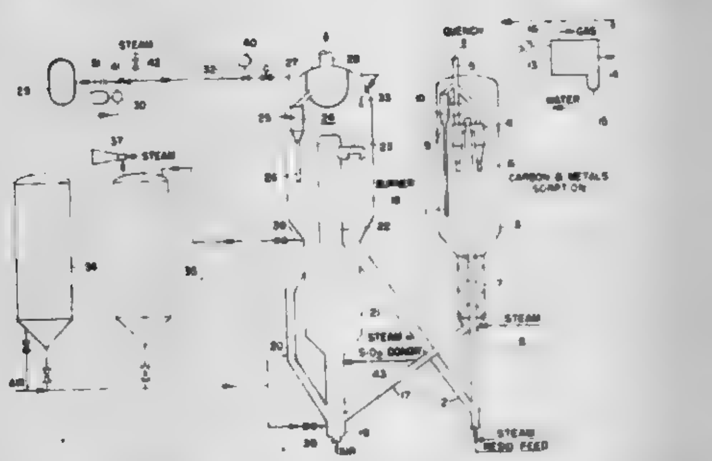


1. In a multiple stage catalytic conversion system wherein (1) a heated hydrocarbonaceous charge stock and hydrogen flow serially through a plurality of catalytic reaction zones, (2) reaction product effluent is subjected to interstage heating between successive reaction zones, and (3) catalyst particles are movable through each reaction zone via gravity flow, the method of effecting the conversion of said charge stock which comprises the sequential steps of:
(a) heating said charge stock and hydrogen, and introducing a first portion thereof into a first reaction zone maintained at hydrocarbon conversion conditions;
(b) restricting the flow of a second portion of the heated hydrocarbon charge stock and hydrogen, and introducing said second portion into a second reaction zone maintained at hydrocarbon conversion conditions;
(c) restricting the flow of the effluent stream from said first reaction zone and combining therewith the effluent stream from said second reaction zone;
(d) heating a first portion of the combined effluent streams and introducing said first portion into a third reaction zone maintained at hydrocarbon conversion conditions;
(e) restricting the flow of a second portion of said combined effluent streams, and admixing therewith the effluent stream from said third reaction zone;
(f) heating the resulting mixture and introducing the same into a fourth reaction zone maintained at hydrocarbon conversion conditions;
(g) separating the effluent from the last reaction zone in said system to provide (i) a normally liquid product stream and (ii) a hydrogen-rich vaporous phase, and recycling at least a portion of said vaporous phase to said first reaction zone;
(h) at least periodically withdrawing catalyst particles from the last reaction zone in said system; and,
(i) at least periodically introducing fresh or regenerated catalyst particles into the first reaction zone in said system.

4,325,808
HYDROCARBON CONVERSION CATALYST SYSTEM AND METHOD
Dae K. Kim, Naperville, Ill., and Ralph J. Bertolacini, Chesterton, Ind., assignors to Standard Oil Company (Indiana), Chicago, Ill.
Filed Jul. 21, 1980, Ser. No. 170,528
Int. Cl.³ C10G *35/06*
U.S. Cl. 208—65 7 Claims

1. A process for reforming a hydrocarbon stream comprising contacting the hydrocarbon stream in a reforming zone under reforming conditions and in the presence of hydrogen and a hydrocarbon conversion catalyst system comprising a physical particle-form mixture of first and second catalysts, the first catalyst comprising at least one noble metal component and a combined halogen deposed on a high surface area, porous refractory inorganic oxide and being free of a crystalline aluminosilicate component, and the second catalyst being free of a noble metal component and comprising at least one metal component deposed on a solid support comprising a crystalline aluminosilicate material having an alkali metal content of less than about 1 percent of its weight, and being dispersed in a high surface area, porous refractory inorganic oxide; each noble metal component in the first catalyst comprising a noble metal, a compound thereof or a mixture thereof; each metal component in the second catalyst consisting essentially of a member selected from the group consisting of chromium, gallium, germanium, indium, lead, manganese, rhenium, technetium, thallium, tin, tungsten, a compound thereof and a mixture thereof; the weight percent of each noble metal component in the first catalyst, calculated as the noble metal element therein and based on the weight of the first catalyst, being in the range of from about 0.1 to about 1; the weight percent of each combined halogen in the first catalyst, calculated as the halogen element therein and based on the weight of the first catalyst, being in the range of from about 0.1 to about 1; the weight percent of each metal component in the second catalyst, calculated as the metal element therein and based on the weight of the second catalyst, being in the range of from about 0.1 to about 5; the weight percent of crystalline aluminosilicate material in the second catalyst, based on the weight of the second catalyst, being in the range of from about 1 to about 80; and the weight ratio of the first catalyst to the second catalyst being in the range of from about 1:1 to about 10:1.

4,325,809
HYDROCARBON PROCESSING
David B. Bartholic, Watchung, N.J., assignor to Engelhard Minerals & Chemicals Corporation, Edison, N.J.
Continuation of Ser. No. 92,719, Nov. 9, 1979, abandoned, which is a continuation-in-part of Ser. No. 38,928, May 14, 1979, Pat. No. 4,243,514, which is a continuation-in-part of Ser. No. 875,326, Feb. 6, 1978, abandoned. This application Aug. 8, 1980, Ser. No. 177,321
Int. Cl.³ C10G *25/09, 51/04*
U.S. Cl. 208—91 19 Claims



8. In a process for preparing premium products from crude petroleum by fractionally distilling the crude petroleum to separate gasoline and distillate gas oil from a residual fraction having a substantial Conradson Carbon number and metals content and charging the distillate gas oil to catalytic cracking; the improvement which comprises;
(a) contacting said residual fraction in a rising confined vertical column with an inert solid material having a low surface area and a microactivity for catalytic cracking not substantially greater than 20 at low severity, including a temperature of at least about 900° F., for a period of time less than that which induces substantial thermal cracking of said residual fraction, and such that the quantity of such decarbonized petroleum fraction is less than said residual fraction by a weight percent no greater than three times said Conradson Carbon number,
(b) at the end of said period of time separating from said inert solid a decarbonized hydrocarbon fraction of reduced Conradson Carbon number and metals content as compared with said residual fraction,
(c) reducing temperature of the said separated fraction to a level below that at which substantial thermal cracking takes place,
(d) adding said decarbonized hydrocarbon to said distillate gas oil as additional charge to said catalytic cracking,
(e) subjecting said inert solid separated from said decarbonized hydrocarbon fraction and now containing a combustible deposit to air at elevated temperature to remove said combustible deposit by burning and thereby heat the inert solid in a burner operated with a lower fluidized dense phase and upper dilute hot vaporous phase, while mixing a silica donor with said inert solid material,
(f) reacting the mixture of silica donor and inert solid material in the presence of steam to induce migration of silica from said donor to said inert solid material,
(g) separating heated inert solids from hot vapors produced in step (e),
(h) cycling at least a portion of said separated hot inert solid from step (g) to step (a),
(i) and at least periodically withdrawing metal loaded inert solid from step (e) without cycling it to step (a).

4,325,810
DISTILLATE YIELDS BY CATALYTICALLY CO-COKING SHALE OIL AND PETROLEUM RESIDUA
Harvey E. Alford, Amherst, and Robert A. Rightmire, Northfield, both of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio
Filed Oct. 1, 1979, Ser. No. 80,832
Int. Cl.³ C10G *1/06, 11/02, 45/16*
U.S. Cl. 208—112 15 Claims

1. In a process wherein a feed material comprising a mixture of a shale oil material and a petroleum material are heated in the substantial absence of oxygen to produce coke and a liquid product, the improvement wherein said feed material contains a hydrogen catalyst selected from the group consisting of hydrogen transfer catalysts, hydrogenation catalysts, and hydrocracking catalysts.

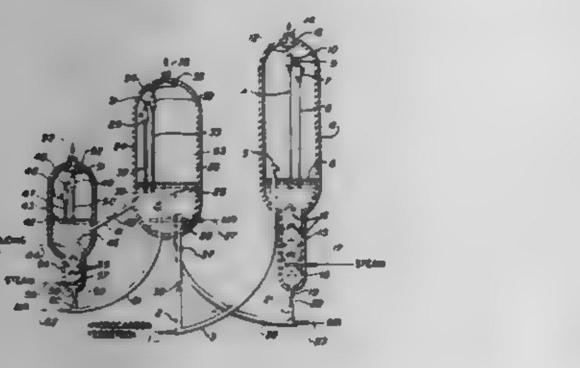
4,325,811
CATALYTIC CRACKING WITH REDUCED EMISSION OF NOXIOUS GAS
Ciro D. Sorrentino, Naperville, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.
Filed Dec. 8, 1980, Ser. No. 214,470
Int. Cl.³ C10G *11/00;* B01J *49/00*
U.S. Cl. 208—113 12 Claims

1. In a process for the cyclic, fluidized catalytic cracking of a sulfur-containing hydrocarbon feedstock which comprises (i) cracking said feedstock in a reaction zone through contact with solid particles to produce lower boiling hydrocarbons and cause a deposit of sulfur-containing coke on said particles, wherein said solid particles comprise cracking catalyst and a regenerable sulfur oxide absorbent; (ii) passing coke-containing solid particles from the reaction zone to a regeneration zone; (iii) removing said sulfur-containing coke deposit from the solid particles in said regeneration zone by burning with an oxygen-containing gas, thereby forming sulfur oxides; (iv) absorbing with said absorbent at least a portion of the sulfur oxides produced by said burning of the sulfur-containg coke deposit in said regeneration zone; and (v) passing coke-depleted solid particles from the regeneration zone to the reaction

zone; a method for decreasing emissions of sulfur oxides from the regeneration zone which comprises:

(a) continuously withdrawing a stream of coke-depleted solid particles having sulfur oxides absorbed therein from the regeneration zone and passing said stream to a reducing zone;

(b) contacting said stream in the reducing zone with a reducing gas at a temperature in the range from about 590° to about 820° C., said reducing gas comprising at least one component selected from the group consisting of hydrogen and hydrocarbons, whereby absorbed sulfur oxides in said stream of particles are released as a sulfur-containing gas; and



(c) after said contacting with the reducing gas in said reducing zone, passing the stream of particles back to the inventory of solid particles which is circulated between said reaction and regeneration zones.

4,325,812

PROCESS FOR CRACKING HEAVY HYDROCARBONS INTO LIGHT OILS AND PRODUCING HYDROGEN

Kuniaki Fujimori, Tokyo; Teruo Suzuka, Kawaguchi; Yukio Inoue, Urawa, and Shirou Aizawa, Toda, all of Japan, assignors to Research Association for Residual Oil Processing, Tokyo, Japan

Filed Sep. 29, 1980, Ser. No. 191,617

Claims priority, application Japan, Sep. 29, 1979, 54/124735

Int. Cl.³ C10G *11/04*

U.S. Cl. 208—119 **15 Claims**

1. A process for cracking a heavy hydrocarbon to form a light oil and for producing hydrogen by the use of a catalyst containing at least 30 wt% Fe which comprises

a first step wherein steam and heavy hydrocarbon are simultaneously contacted with the catalyst in a reduced state to produce hydrogen, cracked gases, and cracked light oils, to oxidize the reduced-state catalyst, and to deposit coke on the catalyst, and

a second step wherein the oxidized-state catayst on which said coke is deposited is contacted with an oxygen-containing gas insufficient for achieving complete combustion of the coke, to thereby partially combust the coke and regenerate said catalyst to a reduced state.

4,325,813

PROCESS FOR PRODUCTION OF HIGH OCTANE GASOLINE FROM CATALYTIC CRACKING UNIT

Stanley M. Brown, Scotch Plains; William J. Reagan, Englishtown, and Gerald M. Woltermann, Middletown, all of N.J., assignors to Engelhard Minerals & Chemicals Corporation, Edison, N.J.

Filed Jul. 30, 1980, Ser. No. 173,532

Int. Cl.³ C10G *11/05*

U.S. Cl. 208—120 **5 Claims**

1. In a process for catalytic cracking of a hydrocarbon charge to produce gasoline by contacting the charge at cracking temperature with a particle form solid cracking catalyst containing a zeolite whereby components of the charge are converted by cracking to lower boiling hydrocarbons including a gasoline fraction with concurrent deposition on the catalyst of an inactivating carbonaceous contaminant, recovering gasoline from said products of conversion, optionally steam stripping hydrocarbon from catalyst, regenerating catalytic cracking activity of the contaminated catalyst by burning carbonaceous deposit therefrom, and contacting catalyst so regenerated with additional such charge, whereby the catalyst declines in activity over repeated cycles of charge contact and regeneration, the average activity of the catalyst inventory being maintained at substantially constant equilibrium values by replacing a portion of the catalyst inventory with fresh catalyst of activity above said equilibrium values;

the improvment whereby the octane rating of said gasoline fraction is maintained at a high level over repeated cycles of charge contact and regeneration, which comprises using fresh catalyst particles containing alkali metal oxide of less than about 1.5% by weight of zeolite content, maintaining the alkali content of said hydrocarbon charge below 0.5 ppm and controlling the amount of alkali metal oxide that comes into contact with catalyst inventory throughout cracking, stripping and regeneration so as to maintain alkali metal oxide content of equilibrium catalyst below 2.0% based on the weight of the zeolite of said catalyst in fresh condition.

4,325,814

CATALYTIC CRACKING PROCESS UTILIZING A COPPER CHROMITE OXIDATION CATALYST

Benjamin Gross, Cherry Hill, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 47,503, Jun. 11, 1979, abandoned, which is a continuation-in-part of Ser. No. 866,072, Dec. 30, 1977, abandoned, which is a continuation-in-part of Ser. No. 511,151, Oct. 2, 1974, abandoned. This application Oct. 15, 1980, Ser. No. 197,252

Int. Cl.³ C10G *11/05, 11/18;* **B01J** *29/38, 21/20*

U.S. Cl. 208—120 **3 Claims**

1. In a process for the catalytic cracking of gas oil to produce products boiling in the motor fuel range, wherein said gas oil is contacted with a porous acidic solid catalyst in a cracking vessel at conversion conditions including elevated temperatures and the absence of added hydrogen so as to convert said gas oil to lower molecular weight products with deposit on said catalyst of a deactivating solid carbonaceous contaminant resulting from said cracking, the so deactivated catalyst being transferred to a regeneration vessel in which oxidation of said carbonaceous deposit proceeds in the presence of air with generation of carbon monoxide and carbon dioxide and the regenerated catalyst at elevated temperature is transferred from said regeneration vessel to said cracking vessel to catalyze further cracking and supply at least part of the heat of reaction required by said cracking, the improvement which comprises:

conducting said cracking and said regeneration with an inventory of solid, porous, acidic cracking catalyst particles and particles of a copper chromite oxidation catalyst in admixture with alumina and limiting the concentration of said oxidation catalyst to an amount great enough to promote oxidation of CO and inadequate to substantially increase the generation of coke and hydrogen in said reaction vessel as compared with a like catalyst free of such metal, said amount being less than 500 ppm based on total catalyst inventory.

2. The process of claim 1, wherein said solid porous acidic cracking catalyst comprises a crystalline aluminosilicate zeolite having a pore size greater than 6 Angstrom units.

3. The process of claim 1, wherein copper chromite is present in an amount ranging from 50–150 ppm.

4,325,815

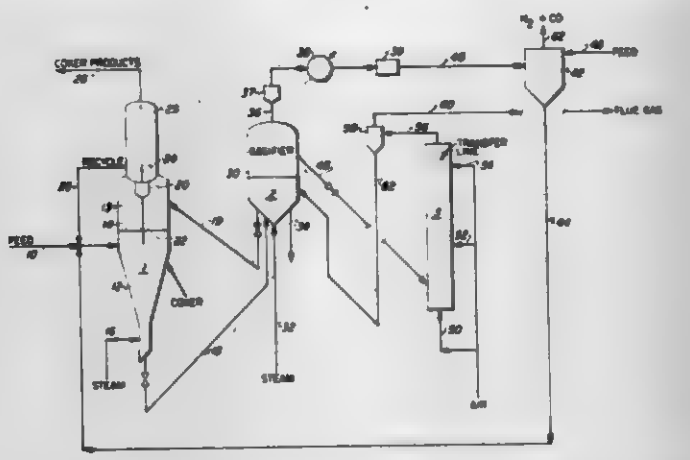
CATALYTIC FLUID COKING AND GASIFICATION PROCESS

William J. Metrailer, Baton Rouge, La., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Sep. 2, 1980, Ser. No. 183,435

Int. Cl.³ C10G *9/28*

U.S. Cl. 208—127 **19 Claims**



1. An integrated coking and gasification process which comprises the steps of:

(a) reacting a carbonaceous chargestock in a coking zone containing a bed of fluidized solids maintained at fluid coking conditions to produce a vapor phase product including normally liquid hydrocarbons, and coke, said coke depositing on said fluidized solids;

(b) reacting a portion of said solids with a coke deposit thereon with steam in a gasification zone maintained at gasification conditions to produce a catalytic partially gasified coke having a high surface area and a gaseous stream comprising hydrogen;

(c) recycling a first portion of said partially gasified coke resulting from step (b) to contact said vapor phase product of step (a) and thereby catalytically crack at least a portion of said normally liquid hydrocarbons;

(d) reacting a second portion of said catalytic partially gasified coke resulting from step (b) with a molecular oxygen-containing gas in a burning zone at burning conditions to burn a portion of said partially gasified coke and produce a gas comprising carbon dioxide and thereby heating the remaining partially gasified coke; and

(e) recycling a portion of said heated remaining partially gasified coke from said burning zone to said gasification zone.

4,325,816

HYDROCARBON DEHYDROCYCLIZATION WITH AN ATTENUATED SUPERACTIVE MULTIMETALLIC CATALYTIC COMPOSITE

George J. Antos, Bartlett, Ill., assignor to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 57,623, Jul. 16, 1979, Pat. No. 4,250,020, which is a continuation-in-part of Ser. No. 833,332, Sep. 14, 1977, Pat. No. 4,165,276. This application Dec. 8, 1980, Ser. No. 214,390

The portion of the term of this patent subsequent to Aug. 21, 1996, has been disclaimed.

Int. Cl.³ C10G *35/06;* **C07C** *2/52*

U.S. Cl. 208—139 **25 Claims**

1. A method for dehydrocyclizing a dehydrocyclizable hydrocarbon comprising contacting the hydrocarbon at hydrocarbon dehydrocyclization conditions with an acidic catalytic composite comprising a combination of a catalytically effective amount of a pyrolyzed rhenium carbonyl component with a porous carrier material containing catalytically effective amounts of a halogen component, a germanium component and a uniform dispersion of a catalytically effective amount of a platinum group component maintained in the elemental metallic state.

4,325,817

CONTROL OF EMISSIONS IN FLUE GAS

David B. Bartholic, Watchung, and John W. Byrne, Saddle Brook, both of N.J., assignors to Engelhard Minerals & Chemicals Corporation, Edison, N.J.

Continuation-in-part of Ser. No. 901,346, May 1, 1978, Pat. No. 4,284,494. This application Jul. 25, 1980, Ser. No. 172,333

Int. Cl.³ C10G *51/04, 55/06*

U.S. Cl. 208—164 **4 Claims**

1. In a process for catalytic cracking of sulfur containing hydrocarbon charge prepared by selective vaporization of crude petroleum or a residual fraction thereof in contact with a rising vertical column of substantially inert solid material at a temperature of about 900° F. or higher for a residence time which does not cause substantial cracking, separating said solid material from so vaporized hydrocarbons and contacting said solid material with air to burn off carbonaceous material deposited thereon and produce first products of combustion and contacting the so vaporized hydrocarbons at cracking temperature with a circulating inventory of cracking catalyst which inventory includes a component capable of sorbing oxides of sulfur in an oxidizing atmosphere and of reaction in a reducing atmosphere to release sulfur as hydrogen sulfide whereby the catalyst acquires an inactivating carbonaceous deposit containing sulfur, separating vaporous products of reaction including hydrogen sulfide from circulating catalyst inventory containing said deposit, regenerating the so separated inventory by contact with air at a temperature to burn said carbonaceous deposit thus generating second products of combustion containing oxides of carbon and sulfur and regenerating the catalyst, separating said second products of combustion from regenerated catalyst and returning regenerated catalyst to renewed contact with hydrocarbon charge with reduction of sulfur associated with the regenerated catalyst; the improvement which comprises cooling said first products of combustion and said second products of combustion to a temperature substantially below the temperature of regeneration of said cracking catalyst, combining the said first and second products of combustion and contacting said cooled and combined products of combustion with said regenerated catalyst to thereby induce sorption by said catalyst inventory being returned to contact with said charge of an amount of sulfur oxides greater than that sorbed during said regeneration.

4,325,818

DUAL SOLVENT REFINING PROCESS

Robert A. Woodle, Nederland, Tex., assignor to Texaco, Inc., White Plains, N.Y.

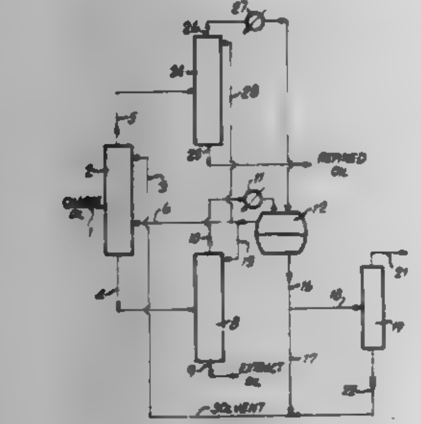
Filed Jul. 17, 1980, Ser. No. 169,926

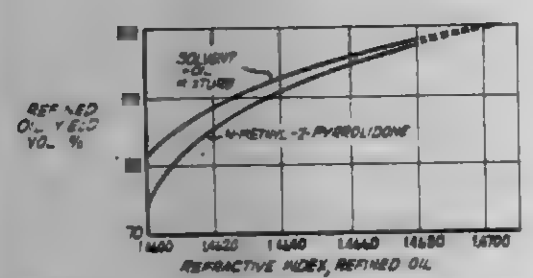
Int. Cl.³ C10G *21/20*

U.S. Cl. 208—326 **5 Claims**

1. In a process for solvent refining a petroleum base lubricating oil stock containing aromatic components and paraffinic components effecting separation of said lubricating oil stock into a paraffinic oil raffinate mixture and an aromatics-rich extract mixture wherein said lubricating oil stock is contacted with N-methyl-2-pyrrolidone containing not more than 1 weight percent water in a solvent extraction zone forming a solvent-rich extract phase in said extraction zone containing aromatic components of said oil stock and an oil-rich raffinate phase containing paraffinic components of said oil stock, the improvement which comprises contacting said extract phase in

said extraction zone with a co-boiling paraffinic backwash oil containing a minor amount of N-methyl-2-pyrrolidone and having a boiling range of 190° to 210° C. thereby effecting displacement of dissolved non-aromatic hydrocarbons into said raffinate phase, withdrawing resulting raffinate mixture from said extraction zone, distilling said extract and raffinate mixtures effecting separation of product extract and raffinate from N-methyl-2-pyrrolidone solvent and said co-boiling paraffinic oil by vaporization of said solvent and co-boiling oil,





cooling and condensing vapors of co-boiling paraffinic oil and N-methyl-2-pyrrolidone and forming a condensate separating into two liquid phases comprising a solvent-rich phase containing dissolved co-boiling paraffinic oil and a co-boiling paraffinic oil-rich phase containing dissolved solvent, passing said solvent-rich phase to said extraction zone as said solvent therefore, and passing said co-boiling paraffinic oil containing N-methyl-2-pyrrolidone to said extraction zone into contact with said extract phase therein as said paraffinic backwash oil, recovering resulting extract mixture from said extraction zone, and recovering said product raffinate from said distillation zone.

4,325,819

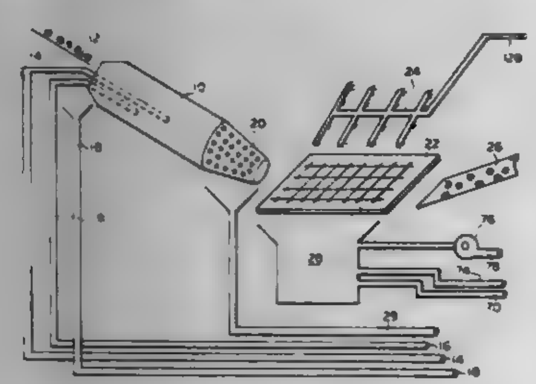
COAL WASHING PLANT

Dwight W. Altizer, 101 Wakefield Rd., Apt. A, Oak Ridge, Tenn. 37830

Filed Sep. 25, 1980, Ser. No. 190,651

Int. Cl.³ B03B *9/00*

U.S. Cl. 209—10 16 Claims



1. Apparatus for processing effluent resulting from washing coal to recover and clarify water suitable for reuse comprising:

means for screening at least a portion of said effluent to obtain another effluent having particles smaller than particles included in said effluent and dry contaminant particles larger than a first selected size;

means for centrifuging said another effluent along with solids from a water clarifying unit, said solids consisting of contaminant particles bonded together by a binding agent, to obtain solids and a different effluent; and

means for adding a polymer flocculent binding agent and processing said another effluent, said different effluent, and the remaining portions of said effluent to obtain clarified water and solids consisting of particles of contaminant materials held together by said binding agent.

10. In a process for washing raw coal to remove contaminant materials by adding water to raw coal which is then washed and screened such that a first coal is obtained wherein substantially all particles of said first coal are greater than a first selected size of about 28 mesh; and a wherein a discharge of waste is obtained, said waste discharge including a first slurry having water and a first group of particles of coal and contaminant material smaller than said first selected size of about 28 mesh, and a first effluent having water and contaminant particles, a first portion of said first effluent containing contaminant particles greater than said first selected size of about 28 mesh and a second portion of said first effluent containing contaminant particles smaller than said first selected size of about 28 mesh; an improved process for recovering coal fines having a particle size smaller than said first selected size of about 28 mesh comprising the steps of:

separating said first slurry to obtain wet coal having a particle size smaller than said first selected size of about 28 mesh and a second effluent comprised of water and contaminant material having a particle size smaller than said first selected size;

screening said wet coal separated from said first slurry to obtain a second slurry comprised of water and a second group of particles having a particle size smaller than a second selected size, which said second selected size is smaller than said first size, and wet second coal having a particle size between said first selected size and said second selected size; and

separating said second slurry to substantially separate said second group of particles into third coal having a particle size smaller than said second selected size and larger than a third selected size, and third effluent comprised of water, coal particles smaller than said third selected size, and contaminant material having a particle size smaller than said second selected size.

4,325,820

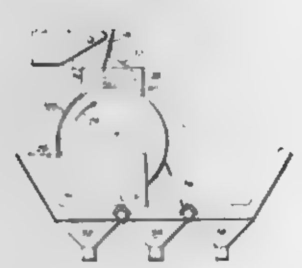
HIGH TENSION ELECTROSTATIC SEPARATORS

David R. Whitlock, Bernardsville, N.J., assignor to Advanced Energy Dynamics, Inc., Natick, Mass.

Filed Feb. 8, 1980, Ser. No. 119,867

Int. Cl.³ B03C *7/06*

U.S. Cl. 209—127 R 16 Claims



1. In a method for the beneficiation of particulate solid substances by means of an electrification mechanism of the electrostatic separation kind wherein said substance includes a substantial proportion of dust-like particles ranging in size down to about 20 microns, and wherein said method employs the known step of depositing a feed of particulate solid substance onto a moving surface of a rotor which is surrounded by an ambient gas forming a boundary layer of gas which moves with said surface relative to ambient gas more remote from said surface, the improvement comprising the steps of isolating said moving surface by stripping said boundary layer of gas from said moving surface prior to the region where said feed is deposited, maintaining said feed region substantially free of said boundary layer while depositing said feed on said surface in said feed region after said stripping and prior to reformation of said boundary layer, and forming a mixture of said feed in a layer of gas entrained on said surface beyond said feed region in the direction of rotation of said surface.

4,325,821

AMINE OXIDE PROMOTERS FOR FROTH FLOTATION OF MINERAL ORES

Saul J. Escalera, Dublin, Ohio, assignor to Sherex Chemical Company, Inc., Dublin, Ohio

Continuation-in-part of Ser. No. 66,637, Aug. 15, 1979, abandoned. This application Feb. 4, 1981, Ser. No. 231,286

Int. Cl.³ B03D *1/02*

U.S. Cl. 209—166 22 Claims

1. In a froth flotation process where preselected solid particles are selectively separated under froth flotation conditions as a froth phase from remaining solid feed particles as an aqueous phase in the presence of a collector amine, the improvement characterized by the addition of an effective proportion of an amine oxide promoter.

4,325,822

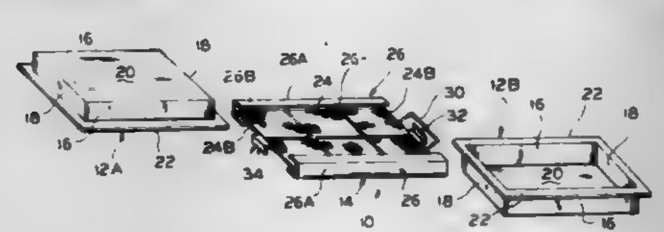
PET LITTER SEPARATOR

John H. Miller, 402 N. 10th St., Mantowoc, Wis. 54200

Filed Jul. 25, 1980, Ser. No. 172,385

Int. Cl.³ B07B *1/04*

U.S. Cl. 209—251 5 Claims



1. An animal waste collection and disposal device of the type which contains a litter material into which waste matter is deposited, said device comprising:

an assembly including a pair of opposed substantially rectangular shaped receptacle members,

each of said receptacle members having wall portions defining a litter-receiving chamber which is open over at least a portion of one major planar face of said receptacle, with the open portion of each receptacle being in facing relation to the open portion of the other receptacle;

a substantially rectangular shaped screen member adapted to be positioned in interposed relation between said opposed receptacles;

first guide track means carried by and corresponding to the longitudinal sides of each of said receptacles;

second guide track means carried by said screen member on both opposite sides of said screen member along its longitudinal edges;

said first guide track means of each of said receptacles being slidably engageable along the longitudinal direction with respective ones of said second guide track means of said screen member respectively to interlockingly and detachably engage said receptacles with said screen member in opposed relation to each other on said opposite sides of said screen member,

said second guide track means protruding outwardly from between said respective ones of said side track means when said screen member is removably attached therebetween, whereby substantially sealed inversion of the assembled receptacles and interposed screen member transfers by gravity said litter material through said screen member from the upper inverted receptacle to the lower receptacle, with said waste matter being retained on the upper surface of said screen member.

4,325,823

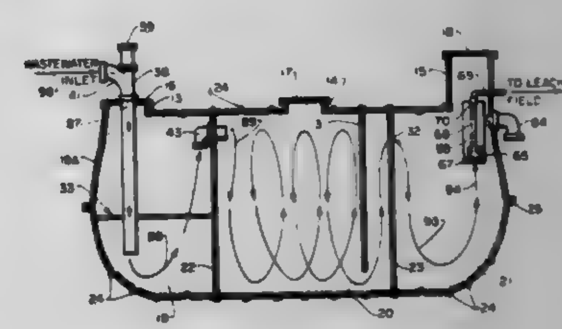
WASTEWATER TREATMENT SYSTEM

Thomas S. Graham, Loomis, Calif., assignor to Tom Graham & Associates, Loomis, Calif.

Filed May 12, 1980, Ser. No. 150,206

Int. Cl.³ B01D *21/24*

U.S. Cl. 210—86 7 Claims



1. A system for the treatment of wastewater comprising:

a tank;

first and second baffle means dividing the tank into three separate chambers, a first blending chamber, a second decomposition chamber, and a third purification chamber;

means fluidly interconnecting the first chamber with said second chamber and said second chamber with said third chamber;

air injecting means for injecting air simultaneously into all of said chambers; and

third baffle means dividing said first chamber into an upper anaerobic compartment and a lower aerobic compartment, said air injecting means opening into said aerobic compartment further including wastewater inlet means opening into the lower aerobic compartment;

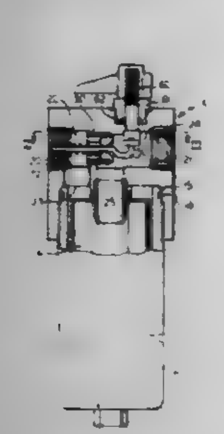
wherein said means fluidly interconnecting said first chamber with said second chamber includes a pipe section having an inlet in the upper anaerobic section of said first chamber, and extending through said first baffle means and having an outlet in the upper portion of said second chamber,

said third baffle means is a funnel formed of corrugated material having an opening at the bottom thereof, said means fluidly connecting said second chamber with said third chamber includes an opening in the upper portion of said baffle means dividing said third chamber from said second chamber, said second chamber includes a baffle spaced from both the bottom of said tank and from said baffle means dividing said third chamber from said second chamber, to prevent solids from exiting said second chamber, and said third chamber includes a vertical outlet pipe in the upper portion, and pumping means mounted in said outlet pipe for pumping wastewater out of said tank.

3. In the system of claim 1 wherein said outlet pipe is a stilling tube and also including sensing means associated with said pumping means for sensing the liquid level in said tank and selectively activating or deactivating said pumping means.

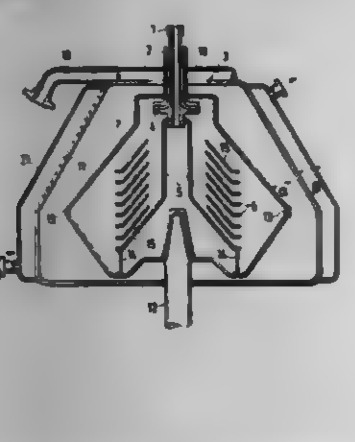
4. In the system of claim 3 including alarm means including liquid level measurement means, associated with said third chamber for actuating a remote alarm when the liquid level in said tank rises about a predetermined level.

4,325,824
UNHOOKING DIRTY FILTER ALARM
Samuel S. Mitchell, Monroeville, and Abbas F. Vijlee, Pittsburgh, both of Pa., assignors to Schroeder Brothers Corporation, McKees Rocks, Pa.
Filed Mar. 26, 1981, Ser. No. 247,936
Int. Cl.[3] B01D *27/10*
U.S. Cl. 210—90 5 Claims



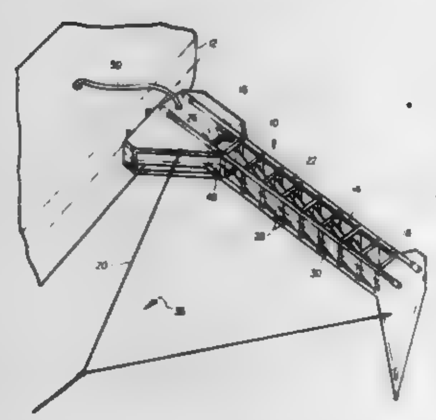
1. A filter comprising
a filter head;
a canister secured to the filter head;
a tubular filter element positioned within the canister;
said filter head comprising inlet and outlet ports for connecting into a hydraulic conduit, passages for delivering fluid from the inlet port to the outer cylindrical surface of the tubular filter element and for delivering fluid from the interior of the filter element to the outlet port;
said filter head having a normally closed bypass valve and a channel between the inlet and outlet ports;
said bypass valve comprising a closure element that is spring biased in the closed position which bias can be overcome by differential pressure across the filter element;
a piston pin fixed to said closure element having an extension with a bend therein to form a generally perpendicular presser foot;
said filter head having a pointer shaft journaled therein being perpendicular to the axis of said piston pin and offset from said axis, crank extending from said pointer shaft extending across the travel path of said presser foot such that when the closure element moves axially it causes the pointer shaft to rotate if the presser foot presses against upon the crank arm;
said pointer shaft extending through the filter head to the exterior whereby rotation of the rod may be observed.

4,325,825
SEPARATOR
Heinz Schütte, Hofheim am Taunus, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany
Filed Apr. 24, 1980, Ser. No. 143,341
Claims priority, application Fed. Rep. of Germany, Apr. 26, 1979, 2916856
Int. Cl.[3] B01D *21/26*; B04B *11/00*
U.S. Cl. 210—371 13 Claims



1. In separator apparatus for separating a mixture of at least two liquids that are immiscible with each other and that contains solid particles having a specific gravity greater than the heavier of the two liquids, including a rotating drum with a biconic circumferential wall formed of two oppositely-directed conic surfaces joined at the bases thereof to define an equator, the wall being axially inclined from said equator at a predetermined inclination angle equal to or greater than the natural angle of repose of said solid particles and the drum having openings at the equator thereof through which the separated heavier liquid and solid particles can pass; means for injecting said mixture into the drum; means for conducting the lighter of the separated liquids from the drum; static pressure chamber means surrounding the drum to receive the heavier liquid and solid particles and holding, during operation, a fill of said heavier liquid surrounding said drum outwardly beyond a predetermined nominal radial level; and means for conducting the heavier liquid from said static pressure chamber means; the improvement wherein said apparatus comprises means for entraining said heavier liquid in the static pressure chamber means to rotate substantially synchronously with said drum, and wherein said means for conducting the heavier liquid includes discharge means disposed at said nominal radial level for maintaining the radial level of the rotating heavier liquid in the static pressure chamber means at said nominal radial level at a predetermined distance from the axis of said drum while said heavier liquid is entrained to rotate with said drum, so that the pressure of said heavier liquid is controlled and discharging of the lighter liquid into the static pressure chamber means is prevented.

4,325,826
OIL SWEEPER METHOD AND APPARATUS
Peik J. van Waveren, Vlaardingen, and Ary de Vrij, Puttershoek, both of Netherlands, assignors to Hydrovak Systems (Holland) B.V., Vlaardingen, Netherlands
Filed Sep. 4, 1980, Ser. No. 184,138
Int. Cl.[3] E02B *15/04*
U.S. Cl. 210—776 7 Claims



1. Oil sweeper apparatus adapted to sweep an oil film from oncoming surface water approaching the apparatus from a generally transverse direction relative to its length, comprising:
(a) an elongated structural framework adapted to be placed in the water;
(b) a surface skimmer located at one end of the framework;
(c) a pair of parallel, longitudinally extending, vertical screens supported on opposite longitudinal sides of the framework, the screens adapted to intersect the water line when the apparatus is placed in the water;
(d) the forward screen relative to the water approach direction comprising multiple, water impervious panels, each panel pivotally mounted to the framework for swinging movement about a vertical swinging axis;
(e) the rearward screen being impervious to water;
(f) means for selectively adjusting and setting the angles of the pivotable panels about their respective swing axes, whereby the panels can be set to approach the rearward screen to thereby, with the rearward screen, deflect oncoming water passing across and between the panels, and between the screens, toward the skimmer.

4,325,827
FUEL AND LUBRICATING COMPOSITIONS CONTAINING N-HYDROXYMETHYL SUCCINIMIDES
Andrew G. Papay, Manchester, and Joseph P. O'Brien, Kirkwood, both of Mo., assignors to Edwin Cooper, Inc., St. Louis, Mo.
Continuation-in-part of Ser. No. 60,280, Jul. 25, 1979, abandoned. This application Jan. 26, 1981, Ser. No. 228,129
Int. Cl.[3] C10M *1/32*
U.S. Cl. 252—51.5 A 8 Claims

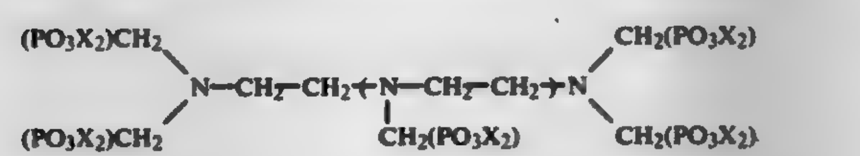
1. A lubricating oil composition formulated for use in the crankcase of an internal combustion engine said composition comprising a major amount of a lubricating oil and a minor friction-reducing amount of an oil-soluble N-hydroxymethyl aliphatic hydrocarbyl succinimide wherein said hydrocarbyl group contains about 12–36 carbon atoms said succinimide being made by reacting ammonia with an aliphatic $C_{12\text{-}36}$ hydrocarbyl succinic anhydride to form the corresponding succinimide and subsequently reacting the succinimide with formaldehyde to form said N-hydroxymethyl aliphatic hydrocarbyl succinimide.

5. An additive concentrate adapted for addition to lubricating oil for use in the crankcase of an internal combustion engine said concentrate containing an oil soluble N-hydroxymethyl aliphatic hydrocarbyl succinimide said succinimide being made by reacting ammonia with an aliphatic $C_{12\text{-}36}$ hydrocarbyl succinic anhydride to form the corresponding succinimide and subsequently reacting the succinimide with formaldehyde to form said N-hydroxy-methyl aliphatic hydrocarbyl succinimide.

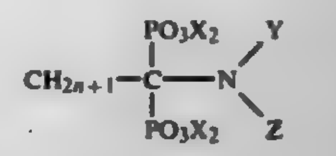
8. Liquid hydrocarbon fuel adapted for use in an internal combustion engine containing a friction-reducing amount of a fuel-soluble N-hydroxymethyl aliphatic hydrocarbyl succinimide wherein said hydrocarbyl contains about 12–16 carbon atoms said succinimide being made by reacting ammonia with an aliphatic $C_{12\text{-}36}$ hydrocarbyl succinic anhydride to form the corresponding succinimide and subsequently reacting the succinimide with formaldehyde to form said N-hydroxymethyl aliphatic hydrocarbyl succinimide.

4,325,828
DETERGENT BLEACH COMPOSITIONS
Dennis Postlethwaite, Birkenhead, England, assignor to Lever Brothers Company, New York, N.Y.
Filed Mar. 19, 1981, Ser. No. 244,499
Claims priority, application United Kingdom, Mar. 27, 1980, 10318/80; Jun. 16, 1980, 19605/80
Int. Cl.[3] C11D *7/54*
U.S. Cl. 252—102 5 Claims

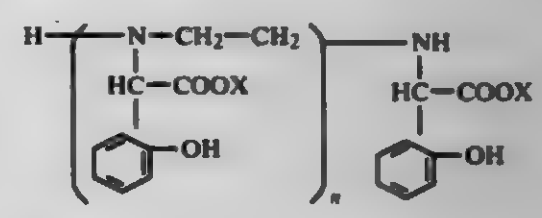
1. Solid detergent bleach composition having an improved bleaching effect at substantially all washing temperatures, consisting essentially of:
(a) from 3 to 40% by weight of a detergent selected from the group consisting of anionic, nonionic, cationic, and amphoteric detergent and mixtures thereof;
(b) from 1 to 25% by weight of a solid organic peroxyacid compound, having a melting point of at least 50° C.;
(c) from 2 to 40% by weight of an inorganic peroxy compound generating hydrogen peroxide in solution, and
(d) from 0.05 to 5% by weight of a stabilizing sequestering agent selected from the group consisting of:
(i) a compound of the general formula:



wherein n is an integer from 0 to 4 and X is H or an alkali metal, alkaline earth metal or ammonium cation;
(ii) a compound of the general formula:



wherein n is an integer from 0 to 2; X is H or an alkali metal, alkaline earth metal or ammonium cation;
$Y = CH_2COOX$ or $CH_2PO_3X_2$
$Z = CH_2COOX$ or $CH_2PO_3X_2$
(X is H or alkali metal, alkaline earth metal or ammonium cation;
(iii) a compound of the general formula:



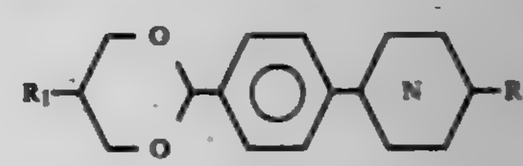
wherein n is 1–3, and X is H, or an alkali metal, alkaline earth metal or ammonium cation; and
(iv) mixtures thereof.

4,325,829
DETERGENT COMPOSITIONS
Peter M. Duggleby, Wirral, England; Bernhard Kueter, Heidelberg, Fed. Rep. of Germany; Ronald M. Morris, Wirral, England; Horst Poeselt, Bensheim; Hermann Rabitsch, Mannheim, both of Fed. Rep. of Germany, and Reginald V. Scowen, Wirral, England, assignors to Lever Brothers Company, New York, N.Y.
Filed Nov. 10, 1980, Ser. No. 205,128
Claims priority, application United Kingdom, Nov. 12, 1979, 39124/79
Int. Cl.[3] C11D *9/14*
U.S. Cl. 252—109 7 Claims

1. A particulate alkaline detergent composition for fabric washing consisting essentially of about 5% to about 40% by weight of at least one synthetic detergent compound, and about 10% to about 40% by weight of a mixture of alkali metal tripolyphosphate and alkali metal orthophosphate in the weight ratio of about 20:1 to about 3:1, wherein the composition contains about 2% to about 25% by weight of a mixture of soap and an anionic polyelectrolyte selected from linear polycarboxylates and organic phosponates in the weight ratio of about 10:1 to about 1:1 and nor more than, if any, about 5% by weight of alkali metal pyrophosphate.

4,325,830
THREE RING DIOXANE LIQUID CRYSTALLINE COMPOUNDS
Nicholas L. Sethofer, San Jose, Calif., assignor to Timex Corporation, Waterbury, Conn.
Filed Dec. 24, 1980, Ser. No. 219,673
Int. Cl.[3] C07D *319/04*; G02F *1/13*; C09K *3/34*
U.S. Cl. 252—299.61 9 Claims

1. A compound of the formula:



where R_1 is alkyl or alkoxy and R_2 is alkyl or alkoxy and where ring N is a benzene or a saturated cyclohexane ring.

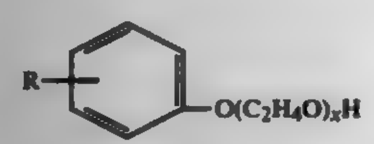
4,325,831

FOAMABLE COMPOSITION

Stuart L. Watson, South Charleston, and Paul M. Westfall, Saint Albans, both of W. Va., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Mar. 12, 1981, Ser. No. 243,083
Int. Cl.³ B01F *17/02, 17/10, 17/42*
U.S. Cl. 252—354 **9 Claims**

1. A foamable mixture comprising:
(a) 2 to 20 parts of a highly ethoxylated alkylphenol of the formula:



wherein R is a saturated or unsaturated, linear or branched alkyl having from 7 to 20 carbon atoms and x has an average value of from 20 to 200;
(b) 2 to 20 parts of an alkali metal N-alkyl sulfosuccinamate of the formula:

$$R'NHOCCH_2\underset{\displaystyle SO_3M}{\underset{|}{C}}HCOOM$$

wherein R' is a saturated or unsaturated, linear or branched alkyl having from 16 to 24 carbon atoms and M is hydrogen or an alkali metal atom with the proviso that at least one M group is an alkali metal atom; and
(c) 3 to 40 parts of an alkali metal alkyl sulfate of the formula:

$R''OSO_3M$

wherein R'' is a saturated or unsaturated, linear or branched alkyl having from 7 to 24 carbon atoms and M' is an alkali metal atom.

4,325,832

ENZYME REFERENCE COMPOSITION

Allan L. Louderback, Temple City, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Continuation-in-part of Ser. No. 17,871, Mar. 5, 1979, abandoned. This application Jan. 21, 1980, Ser. No. 114,009
Int. Cl.³ G01N *33/16;* **C09K** *3/00*
U.S. Cl. 252—408 **12 Claims**

1. An enzyme reference composition of the type comprising:
(a) at least one enzyme constituent of known value;
(b) from about 20 to about 40 weight percent of at least one alkylene polyol having from 2 to 5 carbon atoms;
(c) from about 3 to about 8 grams per deciliter total protein; and
(d) from about 60 to about 80 weight percent water; characterized in that said total protein consists essentially of human serum albumin.

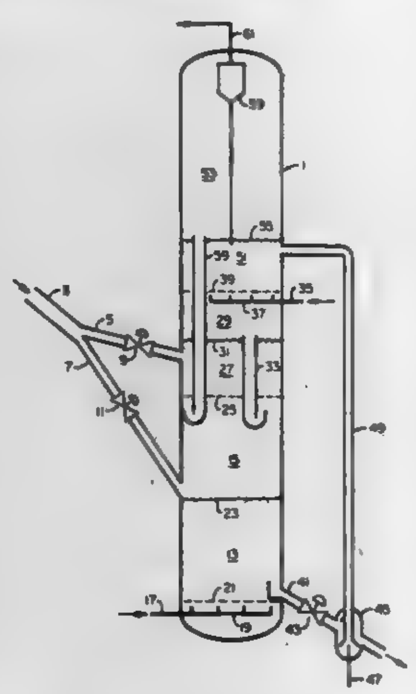
4,325,833

THREE-STAGE CATALYST REGENERATION

John W. Scott, Ross, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Jun. 27, 1980, Ser. No. 163,534
Int. Cl.³ B01J *29/38, 21/20;* **C10G** *11/18;* **C01B** *21/00*
U.S. Cl. 252—417 **14 Claims**

1. A method for burning nitrogen-containing coke off a coke-containing particulate catalyst, which comprises:
(a) separating said coke-containing particulate catalyst into a first portion and a second portion;
(b) burning substantially all coke off said first portion of said coke-containing catalyst with a regeneration gas comprising free oxygen in a first regeneration zone, and burning substantially all carbon monoxide formed in said first zone, sufficient free oxygen being introduced into said first zone to provide at least 1 volume percent residual free oxygen in said regeneration gas after burning said coke and carbon monoxide, whereby nitrogen oxides are formed in said first zone;
(c) passing said regeneration gas from said first zone into a second zone, forming carbon monoxide and carbon dioxide and generating a substantially oxygen-free atmosphere in said second zone by burning coke off said second portion of said coke-containing catalyst and burning carbon monoxide with substantially all said residual free oxygen, and decreasing the amount of nitrogen oxides in said regeneration gas by reacting at least a portion of said nitrogen oxides in said oxygen-free atmosphere to form free nitrogen; and
(d) passing said regeneration gas from said second zone into a third regeneration zone, burning substantially all carbon monoxide generated in said second regeneration zone with additional free oxygen in contact with substantially coke-free catalyst in said third zone.



2. A method according to claim 1 wherein coke in said deactivated catalyst includes a sulfur component, sulfur oxides are formed by burning said coke, and said sulfur oxides are reacted with a solid reactant included with said particulate catalyst in said first regeneration zone to form sulfur-containing solids.

8. A method for burning nitrogen-containing coke off a coke-containing particulate catalyst, which comprises:
(a) introducing a major portion of said coke-containing catalyst into a first fluidized bed comprising substantially coke-free catalyst in a lower zone in a vertically extending regeneration vessel;
(b) passing a regeneration gas comprising free oxygen upwardly through said lower zone, burning substantially all coke off said major portion of coke-containing catalyst in said first bed, and burning substantially all carbon monoxide formed in said first bed within said lower zone, sufficient free oxygen being introduced into said lower zone to provide at least 1 volume percent residual free oxygen in said regeneration gas at the upper end of said lower zone, whereby nitrogen oxides are generated in said lower zone;
(c) introducing a minor portion of said coke-containing catalyst into a second fluidized bed of catalyst in a vertically intermediate zone in said regeneration vessel, passing nitrogen oxides-containing regeneration gas from said lower zone upwardly through said intermediate zone, forming carbon monoxide and carbon dioxide and generating a substantially oxygen-free atmosphere in said second bed by reacting substantially all said residual free oxygen with coke and carbon monoxide in said second bed, and decreasing the amount of nitrogen oxides in said regeneration gas by reacting at least a portion of said nitrogen oxides in said intermediate zone to form free nitrogen; and
(d) passing carbon monoxide-containing regeneration gas from said intermediate zone upwardly through a third fluidized bed comprising substantially coke-free catalyst in an upper zone in said regeneration vessel, and burning substantially all carbon monoxide introduced into said upper zone with additional free oxygen in contact with said third bed.

4,325,834

HETEROGENEOUS CATALYST SUPPORTS

Charles M. Bartish, Bethlehem, Pa., and Larry J. Hayes, Roanoke, Tex., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Nov. 21, 1980, Ser. No. 208,902
Int. Cl.³ B01J *31/02, 31/12*
U.S. Cl. 252—429 R **8 Claims**

1. A heterogeneous Group VI or VIII metal salt catalyst comprising mono-or bi-dentate ligands chemically attached to at least partially amorphous carbon and an effective proportion of a Group VI or VIII metal salt.

4,325,835

CATALYST COMPONENT

Angus J. Hartshorn, Runcorn, and Eric Jones, Kelsall, both of England, assignors to Imperial Chemical Industries Limited, London, England

Filed Jul. 1, 1980, Ser. No. 164,932
Claims priority, application United Kingdom, Jan. 10, 1980, 00890/80; Jun. 6, 1980, 18581/80
Int. Cl.³ C08F *4/64*
U.S. Cl. 252—429 B **25 Claims**

1. A catalyst component which is the product of reacting a particulate support material which has a reactive surface comprising a plurality of sites on the surface of the support which are capable of abstracting a magnesium hydrocarbyl from a solution thereof with
(a) at least one organomagnesium compound in which magnesium is directly bonded through a carbon atom to a first hydrocarbyl group and is bonded to a halogen, or oxyhydrocarbyl or a second hydrocarbyl group, the hydrocarbyl group or groups being alkyl, aryl, cycloalkyl, aralkyl, alkadienyl or alkenyl,
(b) at least one aluminum compound of the general formula: R_nAlY_{3-n} wherein R, each of which may be the same or different, represents a hydrocarbyl group which is an alkyl, aryl, cycloalkyl, aralkyl, alkenyl or alkadienyl group, n is 0, 1, 2, 3 or a fraction less than 3, and Y is a singly charged ligand which is hydride, fluoride, chloride, bromide, iodide or oxyhydrocarbyl,
(c) at least one organometallic compound of the general formula: $R_m{}^1MX_p$ wherein M is a metal of Groups IA, IIA, IIB, IIIB, IVA, VA or VIA of the Periodic Table, R^1 is a hydrocarbyl or a substituted hydrocarbyl group, X is a halogen, m is an integer up to the highest valency of the metal M and p is 0 or an integer up to 2 less than the valency of the metal M, except that when M is a metal from Group VIA, p is always 0, and when M is a metal from Groups IVA, VA or VIA m has a value from 2 to the highest valency of the metal and p has a value from 0 to a value of 2 less than the valency of the metal M, and
(d) at least one transition metal compound of Groups IVA, VA or VIA of the Periodic Table which is known to be useful in forming Ziegler-Natta catalysts, in which catalyst component the molar ratio of the aluminum compound to the organomagnesium compound is between 0.5 and 100, the molar ratio of the aluminum compound to the organometallic compound is between 1.0 and 100 and the molar ratio of the aluminum compound to the transition metal compound is between 1.0 and 2000, which reaction may be effected in any order or combination with the provisos that (i) the at least one organomagnesium compound or the at least one aluminum compound R_nAlY_{3-n} or the at least one organometallic compound $R_m{}^1MX_p$ or the at least one transition metal compound of Groups IVA, VA or VIA contains a halide group, (ii) where the organomagnesium compound or the at least one aluminum compound R_nAlY_{3-n} or the at least one organometallic compound $R_m{}^1MX_p$ is a Ziegler-Natta activator and the support is treated therewith after treatment with the at least one transition metal compound of Groups IVA, VA or VIA the support is treated with a pacifying agent which is capable of breaking metal-carbon or metal-hydrogen bonds in the catalyst component but does not have a deleterious effect on the catalyst component and which is used in sufficient quantity to break substantially all the metal-hydrocarbyl or metal-hydride bonds in the catalyst component, after treatment with the said activator and (iii) where the metal M in organometallic compound $R_m{}^1MX_p$ is magnesium, the organometallic compound $R_m{}^1MX_p$ and the organo-magnesium compound must not be added consecutively or together as a mixture, and that when the metal M in organometallic compound $R_m{}^1MX_p$ is aluminum, the organometallic compound $R_m{}^1MX_p$ and the aluminum compound R_nAlY_{3-n} must not be added consecutively or together as a mixture or complex.

4,325,836

NOVEL TITANIUM HALIDE CONTAINING CATALYST

Ronald A. Epstein, and Robert I. Mink, both of Yonkers, N.Y., assignors to Stauffer Chemical Company, Westport, Conn.

Filed Jul. 18, 1980, Ser. No. 170,262
Int. Cl.³ C08F *4/64*
U.S. Cl. 252—429 B **39 Claims**

1. A catalyst system comprising:
(a) an organoaluminum containing component; and
(b) a titanium halide containing component obtained by:
(i) reacting a halogen containing magnesium compound with an organic phosphite to produce a reaction product;
(ii) co-pulverizing the reaction product with a complex of a titanium halide compound and an electron donor compound to produce a co-pulverized product; and
(iii) reacting the co-pulverized product with a titanium halide compound.

4,325,837

CATALYST, METHOD OF PRODUCING THE CATALYST, AND POLYMERIZATION PROCESS EMPLOYING THE CATALYST

Charles E. Capshew; James N. Short; M. Bruce Welch, all of Bartlesville, Okla., and Richard E. Dietz, Borger, Tex., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 12, 1980, Ser. No. 177,313
Int. Cl.³ C08F *4/64, 4/68*
U.S. Cl. 252—429 B **13 Claims**

1. A method of preparing a catalyst for the polymerization of olefins, said method comprising:
(A) preparing a first catalyst component by reacting in a suitable dry, essentially inert diluent reactants comprising
(1) a metal halide compound selected from the group consisting of metal dihalide compounds and metal hydroxyhalide compounds and the metal of the metal halide compound is selected from the group consisting of Group IIA metals and Group IIB metals of the Mendeleev Periodic Table; and
(2) a transition metal compound in which the transition

metal is selected from the group consisting of Group IVB and Group VB transition metals of the Mendeleev Periodic Table and the transition metal is bonded to at least one radical selected from the group consisting of hydrocarbyloxides, amides, imides, and mercaptides; and

(B) reacting a solution of said first catalyst component with a second catalyst component in the presence of an atmosphere of a polymerizable olefin monomer selected from the group consisting of aliphatic mono-1-olefins and conjugated dienes at a pressure in the range of about 1 to about 1,000 psia, wherein the molar ratio of the transition metal compound to the metal halide compound is in the range of about 10:1 to about 1:10, and wherein the concentration of the metal halide in said diluent is in the range of about 0.2 molar to about 1.2 molar, and wherein said second catalyst component comprises a precipitating agent selected from the group consisting of organometallic compounds of Groups I, II, and III selected from the group consisting of lithium alkyls, Grignard reagents, dialkyl magnesium compounds, dialkyl zinc compounds, and hydrocarbyl aluminum halides; metal halides and oxyhalides of metals of Groups IIIA, IVA, IVB, VA, and VB; hydrogen halides; and organic acid halides selected from the group consisting of compounds having the formula

$$R'''-\overset{\displaystyle O}{\overset{\|}{C}}-X$$

wherein R''' is an alkyl, aryl, or cycloalkyl group or combinations thereof and X is a halide, and

wherein said precipitating agent is combined with said solution of said first catalyst component in either an undiluted form or as an admixture with a suitable essentially inert diluent, the concentration of said precipitating agent in said diluent being at least 0.2 molar, further wherein said solution of said first catalyst component and said second catalyst component are added together during an addition time of less than about two hours, and then

(C) reacting the solid product resulting from step (B), which optionally has been reacted with a halide ion exchanging source selected from the group consisting of titanium tetrahalides, vanadium oxychloride, and zirconium tetrachloride, with a polymerizable olefin selected from aliphatic mono-1-olefins and conjugated dienes to produce a catalyst containing 1 to 50 weight percent prepolymer.

4,325,838

CATALYSTS FOR POLYMERIZATION OF OLEFINS

Hideyuki Tanaka; Yoshihisa Moriya; Kiyotaka Saito; Shozo Hori, and Yutaka Mitsuda, all of Machida, Japan, assignors to Denki Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 31, 1980, Ser. No. 203,080

Claims priority, application Japan, Oct. 31, 1979, 54-139881

Int. Cl.³ C08F *4/64, 4/02*

U.S. Cl. 252—429 B **12 Claims**

1. A catalytic component for polymerization of olefins prepared by intimately contacting magnesium halide as a substrate with at least one member selected from the group of halogen, magnesium halide and an interhalogen compound represented by the following formula, the halogen atoms of which are different from the halogen atom of magnesium halide as the substrate and further intimately contacting the resulting product with an electron donative compound and a halogen-containing titanium compound where halogen is directly attached to titanium:

$$XY_n$$

wherein X and Y are different halogen atoms and n is a number of 1, 3, 5 or 7.

4,325,839

IMPREGNATED SECOND VALENCE CHROMIUM COMPOUND IN SUPPORTED CATALYST

Max P. McDaniel, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 21, 1979, Ser. No. 106,350

Int. Cl.³ C08F *4/78, 4/22, 4/16*

U.S. Cl. 252—430 **24 Claims**

1. A process for producing a catalyst having chromium present in both the hexavalent state and a lower valence state comprising forming a silica-containing support containing hexavalvent chromium, thereafter as a separate step anhydrously impregnating said support with a chromium component in an anhydrous solvent wherein the chromium has a valence of less than 6, and thereafter removing said solvent by gentle heating at a temperature of no more than about 100° C. and recovering said catalyst as the finished product of the process.

13. A process for producing a catalyst having chromium present in both the hexavalent state and a lower valence state consisting essentially of forming a dried silica-containing support containing a chromium compound wherein the chromium has a valence of less than 6, thereafter as a separate step anhydrously impregnating said support with a hexavalent chromium compound as a solution in an anhydrous solvent and thereafter removing said solvent by gentle heating at a temperature of not more than about 100° C.

24. A catalyst produced by the method of claim 13 wherein said lower valence state chromium in the finished product catalyst is a zerovalent chromium compound.

4,325,840

ORGANOMAGNESIUM COMPLEXES

Dennis B. Malpass, LaPorte, Tex., assignor to Texas Alkyls, Inc., Deer Park, Tex.

Continuation of Ser. No. 915,083, Jun. 12, 1978, Pat. No. 4,231,896, which is a continuation of Ser. No. 697,085, Jun. 16, 1976, abandoned, which is a continuation of Ser. No. 570,685, Apr. 23, 1975, abandoned. This application Nov. 30, 1979, Ser. No. 99,225

Int. Cl.³ B01J *31/12*

U.S. Cl. 252—431 R **13 Claims**

1. A hydrocarbon soluble organomagnesium complex having the formula

$$(R'_2Mg)_m\cdot(RM)_n$$

wherein RM is an organozinc compound selected from the group consisting of dialkylzincs, alkylzinc halides, or mixtures thereof, the alkyl portion of which R represents a primary, secondary or tertiary alkyl group, R' is selected from the group consisting of primary alkyl containing from 1 to 10 carbon atoms, and phenyl and mixtures thereof, and m and n are numbers such that the ratio of m/n is from 1 to 20.

4,325,841

NON-FREE-AMINE PROMOTER SYSTEM FOR POLYESTER COMPOSITION

Hilda Howell, Pittsburgh, Pa., assignor to Koppers Company, Inc., Pittsburgh, Pa.

Division of Ser. No. 61,379, Jul. 27, 1979, Pat. No. 4,267,279. This application Sep. 9, 1980, Ser. No. 185,499

Int. Cl.³ B01J *31/12*

U.S. Cl. 252—431 C **6 Claims**

1. A non-free-amine type promoter system for promoting the polymerization of a free-radical catalyzed polyester composition, the promoter system comprising a first promoter and a second promoter, said first promoter provided by a salt-like reaction product of an amine and an aromatic dicarboxylic acid, said promoter system further characterized in providing a promoted curable polyester composition having a gel-time drift which is suppressed during the useable shelf-life of the

polyester composition as compared to a counterpart free-amine promoted polyester composition lacking said salt-like reaction product.

4,325,842

PROCESS FOR PREPARING A SUPPORTED MOLYBDENUM CARBIDE COMPOSITION

Lynn H. Slaugh, and Ronald J. Hoxmeier, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Dec. 8, 1980, Ser. No. 213,969

Int. Cl.³ B01J *23/28, 27/22*

U.S. Cl. 252—443 **7 Claims**

1. A process for preparing a supported molybdenum carbide composition which comprises impregnating a porous, inert support with a solution of $(H_3O)_2Mo_6Cl_{14}.2H_2O$ dissolved in an organic solvent, heating the impregnated support under non-oxidizing conditions in order to remove the solvent and subsequently heating the impregnated support to a temperature ranging from about 650° C. to about 750° C. in a carbidng gas mixture which comprises hydrogen in a concentration ranging from about 1 to about 20 percent by volume, a carbiding component selected from the group consisting of lower alkane, lower alkene, carbon monoxide and mixtures thereof in a concentration ranging from about 0.5 to about 5 percent by volume and the balance being a noble gas.

4,325,843

PROCESS FOR PREPARING A SUPPORTED TUNGSTEN CARBIDE COMPOSITION

Lynn H. Slaugh, and Ronald J. Hoxmeier, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Dec. 8, 1980, Ser. No. 213,970

Int. Cl.³ B01J *23/30, 27/22*

U.S. Cl. 252—443 **6 Claims**

1. A process for preparing a supported tungsten carbide composition which comprises:

(a) impregnating a porous oxidic support with a solution of a tungsten salt decomposable upon calcining to an oxide dissolved in a suitable solvent,

(b) drying the support to remove the solvent,

(c) calcining the impregnated support at a temperature ranging up to about 450° C. to about 750° C.,

(d) heating the support in an ammonia atmosphere at a temperature ranging from about 700° C. to about 800° C., and

(e) heating the resultant composition at a temperature ranging from about 700° C. to about 800° C. in a carbiding gas mixture which comprises hydrogen and a carbiding component selected from the group consisting of carbon monoxide methane, ethane, propane, ethylene, propylene, and mixtures thereof.

4,325,844

METHOD OF PREPARING DIATOMITE FOR RAPID CALCINATION

Bruce C. Olmsted, Jr., Littleton, Colo., assignor to Manville Service Corporation, Denver, Colo.

Filed May 20, 1980, Ser. No. 151,561

Int. Cl.³ B01J *20/14*

U.S. Cl. 252—448 **29 Claims**

1. A process for the calcination of diatomite in which the time at temperature required to calcine a quantity of diatomite is reduced, which process comprises:

(a) mixing with said quantity of diatomite a quantity of water sufficient to produce a mixture comprising water and diatomite with a water content in the range of 15 to 50 weight percent moisture based on the total weight of materials;

(b) forming said moistened diatomite mixture into generally spherical balls; and

(c) calcining said balls at a temperature in the range of about 1700° F. to about 2350° F. for a period of from about 0.75 to about 30 minutes.

2. A process as in claim 1 wherein there is also a flux of whitening agent incorporated into said mixture balls prior to calcining of said balls.

26. A process as in claims 1, 2, 3 or 7 wherein there is also included in said mixture an organic binder.

4,325,845

ZEOLITE CATALYSTS AND METHOD OF PRODUCING THE SAME

John Lim, Anaheim, and Michael Brady, Studio City, both of Calif., assignors to Filtrol Corporation, Los Angeles, Calif.

Filed Nov. 9, 1979, Ser. No. 92,722

Int. Cl.³ B01J *29/08*

U.S. Cl. 252—455 Z **13 Claims**

1. A process of forming a catalyst containing a sodium zeolite of the faujasite type which comprises mixing in a water slurry, a zeolite of the faujasite type containing from about 12 to about 15% sodium expressed as Na_2O, clay and sodium silicate, the weight ratio of the zeolite to the silica equivalent to the sodium silicate being in the range of about 0.8 to about 1.2 parts by weight of the zeolite to one part by weight of the SiO_2 on a volatile free basis, drying the mixture and mixing the mixture with an ammonium salt solution at a pH of about 4 to 7 to form a silica gel in situ in the mixture and drying the treated mixture.

4,325,846

ADSORBENT MATERIALS FOR OILS AND FATS

Kozo Shibata, 72, Aza-Oka, Sasabe,Kawanish-City, Hyogo, Japan

Filed Jan. 30, 1980, Ser. No. 116,948

Int. Cl.³ B01J *20/12*

U.S. Cl. 252—455 R **8 Claims**

1. A porous adsorbent material for oils and fats which consists of a sintered product produced by admixing with water a mixture composed of about 65–35 parts by weight of silica, and about 35 to 65 parts by weight of clay at such a proportion as the total is 100 parts by weight and pore-forming material capable of being burnt off at a temperature of not more than a sintering temperature for silica and clay, the water being 300–450 parts by weight, thereby making a mud-formed mixture, molding the mud-formed mixture to a desired-shape, drying the molded shape, sintering the dried shape at the sintering temperature, whereby continuous open pores are formed, and treating the sintered product with a silicone-based water repellent agent.

4. A porous adsorbent material in accordance with claim 1 wherein sawdust is utilized as a pore-forming material.

4,325,847

USE OF ADDITIONAL ALUMINA FOR EXTRA ZEOLITE STABILITY IN FCC CATALYST

John C. Lim, Anaheim; Adrian P. Humphries, Claremont, and Dennis M. Stamires, Newport Beach, all of Calif., assignors to Filtrol Corporation, Los Angeles, Calif.

Filed Jun. 19, 1980, Ser. No. 160,851

Int. Cl.³ B01J *29/08*

U.S. Cl. 252—455 Z **10 Claims**

1. A method of forming a catalyst which comprises mixing a sodium containing zeolite with an anionic aluminum source in water at a pH substantially above 7, adding an acidic compound and reducing the pH to substantially less than 7 and forming alumina hydrate gel in said water-zeolite mixture adding pseudoboehmite and clay to said water mixture to form a slurry and spray drying said slurry.

2. A method of forming a catalyst which comprises mixing a sodium containing zeolite with an anionic aluminum source in water at a pH substantially above 7, adding an acid or an acidic salt and exchanging the sodium with a cation of said acidic compound, and reducing the pH to substantially less than 7 and forming alumina hydrate gel in said water-zeolite mixture

adding pseudoboehmite and clay to said water mixture to form a slurry and spray dring said slurry.

4,325,848

CELLULOSE-BASED ELECTRIC INSULATION MATERIAL CONTAINING BORIC ANHYDRIDE AND PROCESS FOR PRODUCING SAME

Lev N. Tkach, ulitsa Griboedova, 8; Jury N. Prikhodko, ulitsa Klubnaya, 12a, both of Malin Zhitomirskoi oblasti; Leonid M. Vaisman, ulitsa Entuziastov, 47, kv. 37, Kiev; Vladimir I. Soldatenko, ulitsa Klubnaya, 12, and Vasily V. Kostjuchenko, ulitsa Klubnaya, 2, kv. 5, both of Malin Zhitomirskoi oblasti, all of U.S.S.R.

Continuation of Ser. No. 28,305, Apr. 9, 1979, abandoned. This application Jul. 24, 1980, Ser. No. 171,926

Claims priority, application U.S.S.R., Oct. 26, 1978, 2674052; Oct. 26, 1978, 2674053

Int. Cl.[3] D21C *3/04;* **D21H** *3/68;* **H01B** *3/52*

U.S. Cl. 252—567 **8 Claims**

1. A process for producing cellulose-based electric insulation paper, which comprises preparing a cellulose-based paper pulp, casting said paper pulp into a paper sheet, and pressing and drying said paper sheet, wherein at least one of said paper pulp or paper sheet is treated with a chemical reagent selected from the group consisting of boric acid, a boron compound forming boric acid when reacted with water, and a mixture thereof, said reagent being added in an amount such that the boron content in the desired paper is 0.02 to 1.1% by weight with respect to the absolutely dry paper.

4,325,849

METHOD FOR MAKING A SLURRY CONTAINING PARTICULATE MATTER AND FIBERS FOR A PREFORMED INSULATION PRODUCT

Murray Rosen; Alan R. Koenig, both of St. Petersburg, and John D. Copham, Seminole, all of Fla., assignors to The Celotex Corporation, Tampa, Fla.

Division of Ser. No. 7,101, Jan. 29, 1979, Pat. No. 4,242,241, which is a division of Ser. No. 847,165, Oct. 31, 1977, Pat. No. 4,168,919. This application Aug. 8, 1980, Ser. No. 176,449

Int. Cl.[3] C04B *43/00*

U.S. Cl. 252—62 **3 Claims**

1. A method for making a slurry containing particulate matter, binder and fibers for a preformed insulation product comprising making a liquid binder, putting in chopped strands of fibers into said liquid binder, agitating said liquid binder to separate at least some of said strands into individual fibers, forcing said liquid binder and fibers under pressure through a hollow tubular member against an inwardly closing helical vane to form a conically expanding spray of binder and fibers breaking up any remaining strands of fibers into individual fibers, forming a falling curtain of separated particulate matter and directing said conically expanding spray of binder and fibers against said falling curtain of separated particulate matter to form a uniform slurry of particles, binder and fibers.

4,325,850

PROCESSING AND PRODUCT ENHANCEMENT ADDITIVES FOR POLYOLEFIN FILM

Walter B. Mueller, Taylors, S.C., assignor to W. R. Grace & Co., Duncan, S.C.

Filed May 21, 1979, Ser. No. 40,793

Int. Cl.[3] C08L *23/00, 23/06, 23/16*

U.S. Cl. 524—228 **9 Claims**

1. A polyolefin, thermoplastic packaging film having an improved combination of slip, block, and optical properties comprising:

(a) 500 to 5,000 ppm by weight of a particulate antiblock agent selected from the group consisting of: colloidal silica, diatomaceous earth, clays, aluminum oxide, calcium oxide, magnesium oxide, barium oxide, titanium dioxide, iron oxide, zinc oxide, tin oxide, calcium carbonate, magnesium carbonate, mica, asbestos, calcium silicate, molybdenum disulfide, and zinc sulfide;

(b) 500 to 8000 ppm by weight of a bisamide wax as a slip agent; and

(c) 250 to 40,000 ppm by weight of a plasticizing oil selected from the group consisting of dibutyl sebacate, di-isododecyl phthalate, zinc stearate, stearic acid, polyethylene glycol monostearate, polyethylene glycol distearate, epoxidized vegetable oil, tricresyl phosphate, petroleum oil, parafin oil, tall oil, linseed oil, and liquid petrolatum.

(d) the coefficient of friction of said film being substantially less than said film containing only said antiblock and slip agents alone or in combination.

4,325,851

WATER-ACTIVATABLE HOT-MELT ADHESIVES

Herman Colon, 2, Sobrisco St., Monsey, N.Y. 10952, and Albert Maletsky, 732 Iron Latch Rd., Franklin Lakes, N.J. 07417

Filed Oct. 24, 1980, Ser. No. 200,392

Int. Cl.[3] C08K *5/09*

U.S. Cl. 524—83 **8 Claims**

1. Water-activatable, hot-melt, applied adhesive compositions comprising:

(a) 30 to 70 wt% of polymers comprising 30 to 60 wt% of a water-sensitive vinyl pyrrolidone/vinyl acetate copolymer wherein the weight ratio of the vinyl pyrrolidone moiety to the vinyl acetate moiety ranges from between about 3:1 to 1:3 and 0 to 25 wt% of an ethylene/vinyl acetate copolymer containing from about 17 to 40 wt% of vinyl acetate;

(b) 5 to 12 wt% of at least one free monobasic, saturated, long-chain, fatty acid having chain-lengths preponderantly of about 16 to 20 carbon atoms, said fatty acid having an acid number greater than about 160; and

(c) 0 to 30 wt% of at least one wax selected from the group consisting of solid water-soluble polyethylene glycol waxes and water-insoluable ester waxes.

4,325,852

INSIDE TIRE PAINT

Victor L. Hallenbeck, Brecksville, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Mar. 31, 1980, Ser. No. 136,007

Int. Cl.[3] C08L *91/00*

U.S. Cl. 523—334 **4 Claims**

1. A method of producing an inside green tire paint which is substantially free of silicone and hydrocarbon solvents, said method comprising (a) heating more than one wax to a temperature above the melting point of the highest melting point wax, (b) adding an amine and a fatty acid to the molten wax, (c) adding a surfactant to the molten wax, (d) adding water which has been preheated to a temperature greater than the melting point of the highest melting point wax, (e) agitating the mixture while cooling to a temperature below the melting point temperature of the lowest melting point wax to form a wax dispersion, (f) blending a rubber latex, water and surfactant with said wax dispersion, and (g) adding a pigment capable of functioning as an air bleeding agent.

4,325,853

HOT MELT ADHESIVE COMPOSITIONS CONTAINING ROSIN ESTERS

Vikramkumar Acharya, and Pallavoor R. Lakshmanan, both of Houston, Tex., assignors to Gulf Oil Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 174,296, Jul. 31, 1980, abandoned. This application Jan. 28, 1981, Ser. No. 229,389

Int. Cl.[3] C08L *93/04;* **C08F** *218/08*

U.S. Cl. 524—272 **9 Claims**

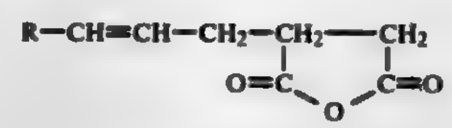
1. A hot melt adhesive composition consisting essentially of:

(a) 10–30 weight % of an alkenyl succinic anhydride,

(b) 20–60 weight % of an ethylene copolymer, and

(c) 10–40 weight % of a tackifying resin;

said alkenyl succinic anhydride having the structure:



where R is an alkyl group containing at least about 15 carbon atoms; said ethylene copolymer having polymerized therein at least 40 weight % polymerized ethylene and the balance one or more polymerized monomers from the group consisting of vinyl acetate, acrylic and methacrylic acid and alkyl esters of acrylic and methacrylic acid; and said tackifying resin being a rosin ester having a Ring and Ball softening temperature of about 65°–140° C. and formed by esterifying a rosin acid with a di-, tri-, or tetra-hydroxy aliphatic alcohol.

4,325,854

SOLVENT SOLUTIONS OF CHEMICALLY MODIFIED ASPHALTS

Michael G. Roberts, and Joseph F. Tanner, both of Newark, Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Apr. 1, 1981, Ser. No. 249,593

Int. Cl.[3] C08L *95/00*

U.S. Cl. 524—476 **9 Claims**

1. A homogeneous, stable solution of the reaction product of asphalt, a vinyl aromatic monomer, and a rubbery polymer in an organic solvent, said solvent being selected from the group consisting of (a) toluene, (b) a mixture of toluene and xylene having a minimum of about 25% by weight toluene and a maximum of about 75% by weight xylene (c) a mixture of toluene and Stoddard solvent having a minimum of about 40% toluene and a maximum of about 60% Stoddard solvent, (d) a mixture of toluene, xylene and at least a compound selected from the group consisting of heptane and hexane said mixture having a minimum amount of 25% toluene, a maximum of about 55% xylene and a maximum of about 20% of heptane or hexane or a mixture thereof, (e) a mixture of toluene, Stoddard solvent and heptane or hexane, or a mixture of heptane or hexane, the maximum amount of heptane or hexane, or a mixture of heptane or hexane, being about 25%, the minimum amount of toluene being about 40% and the maximum amount of Stoddard solvent being about 35%.

4,325,855

ADHESIVES

Heinz H. Dickmann, Bühl; Dieter Hechenberger, Sinsheim-Eschelbach, and Richard Krattner, Bühl-Neusatz, all of Fed. Rep. of Germany, assignors to Lingner and Fischer GmbH, Fed. Rep. of Germany

Filed May 24, 1976, Ser. No. 688,959

Claims priority, application United Kingdom, Sep. 10, 1975, 37212/75

Int. Cl.[3] C08L *1/28, 29/04, 29/12, 33/24*

U.S. Cl. 524—219 **6 Claims**

1. An adhesive composition according to claim 1 which consists essentially of polyvinylpyrrolidone in the amount of 20% by weight, glycerine in the amount of 10% by weight, sodium-N-hexylterephthalic acid amide in the amount of 5% by weight, sodium chloride in the amount of 7.5% by weight and water in the amount of 57.5% by weight.

4,325,856

SEQUENTIAL EMULSION POLYMERIZATION PROCESS

Tadayoshi Ishikawa, Ayase, Japan, and Do I. Lee, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jan. 2, 1980, Ser. No. 108,973

Int. Cl.[3] C08F *2/24*

U.S. Cl. 523—201 **11 Claims**

1. A process for preparing an aqueous copolymer latex of colloidally dispersed, substantially spheroidal, heterogeneous copolymer particles which are individually composed of a relatively hydrophobic polymer core portion having a relatively hydrophilic, polymeric portion preferentially oriented toward the outer surface thereof, said process comprising the steps of:

(a) first preparing an initial aqueous latex of a substantially linear hydrophilic polymer by emulsion copolymerizing at a pH of from about 2 to about 6 in the substantial absence of a cross-linking agent an initial monomer charge comprising (1) one or more vinyl esters of a non-addition polymerizable carboxylic acid and/or one or more esters of an addition polymerizable carboxylic acid and (2) one or more relatively hydrophilic comonomers in an amount which renders the copolymer of said initial latex sufficiently hydrophilic that it ultimately becomes preferentially oriented toward the outer surface of the finished copolymer particles of the final copolymer latex product, said relatively hydrophilic comonomer having a solubility in water of at least about 3 weight percent on a total weight basis at 25° C. and with the proviso that such hydrophilic comonomer can be excluded when the monomer component of step (a)(1) is exclusively vinyl acetate; and

(b) thereafter emulsion polymerizing, in the presence of from about 5 to about 50 parts by weight on a polymer solids basis of the initial hydrophilic polymer latex of step (a) and at a pH of from about 2 to about 6, from about 50 to about 95 parts by weight of a second monomer charge comprising (1) an aliphatic conjugated diene and/or an addition polymerizable monovinylidene monomer selected from the group consisting of monovinylidene aromatic monomers and vinylidene halide monomers and (2) from 0 to about 10 weight percent based upon the weight of such second monomer charge of a monoethylenically unsaturated carboxylic acid monomer.

4,325,857

DURABLE ANTISOLING COATINGS FOR TEXTILE FILAMENTS

Nitin J. Champaneria, Seaford, Del.; Lee R. Harper, Media, Pa., and Edward A. Hosegood, Ocean City, Md., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed May 13, 1980, Ser. No. 149,334

Int. Cl.[3] C08L *63/00*

U.S. Cl. 523—412 **6 Claims**

1. A durable antisoiling coating composition for textile filaments comprising an aqueous dispersion of (1) a perfluoroalkylester of a citric acid urethane and a fluorinated alcohol having the formula $C_nF_{2n+1}(CH_2)_mOH$ wherein n is 6 to 14 and m is 2 and of (2) the reaction product of

(A) not less than 50% by weight, based on the weight of (A) plus (B), of an eoxy resin containing, on the average, two terminal 1,2-epoxy groups per molecule and having an epoxy equivalent weight of 750–5000;

(B) a caboxyl-functional polymer in an amount sufficient to provide at least 1.25 equivalents of carboxyl groups, when the source of the carboxyl group is a mono-protic acid, and at least 2.0 equivalents of carboxyl groups, when the source of such groups is a diprotic acid, per equivalent of 1,2-epoxy groups in the epoxy resin, said polymer having a weight average molecular weight (determined by light

scattering) of about 10000–160000 and an acid number of 100–500;

(C) an aqueous solution of at least 1.25 equivalents of a tertiary amine per equivalent of 1,2-epoxy groups in the epoxy resin, said tertiary amine being selected from the group consisting of $R_1R_2R_3N$, pyridine, N-methylpyrrole, N-methyl piperidine, N-methyl pyrrolidine, N-methyl morpholine, and mixtures thereof and wherein R_1 and R_2 are substituted or unsubstituted monovalent alkyl groups containing one or two carbon atoms in the alkyl portion and R_3 is a substituted or unsubstituted monovalent alkyl group containing 1–4 carbon atoms; and

(D) optionally, 10–90% of the amount required for stoichiometric reaction with the carboxy-functional polymer of (B) of at least one primary, secondary or tertiary amine or monofunctional quaternary ammonium hydroxide;

wherein Y is at least about $6+0.75(2^X)$ wherein Y is the milliequivalent of carboxyl groups neutralized with primary, secondary or tertiary amine or mono-functional quaternary ammonium hydroxide per 100 grams of acid polymer plus epoxy, and X is the epoxy equivalent weight divided by 1000; and wherein for increasing ratios of carboxyl groups to 1,2-epoxy groups, the amount of amine is increased to keep the carboxyl-functional polymer water dispersible;

with said ester being present in said dispersion in a ratio in parts by weight to said reaction product within the range of about 1:1 to 12:1.

4,325,858

AQUEOUS DISPERSION TYPE COATING COMPOSITIONS WITH AN IMPROVED VIBRATION-DAMPING CHARACTERISTIC

Koichi Saito, and Osamu Ohara, both of Kurashiki, Japan, assignors to Kuraray Company, Limited, Kurashiki, Japan

Filed Aug. 15, 1980, Ser. No. 178,592

Claims priority, application Japan, Jun. 16, 1979, 54-104718

Int. Cl.³ C08L *23/06*

U.S. Cl. 524—524 1 Claim

1. An aqueous dispersion type vibration-damping composition comprising, as essential components thereof, (a) a vinyl acetate polymer emulsion, (b) an ethylene polymer in finely divided particulate or emulsion state, (c) a flaky inorganic filler, and (d) ammonium zirconylcarbonate as a cross-linking agent for said vinyl acetate polymer emulsion.

4,325,859

PROCESS FOR THE PRODUCTION OF ORGANIC POLYMER POLYOL-ALKALI METAL SILICATE EMULSION

David H. Blount, 5450 Lea St., San Diego, Calif. 92105

Continuation-in-part of Ser. No. 191,375, Sep. 29, 1980, Pat. No. 4,282,129, which is a continuation-in-part of Ser. No. 146,474, May 5, 1980, Pat. No. 4,273,908. This application Jul. 20, 1981, Ser. No. 284,597

Int. Cl.³ C08L *83/02*

U.S. Cl. 524—96 13 Claims

1. The process for the production of a stable organic-polymer-polyol-alkali metal silicate emulsion by mixing the following components:

(a) Aqueous alkali metal silicate solution, 1 to 50 parts by weight;

(b) Polyol, 25 parts by weight;

(c) Organic acid, 1% to 5% by weight, percentage based on weight of alkali metal silicate solution;

(d) An organic polymer in a fluid state.

4,325,860

POLYMERS CHARACTERIZED BY 1,3-IMIDAZOLIDINE-1,3-DIYL RINGS PLASTICIZED WITH AROMATIC SULFONES OR AROMATIC SULFOXIDES

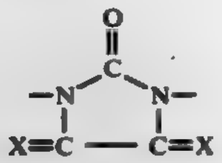
Burnett H. Johnson, Baytown, Tex., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Jan. 28, 1981, Ser. No. 229,241

Int. Cl.³ C08K *5/36*

U.S. Cl. 324—155 33 Claims

1. A plasticized composition comprising heterocyclic polymers characterized in the repeating units by the tri-substituted 1,3-imidazolidine-1,3-diyl ring:



wherein X=O or NH, provided at least one X is O and a plasticizing amount of aromatic sulfone or aromatic sulfoxide.

4,325,861

RAPIDLY DISSOLVED WATER-SOLUBLE POLYMER COMPOSITION

David B. Braun, Ridgefield, Conn., and Meyer R. Rosen, Spring Valley, N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 856,980, Dec. 2, 1977, abandoned. This application Apr. 3, 1980, Ser. No. 136,762

Int. Cl.³ C08K *5/01*

U.S. Cl. 523—205 29 Claims

1. A stable nonaqueous composition adapted to provide, upon dilution with water, a solution containing a high molecular weight water-soluble polymer, comprising:

(a) a particulate water-soluble polymer selected from the group consisting of poly(ethylene oxide), cellulose derivatives and mixtures thereof having an average size of from about 50 to about 250 microns,

(b) a water-insoluble, organic liquid vehicle which is nonsolvent for said particulate polymer in sufficient amounts to coat said particulate polymer,

(c) an inert, nonionic surfactant agent compatible with said organic vehicle in sufficient amounts to remove said organic liquid vehicle coating on said particulate polymer upon dilution with water, and

(d) an inert thickener agent in amounts from about 0.1 to about 5% by weight of said composition to retard stratification of said composition when fluidized.

4,325,862

SOLID PIGMENT COMPOSITIONS CONTAINING C_4-C_6 METHACRYLATE-AMINO ACRYLATE COPOLYMERS

Johann Schuster, Basel, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

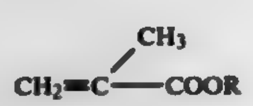
Filed Jun. 2, 1980, Ser. No. 155,766

Claims priority, application Switzerland, Jun. 5, 1979, 5208/79

Int. Cl.³ C08J *3/20;* **C08L** *33/06;* **C09B** *67/00;* **C09C** *3/10*

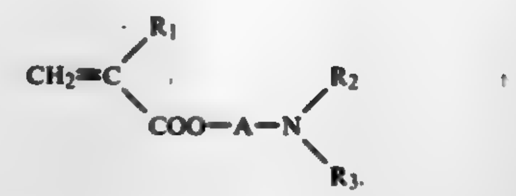
U.S. Cl. 524—87 26 Claims

1. A solid pigment composition comprising an intimate mixture of a pigment and a preformed copolymer of a compound of formula I



I

in which R is C_{4-6}alkyl or C_{4-6}cycloalkyl, a lesser amount of a compound of formula II



II

in which

R_1 is hydrogen or methyl,

R_2 is hydrogen or C_{1-6} alkyl

R_3 is C_{1-6}alkyl

or R_2 and R_3 together with the nitrogen atom to which they are attached form a heterocyclic 5- or 6-membered ring which may contain an oxygen or a further nitrogen atom

and A is a straight or branched chain C_{2-6} alkylene group, and 0 to 10%, by weight, of comonomer other than compounds of formulae I and II.

4,325,863

BENZOFURANONE OR INDOLINONE COMPOUNDS USEFUL AS STABILIZERS FOR ORGANIC MATERIALS

Hans Hinsken, Kandern, Fed. Rep. of Germany; Horst Mayerhoefer, Oberwil; Wolfgang Mueller, Allschwil, both of Switzerland, and Hermann Schneider, Grenzach-Wyhlen, Fed. Rep. of Germany, assignors to Sandoz Ltd., Basel, Switzerland

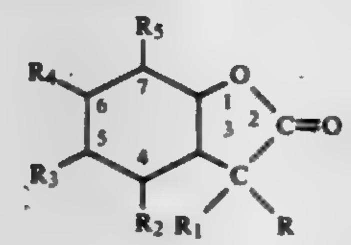
Filed Feb. 4, 1980, Ser. No. 118,054

Claims priority, application Switzerland, Sep. 5, 1979, 1104/79; Sep. 28, 1979, 8793/79

Int. Cl.³ C08K *5/15, 5/34*

U.S. Cl. 624—111 24 Claims

1. A process for stabilizing organic polymeric materials comprising incorporating therein a stabilizing amount of a compound of formula Ic,



Ic

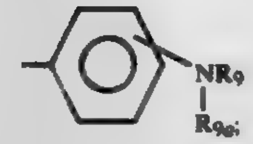
in which either

R is hydrogen, and

R_1 hydrogen; C_{1-22} alkyl; C_5 or C_6 cycloalkyl; C_{1-5} alkyl-C_5 or C_6 cycloalkyl; phenyl; phenyl substituted by one to three substituents selected from the group consisting of C_{1-12}—alkyl, hydroxy, C_{1-12} alkoxy, C_{1-18}—acyloxy, chloro or nitro, with the provisos that: (1) when the phenyl ring contains more than one C_{1-12} alkyl group, said alkyl groups contain a maximum of 18 carbon atoms, (2) the maximum number of hydroxy substituents is two, and (3) the maximum number of each of the substituents selected from C_{1-12} alkoxy, C_{1-18} acyloxy, chloro and nitro is one; or a group of formula (a/4), (a/5) or (a/6)

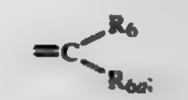
$-(CH_2)_m-C(=O)-OR_7$ (a/4)

$-(CH_2)_m-C(=O)-NR_8R_8$ (a/5)



(a/6)

or R and R_1 together form a group (a/2)



(a/2)

either

each of R_2 to R_5, independently, is hydrogen; C_{1-12} alkyl; C_5 or C_6 cycloalkyl; C_{1-5} alkyl-C_5 or C_6 cycloalkyl; C_{1-22} alkoxy; phenoxy; phenoxy substituted by one or two C_{1-12} alkyl groups,

said alkyl groups having a maximum of 16 carbon atoms; C_{1-18} acyloxy; chloro; phenyl-C_{1-9} alkyl; phenylthio; phenyl-C_{1-9} alkyl or phenylthio substituted on the phenyl ring by one to three substituents selected from C_{1-12} alkyl, hydroxy and $R_{15}CO$—O—; phenyl; phenyl substituted by one or two C_{1-12} alkyl groups, said alkyl groups having a maximum of 16 carbon atoms; nitro; 2-furanylcarbonyloxy; 2-thienylcarbonyloxy; a group of formula (b/2), (b/3) or (b/4)

$-C(=O)-H$ (b/2)

$-CH_2-S-R_{12}$ (b/3)

$-CH(C_6H_5)CO-O-R_7$ or; (b/4)

a group of formula (a/4) or (a/5) as defined above;

with the provisos that:

(a) a maximum of two of R_2 through R_5 is C_5 or C_6 cycloalkyl, C_{1-5} alkyl-C_5 or C_6 cycloalkyl, C_{1-22} alkoxy, phenoxy, substituted phenoxy, C_{1-18} acyloxy or chloro; and

(b) a maximum of one of R_2 through R_5 is optionally substituted phenyl, phenyl-C_{1-9} alkyl or phenylthio, nitro, 2-furanylcarbonyloxy, 2-thienylcarbonyloxy or a group of formula (b/2), (b/3), (b/4), (a/4) or (a/5), provided that only the R_3 substituent can be a group of formula (b/3) or (b/4) and only the R_3 or R_5 substituent can be a group of formula (a/5);

or R_2 and R_3, together, form a condensed benzene ring,

or R_3 and R_4, together, form a furan(2) one ring in which the 3-position bears the substituents R and R_1 as defined above,

or R_4 and R_5, together, form tetramethylene or a furan(2) one ring in which the 3-position bears the substituents R and R_1 as defined above,

and one of the two remaining substituents is hydrogen and the other is any one of the significances given for R_2 to R_5 above;

either

R_6 is C_{1-18} alkyl; C_5 or C_6 cycloalkyl; C_{1-5} alkyl-C_5 or C_6 cycloalkyl; benzyl; $(C_6H_5)_2CH$; phenyl; phenyl mono- or disubstituted by C_{1-12} alkyl, provided that when the phenyl ring contains more than one C_{1-12} alkyl group, said alkyl groups contain a maximum of 16 carbon atoms; phenyl monosubstituted by hydroxy; phenyl mono- or disubstituted by methoxy; phenyl monosubstituted by chloro; phenyl monosubstituted by dimethylamino; 3,5-ditertiary butyl-4-hydroxyphenyl; β-naphthyl; pyridinyl; 2-furyl; or a group of formula (c/1) or (c/2)

$-C(=O)-OR_7$ (c/1)

$-C(=O)-N(R_8)-R_8$, and (c/2)

R_{6a} is hydrogen; C_{1-18} alkyl; C_5 or C_6 cycloalkyl; C_{1-5} alkyl-C_5 or C_6 cycloalkyl; phenyl or benzyl;

or

R_6 and R_{6a}, together with the carbon atom to which they are bound, form an unsubstituted 5- or 6-membered aliphatic ring or a 5- or 6-membered aliphatic ring monosubstituted by C_{1-4} alkyl;

each

R_7, independently, is hydrogen; C_{1-18} alkyl; alkyl-O-alkylene having a maximum of 18 carbon atoms; alkyl-S-alkylene having a maximum of 18 carbon atoms; di-C_{1-4} alkylamino-C_{1-8} alkyl; C_{5-7} cycloalkyl; phenyl; or phenyl substituted by one to three C_{1-12} alkyl groups, said alkyl groups having a maximum of 18 carbon atoms;

either

each R_8, independently, is hydrogen; C_{1-18} alkyl; C_5 or C_6 cycloalkyl; C_{1-5} alkyl-C_5 or C_6 cycloalkyl; phenyl; phenyl substituted by one or two C_{1-12} alkyl groups, said alkyl groups having a maximum of 16 carbon atoms; or a group of formula (d/1), (d/2) or (d/3)

$$-CH_2CH_2OH \qquad (d/1)$$

$$-CH_2CH_2OC_{1-18}alkyl \qquad (d/2)$$

$$-CH_2CH_2-O-\overset{\overset{\displaystyle O}{\|}}{C}-R_{11}; \qquad (d/3)$$

or both

R_8's, together with the nitrogen atom, form an unsubstituted piperidine or morpholine ring;

R_9 has one of the significances of R_8;

R_{9a} is hydrogen; C_{1-18} alkyl; or a group of formula (d/1), (d/2) or (d/3) as defined above;

R_{11} is hydrogen; C_{1-22} alkyl; C_{5-7} cycloalkyl; phenyl; phenyl-C_{1-6} alkyl; or phenyl or phenyl-C_{1-6} alkyl substituted on the phenyl ring by one or two C_{1-12}-alkyl groups, said alkyl groups having a maximum of 16 carbon atoms;

R_{12} is C_{1-18} alkyl; 2-hydroxyethyl; phenyl; or C_{1-9} alkylphenyl;

R_{15} is C_{1-22} alkyl or phenyl;

and n is 0, 1 or 2.

4,325,864

PYRROLIDINE-RING-CONTAINING COMPOSITIONS FOR USE AS ANTI-UV STABILIZERS IN PLASTICS MATERIALS

Silvestro Costanzi, San Giuliano Milanese; Francesco Tessarolo, Monza, and Adriano Ballabio, Giussano, all of Italy, assignors to ANIC S.p.A., Palermo, Italy

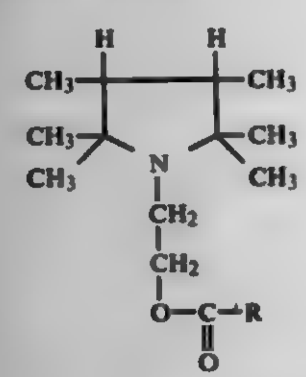
Filed Dec. 5, 1980, Ser. No. 213,653

Claims priority, application Italy, Feb. 19, 1980, 20001 A/80

Int. Cl.[3] C08K *5/00;* C07D *207/08*

U.S. Cl. 524—104 — 5 Claims

1. A compound of the formula:



wherein R is the radical C_nH_{2n+1}, n having a value from 4 to 17.

4,325,865

FLAME RETARDANT RESIN COMPOSITIONS

Massimo Baer, Longmeadow, Mass., assignor to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 487,959, Nov. 2, 1977, Pat. No. 4,205,142. This application Dec. 10, 1979, Ser. No. 102,189

Int. Cl.[3] C08L *77/00;* C08K *3/22, 3/38*

U.S. Cl. 523—205 — 18 Claims

1. A resin composition comprising:

A. a thermoplastic polyamide;

B. an effective amount of a halogenated flame retardant additive; and

C. an effective amount of a flame retardant synergist of average particle size less than about 2 microns, wherein the particles of the synergist are substantially occluded with a non-blocking rubber.

4,325,866

PROTEIN, PP_{11}, A PROCESS FOR ITS PREPARATION AND ITS USE

Hans Bohn, Marburg an der Lahn, Fed. Rep. of Germany, assignor to Behringwerke Aktiengesellschaft, Marburg an der Lahn, Fed. Rep. of Germany

Filed Nov. 14, 1980, Ser. No. 207,184

Claims priority, application Fed. Rep. of Germany, Nov. 17, 1979, 2946458

Int. Cl.[3] A61K *39/395;* C07G *7/00*

U.S. Cl. 260—112 B — 5 Claims

1. A protein, PP_{11}, extracted from placental tissue, having

(a) a carboydrate content of 3.9±0.9%, consisting of 2.6±0.5% of hexoses, 1.0±0.3% of hexosamines, 0.05±0.03% of fucose and 0.26±0.07% of neuraminic acid;

(b) a sedimentation coefficient $S_{20,w}^0$ of 3.5±0.2 S

(c) a molecular weight of 44,300±6,000, determined in an ultracentrifuge;

(d) a molecular weight of 62,000±3,000, determined in polyacrylamide gel containing sodium dodecyl-sulfate (SDS);

(e) an extinction coefficient $E_{1\,cm}^{1\%}$ (280 nm) of 13.4±1.0, and

(f) an electrophoretic mobility similar to that of the α_1-globulins.

4,325,867

PROCESS FOR THE RECOVERY OF α-2-SB-GLYCOPROTEIN

Walter Eberle, Bernried, and Winfried Albert, Pähl, both of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim-Waldhof, Fed. Rep. of Germany

Filed Nov. 20, 1980, Ser. No. 208,759

Claims priority, application Fed. Rep. of Germany, Dec. 7, 1979, 2949407

Int. Cl.[3] C07G *7/00*

U.S. Cl. 260—112 B — 12 Claims

1. Process for obtaining alpha-2-SB-glycoprotein from physiological solutions thereof, which process comprises binding the alpha-2-SB-glycoprotein to a bindable protein immobilized on an insoluble carrier, washing the carrier-bound protein with a buffer solution of pH 6 to 8.5, and eluting the alpha-2-SB-glycoprotein with a buffer solution of pH 9 or more, and isolating same from the eluate.

4,325,868

PROCESS FOR PRODUCING A PROTEINACEOUS MATERIAL HAVING A HIGH WATER HOLDING CAPACITY AND THE MATERIAL PRODUCED THEREBY

Charles R. T. Brown, Oakley, and Peter Harris, Bolnhurst, both of England, assignors to Lever Brothers Company, New York, N.Y.

Filed Feb. 23, 1981, Ser. No. 237,212

Claims priority, application United Kingdom, Feb. 28, 1980, 06807/80

Int. Cl.[3] A23J *1/14*

U.S. Cl. 260—123.5 — 14 Claims

1. A process for producing a proteinaceous material having a high water-holding capacity comprising the steps of:

(a) treating a defatted meal originating from oil-bearing seeds with an aqueous solution having a pH in the range of from 6.0 to 9.0 for a period of time sufficient to solubilise at least a portion of the protein present in the meal;

(b) lowering the pH of the product of step (a) to a value in the range of from 2.0 to 3.0 and maintaining the said pH within said range until a substantial portion of the said protein is dissociated into a variety of subunits;

(c) heating the product of step (b) at a temperature in the range of from 80° to 100° C. so as to aggregate said subunits and obtain a protein-containing material which is insoluble in water;

(d) bringing the pH of the product of step (c) to fall within the range of from 6.0 to 8.0; and

(e) subjecting the product of step (d) to ultra-filtration on a membrane having a cut-off limit such that the proteinaceous material is retained whilst salts and low molecular sugars permeate.

4,325,869

NOVEL DYES, THEIR PREPARATION AND USE

Karl Seitz, Oberwil; Henri Riat, Arlesheim, and Karl Hoegerle, Basle, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

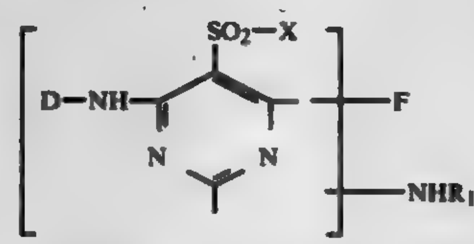
Continuation of Ser. No. 903,632, May 8, 1978, abandoned. This application Jan. 17, 1980, Ser. No. 112,979

Claims priority, application Luxembourg, May 9, 1977, 77286

Int. Cl.[3] C09B *45/00*

U.S. Cl. 260—146 D — 4 Claims

1. A dye of the formula



in which D is a radical of a monoazo or polyazo dye, X is alkyl or alkenyl which may be substituted by halogen, alkoxy or aryl and R_1 is hydrogen, alkyl which may be substituted by hydroxy, alkoxy chloro, phenyl, sulfato or sulfo, cyclohexyl, phenyl which may be substituted by alkyl, alkoxy, chloro, hydroxy, nitro, carboxy, acetylamino, ureido, sulfomethyl or sulfo, or naphthyl which may be substituted by hydroxy or sulfo.

4,325,870

PROCESS FOR THE PREPARATION OF 2,6-DIAMINOPYRIDINE-AZO DYESTUFFS AND OF THEIR PRECURSORS

Ulrich Bühler, Schöneck, and Ernst Heinrich, Neu-Isenburg, both of Fed. Rep. of Germany, assignors to Cassella Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

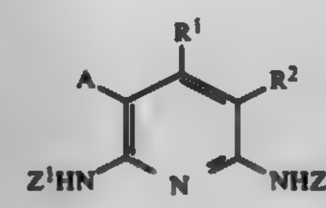
Filed Apr. 2, 1980, Ser. No. 136,814

Claims priority, application Fed. Rep. of Germany, Apr. 23, 1979, 2916319

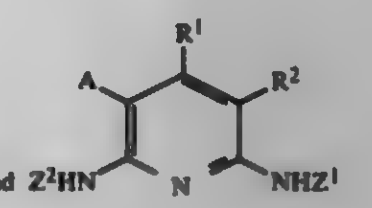
Int. Cl.[3] C09B *29/42;* C07D *213/74*

U.S. Cl. 260—156 — 7 Claims

1. In the process for preparation of 2,6-diaminopyridines of the formula



and



wherein

A is hydrogen or —N=N—D;

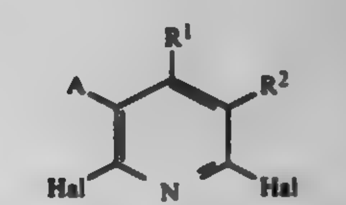
R^1 is H, alkyl having 1 to 8 carbon atoms, phenyl or phenyl substituted by halogen, alkyl having 1 to 8 carbon atoms or alkyl having 1 to 8 carbon atoms;

R^2 is H, cyano, nitro, alkanoyl having 2 to 4 carbon atoms or methylsulphonyl;

Z_1 and Z_2 are identical or different and each is H, alkyl having 1 to 8 carbon atoms, polyalkoxyalkyl having 1 to 8 carbon atoms, cycloalkyl having 5 to 7 carbon atoms, alkenyl having 3 to 5 carbon atoms, or phenyl, said alkyl and polyalkoxyalkyl being unsubstituted or substituted by hydroxyl, alkoxy having 1 to 4 carbon atoms, alkenyloxy having 3 to 5 carbon atoms, cycloalkyloxy having 5 to 7 carbon atoms, phenoxy, phenylalkoxy, alkanoyloxy having 1 to 4 carbon atoms, cyano, amino, alkylamino or dialkyl amino having 2 to 8 carbon atoms and said phenyl being unsubstituted or substituted by alkyl having 1 to 4 carbon atoms, halogen or hydroxyethoxy; and

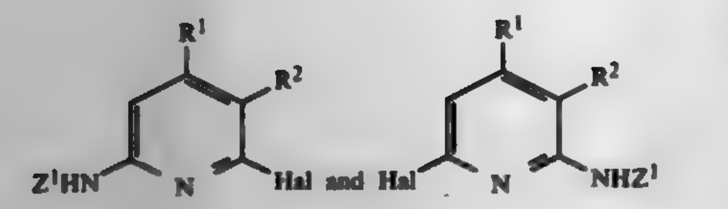
D is a customary diazo coupled moiety of the benzene, azobenzene, benzophenone, diphenyl sulphone, thiazole, isothiazole, benzthiazole, benzisothiazole or thiadiazole series;

said process comprising reacting a 2,6-dihalopyridine of the formula

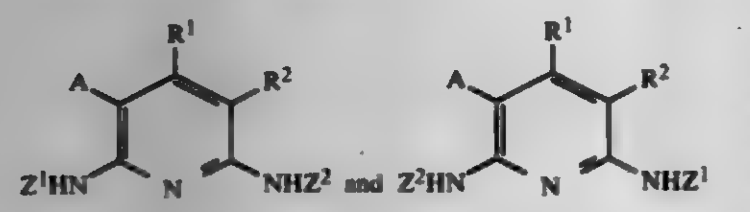


wherein Hal is chlorine or bromine, with a primary amine and when A is —N=ND subsequently coupling the product with a diazonium compound,

wherein the improvement comprises reacting the 2,6-dihalopyridine with 1 to 1.1 times the molar amount of an amine of the formula Z^1NH_2 in a two-phase system of water and an organic solvent which is insoluble in water or soluble in water only to a limited extent and which is inert under the reaction conditions, in the presence of 1 to 1.2 times the molar amount of an inorganic base, at a temperature between 25° and 150° C. and at a pH of 8 to 13, to produce compounds of the formula



and then, after completely separating off the aqueous phase, the resulting mixture is reacted with 1 to 1.1 times the molar amount of an amine of the formula Z^2NH_2 in the same organic solvent, at temperatures between 80° and 180° C., in the presence of 1 to 1.5 times the molar amount of an inorganic base, to produce 2,6-diaminopyridine compounds of the formula



where A is H; and when A is —N=ND, adding an aqueous mineral acid to the reaction mixture to adjust the mixture pH to 1 to 6 and then coupling the 2,6-diaminopyridines with a diazonium compound of the formula

$$D-\overset{\oplus}{N}\equiv N.$$

4,325,871

ORTHO-BIS (2-SUBSTITUTED AZOSTYRYL) BENZENE COMPOUNDS

Masaomi Sasaki, Shizuoka; Mitsuru Hashimoto, Numazu, and Tomiko Kawakami, Tokyo, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

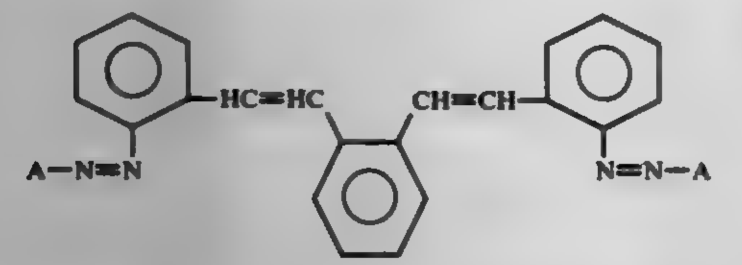
Filed Jun. 11, 1980, Ser. No. 158,461

Claims priority, application Japan, Jun. 20, 1979, 54-76715

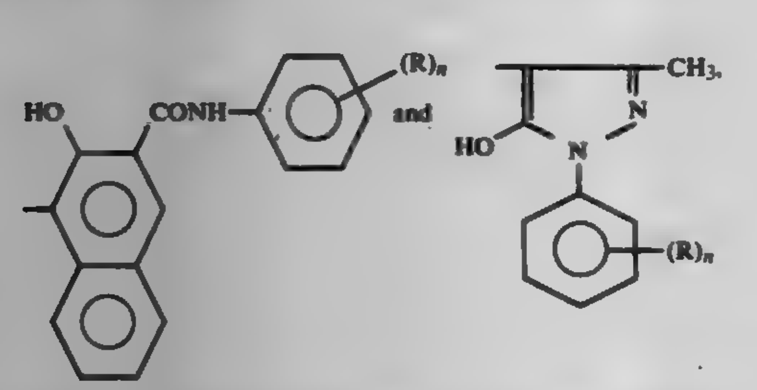
Int. Cl.³ C09B *35/03, 35/033, 35/215;* **G03G** *5/04*

U.S. Cl. 260—160 **14 Claims**

1. A bis-azo compound of the formula



in which A represents identical subsituents selected from the group consisting of



wherein R represents alkyl, alkoxy, nitro, dialkylamino or halogen, and n represents an integer 0, 1, 2 or 3 and when n is 2 or 3, R represents identical or different substituents selected from the group consisting of alkyl, alkoxy, nitro, dialkylamino and halogen.

4,325,872

PROCESS FOR THE PREPARATION OF A 2-PYRROLIDONE

Peter J. N. Meyer, Munstergeleen, and Johannes G. M. Nieuwkamp, Limbricht, both of Netherlands, assignors to Stamicarbon, B.V., Geleen, Netherlands

Filed Dec. 22, 1980, Ser. No. 218,465

Claims priority, application Netherlands, Dec. 21, 1979, 7909230

Int. Cl.³ C07D *207/267*

U.S. Cl. 260—326.5 FN **5 Claims**

1. In processes for the preparation of 2-pyrrolidone from succinonitrile and substituted succinonitriles carrying an alkyl group of from 1 to 4 carbon atoms by hydrogenating said succinonitrile in the presence of ammonia in the liquid phase with a fixed-bed hydrogenation catalyst and treating the hydrogenation product with water, the improvement which consists essentially in regenerating the hydrogenation catalyst by interrupting the hydrogenation and successively

(i) passing liquid ammonia over the catalyst at a temperature of about 75° to about 130° C., then

(ii) passing hydrogen over the catalyst at a temperature of about 130° to about 350° C. and then

(iii) passing liquid ammonia over the catalyst again at a temperature of about 75° to about 130° C.

4,325,873

PROCESS FOR THE PREPARATION OF STYRYL-CYCLOPROPANECARBOXYLIC ACID ESTERS AND INTERMEDIATE PRODUCTS FOR THIS PROCESS

Manfred Jautelat, Burscheid; Dieter Arlt, Cologne; Reinhard Lantzsch, Leverkusen; Rainer Fuchs, Wuppertal; Hans-Jochem Riebel, Wuppertal; Rolf Schröder, Wuppertal, and Horst Harnisch, Much, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

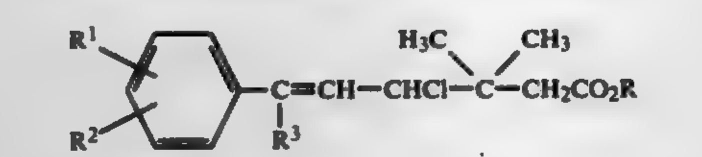
Filed Apr. 7, 1980, Ser. No. 138,044

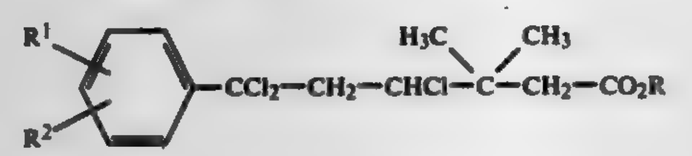
Claims priority, application Fed. Rep. of Germany, Apr. 23, 1979, 2916375

Int. Cl.³ C07D *325/00, 317/44;* **C07C** *121/60, 51/58*

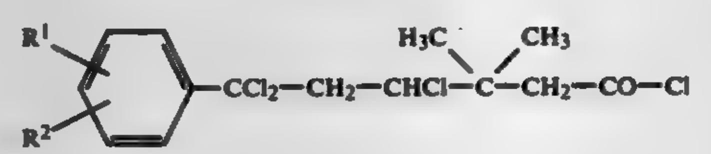
U.S. Cl. 260—338 **4 Claims**

1. A compound selected from the group consisting of



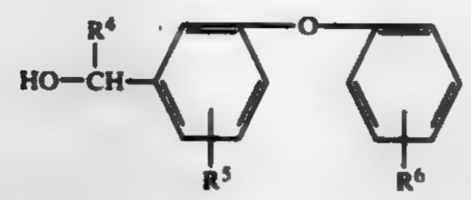


and



in which

R is C_{1-4}-alkyl or,



R^4 is hydrogen, cyano or ethynyl,

R^5 and R^6 each independently is hydrogen or fluorine,

R^1 is alkoxy or alkylthio, either of which may be optionally substituted by halogen,

R^2 is hydrogen or alkoxy, or

R^1 and R^2 together are optionally halogen-substituted alkylenedioxy, and

R^3 is hydrogen or chlorine.

4,325,874

PROCESS FOR PRODUCING ALKYLENE CARBONATES

Stephen E. Jacobson, Morristown, N.J., assignor to The Halcon SD Group, Inc., New York, N.Y.

Filed May 26, 1981, Ser. No. 267,152

Int. Cl.³ C07D *317/38, 317/36*

U.S. Cl. 260—340.2 **16 Claims**

1. A process for preparing alkylene carbonates by reacting the corresponding olefins with carbon dioxide comprising contacting the said reactants with suitable amounts of iodine or an iodide compound and an oxide or a weak acid salt of thallium (III).

15. A process for preparing alkylene carbonates by reacting the corresponding olefins with carbon dioxide comprising contacting the said reactants with suitable amounts of iodine or iodine compounds and an oxide of gold (III).

4,325,875

2-DECARBOXY-2-HYDROXYMETHYL-PGI₂ COMPOUNDS

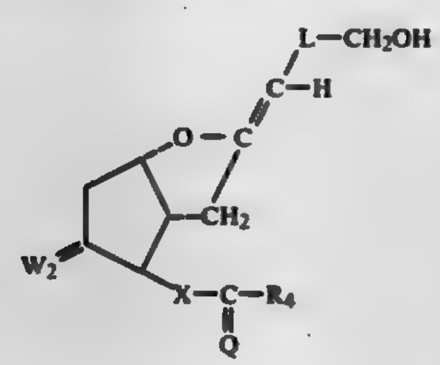
Roy A. Johnson, Kalamazoo; Frank H. Lincoln, Portage, and John E. Pike, Kalamazoo, all of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Continuation of Ser. No. 819,940, Jul. 28, 1977, which is a continuation-in-part of Ser. No. 725,550, Sep. 22, 1976, abandoned, which is a continuation-in-part of Ser. No. 716,770, Aug. 23, 1976, abandoned. This application Mar. 27, 1981, Ser. No. 248,664

Int. Cl.³ C07D *307/935*

U.S. Cl. 260—346.22 **11 Claims**

1. A compound of the formula



or a mixture comprising that compound and the enantiomer thereof,

wherein W_2 is α—OH:β—H, α—H:β—OH, oxo, methylene, α—H:β—H, or α—CH_2OH:β—H;

wherein L is

(1) —$(CH_2)_d$—$C(R_2)_2$—,

(2) —CH_2—O—CH_2—Y—, or

(3) —CH_2CH=CH—,

wherein d is zero to 5, R_2 is hydrogen, methyl, or fluoro, being the same or different with the proviso that one R_2 is not methyl when the other is fluoro, and Y is a valence bond, —CH_2—or —$(CH_2)_2$—,

wherein Q is oxo, α—H:β—H, α—R_8:β—OH, or α—OH:β—R_8,

wherein R_8 is hydrogen or alkyl of one to 4 carbon atoms, inclusive,

wherein R_4 is

—$C(R_5)(R_6)C_gH_{2g}$—CH_3,

—$C(R_5)(R_6)$—Z—(Ph I), or

—CH_2—CH=CH—CH_2CH_3,

wherein C_gH_{2g} is alkylene of one to 9 carbon atoms, inclusive, with one to 5 carbon atoms, inclusive, in the chain between —CR_5R_6 and terminal methyl, wherein R_5 and R_6 are hydrogen, alkyl of one to 4 carbon atoms; inclusive, or fluoro, being the same or different, with the proviso that one of R_5 and R_6 is fluoro only when the other is hydrogen or fluoro and the further proviso that neither R_5 nor R_6 is fluoro when Z is oxa (—O—); wherein Z represents an oxa atom (—O—) or C_jH_{2j} wherein C_jH_{2j} is a valence bond or alkylene of one to 9 carbon atoms, inclusive, with one to 6 carbon atoms, inclusive between CR_5R_6— and (Ph I); wherein (Ph I) is phenyl optionally substituted by one, 2, or 3 alkyl of one to 4 carbon atoms, inclusive, fluoro, chloro, trifluoromethyl, or —OR_7— wherein R_7 is alkyl of one to 4 carbon atoms, inclusive, with the proviso that not more than two such substituents are other than alkyl and such substituents being either the same or different; and wherein X is

(1) trans—CH=CH—,

(2) cis—CH=CH—,

(3) —C≡C—, or

(4) —CH_2CH_2—;

including the lower alkanoates thereof.

4,325,876

PROCESS FOR THE MANUFACTURE OF AN ALKENYLSUCCINIC ANHYDRIDE

Harry Chafetz, Poughkeepsie, N.Y., and Gary D. Lee, Spring, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Dec. 29, 1980, Ser. No. 221,179

Int. Cl.³ C07D *307/60*

U.S. Cl. 260—346.74 **9 Claims**

1. In a process for thermally reacting a reaction mixture of a polyolefin having an average molecular weight ranging from about 300 to 3500 with maleic anhydride to form an alkenyl-substituted succinic anhydride, the improvement which comprises effecting said reaction in the absence of a halogenated compound at a temperature ranging from about 100° to 300° C. while contacting said reaction mixture with oxygen-containing gas.

4,325,877

PRODUCTION OF INTERMEDIATES FOR ENZYME INHIBITORS

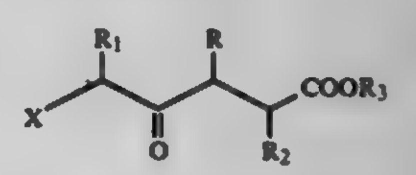
Brian W. Metcalf, Mason, and Jerry L. Adams, West Chester, both of Ohio, assignors to Richardson-Merrell Inc., Wilton, Conn.

Filed Jun. 16, 1980, Ser. No. 160,057

Int. Cl.³ C07C *117/08, 69/74, 69/66*

U.S. Cl. 260—349 **5 Claims**

1. A compound of the formula



wherein R is CF_3, CHF_2 or CH_2F; R_1 is H or alkyl of 1 to 4 carbon atoms; R_2 is H, alkyl of 1 to 4 carbon atoms or benzyl; R_3 is alkyl of 1 to 4 carbon atoms or benzyl and X is N_3.

4,325,878

PROCESS FOR PREPARING 21-LOWER ALKOXYOXALYLPROGESTERONES

Charles A. McCombs, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 2, 1981, Ser. No. 239,799

Int. Cl.³ C07J *7/00*

U.S. Cl. 260—397.1 **17 Claims**

1. A process for preparing 21-lower alkoxyoxalyl-3-methoxypregna-3,5-diene-20-one, alkali metal salt from 3-methoxypregna-3,5-dien-20-one which comprises reacting 3-methoxypregna-3,5-dien-20-one with an alkali metal lower alkoxide base and a lower alkyloxalate in a suitable polar, nonprotic solvent.

12. 21-Methoxyoxalyl-3-methoxypregna-3,5-diene-20-one.

4,325,879

AMINO-14 STEROID DERIVATIVES AND PROCESS FOR PREPARATION OF THE SAME

Francois-Xavier Jarreau, Versailles, and Jean J. Koenig, Vernou la Celle, both of France, assignors to Etablissements Nativelle S.A., Paris, France

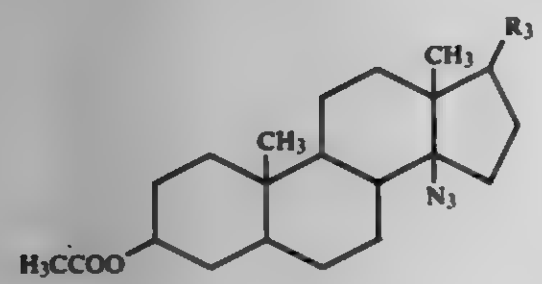
Filed Aug. 29, 1980, Ser. No. 182,546

Claims priority, application France, Aug. 31, 1979, 79 21844

Int. Cl.³ C07C *117/00, 121/86*

U.S. Cl. 260—349 **10 Claims**

10. Amino-14 steroids represented by the general formula (III):



wherein R_3 represents an acyloxy or carbalkoxy group or a hydrogen atom.

4,325,880

PROCESS FOR CONVERSION OF STEROL I-METHYL ETHERS TO STEROLS

Charles H. Foster, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 3, 1981, Ser. No. 250,811

Int. Cl.³ C07J *9/00*

U.S. Cl. 260—397.2 **5 Claims**

1. A process for converting i-methyl ether steroids to sterols comprising refluxing said i-methyl ether steroids in an aqueous acetic acid containing about 99 to 50 weight percent acetic acid to 1 to 50 percent by weight water for a period of about 2 to 20 hours.

4,325,881

DEBROMINATION

James B. Heather, Hercules, Calif., and David R. White, Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

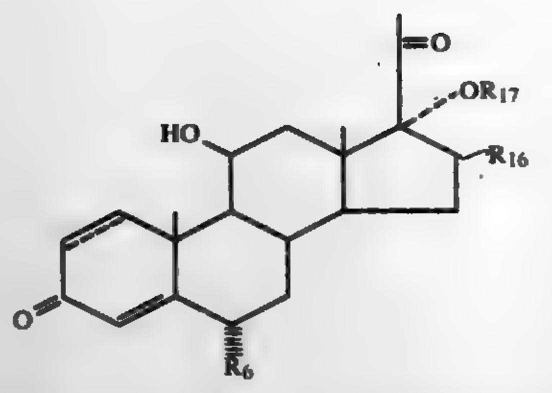
Continuation-in-part of Ser. No. 213,447, Dec. 5, 1980. This application May 15, 1981, Ser. No. 263,833

Int. Cl.³ C07J *7/00*

U.S. Cl. 260—397.45 **8 Claims**

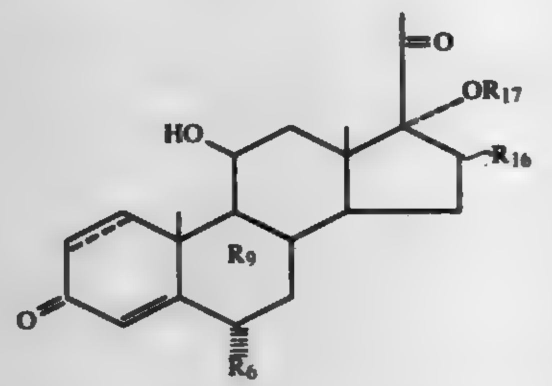
1. A process for the preparation of an 11β,17α-dihydroxyprogesterone of the formula

(VI)



which comprises reacting a 9α-halo-11β,17α-dihydroxyprogesterone of the formula

(V)



with chromous sulfate or chromous chloride or mixtures thereof and HS—CH_2—COOH, where R_6, R_9, R_{16}, R_{17}, and ~ are defined in the specification.

4,325,882

EXTRACTION OF OIL FROM HIGH OIL-BEARING SEED MATERIALS

Robert A. Reiners, Hinsdale, Ill., assignor to CPC International Inc., Englewood Cliffs, N.J.

Filed Dec. 23, 1980, Ser. No. 219,742

Int. Cl.³ A23J *1/14*; C11B *1/10*

U.S. Cl. 260—412.4 **5 Claims**

1. A total immersion process for the extraction of oil from high oil-bearing seeds without contaminating the miscella with fines, consisting essentially of the steps of:

(a) dispersing finely-divided high oil-bearing seeds containing from about 10% to about 25% water by weight, in an oil solvent to give a solid-solvent dispersion;

(b) extracting oil from the solid-solvent dispersion with additional oil solvent;

(c) separating the oil solvent with oil from insoluble material; and

(d) recovering the oil from the oil solvent with oil.

4,325,883

PROCESS FOR BLEACHING NATURALLY-OCCURRING OILS AND FATS

Keith Jones, Wirral; Francis R. M. McDonnell, South Wirral; Stuart N. Morgan, Liverpool, and David W. Thornthwaite, Wirral, all of England, assignors to Lever Brothers Company, New York, N.Y.

Filed Oct. 24, 1980, Ser. No. 200,250

Claims priority, application United Kingdom, Oct. 25, 1979, 37130/79

Int. Cl.³ C07C *27/10*

U.S. Cl. 260—423 **13 Claims**

1. In a process for bleaching a naturally occurring oil or fat containing a colored impurity, the improvement which comprises treating said oil or fat with an aqueous polar bleaching agent in an amount effective to convert said colored impurity to a substantially colorless product, in the presence of an effective amount of a phase transfer catalyst.

4,325,884

METHOD FOR THE PREPARATION OF BIS(ρ-AMINOBENZOATO) COBALT

Jung W. Kang, Clinton, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Jun. 27, 1980, Ser. No. 163,463

Int. Cl.³ C07F *15/06*

U.S. Cl. 260—439 R **2 Claims**

1. A method for the preparation of anhydrous bis(ρ-aminobenzoato) cobalt comprising the steps of sequentially:

forming a suspension of cobalt hydroxide and ρ-aminobenzoic acid in water;

heating said suspension with stirring for a period of time of from 0.5 to about 10 hours at a temperature of from about 25° C. to about 100° C. to form a solid product;

separating said solid product from the water; and,

dehydrating said solid product in a vacuum at a temperature from about 120° C. to about 135° C. until such time as the color of said product becomes purple, indicating the completion of chelation.

4,325,885

METHOD FOR PREPARATION OF OLIGOMERIC IMINIC DERIVATIVES OF ALUMINUM

Giovanni Dozzi, Milan; Salvatore Cucinella, and Tito Salvatori, both of San Donato Milanese, all of Italy, assignors to Anic S.p.A., Palermo, Italy

Division of Ser. No. 20,837, Mar. 15, 1979, Pat. No. 4,239,692. This application May 15, 1980, Ser. No. 149,896

Claims priority, application Italy, Apr. 12, 1978, 22221 A/78

Int. Cl.³ C07F *5/06*

U.S. Cl. 260—448 R **5 Claims**

1. A process for the preparation of oligomeric derivatives of aluminum having a tridimensional "open cage" structure of the formula: $[(HAlN—R'—XR''_m)_i(H_2AlNH—R'—XR''_m)_j]$ wherein:

(a) R' is (i) a linear, branched or aryl-substituted bivalent hydrocarbon aliphatic radical having from 1 to 20 carbon atoms, (ii) a bivalent cycloaliphatic radical or alkyl- or arylsubstituted bivalent cycloaliphatic radical or (iii) an aromatic or alkylsubstituted aromatic bivalent radical having from 1 to 20 carbon atoms,

(b) X is a nitrogen or an oxygen atom,

(c) R" is (i) a linear branched or aryl-substituted aliphatic hydrocarbon radical having from 1 to 20 carbon atoms, (ii) a cycloaliphatic hydrocarbon radical or alkyl or aryl-substituted hydrocarbon radical having from 1 to 20 carbon atoms, or (iii) an aromatic or alkylsubstituted aromatic radical having from 1 to 20 carbon atoms,

(d) m is a function of the nature of X and is equal to v-1, v being the valence of X and wherein m is greater than 1 the radicals R" can be equal to, or different from, each other,

(e) i+j equals z, z being an integer between 4 and 20 and in addition i can be equal to j or different from j comprising the steps of reacting at a temperature between 0° C. and the decomposition temperature of the reaction product and at a hydrogen pressure of from 1–100 kg/cm² metallic aluminum and an amine, wherein said amine is a primary amine containing at least one group of the type —X—R'-'$_m$—wherein X, R" and m are as defined above and obtaining oligomeric derivatives having said tridimensional "open cage" structure.

4,325,886

OPTICAL RESOLUTION OF ACYLTHIOPROPIONIC ACID

Naohito Ohashi, Nishinomiya; Hiroyuki Mizote, Ibaraki; Isamu Maruyama, Minoo; Shoji Nagata, Toyonaka; Kikuo Ishizumi, Toyonaka, and Junki Katsube, Toyonaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Nov. 24, 1980, Ser. No. 209,680

Claims priority, application Japan, Dec. 7, 1979, 54-159456

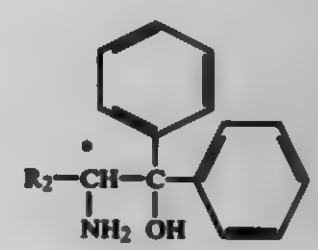
Int. Cl.³ C07C *153/07, 153/09*

U.S. Cl. 260—455 R **6 Claims**

1. A process for the optical resolution of DL-α-methyl-β-acylthiopropionic acid, which comprises contacting a DL-α-methyl-β-acylthiopropionic acid of the formula,

$$R_1SCH_2\underset{\bullet}{\overset{\overset{\displaystyle CH_3}{|}}{C}}HCO_2H$$

wherein R_1 is acetyl or benzoyl which may be substituted with a C_1-C_3 alkyl or a halogen atom, with an optically active amine of the formula,



wherein R_2 is methyl, isopropyl or isobutyl, to form diastereoisomeric salts, subjecting the formed diastereoisomeric salts to the fractional crystallization in a solvent to separate the D-acid salt from the L-acid salt, and then contacting the individual diastereoisomeric salt with acid to give D-α-methyl-β-acylthiopropionic acid and L-α-methyl-β-acylthiopropionic acid.

4,325,887

ISOCYANATOARYL SULFONIC ACID ESTERS

Gerhard Grögler, Leverkusen, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 15,577, Feb. 26, 1979, Pat. No. 4,259,255, which is a continuation of Ser. No. 821,017, Aug. 1, 1977, abandoned. This application Oct. 31, 1980, Ser. No. 203,077

Claims priority, application Fed. Rep. of Germany, Aug. 18, 1976, 2637114

Int. Cl.³ C07C *143/68*

U.S. Cl. 260—456 P **1 Claim**

1. Isocyanatoaryl sulphonic acid esters corresponding to the following general formula:

$$(R_4O—SO_2)_n—R_3(NCO)_m$$

wherein

R_3 represents an optionally C_1–C_4 alkyl-substituted (m+n)-functional aromatic hydrocarbon radical having from 6 to 15 carbon atoms;

R_4 represents an alkyl group having from 1 to 4 carbon atoms or phenyl;

m represents 1 or 2; and

n represents 1 or 2.

4,325,888

PREPARATION OF PERACID BY LIQUID-LIQUID EXTRACTION

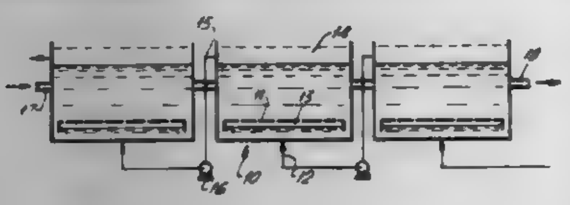
Anthony M. Hildon, Tattenhall, England, assignor to Propylox, Brussels, Belgium

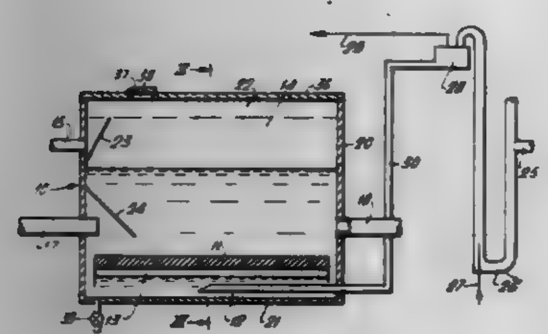
Continuation of Ser. No. 973,630, Dec. 27, 1978, abandoned. This application May 21, 1980, Ser. No. 151,817

Claims priority, application United Kingdom, Jan. 13, 1978, 01335/78

Int. Cl.³ C07C *179/10*

U.S. Cl. 260—502 R 8 Claims





1. A process for the production of a per acid comprising passing a first liquid phase comprising an aqueous solution of hydrogen peroxide through a series of extraction stages; passing a second liquid phase comprising a solution of carboxylic acid in an organic solvent through said series of stages in countercurrent to the first phase; effecting, in each stage, dispersal of the second phase into the first phase, whereby a peracid is generated by reaction in aqueous phase between the carboxylic acid and hydrogen peroxide and is extracted into the organic solvent; allowing, in each stage, coalescence and separation of the second phase into a settled body; withdrawing the second phase from such settled body and passing it under control to the next adjacent stage, the flow of one of said first and second liquid phases in each stage being substantially vertical and the flow of the other of said liquid phases being substantially horizontal whereby the flows of the two phases in each stage are generally transverse to each other.

4,325,889

PROCESS FOR THE PREPARATION OF 1-AMINO-8-NAPHTHOL-3,6-DISULPHONIC ACID (H-ACID)

Horst Behre, Odenthal; Albert Hullen, Langenfeld; Bruno Krüger, Cologne, and Guido Steffan, Odenthal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 61,157, Jul. 26, 1979, abandoned. This application Sep. 12, 1980, Ser. No. 186,884

Claims priority, application Fed. Rep. of Germany, Aug. 4, 1978, 2834166

Int. Cl.³ C07C *143/66*

U.S. Cl. 260—509 5 Claims

1. In a process for the preparation of a 1-amino-8-naphthol-3,6-disulphonic acid mono-alkali metal salt wherein a mixture of naphthylamine-trisulphonic acids and/or their salts is reacted with an alkali metal hydroxide solution at an elevated pressure and elevated temperature and the 1-amino-8-naphthol-3,6-disulphonic acid is subsequently separated out in the form of a mono-alkali metal salt by acidification, the improvement which comprises using for acidification a 30 to 60% strength by weight—relative to H_2SO_4 plus water—waste sulphuric acid

(a) from the precipitation of the magnesium salt of 2-nitronaphthalene-4,8-disulphonic acid, which waste acid contains 1 to 10% by weight of naphthalene- and nitronaphthalene-mono-, -di- and tri-sulphonic acids,

(b) from the precipitation of 2-naphthylamine-5,7-disulphonic acid, which waste acid contains 1 to 6% by weight of naphthylamine-mono-, -di- and -tri-sulphonic acids, or

(c) from the precipitation of naphthalene-1,5-disulphonic acid, which waste acid contains 10 to 30% by weight of naphthalene-mono-, di- and -tri sulphonic acids and may contain sodium ions.

4,325,890

PHENOL-FORMALDEHYDE CONDENSATES, THEIR PREPARATION AND THEIR USE AS DISPERSING AGENTS, LIQUEFACTION AGENTS AND TANNING AGENTS

Gunther Reitz; Vaclav Kaspar, both of Cologne; Karlhans Jakobs, Bergisch-Gladbach, and Kurt Schaupp, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 8, 1980, Ser. No. 176,384

Claims priority, application Fed. Rep. of Germany, Aug. 30, 1979, 2934980

Int. Cl.³ C07C *143/42*

U.S. Cl. 260—512 C 2 Claims

1. Polycondensates of phenols and formaldehyde which contain sulphonic acid groups and salts thereof bonded to the phenol either directly or via a methylene bridge, characterized in that they are prepared in a one-kettle reaction, by reaction of 1 mol of the phenol with 0.3–0.9 mol of sulphonating agent in a strongly acid medium, neutralization of the product to a pH value of 7–8, further reaction with 0.6–2 mols of formaldehyde, reaction with 0.3–0.9 mol of bisulphite and then with 0.8–1.5 mols of formaldehyde at a pH value of 4–8.

4,325,891

METHOD FOR PREPARING KETOPINIC ACID HALIDES AND THE FREE ACID THEREOF

Martin F. Haslanger, Lambertville, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Dec. 15, 1980, Ser. No. 216,344

Int. Cl.³ C07C *51/58, 51/04*

U.S. Cl. 260—544 L 10 Claims

1. A method for preparing ketopinoyl acid halide, which comprises reacting 10-halo-10-sulfinylidenecamphor with ozone under basic conditions in the presence of an organic base, at reduced temperatures of within the range of from about −40° C. to about −100° C., to form the ketopinoyl halide, and recovering the ketopinoyl halide.

4,325,892

Patent Not Issued For This Number

4,325,893

FUEL SUPPLY SYSTEM FOR INTERNAL COMBUSTION ENGINE

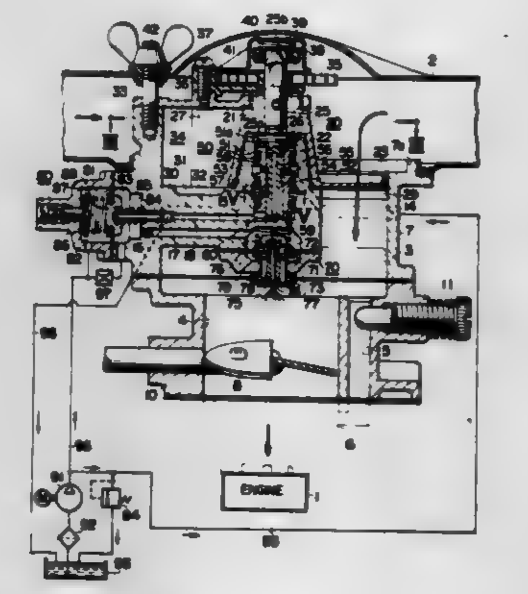
Hideo Kiuchi, Aichi; Oyuki Ogawa, Okazaki, and Nobuyuki Kobayashi, Toyota, all of Japan, assignors to Nippondenso Co., Ltd., Kariya and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of, Japan

Filed Jun. 20, 1980, Ser. No. 161,570

Claims priority, application Japan, Jun. 22, 1979, 54-79541

Int. Cl.³ F02M *7/22*

U.S. Cl. 261—50 A 5 Claims



1. A fuel supply system for an internal combustion engine comprising: a supporting barrel provided with

a transverse wall,

a pair of stationary partition walls disposed substantially perpendicularly to said transverse wall and in diametrically symmetrical relationship with each other about the axis of said barrel and

a pair of air intake openings formed through said transverse wall at diametrically symmetric positions with respect to the axis of said barrel; a metering rotor having

a rotary shaft mounted for rotation on said supporting barrel,

a pair of rotary blades disposed substantially in diametrically symmetrical relationship with each other about the axis of said rotary shaft, each being in the form of a sector and carried by said rotary shaft for varying the opening area of each of said air intake openings in response to the angle of rotation of said rotary shaft, and

a pair of movable partition walls disposed substantially perpendicularly to said rotary blades and in diametrically symmetrical relationship with each other about the axis of said rotary shaft, each being carried by said rotary shaft to move toward or away from each of said stationary partition walls;

means which cooperates with said transverse walls, said stationary partition walls and said movable partition walls so as to define pressure chambers whose volume is variable;

means for transmitting the pressure downstream of said air intake openings into said pressure chambers; a fuel metering system having

a cylinder,

a spool which is coaxial and rotatable in unison with said rotary shaft and rotatably fitted into said cylinder, and

a fuel metering slit which is formed in the interface between said cylinder and said spool and whose opening area varies in response to the angle of rotation of said spool relative to said cylinder; and

a fuel injection valve securely mounted on said supporting barrel coaxially with said rotary shaft for injecting the fuel metered through said fuel metering slit into an intake passage downstream of said air intake openings.

4,325,894

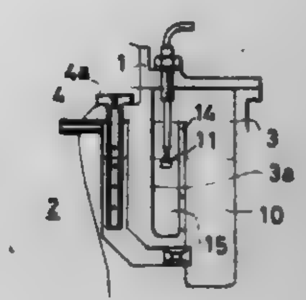
APPARATUS FOR CONTROL OF LIQUID LEVEL IN CARBURETOR

Tasuku Date, Tokyo, and Toshio Nomura, Niiza, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 11, 1979, Ser. No. 56,697

Int. Cl.³ F02M *17/02*

U.S. Cl. 261—66 6 Claims



1. An apparatus for control of a liquid level in a carburetor, including: a fuel chamber; said fuel chamber being formed in a carburetor main body; a liquid level detecting element, said liquid level detecting element being disposed at an upper portion of the interior of said fuel chamber; and an electromagnetic valve, said valve being controlled to open and close by a signal of the detecting element, so that inflow of fuel into the fuel chamber is controlled; said liquid level detecting element comprising a temperature dependent resistance for detecting by contact with the liquid surface; a small chamber being formed in said fuel chamber by means of a partition wall, and said element being provided in said fuel chamber for insertion in said small chamber.

4,325,895

METHOD OF PRODUCING LARGE OBJECTS FROM RAPIDLY QUENCHED NON-EQUILIBRIUM POWDERS

David G. Morris, Lausanne, Switzerland, assignor to Institut Cerac S.A., Lausanne, Switzerland

Filed Jul. 9, 1980, Ser. No. 167,437

Claims priority, application Sweden, Jul. 9, 1979, 7905952

Int. Cl.³ B06B *3/00*

U.S. Cl. 264—23 1 Claim

1. In a method of producing larger objects by bonding together smaller non-equilibrium particles of amorphous or metallic powders, the steps of said method including positioning said powder in a confined space, and applying a shock wave thereto, said particles to be bonded having a critical temperature, below the melting temperature thereof, above which critical temperature thermal degradation can occur,

that improvement comprising:

precompacting said powder to a density of 30% to 60% of that of a solid body formed from said powder before applying said shock wave to said powder,

applying said shock wave to said precompacted powder so that only the surfaces of said powder particles are heated to their melting temperature and the temperature of said particles is above said critical temperature

for a time period of the order of magnitude of not more than a few microseconds, the heat at said particles surfaces being conducted to the interiors of said particles to quench the heated particle surfaces,

wherein all portions of said particles are at a temperature below said critical temperature and the outer surfaces of said particles are bonded together within the order of a few microseconds after said shock wave is applied thereto.

4,325,896

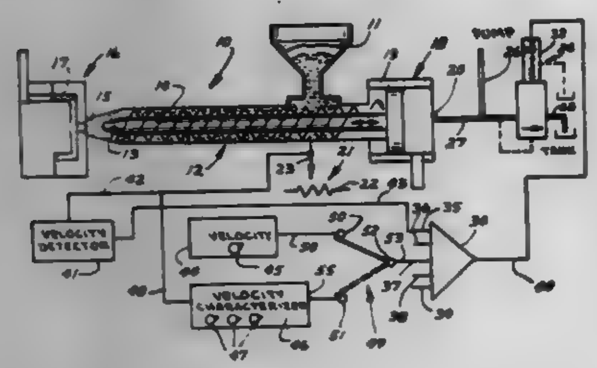
ELECTRO-HYDRAULIC RAM CONTROL APPARATUS

John L. Rodgers, Jr., Mound, Hennepin County, Minn., assignor to Solid Controls, Inc., Minneapolis, Minn.

Division of Ser. No. 881,477, Feb. 27, 1978, Pat. No. 4,222,725, and a continuation of Ser. No. 620,809, Oct. 8, 1975, abandoned. This application May 27, 1980, Ser. No. 153,471

Int. Cl.³ B29F *1/06*

U.S. Cl. 264—40.1 **3 Claims**



1. The method of controlling the velocity of a ram for transferring material from a chamber into a mold cavity in a hydraulic molding press which comprises the steps of:

(a) sensing the velocity of the ram and comparing sensed and reference ram velocity signals to generate a difference signal; and

(b) using the difference signal to establish a signal representative of the pressure correction required in the hydraulic cylinder for said ram to maintain a predetermined desired ram velocity by controlling only the pressure of hydraulic fluid in said cylinder.

4,325,897

METHOD AND APPARATUS FOR CONTROLLING SIZE OF EXTRUDED TUBE

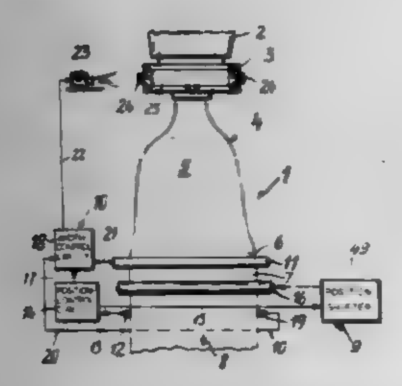
Ludwig Zerle, Paarstr. 2, 8905 Mering, and Klaus Scharm, Rossinistr. 12, 8900 Augsburg, both of Fed. Rep. of Germany

Filed May 12, 1980, Ser. No. 148,970

Claims priority, application Fed. Rep. of Germany, May 15, 1979, 2919472

Int. Cl.³ B29D *7/02*

U.S. Cl. 264—40.3 **13 Claims**



1. A method for producing a foil strip of predetermined width, comprising the steps of:

extruding, from an at least partially rotatable extruder head, a foil tube of substantially uniform wall thickness;

pressurizing, by means of a blower and at least one valve attached to said head, said tube to form from at least a portion thereof a bubble;

collapsing said tube from said bubble to produce a two-layer web;

transporting said web away from said extruder head;

monitoring parallel edges of said web to determine an actual width thereof;

generating an electromagnetic width-correction signal as a function of the divergence between said actual width and said predetermined width;

wirelessly transmitting said width-correction signal to a receiver on said head; and

adjusting, according to the wirelessly transmitted width-correction signal, the pressurization of said tube by said blower and said valve.

4,325,898

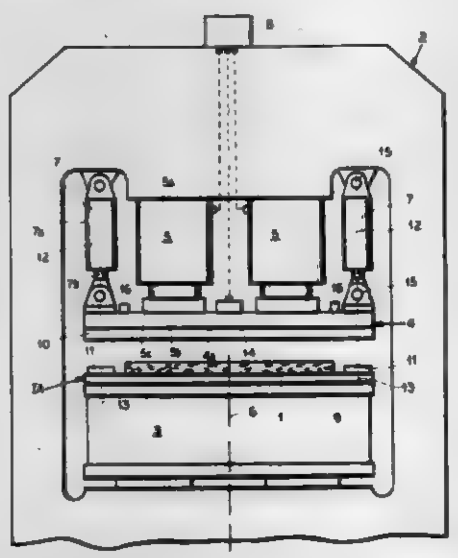
METHOD OF OPERATING A PLATEN PRESS

Jürgen Pesch, Krefeld-Traar, Fed. Rep. of Germany, assignor to G. Siempelkamp GmbH & Co., Krefeld, Fed. Rep. of Germany

Division of Ser. No. 127,572, Mar. 6, 1980, Pat. No. 4,289,467. This application Sep. 8, 1980, Ser. No. 185,161

Int. Cl.³ B29J *5/00*

U.S. Cl. 264—40.5 **1 Claim**



1. A method of operating a platen press for plane-parallel compression of a particleboard mat to produce particleboard of a predetermined thickness, comprising:

(a) placing upon a lower fixed platen and beneath an upper movable deformable platen of said press, a mat to be formed into particleboard;

(b) placing upon said fixed lower platen and along each longitudinal edge of said mat rigid bars having said predetermined thickness;

(c) moving downwardly said upper platen to compress said mat until said upper platen contacts said bars, while deforming upwardly said upper platen at locations intermediate said bars by contact with said mat,

(d) measuring said deformation of said upper platen; and

(e) applying to said deformed intermediate locations of said upper platen controlled pressure responsive to said measured deformation of said upper platen to reform said upper platen for plane-parallel compression of said mat, and to form said particleboard to a uniform thickness corresponding to the thickness of said bars.

4,325,899

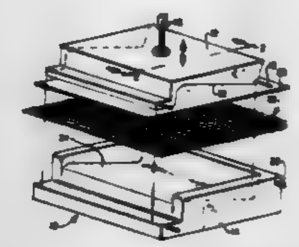
METHOD FOR HEAT FORMING HARDBOARD AND OTHER TYPES OF FORMING BOARD

John N. Cole, Maineville, and David A. Hettel, Cincinnati, both of Ohio, assignors to The Mead Corporation, Dayton, Ohio

Filed Jun. 30, 1980, Ser. No. 164,627

Int. Cl.³ B29C *1/02, 17/00*

U.S. Cl. 264—86 **4 Claims**



1. A method of heat forming board sheets comprising the steps of:

(a) placing a cheet of heat formable board, having a water content below about 20 percent by weight, a cellulose content of between 43 and 73 percent by weight, and a polyolefin binder of between 12 and 30 percent by weight in a die having upper and lower platens with mating contours, and having a mesh screen located adjacent one of said platens, said screen being sized to extend outward to form a border about the periphery of said die between said upper and lower platens;

(b) pressing said platens together thereby imposing a pressure upon said sheet of between 50 and 300 pounds per square inch and heating said sheet such that said sheet becomes plastic and is formed by said platens to said mating contours but said sheet does not become embedded in said screen, and gases released from said sheet follow the contours of said screen to escape from said die;

(c) separating said platens; and

(d) removing said formed sheet from said die and from said screen.

4,325,900

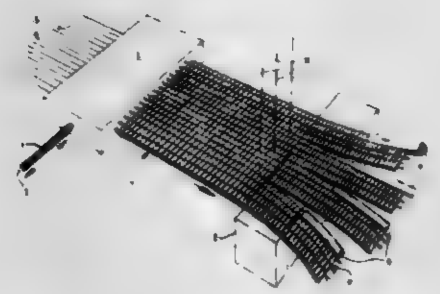
MANUFACTURE OF BRUSHES

David Holding, Bolton, and John D. Chancellor, Mickleover, both of England, assignors to Schlegel (UK) Limited, Leeds, England

Filed Jul. 3, 1980, Ser. No. 165,789

Int. Cl.³ B29D *31/00*

U.S. Cl. 264—103 **11 Claims**



1. A method of manufacturing brush components comprising forming a multifilament tow from synthetic resinous bristle filaments, feeding the tow in one direction to a loom as the weft, weaving from the tow a bristle fabric extending in a direction transverse to the one direction by using traditional warp yarns, feeding the fabric in the transverse direction through an extruder to cause portions of the synthetic resinous bristle wefts in the vicinity of the extruder heads to be heated to a temperature sufficient to at least soften them, and extruding onto the fabric across the softened portions of the bristle wefts as the fabric is fed through the extruder, at least one strip of a polymeric material, the extruded polymeric material and the softened portions of the bristle wefts fusing together during the extruding step to lock them together.

4,325,901

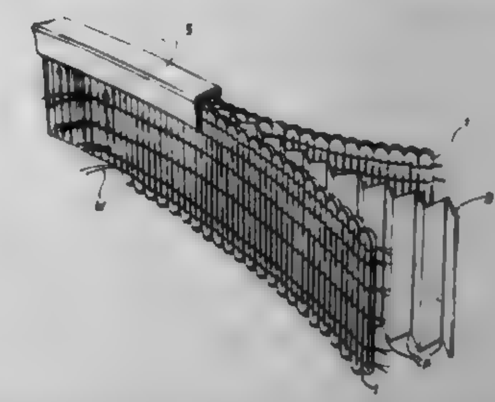
METHOD OF BRUSH MANUFACTURE

David Holding, Bolton, and John D. Chancellor, Mickleover, both of England, assignors to Schlegel (UK) Limited, Leeds, England

Filed Jul. 3, 1980, Ser. No. 165,788

Int. Cl.³ B29C *24/00, 17/00*

U.S. Cl. 264—146 **30 Claims**



20. A method of manufacturing a brush component from at least two beaded brush strips, each strip formed of a plurality of synthetic resinous bristle filaments comprising the steps of:

arranging the beaded brush strips with the beaded portions and bristle filaments adjacent each other in aligned side-by-side relation;

positioning at least one barrier fin of synthetic resinous material between the beaded brush strips and aligned therewith with a side edge region of the fin and beaded portions forming a sandwich; and

subjecting the sandwich to heat wherein the beaded portions and side edge region of the fin are fused and formed so as to enable the brush component to be secured to a support.

4,325,902

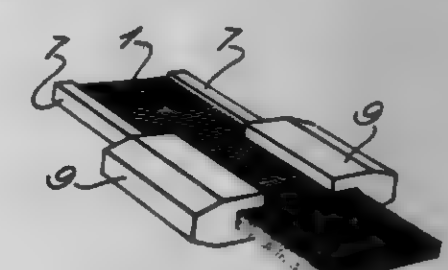
METHOD OF MANUFACTURE OF BRUSH COMPONENTS

David Holding, Bolton, England, assignor to Schlegel (UK) Limited, Leeds, England

Filed Jul. 3, 1980, Ser. No. 165,790

Int. Cl.³ B29D *31/00*

U.S. Cl. 264—146 **18 Claims**



1. A method of manufacturing a brush component comprising feeding a plurality of predetermined lengths of brush bristle formed of a first synthetic resinous material from a supply into the nip of at least one pair of endless haul-off belts so that said bristles are arranged in an adjacent longitudinally extending array substantially parallel to each other with their ends substantially in line, the array being of substantially uniform thickness and density, passing the array of bristles between two extrusion dies, heating an area of the array along the length of the array of bristles as the array is advanced past the extrusion dies so as at least to cause outer surface portions of said heated bristles to melt, extruding layers of a second synthetic resinous material onto both sides of said area along the length of the array of bristles as the array is advanced past the extrusion dies

so as to penetrate between the bristles and to hold them together, the first and second synthetic resinous materials being sufficiently compatible so that they will fuse with each other during this extruding step, and slitting the bristles substantially along the centre of the array after they emerge from the extruder to provide at least one brush component.

4,325,903
PROCESSING OF MELT PROCESSIBLE LIQUID CRYSTAL POLYMER BY CONTROL OF THERMAL HISTORY

Kurt F. Wissbrun, Short Hills, and Yoshiaki Ide, North Plainfield, both of N.J., assignors to Celanese Corporation, New York, N.Y.

Filed Jul. 18, 1980, Ser. No. 169,012

Int. Cl.³ B28B *3/20*

U.S. Cl. 264—176 R 53 Claims

1. A process for the extrusion of melt processable liquid crystal polymer which provides improved processability characteristics, said process comprising the steps of:

(a) subjecting said liquid crystal polymer to an elevated temperature between the differential scanning calorimetry transition temperature and the degradation temperature of the polymer;

(b) cooling said liquid crystal polymer to a processing temperature which is between said differential scanning calorimetry transition temperature and said elevated temperature and at which said liquid crystal polymer is less subject to degradation than at said elevated temperature; and

(c) extruding said liquid crystal polymer into the form of a shaped article having mechanical properties which are improved over those of articles formed from liquid crystal polymer which has not been subjected to said elevated temperature.

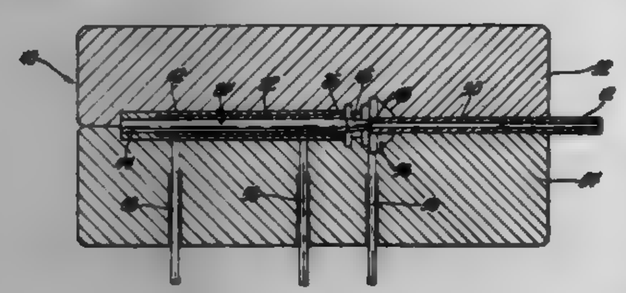
4,325,904
MOTION TRANSMITTING REMOTE CONTROL ASSEMBLY

Thomas J. Frankhouse, Southfield, Mich., assignor to Teleflex Incorporated, Limerick, Pa.

Division of Ser. No. 6,587, Jan. 26, 1979, abandoned. This application Feb. 14, 1980, Ser. No. 121,776

Int. Cl.³ B29D *31/00*

U.S. Cl. 264—242 6 Claims



1. A method of making a motion transmitting remote control assembly of the type including a sleeve having a bore extending therethrough and a male swivel portion with a partial convex spherical surface extending from its intersection with the exterior of the sleeve to a lip defined by its intersection with said bore and pivotally supported in a female swivel portion having a partial concave spherical surface, said method including the steps of; enclosing and covering a portion of the convex spherical surface extending from the intersection thereof with the exterior of the sleeve while leaving the remainder of said convex surface extending to the lip exposed, plugging said bore in said sleeve contiguously with said lip to prevent entry of material into said bore past said lip, placing said sleeve in a mold cavity with said remainder of said convex surface exposed and said bore plugged, and injecting organic polymeric material into the cavity for molding the fitting about the male swivel portion.

4,325,905
METHOD FOR PRODUCING A DOUBLE-WALLED PAPER CONTAINER

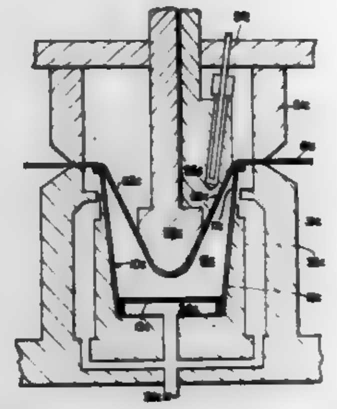
Keiichi Takahashi, Ichikawa, Japan, assignor to Tokan Kogyo Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 887,372, Mar. 16, 1978, abandoned. This application Aug. 11, 1980, Ser. No. 176,792

Claims priority, application Japan, Mar. 23, 1977, 52-31151; Mar. 23, 1977, 52-31152; Mar. 23, 1977, 52-31153; Mar. 23, 1977, 52-31154; May 24, 1977, 52-59347; May 24, 1977, 52-59348

Int. Cl.³ B29C *17/04;* B29D *3/00;* B32B *1/10*

U.S. Cl. 264—516 2 Claims



1. A method for producing a double-walled paper container having a peeping window in the side wall comprising the steps of placing a paper container having a peeping window forming through hole in a side wall thereof in a shaping die set, positioning a piece of synthetic resin film or sheet on the top of said shaping die set in tension across the mouth of said paper container, stretching said film or sheet into the cavity in said paper container by means of an assist plug, cooling said film or sheet in the area to be aligned with said peeping window forming through hole, and applying negative pressure to the cavity in said die set to further stretch the portion of said film or sheet except for the portion to be aligned with said window forming through hole so as to apply the film or sheet portion to the inner surface of said paper container with said cooled and unstretched film or sheet portion being aligned with said peeping window through hole.

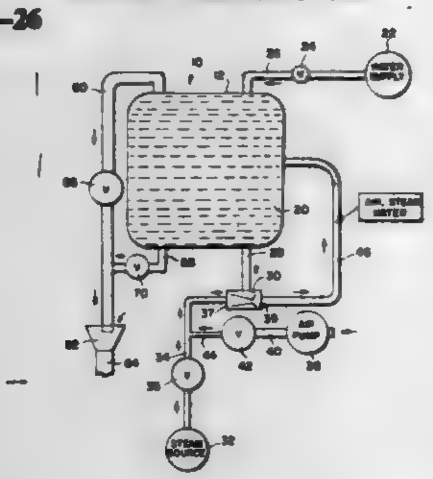
4,325,906
PROCESS FOR QUIETING STEAM INJECTED INTO WATER IN A STERILIZER

Edward M. Kackos, Belmar, N.J., assignor to Vernitron Corporation, Lake Success, N.Y.

Filed Oct. 14, 1980, Ser. No. 196,206

Int. Cl.³ [illegible]

U.S. Cl. 422—26 2 Claims



1. A process for quietly injecting steam having air inherently present therein into a body of water in a sterilizer chamber, comprising the steps of:

supplying steam at high pressure;

continuously mixing minute quantities of air quietly with said steam, said air being at a higher pressure than said steam pressure; and

continuously injecting quietly a stream of said air, mixed with said steam into said body of water.

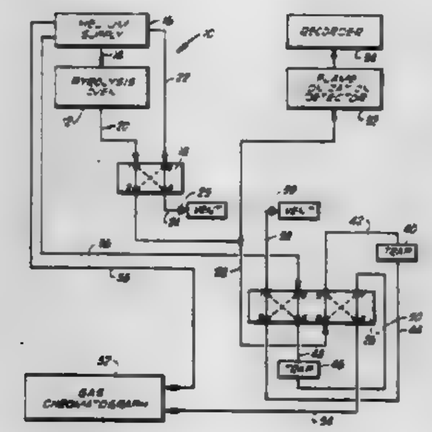
4,325,907
PYROLYSIS PRODUCT GASES ANALYZING METHOD AND SYSTEM

Harry Dembicki, Jr., and Roger A. Woods, both of Ponca City, Okla., assignors to Conoco Inc., Ponca City, Okla.

Division of Ser. No. 37,938, May 9, 1979, abandoned. This application Sep. 22, 1980, Ser. No. 189,737

Int. Cl.³ G01N *31/12, 31/06, 31/08, 21/74*

U.S. Cl. 422—54 6 Claims



1. A system for subjecting one or more materials to pyrolysis and for trapping and analyzing the product gases therefrom comprising:

a pyrolysis oven having an inert gas inlet connection and a product gas outlet connection;

a means defining a source of inert gas;

a first conduit connected between said means defining a source of inert gas and said inert gas inlet connection of said oven;

a two-position four-port valve including first, second, third and fourth ports whereby in one position said first and third ports are communicated with said second and fourth ports, respectively, and in the other position, said first and third ports are communicated with said fourth and second ports, respectively;

a second conduit connected between said product gas outlet of said oven and said first port of said four-port valve;

a third conduit connected between said means defining a source of inert gas and said third port of said four-port valve;

a two-position eight-port valve having first, second, third, fourth, fifth, sixth, seventh and eighth ports whereby in one-position said first, third, fifth and seventh ports are communicated with said second, fourth, sixth and eighth ports, respectively, and in the other position, said first, third, fifth and seventh ports are communicated with said fourth, second, eighth and sixth parts, respectively;

a fourth conduit connected between said second port of said four-port valve and said sixth port of said eight-port valve;

a first trap means for condensing, retaining and then vaporizing said pyrolysis product gases having an inlet connection and an outlet connection;

a fifth conduit connected between said fifth port of said eight-port valve and said inlet connection of said first trap means;

a sixth conduit connected between said outlet connection of said first trap means and said second port of said eight-port valve;

a seventh conduit connected between said means defining a source of inert gas and said third port of said eight-way valve;

a second trap means for condensing, retaining and then vaporizing said pyrolysis product gases having an inlet connection and an outlet connection;

an eighth conduit connected between said fourth port of said eight-port valve and said inlet connection of said second trap means;

a ninth conduit connected between said outlet connection of said second trap means and said seventh port of said eight-way valve;

a gas analyzer; and

a tenth conduit connected between said gas analyzer and said eighth port of said eight-port valve.

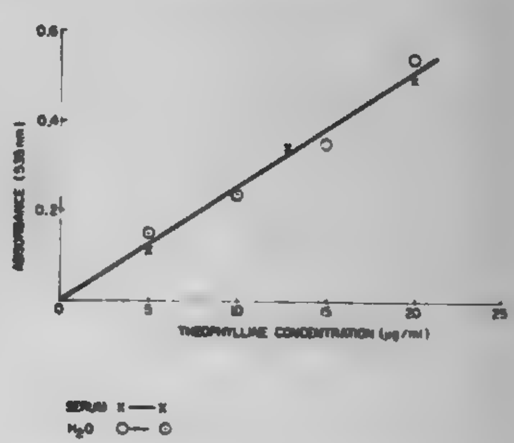
4,325,908
THEOPHYLLINE TEST

Bernard M. Scheinthal, Pine Brook, and Lester Chafetz, New Providence, both of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Feb. 20, 1980, Ser. No. 122,912

Int. Cl.³ G01N *21/78, 33/52*

U.S. Cl. 422—61 3 Claims



1. A diagnostic test kit for the determination of theophylline levels in a body fluid, comprising in combination (a) a vessel in which is placed a predetermined measured volume of body fluid containing theophylline values, (b) an alkaline hydroxide in solid particulate form in an amount whose heat of solution when combined with said predetermined volume of body fluid is sufficient to raise the temperature of said fluid to a temperature at which reaction with said alkaline hydroxide acts to hydrolyze any theophylline present to theophyllidine, (c) a solid organic acid in stoichiometric excess relative to said alkaline hydroxide, and (d) a tetrazo chromogen which is a stabilized salt of tetrazotized dianisidine.

4,325,909
FLUID TRANSFER APPARATUS

Wallace H. Coulter, Miami Springs, and Walter M. Mena, Hialeah Gardens, both of Fla., assignors to Coulter Electronics, Inc., Hialeah, Fla.

Filed Oct. 24, 1980, Ser. No. 200,143

Int. Cl.³ G01N *1/14, 35/06*

U.S. Cl. 422—63 8 Claims

1. A vertically and horizontally movable arm structure for fluid transfer, comprising:

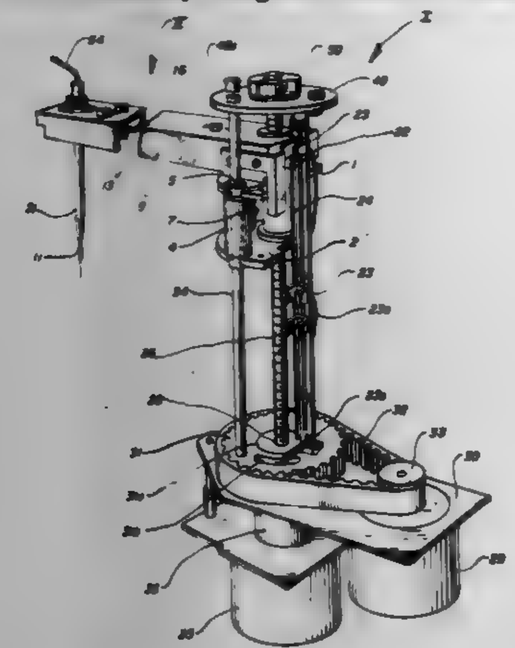
(A) a generally elongate arm member for holding a fluid probe at a distal end thereof; and

(B) an oscillating assembly mounted to said arm member, for oscillation of said probe to stir fluid into which said probe is inserted, wherein said oscillating assembly includes:

(1) a mounting member for positioning said probe adjacent said distal end of said arm member;

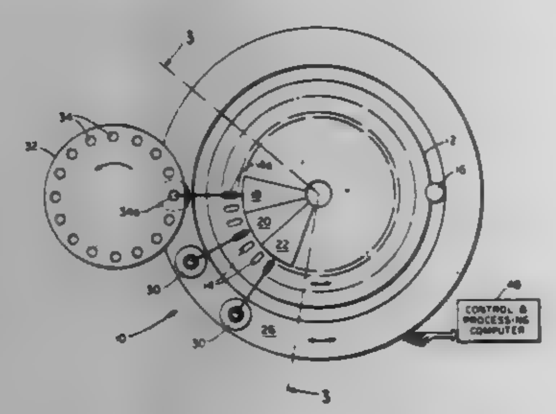
(2) at least one tubular member attached to said mounting member and aligned substantially parallel to said arm member; and

(3) drive means for linear oscillation of said tubular member substantially along the tubular axis thereof, in order



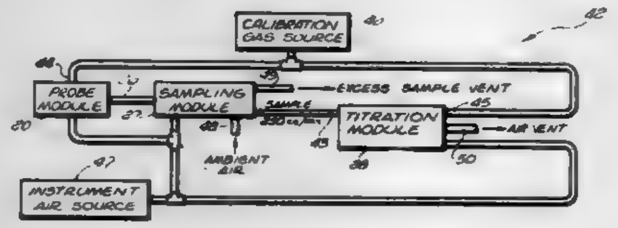
to produce oscillation of said attached probe mounting member.

4,325,910
AUTOMATED MULTIPLE-PURPOSE CHEMICAL-ANALYSIS APPARATUS
Michael Jordan, Merrimack, N.H., assignor to Technicraft, Inc., Amherst, N.H.
Filed Jul. 11, 1979, Ser. No. 56,688
Int. Cl.³ G01N *21/27, 35/06*
U.S. Cl. 422—64 **12 Claims**



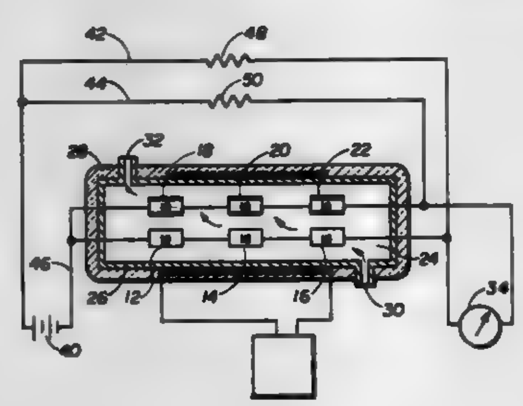
1. In automated sample analysis apparatus for analyzing each of a plurality of samples successively and in liquid state for at least one constituent, said apparatus having
(i) sample containers on a first transport,
(ii) reaction vessels and optical cuvette elements on a second transport,
(iii) reagent containers on a third transport,
(iv) liquid transfer means, and
(v) measuring means,
the improvement wherein
said second transport conveys said reaction vessels and said cuvette elements in separate respective single ordered successions successively along a first path,
said third transport conveys said reagent containers along a second path coextensive at least in part with said first path,
said liquid transfer means are arranged for transferring liquid from sample containers on said first transport to reaction vessels being conveyed along said first path, and are arranged for transferring liquid between containers on said third transport and reaction vessels conveyed along said first path at any of plural locations where said second path is coextensive with said first path, and
said measuring means includes photometer source means arranged for illuminating said cuvette elements with optical measuring energy at different locations along at least a selected part of said first path, and further includes photometric detector means and detector carriage means, said carriage means being arranged for carrying said detector means, relative to said second transport, about a path extending along at least a part of said first path receiving radiant energy responsive to illumination of said cuvette elements by said optical source means.

4,325,911
STACK GAS ANALYZER AND THERMAL OXIDATION DEVICE THEREFOR
A. L. Vincent, Monrovia, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.
Division of Ser. No. 48,475, Jun. 14, 1979, abandoned, which is a division of Ser. No. 871,195, Jan. 23, 1978, Pat. No. 4,211,748. This application May 20, 1980, Ser. No. 151,715
Int. Cl.³ G01N *31/16, 31/12, 31/06*
U.S. Cl. 422—75 **5 Claims**



1. Combustion apparatus comprising: a device for burning combustible material to provide a stack gas mixture including sulfur dioxide and total reduced sulfur; means to sequester a sample of said mixture; means for cooling said sample to dehydrate said mixture; means to remove the sulfur dioxide in said sample from said sample leaving a remnant including total reduced sulfur; means for reheating said remnant to cause sulfur or sulfur compounds in said remnant to be oxidized to form sulfur dioxide and means to detect the amount of sulfur dioxide whenever the same is formed by the said reheating means as aforesaid.

4,325,912
CARBON MONOXIDE DETECTION APPARATUS
Kenneth B. Sawa, Yorba Linda, and Radhakrishna M. Neti, Brea, both of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.
Filed Jul. 1, 1980, Ser. No. 165,164
Int. Cl.³ G01N *27/16, 27/18*
U.S. Cl. 422—95 **19 Claims**



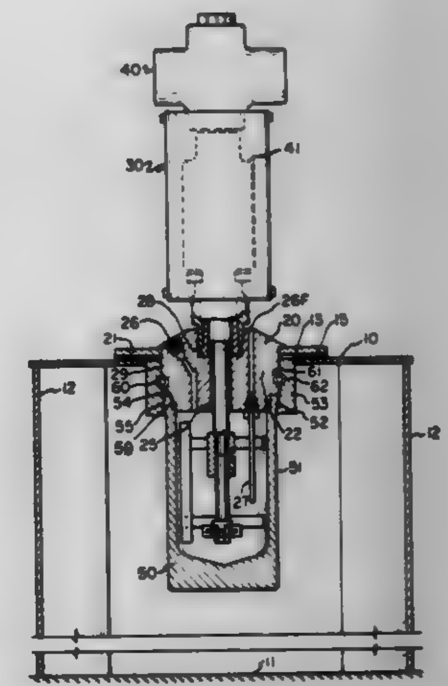
1. A carbon monoxide detector comprising;
(a) at least one forward biased solid-state measuring diode connected to provide a first output signal;
(b) an equal number of forward biased solid-state reference diodes connected to provide a second output signal;
(c) a deposit of an oxide of a noble metal in heat conducting relationship to the measuring diode, said deposit serving as an catalyst for carbon monoxide oxidation; and
(d) electrical means for generating an output signal that varies in accordance with the difference between the first and second output signals.

4,325,913
REAGENT PROBE AND METHOD FOR FABRICATION THEREOF
Stephen C. Wardlaw, Branford, Conn., assignor to Coulter Electronics, Inc., Hialeah, Fla.
Filed Oct. 20, 1980, Ser. No. 198,523
Int. Cl.³ B01L *3/02*
U.S. Cl. 422—100 **4 Claims**

1. A probe for aspirating and dispensing fluids, comprising:
(A) a tubular bodywall having a terminal orifice formed by a substantially arcuate termination of said bodywall which arcuate termination is obliquely concave with respect to the interior of said bodywall; and
(B) an inwardly projecting tip formed as the general extremity portion of said arcuate termination, wherein the projection of said tip extends inwardly in relation to said bodywall and the portion of said tip immediately adjacent to the end of said tip has a narrow, flat leading face lying in a plane generally perpendicular to the tubular axis of said bodywall so that said leading face is sufficiently narrow to only partially obstruct axial entry and exit of fluid through said orifice into said bodywall, said leading face being positioned at a distance in the range of about ¼ to about ¾ of the distance perpendicularly across the outside diameter of said bodywall.

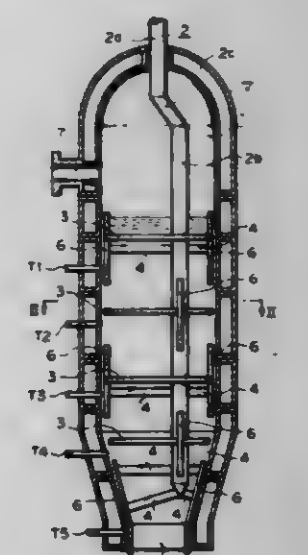
4,325,914
LABORATORY PRESSURE VESSEL
Robert F. Ruyak, Erie, Pa., assignor to Autoclave Engineers, Inc., Erie, Pa.
Filed Sep. 2, 1980, Ser. No. 182,984
Int. Cl.³ B01L *3/00, 3/16;* **B65D** *53/00, 45/00*
U.S. Cl. 422—102 **7 Claims**

1. A laboratory pressure vessel comprising
a normally stationary platform,
means for supporting the platform above the surface upon which the supporting means rests,
a pressure vessel cover fixedly secured to the platform and having a portion extending downwardly below the platform, said cover having utility passages therein,
a pressure vessel body comprising a cylindrical side wall and a bottom, said body having an open end arranged to fit over the portion of the pressure vessel cover extending downwardly below the platform, grooves in said cover and/or vessel body defining a first annular space for receiving a means for sealing said cover to said vessel body, said pressure vessel body having no openings through the side wall below the said first annular space,
a quick securing means comprising facing channels in the pressure vessel cover and pressure vessel body between



the facing cylindrical surfaces thereof and located above said first annular space, which facing channels define a second annular space, an opening through the cylindrical side wall of the body outwardly of the second annular space and in open communication therewith, flexible means for inserting through said body side wall opening and filling said second annular space thereby holding the cover and vessel body together.

4,325,915
BULK POLYMERIZATION REACTOR
Hiroshi Sato, Ichihara; Takehiko Okamoto, Nagoya, and Akira Asada, Ikeda, all of Japan, assignors to Toray Industries, Inc., Japan
Filed Mar. 27, 1980, Ser. No. 134,520
Int. Cl.³ B01J *19/18*
U.S. Cl. 422—135 **11 Claims**



1. A bulk polymerization reactor comprising
a vertically elongated cylindrical polymerization vat which defines a reaction chamber provided with a material supply port and a bottom product resin discharge port,
a rotary shaft including an off-center longitudinal section

vertically extending through said reaction chamber, said longitudinal section having a degree of eccentricity from the center axis of said reaction chamber of from about 10% to about 150%,

a plurality of horizontal perforated discs fixed to said off-center longitudinal section of said rotary shaft, said perforated discs leaving a cylindrical clearance between their periphery and a corresponding wall section of said reaction chamber, and

a plurality of shearing blades fixedly coupled to said off-center longitudinal section of said rotary shaft by means of an arm, each blade leaving a clearance between its outer face and a corresponding wall section of said reaction chamber.

4,325,916

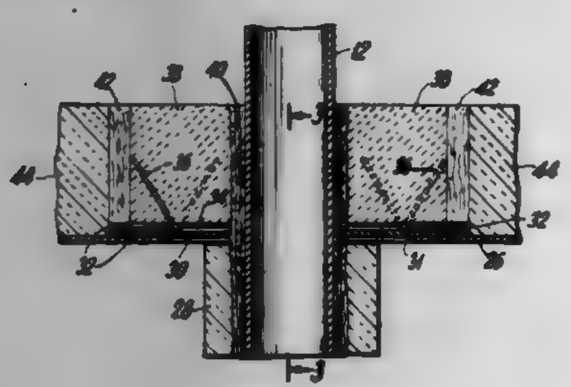
REFORMER FURNACE SEAL

Arthur C. Worley, Mt. Tabor, N.J., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Dec. 31, 1979, Ser. No. 108,409

Int. Cl.³ B01J *8/06, 19/02;* F27D *1/16*

U.S. Cl. 422—197 1 Claim



1. In a hydrocarbon reforming furnace having a furnace box, a plurality of vertically oriented reforming tubes with their inlet and outlet ends extending outside said furnace box, a horizontally oriented inlet header provided with insulation on the interior thereof, a horizontally oriented outlet header provided with insulation on the interior thereof, the improvement comprising a refractory seal cast in place about the lower portion of the vertically oriented reforming tubes wherein such refractory seal is supported on metal support strips and sliding metal base plates with "V" shaped welding studs securing said refractory seal to said sliding metal base plates whereby said refractory seal which has a different coefficient of expansion than said base plates can nonetheless move therewith and the interface of the cast-in-place refractory seal with the tubes and the furnace floor is additionally sealed with ceramic fiber blankets so as to further increase the air sealing of the refractory seal and the tube vibration dampening function of said refractory seal, said refractory seal having a thermal expansion rate similar to that of the insulated outlet header.

4,325,917

METHOD AND APPARATUS FOR PRODUCING SAPPHIRE TUBES

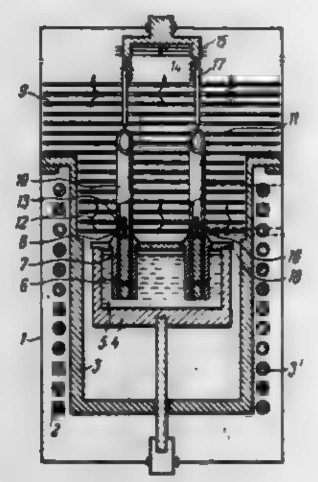
Boris B. Pelts, Lesnaya ulitsa, 63/43, kv. 157, Moscow; Beniamin A. Tumasian, prospekt Lenina, 39/12, kv. 51, Erevan; Leonid P. Egorov, Profsojuznaya ulitsa, 87, korpus 1, kv. 92, Moscow; Lev M. Zatulovsky, Orlikov pereulok, 8, kv. 55, Moscow; Petr M. Chaikin, Staroslobodsky pereulok, 14, kv. 18, Moscow; Efim A. Freiman, 2 Vladimirskaya ulitsa, 15, korpus 1, kv. 53, Moscow; Eduard A. Chalian, ulitsa Gvardeiskaya, 9, kv. 30, Erevan; Grant I. Abramian, ulitsa Olega Koshevogo, 26, kv. 3, Erevan; Stepan E. Azoian, 7 ulitsa Agesan, 17, Erevan, and Kliment A. Kostandian, 10 ulitsa Zeituna, 10, kv. 5, Erevan, all of U.S.S.R.

Continuation of Ser. No. 926,492, Jul. 20, 1978, abandoned. This application Nov. 12, 1980, Ser. No. 205,985

Claims priority, application U.S.S.R., Jul. 21, 1977, 2509201

Int. Cl.³ B01J *17/18*

U.S. Cl. 422—249 7 Claims



1. An apparatus for producing crystalline sapphire tubes comprising an air-tight chamber having an inert gas blanket; an electrically conducting cylindrical container; an induction heater for indirect heating including a coil wound around said container; a crucible including dies having capillary passages for feeding a melt to the tube pulled, said crucible being located in said container below the upper edge thereof so that the length of said container extending above said crucible is roughly equal to the height of said crucible, and the side wall of the said length is made thinner than elsewhere; first heat-insulating shields of electrically conductive material stacked above said crucible within said length of the container where the said wall is thinner than elsewhere so that the shields are subjected to the electromagnetic field of the induction heater; second heat-insulating shields stacked above said upper edge of said container, said first and second heat-insulating shields having perforations positioned and dimensioned for permitting convective gas flow of said inert gas blanket through said shields; and a pin of a heat conducting material having a melting point exceeding 2100° C. mounted at the top of each die coaxially therewith, said first and second heat-insulating shields and said pin cooperating to maintain a specified temperature gradient within the pulling region of said tube.

4,325,918

DEPROTONATION OF AN ALKYLPHENYL ACID PHOSPHATE EXTRACTANT

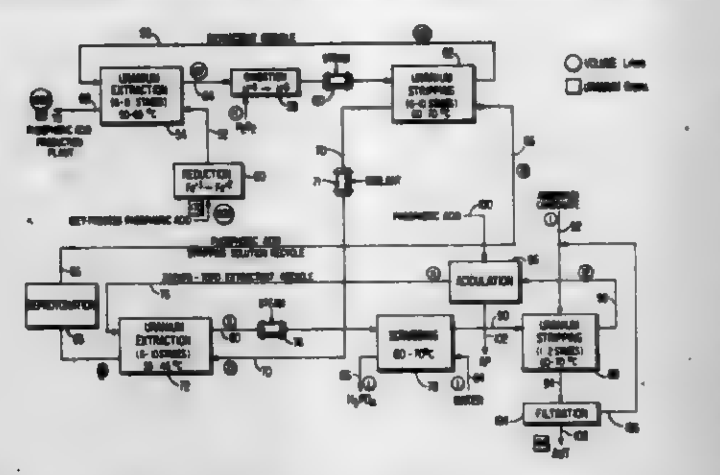
Donald A. Luke, Seffner; Alex Magdics, Lakeland; Sandra L. Paris, Temple Terrace, and Ralph E. Worthington, Winter Haven, all of Fla., assignors to UNC Recovery Corporation, Mulberry, Fla.

Filed Aug. 31, 1979, Ser. No. 71,657

Int. Cl.³ C01G *43/00;* C01B *25/237*

U.S. Cl. 423—10 28 Claims

1. In a process for recovering uranium from wet-process phosphoric acid comprising extracting uranium into an alkylphenyl acid phosphate extractant in which acidic impurities in the wet-process phosphoric acid are transferred to the extractant resulting in hydrolysis of the extractant, the improvement comprising decreasing the proton concentration of said ex-



tractant resulting from said acidic impurities whereby said hydrolysis of said extractant is decreased.

4,325,919

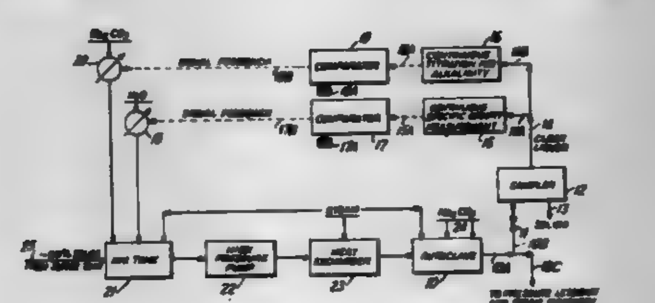
AUTOCLAVE SODA DIGESTION OF SCHEELITE CONCENTRATES WITH FEEDBACK CONTROL

Paul B. Queneau, Golden; Leo W. Beckstead, Arvada, and Dale K. Huggins, Golden, all of Colo., assignors to AMAX Inc., Greenwich, Conn.

Filed Jan. 19, 1981, Ser. No. 225,910

Int. Cl.³ C01G *41/00*

U.S. Cl. 423—61 20 Claims



1. In a continuous process for maintaining high WO_3 extraction efficiency in the soda ash digestion of tungsten concentrates, wherein a tungsten concentrate is slurried with an aqueous sodium carbonate solution and digested at a temperature selected in the range of about 180° C. to 310° C. and a pressure ranging from about 145 psig to 1430 psig, the improvement which comprises:

forming a slurry of a tungsten concentrate charge of selected average particle size in an aqueous sodium carbonate solution of concentration selected to fall in the range of about 50 gpl to 200 gpl at a Na_2CO_3/WO_3 weight ratio ranging from about 0.9 to 2,

the concentration of the Na_2CO_3 solution being substantially inversely correlated to the selected digestion temperature and substantially directly correlated to the Na_2CO_3/WO_3 weight ratio,

digesting said tungsten concentrate in an autoclave at said selected temperature and pressure for a time selected to provide the desired high extraction efficiency of WO_3 equivalent from said tungsten concentrate and form a pregnant liquor thereof, and

while said digestion is in progress determining the specific gravity value and the Na_2CO_3 concentration value of said pregnant liquor,

comparing each of said values to a corresponding reference value predetermined to reflect the desired digestion conditions in said autoclave and provide a difference feedback signal,

and then varying the amount of Na_2CO_3 and water fed to the slurry in accordance with the corresponding feedback signal obtained in order to maintain the digestion in the autoclave at a desired high extraction efficiency of over about 95%.

4,325,920

METHOD TO OXIDIZE TI^{+3} DURING THE SULFURIC ACID DIGESTION OF TITANIFEROUS SLAGS

Michel Gueguin, Tracy, Canada, assignor to QIT-Fer et Titane du Quebec, Inc., Canada

Filed Nov. 12, 1980, Ser. No. 206,300

Int. Cl.³ C01G *23/00*

U.S. Cl. 423—82 8 Claims

1. A method of reducing the titanous sulfate content and correspondingly increasing the titanic sulfate content of the digestion product produced by the sulfuric acid digestion of titaniferous slags having a substantial content of titanous compounds which comprises digesting said slags with acid in the presence of a lignin product, said lignin product assisting in the oxidation of the Ti^{+3} content of the slag.

4,325,921

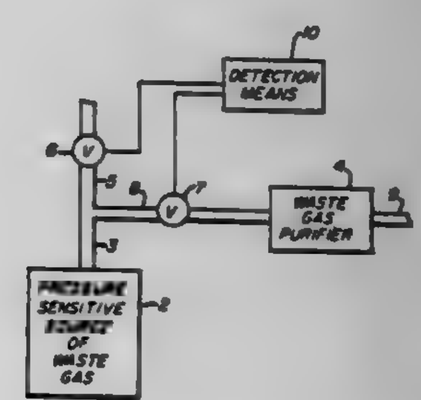
WASTE GAS PURIFICATION SYSTEMS AND METHODS

John E. Aiken, Monroeville Borough, and William J. Didycz, Whitehall Borough, both of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 8,678, Feb. 2, 1979, Pat. No. 4,238,460. This application May 7, 1980, Ser. No. 147,459

Int. Cl.³ B01D *53/36*

U.S. Cl. 423—210 16 Claims



14. Process for controlling a waste gas stream comprising:

(1) maintaining a substantially uniform pressure in a pressure sensitive source of a waste gas stream,

(2) passing said waste gas stream through a first conduit having its inlet end connected to the source of the waste gas stream and downstream to a waste gas purifier, and

(3) adjusting valves in the first conduit and in a second by-pass conduit connected to the source of the waste gas stream in response to one or more predetermined conditions harmful to the waste gas purifier to stop the flow of waste gases to the waste gas purifier and cause the waste gases to flow through the by-pass conduit, said adjusting of the valves being conducted in a predetermined manner which maintains a substantially uniform pressure in the pressure sensitive source of the waste gas stream.

4,325,922

TREATMENT OF HIGH-TEMPERATURE STACK GASES CONTAINING CONDENSABLE BORON COMPOUNDS

Mark A. Bryant, Columbus, Ohio, assignor to United McGill Corporation, Groveport, Ohio

Continuation of Ser. No. 86,133, Oct. 18, 1979, abandoned. This application Oct. 7, 1980, Ser. No. 194,789

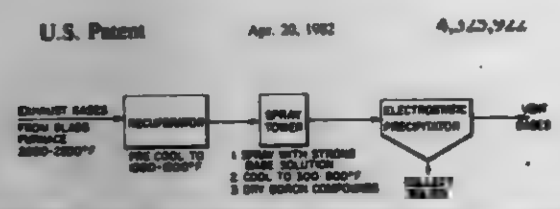
Int. Cl.³ B01D *53/34*

U.S. Cl. 423—210 8 Claims

1. A process for treating high-temperature stack gases contaminated with condensable boron oxides or boric acids to produce ecologically-acceptable effluent gases comprising the steps of:

(a) simultaneously cooling the stack gases to a temperature

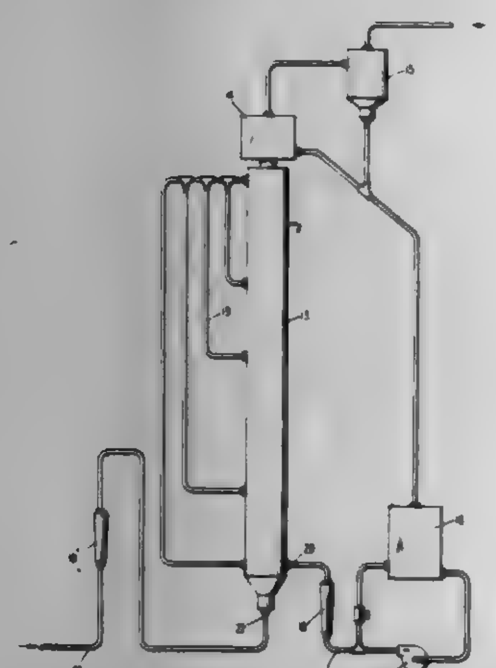
about 300°-800° F. and converting condensable boron oxides and boric acids to non-volatile boron compounds by spraying the stack gases with an aqueous solution of a strong base;



(b) collecting and removing by electrostatic precipitation the thus-formed non-volatile boron compounds from the cooled gases and

(c) venting the resulting ecologically-acceptable effluent gases to the atmosphere.

4,325,923
CONTACTING OF PLURAL PHASES
Roger Botton, Lyons, and Dominique Cosserat, Saint Priest, both of France, assignors to Rhone-Poulenc Industries, Paris, France
Continuation of Ser. No. 60,889, Jul. 26, 1979, abandoned. This application May 30, 1980, Ser. No. 155,119
Claims priority, application France, Jul. 26, 1978, 78 22094
Int. Cl.³ B01D *53/34*
U.S. Cl. 423—234 **10 Claims**



1. In a process for the contacting of a gaseous phase with a liquid phase by cocurrently introducing the plural, physically disparate phases into a contactor, the improvement comprising

(i) introducing the gaseous phase at a velocity which exceeds its phase transition inversion velocity and is thereby sufficient to create a dispersion of the liquid phase in the gas and establish at most the following zones, from bottom to top, in the column:

(a) an emulsion zone of constant liquid concentration,

(b) an intermediate zone of decreasing liquid concentration, and

(c) a zone of constant liquid concentration wherein the liquid concentration is less than that in the emulsion zone,

but wherein said velocity is less than its multiple critical point velocity; and,

(ii) introducing the liquid phase at a velocity sufficient to establish a mass liquid concentration in the emulsion zone which is between its corresponding phase transition inversion point and multiple critical point values.

4,325,924
UREA REDUCTION OF NO_x IN FUEL RICH COMBUSTION EFFLUENTS
John K. Arand, Rancho Palos Verdes; Lawrence J. Muzio, Laguna Niguel, and Donald P. Teixeira, Los Altos, all of Calif., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.
Filed Oct. 25, 1977, Ser. No. 844,556
Int. Cl.³ B01D *53/00*
U.S. Cl. 423—235 **8 Claims**

1. A process for selectively reducing nitrogen oxides in a combustion effluent, comprising:

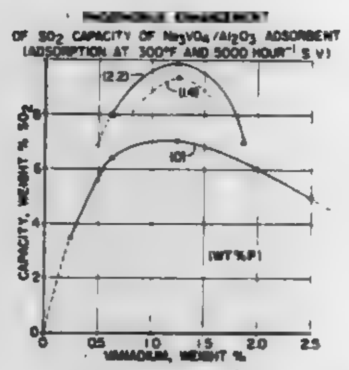
contacting with urea a nitrogen oxide containing effluent stream having an equivalence ratio of fuel over oxygen, greater than one wherein said urea is present in an amount of from about 0.5 to 10 moles per mole of nitrogen oxide at a temperature in the range of about 1900° to 3000° F.

4,325,925
METHOD FOR THE REMOVAL OF NITRIC OXIDE FROM GAS STREAMS
Frank C. Haas, Arvada, and Gerald B. Faudel, Denver, both of Colo., assignors to Tosco Corporation, Los Angeles, Calif.
Filed Jun. 6, 1980, Ser. No. 156,911
Int. Cl.³ B01D *53/34*
U.S. Cl. 423—239 **8 Claims**

1. A method for reducing the amount of nitric oxide in a gas containing same which comprises:

introducing a gas containing nitric oxide and water, the volume of water in said gas being at least equal to the volume of nitric oxide to be removed, into contact with elemental iron at a temperature below 200° C. for a sufficient length of time to react a significant portion of said nitric oxide with said water and elemental iron to thereby reduce the amount of nitric oxide in said gas.

4,325,926
PROCESS FOR REMOVING SULFUR DIOXIDE FROM A GAS
William A. Blanton, Jr., Woodacre, Calif., assignor to Chevron Research Company, San Francisco, Calif.
Continuation-in-part of Ser. No. 18,083, Mar. 6, 1979, abandoned, which is a continuation-in-part of Ser. No. 2,054, Jan. 8, 1979, abandoned, which is a continuation of Ser. No. 861,461, Dec. 16, 1977, abandoned. This application Apr. 7, 1980, Ser. No. 137,940
Int. Cl.³ B01J *8/00;* **C01B** *17/78;* **B01J** *27/14, 23/16*
U.S. Cl. 423—244 **5 Claims**



1. A method for removing sulfur dioxide from a waste gas which consists essentially of contacting said waste gas, at sulfur dioxide absorbing conditions, with a composition consisting essentially of alumina, sodium vanadate and phosphate or sodium phosphovanadate or a mixture thereof, said composition, based on said alumina, containing an amount of said vanadate, calculated as vanadium, in the range of from about 1 to 20%, and sufficient of said phosphate to provide a phosphorus-to-vanadium atomic ratio in the range of from about 0.2-1.8 to 1.

4,325,927
PURIFIED MONOAMMONIUM PHOSPHATE PROCESS
Charles W. Weston, Prairieville, and John W. Wen, Baton Rouge, both of La., assignors to Agrico Chemical Company, Tulsa, Okla.
Continuation-in-part of Ser. No. 103,459, Dec. 14, 1979, abandoned. This application Dec. 10, 1980, Ser. No. 214,991
Int. Cl.³ C01B *25/28*
U.S. Cl. 423—310 **25 Claims**

13. In a process for the production of purified monoammonium phosphate from wet process phosphoric acid wherein the phosphoric acid is ammoniated to form monoammonium phosphate, the steps comprising ammoniating wet process phosphoric acid having a concentration of between about 25% and 35% by weight P_2O_5 to a pH between about 1.5 and 2.5 to form a crystalline precipitate, said ammoniation taking place at a temperature between about 75° C. and 105° C. for a period of about 10 minutes or more and thereafter aging the ammoniated phosphoric acid for about 10 minutes or more after the ammoniation to a pH between about 1.5 and 2.5 is completed and prior to further ammoniation to form said monoammonium phosphate.

4,325,928
ROCK TREATMENT PROCESS
Edward J. Lowe, Stourbridge, England, assignor to Albright & Wilson Limited, Warley, England
Filed Feb. 22, 1980, Ser. No. 123,687
Claims priority, application United Kingdom, Mar. 1, 1979, 07334/79
Int. Cl.³ C01B *25/16*
U.S. Cl. 423—320 **26 Claims**

1. A process for preparing wet process phosphoric acid from phosphate rock containing acid insoluble heat labile iron sulfide and organic compounds wherein phosphate rock is heated to give a heated rock and the heated rock is reacted with a mixture of sulfuric acid and phosphoric acid to form calcium sulfate and phosphoric acid, comprising

heating said phosphate rock at a temperature between 380° and 600° C. which is insufficient to convert all said acid insoluble iron sulfide into acid soluble iron sulfide to convert at least some of the organic compounds to carbon to produce a heat treated rock comprising carbon particles and acid insoluble iron sulfide;

reacting said heat treated rock containing carbon particles with said mixture of sulphuric acid and phosphoric acid to form (i) a solid fraction comprising calcium sulfate, carbon particles, and acid insoluble iron sulfide, and (ii) wet process phosphoric acid; and

separating said solid fraction to leave purified wet process phosphoric acid.

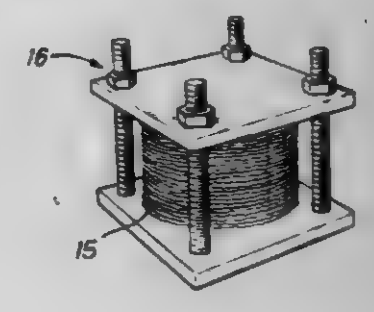
4,325,929
METHOD OF PREPARING CRYSTALLINE SILICA POLYMORPH
Dean A. Young, Yorba Linda, Calif., assignor to Union Oil Company of California, Brea, Calif.
Continuation-in-part of Ser. No. 12,869, Feb. 16, 1979, abandoned. This application Dec. 17, 1980, Ser. No. 217,237
Int. Cl.³ C01B *33/12*
U.S. Cl. 423—339 **7 Claims**

1. A process for hydrothermally preparing a crystalline silica polymorph which comprises:

(1) subjecting an aqueous reaction mixture to high shear mixing for 4 to 100 hours at a temperature of from 250° to 380° F., said reaction mixture containing from 2 to 6 weight percent of sodium oxide, from 8 to 16 weight percent of silicon oxide, from 0.01 to 0.25 weight percent of disodium 4-dodecylated oxydibenzene sulfonate, from 2 to 5 weight percent of anhydrous sulfuric acid, from 0.5 to 3 weight percent of sodium chloride and either from 6 to 13 weight percent of tetrapropyl ammonium bromide or a mixture which comprises from 2 to 4 weight percent of tripropylamine, from 1 to 3 weight percent of 1-bromopropane and from 3 to 6 weight percent of methyethyl ketone, and

(2) maintaining said aqueous reaction mixture in an unagitated state for 10 to 100 hours to crystallize said silica polymorph, and wherein said silica polymorph after calcination at 1,000° F. for 16 hours, has as the four strongest d-values of its X-ray diffraction pattern, d=10.9, d=4.06, d=3.83 and d=3.33.

4,325,930
PRODUCING A SILICON CARBIDE STRUCTURE AND MULTIDIRECTIONAL SILICON CARBIDE TEXTURE
Andre M. Vallet, Saint-Aubin, France, assignor to Societe Europeenne de Propulsion, Putraux, France
Filed Dec. 30, 1980, Ser. No. 221,448
Int. Cl.³ C01B *31/36;* **C04B** *35/56*
U.S. Cl. 423—345 **5 Claims**



1. A method for producing a silicon carbide structure, comprising the steps consisting in:

impregnating a carbon structure by immersion into a bath containing 10 to 30% by weight of fugitive resin, 20 to 40% by weight of silicon powder in suspension, the remainder being essentially constituted by a solvent of said resin,

drying the impregnated structure so as to obtain an easy to handle structure coated with resin and silicon powder bonded in the resin, and

heat-treating the coated structure in neutral atmosphere at a temperature of between 1450° C. and 1800° C., for a time period of between 2 to 60 minutes and substantially at atmospheric pressure, in order to let the silicon react with the carbon and to obtain the desired carbide structure.

4,325,931
METHOD OF PRODUCING AMMONIA
Derek C. Lewis, Chapmansgatan 5, 112 36 Stockholm, Sweden
PCT No. PCT/SE78/00096, § 371 Date Aug. 19, 1979, § 102(e) Date Jul. 23, 1979, PCT Pub. No. WO79/00407, PCT Pub. Date Jul. 12, 1979
PCT Filed Dec. 18, 1978, Ser. No. 154,416
Claims priority, application Sweden, Dec. 19, 1977, 7714433
Int. Cl.³ C01C *1/04*
U.S. Cl. 423—363 **16 Claims**

1. A method of producing ammonia by catalyzed reaction between hydrogen and nitrogen, which comprises contacting a mixture containing hydrogen and nitrogen gases with an intermetallic compound consisting essentially of at least one metal selected from the groups consisting of alkali metals and alkaline earth metals, with the exception of Be, and at least one metal selected from the group consisting of transition metals.

4,325,932

METHOD OF PRODUCING NITROUS OXIDE

Charles M. Bartish, Bethlehem, Pa., and Donald F. Tucker, Doraville, Ga., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Dec. 22, 1980, Ser. No. 219,166

Int. Cl.³ C01B *21/22*

U.S. Cl. 423—402 7 Claims

1. A method for producing nitrous oxide by reacting nitric oxide and carbon monoxide in the presence of a catalyst containing $PdCl_2$, $CuCl_2$ and A, wherein A is selected from the group consisting of LiCl, NaCl, KCl, $MgCl_2$ and $CaCl_2$, characterized in that said catalyst is dissolved in an anhydrous alcohol.

4,325,933

PROCESS FOR STABILIZATION OF SODIUM PERCARBONATE

Tadao Matsumoto, Chiba, and Masaaki Koizawa, Isteishi, both of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 31,430, Apr. 19, 1979. This application Jun. 11, 1980, Ser. No. 158,434

Claims priority, application Japan, Apr. 28, 1978, 53/51763

Int. Cl.³ C01B *31/00, 15/37;* C09K *3/00*

U.S. Cl. 423—415 P 8 Claims

4. A process for treating sodium percarbonate particles to stabilize same, which consists essentially of the steps of: spraying onto the surfaces of preformed particles of sodium percarbonate having a particle size of from 100 to 1,000 microns, a treating agent consisting essentially of an aqueous solution of one or more water-soluble alkaline earth metal salts selected from the group consisting of magnesium sulfate, magnesium chloride, calcium chloride, strontium chloride and barium chloride, under conditions effective to react from 0.07 to 0.3 mole of said alkaline earth metal salt per mole of said sodium percarbonate to form a thin surface layer of alkaline earth metal carbonate on the surfaces of said sodium percarbonate particles; and then separating and drying said surface-treated sodium percarbonate particles.

4,325,934

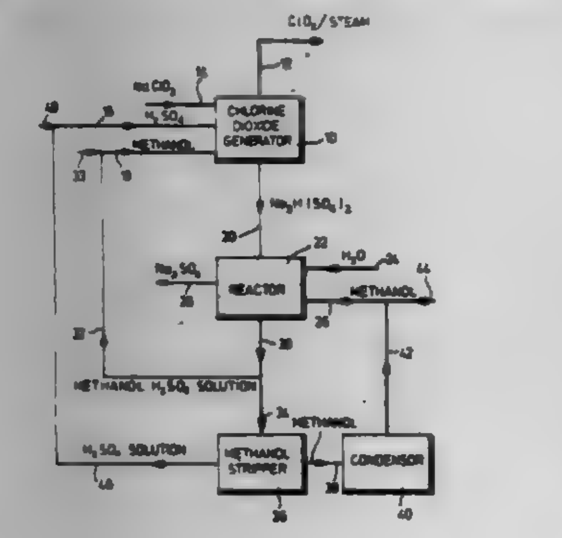
PRODUCTION OF CHLORINE DIOXIDE WITH CONVERSION OF BY-PRODUCT SOLID PHASE SODIUM ACID SULPHATE TO ITS NEUTRAL FORM

Richard Swindells, Caledon, and Maurice C. J. Fredette, Mississauga, both of Canada, assignors to Erco Industries Limited, Islington, Canada

Filed Sep. 22, 1980, Ser. No. 189,703

Int. Cl.³ C01B *11/02, 17/90, 5/00*

U.S. Cl. 423—478 19 Claims



1. A process for the conversion of solid phase sodium acid sulphate to solid phase neutral sodium sulphate, which comprises:

contacting said sodium acid sulphate while in said solid phase with water in a weight ratio of water to sodium acid sulphate (calculated as $Na_3H(SO_4)_2$) from about 0.6:1 to about 0.8:1 and with methanol in a weight ratio of methanol to sodium acid sulphate (calculated as $Na_3H(SO_4)_2$) from about 0.3:1 to about 0.8:1 to form solid phase neutral sodium sulphate from said solid phase sodium acid sulphate and an aqueous phase containing sulphuric acid, and

separating the aqueous phase from the solid phase neutral sodium sulphate.

7. A process for the production of chlorine dioxide, which comprises:

reducing chlorate ions in a reaction zone with chloride ions in an aqueous acid reaction medium containing sulphuric acid in an amount greater than about 6 normal to form chlorine dioxide and chlorine,

maintaining said reaction medium at its boiling point under a subatmospheric pressure applied to said reaction zone while precipitating a sodium acid sulphate from the reaction medium,

removing said precipitated sodium acid sulphate salt from the reaction medium,

contacting said removed sodium acid sulphate salt with water in a weight ratio of water to sodium acid sulphate (calculated as $Na_3H(SO_4)_2$) from about 0.6:1 to about 0.8:1 and with a water soluble solvent selected from methanol, ethanol and acetone in a weight ratio of water soluble solvent to sodium acid sulphate (calculated as Na_3H-$(SO_4)_2$) from about 0.3:1 to about 0.8:1 to cause conversion of said sodium acid sulphate to neutral sodium sulphate and formation of an aqueous phase containing sulphuric acid, and

removing solvent from said aqueous phase.

4,325,935

METHOD AND AN INSTALLATION FOR OBTAINING OR RECOVERING HYDROFLUORIC ACID

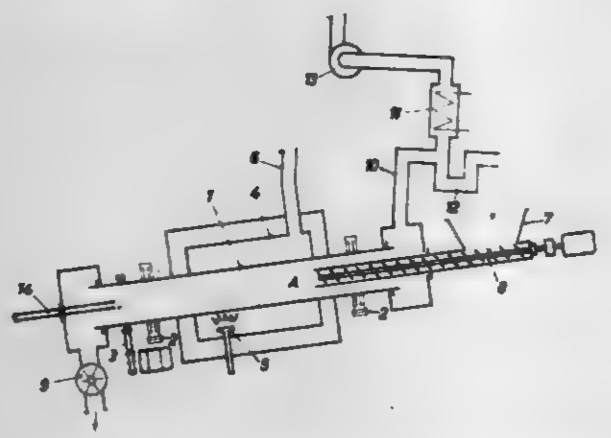
Albert Krepler, Vienna, Austria, assignor to Ruthner Industrieanlagen-Aktiengesellschaft, Vienna, Austria

Filed Jun. 13, 1980, Ser. No. 159,452

Claims priority, application Austria, Jun. 15, 1979, 4267/79

Int. Cl.³ C01B *7/19*

U.S. Cl. 423—483 6 Claims



1. A method of obtaining hydrofluoric acid from heavy metal fluorides, comprising contacting heavy metal fluorides with water vapour at 400° to 600° C. and at an overall pressure of about 1 bar while maintaining the water vapour partial pressure in a sufficiently linear relationship with the temperature in this range at a minimum of 0.9 bar at 400° C. and at a minimum of 0.5 bar at 600° C., separating the solid reaction material from the gaseous phase while still hot, and recovering aqueous hydrofluoric acid from the gaseous phase by cooling.

4,325,936

METHOD FOR REMOVING HYDROGEN SULFIDE FROM GAS STREAMS

Hugh W. Gowdy, Irvine, and Donald M. Fenton, Anaheim, both of Calif., assignors to Union Oil Company of California, Brea, Calif.

Continuation-in-part of Ser. No. 50,193, Jun. 20, 1979, abandoned. This application Feb. 12, 1981, Ser. No. 233,888

Int. Cl.³ C01B *17/05*

U.S. Cl. 423—573 R 30 Claims

1. A method for removing hydrogen sulfide from a hydrogen sulfide-containing gas stream and converting said hydrogen sulfide to elemental sulfur, which comprises:

(a) contacting said gas stream with a regenerable quinone-containing washing solution so as to absorb said hydrogen sulfide into said washing solution, the washing solution introduced into contact with said gas stream comprising an aqueous solution having a pH between about 5 and about 10 and containing (1) solubilized vanadium, (2) one or more water-soluble quinones, (3) thiocyanate ions and (4) a water-soluble carboxylate complexing agent, said washing solution having a selected molar ratio of said vanadium to said quinones above about 15, said molar ratio being selected to substantially reduce the formation of contaminant sulfate salts;

(b) allowing the absorbed hydrogen sulfide to react with constituents of said washing solution so as to convert said absorbed hydrogen sulfide substantially exclusively to elemental sulfur;

(c) oxidatively regenerating the washing solution from step (b) so as to form a regenerated washing solution; and

(d) separating said elemental sulfur from said washing solution.

4,325,937

MICROBIAL INSECTICIDE

Kemet D. Spence, Potlatch, Id., and Robert E. Andrews, Pullman, Wash., assignors to Battelle Development Corporation, Columbus, Ohio

Continuation of Ser. No. 134,325, Mar. 26, 1980, which is a division of Ser. No. 33,895, Apr. 27, 1979, Pat. No. 4,223,007, which is a continuation-in-part of Ser. No. 835,817, Sep. 22, 1977, abandoned. This application Mar. 5, 1981, Ser. No. 240,846

Int. Cl.³ A61K *39/02, 39/12;* C12K *1/08;* A01N *15/00*

U.S. Cl. 424—16 12 Claims

1. A method of embedding microorganisms and their biologically active chemical products in microbeads, comprising:

(a) mixing a buffered aqueous solution containing microorganisms and their biologically active chemical products with an aqueous solution containing a nucleic acid; and

(b) mixing the said mixture with an aqueous solution containing a proteinaceous material, thereby spontaneously forming microbeads having the microorganisms and chemical products embedded therein.

4,325,938

PESTICIDE AND PROCESS FOR ITS PRODUCTION

Wolfgang Kapp, Offenbach am Main, Fed. Rep. of Germany, assignor to Deutsche Gesellschaft für Schädlingsbekämpfung mbH, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 968,089, Dec. 11, 1978, abandoned, which is a continuation of Ser. No. 627,023, Oct. 30, 1975, abandoned. This application Apr. 1, 1980, Ser. No. 136,363

Claims priority, application Fed. Rep. of Germany, Nov. 15, 1974, 2454172

Int. Cl.³ A01N *25/00, 25/26, 25/10*

U.S. Cl. 424—18 18 Claims

1. A pesticide comprising molded body made of a water-insoluble thermoplastic polyvinylacetate in which finely divided magnesium phosphide is embedded with the particles of said metal phosphide being dispersed in said molded body, the molded body being coated on both sides with a nonwoven fabric comprising cellulose fibers which is permeable to water vapor and fibers of which substance extend into said body into contact with metal phosphide particles contained therein.

4,325,939

ZINC DERIVATIVES AND THEIR USE IN DENTAL COMPOSITIONS

Nutan B. Shah, New Rochelle, N.Y., assignor to Richardson-Vicks Inc., Wilton, Conn.

Filed Sep. 22, 1980, Ser. No. 189,152

Int. Cl.³ A61K *7/16, 7/24, 31/315;* C07F *3/06*

U.S. Cl. 424—55 8 Claims

1. A compound selected from the group consisting of an ammonium or an alkali metal zinc citrate.

4,325,940

ANTI-MICROBIAL, COSMETIC AND WATER-TREATING IONENE POLYMERIC COMPOUNDS

Harold A. Green, Havertown, Pa.; John J. Merianos, Middletown, and Alfonso N. Petrocci, Glen Rock, both of N.J., assignors to Kewanee Industries, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 29,778, Apr. 13, 1979, which is a continuation-in-part of Ser. No. 902,894, May 4, 1978, Pat. No. 4,190,644, which is a continuation-in-part of Ser. No. 744,617, Nov. 24, 1976, Pat. No. 4,089,977. This application Feb. 8, 1980, Ser. No. 119,948

Int. Cl.³ C07D *413/14, 413/06, 401/06, 401/14*

U.S. Cl. 424—70 56 Claims

1. A polymeric product having the formula:

$$R^{IV}-\overset{\overset{\displaystyle R^{III}}{|}}{\underset{\underset{\displaystyle X^-}{\underset{\displaystyle R^{V}}{|}}}{N^{\pm}}}\left[-CH_2CHOHCH_2-\overset{\overset{\displaystyle R^{I}}{|}}{\underset{\underset{\displaystyle X^-}{\underset{\displaystyle R^{II}}{|}}}{N^{\pm}}}\right]_n-CH_2CHOHCH_2-\overset{\overset{\displaystyle R^{III}}{|}}{\underset{\underset{\displaystyle X^-}{\underset{\displaystyle R^{V}}{|}}}{N^{\pm}}}-R^{IV}$$

in which R^{I} and R^{II} are (I) the same or different monovalent, branched or unbranched, alkyl groups of from 1 to 18 carbon atoms, optionally substituted by from 1 to 2 hydroxyl groups; or (II) form a 5, 6 or 7 membered monoheterocyclic ring when taken together with N, or (III) form the N-morpholino group when taken together with N and an oxygen atom; wherein R^{III}, R^{IV} and R^{V} are (I) the same or different, branched or unbranched, alkyl groups of from 1 to 18 carbon atoms optionally substituted by 1 or 2 hydroxyl groups or (II) R^{III} is a branched or unbranched alkyl group of from 1 to 18 carbon atoms optionally substituted by 1 or 2 hydroxyl groups, and R^{IV} and R^{V} form a 5, 6 or 7 membered monoheterocyclic ring when taken together with N; or (III) R^{III} is a branched or unbranched alkyl group of from 1 to 18 carbon atoms optionally substituted by 1 or 2 hydroxyl groups and R^{IV} and R^{V} form the N-morpholino group when taken together with N and an oxygen atom; wherein X is a halogen of atomic weight above 30; and wherein n is an integer of from 2 to 20.

15. A method of inhibiting microorganisms which comprises applying the product of claim 1 in a carrier to said microorganisms in an amount sufficient to inhibit their growth.

4,325,941

SOLID FORMULATIONS CONTAINING PHEROMONES AND METHOD OF USING SAME

Anacleto Dal Moro; Franco Pinamonti, and Amedeo Capizzi, all of Milan, Italy, assignors to Montedison S.p.A., Milan, Italy

Continuation-in-part of Ser. No. 210,728, Nov. 26, 1980, abandoned. This application May 26, 1981, Ser. No. 267,395

Claims priority, application Italy, Nov. 29, 1979, 27702 A/79

Int. Cl.³ A01N *17/14*

U.S. Cl. 424—84 21 Claims

1. A solid formulation comprising a sex pheromone of in-

sects as an active substance, a carrier composed of a mixture of an inert material having absorbing properties and of an inert material having adsorbing properties as main vehicle, a wetting agent, a dispersant, a sticker, an ultraviolet stabilizer and an antioxidant, said formulation having the following composition to 100%:

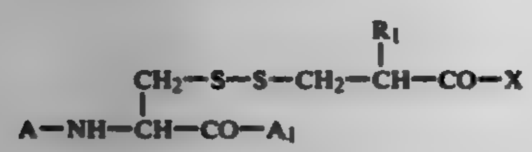
A	Active substance - sex pheromone	0.5–10% by weight
B	Inert carrier having absorbing properties consisting essentially of a material selected amongst fossil meal, kaolin and attapulgite	30–50% by weight
C	Inert carrier having adsorbing properties consisting essentially of activated carbon with a specific surface from 300 to 900 m^2/g	10–50% by weight
D	Mixture of polyoxyethylated alkylphenol (1–10% by weight), sodium polymethacrylate (50–94% by weight) and sodium lignosulphonate (5–40% by weight), the total being 100%	5–15% by weight
E	U.V. Stabilizer consisting of derivatives of benzophenone having stabilizing properties	0.5–10% by weight
F	Antioxidant selected amongst the esters of 3-(3,5-di-tert.butyl-4-hydroxy-phenyl)-propionic acid with stearic alcohol or with pentaerithritol (tetrakis ester)	0.5–10% by weight

4,325,942
UBIDECARENONE COMPOSITIONS HAVING ENHANCED ABSORPTION PROPERTIES
Kazuo Taki, Komae, and Hideo Takahira, Sakado, both of Japan, assignors to Eisai Co., Ltd., Tokyo, Japan
Filed Jul. 15, 1980, Ser. No. 169,194
Claims priority, application Japan, Jul. 25, 1979, 54-93636
Int. Cl.[3] A61K *37/48*
U.S. Cl. 424—94 **4 Claims**

1. An orally administrable composition for the treatment of hypertensive disease which comprises ubidecarenone in admixture with not less than 0.2 parts per 1 part by weight of ubidecarenone of a higher fatty acid having 12 to 18 carbon atoms, a monoglyceride of a higher fatty acid having 12 to 18 carbon atoms or a mixture thereof.

4,325,943
MIXED DISULFIDES
Sesha I. Natarajan, Neshanic Station; Miguel A. Ondetti; Shih-jung Lan, both of Princeton, and Keith K. Wong, Milltown, all of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.
Division of Ser. No. 146,729, May 2, 1980, Pat. No. 4,284,624. This application Dec. 22, 1980, Ser. No. 219,043
Int. Cl.[3] A61K *37/00;* **C07C** *103/52;* **A61K** *31/40;* **C07D** *209/04*
U.S. Cl. 424—177 **6 Claims**

1. A compound of the formula

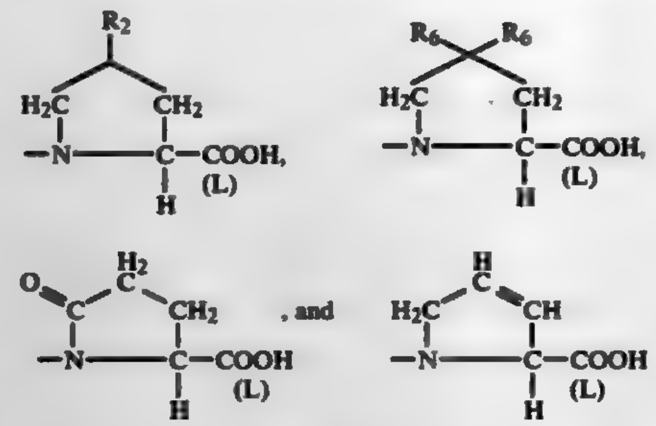


and salts thereof, wherein

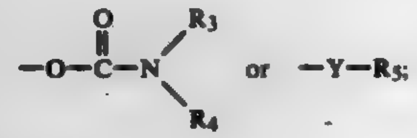
A and A_1 are each amino acid residues independently selected from the group consisting of glycyl, alanyl, valyl, leucyl, α-glutamyl, γ-glutamyl, α-aspartyl, β-aspartyl, phenylalanyl, tyrosyl, tryptophyl, lysyl, arginyl and prolyl provided that at least one of A and A_1 is tryptophyl, said A residue being joined through a carbonyl group and said A_1 residue being joined through an amino group;

R_1 is hydrogen, lower alkyl or halo substituted lower alkyl;

X is an α-imino acid residue selected from the group consisting of



R_2 is hydrogen, hydroxy, lower alkyl, halogen, keto,



Y is O or S;

R_5 is lower alkyl, phenyl, phenyl-lower alkylene, 1- or 2-naphthyl, biphenyl, substituted phenyl, substituted phenyl-lower alkylene, substituted 1- or 2-naphthyl, or substituted biphenyl wherein said substituent is on the phenyl ring and is one or two members selected from the group consisting of lower alkyl of 1 to 4 carbons, lower alkoxy of 1 to 4 carbons, lower alkylthio of 1 to 4 carbons, chloro, fluoro, trifluoromethyl, acetyloxy and hydroxy;

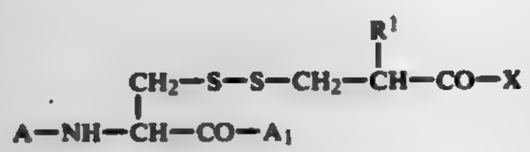
R_6 is halogen or —Y—R_7;

R_7 is lower alkyl, phenyl, phenyl-lower alkylene, substituted phenyl, or substituted phenyl-lower alkylene wherein said substituent is one or two members selected from the group consisting of lower alkyl of 1 to 4 carbons, lower alkoxy of 1 to 4 carbons, lower alkylthio of 1 to 4 carbons, chloro, fluoro, trifluoromethyl, acetyloxy, and hydroxy, or the R_7 groups join in an alkylene chain of 2 or 3 carbons to complete a 5- or 6-membered ring or said ring in which one of the carbon atoms has a lower alkyl or di(lower alkyl)substituent; and

R_3 and R_4 are independently selected from the group consisting of hydrogen and lower alkyl.

4,325,944
MIXED DISULFIDES
Sesha I. Natarajan, Neshanic Station; Miguel A. Ondetti; Shih-jung Lan, both of Princeton, and Keith K. Wong, Milltown, all of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.
Division of Ser. No. 146,729, May 2, 1980, Pat. No. 4,284,624. This application Dec. 22, 1980, Ser. No. 219,176
Int. Cl.[3] A61K *37/00;* **C07C** *103/52;* **A61K** *31/40;* **C07D** *209/04*
U.S. Cl. 424—177 **6 Claims**

1. A compound of the formula

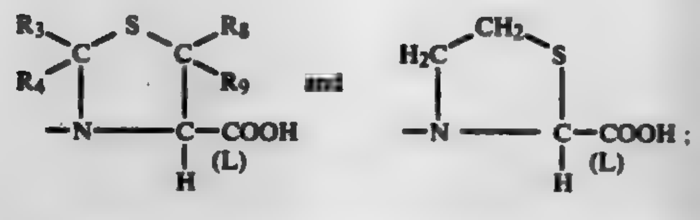


and salts thereof, wherein

A and A_1 are each amino acid residues independently selected from the group consisting of glycyl, alanyl, valyl, leucyl, α-glutamyl, γ-glutamyl, α-aspartyl, β-aspartyl, phenylalanyl, tyrosyl, tryptophyl, lysyl, arginyl and prolyl provided that at least one of A and A_1 is tryptophyl, said A residue being joined through a carbonyl group and said A_1 residue being joined through an amino group;

R_1 is hydrogen, lower alkyl or halo substituted lower alkyl;

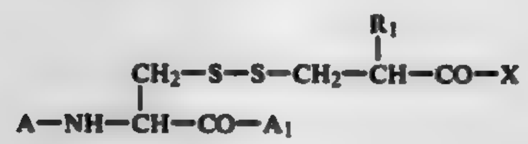
X is an α-imino acid residue selected from the group consisting of



R_3, R_4, R_8 and R_9 are independently selected from the group consisting of hydrogen and lower alkyl.

4,325,945
MIXED DISULFIDES
Sesha I. Natarajan, Neshanic Station; Miguel A. Ondetti; Shih-jung Lan, both of Princeton, and Keith K. Wong, Milltown, all of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.
Division of Ser. No. 146,729, May 2, 1980, Pat. No. 4,284,624. This application Dec. 22, 1980, Ser. No. 219,283
Int. Cl.[3] A61K *37/00;* **C07C** *103/52;* **A61K** *31/40;* **C07D** *209/04*
U.S. Cl. 424—177 **6 Claims**

1. A compound of the formula

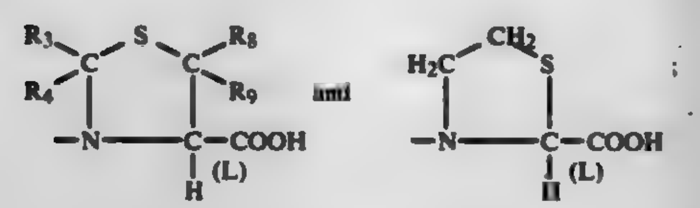


and salts thereof, wherein

A and A_1 are each amino acid residues independently selected from the group consisting of glycyl, alanyl, valyl, leucyl, α-glutamyl, γ-glutamyl, α-aspartyl, β-aspartyl, phenylalanyl, tyrosyl, lysyl, arginyl, and prolyl, said A residue being joined through a carbonyl group and said A_1 residue being joined through an amino group;

R_1 is hydrogen, lower alkyl or halo substituted lower alkyl;

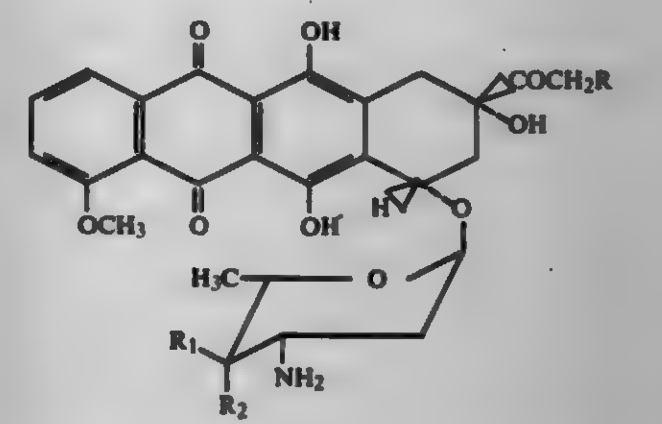
X is an α-imino acid residue selected from the group consisting of



R_3, R_4, R_8 and R_9 are independently selected from the group consisting of hydrogen and lower alkyl.

4,325,946
ANTHRACYCLINE GLYCOSIDES, THEIR PREPARATION, USE AND COMPOSITIONS THEREOF
Alberto Bargiotti, Milan; Giuseppe Cassinelli, Voghera; Sergio Penco, Milan; Federico Arcamone, Nerviano, and Aurelio di Marco, Milan, all of Italy, assignors to Farmitalia Carlo Erba S.p.A., Milan, Italy
Filed Aug. 28, 1980, Ser. No. 182,119
Claims priority, application United Kingdom, Sep. 1, 1979, 30392/79
Int. Cl.[3] A61K *31/71;* **C07H** *15/22, 15/24*
U.S. Cl. 424—180 **14 Claims**

1. An anthracycline glycoside of the formula:



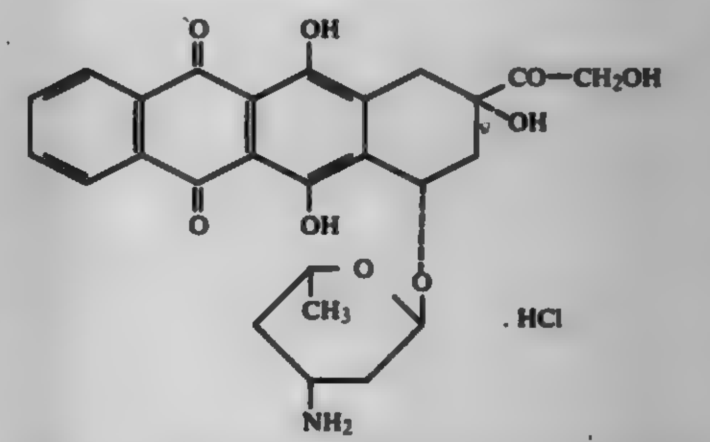
I

wherein R is hydrogen or hydroxy, one of R_1 and R_2 is methyl and the other of R_1 and R_2 is hydroxy, and pharmaceutically acceptable acid addition salts thereof.

14. A method of inhibiting the growth of transplanted P 388 leukemia comprising intraperitoneally administering to a host afflicted therewith, a therapeutically effective amount of an anthracycline glycoside as claimed in claim 1.

4,325,947
4-DEMETHOXY-4'-DEOXYDOXORUBICIN
Sergio Penco, Milan; Giuliano Franchi, Corsico; Federico Arcamone, Nerviano, and Annamaria Casazza, Milan, all of Italy, assignors to Farmitalia Carlo Erba S.p.A., Milan, Italy
Filed May 12, 1981, Ser. No. 263,002
Int. Cl.[3] A61K *31/70;* **C07H** *15/24*
U.S. Cl. 424—180 **4 Claims**

1. A compound of general formula I:



(I)

which is 4-demethoxy-4'-deoxydoxorubicin hydrochloride.

2. A method of inhibiting the growth of a tumor selected from the group consisting of L_{1210} leukemia, transplanted Gross leukemia and lymphocitic P_{388} leukemia which comprises administering to a host afflicted with said tumors an amount of a compound according to claim 1 sufficient to inhibit the growth of said tumors.

4,325,948
COMBATING PESTS WITH 2-CYCLOALKYL-PYRIMIDIN-5-YL-(THIONO)(THIOL)-PHOSPHORIC (PHOSPHONIC) ACID ESTERS AND ESTER-AMIDES

Fritz Maurer, Wuppertal; Bernhard Homeyer, Leverkusen; Ingeborg Hammann, Cologne, and Wolfgang Behrenz, Overath, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

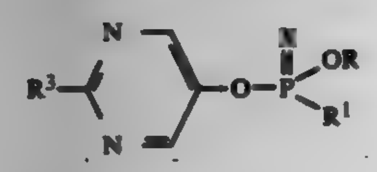
Filed Jul. 27, 1979, Ser. No. 61,336

Claims priority, application Fed. Rep. of Germany, Aug. 12, 1978, 2835492

Int. Cl.[3] A01N *57/16, 57/24, 57/32;* C07F *9/65*

U.S. Cl. 424—200 10 Claims

1. A 2-cycloalkyl-pyrimidin-5-yl-(thiono)(thiol)-phosphoric (phosphonic) aced ester or ester-amide of the formula



in which

R is alkyl with 1 to 5 carbon atoms,

R^1 is alkyl, alkoxy, alkylthio or alkylamino each with 1 to 5 carbon atoms per alkyl radical, or phenyl,

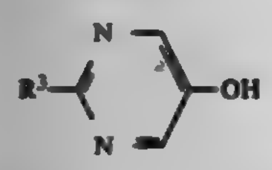
R^3 is cycloalkyl with 3 to 6 carbon atoms, and

X is oxygen or sulphur.

7. An arthropodicidal or nematicidal composition containing as active ingredient an arthropodicidally or nematicidally effective amount of a compound according to claim 1 in admixture with a diluent.

8. A method of combating arthropods or nematodes which comprises applying to the arthropods or nematodes, or to a habitat thereof, an arthropodicidally or nematidially effective amount of a compound according to claim 1.

10. A compound of the formula



wherein R^3 is cycloalkyl of 3 to 6 carbon atoms.

4,325,949
COMBINATIONS OF AGENTS WHICH GIVE ENHANCED ANTI-INFLAMMATORY ACTIVITY

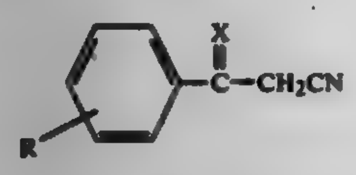
Adolph E. Sloboda, New City, N.Y., assignor to American Cyanamid Company, Stamford, Conn.

Continuation of Ser. No. 121,851, Feb. 15, 1980, abandoned. This application Dec. 23, 1980, Ser. No. 219,750

Int. Cl.[3] A61K *31/60, 31/275, 31/615*

U.S. Cl. 424—230 5 Claims

1. An anti-inflammatory composition of matter comprising, in additive combination, a mixture of 2-(acetyloxy)benzoic acid and an agent of the formula:



wherein X is oxo or imino and R is hydrogen or fluoro with the proviso that R may not be ortho-fluoro when X is imino, in the proportion of the 2-(acetyloxy)benzoic acid to the agent of from 100:1 to 1:100 parts by weight.

4,325,950
PLATINUM CAFFEINE CHLORIDE ANION COMPLEX AND METHOD

Roger E. Cramer, Honolulu, Hi., assignor to The Research Corporation of the University of Hawaii, Honolulu, Hi.

Filed Feb. 19, 1980, Ser. No. 122,144

Int. Cl.[3] A01N *9/00;* A61K *31/555;* A61L *13/00*

U.S. Cl. 424—245 9 Claims

1. The complex comprising the potassium salt of Pt[caffeine]Cl_3.

4,325,951
1-OXADETHIACEPHALOSPORIN DERIVATIVES AND ANTIBACTERIAL USE THEREOF

Shigeharu Inouye, Yokohama; Takashi Tsuruoka, Kawasaki, and Katsuyoshi Iwamatsu, Yokohama, all of Japan, assignors to Meiji Seika Kaisha, Ltd., Tokyo, Japan

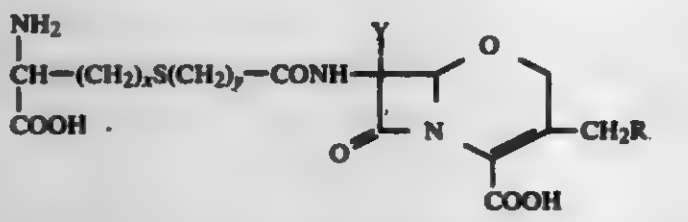
Filed Oct. 24, 1980, Ser. No. 200,410

Claims priority, application Japan, Nov. 2, 1979, 54-141297

Int. Cl.[3] A61K *31/535;* C07D *498/04*

U.S. Cl. 424—248.52 10 Claims

1. A 1-oxadethiacephalosporin of the formula (I):



(I)

wherein R is (1-methyl-1H-tetrazole-5-yl)thio group; (1-carboxylmethyl-1H-tetrazole-5-yl)thio group; (2-carboxymethyl-1H-tetrazole-5-yl)thio group; (4-methyl-5-oxo-6-hydroxy-4,5-dihydro-1,2,4-triazine-3-yl)thio group; (8-amino-tetrazolo-(1,5-b)-pyridazine-6-yl)thio group; pyridinium group; 4-carbamoylpyridinium group, or (1-dimethylaminoethyl-1H-tetrazole-5-yl)thio group, Y is a hydrogen atom or a methoxy group, and x and y each denote an integer of 1, 2 or 3, and pharmaceutically acceptable salt and ester thereof.

9. A method fo inhibiting bacterial growth, which comprises administering an antibacterially effective and safe amount of the 1-oxadethiacephalosporin of claim 1 or its pharmaceutically acceptable salt or ester to an animal, including men, susceptible to the bacterial growth.

4,325,952
METHOD OF TREATING ABSTINENCE SYNDROME WITH CYCLOAKLYLTRIAZOLES

Bruno Silvestrini, and Leandro Baiocchi, both of Rome, Italy, assignors to Aziende Chimiche Riunite Angelini Francesco, Italy

Division of Ser. No. 25,273, Mar. 29, 1979. This application Aug. 29, 1980, Ser. No. 182,424

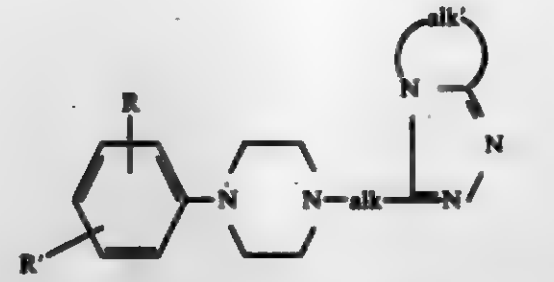
Claims priority, application Italy, Apr. 18, 1978, 22421 A/78

Int. Cl.[3] A61K *31/495*

U.S. Cl. 424—250 9 Claims

1. A method of treating symptons of nicotine abstinence syndrome comprising, administering to a mammal which has nicotine abstinence syndrome an amount of a compound of formula I or is pharmaceutically acceptable salt which is sufficient to remove said symptoms from the mammal, said formula I being:

I



wherein "alk" is selected from the group consisting of linear and branched divalent aliphatic chains having from 1 to 10 carbon atoms; "alk" is selected from the group consisting of linear and branched divalent aliphatic chains having from 1 to 5 carbon atoms; and each R and R′ is selected from the group consisting of hydrogen, alkyl having from 1 to 5 carbon atoms, halogen, alkyloxy having from 1 to 3 carbon atoms, hydroxy, trifluoromethyl and methylthio.

4,325,953
4-ARYL-4-ARYLOXYPIPERIDINES

Robin G. Shepherd, Burnham, England, assignor to John Wyeth and Brother Limited, Maidenhead, England

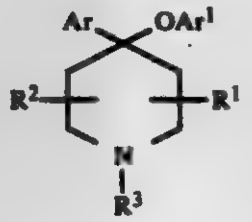
Filed Sep. 3, 1980, Ser. No. 183,789

Claims priority, application United Kingdom, Sep. 14, 1979, 32046/79

Int. Cl.[3] A61K *31/445;* C07D *211/44*

U.S. Cl. 424—250 20 Claims

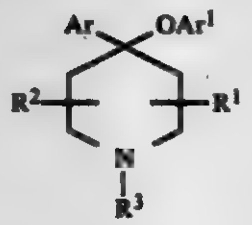
1. A compound selected from the group consisting of a 4-aryl-4-aryloxypiperidine of the formula (I)



(I)

and a pharmaceutically acceptable acid addition salt thereof, wherein R^1 and R^2 are hydrogen or lower alkyl, R^3 is hydrogen, lower alkyl or benzyl, Ar is phenyl optionally substituted by one or more halogen, trifluoromethyl, lower alkyl, lower alkoxy, nitro or amino groups and Ar^1 is a phenyl radical optionally substituted by one or more cyano, methylsulphinyl, methylsulphonyl, lower alkoxy, trifluoromethyl, lower alkyl, lower alkenyl, halogen, nitro, amino or acylamino groups or is a 2- or 4-pyridyl, 2-pyrazinyl or 2-quinolinyl radical with the proviso that when R^3 is hydrogen or benzyl and Ar is phenyl, Ar^1 is other than phenyl or phenyl substituted by one or more lower alkoxy, trifluoromethyl, lower alkyl, halogen or nitro groups.

3. A compound selected from the group consisting of a 4-aryl-4-aryloxypiperidine of the formula (I)



(I)

and a pharmaceutically acceptable acid addition salt thereof, wherein R^1 and R^2 are hydrogen or lower alkyl, R^3 is hydrogen, lower alkyl or benzyl, Ar is phenyl optionally substituted by one or more halogen, trifluoromethyl, lower alkyl, lower alkoxy, nitro or amino groups and Ar^1 is a phenyl radical optionally substituted by one or more cyano, methylsulphinyl, methylsulphonyl, lower alkoxy, trifluoromethyl, lower alkyl, lower alkenyl, halogen, nitro, amino or acylamino groups or is a 2- or 4-pyridyl, 2-pyrazinyl or 2-quinolinyl, radical.

4,325,954
PYRROLOPYRIMIDINONES AND PYRROLOIMIDAZOLONES AND THEIR COMPOSITIONS AND THERAPEUTIC METHODS

Jacques G. Maillard, Versailles; Tri Vovan, Igny, and Jacky M. Legeai, Palaiseau, all of France, assignors to Laboratoires Jacques Logeais, Issy les Moulineaux, France

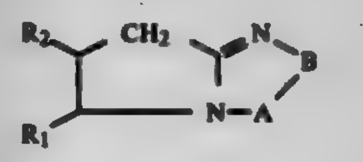
Filed Feb. 1, 1980, Ser. No. 117,482

Claims priority, application France, Feb. 20, 1979, 79 04266

Int. Cl.[3] A61K *31/505;* C07D *471/04, 487/04*

U.S. Cl. 424—251 4 Claims

1. A compound selected from the group consisting of compounds of the formula:



(I)

in which:

R_1 is hydrogen and R_2 is selected from phenyl and benzofuryl or R_2 is hydrogen and R_1 is selected from phenyl and benzyl; and

group —A—B— is —CO—CHR—CH_2— in which R is selected from hydrogen, C_{1-6} alkyl, phenyl, benzyl, methylthioethyl and —$(CH_2)_m$—COOR′ in which m is selected from 0, 1 and 2 and R′ is C_{1-6} alkyl,

and a pharmacologically acceptable acid addition salt thereof.

4,325,955
SUBSTITUTED 3-BENZHYDRYLTHIAZOLO(3,2-a)PYRIMIDINES

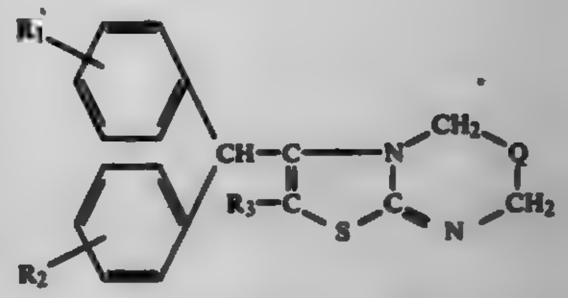
William B. Wright, Jr., Woodcliff Lake; Andrew S. Tomcufcik, Old Tappan, both of N.J., and Joseph W. Marsico, Jr., Pearl River, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Mar. 23, 1981, Ser. No. 246,346

Int. Cl.[3] A61K *31/415, 31/425;* C07D *513/04*

U.S. Cl. 424—251 11 Claims

1. A compound selected from the group consisting of those of the formula:



wherein R_1 and R_2 may be the same or different and are hydrogen, fluoro, chloro, bromo or alkyl having up to 3 carbon atoms; R_3 is hydrogen or alkyl having up to 3 carbon atoms; and Q is a divalent moiety of the formula:

$$-CH_2- \text{ or } -\overset{CH_3}{\underset{CH_3}{\overset{|}{\underset{|}{C}}}}-$$

and the pharmacologically acceptable acid-addition salts thereof.

10. The method of promoting diuresis in a mammal which

comprises administering to said mammal an effective diuretic amount of a compound of claim 1.

4,325,956

METHOD AND PHARMACEUTICAL PREPARATION FOR TREATING CHRONIC OBSTRUCTIVE AIRWAY DISEASE AND CARDIAC DISEASE, AND INTERMEDIATES FOR THE PREPARATION OF THERAPEUTICALLY ACTIVE XANTHINE DERIVATIVES

Per G. Kjellin, Lund, and Carl G. A. Persson, Löberöd, both of Sweden, assignors to Aktiebolaget Draco, Lund, Sweden

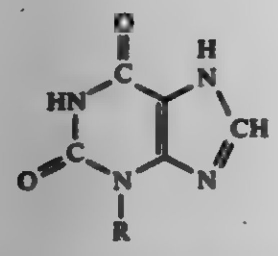
Filed Oct. 5, 1979, Ser. No. 82,402

Claims priority, application Sweden, Oct. 20, 1978, 7810946

Int. Cl.[3] A61K *31/52*

U.S. Cl. 424—253 — 5 Claims

1. A method for the treatment of chronic obstructive airway disease, characterized in administering to a host suffering therefrom of a therapeutically active dose of a compound of the formula



I

or a therapeutically acceptable salt thereof, wherein R is $-CH_2CH_2CH_3$, $-CH_2CH_2CH_2CH_3$ or $-CH_2CH(CH_3)_2$.

4,325,957

2-ACYLAMINOMETHYL-1,4-BENZODIAZEPINE DERIVATIVES AND THEIR SALTS AND PHARMACEUTICAL COMPOSITIONS THEREOF

Horst Zeugner, Hanover, Fed. Rep. of Germany; Dietmar Roemer, Allschwil, Switzerland; Hans Liepmann, Hanover, and Wolfgang Milkowski, Burgdorf, both of Fed. Rep. of Germany, assignors to Kali-Chemie Pharma GmbH., Hanover, Fed. Rep. of Germany

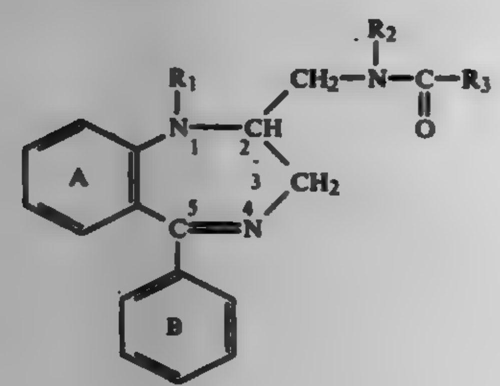
Filed Dec. 23, 1980, Ser. No. 219,487

Claims priority, application Fed. Rep. of Germany, Dec. 24, 1979, 2952279

Int. Cl.[3] C07D *401/12, 403/12, 405/12, 409/12*

U.S. Cl. 424—263 — 21 Claims

1. A compound selected from the group consisting of 2-acylaminomethyl-1H-2,3-dihydro-1,4-benzodiazepine derivatives of the Formula I



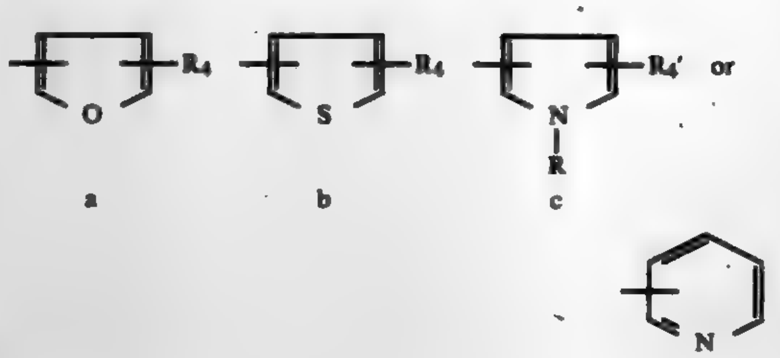
(I)

wherein

R_1 represents hydrogen, lower alkyl, lower alkenyl or cyclopropylmethyl,

R_2 represents hydrogen, lower alkyl or lower alkenyl;

R_3 represents a group of the formula a, b, c, or d



a b c d

wherein R is hydrogen or C_1–C_3-alkyl, R_4 is hydrogen, lower alkyl, lower alkoxy, nitro or halogen, and R_4' is hydrogen or C_1–C_4-alkyl, and the phenylene group A and the phenyl group B independently from each other each may be unsubstituted or be substituted by 1 to 3 substituents selected from the group consisting of halogen, lower alkylthio, lower alkoxy, lower alkyl, hydroxy, nitro and trifluoromethyl, or be substituted at two adjacent carbon atoms by methylenedioxy or ethylenedioxy, and optical isomers and pharmaceutically-acceptable acid addition salts thereof.

20. A method of treating pain disorders in larger mammals which comprises administering to a larger mammal an effective amount of a compound as defined in claim 1.

4,325,958

BIS-AMIDINE KETONES, COMPOSITIONS CONTAINING SAME AND METHOD OF USE

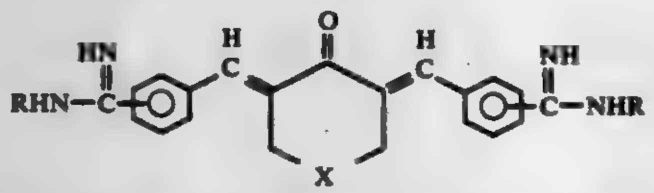
George C. Rovnyak, Hopewell, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Jun. 5, 1981, Ser. No. 270,774

Int. Cl.[3] A61K *31/35, 31/38;* C07D *309/38, 335/02*

U.S. Cl. 424—267 — 10 Claims

1. A compound of the structure



wherein X is S, SO_2, O or NR^1, R is H, lower alkyl or aryl, and R^1 is H, lower alkyl, lower alkanoyl, aroyl or aryl-lower alkyl, or acid-addition salts thereof.

4,325,959

HYPOGLYCEMIC 4-(((1,3,4 THIADIAZOLYL) THIO)METHYLBENZOIC ACIDS, ESTERS AND AMIDES

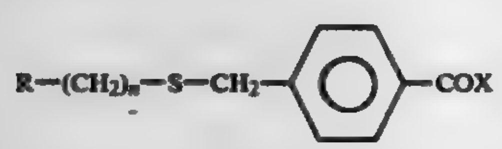
Donald P. Matthews, Indianapolis, Ind., assignor to The Dow Chemical Company, Midland, Mich.

Filed Aug. 9, 1979, Ser. No. 65,390

Int. Cl.[3] A61K *31/425;* C07D *285/12*

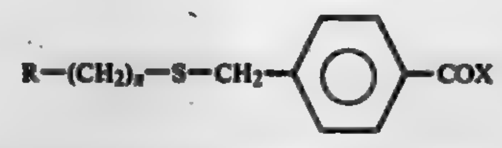
U.S. Cl. 424—270 — 23 Claims

1. A compound of the formula:



wherein R represents a substituted or unsubstituted 1,3,4-thiadiazolyl group the optional substitution on the 1,3,4-thiadiazolyl group being selected from lower alkyl, halo, or hydroxy; X represents amino or an $-OR^1$ moiety wherein R^1 represents hydrogen or lower alkyl; and n represents the integer 0, 1, 2 or 3 or a pharmaceutically-acceptable salt of the acid.

8. A method for treating hyperglycemia in a mammal which comprises administering internally to a mammal an effective hypoglycemic amount of a compound of the formula:



wherein R represents a substituted or unsubstituted 1,3,4-thiadiazolyl group the optional substitution on the 1,3,4-thiadiazolyl group being selected from a lower alkyl, halo, or hydroxy; X represents amino or an $-OR^1$ moiety wherein R^1 represents hydrogen or lower alkyl; and n represents the integer 0,,1, 2 or 3 or a pharmaceutically-acceptable salt of the acid.

4,325,960

6-AMIDINOPENICILLANIC ACID DERIVATIVES INCLUDING THE RADICAL OF A β-LACTAMASE INHIBITOR

Wagn O. Godtfredsen, Vaerloese, and Welf von Daehne, Rungsted Kyst, both of Denmark, assignors to Leo Pharmaceutical Products Ltd. A/S (Lovens Kemiske Fabrik Produktionsaktieselskab), Ballerup, Denmark

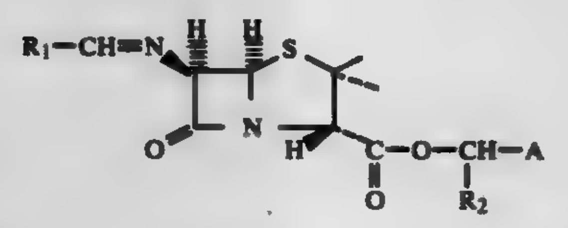
Filed Jan. 29, 1980, Ser. No. 116,651

Claims priority, application United Kingdom, Feb. 13, 1979, 05021/79; Jun. 19, 1979, 21342/79

Int. Cl.[3] C07D *499/80*

U.S. Cl. 424—270 — 25 Claims

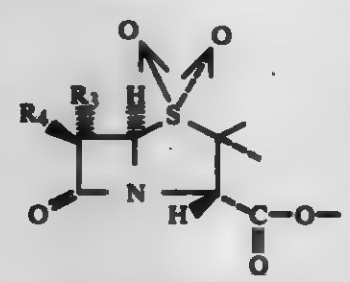
1. A compound of formula I



I

in which R_1 stands for a five- to ten-membered azacycloalkyl or azabicycloalkyl residue attached via the nitrogen atom and optionally being substituted by one or two, the same or different, lower alkyl groups; R_2 represents a hydrogen atom or a lower alkyl, phenyl or phenylalkyl radical; A represents a radical selected from the group consisting of

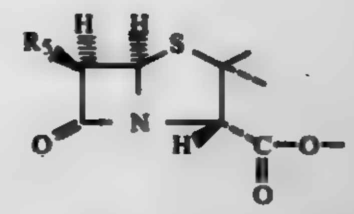
(a) a radical of the formula II:



II

in which R_3 stands for a hydrogen or a halogen atom; R_4 is a hydrogen atom or an amino or acylamino group, and where at least one of R_3 and R_4 is hydrogen;

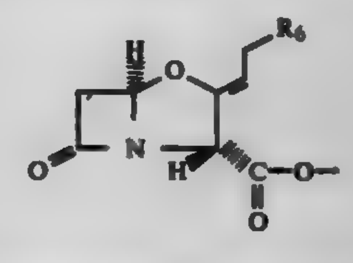
(b) a radical of the formula III:



III

in which R_5 stands for a halogen atom; and

(c) a radical of the formula IV:



IV

in which R_6 stands for a hydroxyl group or formula IV represents one of the radicals of known clavulanic acid derivatives with β-lactamase inhibitory activity;

and salts thereof with pharmaceutically acceptable, non-toxic acids.

4,325,961

FLUORINATED AMINO ACIDS

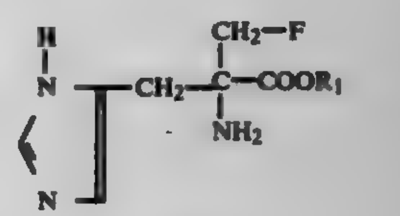
Janos Kollonitsch, Westfield, and Arthur A. Patchett, Cranford, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Jun. 1, 1977, Ser. No. 802,391

Int. Cl.[3] A61K *31/415;* C07D *233/64*

U.S. Cl. 424—273 R — 7 Claims

1. A compound of the formula



wherein

R_1 is H or C_1–C_{18} alkyl.

4. A pharmaceutical composition for treating gastric leasions containing an effective amount of a compound of claim 1 or an acid addition salt thereof and a diluent.

4,325,962

PHARMACEUTICAL COMPOSITIONS COMPRISING A PYRAZOLE DERIVATIVE AND METHOD OF USE

Georg Rainer, Konstanz, Fed. Rep. of Germany, assignor to Byk-Gulden Lomberg Chemische Fabrik GmbH, Fed. Rep. of Germany

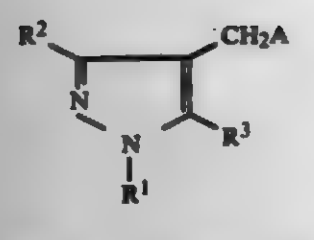
Division of Ser. No. 72,233, Sep. 14, 1970, Pat. No. 4,146,721. This application Dec. 15, 1978, Ser. No. 969,872

Claims priority, application Fed. Rep. of Germany, Sep. 12, 1969, 1946370

Int. Cl.[3] A61K *31/415*

U.S. Cl. 424—273 P — 41 Claims

26. An anti-inflammatory, analgesic or antipyretic drug composition comprising a mixture of at least one pharmaceutically acceptable carrier and in an amount effective to provide anti-inflammatory, analgesic or antipyretic action, at least one pyrazol-4-acetic acid derivative of the formula



wherein R^1 is phenyl, R^2 is phenyl, p-halogenophenyl, p-methylphenyl, R^3 is hydrogen or phenyl and A is —COOH or —$COOR^5$ wherein R^5 is alkyl of 1 to 4 carbon atoms, or a salt of the acid with a pharmocologically acceptable base.

4,325,963

THIENOPYRROLONE SUBSTITUTED BENEZENESULFONYLUREAS AND THEIR USE

Volker Hitzel, Hofheim am Taunus; Rudi Weyer, Kelkheim; Karl Geisen, Frankfurt am Main, and Günter Regitz, Bad Soden am Taunus, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

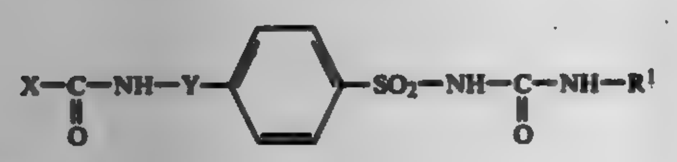
Filed Dec. 17, 1980, Ser. No. 217,526

Claims priority, application Fed. Rep. of Germany, Dec. 19, 1979, 2951060

Int. Cl.³ A61K *31/64;* C07D *495/04*

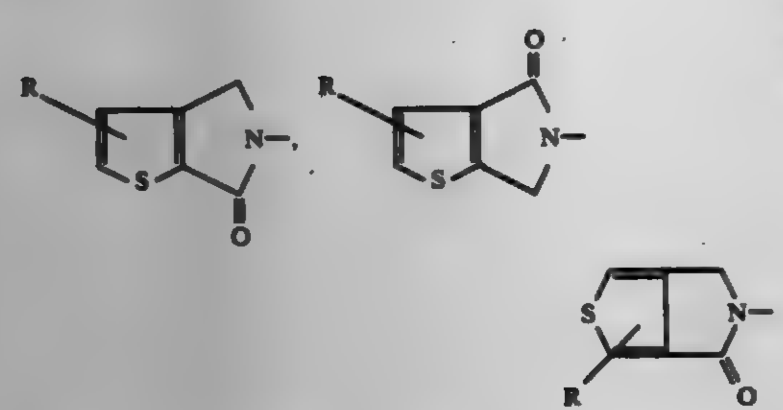
U.S. Cl. 424—274 9 Claims

1. Sulfonylureas of the formula



wherein

X is



with R being hydrogen or halogen,

Y is alkylene with 2–3 C-atoms,

R is alkyl with 3 to 8 C-atoms, cycloalkyl, alkylcycloalkyl, dialkylcycloalkyl, cycloalkylalkyl, cycloalkenyl, alkylcycloalkenyl, with 5–9 C-atoms each, methylcyclopentylmethyl, cyclohexenylmethyl, chlorocyclohexyl, methoxycyclohexyl, bicycloheptyl, bicycloheptenyl, bicycloheptylmethyl, bicycloheptenylmethyl, bicyclooctyl, nortricyclyl, adamantyl or benzyl and their physiologically tolerated salts.

9. Process for lowering the blood sugar level in the treatment of diabetes by administering an effective amount of a compound according to claim 1.

4,325,964

PHENYLAMIDINE DERIVATIVES

Louis Lafon, Paris, France, assignor to Laboratoire L. Lafon, Maisons Alfort, France

Continuation of Ser. No. 877,963, Feb. 15, 1978, abandoned. This application Dec. 27, 1979, Ser. No. 107,609

Claims priority, application United Kingdom, Feb. 15, 1977, 06298/77; Apr. 21, 1977, 16705/77

The portion of the term of this patent subsequent to Mar. 27, 1996, has been disclaimed.

Int. Cl.³ A61K *31/36, 31/155, 31/19;* C07C *83/10, 123/00*

U.S. Cl. 424—282 24 Claims

1. A chemical compound selected from the group consisting of:

I. The following acetamido oximes and the non-toxic acid addition salts thereof:
2-(4-fluoro-anilino)-acetamidoxime,
2-(2-bromo-anilino)-acetamidoxime,
2-(3,4-dichloro-anilino-acetamidoxime,
2-(4-chlorobenzylmercapto)-acetamidoxime,
2-(3-chloro-anilino)-acetamidoxime,
2-(4-methyl-anilino)-acetamidoxime,
2-(3-methyl-anilino)-acetamidoxime,
2-(2-fluoro-anilino)-acetamidoxime,
2-(4-methoxy-anilino)-acetamidoxime,
2-(2-methoxy-anilino)-acetamidoxime,
2-(2-chloro-anilino)-acetamidoxime; and

II. The following hydroxamic acids and the non-toxic metallic salts thereof:
2-(4-chlorobenzylmercapto)-acetohydroxamic acid,
2-(3,4-dichlorobenzylmercapto)-acetohydroxamic acid,
2-(4-chlorobenzylmercapto)-propionohydroxamic acid,
d-naphthylmethylenemercapto-acetohydroxamic acid,
2-(4-fluorobenzylmercapto)-acetohydroxamic acid,
2-(4-methoxybenzylmercapto)-acetohydroxamic acid,
2-(2,4-dichlorobenzylmercapto)-acetohydroxamic acid,
2-(2,6-dichlorobenzylmercapto)-acetohydroxamic acid,
2-(4-nitrobenzylmercapto)-acetohydroxamic acid,
2-(3,4-methylenedioxybenzylmercapto)-acetohydroxamic acid,
2(3,4-dimethoxybenzylmercapto)-acetohydroxamic acid.

24. A therapeutic composition comprising a physiologically acceptable excipient and a pharmaceutically effective amount of a compound selected from the group consisting of the compounds set forth in claim 1 and the non-toxic acid addition and metallic salts thereof, said composition being useful for sedative and anxiolytic purposes.

4,325,965

AGENT FOR PREVENTING OR TREATING PSORIASIS

Ryoichi Chiba, Tokyo, Japan, assignor to Eisai Co., Ltd., Tokyo, Japan

Filed Oct. 20, 1980, Ser. No. 198,560

Claims priority, application Japan, Oct. 22, 1979, 54/135136

Int. Cl.³ A61K *31/355*

U.S. Cl. 424—284 5 Claims

1. A method for treating psoriasis which comprises topically applying to a patient affected with psoriasis a composition including as the principal active ingredient, an effective amount of δ-tocopherol, dispersed or dissolved in a pharmaceutically acceptable topical carrier.

4,325,966

FUNGICIDAL COMPOUNDS, COMPOSITIONS AND PROCESSES

Nazim Punja, Crowthorne, England, assignor to Imperial Chemical Industries Limited, London, England

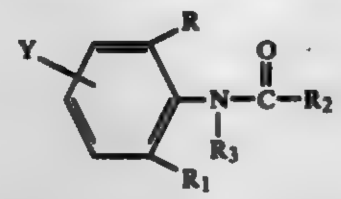
Filed Apr. 27, 1979, Ser. No. 34,134

Claims priority, application United Kingdom, May 15, 1978, 19566/78; Jun. 22, 1978, 27613/78; Dec. 18, 1978, 48901/78; Dec. 18, 1978, 48975/78; Mar. 19, 1979, 09485/79

Int. Cl.³ A01N *37/22, 43/08;* C07C *103/365;* C07D *307/68*

U.S. Cl. 424—285 9 Claims

1. A fungicidal acylanilide derivative having the formula:



wherein R and R_1 are halogen atoms or lower alkyl groups; R_2 is a furyl or alkoxyalkyl group; and R_3 is an alkenyl or propargyl group optionally substituted with halogen atoms or alkyl, haloalkyl, alkoxy, alkoxycarbonyl or aryl groups; and Y is one or more hydrogen or halogen atoms, or alkyl groups.

8. A process for combating pests, especially plant fungi and plant bactéria, which comprises applying to plants or seeds, or to their loci, an acylanilide derivative as defined in claim 1.

4,325,967

CYCLOPENTANE DERIVATIVES

Michael P. L. Caton, Upminster; Edward C. J. Coffee, London, both of England, and Gordon L. Watkins, Santa Monica, Calif., assignors to May & Baker Limited, Essex, England

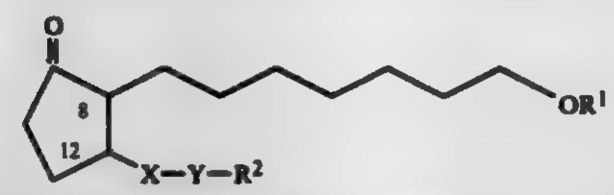
Division of Ser. No. 835,723, Sep. 22, 1977, Pat. No. 4,183,870, which is a division of Ser. No. 543,552, Jan. 23, 1975, Pat. No. 4,088,695. This application May 7, 1979, Ser. No. 36,644

Claims priority, application United Kingdom, Jan. 26, 1974, 3730/74

Int. Cl.³ A61K *31/12, 31/22, 31/235;* C07C *49/723, 49/743, 49/753, 69/003, 69/007, 69/16, 69/78*

U.S. Cl. 424—299 16 Claims

1. A cyclopentane derivative of the formula:

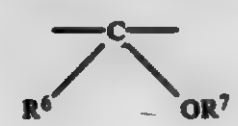


I

wherein R^1 represents hydrogen, alkanoyl of 1 through 4 carbon atoms or benzoyl, R^2 represents a group of the formula:

$$—CR^3R^4R^5 \qquad \text{II}$$

(wherein R^3 and R^4 each represent hydrogen or alkyl of 1 through 4 carbon atoms, and R^5 represents hydrogen or alkyl of 1 through 10 carbon atoms, alkoxy of 1 through 10 carbon atoms, cycloalkyl of 5 through 7 carbon atoms or adamantyl, or R^5 represents alkyl of 1 through 6 carbon atoms substituted by alkoxy of 1 through 6 carbon atoms, by cycloalkyl of 5 through 7 carbon atoms or by adamantyl, or the group —$CR^3R^4R^5$ together forms cycloalkyl of 5 through 7 carbon atoms or adamantyl), X represents trans-vinylene or ethylene, and Y represents carbonyl or a group of the formula:



III

wherein R^6 represents hydrogen or alkyl of 1 through 4 carbon atoms, and R^7 represents hydrogen, alkanoyl of 1 through 4 carbon atoms or benzoyl.

4,325,968

BENZENETHIOCARBAMATE DERIVATIVES

Taizo Nakagawa, Ageo; Yutaka Watanabe, Saitama; Kaoru Ohmori, Okegawa; Kengo Koike, Ageo, and Iwao Tejima, Yono, all of Japan, assignors to Nippon Kayaku Kabushiki Kaisha, Tokyo, Japan

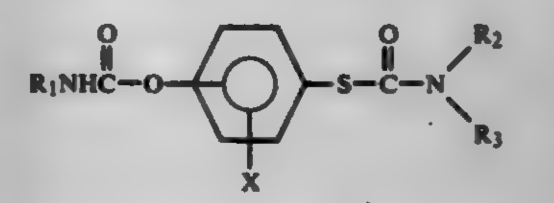
Filed Jan. 5, 1981, Ser. No. 222,572

Claims priority, application Japan, Jan. 23, 1980, 55-5664

Int. Cl.³ A01N *47/10;* C07C *155/02*

U.S. Cl. 424—300 17 Claims

1. A compound represented by the formula:



(1)

wherein R_1 is alkyl having 1 to 4 carbon atoms, R_2 is hydrogen or alkyl having 1 to 4 carbon atoms, R_3 is alkyl having 1 to 4 carbon atoms, X is hydrogen, halogen, alkyl having 1 to 4 carbon atoms, alkoxy having 1 to 4 carbon atoms or alkylsulfonyloxy having 1 to 4 carbon atoms.

4,325,969

CYANOVINYL PYRETHROIDS AND PESTICIDAL USE THEREOF

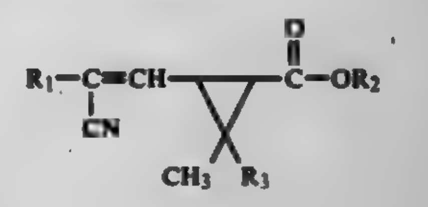
Dale G. Brown, Hopewell, N.J., assignor to American Cyanamid Co., Stamford, Conn.

Continuation of Ser. No. 937,360, Aug. 28, 1978, abandoned. This application Feb. 25, 1980, Ser. No. 124,153

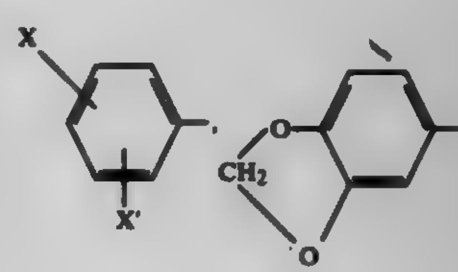
Int. Cl.³ A01N *31/14, 43/16;* C07C *121/50, 121/60*

U.S. Cl. 424—304 23 Claims

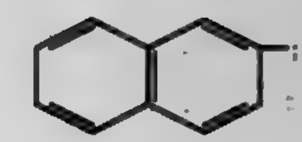
1. A compound of the formula:



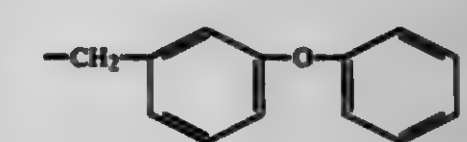
wherein R_1 is



or

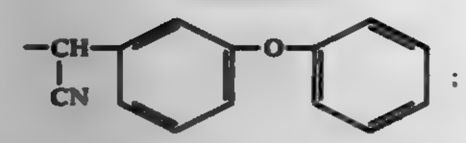


R_2 is



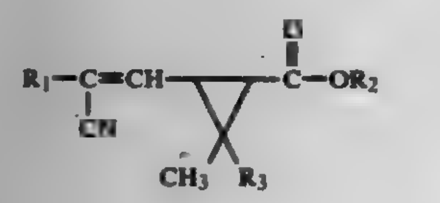
or

-continued

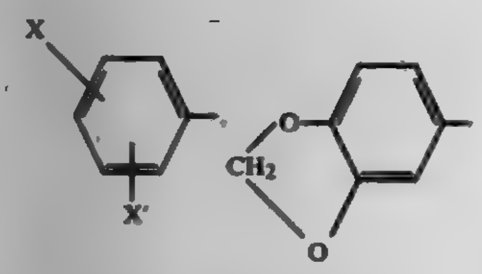


R_3 is hydrogen or methyl; and X and X′ are each hydrogen, halogen, C_1–C_3 alkyl, C_1–C_3 alkoxy or haloalkyl C_1–C_3.

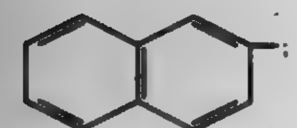
12. A method for the control of insect pests of agriculturally important crops or ectoparasites of domesticated warm-blooded animals comprising contacting the insects, ectoparasites or applying to their hosts and to their habitat an insecticidally or ectoparasiticidally effective amount of a compound of the formula:



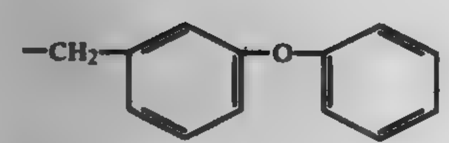
wherein R_1 is



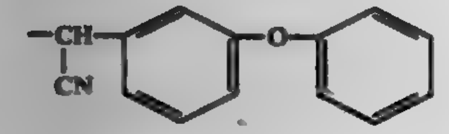
or



R_2 is a moiety



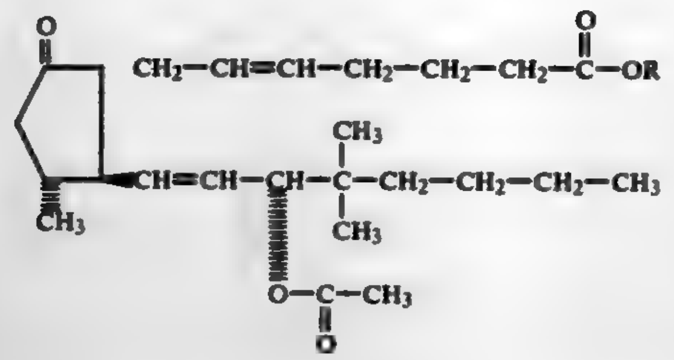
or



R_3 is hydrogen or methyl; and X and X′ are each hydrogen, halogen, C_1–C_3 alkyl, C_1–C_3 alkoxy or haloalkyl C_{1-C2}.

4,325,970
15-ACETYL-PROSTAGLANDINS
George W. Holland; Perry Rosen, both of North Caldwell, and Hugo Gallo-Torres, Livingston, all of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.
Filed Oct. 9, 1980, Ser. No. 195,576
Int. Cl.[3] C07C *177/00;* A61K *31/557*
U.S. Cl. 424—311 19 Claims

1. A compound of the formula:



wherein R is hydrogen or lower alkyl or pharmaceutically acceptable salts thereof.

4,325,971
METOCLOPRAMIDE/PARACETAMOL TABLETS
Robert H. Poyser, Old Harlow, and David H. Turner, London, both of England, assignors to Beecham Group Limited, England
Filed Nov. 15, 1979, Ser. No. 94,503
Claims priority, application United Kingdom, Nov. 16, 1978, 44841/78
Int. Cl.[3] A61K *31/165, 31/615*
U.S. Cl. 424—324 5 Claims

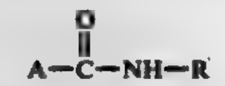
1. An analgesic tablet, which comprises an effective amount of paracetamol in combination with metoclopramide or an acid addition salt thereof, the weight ratio of paracetamol to metoclopramide or acid addition salt thereof being from 80:1 to 120:1, respectively.

4,325,972
PERFLUORINATED N,N-DIMETHYL CYCLOHEXYLMETHYLAMINE EMULSIONS
Robert P. Geyer, Brookline, Mass., and Frederick L. Herman, Allentown, Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.
Division of Ser. No. 153,235, May 27, 1980. This application Jun. 30, 1981, Ser. No. 278,934
Int. Cl.[3] A61K *31/13*
U.S. Cl. 424—325 7 Claims

1. A synthetic blood composition comprising a mammalian blood substitute aqueous emulsion containing an effective amount of perfluoro-N,N-dimethylcyclohexylmethylamine.

4,325,973
HYDROXYALKYL AMIDES AS FUNGICIDES TO EUMYCOTINA IN PHANEROGAMIA PLANT LIFE
David E. Graham, Westfield, N.J., and Joseph P. Copes, deceased, late of Easton, Pa. (by Anna M. Copes, legal representative), assignors to GAF Corporation, New York, N.Y.
Continuation of Ser. No. 758,585, Jan. 12, 1977, abandoned. This application Jul. 21, 1980, Ser. No. 170,446
Int. Cl.[3] A01N *37/18*
U.S. Cl. 424—320 10 Claims

1. A process for the control of Eumycotina fungi which comprises applying to a plant a fungicidal amount of one or more amide fungicides having the formula:



wherein A is hydroxyalkyl containing from 2 to 14 carbon atoms and is and wherein R is an organic radical of from 4 to 20 carbon atoms and is selected from the group consisting of an acyclic alkyl radical, an alkenyl radical having one or more doubly bonded carbon atoms and a mono on di-fluoxinated benzyl radical.

4,325,974
β, γ-DIHYDROPOLYPRENYL ALCOHOL AND HYPOTENSIVE PHARMACEUTICAL COMPOSITION CONTAINING SAME
Isao Yamatsu, Kawaguchi; Shinya Abe; Yuichi Inai, both of Tokyo; Toshiji Igarashi, Tokorozawa, and Yoshikage Nakajima, Tokyo, all of Japan, assignors to Eisai Co., Ltd., Tokyo, Japan
Filed Nov. 21, 1979, Ser. No. 96,355
Claims priority, application Japan, Dec. 1, 1978, 53-147858
Int. Cl.[3] A61K *31/045;* C07C *29/136, 33/02*
U.S. Cl. 424—343 11 Claims

1. A compound having the formula:

wherein n is an integer of 8 to 10.

5. A pharmaceutical composition for treating hypertension and hepatic disease comprising a therapeutically effective amount of a compound as claimed in claim 1, in association with a pharmaceutically acceptable carrier, diluent or vehicle.

4,325,975
MINERALIZED DRINKING WATER AND METHOD OF MAKING SAME
John A. Lindon, 255 S. Beverly Glen Blvd., Los Angeles, Calif. 90024, and Arthur Malin, 606 N. Foothill Rd., Beverly Hills, Calif. 90210
Continuation-in-part of Ser. No. 108,538, Dec. 31, 1979, abandoned. This application Dec. 22, 1980, Ser. No. 218,472
Int. Cl.[3] A23L *2/00*
U.S. Cl. 426—66 10 Claims

1. A sodium and potassium free mineralized drinking water formulation which consists essentially of an aqueous solution of distilled water containing:
20–40 mg/liter Strontium ions;
50–100 mg/liter Magnesium ions;
60–125 mg/liter Calcium ions; and
0.06–0.15 mg/liter Lithium ions,
each of said ions being present in association with water-soluble salts.

4,325,976
REFORMED RICE PRODUCT
Alastair D. Harrow, Rushden, and John W. Martin, Oakley, both of England, assignors to Thomas J. Lipton, Inc., Englewood Cliffs, N.J.
Filed Mar. 18, 1980, Ser. No. 131,331
Claims priority, application United Kingdom, Mar. 22, 1979, 10180/79
Int. Cl.[3] A21D *2/00, 10/00;* A23L *1/10*
U.S. Cl. 426—104 19 Claims

1. A dry composition for use in the production of a reformed rice product, which comprises:
(a) a mixture of pregelatinised and ungelatinised flour in which the proportion of the pregelatinised flour is from 30% to 70% by weight of the mixture and in which the flour is at least partly rice flour,
(b) at least 3.0% sodium chloride by weight of the composition, and
(c) an amount up to 10% of fat in powder form by weight of the composition.

4,325,977
BLAND WHEY PRODUCT AND PROCESS OF PREPARATION
Robert K. Remer, Evanston, Ill., assignor to Hull-Smith Chemicals, Inc., Oak Brook, Ill.
Continuation of Ser. No. 933,173, Aug. 14, 1978, Pat. No. 4,235,937. This application Aug. 1, 1980, Ser. No. 174,658
The portion of the term of this patent subsequent to Nov. 25, 1997, has been disclaimed.
Int. Cl.[3] A23C *21/00, 21/08*
U.S. Cl. 426—534 24 Claims

1. A process for treating whey, comprising:
subjecting whey to blending shear forces, said blending step being conducted above a predetermined temperature;
incorporating a blandness imparting component into said whey during said blending step to give the whey a bland odor and taste, said blandness imparting component including a metal gluconate; and
adding a colloid enhancer component to said whey during said blending step to impart a colloidal-type condition to said whey.

4,325,978
PROCESS FOR IMPARTING BLANDNESS TO CHEESE
Robert K. Remer, Evanston, Ill., assignor to Hull-Smith Chemicals, Inc., Oak Brook, Ill.
Division of Ser. No. 933,173, Aug. 14, 1978, Pat. No. 4,235,937. This application Jul. 28, 1980, Ser. No. 172,993
Int. Cl.[3] A23C *19/06*
U.S. Cl. 426—534 4 Claims

1. A process for treating a protein source, comprising: providing a supply of cheese as produced with residual whey thereon, adding a blandness imparting component to a final rinsing water, and rinsing said supply of cheese with said final rinsing water including said blandness imparting component, said blandness imparting component being selected from the group consisting of iron gluconate, copper gluconate, and blends thereof.

4,325,979
POWDERED COMPOSITIONS FOR CREAM TOPPINGS
Moshe Trop, and Avinoam Livne, both of Beer Sheva, Israel, assignors to Ben-Gurion University of the Negev Research and Development Authority, Beer Sheva, Israel
Filed Sep. 24, 1980, Ser. No. 190,133
Claims priority, application Israel, Sep. 28, 1979, 58363
Int. Cl.[3] A23J *3/02*
U.S. Cl. 426—570 16 Claims

1. A powdered composition, suitable for mixing with a liquid to obtain a cream topping, comprising, by weight proportions, about 30 to about 45 parts of a vegetable lipid whipping agent, about 5 to 15 parts whole milk powder, about 3 to 5 parts sodium caseinate and about 30 to 60 parts sugar, wherein said lipid whipping agent comprises about 15 to 35% of sugar or corn syrup solids, about 6 to 11% sodium caseinate and about 50 to 70% of a lipid component, which lipid component comprises about 75 to 85% partially hydrogenated vegetable oil, about 10 to 12% lactylated fatty acid esters of a polyalcohol and about 8 to 10% of fatty acid mono or diglycerides or mixture of said mono and digylcerides.

4,325,980

PROCESS FOR PRODUCING A MARGARINE HAVING A REDUCED TENDENCY TO SPATTERING

Johannes H. M. Rek, Vlaardingen, Netherlands, and Pieter M. J. Holemans, Ekeren, Belgium, assignors to Lever Brothers Company, New York, N.Y.

PCT No. PCT/EP79/00101, § 371 Date Aug. 14, 1980, § 102(e) Date Aug. 14, 1980, PCT Pub. No. WO80/01232, PCT Pub. Date Jun. 26, 1980

PCT Filed Dec. 18, 1979, Ser. No. 205,370

Claims priority, application Netherlands, Dec. 20, 1978, 7812332

Int. Cl.³ A23D *3/02*

U.S. Cl. 426—604 9 Claims

1. A process for producing a water-in-oil emulsion of the margarine-type having an oil phase and an aqueous phase, said emulsion displaying a reduced tendency to spattering, wherein the oil phase and the aqueous phase are mixed and worked to produce a margarine, comprising adding at least 0.025% by weight of a hydrophilic finely divided metal oxide or hydrophilic finely divided metalloid oxide or mixtures thereof and at least 0.01% by weight of phosphatide to said oil phase, said oil phase consisting essentially of a fat or fat blend having a slip melting point of 30°-40° C., wherein said phosphatide and said hydrophilic metal oxide or said hydrophilic metalloid oxide or mixtures thereof are added separately to said oil phase to prevent interacting prior to introduction into said oil phase.

4,325,981

METHOD OF PREVENTING COLOR ACCURATE REPRODUCTIONS USING COLOR PHOTOCOPIERS AND THE LIKE

Takeo Sugiura, Saitama; Keiji Miyajima, Chiba; Hideo Nagatomo, and Kiyoshi Masui, both of Saitama, all of Japan, assignors to Toppan Printing Co., Ltd., Japan

Division of Ser. No. 16,721, Mar. 2, 1979, Pat. No. 4,277,514. This application Oct. 30, 1980, Ser. No. 202,158

Claims priority, application Japan, Mar. 7, 1978, 53/25662; Dec. 18, 1978, 53/158227

Int. Cl.³ B41M *3/14*; B44F *1/12*

U.S. Cl. 427—7 6 Claims

1. A method of preventing color accurate reproduction of a colored pattern with color photocopiers and color photography using photosensitive materials having spectral sensitivity in the wavelength ranges consisting of the human visible range and adjacent wavelength ranges thereto, comprising, forming at least a portion of the colored pattern with a color material having a spectral reflection factor curve with high spectral reflection in at least one of the areas of wavelength below 450 nm and above 650 nm so that a reproduction of the colored pattern is in a color not perceived by a direct human viewer of the colored pattern, and forming said at least one portion of the colored pattern with a color material having a spectral reflection factor curve with high spectral reflection in at least one area between 450 nm and 650 nm whereby said at least one portion of the colored pattern is viewed in a viewing color different from a reproduced color reproduced by the color photocopiers and color photography, said colored pattern being formed with said color material having a spectral reflection factor curve with high spectral reflection factors in at least one of the areas of wavelength below 450 nm and also above 650 nm and in at least one area between 450 nm and 650 nm and a color material having the same hue as that of the viewing color but scarcely having any reflection factor in the areas of wavelength below 450 nm and above 650 nm, whereby a human viewer identifies said colored pattern as a uniform hue but identifies the reproduction of the same as a combination of different hues.

4,325,982

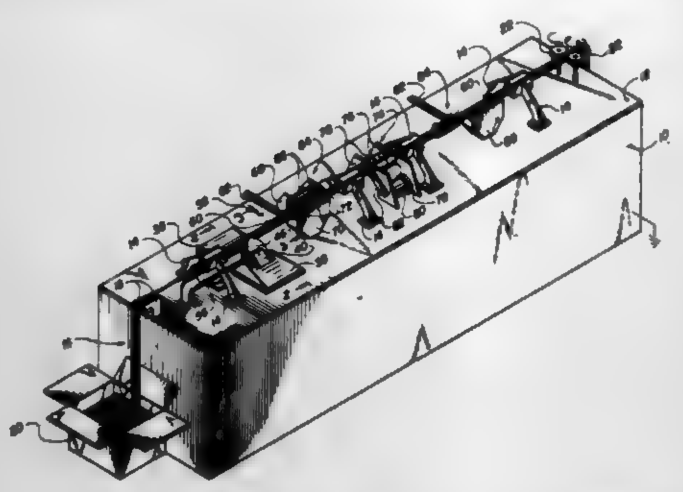
ZIPPER CHAIN COATER

Donald J. Gillette, Guilford; Bedrich Hajek, New Haven, and David Seales, East Haven, all of Conn., assignors to Electrostatic Equipment Corporation, New Haven, Conn.

Filed Apr. 23, 1980, Ser. No. 143,115

Int. Cl.³ B05D *1/04, 1/28*

U.S. Cl. 427—32 18 Claims



1. A method of continuously producing smooth, adherent coatings upon the teeth of a zipper chain, comprising the steps of:

a. continuously moving a zipper chain along a travel path, said chain being comprised of a fabric web and a multiplicity of metal teeth affixed thereto;
b. generating a cloud of electrostatically charged particles of a heat fusible powder;
c. depositing said particles upon said moving chain in areas substantially limited to the surfaces of said teeth;
d. heating said moving coated chain only in said limited areas by generating heat within said teeth, to effect fusion and at least initial cohesion of said deposited particles;
e. removing from said moving chain inadequately adhered particles; and
f. reheating said limited areas of said moving chain, to effect final cohesion of said particles and to produce, upon cooling of said chain, a smooth, adherent coating thereof on said teeth.

4,325,983

CATALYTIC PROMOTERS IN ELECTROLESS PLATING CATALYSTS ADDED PRIOR TO A COLLOIDAL NUCLEATION PROCESS

Nathan Feldstein, 63 Hemlock Cir., Princeton, N.J. 08540

Division of Ser. No. 833,905, Sep. 16, 1977, Pat. No. 4,151,311, which is a continuation-in-part of Ser. No. 651,507, Jan. 22, 1976, abandoned. This application Mar. 29, 1979, Ser. No. 24,892

Int. Cl.³ C23C *3/02*; H05K *3/18*

U.S. Cl. 427—98 22 Claims

1. A process for electroless metal deposition onto a non-conductor surface (1) contacting said surface with a colloidal catalytic composition comprising the admixture of a principal catalytic agent wherein said principal catalytic agent is a compound of a metal selected from the groups of metals consisting of copper, nickel, cobalt, and iron and mixtures thereof and a catalytic promoter agent wherein said catalytic promoter agent is a compound of a metal selected from the group of metals consisting of Mg, Ca, Y, Ti, Zr, Hf, V, Nb, Ta, Cr, Mo, W, Tc and Re and mixtures thereof and further said catalytic promoter is added prior to the colloidal nucleation process in which the principal catalytic agent is allowed to react as to yield a colloid, and further wherein the concentrations for the principal catalytic agent and the catalytic promoter agent are so adjusted as to yield a catalytic composition having a greater catalytic activity for electroless metal deposition in comparison to the same catalytic composition in the absence of said catalytic promoter agent, and (2) contacting the treated non-conductor with a compatible electroless plating bath to deposit a metallic layer.

4,325,984

PLASMA PASSIVATION TECHNIQUE FOR THE PREVENTION OF POST-ETCH CORROSION OF PLASMA-ETCHED ALUMINUM FILMS

Christopher H. Galfo, San Jose, and Ashok L. Nalamwar, Milpitas, both of Calif., assignors to Fairchild Camera & Instrument Corp., Mountain View, Calif.

Filed Jul. 28, 1980, Ser. No. 172,745

Int. Cl.³ B05D *3/04, 3/06*

U.S. Cl. 427—38 9 Claims

1. A method for preventing the post-etch corrosion of aluminum or aluminum-alloy film which has been etched utilizing chlorinated plasma comprising exposing the etched film to sulfur hexafluoride plasma.

2. A method for preventing the post-etch corrosion of aluminum or aluminum alloy film which has been etched in a reaction chamber containing chlorinated plasma comprising:

a. evacuating the reaction chamber of chlorinated plasma;
b. while maintaining a vacuum in the reaction chamber, introducing fluorinated gas to the chamber;
c. applying suitable RF power to the chamber to generate a fluorinated plasma for passivation of the etched aluminum film.

4,325,985

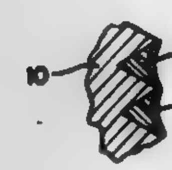
THREAD LOCK

Richard B. Wallace, Bloomfield Hills, Mich., assignor to The Oakland Corporation, Troy, Mich.

Continuation-in-part of Ser. No. 135,504, Mar. 31, 1980, abandoned. This application Sep. 29, 1980, Ser. No. 191,948

Int. Cl.³ B05D *3/06*

U.S. Cl. 427—54.1 32 Claims



1. The method of producing an externally threaded article provided with thread locking means adapted to oppose separation from a mating threaded article, which comprises depositing a fluid lock-forming material on a threaded surface of the article to cause the fluid material to be received in thread grooves and to fill the bottoms of the thread grooves, the fluid material comprising an uncured fluid resin capable of polymerization to a solid state acting between confronting thread surfaces of a threadedly engaged mating article, applying a light coating of a fluid radiation-curable film-forming material over the deposit and subjecting the coating to radiation for a few seconds to cure the coating to a thin, dry, solid, non-tacky protective film over the still-fluid deposit to permit random association of the article with like articles without sticking together.

4,325,986

METHOD FOR CONTINUOUS DEPOSITION BY VACUUM EVAPORATION

Bill N. Baron; Richard E. Rocheleau, and T. W. Fraser Russell, all of Newark, Del., assignors to University of Delaware, Newark, Del.

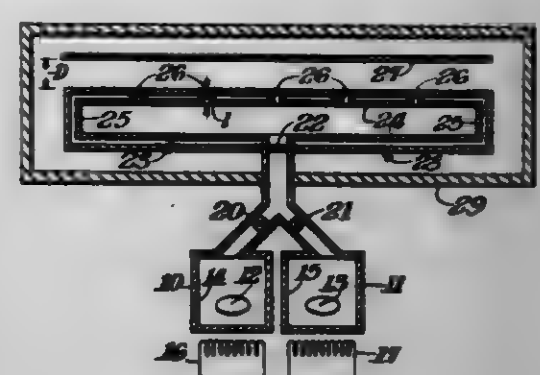
Filed May 29, 1979, Ser. No. 43,317

Int. Cl.³ C23C *13/02, 13/04*

U.S. Cl. 427—74 26 Claims

16. A method for depositing material on a continuously moving substrate comprising steps of:

heating said material to the vapor state in a substantially enclosed evaporation chamber;
conveying said material from said evaporation chamber to a manifold chamber through a restricted diameter rate controlling orifice between said evaporation chamber and said manifold chamber with said manifold chamber being in communication with a vacuum coating chamber;



conveying said material out of said manifold chamber through a plurality of nozzles in a spaced array and from said nozzles into said vacuum chamber; and
passing said substrate in said vacuum chamber adjacent to and spaced from said nozzles to deposit said material on said continuously moving substrate.

4,325,987

PROCESS FOR THE PRODUCTION OF AN ELECTRICALLY CONDUCTING ARTICLE

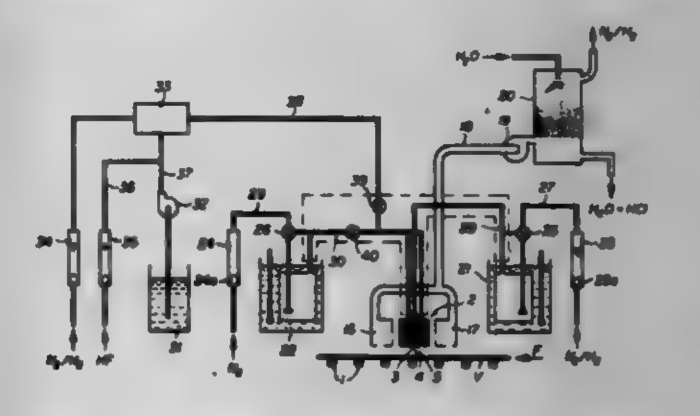
Reinhard Kalbskopf, Onex, and Otto Baumberger, Carouge, both of Switzerland, assignors to Societa Italiana Vetro-Siv-S.p.A., San Salvo, Italy

Division of Ser. No. 173,806, Jul. 30, 1980. This application Jan. 8, 1981, Ser. No. 223,263

Claims priority, application Switzerland, Jul. 31, 1979, 7033/79

Int. Cl.³ C03C *17/245*

U.S. Cl. 427—110 8 Claims



1. A process for forming on a mineral substrate an adherent coating of stannic oxide having a resistivity below $10^{-2}\Omega$ cm, comprising heating the substrate to at least 500° C. and reacting on the heated substrate's surface a volatile tin compound and water vapor diluted in a carrier gas containing at least 30% hydrogen, thereby depositing said coating on said substrate.

4,325,988

DEPOSITION OF COATINGS FROM FINE POWDER REACTANTS

William E. Wagner, Verona, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

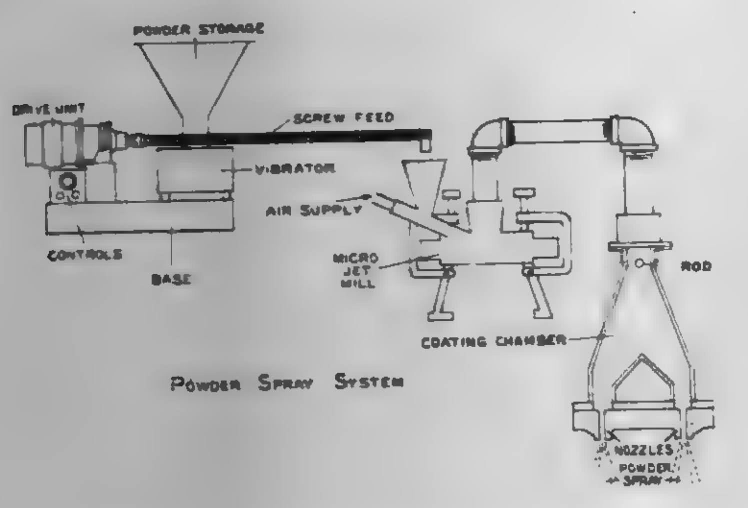
Filed Aug. 8, 1980, Ser. No. 176,323

Int. Cl.³ C03C *17/23*

U.S. Cl. 427—160 8 Claims

1. In a method for coating a substrate by contacting the

surface of the substrate with a powder coating reactant, which comprises the steps of:
a. dispersing the powder coating reactant into a stream of carrier gas;
b. conveying the reactant/gas mixture to a coating chamber; and



c. delivering the reactant/gas mixture to the surface to be coated; the improvement which comprises reducing the powder coating reactant to a fine dust having an average particle size less than about 10 microns and passing the dust/gas mixture over a bar at the entrance of the coating chamber to create a swirling smoke.

4,325,989
SEAMABLE UNCURED CHLOROSULFONATED POLYETHYLENE
Wolfgang Honsberg, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Filed Aug. 27, 1980, Ser. No. 181,728
Int. Cl.^{3} B05D *7/04*
U.S. Cl. 427—160 **7 Claims**

1. A process for retaining seamability of a sheet of uncured chlorosulfonated polyethylene which comprises applying from about 0.3–4 mg/sq cm of an ultraviolet light absorber dissolved in an organic solvent to the surface of a sheet of uncured chlorosulfonated polyethylene having from about 20–30% by weight chlorine and from about 0.7–1.4% by weight sulfur that is to be seamed to another sheet of uncured chlorosulfonated polyethylene.

4,325,990
ELECTROLESS COPPER DEPOSITION SOLUTIONS WITH HYPOPHOSPHITE REDUCING AGENT
Donald R. Ferrier, Thomaston, Conn., assignor to MacDermid Incorporated, Waterbury, Conn.
Filed May 12, 1980, Ser. No. 149,236
Int. Cl.^{3} C23C *3/02*
U.S. Cl. 427—305 **10 Claims**

1. An electroless copper deposition solution comprising, in addition to water, a soluble source of cupric ions, a complexing agent effective to maintain said cupric ions in solution at pH levels below 5.0, and a reducing agent effective to reduce cupric ions to copper as a deposited conductive metal film on a catalyzed non-conductive surface of a substrate when in contact with said solution, wherein said reducing agent is a soluble source of hypophosphite ions; said solution having a pH of from about 2.0 to 3.5 and said complexing agent being selected to be effective for coordination with said cupric ions within that range to prevent their precipitation from said solution, wherein said solution is free of significant concentrations of anions which would interfere if present with the reduction of the cupric ions by said hypophosphite reducing agent to produce said conductive copper film on a catalyzed surface of a substrate placed in contact with said solution.

4,325,991
ELECTROLESS PLATING OF POLYESTERS
Lawrence P. Donovan, III, Monrovia; Eileen Maguire, Arcadia, and David A. Dillard, Diamond Bar, all of Calif., assignors to Crown City Plating Co., El Monte, Calif.
Filed Jan. 5, 1981, Ser. No. 222,592
Int. Cl.^{3} C23C *3/02*; B29C *17/08*
U.S. Cl. 427—307 **48 Claims**

1. A process for preparing the surface of filled polyester substrates for electroless plating which comprises:
(a) forming a conditioned filled polyester substrate by contacting the filled polyester substrate with an alkaline conditioner having a pH of at least about 8 and maintained at a temperature from about 135° F. to the lesser of the boiling point of the solution and the softening temperature of the filled polyester substrate for a time sufficient to render the substrate receptive to etch by an acid fluoride etch solution; and
(b) etching the conditioned filled polyester substrate by contact with an aqueous acid fluoride etch solution having a pH less than about 5 and containing fluoride in concentration of from about 1 mole per liter of solution to solution saturation as provided by at least one soluble fluoride compound for a time sufficient to etch the surface of the filled polyester substrate and increase adhesion of an electrolessly deposited metal thereto.

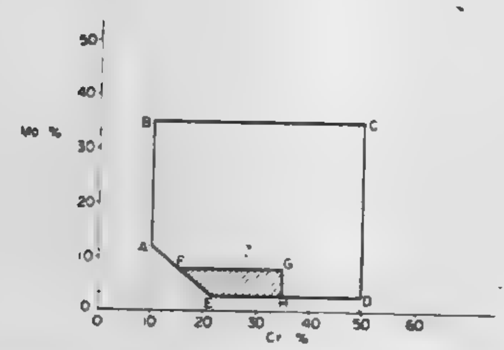
4,325,992
ELECTROLESS PLATING OF POLYCARBONATES
Lawrence P. Donovan, III, Monrovia; Eileen Maguire, Arcadia, and David A. Dillard, Diamond Bar, all of Calif., assignors to Crown City Plating Co., El Monte, Calif.
Filed Jan. 5, 1981, Ser. No. 222,591
Int. Cl.^{3} C23C *3/02*; B29C *17/08*
U.S. Cl. 427—307 **35 Claims**

1. A process for preparing the surface of filled polycarbonate resin substrate for electroless plating which comprises:
(a) forming a conditioned filled polycarbonate resin substrate by contacting the filled polycarbonate resin substrate with an alkaline conditioner having a pH of at least about 8 and maintained at a temperature from about 135° F. to the lesser of the boiling point of the solution and the softening temperature of the filled polycarbonate resin substrate for a time sufficient to render the substrate receptive to etch by an acid fluoride etch solution; and
(b) etching the conditioned filled polycarbonate resin substrate by contact with an aqueous acid fluoride etch solution having a pH less than about 5 and containing fluoride in concentration of from about 1 mole per liter of solution to solution saturation as provided by at least one soluble fluoride compound for a time sufficient to etch the surface of the filled polycarbonate resin substrate and increase adhesion of an electrolessly deposited metal thereto.

4,325,993
WOOD PRESERVATION PROCESS
John G. Schroder, 43 Griffith Ave., Roseville, N.S.W., Australia (2069)
Filed Nov. 21, 1979, Ser. No. 96,412
Claims priority, application Australia, Nov. 27, 1978, PD6917; May 24, 1979, PD8934; May 30, 1979, PD9010; Jul. 12, 1979, PD9565
Int. Cl.^{3} B05D *1/18, 3/02, 3/12*
U.S. Cl. 427—315 **11 Claims**

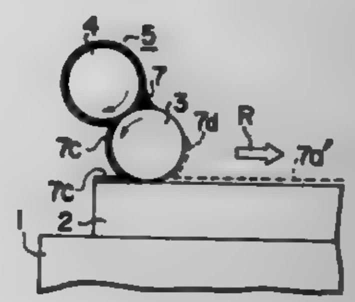
1. A process for preserving wood comprising the steps of:
providing a solution containing copper ions, arsenic acid ions and chromic acid ions, the ratio of copper to arsenic being such as to establish acid copper arsenate equilibrium at a pH of less than 2.8 and at a temperature greater than 40° C.,
said solution having a sufficient concentration of chromic acid ions to establish tertiary chromium arsenate equilibrium, and to provide a ratio of chromium to arsenic which will ensure that substantially all arsenic is precipitated and fixed as tertiary chromium arsenate when the pH rises to about 2.8,
placing the wood in a bath of the solution and heating acid bath to maintain the temperature of the wood above at least about 40° C. for a time sufficient to ensure that the copper ions, arsenic acid ions and chromic acid ions diffuse through the wood whereby the pH of the aqueous phase within the wood falls below 2.8 and acid copper arsenate equilibrium is established,
cooling the bath and the wood to below about 40° C. so that the chromic acid ions adsorb onto the cells of the wood whereby the pH of the aqueous phase of the wood rises causing (a) substantially all of the chromium to be precipitated and fixed within the wood as tertiary chromium arsenate when the pH rises to about 2.8, and (b) basic copper arsenate to be precipitated and fixed within the wood when the pH rises to about 3.2, the concentration of the chromic acid in said aqueous phase being such that the pH of said aqueous phase remains below 4 until the aforesaid precipitation and fixation reactions are substantially completed, thereby preventing formation of chromates within and on the surface of the wood.

4,325,994
COATING METAL FOR PREVENTING THE CREVICE CORROSION OF AUSTENITIC STAINLESS STEEL AND METHOD OF PREVENTING CREVICE CORROSION USING SUCH METAL
Nobumitsu Kitashima, Chigasaki; Norio Takahashi, Yamato; Juichi Ishiguro, Kanagawa, and Satoshi Kawamura, Chigasaki, all of Japan, assignors to Ebara Corporation, Tokyo, Japan
Filed Dec. 22, 1980, Ser. No. 218,684
Claims priority, application Japan, Dec. 29, 1979, 55-194; Dec. 29, 1979, 55-195; Dec. 29, 1979, 55-196; Dec. 29, 1979, 55-197
Int. Cl.^{3} A32B *15/18*; C23C *7/00*
U.S. Cl. 427—376.8 **10 Claims**



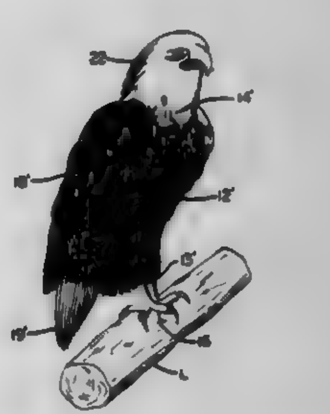
1. A method of preventing the crevice corrosion of austenitic stainless steel to be placed in a corrosive environment by applying a molten alloy of the following composition onto the surface of the area of austenitic stainless steel that is to be in contact with another object or the area that surrounds such area: 10–50 wt% Cr, 3–35 wt% Mo and the balance being Ni or Co or both Ni and Co and incidental impurities, the Cr and Mo levels being within the range defined by A-B-C-D-E in accompanying FIG. 4.

4,325,995
METHOD AND AN APPARATUS FOR THIN FILM FORMATION
Yoshitaka Tamura; Shizuo Ishitani, and Takashi Shigemura, all of Mobara, Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed May 30, 1980, Ser. No. 154,997
Claims priority, application Japan, Jun. 6, 1979, 54/69895
Int. Cl.^{3} B05D *1/28*
U.S. Cl. 427—428 **4 Claims**



1. In a method for thin film formation comprising the steps of:
feeding a film-forming material onto a platform with a roll coater including a distributing roller and a coating roller, said coating roller being adapted to be in contact with the distributing roller under pressure and with the platform;
coating said material on the platform by rotating the coating roller and by moving the roller coater over the platform; and
transferring the material coated on the platform onto an object on which a thin film is to be formed, thereby forming a film of said material on said object;
the improvement which comprises rotating said coating roller in a reverse direction with respect to the direction of movement of the roll coater over said platform thereby scraping the material coated previously and remaining on the platform after the transferring step by the reverse rotation of said coating roller and collecting the scraped material in a puddle of said material formed between the distributing roller and the coating roller, the scraping and collecting steps being effected simultaneously with the coating step whereby said film forming material is coated in a uniform thickness on said platform.

4,325,996
ARTIFICIAL BIRD AND METHOD OF MAKING SAME
Rickie F. Krietemeier, 6311 S. Florence Way, Englewood, Colo. 80111, and Gary D. Davis, 7930 E. Edgewood Dr., Indianapolis, Ind. 46239
Filed Jul. 24, 1980, Ser. No. 171,746
Int. Cl.^{3} A41G *9/00*; A63H *33/16*
U.S. Cl. 428—16 **16 Claims**



1. A replica of a bird comprising in combination:
a molded body consisting of a trunk, legs, neck and head;
feet secured to each of the legs, and a feathered wing section

secured to said body said wing section having a base plate and interconnecting means extending from said base plate for interconnecting said wing section to said body; and
feather patterns for each of said feathered wing section, trunk and legs of said molded body, each feathered pattern comprising a flexible matrix and series of rows of individual feathers arranged to extend in horizontal courses with the feathers in each row partially overlapping the feathers in each next row in succession, and means for applying each of said feathered patterns in place on said matrix.

4,325,997
PROCESSABLE CELLULOSE ESTER COMPOSITIONS
Richard J. Brewer, and Richard T. Bogan, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.
Continuation of Ser. No. 20,392, Mar. 14, 1979, abandoned. This application Sep. 29, 1980, Ser. No. 191,791
Int. Cl.^{3} B32B *15/08;* C08L *1/10, 1/12, 1/14*
U.S. Cl. 428—31 16 Claims

1. A processable halogenated phosphoric ester free cellulose ester plastic composition comprising (1) at least one cellulose ester plastic of the group consisting of cellulose acetate, cellulose propionate, cellulose butyrate, cellulose acetate propionate, cellulose acetate butyrate and (2) about 5 to 15 parts by weight of an acid accepting liquid epoxy compound per 100 parts by weight of said cellulose ester plastic.

9. Decorative trim prepared by extruding the composition of claim 1 onto metal foil.

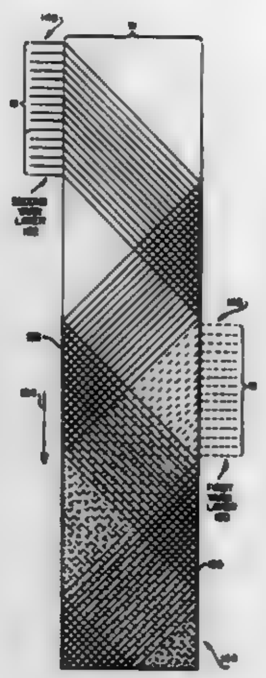
4,325,998
BIAXIALLY STRESSED FLUORINATED POLYMER ROLL COVER
Harry S. Chapman, Hickory, Pa., assignor to Kennecott Corporation, Stamford, Conn.
Division of Ser. No. 870,771, Jan. 19, 1978, Pat. No. 4,250,605. This application Nov. 19, 1980, Ser. No. 208,372
Int. Cl.^{3} B32B *3/10, 31/00;* B44C *1/22;* B29C *17/08*
U.S. Cl. 428—36 18 Claims

1. A biaxially heat shrinkable fluorinated polymer sleeve, having an internal surface which is etched with a composition selected from the group consisting of sodium dissolved in a liquid ammonia, sodium dissolved in a mixture of naphthalene and tetrahydrofuran, and molten sodium hydroxide, said sleeve which also has said internal surface essentially coated with a high temperature elastomeric adhesive which is essentially a composition selected from the group consisting of polydimethylsiloxane silicone elastomer, with pendant hydroxy groups, and a chain silicone elastomer containing polydimethylsiloxane, alkane and phenylmethylsilane groups.

3. The invention of claim 1 wherein a plurality of apertures is placed through the surface of said sleeve, each of said apertures being about 4 millimeters or less in diameter and the distance between any two or more of said apertures being in a range of about 0.1 to about 5 centimeters.

9. A biaxially heat shrinkable fluorinated polymer sleeve, having an internal surface which is etched with a composition selected from the group consisting of sodium dissolved in liquid ammonia, sodium dissolved in a mixture of naphthalene and tetrahydrofuran, and molten sodium hydroxide.

4,325,999
BIAS FABRIC
Arthur R. Campman, Los Angeles; George K. Shibata, Whittier, and William D. Cumming, Redondo Beach, all of Calif., assignors to Hitco, Irvine, Calif.
Filed Nov. 23, 1979, Ser. No. 96,833
Int. Cl.^{3} B32B *5/12*
U.S. Cl. 428—112 9 Claims



1. A bias fabric having a pair of opposite sides extending along the length thereof and a generally uniform width between the pair of opposite sides and principally consisting of a plurality of generally parallel, spaced-apart yarns having a density of at least about 12 yarns per inch and extending back and forth across the width of the fabric and forming angles of approximately 45° with the opposite sides of the fabric, the plurality of yarns repeatedly intersecting each of the opposite sides of the fabric with each intersection of the plurality of yarns with one of the opposite sides occurring along a portion of the side equal to approximately twice the width of the fabric, the yarns consisting of material which is relatively porous and which is suitable for impregnation with and at least partial curing of a resin.

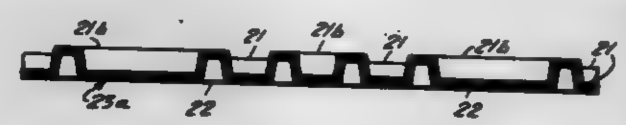
4,326,000
SOFT, ABSORBENT, UNITARY, LAMINATE-LIKE FIBROUS WEB
Clifford J. Roberts, Jr., Turnersville, N.J., assignor to Scott Paper Company, Philadelphia, Pa.
Continuation-in-part of Ser. No. 583,708, Jun. 4, 1975, Pat. No. 4,000,237, which is a division of Ser. No. 356,051, Apr. 30, 1973, Pat. No. 3,903,342. This application Oct. 29, 1975, Ser. No. 626,993
Int. Cl.^{3} B31F *1/12;* B32B *3/28*
U.S. Cl. 428—153 17 Claims

1. Fibrous sheet material comprising,
a soft, absorbent, unitary, laminate-like web of substantially planar-aligned fibers,
the web having first and second surface regions, each on one side of a central core region, the central core region having less fiber concentration than the first surface region,
only one of said surface regions having a surface disposition of bonding material extending only through said surface region,
a second, penetrating disposition of bonding material extending through the central core region and connecting the first and second surface regions together, the second penetrating disposition of bonding material being in a fine, spaced-apart pattern occupying less area in the plane of the web than the one, surface disposition of bonding material, whereby, the outer surface of the other surface region is interconnected to the one surface region with bonding material.

4,326,001
RADIATION CURED COATING AND PROCESS THEREFOR
Peter R. Sachs, New Windsor, and James W. Sears, Newburgh, both of N.Y., assignors to GAF Corporation, New York, N.Y.
Filed Oct. 1, 1980, Ser. No. 192,587
Int. Cl.^{3} B05D *3/06*
U.S. Cl. 428—161 5 Claims

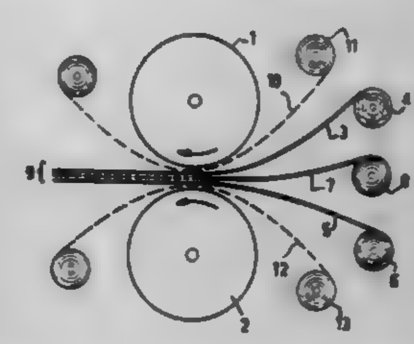
1. Method of forming a pigmented, radiation cured coating on a substrate of embossed vinyl tile base or sheet material comprising:
(a) applying by roll coating to the substrate a pigmented first layer between about 0.01 and about 0.1 mm thick of radiation curable material and subjecting such layer to ultraviolet light in an atmosphere containing at least about 5,000 ppm oxygen until the radiation curable material is cured except for its surface said layer being applied onto the substrate so that all of the substrate is covered by the coating and with enough pressure to leave puddles of coating material in the embossed valleys of the substrate; and
(b) then applying by roll coating to the surface of the thus partially cured first layer an unpigmented second layer of the same or a different radiation curable material and subjecting the second layer to ultraviolet light in an inert atmosphere containing less than about 1,000 ppm oxygen to thereby completely cure said second layer and complete the cure of the first layer.

4,326,002
MULTI-PLY FIBROUS SHEET STRUCTURE AND ITS MANUFACTURE
Galyn A. Schulz, Appleton, Wis., assignor to American Can Company, Greenwich, Conn.
Continuation of Ser. No. 21,915, Mar. 19, 1979, abandoned. This application May 15, 1980, Ser. No. 149,912
Int. Cl.^{3} B32B *3/28*
U.S. Cl. 428—178 2 Claims



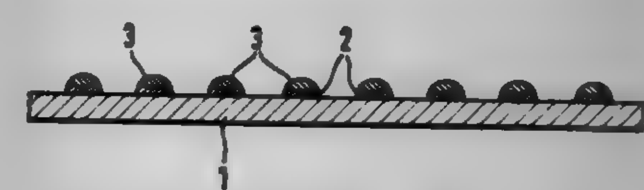
1. An absorbent fibrous sheet of papermaking fibers, comprising:
two webs with inner surfaces facing each other, each web having a plurality of crests and depressions of a first pattern on its inner surface;
the crests on each web being positioned between the crests on the other web and extending beyond the crests on the other web toward the depressions on the other web;
portions interconnecting crests and depressions of one web being laterally spaced from portions interconnecting crests and depressions of the other web;
means connecting at least some of the depressions of one web to the crests of the other web, whereby said webs are joined together to form said sheet; and
said sheet being embossed as a unit to have formed therein a plurality of registered crests ad registered depressions of a second pattern in each said web fitted compactly within one another throughout the extents of said crests and depressions, said crests of one of said webs extending beyond and spaced from the plane of the portion of said one web having said first pattern of crests and depressions.

4,326,003
COMPOSITE PIECE MADE FROM FLEXIBLE MATERIAL AND PROCESS OF PREPARATION
Marc V. Bouhaniche, 96, rue Saint-Denis, 75001 Paris, France
Filed Oct. 1, 1979, Ser. No. 80,986
Int. Cl.^{3} B32B *7/14*
U.S. Cl. 428—198 8 Claims



1. Composite piece made of flexible materials, comprising at least two elementary layers of materials of which the nature and/or color and/or structure may or may not be identical, adjacent layers being bonded to one another by means of a large number of thermoplastic beads which are interposed between the two layers along several parallel lines and at a constant interval from one another and adhere irreversibly to each of the two said layers, said thermoplastic beads melting at a temperature of at least 180° C. and the two elementary layers being bonded together and printed on one or both faces from print transfer paper simultaneously in a single operation by heating the print transfer paper to a temperature of at least 200° C. sufficient to heat-print the outer face or faces and simultaneously heat-weld the two elementary layers together, the heat-printing being carried out at a higher temperature sufficient to vaporize coloring pigments in the print transfer paper and deposit them on the outer face or faces of the elementary layers, said higher temperature being selected so that the heat-weld temperature is lower but sufficient to heat-weld the elementary layers.

4,326,004
RASTER-SHAPED HEAT-SEALABLE ADHESIVE COATING FOR TEXTILES AND METHOD OF PRODUCING THE SAME USING A POWDER PRINTING PROCEDURE
Josef Hefele, Gräfelfing, Fed. Rep. of Germany, assignor to Kufner Textilwerke KG, Fed. Rep. of Germany
Filed Feb. 28, 1980, Ser. No. 125,372
Claims priority, application Fed. Rep. of Germany, Nov. 19, 1979, 2946612
Int. Cl.^{3} B32B *3/16, 5/16, 5/30, 7/14*
U.S. Cl. 428—198 12 Claims



1. A raster-shaped heat-sealable adhesive coating on substrates, such as textile liners for outer garments, comprised of two adhesive layers, a first layer superimposed on a second layer via a powder printing technique, and at least one of said layers containing a polyvinyl chloride material and, optionally, a softening agent therefor.

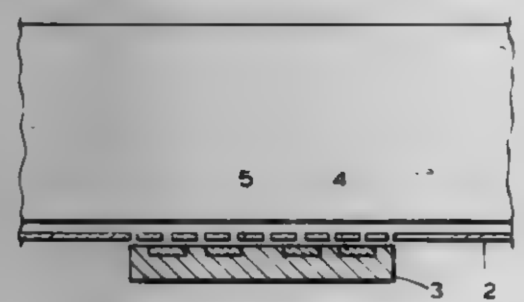
11. A method of producing a raster-shaped heat-sealable adhesive coating on a substrate via powder printing techniques comprising:

providing a polyvinyl chloride-containing adhesive powder having an average particle size up to a maximum of about 250 μm,

providing another adhesive powder having an average particle size of less than about 150 μm, and

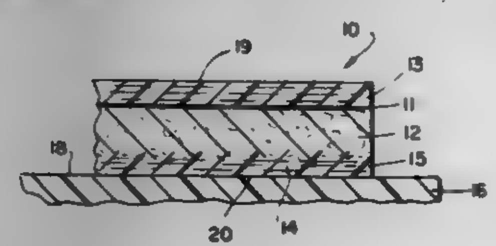
sequentially printing said powders onto a substrate surface in a select raster pattern so that said polyvinyl chloride-containing powder is in direct contact with said substrate surface and said another adhesive powder is superimposed onto said polyvinyl chloride-containing powder.

4,326,005
DRY RELEASE TRANSFER
Kenneth J. Reed, 33 Carlysle Square, London S.W.3, and Alan L. Lythgoe, Hythe, both of England, assignors to Kenneth James Reed, London, England
Filed Feb. 15, 1979, Ser. No. 12,303
Claims priority, application United Kingdom, Feb. 15, 1978, [illegible]
Int. Cl.³ B32B *3/00;* C09J *7/02*
U.S. Cl. 428—201 22 Claims



1. A dry release transfer sheet which comprises a carrier sheet, a releasable layer adhered thereto and a stress-resisting transferable design layer printed on said releasable layer, said releasable layer having low cohesive strength and low tensile strength compared with the transferable layer and providing a surface capable of being wetted with an ink in printing said design layer and said design layer having an elongation at break which is at least 0.5% and a thickness which is at least 3 times the thickness of the releasable layer, whereby application of an external force to the carrier sheet in the region of the design layer causes stressing of the releasable layer and cohesive failure within the releasable layer thus physically releasing the design layer from the carrier sheet and enabling subsequent transfer of the design layer with an underlying portion of releasable layer.

4,326,006
NON-SLIP PLACE MAT
Bernard Kaminstein, 29 Third Ave., New York, N.Y. 10003
Filed Feb. 5, 1981, Ser. No. 231,687
Int. Cl.³ B32B *3/00, 9/06;* C08L *7/02, 91/00*
U.S. Cl. 428—204 36 Claims



1. A non-slip place mat comprising:

a. a paper sheet, said sheet comprising a composition coating on both sides; and

b. said composition coating comprising a blend of water, a water soluble salt, a wax and a polymeric material having a molecular weight greater than the wax.

23. A method for preparing a coating composition for a paper place mat to render the mat slip resistant, comprising:

a. heating an amount of water;

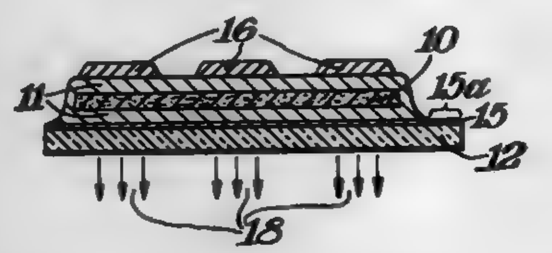
b. melting an amount of wax;

c. adding to the heated water of step a., an amount of a water soluble salt;

d. adding the wax of step b. to the mixture of step c.; and

e. adding the mixture of step d. to a polymeric material.

4,326,007
ELECTO-LUMINESCENT STRUCTURE
Ferd E. Williams, and David C. Morton, both of Newark, Del., assignors to University of Delaware, Newark, Del.
Filed Apr. 21, 1980, Ser. No. 142,043
Int. Cl.³ B32B *33/00;* H01J *1/63*
U.S. Cl. 428—333 1 Claim



1. A laminar electroluminescent structure comprising a semi-insulator layer consisting essentially of silicon monoxide having a thickness in the range of about 500 A to about 1000 A capable of producing relatively high energy electrons upon imposition of a voltage thereacross and, contiguous to said semi-insulator layer and in surface contact therewith, a phosphor layer consisting essentially of ZnF_2:Mn having a thickness in the range of about 150 A to about 5000 A receiving high energy electrons from said semi-insulator layer and luminescing by excitation due to impact of said high energy electrons derived from said semi-insulator layer, and electrodes on the outboard surfaces of said semi-insulator layer and said phosphor layer for applying an electrical voltage across said structure.

4,326,008
PROTEIN SPECIFIC FLUORESCENT MICROSPHERES FOR LABELLING A PROTEIN
Alan Rembaum, Altadena, Calif., assignor to California Institute of Technology, Pasadena, Calif.
Division of Ser. No. 718,104, Aug. 27, 1976, abandoned. This application Apr. 25, 1980, Ser. No. 143,838
Int. Cl.³ B32B *5/16, 9/04;* G01N *31/00, 33/00*
U.S. Cl. 428—403 15 Claims

1. A protein specific fluorescent reagent composition for labelling a protein comprising discrete microspheres having a diameter below 100 microns containing a covalent bonding group selected from hydroxyl, amino or carboxyl covalently bound to a conjugate of said protein, said polymer comprising the addition interpolymerized reaction product of a monomer mixture consisting essentially of:

20 to 60% by weight of a first mono-unsaturated acrylic monomer containing at least one of said covalent bonding groups;

0.1% to 15% by weight of a fluorescent comonomer addition polymerizable with said first monomer; and

1 to 20% by weight of a polyunsaturated cross-linking agent addition polymerizable with said first monomer or comonomer.

4,326,009
POLYMERIC PARTICULATE CARRIER
Garfield P. Royer, 100 Howard St., Worthington, Ohio 43085
Continuation of Ser. No. 936,845, Aug. 25, 1978, abandoned, and a continuation-in-part of Ser. No. 819,283, Jul. 27, 1977, abandoned. This application Jul. 15, 1980, Ser. No. 169,264
Int. Cl.³ B32B *5/16*
U.S. Cl. 428—407 12 Claims

1. A polymeric carrier having a predetermined particle size such that the largest dimension thereof is less than about 8 mm and the smallest dimension is at least 0.1 mm, said carrier comprising a plurality of polymeric segments containing chemically modifiable groups on the surface thereof, said segments being united into a coherent, stable porous matrix by means of cross-links between segments, said matrix defining at least one cavity of predetermined size, the particle size of said carrier, the porosity of said matrix and the presence of said cavity combining to provide desirable liquid compatability and diffusional characteristics.

4,326,010
ADDITIVE IN A PHOTOPOLYMERIZABLE COMPOSITION FOR REDUCING ITS ADHESION TO A SUPPORT FILM
Richard D. Bauer, Towanda, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Filed Jun. 15, 1979, Ser. No. 49,209
Int. Cl.³ B32B *27/36;* C08F *255/02*
U.S. Cl. 428—483 14 Claims

1. A method for reducing the adhesion between a support film and a photopolymerizable composition comprising polymeric binder, monomer and photoinitiator by incorporating into said composition an effective amount up to 4% based on the weight of the composition of an aliphatic polyester adhesion reducing agent selected from the group consisting of polyesters of hydroxy monocarboxylic acids or lactones thereof, and polyesters of dicarboxylic acids and diols, having an average molecular weight of 1500 to 40,000.

7. A photopolymerizable composition comprising polymeric binder, monomer, photoinitiator and an effective amount up to 4% based on the weight of the composition of an aliphatic polyester adhesion reducing agent selected from the group consisting of polyesters of hydroxy monocarboxylic acids, or lactones thereof and polyesters of dicarboxylic acids and diols, having an average molecular weight of 1500 to 40,000.

4,326,011
HOT CORROSION RESISTANT COATINGS
Joseph A. Goebel, Rocky Hill; Richard H. Barkalow, and Nicholas E. Ulion, both of Marlborough, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.
Filed Feb. 11, 1980, Ser. No. 120,248
Int. Cl.³ B32B *15/04*
U.S. Cl. 428—641 8 Claims

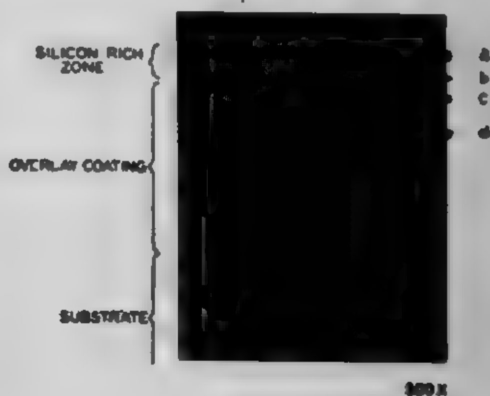
1. A coated superalloy article having enhanced resistance to hot corrosion which comprises:

a. superalloy substrate;

b. a thin adherent overlay coating, on the substrate, of a material selected from the group consisting of MCr, MCrAl, MCrAlY and MCrAlHf where "M" is selected from the group consisting of Fe, Ni, and Co and mixtures thereof;

c. a silicon enriched layer at the surface of the overlay coating having a thickness from about 10 to about 40% of the total coating thickness and having a silicon concentration of from greater than 10 to about 50%, balance selected from the elements which makeup the overlay coating with substantially all of the elements in the overlay coating being present.

8. A coated superalloy article having enhanced resistance to hot corrosion which comprises:

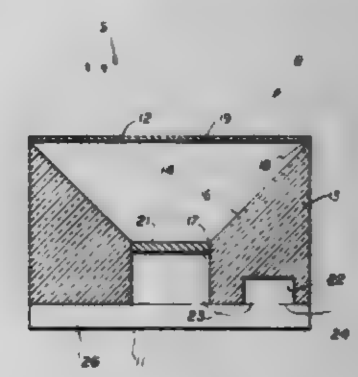


a. superalloy substrate;

b. a thin adherent overlay coating, on the substrate, of a material selected from the group consisting of MCr, MCrAl, MCrAlY and MCrAlHf where "M" is selected from the group consisting of Fe, Ni, and Co and mixtures thereof;

c. a silicon enriched layer at the surface of the overlay coating having a thickness from about 10 to about 40% of the total coating thickness and having a silicon concentration of from about 20 to about 40%.

4,326,012
SOLAR POWER BUILDING BLOCK
Walter T. Charlton, 2011 "I" St. N.W., Ste. 303, Washington, D.C. 20006
Filed Sep. 18, 1980, Ser. No. 188,567
Int. Cl.³ H01L *31/04;* F24J *3/02*
U.S. Cl. 429—9 11 Claims



1. A device for forming static structures such as walls or the like exposed to sunlight comprising, in combination,

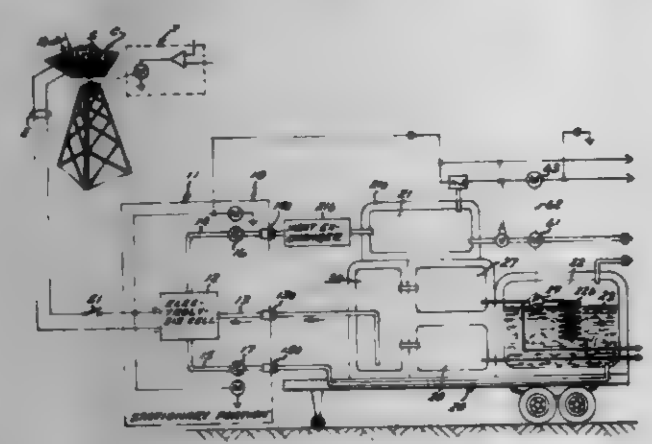
a building block having a molded body of rectangular cross-sectional shape and compressive strength for use as a building unit having opposed inner and outer side faces, said body outer side faces having a recess therin, said recess having side walls and an inner end,

a solar cell disposed in said body within the inner end of said recess, said recess having an outer end opening into said body outer side face for exposure to sunlight in a wall construction,

electric power storage means disposed within said body and circuit means for connecting said solar cell to said electric

power storage means whereby the electric power generated by said solar cell upon the impingement of sunlight on said solar cell passing through the outer end opening of said recess is stored in said storage means, and
means for connecting said electric power storage means to an associated power utilization device.

4,326,013
ENERGY SYSTEM
Edgar F. Jacobi, SN 754 Jens-Jensen, St. Charles, Ill. 60174, and Mark R. Madden, Rte. #2, Plainsfield, Wis. 54966
Filed Nov. 17, 1980, Ser. No. 207,658
Int. Cl.³ H01M *8/18*
U.S. Cl. 429—20 8 Claims

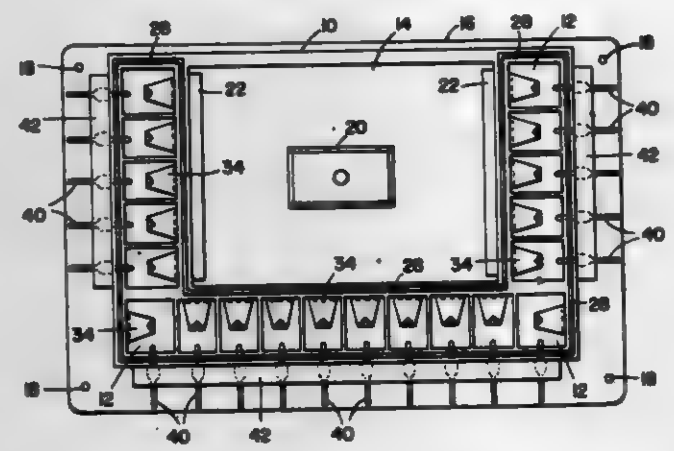


1. A transportable storage system conformed to transfer hydrogen and oxygen produced in the course of photovoltaic electrolysis of water, comprising:
a movable platform;
a first and second insulated coolant chamber mounted on said platform and storing coolant therein;
a container housing metallic fibers mounted on said platform;
a tank for storing gas under pressure mounted on said platform;
conveying means selectively connected to transfer said hydrogen and oxygen to said container and tank;
a first heat exchanger received in said container; and
circulating means for transferring water through said first heat exchanger from said first to said second chamber during the course of said transfer by said conveying means.

4,326,014
HIGH TEMPERATURE ORGANIC ELECTROLYTE CELLS
Arabinda N. Dey, Needham, Mass., assignor to Duracell International Inc., Bethel, Conn.
Division of Ser. No. 710,753, Aug. 2, 1976, Pat. No. 4,085,256, which is a continuation of Ser. No. 254,998, May 19, 1972, abandoned. This application Apr. 17, 1978, Ser. No. 897,211
Int. Cl.³ H01M *6/00*
U.S. Cl. 429—48 5 Claims

1. The method of treating anodes of active metals above hydrogen in the electromotive series for use in anhydrous electrochemical energy generating cells comprising the steps of immersing the active metal in an anhydrous organic electrolyte comprised of an organic solvent with an electrolyte salt dissolved therein and having a gaseous reactant selected from the group consisting of CO_2, SO_2, O_2, NH_3, and N_2 saturated with respect to water vapor bubbled therethrough; forming upon the surface of said active metal, with said gaseous reactant in the presence of the electrolyte, a coating of the reaction product of said active metal with said reactants; said coating being insoluble in said cell on open circuit but removable under the slight overvoltage conditions during discharge of said cell.

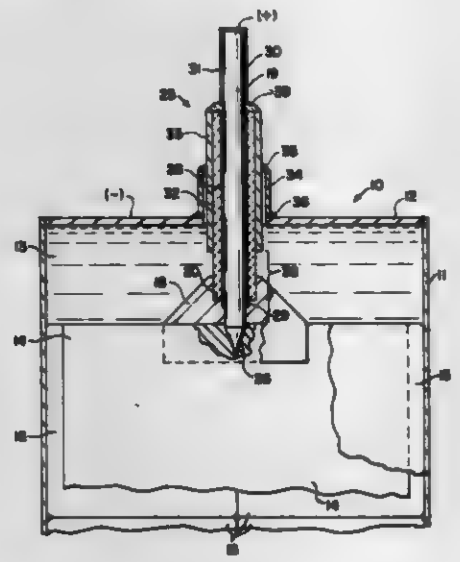
4,326,015
BATTERY ACTIVATE ASSEMBLY
Janet K. Kohler, Palo Alto, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Oct. 23, 1978, Ser. No. 953,670
Int. Cl.³ H01M *10/44*
U.S. Cl. 429—52 15 Claims



1. A battery activate assembly for filling a battery with a fluid electrolyte comprising:
(a) a box having a cavity, said cavity having an exit hole;
(b) means for puncturing the seal of a bottle containing said fluid electrolyte when said bottle is inverted and inserted into said cavity, said puncturing means being situated in said cavity so that said fluid electrolyte fills said cavity when said seal is punctured; and
(c) means for conveying said fluid electrolyte from said cavity via said exit hole to an individual cell of said battery.

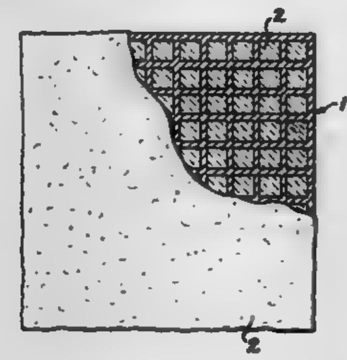
11. A method for activating individual cells of a battery with a fluid electrolyte comprising the steps of:
(a) inserting a bottle containing said fluid electrolyte into a cavity of a box, said cavity having a knife edge, such that the seal of said bottle is punctured and said fluid electrolyte fills said cavity; and
(b) conveying said fluid electrolyte from said cavity via a hole therein to an individual cell of said battery.

4,326,016
SWAGED SEAL FOR FUSED SALT BATTERIES
Theodore B. Selover, Jr., Shaker Heights, Ohio, and Thomas H. Hacha, Troy, Mich., assignors to The Standard Oil Company, Cleveland, Ohio
Filed Dec. 30, 1980, Ser. No. 221,390
Int. Cl.³ H01M *2/08*
U.S. Cl. 429—184 10 Claims



1. A seal for fused salt batteries having a current conducting rod partially within said battery and partially outside comprising:
a layer of material provided on the body of said current conducting rod leaving exposed the opposite ends thereof, said layer being inert in the fused salt electrolyte and compressible; and
a swaged metal sheath covering said layer compacting it to approximately its maximum density.

4,326,017
POSITIVE ELECTRODE FOR LEAD ACID BATTERY
Fritz G. Will, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.
Filed Jan. 26, 1981, Ser. No. 228,648
Int. Cl.³ H01M *4/56*
U.S. Cl. 429—228 9 Claims



1. A positive electrode for use in a secondary lead-sulfuric acid electrolyte cell or battery comprised of a grid supporting an adherent external layer of PbO_2, said grid being comprised of an electrically conducting substrate having an at least substantially pinhole-free coating of semiconducting metal oxide, the sulfuric acid electrolyte having no significant deleterious effect on the coating and forming a substantially non-corroding oxide with the substrate.

4,326,018
LITHOGRAPHIC PRINTING PLATE
Paul Jargiello, Orange, N.J., assignor to Polychrome Corporation, Yonkers, N.Y.
Continuation-in-part of Ser. No. 58,976, Jul. 20, 1979, Pat. No. 4,233,390, which is a continuation-in-part of Ser. No. 859,967, Oct. 6, 1977, abandoned. This application Aug. 15, 1980, Ser. No. 178,657
Int. Cl.³ G03F *7/02;* G03C *1/58, 1/76*
U.S. Cl. 430—15 14 Claims

1. A lithographic printing plate which comprises a light-sensitive sheet material which has been imagewise exposed to a radiation source, the exposed plate developed and the developed plate post-cured by further exposure to a high intensity radiation source or air-baking at high temperatures wherein the light sensitive sheet material comprises a sheet substrate upon which had been coated a first layer comprising a photosensitive lithographically suitable diazo compound and a second layer comprising a lithographically suitable photopolymerizable composition.

4,326,019
POSITIVE TONERS CONTAINING LONG CHAIN HYDRAZINIUM COMPOUNDS
Chin H. Lu, and Peter F. Erhardt, both of Webster, N.Y., assignors to Xerox Corporation, Stamford, Conn.
Division of Ser. No. 19,698, Mar. 12, 1979, Pat. No. 4,269,922. This application Jan. 8, 1981, Ser. No. 223,511
Int. Cl.³ G03G *9/00, 13/16*
U.S. Cl. 430—108 11 Claims

1. A positively charged toner composition comprised of a resin, a colorant and a long chain hydrazinium compound of the formula:

$$\left[\begin{array}{c} R_2 \\ | \\ R_1-N-R_3 \\ | \\ NH_2 \end{array}\right]^+ A^-$$

wherein R_1 is a hydrocarbon radical containing from 8 to 22 carbon atoms, R_2 and R_3 are independently selected from hydrogen or hydrocarbon radicals containing from 1 to 22 carbon atoms, and A is an anion selected from halides, sulfate, sulphonate, phosphate and nitrate.

10. A toner in accordance with claim 1 wherein a carrier material is added to the composition thereby resulting in a developer material wherein the toner is charged positively and the carrier is charged negatively.

11. A toner in accordance with claim 10 wherein the carrier is selected from polyvinylidene fluoride coated steel carrier or vinyl fluoride resin coated steel carrier.

4,326,020
METHOD OF MAKING POSITIVE ACTING DIAZO LITHOGRAPHIC PRINTING PLATE
Eugene Golda, Monsey, and Alan Wilkes, Brewster, both of N.Y., assignors to Polychrome Corporation, Yonkers, N.Y.
Filed Sep. 10, 1980, Ser. No. 185,843
Int. Cl.³ G03F *7/08*
U.S. Cl. 430—302 12 Claims

1. A method for producing a positive acting lithographic printing plate which comprises:
(a) Coating at least one surface of a substrate with a first layer comprising a water soluble lithographically suitable, light sensitive, negative acting aromatic diazo composition; and
(b) applying to said first layer, a second layer comprising a water insoluble, ink receptive, water permeable negative working lithographic photosensitive composition which comprises:
(i) at least one water insoluble, water permeable, oleophilic resin selected from the group consisting of epoxy resins, polyurethane, polyester, urethane, poly(ethylene oxides), poly(vinyl hydrogen phthalate), poly(vinyl acetals) and poly(vinyl butyral) resins; and
(ii) The light-sensitive reaction product of a diazo diphenylamine-formaldehyde condensate with a benzophenone sulfonic acid; and
(c) determining on a sample of the coated substrate of step 1(b) the optimum amount of light, in lumens or equivalent, necessary to produce a GATF step 7 to step 9 negative working plate; and
(d) in an imaging step exposing the construction of step 1(b) to 3 to 15% of the "optimum amount of light" determined in step (c); and
(e) developing said exposed construction by washing with a developer comprising water whereby the light exposed areas of the two layers formed in steps (a) and (b) are removed; and then
(f) post exposing the developed construction to the above optimum amount of light for production of a negative-working plate whereby a positive-working lithographic plate is produced.

4,326,021

PHOTOGRAPHIC NEGATIVE MATERIAL WITH AT LEAST ONE LAYER CONTAINING A DESENSITIZED SILVER HALIDE EMULSION

Rolf Steiger, Praroman, and Jean-Francois Reber, Marly, both of Switzerland, assignors to Ciba Geigy AG, Basel, Switzerland

Filed Feb. 11, 1981, Ser. No. 233,411

Claims priority, application Switzerland, Mar. 7, 1980, 1915/80

Int. Cl.³ G03C *1/36*

U.S. Cl. 430—427 **11 Claims**

1. A photographic negative silver halide material with at least one layer which contains a desensitised silver halide emulsion, wherein this layer contains, as the desensitiser, a trinuclear heptamethinecyanine or a methine halogenated trinuclear tetramethinecyanine with each having three identical heterocyclic ring systems, which can have different substituents and are linked to one another by three identical methine systems, which can be mesomeric.

4,326,022

PHOTOGRAPHIC MATERIAL CONTAINING A HIGH BOILING SOLVENT

Kenji Ito; Katsumi Matsuura; Hiroshi Sugita; Toshihiko Kimura, and Hideaki Arai, all of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

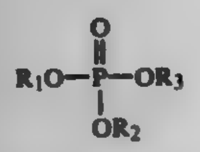
Filed Dec. 1, 1980, Ser. No. 211,893

Claims priority, application Japan, Dec. 7, 1979, 54-158113

Int. Cl.³ G03C *1/10*

U.S. Cl. 430—546 **1 Claim**

1. A silver halide photographic material containing a hydrophobic photographic additive being contained in oil particles dispersed in a hydrophilic colloidal layer coated on a support wherein the oil particles consist of a compound represented by a formula



wherein R_1 represents an alkyl radical, and each of R_2 and R_3 represents an aryl radical, said additive comprising a magenta dye-forming coupler.

4,326,023

SPECTRAL SENSITIZATION OF PHOTOGRAPHIC EMULSIONS

Mary K. DeSeyn, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

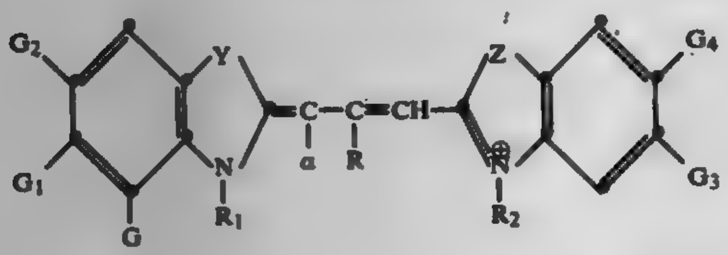
Filed Sep. 15, 1976, Ser. No. 723,418

Int. Cl.³ G03C *1/14*

U.S. Cl. 430—550 **11 Claims**

1. A photographic silver halide emulsion sensitized to the region of the electromagnetic spectrum between 590 and 640 nanometers with a dye from each of the following groups I, II and III:

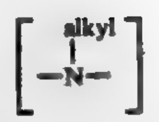
I. a dye having the structural formula:



where:

Y is selenium or sulfur;

Z is oxygen or



R is methyl or ethyl;

R_1 and R_2 are each acid substituted alkyl;

α is hydrogen;

G is hydrogen;

G_1 is hydrogen, halogen or alkoxy;

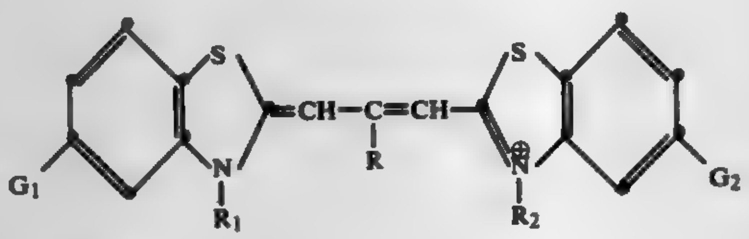
G_2 is hydrogen or alkoxy; or

G and G_1 or G_1 and G_2 are the atoms necessary to complete a fused benzene ring;

G_3 is alkyl, alkoxy, aryl, halogen or styryl; and

G_4 is hydrogen, alkyl or halogen;

II. a dye having the structural formula:



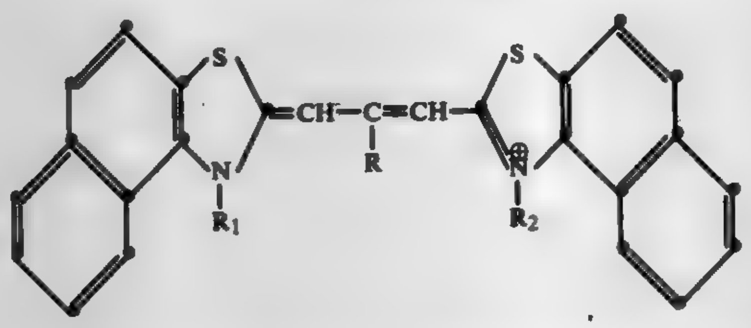
where:

R is methyl or ethyl,

R_1 and R_2 are each hydroxyalkyl or each acid-substituted alkyl; and

G_1 and G_2 are, independently, hydrogen, halogen, alkyl, aryl or alkoxy, provided that at least one of G_1 and G_2 is a substituent other than hydrogen; and

III. a dye having the structural formula:



where:

R is methyl, ethyl or a negatively charged ketomethylene residue which forms an allopolarcyanine dye; and

R_1 and R_2 are each acid-substituted alkyl; and dyes I, II and III have associated an anion or a cation, if necessary to neutralize the charge on the dye molecule.

4,326,024

SILVER HALIDE EMULSION CONTAINING YELLOW-DYE-FORMING COUPLER

Hidetoshi Kobayashi, and Mitsugu Tanaka, both of Minamiashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

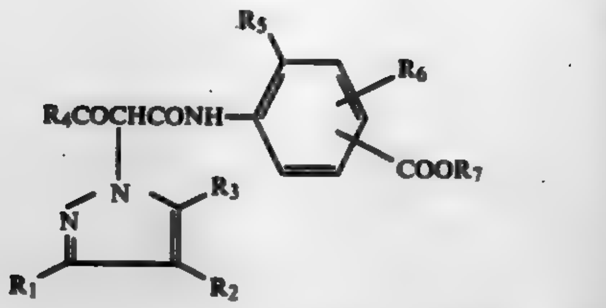
Continuation-in-part of Ser. No. 155,818, Jun. 2, 1980, abandoned. This application Mar. 20, 1981, Ser. No. 245,842

Claims priority, application Japan, May 31, 1979, 54-68180; France, May 28, 1980, 80 11785; Fed. Rep. of Germany, May 29, 1980, 3020416; United Kingdom, Jun. 2, 1980, 1008/80

Int. Cl.³ G03C *1/40*

U.S. Cl. 430—557 **12 Claims**

1. A silver halide color photosensitive material comprising a yellow-dye-forming coupler having the formula (I):



(I)

wherein R_1, R_2 and R_3 each independently represents a hydrogen, a halogen, an alkyl group, an alkoxy group, an aryloxy group, an alkoxycarbonyl group, an aryl group, a heterocyclic group or a carboxyl group; R_4 represents an aryl group or a tertiary alkyl group; R_5 and R_6 each independently represents a hydrogen, a halogen or an alkoxy group; and R_7 represents a substituted or unsubstituted alkyl group.

4,326,025

ANTI-HEMOLYTIC AGENT EMULSIONS AND THE USE THEREOF

Richard G. Buckles, Basel, Switzerland, and Jan W. Garber, McHenry, Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Dec. 19, 1979, Ser. No. 105,468

Int. Cl.³ A01N *1/02;* **A61K** *35/14*

U.S. Cl. 435—2 **34 Claims**

1. The method of storing blood in vitro for a period of more than two days at a reduced temperature in a hemocompatible container which also contains a sufficient quantity of an emulsion of an antihemolytic agent emulsified with a blood-compatible, nontoxic surfactant emulsifying agent, said antihemolytic agent being a fatty ester containing at least two ester linkages comprising fatty hydrocarbon groups of four to twelve carbon atoms each, said emulsion being stabilized and blood hemolysis reduced for a period of time equal to the duration of storage of the blood, when compared with blood under similar storage conditions in the absence of said emulsion.

4,326,026

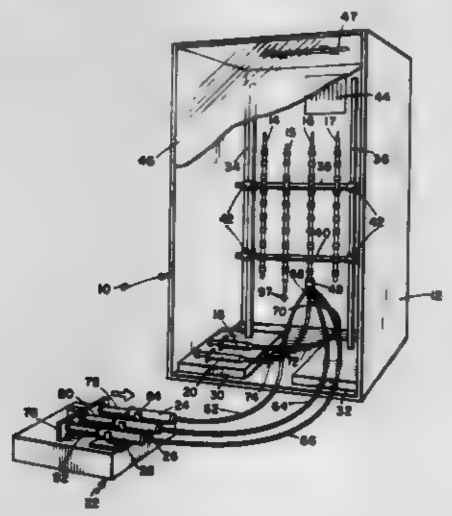
METHOD FOR FRACTIONATING CELLS

Siddhartha Sarkar, Solana Beach, Calif., assignor to The Regents of the University of California, Berkeley, Calif.

Filed Jun. 2, 1980, Ser. No. 155,227

Int. Cl.³ C12N *5/02;* **A61K** *35/48*

U.S. Cl. 435—2 **9 Claims**



1. A method for fractionating live cells comprising the steps of:

introducing a suspension fluid containing the live cells into an elongate chamber;

maintaining a laminar flow of a nutrient fluid longitudinally of the chamber to establish a longitudinal gradient of different fractions of the cells, the nutrient fluid being maintained at a temperature near that of the normal environment of the cells; and

extracting fluid samples containing the cell fractions from the chamber.

9. A method for obtaining enriched quantities of live male and female sperm cells in physically separate fractions, comprising the steps of:

introducing a predetermined quantity of a suspension fluid containing the live male and female sperm cells into the lower end of a vertically extending chamber;

introducing a nutrient fluid suitable for supporting the viability of the sperm into the upper end of the chamber at a first predetermined rate;

maintaining the temperature of the nutrient fluid at a level near that of the normal environment of the sperm cells;

draining the nutrient fluid from the lower end of the chamber at a second predetermined rate;

maintaining the first and second rates at relative levels sufficient to establish a vertically extending gradient of different fractions of the sperm cells; and

extracting different fractions of the sperm cells at vertically spaced locations along the chamber.

4,326,027

ANTIGLOBULIN CONTROL CELLS

Barry Wenz, White Plains, N.Y., assignor to Albert Einstein College of Medicine of Yeshiva University, Bronx, N.Y.

Filed Mar. 28, 1978, Ser. No. 891,019

Int. Cl.³ C12P *21/00;* **C12N** *5/00;* **G01N** *31/00*

U.S. Cl. 435—7 **15 Claims**

1. Hematological control cells comprising human red blood cells immunologically coated with univalent antibody 3.5S Fab fragments of an incomplete antibody wherein the degree of saturation of 3.5S fragments provides a +1 to +4 agglutination in the presence of active anti-human sera.

6. Hematological control cells comprising red blood cells having univalent antibody Fab fragments immunologically adhered thereto wherein the degree of saturation of said fragments provides a +1 to +4 agglutination in the presence of active anti-human sera.

4,326,028

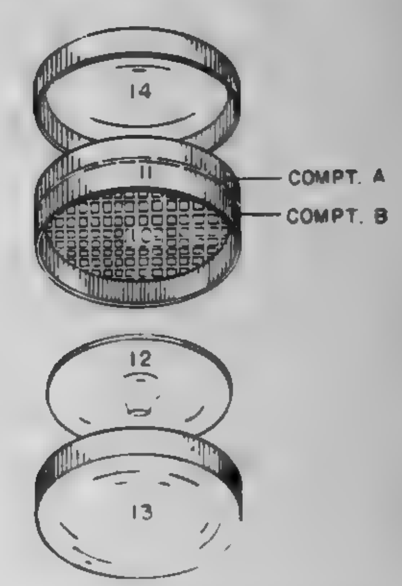
ANTIBIOTIC TESTING VESSEL

Lewis R. Brown, 5 Hialeah Dr., Starkville, Miss. 39759

Filed Sep. 10, 1980, Ser. No. 185,746

Int. Cl.³ C12Q *1/18*

U.S. Cl. 435—32 **4 Claims**



1. A vessel for testing the biological activity of substances produced by microorganisms cultured on agar which comprises

a cylinder,

a perforate support member attached on its periphery to the inner wall of the cylinder, for supporting a layer of hardened agar perpendicular to the axis of the cylinder, and sealing means removably attached to the inner wall of the cylinder adjacent the perforate support member for sealing the perforate support member while liquid agar poured onto it hardens.

4,326,029

PROCESS FOR PRODUCTION OF L-ASPARTIC ACID

Hideaki Yukawa; Terukazu Nara, and Yoshihiro Takayama, all of Ibaraki, Japan, assignors to Mitsubishi Petrochemical Co., Ltd., Tokyo, Japan

Filed Aug. 11, 1980, Ser. No. 177,044

Claims priority, application Japan, Aug. 10, 1979, 54/101820

Int. Cl.³ C12P *13/20*

U.S. Cl. 435—109 **2 Claims**

1. In a process for producing L-aspartic acid from fumaric acid or a salt thereof and ammonia or an ammonium salt, the improvement which comprises using a cultured product which is obtained by aerobically culturing a microorganism belonging to the Genus Brevibacterium and having resistance to α-amino-n-butyric acid.

4,326,030

PROCESS FOR THE PRODUCTION OF PYRUVIC ACID AND CITRIC ACID

Refaat M. El-Sayed, Täby, Sweden, assignor to Diamond Shamrock Corporation, Dallas, Tex.

Continuation of Ser. No. 902,898, May 4, 1978, abandoned. This application Dec. 5, 1979, Ser. No. 100,395

Claims priority, application Sweden, May 18, 1977, 7705883

Int. Cl.³ C12P *7/48, 7/40*

U.S. Cl. 435—144 **74 Claims**

9. A process for producing pyruvic acid which comprising cultivating in a medium containing a source of lactose carbon a strain of *Escherichia Coli* which is capable of producing pyruvic acid from lactose carbon and has substantially the same identifying characteristics as *Escherichia Coli* DSM 1392 until pyruvic acid is accumulated in a recoverable amount, said cultivation being under aerobic conditions at the beginning and later under anerobic conditions.

4,326,031

PROCESS FOR THE CONTINUOUS ENZYMATIC CHANGE OF WATER SOLUBLE α-KETOCARBOXYLIC ACIDS INTO THE CORRESPONDING α-HYDROXYCARBOXYLIC ACIDS

Christian Wandrey; Rolf Wichmann, both of Jülich; Wolfgang Leuchtenberger, Bruchköbel; Maria-Regina Kula, Wolfenbüttel, and Andreas Bückmann, Braunschweig-Stöckheim, all of Fed. Rep. of Germany, assignors to Degussa AG, Frankfurt, Fed. Rep. of Germany

Filed Jul. 25, 1980, Ser. No. 172,444

Claims priority, application Fed. Rep. of Germany, Jul. 25, 1979, 2930087

Int. Cl.³ C12P *7/42*

U.S. Cl. 435—146 **14 Claims**

1. A process for continuously enzymatically converting water soluble α-ketocarboxylic acids in a membrane reactor equipped with a mean pore diameter of 1–3 nm into the corresponding α-hydroxycarboxylic acid comprising carrying out the conversion in the presence of a substrate specific dehydrogenase, a nicotinamide-adenine-dinucleotide (NAD^+/NADH) linked to a water soluble polymer of molecular weight 500 to 50,000 as coenzyme while simultaneously regenerating NADH from NAD^+ in the presence of a formate dehydrogenase by means of formate ion, there being employed 0.1 to 10 mmol/l of said coenzyme, continuously supplying to the reactor a substrate stream which contains 50 to 100% of the maximum amount soluble, but not over 2,000 mmol/l, of the reacting α-ketocarboxylic acid in the form of a water soluble salt as substrate, and 100 to 6,000 mmol/l of a formate, maintaining over the membrane a differential pressure of 0.1 to 15 bar and continuously drawing off behind the membrane a filtrate stream containing the α-hydroxycarboxylic acid formed.

4,326,032

PROCESS FOR THE PRODUCTION OF ORGANIC FUEL

Leslie H. Grove, 707 E. Hoyt Ave., St. Paul, Minn. 55106

Continuation-in-part of Ser. No. 68,209, Aug. 20, 1979, abandoned, which is a continuation-in-part of Ser. No. 922,748, Jul., 1978, abandoned. This application Sep. 22, 1980, Ser. No. 189,205

Int. Cl.³ C12P *7/08;* **C12R** *1/145*

U.S. Cl. 435—148 **13 Claims**

1. A method for producing a non-potable oxo- or oxy-aliphatic organic fuel boiling within the range of 20° to 200° C. and containing lower aliphatic monohydric alcohols or carbonyl compounds, which method comprises the steps of:

(a) blending water, a cellulose- or hemicellulose-containing particulate mass, and a fermentation agent to form a fermentation medium, said fermentation agent being selected from the group consisting of:
   (i) a deliberate combination of at least two carbohydrase-producing Clostridium species in a ratio ranging from 9:1 to 1:9, at least one of said species being capable of producing cellulase; and
   (ii) the carbohydrase enzymes produced by said combination;
(b) fermenting said particulate mass at fermentation temperatures, with supression of carboxylic acid production, until fermentation products are produced; and
(c) recovering the non-potable organic fuel from said fermentation medium.

4,326,033

MODIFIED UROKINASE HAVING EXTENDED ACTIVITY AND METHOD OF MAKING

William H. Holleman; Shaw-Guang Lee, both of Libertyville, and Paul P. Hung, Waukegan, all of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Filed May 5, 1980, Ser. No. 146,823

Int. Cl.³ C12N *9/48, 9/72*

U.S. Cl. 435—212 **7 Claims**

1. A method of increasing the biological half-life of urokinase without substantially decreasing the fibrinolytic activity there of said method comprising treating urokinase to remove or degrade the carbohydrate portion of the molecule.

4,326,034

FERMENTATION PROCESS FOR PRODUCING HIGHER PLANT CELLS

Eric Peel, Shepperton, and Colin C. Dalton, Laleham, both of England, assignors to The British Petroleum Company Limited, London, England

Filed Aug. 8, 1979, Ser. No. 65,002

Claims priority, application United Kingdom, Aug. 16, 1978, 33470/78

Int. Cl.³ C12N *5/02*

U.S. Cl. 435—241 **8 Claims**

1. A method for producing higher plant cells which are capable of growth in the presence of light and the absence of a carbohydrate carbon source comprising cultivating higher plant cells which require a carbohydrate carbon source for growth, in the presence of light, a gas containing free oxygen and a gas containing carbon dioxide, in a liquid aqueous medium consisting essentially of inorganic elements required by the cells for growth and the carbohydrate and maintaining said plant cells in suspension and maintains the concentration of dissolved oxygen in the medium at a value within the range 10 to 250 n mol of oxygen per ml of medium while reducing the quantity of readily assimilable carbohydrate which is available to the cell to an amount which induces in the cell the development of an enhanced capacity for photosynthesis and continuing cultivation until cells which can grow in the presence of light and in the absence of carbohydrate are produced.

4,326,035

PROCESS FOR THE CULTURE OF AEROBIC MICROORGANISMS

Rodolfo Gabellieri, Brussels, Belgium, assignor to Interox, Brussels, Belgium

Filed Jan. 9, 1978, Ser. No. 868,466

Claims priority, application Luxembourg, Jan. 10, 1977, 76547

Int. Cl.³ C12N *1/32*

U.S. Cl. 435—247 **13 Claims**

1. Process for the culture of aerobic microorganisms in a culture medium provided with at least one source of oxygen, and with a highly flammable substrate comprised of at least one source of carbon and at least one source of hydrogen, consisting essentially of: providing oxygen originating from the decomposition of hydrogen peroxide as a sole added source of molecular oxygen and providing said highly inflammable substrate as a substrate having a flash point equal to or less than 30° C., said hydrogen peroxide being provided in the form of an aqueous solution in an amount such that oxygen is formed in a quantity sufficient to satisfy the growth needs of the microorganisms, whereby the risk of ignition of the substrate used is avoided.

4,326,036

PRODUCTION OF ETHANOL FROM SUGAR CANE

Frank W. Hayes, 144 Park West, London, W2 2QP, England

Filed Oct. 16, 1980, Ser. No. 197,538

Claims priority, application United Kingdom, Oct. 17, 1979, 36060/79

Int. Cl.³ C12P *7/06, 7/14, 7/08, 19/02*

U.S. Cl. 435—161 **8 Claims**

1. A method for the production of ethanol from sugar cane which comprises:

(i) chopping and shredding the harvested sugar cane to provide a digestion mass of juice and fibre;
(ii) subjecting the digestion mass of juice and fibre in a first continuous digestion zone to the hydrolytic action of a hemicellulase enzyme to break down at least some of the hemicellulose content of the sugar cane fibres into fermentable sugar;
(iii) separating the product digestion mass produced in step (ii) into a liquid fraction containing fermentable sugars both from the original juice and produced in the digestion zone by said enzyme, and a fibrous residue fraction;
(iv) subjecting the fibrous residue fraction from step (iii) in a second continuous digestion zone to the combined action of a cellulase enzyme and an ethanol-producing fermentation culture, thereby to partially break down the cellulose content of the fibre residue into a fermentable sugar and to initiate fermentation of that fermentable sugar, and any residual fermentable sugar carried over from the first digestion zone;
(v) separating the product digestion mass produced in step (iv) into a second liquid fraction comprising a partially fermented sugar juice, and a fibrous residue;
(vi) combining the liquid fraction from step (iii) with the liquid fraction from step (v) and subjecting the combined liquid fractions in a fermentation zone to a fermentation process using an ethanol-producing microorganism thereby to produce ethanol;
(vii) recovering the ethanol produced in step (vi); and
(viii) burning at least part of the fibrous residue produced in step (v) to provide at least some of the heat energy requirements of the process.

4,326,037

ENZYMATIC METHOD FOR IMPROVING THE INJECTABILITY OF POLYSACCHARIDES

William L. Griffith, Oak Ridge; Alicia L. Compere, Knoxville, and James W. Holleman, Oak Ridge, all of Tenn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Nov. 1, 1979, Ser. No. 90,176

Int. Cl.³ C13L *3/00*

U.S. Cl. 435—274 **9 Claims**

1. A method for enhancing the ability of a polysaccharide in an aqueous solution to flow through a porous medium, said aqueous solution having a tendency to plug said porous medium, comprising the steps of:

(a) contacting said polysaccharide with an endoenzyme capable of hydrolyzing at least one of the linkages between sugar units of said polysaccharide, and
(b) maintaining said polysaccharide in contact with said endoenzyme under hydrolysis conditions for a time sufficient to decrease said tendency of said polysaccharide in aqueous solution to plug said porous medium, said time insufficient to decrease the viscosity of said aqueous polysaccharide solution by more than 25%.

9. A method for recovering oil from an oil-containing subterranean formation penetrated by an injection means and a production means which comprises injecting through said injection means and into said formation flooding water containing as a thickening agent a polysaccharide treated according to the process of claims 1, 3, or 7.

4,326,038

SEALING COMPOSITION AND SEALING METHOD

Isao Oda, Nagoya, and Masayuki Kaneno, Tokoname, both of Japan, assignors to NGK Insulators, Ltd., Nagoya, Japan

Continuation-in-part of Ser. No. 82,149, Oct. 5, 1979, abandoned, which is a continuation of Ser. No. 919,070, Jun. 26, 1978, abandoned. This application May 11, 1981, Ser. No. 262,794

Claims priority, application Japan, Jun. 29, 1977, 52-76550

Int. Cl.³ C03C *3/12*

U.S. Cl. 501—41 **2 Claims**

1. A sealing composition for sealing ceramics mutually or sealing ceramics and metal, consisting of 40–50% by weight of aluminum oxide, 35–43% by weight of calcium oxide, 3–10% by weight of yttrium oxide and 8–15% by weight of strontium oxide.

4,326,039

DENSE SHAPED ARTICLES OF POLYCRYSTALLINE β-SILICON CARBIDE AND PROCESS FOR THE MANUFACTURE THEREOF BY HOT-PRESSING

Jochen Kriegesmann, Durach-Bechen; Alfred Lipp, Bad Worishofen, and Klaus Reinmuth, Durach, all of Fed. Rep. of Germany, assignors to Elektroschmelzwerk Kempten GmbH, Munich, Fed. Rep. of Germany

Filed Jun. 25, 1980, Ser. No. 163,214

Claims priority, application Fed. Rep. of Germany, May 7, 1979, 2927226

Int. Cl.³ C04B *35/56*

U.S. Cl. 501—90 **1 Claim**

1. Shaped articles of polycrystalline silicon carbide having a density of at least 99% of the theoretical density of SiC, consisting essentially of

at least 97.8% by weight of β-silicon carbide;
from about 0.1 to 0.8% by weight of aluminum;
up to about 0.8% by weight of nitrogen and/or phosphorus,
up to about 0.3% by weight of oxygen;
up to about 0.3% by weight of carbon, the β-silicon carbide being in the form of a single-phase microstructure and the other constituents being substantially in the form of a solid solution in the β-SiC lattice and having a flexural strength of at least 600 N/mm² up to at least 1450° C., measured

according to the four-point method at a stress rate of 3.mm^{-2}.sec$^{31\ 1}$, and a predominantly transgranular fracture mechanism.

4,326,040

REFRACTORY FOR CASTING AND PROCESS FOR PRODUCING SAME

Nobuhiko Kaji, 2-2-8, Yugawa Kokura Minami-ku Kita Kyushu-shi, Fukuoka-ken; Hidenobu Honda, 2-11-36, Higashi Narumizu, Yahata Nishi-ku, Kita Kyushu-shi, Fukuoka-ken, and Hiroshi Shikano, 4-9-40, Kobai, Yahata Nishi-ku, Kita Kyushu-shi, Fukuoka-ken, all of Japan

Filed Dec. 24, 1980, Ser. No. 220,468

Claims priority, application Japan, Dec. 28, 1979, 54-170307

Int. Cl.^{3} C04B *35/52*

U.S. Cl. 501—100 10 Claims

1. A highly durable refractory for casting comprising, based on the total weight of said refractory in each case, 5–80% by weight of refractory component including the principal mineral phase consisting of mullite, baddeleyite and corundum and having the chemical composition consisting of 25–85% by weight of Al_2O_3, 10–70% by weight of ZrO_2 and 5–25% by weight of SiO_2, respectively, based on the total weight of said chemical composition and 10–40% by weight of carbon powder.

4,326,041

PROCESS FOR THE CATALYTIC SYNTHESIS OF METHANOL

Hans-Joachim Böhnisch, Dortmund, Fed. Rep. of Germany, assignor to UHDE GmbH, Dortmund, Fed. Rep. of Germany

Filed Aug. 11, 1980, Ser. No. 177,093

Claims priority, application Fed. Rep. of Germany, Aug. 24, 1979, 2934332

Int. Cl.^{3} C07C *27/06, 31/04*

U.S. Cl. 518—702 2 Claims

1. In a process wherein natural gas feed is cracked in a natural gas cracking plant to produce a raw gas which contains CO, CO_2 and H_2, the raw gas is compressed in several stages to a synthesis pressure of 50–150 bar, cooled and converted to methanol in a catalytic synthesis loop while gas is purged from the synthesis loop to maintain the inert gas level therein below a given limit, the improvement comprising exchanging heat to natural gas feed for the natural gas cracking plant from compressed raw gas at an intermediate stage of compression and exchanging heat to the purged gas from the finally-compressed raw gas.

4,326,042

MORPHOLINE AND PIPERAZINE DERIVATIVES IN A CATALYST SYSTEM FOR POLYESTER-BASED POLYURETHANE FOAMS

Robert L. Zimmerman, Austin, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Apr. 22, 1981, Ser. No. 256,360

Int. Cl.^{3} C08G *18/14*

U.S. Cl. 521—115 9 Claims

1. A catalyst system for use in reacting with an organic polyisocyanate and an organic polyester polyol to produce a polyurethane, the catalyst system comprising catalytic amounts of N-methoxypropylmorpholine, N-butylmorpholine and N,N'-dimethylpiperazine.

4,326,043

PROCESS FOR THE PREPARATION OF POLYISOCYANURATE DISPERSIONS MODIFIED WITH HALOGENATED ALCOHOLS AND COMPOSITIONS PREPARED THEREFROM

Thirumurti Narayan, Grosse Ile, and John T. Patton, Jr., Wyandotte, both of Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Jan. 19, 1981, Ser. No. 225,936

Int. Cl.^{3} C08G *18/14, 18/77, 18/80;* C08K *5/06*

U.S. Cl. 521—137 21 Claims

1. A dispersible polyisocyanurate polymer prepared by (a) polymerizing an organic polyisocyanate in an organic solvent in the presence of an effective amount of a trimerization catalyst, (b) deactivating said catalyst, and (c) reacting the free isocyanate groups remaining in the polymer with a monofunctional halogenated alcohol.

4,326,044

FIRE-RETARDANT MONOCARBOXYLIC ACID COPOLYMERS

Adolph V. DiGiulio, and Jack N. Bauer, both of Pittsburgh, Pa., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Division of Ser. No. 147,037, May 7, 1980, Pat. No. 4,278,767. This application Feb. 17, 1981, Ser. No. 235,261

Int. Cl.^{3} C08V *9/00*

U.S. Cl. 521—147 5 Claims

1. A fire-retardant foam composition having a density of between 1 and 10 pounds per cubic foot and consisting of a copolymer of 70 to 95 mole percent of a monovinyl aromatic monomer and 5 to 30 mole percent of an ethylenically unsaturated monocarboxylic acid monomer, from 10 to 20 parts per hundred parts of copolymer of an at least tribrominated diphenylether, and 4 to 8 parts per hundred parts of copolymer of a metal oxide synergist for the ether.

4,326,045

THERMOPLASTIC RESINS CONTAINING COUMARONE-INDENE RESIN OR POLYINDENE

George S. Li, Aurora, and Irving Rosen, Warrensville Heights, both of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Continuation of Ser. No. 909,323, May 24, 1978, Pat. No. 4,162,277, which is a continuation of Ser. No. 816,245, Jul. 18, 1977, Pat. No. 4,117,040, which is a continuation of Ser. No. 644,122, Dec. 24, 1975, Pat. No. 4,066,717. This application Jan. 22, 1979, Ser. No. 5,547

Int. Cl.^{2} C08L *45/02, 33/12*

U.S. Cl. 525—206 1 Claim

1. A composition having improved physical properties comprising a blend of (A) 100 parts by weight of polymethyl methacrylate and (B) from 1 to 50 parts by weight of a member selected from the group consisting of polyindene and a coumarone-indene resin.

4,326,046

PROCESS FOR PRODUCING MODIFIED POLYTETRAFLUOROETHYLENE

Haruhisa Miyake, Yokohama; Masami Yamashita, Yokosuka, and Tatsuro Asawa, Yokohama, all of Japan, assignors to Asahi Glass Company, Ltd., Tokyo, Japan

Filed Nov. 3, 1980, Ser. No. 203,505

Claims priority, application Japan, Nov. 30, 1979, 54-154222

Int. Cl.^{3} C08F *259/08*

U.S. Cl. 525—276 4 Claims

1. A process for producing a modified polytetrafluoroethylene which comprises polymerizing tetrafluoroethylene in an aqueous medium containing a dispersing agent with a polymerization initator source and then, copolymerizing tetrafluoroethylene and a fluorinated monomer having an acid functional group or a functional group which is convertible to the acid group as a copolymerizable modifier in the presence of the

resulting polytetrafluoroethylene to obtain modified polytetrafluoroethylene particles having cores made of homopolymer of tetrafluoroethylene and sheath layers in which the copolymerized specific modifier is present in the ratio of about 0.001 to 10 mol% based on the total polymer.

4,326,047

PROCESS FOR REACTING ALKYLENE OXIDES WITH HYDROXYL-CONTAINING INITIATOR COMPOUNDS

Ronald L. Yates, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Nov. 6, 1980, Ser. No. 204,688

Int. Cl.^{3} C08G *65/26, 65/28*

U.S. Cl. 525—507 3 Claims

1. In a process for reacting one or more monoepoxy-containing compounds with a compound or mixture of compounds having one or more OH and/or SH groups in the presence of calcium naphthenate as a catalyst, the improvement which comprises employing said catalyst in solid form.

4,326,048

METHOD FOR EMERGENCY SHUTDOWN OF GAS PHASE POLYOLEFIN REACTOR

Jack F. Stevens, Naperville; Kwok-fu Lee, Glen Ellyn; Philip M. Rose, Naperville; David R. Kreider, and Chi-Hung Lin, both of Wheaton, all of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed May 27, 1980, Ser. No. 153,773

Int. Cl.^{3} C08F *2/34, 2/42, 10/06*

U.S. Cl. 526—68 5 Claims

1. A method of rapidly terminating and restarting a gas phase olefin polymerization reaction using a titanium halide/aluminum alkyl catalyst system comprising (1) discontinuing catalyst addition, (2) discontinuing reactor quench liquid flow, (3) discontinuing reactor off gas flow, (4) injecting an amount of carbon oxide sufficient to terminate the reaction, (5) discontinuing recycle gas flow, (6) venting and flushing polymerization reactor, (7) resuming quench liquid, off gas and recycle gas flow, (8) injecting an amount of aluminum alkyl sufficient to initiate polymerization and (9) resuming titanium halide addition.

4,326,049

PHASE TRANSFER FREE-RADICAL POLYMERIZATION

Jerald K. Rasmussen, Stillwater, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Sep. 18, 1979, Ser. No. 76,529

Int. Cl.^{3} C08F *4/50, 4/48, 20/18*

U.S. Cl. 526—91 8 Claims

1. A process for the polymerization of free-radical polymerizable, ethylenically unsaturated monomeric material comprising:

(1) placing in a suitable vessel an organic liquid comprising said polymerizable, ethylenically unsaturated monomeric material;

(2) adding to said organic liquid:

(a) a water-soluble, organic-insoluble free-radical initiator, and

(b) an organic phase transfer agent capable of complexing with said initiator to produce an adduct which is soluble in said organic liquid and has the general formula $(Q^+)_nX^{n-}$, wherein Q^+ is

(i) a cation complex of an alkali or alkaline earth metal or ammonium cation and a neutral donor molecule selected from the group consisting of multidentate compounds, an amine selected from the group consisting of N,N'-dimethylpiperazine, 1,4-diazabicyclo octane, N,N,N',N'-tetramethylethylenediamine, piperazine hexamethyl phosphoric triamide, amphoteric compounds; or

(ii) a cation having the formula $(A_mM)^+$ where A is an organic radical having from one to eighteen carbon atoms bonded to M by m covalent linkages and M is an element selected from Groups VA and VIA of the Periodic Table of Elements;

and X^{n-} represents the anionic residue of a free-radical initiator having a valency of n which is capable of producing free-radicals upon activation, and n is an integer of 1 or 2;

(3) activating said adduct to produce free-radicals; and

(4) permitting said free-radicals to cause said monomeric material to polymerize.

4,326,050

PROCESS AND PRODUCT

Heinz Schulze; Robert L. Zimmerman, and Harold G. Waddill, all of Austin, Tex., assignors to Texaco Development Corporation, White Plains, N.Y.

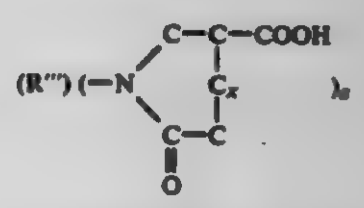
Division of Ser. No. 847,642, Nov. 1, 1977, which is a continuation-in-part of Ser. No. 689,409, May 24, 1976, abandoned. This application Apr. 1, 1981, Ser. No. 249,799

Int. Cl.^{3} C08G *59/52, 59/58*

U.S. Cl. 528—94 5 Claims

1. The method of curing an uncured epoxy resin which comprises

curing 100 parts of said uncured epoxy resin in the presence of aromatic polyamine curing agent and 1–15 parts of an accelerator



wherein x is an integer of 0–2; a is an integer of at least 2; R''' is a polyoxyalkylene chain having terminal carbon atoms to which the nitrogen atoms are bonded; and the molecular weight of R''' is 200–2100.

4,326,051

ACRYLONITRILE POLYMERIZATION WITH ORGANIC SOLVENT

Carlhans Süling, Odenthal; Siegfried Korte, Leverkusen, and Theo Neukam, Dormagen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 56,493, Jul. 11, 1979, abandoned. This application Jul. 21, 1980, Ser. No. 170,376

Claims priority, application Fed. Rep. of Germany, Jul. 28, 1978, 2833143

Int. Cl.^{3} C08F *2/06, 22/30*

U.S. Cl. 528—386 6 Claims

1. A process for the preparation of a polyacrylonitrile or of a co-polymer comprising predominantly acrylonitrile, said polymers having a K-value of from 50 to 100, a dye absorption capacity for cationic dyes of at least 0.5% by weight, a conductivity, measured in dimethylformamide solution, of at least 10μ Siemens, and from 0.2 to 1.5% by weight of sulfur fixed to said polymer, wherein acrylonitrile either alone or with up to 30% by weight of at least one ethylenically unsaturated comonomer, selected from the group consisting of acrylic acid alkyl esters, vinyl esters of aliphatic carboxylic acids, unsubstituted styrene or styrene substituted by alkyl groups, maleic acid andydride and N-alkyl-substituted maleic acid imides, is polymerized to conversions of from 40 to 95% by weight at temperatures of from 0° to 60° C., in an aliphatic hydrocarbon having a boiling point in the range of from −10° C. to 80° C. or in mixtures of aliphatic hydrocarbons boiling within the range of from −10° C. to 80° C., in the presence of a starter system consisting of from 0.1 to 8.0 mol % of sulfur dioxide, from 0.1 to 2.0 mol % of a hydroperoxide which is soluble in

the reaction medium and from 0.01 to 1.0 mol % of an organic acid which is soluble in the reaction system (based in each case on the quantity of monomers used).

4,326,052
DEACETYLATED POLYSACCHARIDE S-60

Kenneth S. Kang, LaJolla; George T. Colegrove, and George T. Veeder, both of San Diego, all of Calif., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 47,505, Jun. 8, 1979, abandoned, which is a continuation-in-part of Ser. No. 966,538, Dec. 4, 1978, abandoned. This application Aug. 14, 1980, Ser. No. 178,053

Int. Cl.[3] C07H *1/00, 1/08*

U.S. Cl. 536—1 4 Claims

1. Deacetylated heteropolysaccharide S-60, which comprises (a) about 50% (wt./wt.) insoluble material of which about 34% (wt./wt.) is protein, and (b) about 50% (wt./wt.) carbohydrate which contains about 22–26% (wt./wt.) glucuronic acid, 0% acetyl groups, and the neutral sugars rhamnose and glucose in the approximate molar ratio 3:2, said rhamnose and glucose sugars being primarily 1,4 β-linked, said heteropolysaccharide being further characterized in that it is anionic, and forms brittle, thermoreversible gels.

4,326,053
POLYSACCHARIDE S-60 AND BACTERIAL FERMENTATION PROCESS FOR ITS PREPARATION

Kenneth S. Kang, LaJolla, and George T. Veeder, San Diego, both of Calif., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 47,598, Jun. 8, 1979, abandoned, which is a continuation-in-part of Ser. No. 966,531, Dec. 4, 1978, abandoned. This application Aug. 14, 1980, Ser. No. 178,054

Int. Cl.[3] C07H *1/00, 1/08*

U.S. Cl. 536—1 5 Claims

1. Heteropolysaccharide S-60, the carbohydrate portion of which contains about 6–9% (wt./wt.) O-acetyl groups as the O-glycosidically linked ester, about 22% (wt./wt.) glucuronic acid, and the neutral sugars rhamnose and glucose in the approximate molar ratio 3:2, said rhamnose and glucose sugars being primarily 1,4 β-linked, said heteropolysaccharide being further characterized in that it is anionic, forms elastic, thermoreversible gels which melt and set in the range of about 65°–70° C., and forms aqueous solutions whose 0.1% viscosity is 40–80 cP, measured on a Brookfield LVF viscometer, spindle 2, 60 rpm, 25° C.

4,326,054
CLEOMYCINS AND PROCESS FOR PRODUCING SAME

Hamao Umezawa, Tokyo; Tomohisa Takita, Asaka; Akio Fujii, Kamakura; Yasuhiko Muraoka, Kitamoto, and Mamoru Konishima, Tokorozawa, all of Japan, assignors to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai, Tokyo, Japan

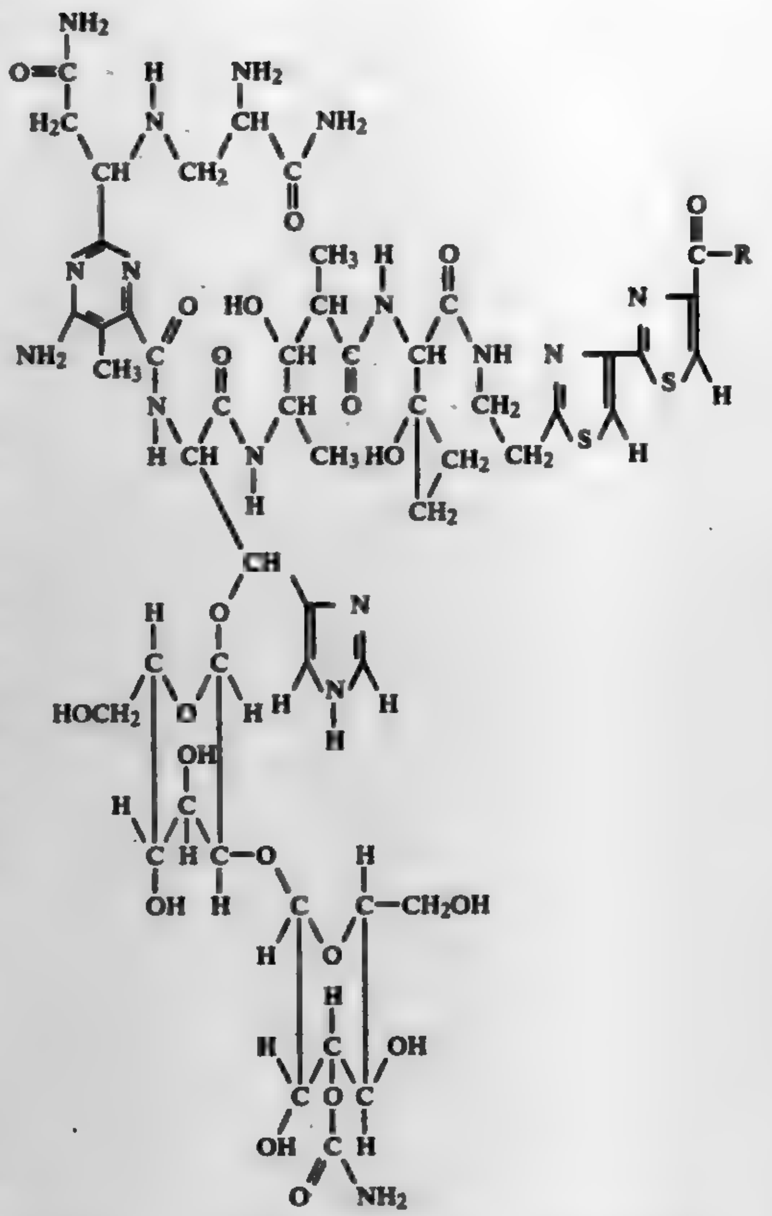
Filed Jul. 9, 1980, Ser. No. 167,439

Claims priority, application Japan, Jul. 19, 1979, 54-90951

Int. Cl.[3] C07H *11/02, 13/12*

U.S. Cl. 536—17 R 8 Claims

1. Novel antibiotics cleomycins represented by the formula



wherein R is a terminal amino residue corresponding to an aliphatic primary amine having at least two basic groups in the molecule, and nontoxic salts thereof selected from the group consisting of hydrochloride and sulfate salts, said basic groups being selected from the group consisting of nitrogen-containing, oxygen-containing and sulfur-containing organic groups.

4,326,055
STILBENE DERIVATIVES

Peter Loeliger, Kaiseraugst, Switzerland, assignor to Hoffmann-La Roche Inc., Nutley, N.J.

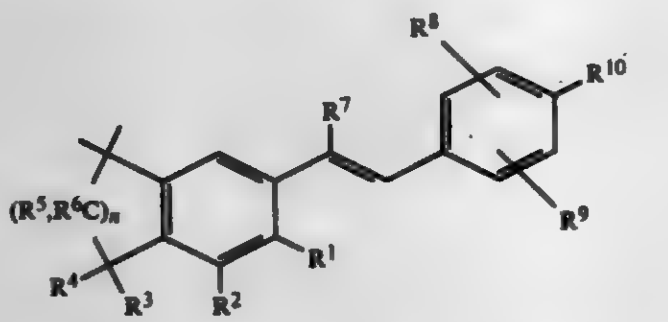
Continuation-in-part of Ser. No. 899,427, Apr. 24, 1978, Pat. No. 4,193,931. This application Dec. 15, 1978, Ser. No. 969,907

Claims priority, application Luxembourg, Dec. 22, 1977, 78751; Switzerland, Nov. 10, 1978, 11590/78

Int. Cl.[3] C07C *69/76;* C09B *23/00, 55/00*

U.S. Cl. 542—429 47 Claims

1. Compounds of the formula:



I

wherein n is an integer of from 1 and 2 and, when n is 1, R^1 and R^2 are individually hydrogen, lower alkoxy or halogen, or,

when n is 2, R^1 is hydrogen, lower alkoxy or halogen and R^2 is hydrogen; R^3, R^4, R^5 and R^6 are individually hydrogen or lower alkyl; R^7 is hydrogen, methyl or ethyl; R^8 and R^9 are hydrogen, lower alkyl or halogen; and R^{10} is $-(CH{=}CR^{19})_mR^{11}$; m is zero or 1; R^{11} is

or 2-oxazolinyl, or, when m is 1, R^{11} is additionally hydrogen; R^{12} is hydrogen or lower alkyl; R^{13} is hydrogen, lower alkyl, $-N(R^{17}, R^{18})$ or $-OR^{14}$; R^{14} is hydrogen, lower alkyl or alkanoyl; R^{15} is hydrogen, lower alkyl, $-OR^{16}$ or $-(CH_2)_pN(R^{17}, R^{18})$; R^{16} is hydrogen, lower alkyl, hydroxy-(lower alkyl), aryl, substituted aryl, aralkyl or aralkyl substituted in the aryl portion; R^{17} and R^{18} are individually hydrogen or lower alkyl or R^{17} and R^{18} taken together with the nitrogen atom to which they are attached form a heterocyclic group; R^{19} is hydrogen or lower alkyl and p is zero, 1, 2 or 3; as well as ketals thereof where R^{11} is $-C(O)R^{15}$ and R^{15} is hydrogen or lower alkyl, as well as salts thereof.

4,326,056
PROCESS FOR THE PRODUCTION OF 4-AMINO-6-TERT. BUTYL-3-MERCAPTO-1,2,4-TRIAZIN-5-ONE

Axel Kleemann, Hanau; Bernd Lehmann, Friegericht, and Herbert Klenk, Hanau, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

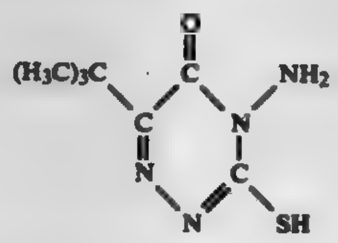
Filed May 22, 1981, Ser. No. 266,147

Claims priority, application Fed. Rep. of Germany, May 29, 1980, 3020370

Int. Cl.[3] C07D *253/06*

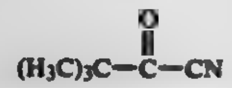
U.S. Cl. 544—182 6 Claims

1. In a process for the production of 4-amino-6-tert.butyl-3-mercapto-1,2,4-triazin-5-one (I)



(I)

by reacting pivaloyl cyanide (II)

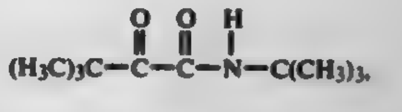


(II)

in a first reaction step with isobutylene in the presence of acetic acid and sulfuric acid and in a final reaction step forming the 4-amino-6-tert.butyl-3-mercapto-1,2,4-triazin-5-one (I) by means of thiocarbohydrazide (III)

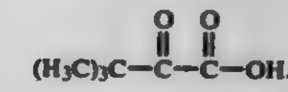
(III)

the improvement comprising reacting the pivaloyl cyanide (II) with isobutylene in the presence of 1.4 to 1.7 moles per mole of pivaloyl cyanide employed of sulfuric acid having a concentration between 93 and 100 weight percent, treating the reaction mixture obtained in this reaction with water and optionally more acetic acid in such amount that in each case it contains per mole of pivaloyl cyanide employed 50 to 220 grams of water and in all 150 to 850 grams of acetic acid with the proviso that the weight ratio of water to acetic acid is between 0.1 and 1.0:1, subsequently heating at boiling until by thin layer chromatography there is no longer detectable trimethyl pyruvic acid tert.butylamide



IV

diluting the reaction mixture with enough water that the weight ratio of water to acetic acid is between 0.4 and 2.0 and precipitating the 4-amino-6-tert.butyl-3-mercapto-1,2,4-triazin-5-one (I) with an amount of thiocarbohydrazide (III) at least equivalent to the content of trimethyl pyruvic acid



(V)

4,326,057
ADDUCTS OF ACROLEIN AND ISOCYANURIC ACID

Saul M. Cohen, Springfield, and John R. LeBlanc, Wilbraham, both of Mass., assignors to Monsanto Company, St. Louis, Mo.

Filed Dec. 22, 1980, Ser. No. 219,209

Int. Cl.[3] C07D *251/34*

U.S. Cl. 544—221 29 Claims

1. A process for the preparation of an aldehyde composition which comprises reacting isocyanuric acid with at least about 1 mole of acrolein per mole of isocyanuric acid under mildly acidic conditions.

4,326,058
ORGANO-PHOSPHORIC ESTERS AND THEIR PRODUCTION AND USE

Takayuki Okabe, Nishinomiya; Masachika Hirano, Ibaraki, and Kunio Mukai, Takarazuka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

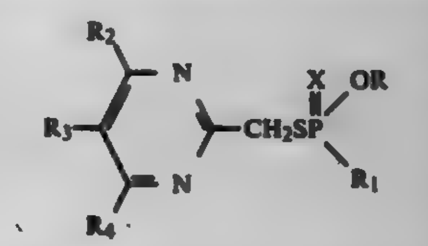
Filed Jan. 28, 1980, Ser. No. 116,214

Claims priority, application Japan, Feb. 5, 1979, 54-12496; Nov. 20, 1979, 54-151002

Int. Cl.[3] C07F *9/65;* C07D *239/36;* A01N *57/16, 57/32*

U.S. Cl. 544—243 7 Claims

1. A phosphoro-thioate or dithioate of the formula,



wherein R is a methyl or ethyl group, R_1 is a methoxy, ethoxy, methylamino or ethylamino group, R_2 is a halogen atom, or a C_1–C_3 alkyl group, R_3 is a hydrogen atom, R_4 is a C_1–C_3 alkyl group and X is an oxygen or sulfur atom, provided X is an oxygen atom when R_1 is a methylamino or ethylamino group.

4,326,059
PROCESS FOR THE PRODUCTION OF THIOPHOSPHORIC ACID ESTERS

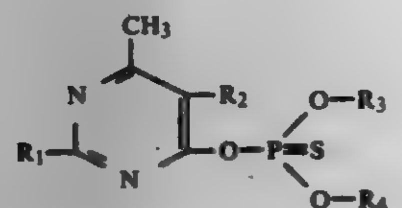
Robert Gargano; Donald E. Perez, and David K. Williams, all of Mobile, Ala., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 16,753, Mar. 2, 1979, abandoned, which is a continuation of Ser. No. 865,098, Dec. 27, 1977, abandoned. This application Jun. 20, 1980, Ser. No. 161,475

Int. Cl.[3] C07F *9/65*

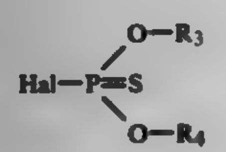
U.S. Cl. 544—243 — 11 Claims

1. In a process for the production of thiophosphoric acid esters of the formula I



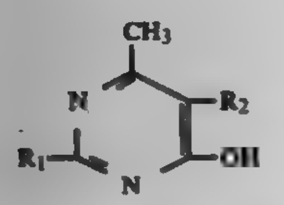
I

wherein R_1 is lower alkyl, lower alkenyl, lower alkoxy(lower) alkyl or lower alkylmercapto(lower)alkyl, R_2 is hydrogen, lower alkyl or lower alkenyl and R_3 and R_4 are lower alkyl, which comprises reacting a dialkyl phosphoric acid halide of formula II



II

wherein Hal represents chlorine or bromine and R_3 and R_4 are as defined hereinabove with a hydroxypyrimidine of the formula III



III

wherein R_1 and R_2 have the significance given to them above, in the presence of an organic solvent, the improvement which comprises

(a) in a first step, converting the hydroxypyrimidine reactant of formula III into the sodium salt with the aid of a sodium hydroxide solution consisting of 70% to 40% sodium hydroxide under reflux in an aromatic hydrocarbon solvent capable of removing water by azeotropic distillation below the decomposition point of the hydroxypyrimidine of formula III and in the presence of about 0.5 to about 3 mole-% of a quaternary ammonium salt of the formula $N(R_7, R_8, R_9, R_{10})^{\oplus}\ Y^{\ominus}$ as a phase transfer catalyst wherein R_7 to R_{10} independently represent an alkyl, aryl, aralkyl, cycloalkyl or alkaryl group each with at most 12 carbon atoms and Y is a neutralizing anion selected from among chlorides, bromides, iodides, sulfates, hydrogen sulfates, phosphates, perchlorates, nitrates and continuously removing water by an azeotropic distillation,

(b) in a second, condensation step, adding to the thus-dried slurried reaction mass at a temperature of about 60° to 80° C. the reactant of formula II.

4,326,060
PROCESS FOR PREPARATION OF FOLIC ACID DERIVATIVES

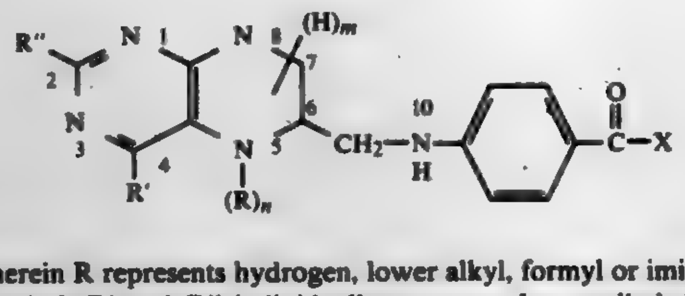
Peter R. Farina, North Salem, and James A. Grattan, Croton-on-Hudson both of N.Y., assignors to Baker Instruments Corporation, Bethlehem, Pa.

Division of Ser. No. 34,760, Apr. 30, 1979. This application Oct. 31, 1979, Ser. No. 90,064

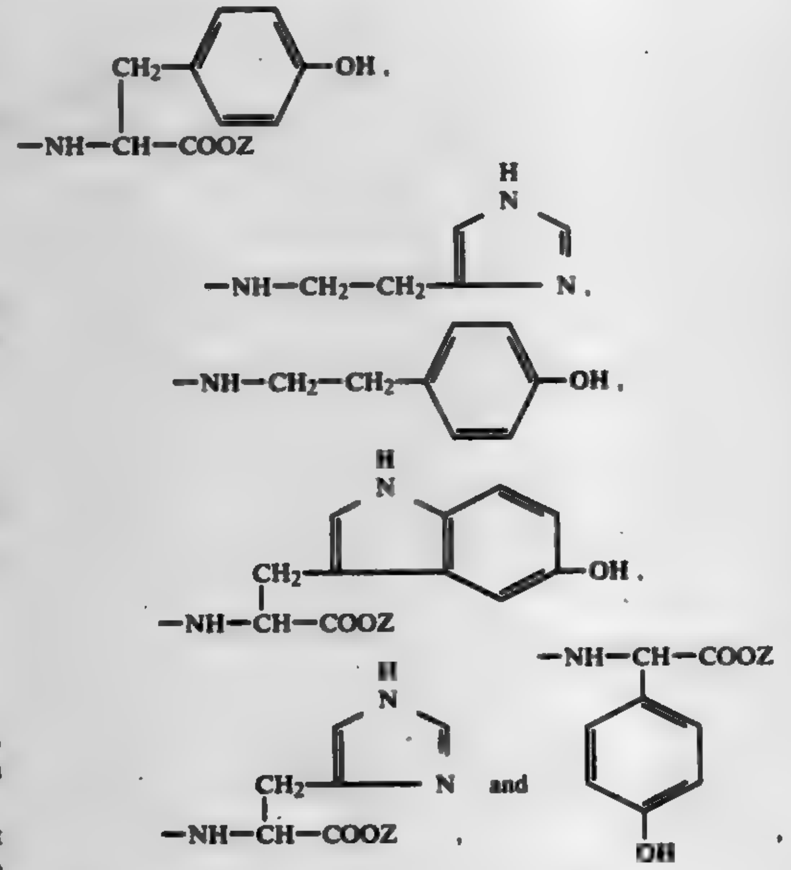
Int. Cl.[3] C07D *475/06*

U.S. Cl. 544—258 — 8 Claims

1. A process for the preparation of a composition having the formula:

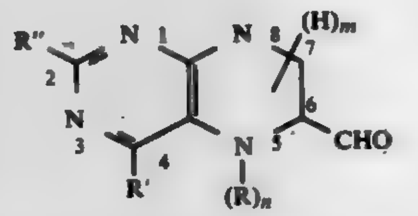


wherein R represents hydrogen, lower alkyl, formyl or iminomenthyl; R' and R'' individually represent lower alkyl, hydroxyl, halo, amino or acetamido; m has a value of 1, 3 or 4; n has a value of zero or 1; and X is an amino acid or descarboxy amino acid moiety; selected from the group consising of:

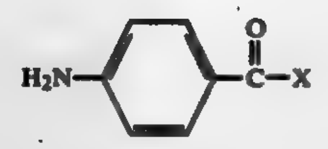


wherein Z is hydrogen or lower alkyl; said process comprising the steps of:

(a) contacting in the presence of a solvent of trifluoroacetic acid and glacial acetic acid, a 6-formyl-pterin of the formula:



wherein R', R'', n and m are as above, with



wherein X is as above,

(b) removing said solvent, and suspending the reaction product of step (a) in glacial acetic acid,

(c) adding thereto dimethylamine borane, and recovering said composition.

4,326,061
SUBSTITUTED DECAHYDROQUINOLINES

Pyong-Nae Son, Akron, and Robert W. Layer, Cayahoga Falls, both of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Division of Ser. No. 697,345, Jun. 18, 1976, Pat. No. 4,073,770. This application Jun. 30, 1977, Ser. No. 811,820

Int. Cl.[3] C07D *215/14, 215/12*

U.S. Cl. 546—164 — 4 Claims

1. The compound 1-(2'-hydroxyethyl)-2,2,4-trimethyl decahydroquinoline.

2. The compound 1-(2'-hydroxyethyl)-2,2,4,8-tetramethyl decahydroquinoline.

3. The compound 1-(2'-hydroxybutyl)-2,2,4-trimethyl decahydroquinoline.

4. The compound 1-(3'-aminopropyl)-2,2,4-trimethyl decahydroquinoline.

4,326,062
MANUFACTURE OF POLYMERIZED 2,2,4-TRIMETHYL-1,2-DIHYDROQUINOLINE

Takashi Kojima, Toyonaka; Eizo Okino, Nishinomiya, and Ryozo Ishimoto, Toyonaka, all of Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

Filed Jul. 22, 1980, Ser. No. 171,239

Claims priority, application Japan, Jul. 26, 1979, 54/95824

Int. Cl.[3] C07D *215/06*

U.S. Cl. 546—166 — 4 Claims

1. A method for producing polymerized 2,2,4-trimethyl-1,2-dihydroquinoline containing 25% by weight or more of dimerized 2,2,4-trimethyl-1,2-dihydroquinoline, which comprises subjecting a raw 2,2,4-trimethyl-1,2-dihydroquinoline monomer to polymerization in the presence of hydrochloric acid, the concentration of hydrochloric acid being from 15 to 25% by weight, and the amount of hydrochloric acid being from 0.2 to 0.5 mole per mole of the total of 2,2,4-trimethyl-1,2-dihydroquinoline and impurity amines contained in the monomer.

4,326,063
HIGH MOLECULAR WEIGHT PIPERIDINE DERIVATIVES AS UV STABILIZERS

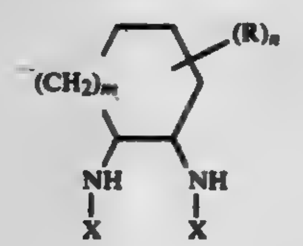
Pyong-Nae Son, Akron, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Jul. 24, 1980, Ser. No. 171,775

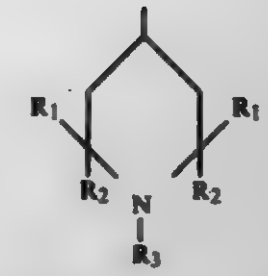
Int. Cl.[3] C07D *401/08*

U.S. Cl. 546—191 — 5 Claims

1. A compound of the formula



wherein X is



R being selected from alkyl of 1-6 carbon atoms; with R_1 and R_2 being independently selected from the group consisting of alkyl of 1-6 carbon atoms; R_3 being selected from the the group consisting of hydrogen, hydroxyl, alkyl of 1-6 carbon atoms, benzyl;

m is 1 to 4; and

n is 0-3.

4,326,064
DERIVATIVES OF 1,4-DIHYDROPYRIDINE-3-CARBOTHIOL ACIDS

Brigita A. Vigante, ulitsa Dzirnavu, 46, kv. 6; Yan-Voldemar Y. Ozol, ulitsa Struktoru, 11, kv. 4; Rasma O. Vitolia, ulitsa Lielvardes, 26, kv. 39, all of Riga; Gunta O. Silenietse, ulitsa Mierv, 16/7, kv. 328, Rizhsky raion, Salaspils; Agris A. Kimenis, ulitsa Staitseles, 15, kv. 208, and Gunar Y. Dubur, ulitsa Ierikju, 43, kv. 2, both of Riga, all of U.S.S.R.

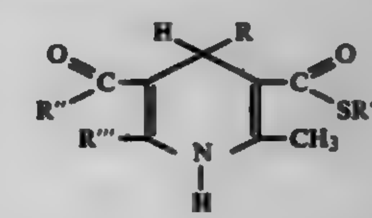
Continuation of Ser. No. 21,486, Mar. 19, 1979, Pat. No. 4,252,956. This application Oct. 28, 1980, Ser. No. 201,599

The portion of the term of this patent subsequent to Feb. 24, 1998, has been disclaimed.

Int. Cl.[3] C07D *213/55*

U.S. Cl. 546—322 — 2 Claims

1. A compound of 1,4-dihydropyridine-3-carbothiol acid having the following structure:



wherein

R is hydrogen, lower alkyl, phenyl, or pyridyl;

R' is lower alkyl, or benzyl;

R'' is lower alkoxy;

R''' is methyl.

4,326,065
OXADIAZOLE ULTRAVIOLET STABILIZERS AND THEIR USE IN ORGANIC COMPOSITIONS

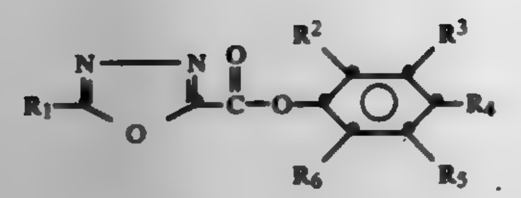
Gether Irick, Jr., and Charles A. Kelly, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 955,449, Oct. 27, 1978, Pat. No. 4,236,013, which is a division of Ser. No. 797,667, Dec. 17, 1976, Pat. No. 4,137,235, which is a continuation of Ser. No. 484,846, Jul. 1, 1974, abandoned. This application Jun. 13, 1980, Ser. No. 159,090

Int. Cl.[3] C07D *271/10*

U.S. Cl. 548—143 — 8 Claims

1. A composition of matter having the formula:



wherein R_1 is hydrogen, chloro, bromo, lower alkyl containing 1 to 12 carbon atoms, cyclohexyl, phenyl, lower alkyl phenyl, phenyl-substituted phenyl, alkoxy containing an alkyl radical containing 1 to 20 carbon atoms, chloromethyl and dimethyl amino; at least one R_2 or R_6 is hydrogen and the other R_2, R_3, R_4, R_5 and R_6 are hydrogen, lower alkyl having 1 to 12 carbon atoms, cyclohexyl, phenyl, lower alkyl phenyl, phenyl-substituted-phenyl, alkoxy containing an alkyl radical containing 1 to 20 carbon atoms, dimethyl substituted amino, hydroxy, nitrile, chloro and bromo.

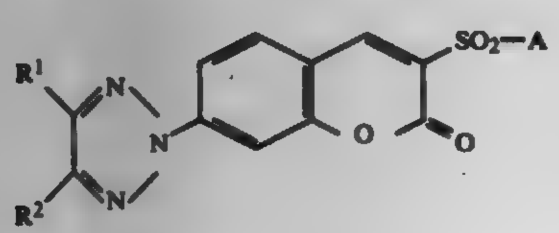
4,326,066

TRIAZOLYL COUMARIN COMPOUNDS, PROCESSES FOR THEIR PREPARATION AND THEIR USE AS WHITENERS AND LASER DYESTUFFS

Udo Eckstein, Cologne; Roderich Raue, Leverkusen, and Carl-Wolfgang Schellhammer, Berg.-Gladbach all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jan. 7, 1980, Ser. No. 109,957
Claims priority, application Fed. Rep. of Germany, Jan. 23, 1979, 2902470
Int. Cl.³ C07D *405/4, 405/10, 413/14;* C09K *9/02*
U.S. Cl. 548—256 2 Claims

1. A coumarin compound of the formula



wherein

R^1 is C_{1-2} alkyl or phenyl,

R^2 is hydrogen, methyl or chlorine, and

A is C_{1-4}-alkyl optionally substituted by Cl, CN or O—C_{1-2}-alkyl, or phenyl optionally substituted by phenyl, Cl or methyl.

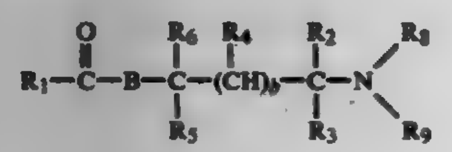
4,326,067

PROCESS FOR MAKING N-(2-AMINOETHYL)AMIDES

Michael J. Fazio, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

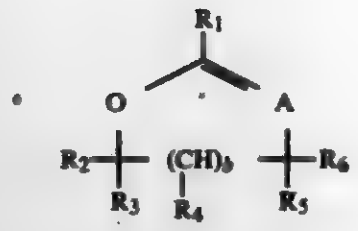
Filed Dec. 3, 1980, Ser. No. 212,476
Int. Cl.³ C07C *85/20, 102/00, 245/18;* C07D *205/04, 207/06, 211/14, 223/04, 233/04*
U.S. Cl. 548—347 21 Claims

1. A process for preparing a N-(2-substituted aminoethyl)amide of the formula:



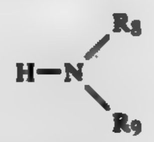
I

the process comprising contacting one or more compounds of the formula:



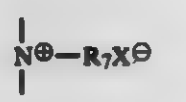
II

with an amine of the formula:



III

and wherein A is nitrogen or a quaternary nitrogen of the formula:



IV

wherein B is

where A is nitrogen and B is

when A is IV; wherein $X^{\ominus}$ is a counterion; and wherein R_1–R_7, which may be the same or different, are each hydrogen, an aliphatic or cycloaliphatic or aromatic radical, or an inertly-substituted aliphatic, cycloaliphatic or aromatic radical; and wherein R_8 and R_9, which are the same or different, are hydrogen, an aliphatic or cycloaliphatic or inertly-substituted aliphatic or cycloaliphatic radical; or R_8 and/or R_9 are:

$R_{10}NH_2$

wherein R_{10} is an aliphatic or cycloaliphatic or an inertly-substituted aliphatic or cycloaliphatic chain containing from 4 to 25 carbon atoms which separates the 2 nitrogen atoms by at least 4 carbon atoms; or R_8, R_9 and the mediate nitrogen atom form an inertly-substituted or unsubstituted aliphatic heterocyclic ring containing from 4 to 7 members; and wherein b is zero or 1.

4,326,068

PROCESS OF PREPARING HEXAFLUOROTHIOACETONE DIMER

Louis G. Anello, Hamburg, and Michael Van Der Puy, Cheektowaga, both of N.Y., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Dec. 15, 1980, Ser. No. 216,035
Int. Cl.³ C07D *339/00*
U.S. Cl. 549—89 11 Claims

1. In a process of preparing hexafluorothioacetone dimer wherein hexafluoropropene is contacted with elemental sulfur and alkali metal fluoride in a solvent, the improvement which comprises using an aprotic solvent comprising a member selected from the group consisting of acetonitrile, dimethylacetamide, dimethylformamide, dimethyl sulfoxide and N-methyl pyrrolidone while maintaining an absolute pressure of the contact at substantially one atmosphere.

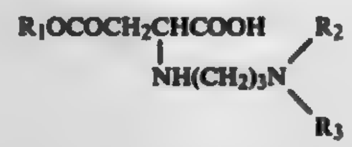
4,326,069

N-SUBSTITUTED ASPARTIC ACID MONOESTERS

Friedrich Stockinger, Hölstein; Sameer H. Eldin, Birsfelden, and Friedrich Lohse, Oberwil, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

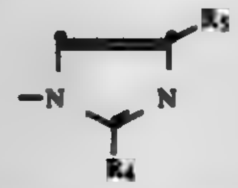
Filed Apr. 28, 1980, Ser. No. 144,136
Claims priority, application Switzerland, May 8, 1979, 4306/79
Int. Cl.³ C07C *101/22;* C07D *233/61*
U.S. Cl. 560—169 6 Claims

1. An N-substituted aspartic acid monoester of the formula



wherein

R_1 is alkyl having 1 to 4 C atoms or cyclohexyl, and R_2 and R_3 are each a methyl or ethyl group, or together with the N atom they form an N-heterocyclic ring of the formula



wherein R_4 is methyl, and R_5 is a hydrogen atom or ethyl.

4,326,070

BETA DEUTERATED 2-ETHYLHEXANOL AND DERIVATIVES

Bruce J. Beimesch, Crescent Springs, Ky., and Clarence E. Clark, Jr., Cincinnati, Ohio, assignors to Emery Industries, Inc., Cincinnati, Ohio

Filed Feb. 17, 1981, Ser. No. 235,257
Int. Cl.³ C07C *69/48, 69/50, 69/003, 31/125*
U.S. Cl. 560—190 4 Claims

3. Di(2-d-2-ethylhexyl)azelate.

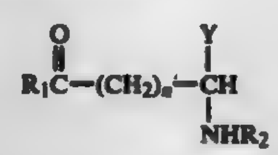
4,326,071

HALOMETHYL DERIVATIVES OF GAMMA-AMINOBUTYRIC ACID AND RELATED COMPOUNDS

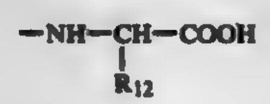
Philippe Bey, Strasbourg, and Michel Jung, Illkirch Graffenstaden, both of France, assignors to Merrell Toraude et Compagnie, Strasbourg, France

Filed Sep. 28, 1977, Ser. No. 837,300
Int. Cl.³ C07C *101/10, 101/18*
U.S. Cl. 562—574 8 Claims

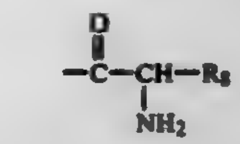
1. A compound of the formula



wherein Y is FCH_2- or F_2CH-; R_1 is hydroxy, a straight or branched alkoxy group of from 1 to 8 carbon atoms, -$NR_{10}R_{11}$ wherein each of R_{10} and R_{11} is hydrogen or a straight or branched alkyl group of from 1 to 4 carbon atoms or



wherein R_{12} is hydrogen, a straight or branched lower alkyl group of from 1 to 4 carbon atoms, benzyl or p-hydroxybenzyl; R_2 is hydrogen, alkylcarbonyl wherein the alkyl moiety has from 1 to 4 carbon atoms and is straight or branched, alkoxycarbonyl wherein the alkoxy moiety has from 1 to 4 carbon atoms and is straight or branched or



wherein R_8 is hydrogen, a straight or branched lower alkyl group of from 1 to 4 carbon atoms, benzyl or p-hydroxybenzyl; n is the integer 2 or 3; or a pharmaceutically acceptable salt or an individual optical isomer thereof.

4,326,072

RUTHENIUM CATALYZED HYDROGENATION OF D-GLUCURONIC ACID

Walter M. Kruse, and Makram H. Meshreki, both of Wilmington, Del., assignors to ICI Americas Inc., Wilmington, Del.

Filed Jul. 1, 1980, Ser. No. 165,210
Int. Cl.³ C07C *59/105*
U.S. Cl. 562—587 9 Claims

1. A process for the preparation of L-gulonic acid which comprises hydrogenating D-glucuronic acid in a solvent at a temperature up to about 130° C. and in the presence of a ruthenium catalyst.

4,326,073

PRODUCTION OF ANHYDROUS OR SUBSTANTIALLY ANHYDROUS FORMIC ACID

Dieter Wolf, Gruenstadt; Rudolf Schmidt, Frankenthal; Ulrich Block, Ludwigshafen; Hartmut Schoenmakers, Heidelberg; Kaspar Bott, Wachenheim, and Gerd Kaibel, Lampertheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Mar. 18, 1980, Ser. No. 131,501
Claims priority, application Fed. Rep. of Germany, Apr. 11, 1979, 2914671
Int. Cl.³ C07C *51/09*
U.S. Cl. 562—609 12 Claims

1. In a process for obtaining anhydrous or substantially anhydrous formic acid by hydrolysis of methyl formate, the improvement which comprises:

(a) hydrolyzing methyl formate;
(b) in a first stage distillation column, distilling methanol and excess methyl formate from the hydrolysis mixture obtained in step (a);
(c) extracting the bottom product of the first distillation stage (b), consisting essentially of formic acid and water, by means of a liquid-liquid extraction with an extractant which in the main takes up the formic acid;
(d) in a second stage distillation column, distilling the extract phase, consisting essentially of formic acid, the extractant and a part of the water;
(e) recycling, as vapor, into the lower part of the distillation column of stage (b), the top product obtained from the second distillation stage (d) and consisting essentially of
  (1) all or part of the water introduced into said second stage (d), and
  (2) part of the formic acid;
(f) separating, by distillation in a third stage distillation column, the bottom product of distillation stage (d) consisting essentially of
  (1) the extractant with or without part of the water, and
  (2) the greater part of the formic acid into anhydrous or substantially anhydrous formic acid and the extractant; and
(g) recycling to the process the extractant leaving the third distillation stage (f).

4,326,074

AMIDINOUREAS

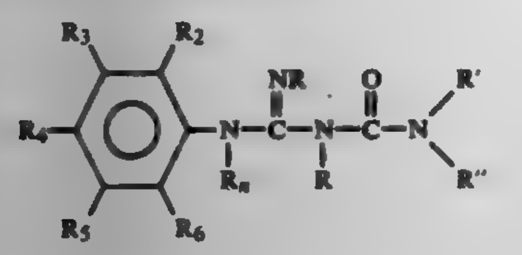
Julius Diamond, Morris Plains, N.J., and George H. Douglas, Paoli, Pa., assignors to William H. Rorer, Inc., Fort Washington, Pa.

Continuation of Ser. No. 738,428, Nov. 3, 1976, abandoned, which is a division of Ser. No. 558,186, Mar. 31, 1975, Pat. No. 4,025,652, which is a continuation-in-part of Ser. No. 486,783, Jul. 9, 1974, abandoned, which is a continuation-in-part of Ser. No. 291,474, Sep. 22, 1972, abandoned. This application Dec. 18, 1979, Ser. No. 104,942

Int. Cl.³ C07C *127/19*

U.S. Cl. 564—47 11 Claims

1. A compound of the formula:



where:

R_2 and R_6 may be the same or different and are: loweralkyl or halo;

R_3, R_4 and R_5 are hydrogen;

R is hydrogen;

R′ and R″ are hydrogen or a loweralkyl selected from the group consisting of methyl, ethyl, propyl and isopropyl;

R_n is hydrogen provided at least one of R′ and R″ is other than hydrogen; and

the non-toxic acid addition salts thereof.

4,326,075

AMIDINOUREAS

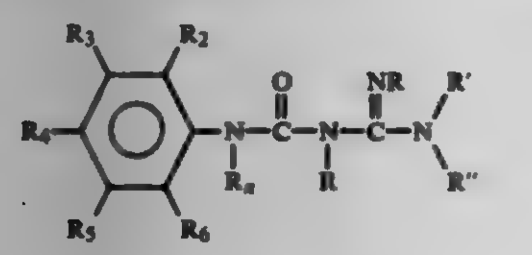
Julius Diamond, Morris Plains, N.J., and George H. Douglas, Paoli, Pa., assignors to William H. Rorer, Inc., Fort Washington, Pa.

Continuation of Ser. No. 926,675, Jul. 21, 1978, Pat. No. 4,203,920, which is a continuation of Ser. No. 787,673, Apr. 14, 1977, abandoned, which is a division of Ser. No. 558,187, Mar. 31, 1975, Pat. No. 4,060,635. This application Feb. 5, 1980, Ser. No. 118,823

Int. Cl.³ C07C *127/19*; A61R *31/17*

U.S. Cl. 564—48 3 Claims

1. A compound of the formula:



where:

R_2 and R_6 are loweralkyl;

R_3, R_4 and R_5 are hydrogen;

R is hydrogen;

R′ is alkyl;

R″ is hydrogen; and

R_n is hydrogen; and

the non-toxic addition salts thereof.

4,326,076

METHOD FOR PREPARING THE OPTICALLY ACTIVE ISOMER OF 2,2-[[5-[3-[(1,1-DIMETHYLETHYL)AMINO]-2-HYDROXYPROPOXY]-1,2,3,4-TETRAHYDRO-2,3-NAPHTHALENEDIYL]BIS(OXY)]BIS[N,N-DIPROPYLACETAMIDE]

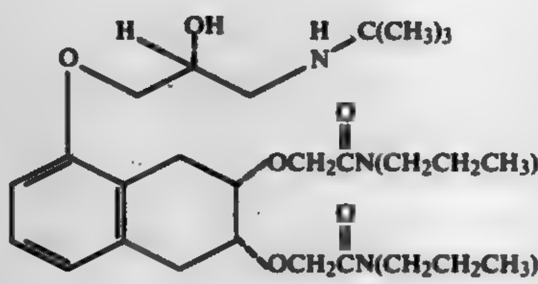
Jerome L. Moniot, Richboro, Pa.; Rita T. Fox, Princeton, and Francis A. Sowinski, Edison, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Oct. 9, 1980, Ser. No. 195,684

Int. Cl.³ C07C *103/24, 103/28*

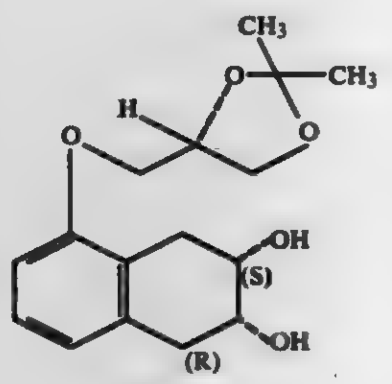
U.S. Cl. 564—156 7 Claims

1. A process for preparing the optically active isomer [2R-[2α,3α,5(R*)]]-2,2′-[[5-[3-[(1,1-dimethylethyl)amino]-2-hydroxypropoxy]-1,2,3,4-tetrahydro-2,3-naphthalenediyl]bis-(oxy)]-bis[N,N-dipropylacetamide] having the structure

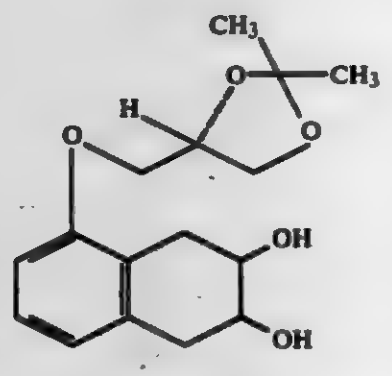


which comprises:

(1) reacting cis-5,6,7,8-tetrahydro-1,6,7-naphthalenetriol with an (R)-alkyl or aryl sulfonyl solketal, to form a mixture of d- and l-cyclic derivatives wherein the phenolic hydroxyl group is converted to an ether and the two alcoholic hydroxyl groups remain free, said cyclic derivatives having the structures



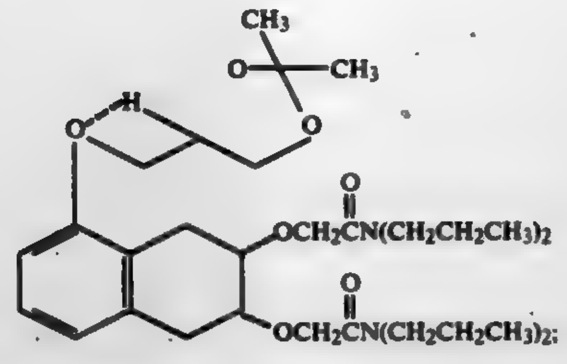
(l-isomer)



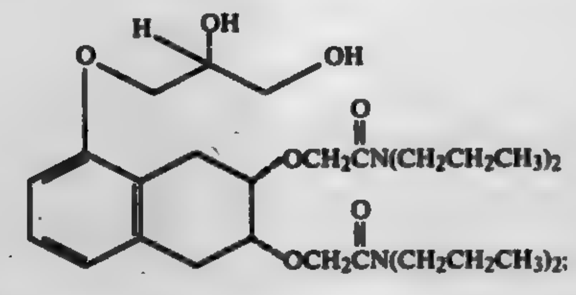
(d-isomer)

(2) separating out the l-cyclic derivative from said mixture;

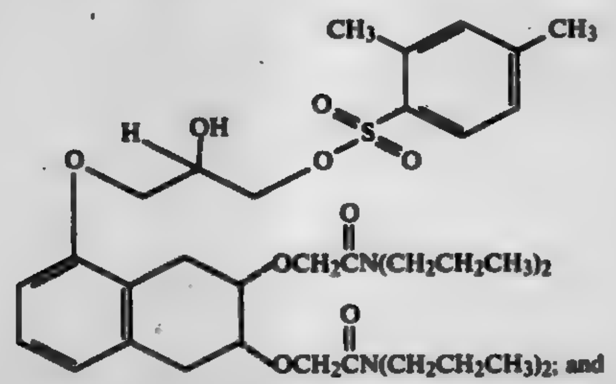
(3) reacting said l-cyclic derivative with N,N-dipropylchloroacetamide, N,N-dipropyliodoacetamide or, N,N-dipropylbromoacetamide, to yield a compound having the structure



(4) hydrolyzing the acetonide ring of the compound produced in (3) to yield



(5) reacting the compound produced in step (4) with mesitylenesulfonyl chloride to form



(6) removing the trimethylphenylsulfonyloxy group by reacting the compound produced in step (5) with t-butylamine to yield said optically active isomer.

4,326,077

N-HALOACETYLPHENYLAMINO CARBONYL CYCLIC INTERMEDIATES

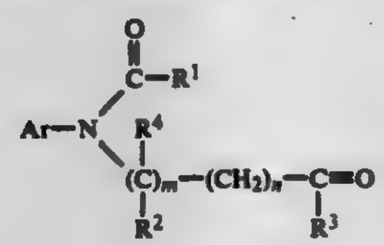
William L. Schinski, San Rafael; David C. K. Chan, Petaluma, and Irene C. Huang, Huntington Beach, all of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Division of Ser. No. 14,410, Feb. 23, 1979, Pat. No. 4,260,410, which is a continuation-in-part of Ser. No. 892,365, Mar. 31, 1978, Pat. No. 4,174,210. This application Sep. 22, 1980, Ser. No. 189,504

Int. Cl.³ C07C *103/37*

U.S. Cl. 564—211 4 Claims

1. A compound having the formula



(I)

wherein

Ar is phenyl or phenyl substituted with 1 to 4 of the same or different substituents selected from fluoro, chloro, bromo, iodo, or alkyl of 1 to 4 carbon atoms, or substituted with 1 to 2 of the same or different substituents selected from alkoxy of 1 to 4 carbon atoms, nitro or haloalkyl of 1 to 2 carbon atoms and 1 to 3 of the same or different halogens selected from fluoro, chloro, bromo or iodo;

R^1 is halomethyl of 1 to 3 of the same or different halogens selected from fluoro, chloro, bromo or iodo;

R^2 and R^3 are joined together to form a carbocyclic ring of 5 to 6 carbon atoms;

R^4 is hydrogen or alkyl of 1 to 6 carbon atoms;

n is 0 or 1; and

m is 0 or 1.

4,326,078

PROCESS FOR PREPARATION OF HYDRAZOBENZENES BY CATALYTIC HYDROGENATION OF NITROBENZENES

Hans-Joachim Herrmann, Troisdorf, Fed. Rep. of Germany, assignor to Dynamit Noble Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Filed Jul. 25, 1979, Ser. No. 60,562

Claims priority, application Fed. Rep. of Germany, Jul. 31, 1978, 2833605

Int. Cl.³ C07C *85/24*

U.S. Cl. 564—312 19 Claims

1. In a process for the hydrogenation of nitrobenzene with hydrogen to hydrazobenzene at temperatures ranging from 40° to 110° C. in the presence of a precious metal catalyst, an aqueous alkaline solution and an organic solvent, the reaction mixture being maintained in turbulent motion, the improvement wherein said nitrobenzene is o-, m- or p-chloronitrobenzene, the reaction is carried out in the presence of an organic solvent which is an aliphatic or cycloaliphatic hydrocarbon that is not miscible or not miscible in any ratio with water, the precious metal catalyst is used in such amount that the weight ratio of chloronitrobenzene used to precious metal catalyst is in the range 1:0.00005 to less than 0.0002, the aqueous alkaline solution being one wherein the alkali content thereof is greater than 20 weight percent, and the process is carried out in the presence of a quinone as co-catalyst, said quinone co-catalyst being present such that the weight ratio of monochloronitrobenzene to quinone co-catalyst is in the range of 1:0.0005 to less than 0.002.

8. In a process for the hydrogenation of nitrobenzene with hydrogen to hydrazobenzene at temperatures ranging from 40° to 110° C. in the presence of a precious metal catalyst, an aqueous alkaline solution and an organic solvent, the reaction mixture being maintained in turbulent motion, the improvement wherein said nitrobenzene is o-, m- or p-chloronitrobenzene, the reaction is carried out in the presence of an organic solvent which is an alcohol, the precious metal catalyst is employed in an amount such that the weight ratio of chloronitrobenzene employed to precious metal catalyst is in the range of 1:0.00005 to less than 0.0002, the aqueous alkaline solution employed being one in which the alkali content is greater than 20 weight percent.

4,326,079

PROCESS FOR PREPARING AROMATIC ALKYLAMINES

Ugo Romano, Vimercate, and Giuseppe Idri, San Donato Milanese, both of Italy, assignors to Anic, S.P.A., Palermo, Italy

Filed Feb. 22, 1980, Ser. No. 123,918

Claims priority, application Italy, Mar. 7, 1979, 20800 A/79

Int. Cl.³ C07C *85/02, 85/08*

U.S. Cl. 564—393 6 Claims

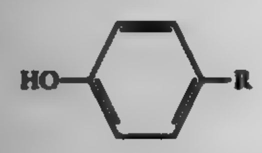
1. A process for preparing aromatic alkylamines consisting of reacting the relevant amine with a dialkylester of carbonic acid in the presence of an organic iodide and forming the relevant aromatic alkylamine.

4,326,080
PROCESS FOR THE PREPARATION OF 4-AMINO-DIPHENYLAMINES

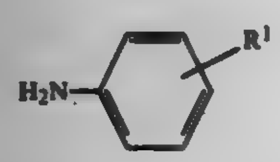
Karlfried Wedemeyer, Cologne, and Siegfried Böhm, Dormagen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jun. 11, 1980, Ser. No. 158,540
Claims priority, application Fed. Rep. of Germany, Jul. 3, 1979, 2926714
Int. Cl.³ C07C *85/02, 85/06*
U.S. Cl. 564—402 **10 Claims**

1. A process for the preparation of a 4-amino-diphenyl amino derivative which comprises:
(a) contacting a hydroxybenzene of the formula



wherein R is hydroxyl or amino with an aniline compound of the formula



wherein R_1 represents hydrogen or an alkyl radical in the presence of a γ-aluminum oxide containing catalyst; and
(b) contacting the product from step (a) with ammonia in the presence of the same γ-aluminum oxide containing catalyst used in step (a).

4,326,081
CONVERSION OF MONONITROAROMATIC COMPOUNDS TO AMINO COMPOUNDS BY HYDROGEN SULFIDE

Charles T. Ratcliffe, Morristown; Stuart L. Soled, Madison; Anthony J. Signorelli, Succasunna, and Irving L. Mador, Morristown, all of N.J., assignors to Allied Corporation, Morristown, N.J.

Filed Feb. 23, 1981, Ser. No. 237,326
Int. Cl.³ C07C *85/11*
U.S. Cl. 564—416 **11 Claims**

1. In a process for hydrogenation at reaction temperature in the range between 200° and 400° C. of a mononitroaromatic compound, of the group consisting of nitrobenzene, nitrotoluene, and mono(chloro-, bromo-, fluoro- and hydroxy-) nitrobenzenes and nitrotoluenes, to the corresponding aminoaromatic compound comprising contacting said compound with a catalyst consisting essentially of titanium dioxide: the improvement which comprises employing hydrogen sulfide as the hydrogenation gas.

4,326,082
USE OF AQUEOUS TRIETHYLAMINE/PHOSPHORIC ACID SALT SOLUTIONS TO EXTRACT WATER AND TRIETHYLAMINE FROM SOLUTIONS THEREOF IN ORGANIC SOLVENTS

Patrick H. Martin, Danville, and Stephen L. Michaels, Oakland, both of Calif., assignors to The Dow Chemical Company, Midland, Mich.

Filed Apr. 7, 1980, Ser. No. 137,653
Int. Cl.³ C07C *85/26*
U.S. Cl. 564—497 **9 Claims**

1. The process for removing an amine from a feed solution thereof in an organic solvent which comprises:
(1) intimately contacting said feed with an extractant which is an aqueous solution of a 1:1 salt of said amine with ortho phosphoric acid and then separating the resultant raffinate and extract, and
(2) liberating the extracted amine by heating the extract.

4,326,083
PROCESS FOR MAKING HALOALKYLTRIALKOXYPHENONE

Wilbur H. McKellin, Deerfield, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Continuation-in-part of Ser. No. 128,795, Mar. 10, 1980, abandoned. This application May 4, 1981, Ser. No. 260,160
Int. Cl.³ C07C *45/46*
U.S. Cl. 568—322 **14 Claims**

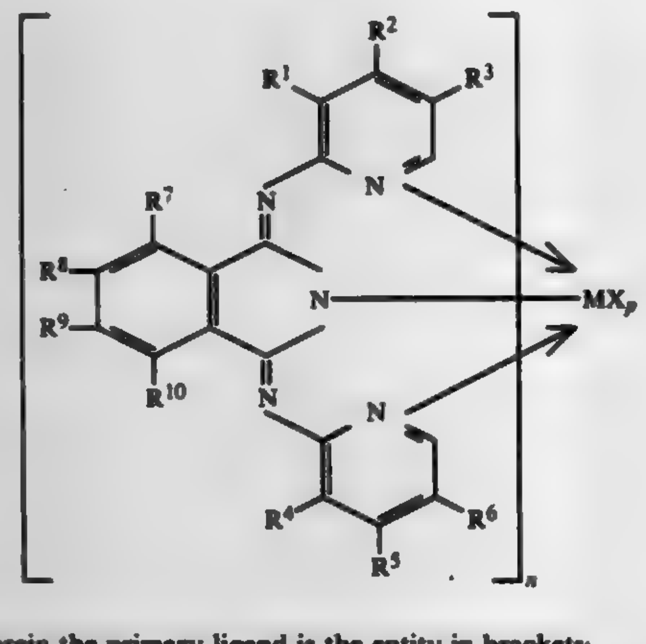
1. The process of making a trialkoxyphenyl haloalkyl ketone consisting essentially in mixing together a trialkoxybenzene in an inert solvent with 1–1.5 molar equivalents of a haloacyl halide in the presence of 1–1.5 molar equivalents of zinc chloride at a temperature of between 0° and 50° C. for a period of at least 1 hr.

4,326,084
PROCESS FOR PRODUCING A MIXTURE CONTAINING CYCLOHEXANOL AND CYCLOHEXANONE FROM CYCLOHEXANE

Joe D. Druliner, Newark; Steven D. Ittel, Wilmington; Paul J. Krusic, Wilmington, and Chadwick A. Tolman, Wilmington, all of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 83,644, Oct. 11, 1979. This application Sep. 16, 1980, Ser. No. 184,635
Int. Cl.³ C07C *27/12, 29/50, 45/33*
U.S. Cl. 568—360 **23 Claims**

1. In a process for producing a mixture containing cyclohexanol and cyclohexanone wherein cyclohexane is oxidized in air to provide a reaction mixture containing cyclohexyl hydroperoxide and the cyclohexyl hydroperoxide is decomposed in the presence of starting cyclohexane to provide a mixture containing cyclohexanol and cyclohexanone, the improvement comprising (1) conducting the oxidation step by contacting cyclohexane with air at a temperature of from about 120°–160° C. in the presence of a catalytic amount of catalyst composition consisting essentially of at least one transition metal complex having the structural formula



wherein the primary ligand is the entity in brackets;
M is Co, Mn or Fe;
R^1, R^2, R^3, R^4, R^5, and R^6 are independently hydrogen, lower alkyl, lower alkoxyalkyl, phenyl, benzyl, or phenethyl or any two adjacent members of R^1 through R^6 are jointly four CH entities of a benzene ring fused to the pyridine ring;
R^7, R^8, R^9 and R^{10} are independently hydrogen, lower alkyl or lower alkoxyalkyl or any two adjacent members of R^7 through R^{10} can jointly be four CH entities of a benzene ring fused to the benzene ring of the isoindoline moiety;
X is an ancillary anionic ligand;
n is 1 or 2;
p is 0, 1 or 2, provided that n+p is 2 or 3;
with the proviso that when there are two primary ligands the values of R^1 through R^{10} can be different for each ligand and when there are two ancillary anionic ligands the value of X can be different;
and/or (2) conducting the decomposition step by contacting a reaction mixture containing cyclohexane and from about 0.1 to about 10% by weight of cyclohexyl hydroperoxide with a catalytic amount of said catalyst composition at a temperature of from about 80°–160° C., optionally in the presence of molecular oxygen.

4,326,085
PROCESS FOR REMOVING ALKALI METAL CARBOXYLATES FROM MIXTURES CONTAINING A CYCLOAKANONE AND A CYCLOALKANOL OBTAINED IN OXIDATION OF CYCLOALKANES

Mario G. R. T. De Cooker, Sittard, Netherlands, assignor to Stamicarbon B.V., Geleen, Netherlands

Filed Jun. 11, 1980, Ser. No. 158,578
Claims priority, application Netherlands, Jun. 14, 1979, 7904651
Int. Cl.³ C07C *29/86, 45/80*
U.S. Cl. 568—366 **13 Claims**

1. A process for the purification of organic solution mixtures of a cycloalkanone and a cycloalkanol in the corresponding cycloalkane, and containing a minor quantity of by-product impurities including organic acids and cycloalkyl esters, produced from the molecular oxygen oxidation of said corresponding cycloalkane, which comprises the combination of steps of
(1) treating said organic solution mixture with an aqueous alkaline solution to neutralize and/or saponify said acids and esters, whereby a two-phase organic/aqueous liquid system is formed, and separating an organic phase therefrom containing said cycloalkanone and cycloalkanol now contaminated with alkali metal organic carboxylic acid salts;

and then

(2) washing said cycloalkanone/cycloalkanol components of said organic phase with an aqueous acid solution, containing from 0.05 to 20 mgeq/kg relative to the organic mixture,
whereby a second two-phase organic/aqueous liquid system is formed;

and

(3) separating the organic phase of said second two-phase system from the aqueous acid phase,

to obtain a cycloalkanone/cycloalkanol product now substantially free from (a) organic acids and cycloalkyl esters and (b) alkali metal acid salts.

4,326,086
PROCESS FOR THE PREPARATON OF LOW MOLECULAR WEIGHT POLYHYDROXYL COMPOUNDS

Edgar Möhring, Bergisch-Gladbach; Hanns P. Müller, and Kuno Wagner, both of Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 17, 1978, Ser. No. 934,650
Claims priority, application Fed. Rep. of Germany, Aug. 24, 1977, 2738154
Int. Cl.³ C07C *27/00, 31/18, 45/45*
U.S. Cl. 568—388 **1 Claim**

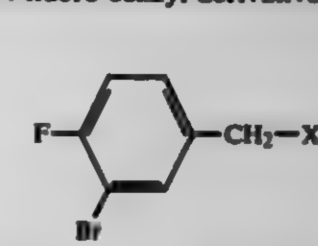
1. In a process for the preparation of low molecular weight polyhydroxyl compounds wherein formaldehyde hydrate is condensed in the presence of soluble or insoluble compounds of metals of the 2nd to 4th Main Group or 2nd to 8th sub-Group of the Periodic System of Elements as catalyst, and optionally in the presence of compounds capable of enediol formation as cocatalyst and/or of low molecular weight and/or higher molecular weight polyhydroxyl compounds, the improvement which comprises controlling the pH during the condensation reaction by the addition of from 5 to 200 milliequivalents, based on 1 mol of formaldehyde, of N-methylmorpholine, N,N'-dimethylpiperazine or addition products, with a molecular weight of up to 1,000, of ethylene oxide and/or propylene oxide with morpholine or piperazine.

4,326,087
3-BROMO-4-FLUORO-BENZYL DERIVATIVES

Rainer Fuchs; Fritz Maurer, both of Wuppertal; Uwe Priesnitz, Unna-Massen; Hans-Jochem Riebel, Wuppertal, and Erich Klauke, Odenthal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jul. 30, 1980, Ser. No. 173,544
Claims priority, application Fed. Rep. of Germany, Aug. 22, 1979, 2933985
Int. Cl.³ C07C *43/21*
U.S. Cl. 568—631 **7 Claims**

1. A 3-bromo-4-fluoro-benzyl derivative of the formula



in which X is hydroxy, phenoxy, benzyloxy, chlorine or bromine.

4,326,088
PROCESS FOR PREPARING 4,4-DIHYDROXYDIPHENYL ETHER

Harry Braus, Cincinnati, Ohio, assignor to National Distillers & Chemical Corp., New York, N.Y.

Filed Jan. 8, 1981, Ser. No. 223,450
Int. Cl.³ C07C *41/26, 43/263*
U.S. Cl. 568—638 **5 Claims**

1. A process for preparing 4,4'-dihydroxydiphenyl ether which comprises reacting 4,4'-diisopropyldiphenyl ether with oxygen to provide the dihydroperoxide derivative of 4,4'-diisopropyldiphenyl ether and thereafter decomposing said dihydroperoxide derivative in the presence of acid to provide 4,4'-dihydroxydiphenyl ether.

4,326,089
THERMAL PROCESS FOR PREPARING 3-PHENOXYBENZYL BROMIDE

Kestutis A. Keblys, Southfield, Mich., assignor to Ethyl Corporation, Richmond, Va.

Filed Sep. 26, 1977, Ser. No. 836,428
Int. Cl.³ C07C *41/22*
U.S. Cl. 568—639 **3 Claims**

1. A process for preparing m-phenoxybenzyl bromide, or m-phenoxybenzal bromide, or a mixture thereof, said process comprising brominating m-phenoxytoluene with bromine at a temperature above about 250° C., said process being conducted in the absence of a catalyst and in the absence of added u.v. radiation; said process being characterized by formation of a low amount of nuclear brominated by-product.

4,326,090

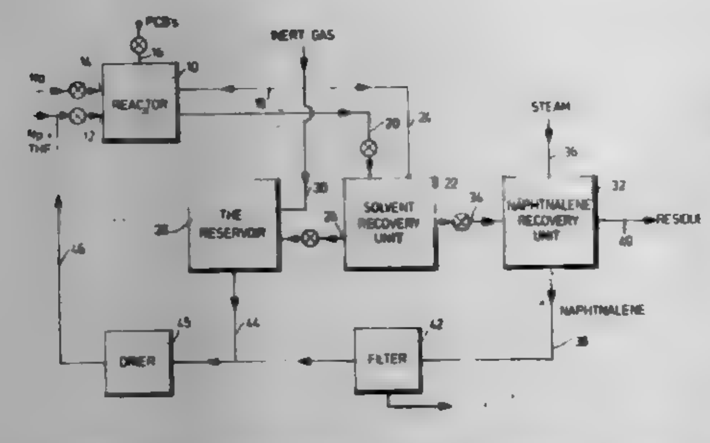
DESTRUCTION OF PCB'S

James G. Smith, and Gurbachan L. Bubbar, both of Waterloo, Canada, assignors to University of Waterloo, Waterloo, Canada

Filed Oct. 8, 1980, Ser. No. 194,972

Int. Cl.³ C07C *1/20;* C02F *1/70*

U.S. Cl. 585—469 **10 Claims**



1. A process of dehalogenating a polyhalogenated organic material, which comprises reacting said polyhalogenated organic material with sodium naphthalenide in the presence of sodium metal.

4,326,091

PROCESS FOR THE SELECTIVE ADSORPTION OF PARA-XYLENE

Rudolf J. Maas, and Rene M. Visser, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Apr. 24, 1980, Ser. No. 143,386

Claims priority, application United Kingdom, May 1, 1979, 15081/79

Int. Cl.³ C07C *7/13;* C10G *25/03*

U.S. Cl. 585—828 **12 Claims**

1. A process for preparing a stream enriched in para-xylene from a mixture consisting substantially of aromatic hydrocarbons with six to nine carbon atoms in the molecule including para-xylene and ethyl benzene, comprising contacting the mixture with a crystalline silicate as selective adsorbent of para-xylene, and subsequently desorbing the para-xylene enriched stream from the silicate, which crystalline silicate, after calcining in air at 500° C.,

(a) is thermally stable up to at least 600° C.,

(b) has an X-ray diffraction pattern (Cu-Kα radiation, 0.15418 nm wave length) showing at least the reflections below:

2θ	Relative intensity
7.8–8.2	S
8.7–9.1	M
11.8–12.1	W
12.4–12.7	W
14.6–14.9	W

-continued

2θ	Relative intensity
15.4–15.7	W
15.8–16.1	W
17.6–17.9	W
19.2–19.5	W
20.2–20.6	W
20.7–21.1	W
23.1–23.4	VS
23.8–24.1	VS
24.2–24.8	S
29.7–30.1	M

where θ is the Bragg angle, VS = very strong, S = strong, M = moderate, W = weak,

(c) measured at a hydrocarbon pressure of 8×10^{-2} bar at a temperature of 100° C. in the H-form it has an adsorption of n-hexane (n-C_6) of at least 0.8 mmol/g and an adsorption of 2,2-dimethylbutane (2,2-DMB) of at least 0.5 mmol/g, and the ratio

$$\frac{\text{adsorption of n-hexane}}{\text{adsorption of 2,2-dimethylbutane}}$$

should be at least 1.5,

(d) has the following overall composition:

$$y(1.0\pm0.3)M_2O.y(aFe_2O_3.bAl_2O_3).SiO_2$$

where:
M is H and an alkali metal
$a+b=1$
$a\geqq0$
$b\geqq0$
$O\leqq y\leqq0.1$

characterized in that the crystalline silicate is modified in order to increase its selectivity for para-xylene by bringing it into contact for a period of about 10 hours with a solution of concentration m (in gion/l) of a salt of a polyvalent rare earth cation whose charge density is e/R (in nm^{-1}) wherein the product (e/R)m is at least 45, after which it is filtered, washed and dried at an elevated temperature so that the salt decomposes to leave the metal cation in the crystalline silicate.

4,326,092

PROCESS FOR THE SEPARATION OF META-XYLENE

Richard W. Neuzil, Downers Grove, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Jul. 17, 1980, Ser. No. 169,552

Int. Cl.³ C07C *7/12*

U.S. Cl. 585—828 **11 Claims**

1. A process for separating meta-xylene from a feed mixture comprising meta-xylene the other xylene isomers and ethylbenzene which process comprises contacting at adsorption conditions said mixture with an adsorbent comprising a type Y zeolite containing sodium at the exchangeable cationic sites and having a silica to alumina mole ratio of from about 4.5 to about 5.0, selectively adsorbing therein said meta-xylene to the substantial exclusion of the remaining components of said mixture and thereafter recovering high-purity meta-xylene.

4,326,093

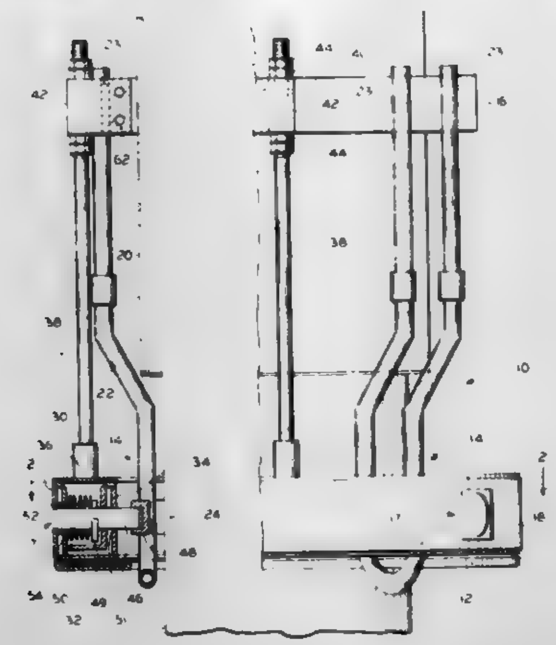
ELECTRODE CONTACT ASSEMBLY

John A. Persson, Gibsonia, Pa., assignor to Lectromelt Corporation, Pittsburgh, Pa.

Filed Jul. 28, 1980, Ser. No. 172,531

Int. Cl.³ H05B *7/107*

U.S. Cl. 373—101 **7 Claims**



1. Contact assembly for arc furnace electrodes comprising support means having a pair of elongate spaced apart legs formed of an electrically conductive material,

a separate contact shoe affixed to each of said legs and adjacent their lower ends,

said contact shoes being substantially shorter than the legs to which they are affixed,

each contact shoe having a front face for engaging an electrode and a rear face configured complementary to the respective leg to which it is attached,

and a pressure member engaging the opposite side of each of said legs and adjacent their lower ends for jointly urging said contact shoes into engagement with an electrode whereby each of said contact shoes will individually engage the same to provide separate regions of electrical engagement between said contact assembly and said electrode,

said legs being electrically conductive and having passages formed therein for conducting cooling fluid.

4,326,094

WATERPROOFING OF INSULATED ELECTRIC CABLES

Reginald A. Hunn, Natal, South Africa, assignor to South African Inventions Development Corporation, Pretoria, South Africa

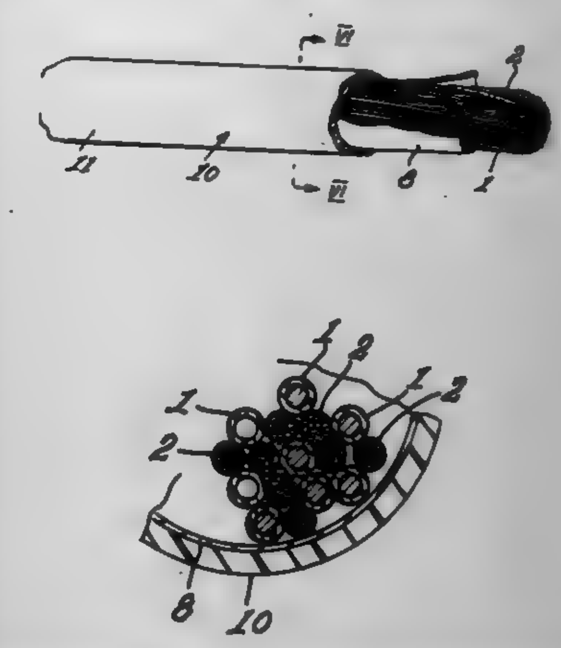
Filed Nov. 19, 1979, Ser. No. 95,357

Claims priority, application South Africa, Nov. 22, 1978, 78/6576

Int. Cl.³ H01B *11/02*

U.S. Cl. 174—23 R **17 Claims**

1. An electric cable comprising an exterior sheath, a plurality of twinned, stranded insulated conductors having helical interstices associated therewith located within said sheath, a plurality of strand material carrier elements located in said helical interstices and extending along the entire length of said cable, said strand material carrier elements having deposited thereon an adjuvant incorporating a moisture sensitive swelling agent, said swelling agent reacting with any moisture leaking into said sheath to seal off the leak, the physical bending characteristics of said cable remaining substantially unchanged



by the incorporation of said strand material carrier elements therein.

4,326,095

CASING COMPRISING A BARRIER FOR INTERCEPTING ALPHA PARTICLES FROM A SEALING LAYER

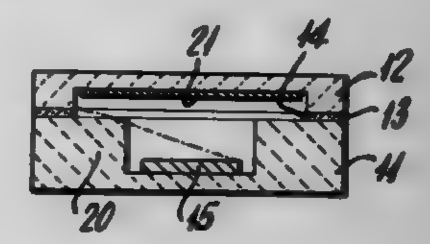
Teruo Yamaguchi, Nagoya, Japan, assignor to Narumi China Corporation, Nagoya, Japan

Filed Dec. 27, 1979, Ser. No. 107,714

Claims priority, application Japan, Dec. 28, 1978, 53-178552[U]

Int. Cl.³ H05K *5/06*

U.S. Cl. 174—52 FP **10 Claims**



1. A casing for a semiconductor memory chip having a first surface and a second surface opposite said first surface, wherein said casing comprises a base member and a cap member;

said base member having a peripheral region having a peripheral surface, a mounting region having a mounting surface, and an intermediate region between said peripheral and said mounting regions;

said cap member having a cap-member peripheral surface, and a sealing layer interposed between said peripheral surfaces and hermetically sealing said members to each other at said peripheral surfaces;

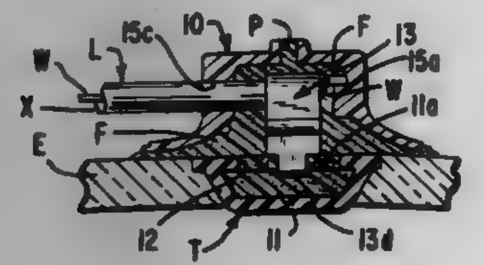
at least one of said members being recessed and defining with the other of said members a hollow space over said mounting and intermediate regions and hermetically closed by said sealing layer;

at least one semiconductor memory chip being mounted on said mounting surface with said first surface exposed to said hollow space and said second surface attached to said mounting surface;

said sealing layer having an inside end surface exposed toward said hollow space and emitting alpha particles from said inside end surface at least toward a limited space

enveloping imaginary lines of vision of viewing said inside end surface and said first surface from one to the other;
the improvement in which a barrier is an integral formation of at least one of said members in interposed relation between said inside end surface and said first surface, said barrier extending peripherally continuously into said limited space and intercepting said imaginary lines of vision.

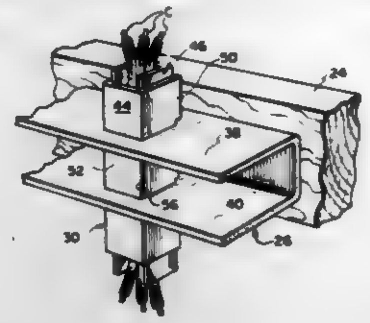
4,326,096
ELECTRICAL CONNECTOR
William J. Leitmann, Northbrook, Ill., assignor to Hobson Bros., Inc., Chicago, Ill.
Filed Feb. 20, 1980, Ser. No. 123,032
Int. Cl.³ H01R *4/48;* H04N *5/65*
U.S. Cl. 174—84 R 7 Claims

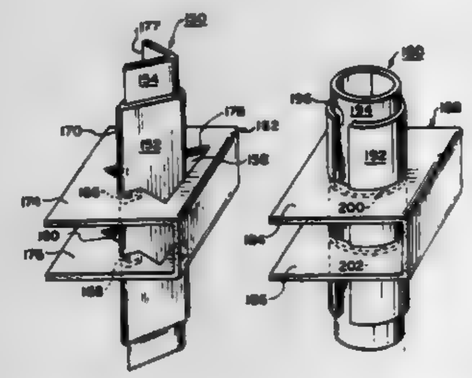


1. An electrical connector for use with a surface mounted terminal in a high voltage circuit, the terminal having a recess provided with an inwardly projecting lip delimiting an entry to the recess, said connector comprising a clip of electrically conductive material and having a pair of elongated protruding elements connected at one end by a bail section, the opposite end portions of said elements being free and adapted to extend into the terminal recess entry and resiliently engage and interlock with the terminal lip; an insulated electrical lead having an end portion thereof straddled by the coaction of said bail section and adjacent portions of said protruding elements, a distal first segment of the lead end portion extending in one direction from said bail section and being in electrical contact with and secured to a segment of the clip projecting from said bail section and being transversely disposed relative to said protruding elements, a second segment of the lead end portion extending in a second direction away from said bail section; an insulated cover piece accommodating said clip and the lead end portion and supportingly engaging the first and second segments of the lead end portion, said cover piece having a section thereof encompassing the clip protruding elements and being adapted to overlie a portion of the surface circumjacent the terminal; and a filler of adhesive rubberlike insulative material disposed in the interior of said cover piece and embedding therein said clip and at least the distal first segment of the lead end portion connected to said clip segment, said filler being adapted to embed therein the terminal lip when engaged by the clip protruding elements.

4,326,097
ELECTRICAL DEVICE WITH INSULATING CONDUCTOR SUPPORT STRUCTURE
Frank W. Heinrichs, Jr., McMurray, Pa., assignor to McGraw-Edison Company, Rolling Meadows, Ill.
Filed Jan. 31, 1980, Ser. No. 117,202
Int. Cl.³ H01B *17/58;* H02G *3/04;* H01F *15/10*
U.S. Cl. 174—155 15 Claims

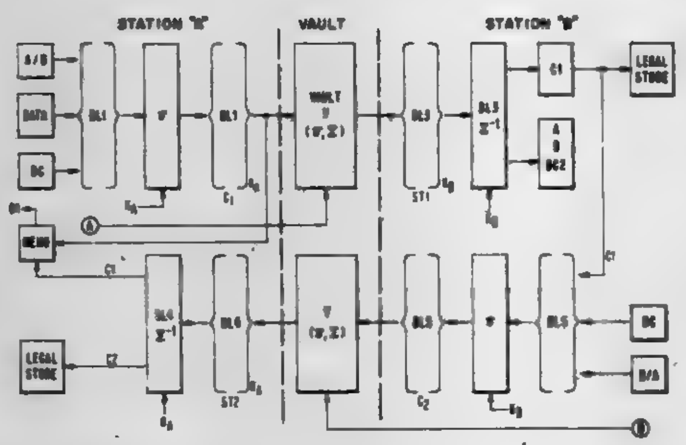
1. In an electrical device having a high voltage conductor and at least one mounting wall having a passage therethrough through which the high voltage conductor passes, a conductor support comprising:
a first channel member, formed from a sheet of dielectric material, inserted in said passage and at least partially surrounding said conductor; engaging means, formed in said first channel member intermediate the ends thereof engaging the edges of said mounting wall adjacent said passage along the periphery of said passage; and
a second channel member, formed from a sheet of dielectric material, inserted in said first channel member and at least partially surrounding said conductor,
said first and said second channel members cooperating to completely surround the conductor, said second channel





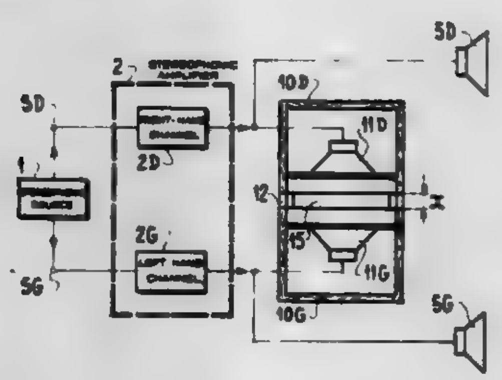
member having a first portion interposed between said conductor and the edges of said mounting wall defining said passage and a second portion interposed between said conductor and said first channel member,
said second channel member being maintained in engagement with said first channel member by an interference fit, whereby said conductor is supported by said mounting wall.

4,326,098
HIGH SECURITY SYSTEM FOR ELECTRONIC SIGNATURE VERIFICATION
Willard G. Bouricius, Katonah, N.Y., and Horst Feistel, Lexington, Mass., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Jul. 2, 1980, Ser. No. 165,455
Int. Cl.³ H04L *9/00*
U.S. Cl. 178—22.08 14 Claims



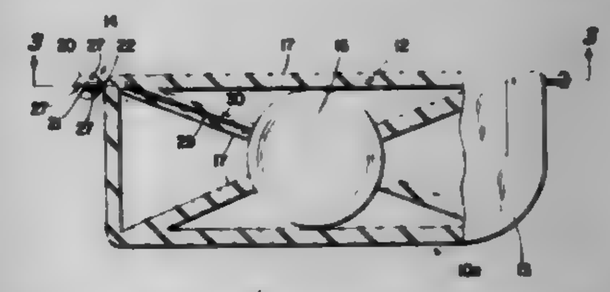
1. A method for effecting a high security electronic signature verification operation in a computer based communication system comprising a central data communication network controller which includes a high security verify unit (Vault) therein said system further including at least two remotely located terminals selectively connectable to said Vault over said data communication network and wherein said Vault and each of said terminals includes substantially identical key-controlled block-cipher cryptographic devices included therein and wherein said Vault has available therein means for obtaining the individual keys K_X of each terminal (or user X) connected to said system, said method comprising:
User A (sender) at a first terminal sending the Vault a first message (A⊕C1) including a first segment which comprises an identification code of the user A in clear format and a second segment C1 including at least an identification of the sender, user A, the receiver user B (A/B) and the message to be communicated to user B (Data) at a second terminal, said second portion being encrypted under user A's key K_A,
the Vault upon receipt of said message A⊕C1 obtaining the key K_A based on the first portion of said message A, and decrypting said message portion C1 using key K_A, verifying the identity of user A and upon a successful verification of the user A said Vault forming a second message to be sent to user B (receiver) at said second terminal, said second message including the message segment C1 from the first message and a new message segment comprising the identity A/B of the sender and receiver and Data which message is encrypted as a function of user B's key K_B,
user B upon receipt of said second message from the Vault decoding same and saving the message C1 in a 'Legal Store', and forming a third message B⊕C2 to be returned to the Vault said third message including the identity of user B in clear format as a first segment and a second segment C2 comprising at least the previous message segment C1 and the identity A/B of the sender and receiver, enciphering this second message segment under key K_B, and sending the message B⊕C2 to the Vault,
the Vault upon receipt of the message from the user B decrypting the message C2 to obtain segment C1 therefrom, said Vault then forming a fourth message C1⊕C2 and encrypting said message as a function of user A's key K_A and sending said message to user A,
user A upon receipt of said fourth message from the Vault decrypting the message to obtain C1 and C2, and storing C2 in a 'Legal Store'.

4,326,099
LOW FREQUENCY CABINET, IN PARTICULAR FOR A TRIPHONIC AUDIO NETWORK
Michel Maille, Paris, France, assignor to Thomson-Brandt, Paris, France
Filed Feb. 20, 1980, Ser. No. 122,869
Claims priority, application France, Feb. 23, 1979, 79 04661
Int. Cl.³ H04S *1/00*
U.S. Cl. 179—1 GA 8 Claims



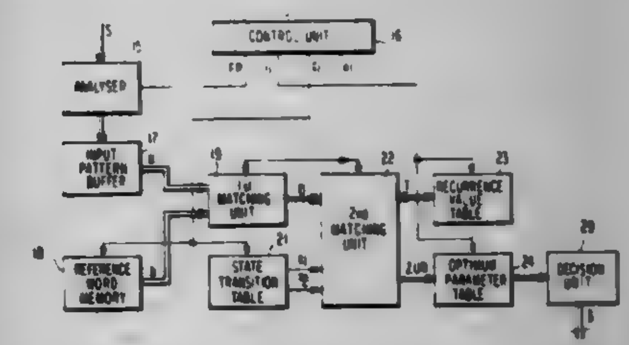
1. A low frequency acoustic cabinet, especially for frequencies of less than 200 Hz, comprising:
first and second loud-speakers, each having a front and rear face,
first and second enclosures, the rear face of the first and second loud-speakers radiating respectively in the first and second enclosures, and
a single tuned cavity in which radiate the front faces of the two loud-speakers and which is connected to the outside by an opening of predetermined dimensions, said cavity forming a low pass filter, the high frequency limit of which depends on its volume and the amplitude of the sound signal being dependent of the surface of said opening, said first and second loud-speakers being adapted to receive the output signal from respectively right-hand and left-hand channels of a stereophonic amplifier.

4,326,100
COMBINATION AUTOMOBILE SUN VISOR AND SPEAKER ASSEMBLY
David D. Polacsek, 780 Oberlin Rd., Apt. 17, Elyria, Ohio 44035
Filed Apr. 24, 1980, Ser. No. 143,431
Int. Cl.³ H04R *1/02;* B60R *11/02*
U.S. Cl. 179—1 VE 9 Claims



1. A combination automobile sun visor and speaker assembly comprising a thin bidirectional wafer-type speaker enclosed in a layer of acoustically transparent material to form an entire sun visor, the speaker comprising a lightweight acoustic panel supported by a frame, means for mounting the speaker above a windshield in place of a conventional sun visor, the mounting means comprising a pivotable sun visor mounting assembly attached directly to the speaker, and wiring extending from the speaker for connection to an external audio source.

4,326,101
SYSTEM FOR RECOGNIZING A WORD SEQUENCE BY DYNAMIC PROGRAMMING AND BY THE USE OF A STATE TRANSITION DIAGRAM
Hiroaki Sakoe, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan
Filed Aug. 6, 1980, Ser. No. 175,798
Claims priority, application Japan, Aug. 17, 1979, 54-104669
Int. Cl.³ G10L *1/00*
U.S. Cl. 179—1 SD 1 Claim



1. A continuous speech recognition system for recognizing a word sequence which is substantially continuously spoken in compliance with a regular grammar and supplied to said system as an input pattern A defined by a time sequence of first through I-th input pattern feature vectors a_i arranged at equally spaced successive instants i (i = 1, 2, . . . , I), said regular grammar being defined by a state transition diagram for an initial state and a finite sequency of possible states x, said finite

sequence next following said initial state, said system comprising:

a reference word memory for memorizing first through N-th reference words B^c ($c=1, 2, \ldots, N$), an n-th reference word B^n (n being representative of each of c) being given by a time sequence of first through J^n-th reference word feature vectors b_j^n ($j^n=1, 2, \ldots, J^n$);

similarity measure calculating means for calculating at each instant m (m being representative of each of i) a group of similarity measures D(u, m, c) between a group of fragmentary patterns A(u, m)'s and every one of said reference words B^c, said group of fragmentary patterns A(u, m)'s being defined, by said each instant m and a plurality of previous instants u's preceding said each instant m among said successive instants i, as those parts of said input pattern feature vector sequence which consist of (u+1)-th through m-th input pattern feature vectors a_{u+1}'s to a_m;

a state transition table for memorizing, in connection with a particular y (y being representative of each of x), a previous state z and a set of words P_{zy} for a permutation of said previous and said particular states z and y, said previous state z being each of that at least one of said initial and said possible states x which precedes said particular state y, said word set P_{zy} being preselected from said reference words B^c according to said permutation;

a recurrence value table comprising a plurality of memory locations two dimensionally accessible by said successive instants i and said possible states x;

an optimum parameter table comprising a plurality of memory locations two dimensionally accessible by said successive instants i and said possible states x;

optimum parameter determining means for repeating calculation of a recurrence value $T_y(m)$ and determination of a set of optimum parameters $ZUN_y(m)$ at said each instant m and for said particular state y and storage of said recurrence value $T_y(m)$ and said optimum parameter set $ZUN_y(m)$ in said recurrence value and said optimum parameter tables, respectively, at memory locations accessible by said each instant m and said particular state y, said recurrence value $T_y(m)$ being calculated as a minimum of a plurality of sums of previous recurrence values $T_z(u)$'s and those of similarity measures D(u, m, c) of said group, respectively, which are calculated for the reference words belonging to said word set P_{zy}, said previous recurrence values $T_z(u)$'s being calculated at the respective previous instant u's and for the previous state z and stored in said recurrence value table at memory locations accessible by said previous instants u's and said previous state z, said set of optimum parameters $ZUN_y(m)$ being that one each of all the previous state z for said particular state y, said previous instants u's, and the reference words in said word set P_{zy} for which said minimum is calculated; and

deciding means for deciding a concatenation of reference words from the reference words stored in said optimum parameter table as said word sequence with reference to the sets of optimum parameters $ZUN_y(m)$'s stored in said optimum parameter table.

4,326,102
AUDIO DATA TRANSMISSION DEVICE WITH COUPLING DEVICE

David W. Culp, Huntington Beach, and Dale P. Mastell, El Toro, both of Calif., assignors to MSI Data Corporation, Costa Mesa, Calif.

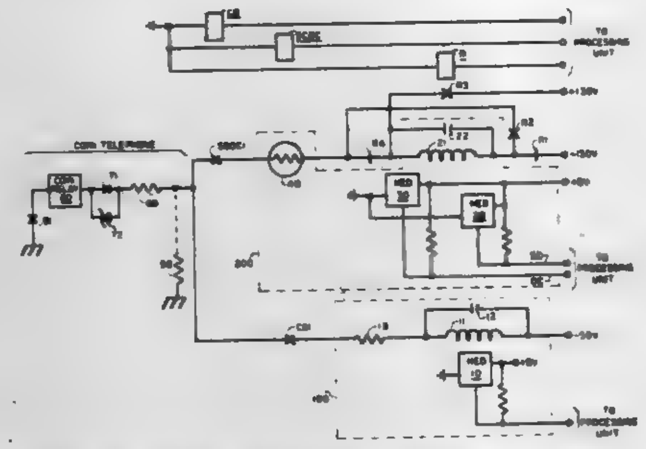
Filed Feb. 4, 1980, Ser. No. 118,394

Int. Cl.³ H04M *11/00*

U.S. Cl. 179—2 C 2 Claims

1. An audio data transmission device for coupling audio tone signals to a conventional telephone handpiece microphone comprising

a telephone handpiece muff comprising a cup-like configuration having two open ends, one end adapted to be slipped over the microphone end of the telephone handpiece and having an inside diameter to receive the handpiece microphone end in an acoustic sealing relationship, the opposite end of the muff having an internal flange spaced a distance from said one end to receive the telephone handpiece so as to completely enclose the microphone portion of the handpiece, said one end including a dependent, inwardly extending sealing element adapted to hug the telephone handpiece in an acoustic sealing relationship, said internal flange having a soft, acoustical sealing element secured thereto for acoustically sealing the microphone end of the handset when mounted in the muff, and



an audio tone signal transmitting element having two open ends with one end secured to said internal flange of the muff and having an inner diameter substantially the same as the diameter of the sound receiving portion of the telephone microphone, said audio tone signal transmitting element having a preselected length for transmitting audio signals therein and selected to minimize the tendency of the telephone microphone to generate second harmonics in response to the audio signals transmitted thereto.

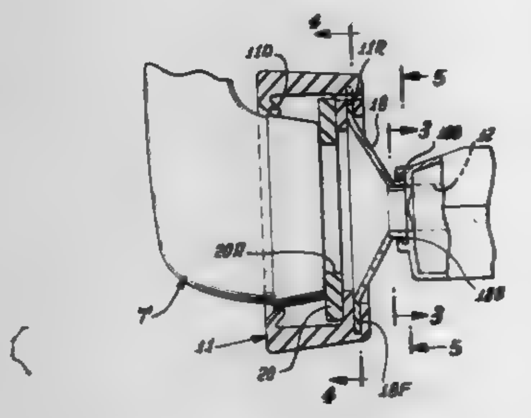
4,326,103
COIN TELEPHONE MONITOR CIRCUIT

Kenneth H. Oehrig, Plainfield, Ill., assignor to GTE Automatic Electric Labs Inc., Northlake, Ill.

Filed Jun. 2, 1980, Ser. No. 155,720

Int. Cl.³ H04M *3/22, 17/02*

U.S. Cl. 179—6.3 R 11 Claims



1. A coin telephone monitor circuit for use in a telephone switching system including a line battery power supply, a processing unit operated to generate a coin ground test signal, and a coin telephone including a telephone line, said coin telephone operated in response to deposit of a predetermined number of coins, to connect said line to ground, said coin telephone monitor circuit comprising:

coin ground detection means;

switching means connected to said processing unit and said telephone line, operated in response to said coin ground test signal to connect said coin ground detection means to said telephone line;

an induction coil connected to said line battery supply, operated in response to current flow from said line battery supply through said induction coil to said ground to generate a magnetic flux; and

a Hall effect device connected in magnetic field proximity to said induction coil, operated in response to said magnetic flux to generate an initial rate deposited signal.

4,326,104
CURRENT DETECTOR

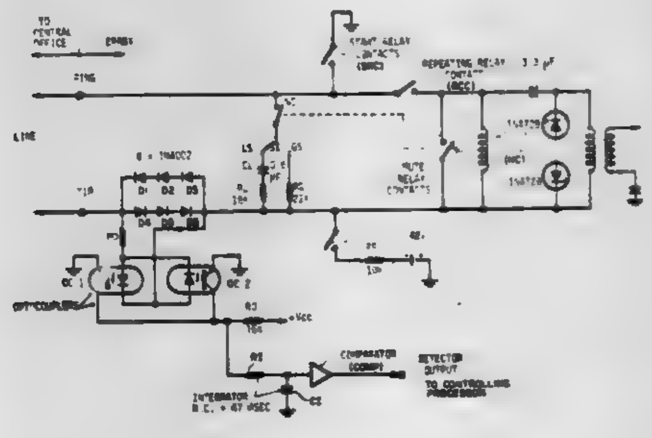
Ephraim Bergida, Petah-Tikva, Israel, assignor to Tadiran Israel Electronics Industries Ltd., Tel Aviv, Israel

Filed Jul. 25, 1979, Ser. No. 60,606

Claims priority, application Israel, Apr. 5, 1979, 57011

Int. Cl.³ H04M *3/22*

U.S. Cl. 179—16 AA 4 Claims



1. A current detector in an automatic telephone exchange interconnection circuit, useful in interconnection of an automatic telephone exchange with a central office via TIP and RING leads, for detecting any one of the loop current, ringing current and TIP lead ground current said current delector comprising:

rectifying means coupled to the TIP lead for rectifying at least a portion of the current flowing therealong of either polarity; and

detector means for receiving the rectified output of said rectifying means and for providing a DC output signal indicating current passage along the TIP lead;

wherein said rectifying means produces a rectifier output, said detector means comprising an integrator for receiving and integrating said recitifier output to provide an integrated output, and a comparator for comparing said integrated output to a reference to produce said DC output signal indicating current passage along said TIP lead; whereby to detect any one of said loop current, said ringing current and said TIP lead ground current.

4,326,105
DIAL PULSE DETECTOR

Brian J. N. Vaughan, and Brian J. Pascas, both of Ottawa, Canada, assignors to Mitel Corporation, Kanata, Canada

Filed Feb. 8, 1980, Ser. No. 119,900

Claims priority, application Canada, Dec. 21, 1979, 342522

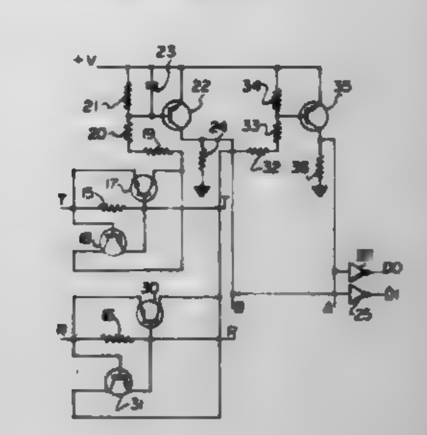
Int. Cl.³ H04Q *1/36*

U.S. Cl. 179—16 EA 17 Claims

1. A dial pulse detection circuit comprising:

(a) means for detecting a first line current transition through a predetermined upper threshold, and for establishing a dial pulse leading edge in response to said detection,

(b) means for ignoring a first line current transition through a predetermined lower threshold which follows said first transition through said upper threshold but detecting a second line current transition through said predetermined lower threshold and for establishing a dial pulse trailing edge in response to its detection, and



(c) means for ignoring a second line current transition through said upper threshold following said second line current transition through said lower threshold,

whereby a complete dial pulse is established.

4,326,106
TELEPHONE AMPLIFIED CIRCUIT

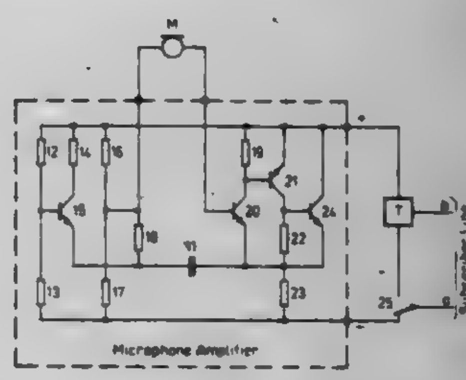
Willy Minner, Schwaigern; Rainer Rodenheber, Leingarten, and Erhard Reitz, Oberursel, all of Fed. Rep. of Germany, assignors to Licentia Patent-Verwaltungs GmbH and Telefonbau und Normalzeit GmbH, both of Frankfurt am Main, Fed. Rep. of Germany

Filed Jan. 31, 1980, Ser. No. 117,273

Claims priority, application Fed. Rep. of Germany, Feb. 3, 1979, 2904096

Int. Cl.³ H04M *1/60*

U.S. Cl. 179—81 B 3 Claims



1. In a microphone amplifier with a capactive degenerative feedback circuit in a telephone station furnished with current from the telephone network via a two-wire subscriber line, a speed-up circuit for initially charging a capacitor in the feedback circuit when supply voltage across the subscriber line is applied to the station, comprising:

a three-electrode transistor (15) having one electrode connected to one terminal of the feedback capacitor (11) the other capacitor terminal being coupled to one of the subscriber line wires;

resistance means connected between the two subscriber line wires and connected to the control electrode of said transistor (15); and

the third electrode of the transistor (15) coupled to the other subscriber line wire.

4,326,107

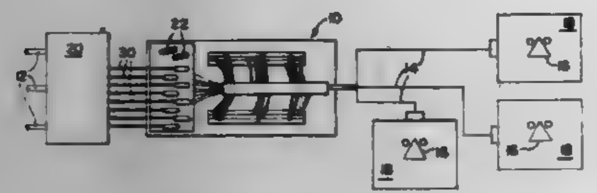
COMMUNICATION SYSTEM AND MEANS FOR INTERCONNECTION OF SAME

Jiulio Perna, Naperville, Ill., assignor to Bunker Ramo Corporation, Oak Brook, Ill.

Continuation-in-part of Ser. No. 78,351, Sep. 24, 1979. This application Nov. 9, 1979, Ser. No. 92,865

Int. Cl.³ H04Q *1/16*

U.S. Cl. 179—98 22 Claims



1. An interconnection system for manually programming the assignment of individual communication channel identifiers of a multi-channel communication network to individual stations at different locations within the network service area, said system comprising:

a plurality of multi-circuit connectors adapted to receive and couple with communication trunk lines;

a plurality of connector members each including indicia identifiable with a given station within said network service area and having a mating portion and a terminal portion adapted to field terminate an information transmission cable associated with said given station; and

means for interconnecting said multi-circuit connectors and said connector members including a plurality of conductor means, each electrically coupled to and permanently affixed at one end to said multi-circuit connector and electrically coupled to and permanently affixed at its other end to a relocatable connector, each said relocatable connector including indicia identifiable with one of said communication channels and directly matable with the mating portion of any of said connector members, whereby the individual communication channels may be manually assigned to the individual communication stations.

4,326,108

HOOK SWITCH FOR TELEPHONE INSTRUMENTS

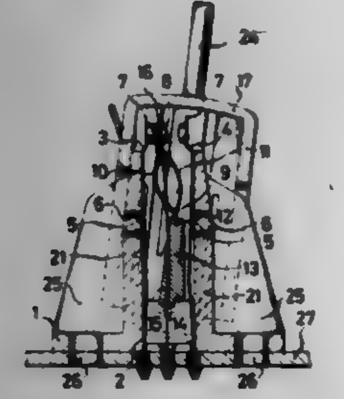
Helmut Barkow, Steinbach, and Karl Frank, Frankfurt am Main, both of Fed. Rep. of Germany, assignors to Telefonbau und Normalzeit GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Jun. 30, 1980, Ser. No. 164,277

Claims priority, application Fed. Rep. of Germany, Jul. 2, 1979, [illegible]

Int. Cl.³ H01H *21/24*; H04M *1/08*

U.S. Cl. 179—164 13 Claims



1. In a hook switch for telephone instruments having at least one set of outer contact springs (3, 4) and a movable switching balance (17) with an operation part (13) inside a case, the improvement comprising: a bounce contact spring (8) formed like a frame having a pair of center located spring blades (10, 11) which are arched outwardly in opposite directions and connected at their lower ends (9).

4,326,109

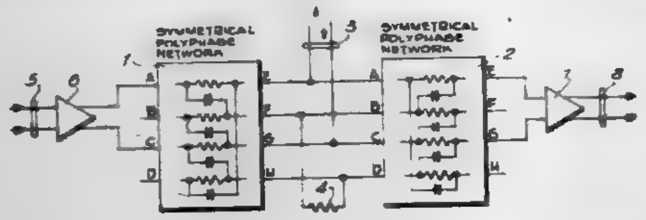
APPARATUS FOR COUPLING A TWO-WAY TRANSMISSION PATH TO A ONE-WAY TRANSMITTING PATH AND A ONE-WAY RECEIVING PATH

William F. McGee, Nepean, Canada, and Wasfy B. Mikhael, Morgantown, W. Va., assignors to Northern Telecom Limited, Montreal, Canada

Filed Apr. 11, 1980, Ser. No. 138,839

Int. Cl.³ H04B *1/58*

U.S. Cl. 179—170 NC 5 Claims



3. A 2-wire/4-wire hybrid circuit comprising:

a first phase-shift network having two inputs and four outputs at which a four-phase signal is produced in response to a differential signal supplied to said inputs;

a second phase-shift network having four inputs, which are connected to the outputs of the first phase-shift network, and two outputs, the second phase-shift network being conjugate to the first whereby a differential signal supplied to the inputs of the first network and resulting in a four-phase signal at the outputs of the first network results in no signal being produced at the outputs of the second network; and

means for connecting the receiving wires and the transmitting wires of a 4-wire line respectively to the inputs of the first network the outputs of the second network, and means for connecting the wires of a 2-wire line to two inversely-related outputs of the first network, and means for connecting a balancing impedance, equivalent to the impedance of the 2-wire line, between the other inversely-related outputs of the first network.

4,326,110

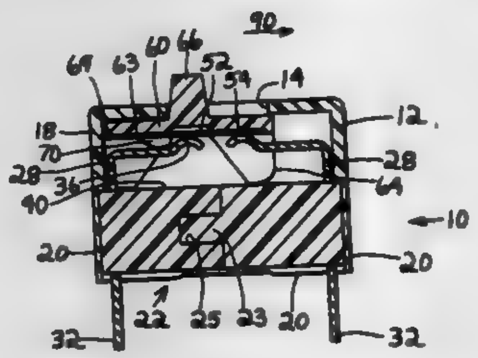
PREPROGRAMMED SLIDE SWITCH ASSEMBLY

John Zdanys, Jr., Edwardsburg, Mich., assignor to CTS Corporation, Elkhart, Ind.

Filed Sep. 15, 1980, Ser. No. 186,912

Int. Cl.³ H01H *15/00*

U.S. Cl. 200—16 R 11 Claims



1. A slide switch comprising a cover having a plurality of walls forming a cavity therein, a plurality of sets of terminals disposed in said cavity, each terminal of said sets of terminals comprising a contact arm integral with a terminal portion extending exterior to the cavity, a transversely movable slider disposed within said cavity, a plurality of cams disposed along one side of said slider and each of said terminals having a curved portion at an end thereof, each of said cams slideably engaging a respective one of said curved portions upon transverse movement of said slider for effecting a detent during said movement, a plurality of contactors secured to said slider, each of said contactors positioned adjacent a set of said terminals, said contactors being disposed in a predetermined pattern whereby at one position each of said contactors effects contacting with a preselected terminal of a respective set of terminals and thereafter at a second position each contactor contacts both terminals of a respective set of terminals whereby upon transverse movement of said slider each of said contactors either effects wipeable engagement with the other terminal of said set of terminals to complete a circuit across said set of terminals or wipeably disengages one terminal of said set of terminals to open a circuit across the set of terminals in a predetermined pattern for making and opening circuits across respective sets of said terminals.

4,326,111

INERTIA SWITCH DEVICE

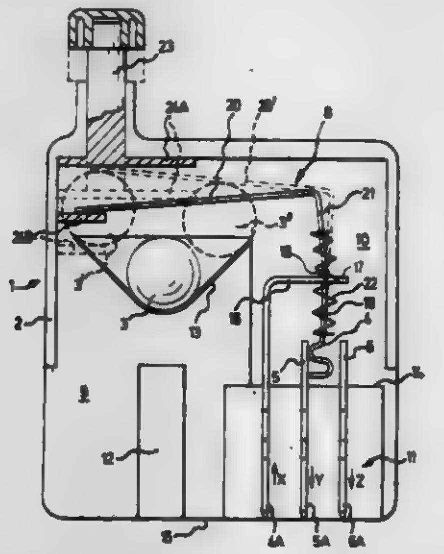
Peter R. Jackman, Basingstoke, England, assignor to Inertia Switch Limited, England

Filed Sep. 10, 1979, Ser. No. 74,143

Claims priority, application United Kingdom, Jan. 21, 1978, 1294/78; May 31, 1978, 19375/78

Int. Cl.³ H01H *35/14*

U.S. Cl. 200—61.45 R 10 Claims



1. An inertia switch device, comprising:

(a) a housing having a conical seat;

(b) an inertia mass located within the housing and movable from a rest position in response to acceleration or deceleration applied thereto, the inertia mass being formed by a spherical member located in the conical seat so as to be substantially independent of the direction of an applied acceleration or deceleration in a horizontal plane;

(c) rigid operating means mounted within the housing and including a first arm disposed to be struck and moved by the inertia mass when the acceleration or deceleration has exceeded a threshold value, and a second arm having a bifurcated portion;

(d) support means secured within the housing and having a bifurcated portion on which the bifurcated portion of said second arm is pivotally mounted for movement about a pivotal axis;

(e) first, second and third electrical contacts mounted within the housing;

(f) the first electrical contact being movable between first and second positions and disposed between and respectively engageable with the second and third electrical contacts, said first electrical contact having a bifurcated portion pivoted on said bifurcated portion of said support means; and

(g) resilient biasing means connecting said second arm to said first electrical contact, and lying within the bifurcated portions so that a center-line of the resilient biasing means can move to either side of said pivotal axis to bias said first electrical contact stably to one of said positions dependent on the position of the operating means.

4,326,112

MICROWAVE OVEN HAVING A TUBULAR L-SHAPED ANTENNA

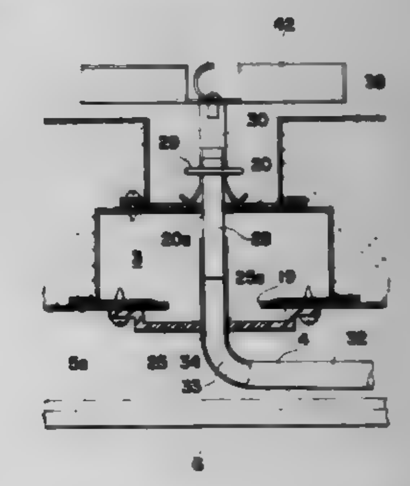
Junzo Tanaka, Fujiidera; Nobuo Ikeda, and Hirofumi Yoshimura, both of Nara, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Continuation of Ser. No. 893,306, Apr. 4, 1978, abandoned. This application Nov. 20, 1979, Ser. No. 96,169

Claims priority, application Japan, Oct. 14, 1977, 52-123761; Oct. 17, 1977, 52-124741

Int. Cl.³ H05B *6/72*

U.S. Cl. 219—10.55 F 5 Claims



1. A microwave oven comprising:

conductive walls and a conductive door defining an enclosed heating cavity, one of said walls having an opening defined therein and serving as an outer conductive element for microwaves;

means for generating microwaves;

a waveguide having one end coupled to said generating means and the other end coupled to said opening in said one of the walls, said waveguide having a first hole therein opposite said opening, for supplying said microwaves from said generating means towards said opening in said one of the walls;

an antenna of a substantially tubular L-shaped configuration and serving as an inner conductive element for said microwaves, said antenna being constituted by a first tubular antenna portion, having one end disposed in said waveguide means and extending through said opening in said one of the walls in a direction perpendicular to the plane of said one of the walls, and a second tubular antenna portion radially extending from said first antenna portion and positioned within said heating cavity, said second antenna portion having its longitudinal axis parallel to and spaced from said one of the walls a distance equal to a quarter of the wavelength of the microwaves, whereby microwaves are radiated in part from said first antenna portion in a direction substantially at right angles to the longitudinal axis of said first antenna portion and in part from said second antenna portion in a direction substantially at right angles to the longitudinal axis of said second antenna portion;

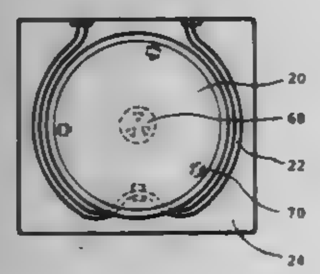
a driving means for rotating said antenna including an elongated connecting member of a low loss dielectric material having a diameter not greater than the diameter of said first antenna portion, connected at one end thereof to said first antenna portion, passing through and rotatably supported by said first hole in said waveguide, whereby said second antenna portion rotates in a plane perpendicular to the axis of said first antenna portion; and

a supporting means of a dielectric material having a substan-

tially convex downward shape and further having a second hole in the central portion thereof and being attached to said one of the walls at a point spaced outwardly from the edge of said opening and disposed in a position covering said opening in said one of the walls, and further having said first antenna portion passing through said second hole therein and rotatably supporting said first antenna portion.

4,326,113
HEATER DISPOSED BELOW A TURNTABLE IN A COMBINATION MICROWAVE AND ELECTRIC OVEN

Munemitsu Toyoda, Osaka, and Koichiro Adachi, Nara, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Continuation of Ser. No. 830,887, Sep. 6, 1977, abandoned. This application Dec. 28, 1979, Ser. No. 107,889
Claims priority, application Japan, Sep. 6, 1976, 51-120467[U]
Int. Cl.³ H05B *9/06*
U.S. Cl. 219—10.55 D **23 Claims**



1. In a combination microwave and electric oven energized by a power source and capable of operating in an electric heating mode and a microwave cooking mode, said combination microwave and electric oven including an oven cavity, a microwave generating means operatively associated with said oven cavity for generating microwave energy during said microwave cooking mode, a heating means disposed in said oven cavity for generating electric heat energy during said electric heating mode, and a turntable having a solid plate construction disposed at the lower section of said oven cavity for mounting a foodstuff thereon, at least the top surface of said turntable being a continuous surface devoid of any holes therethrough, said heating means further comprising:

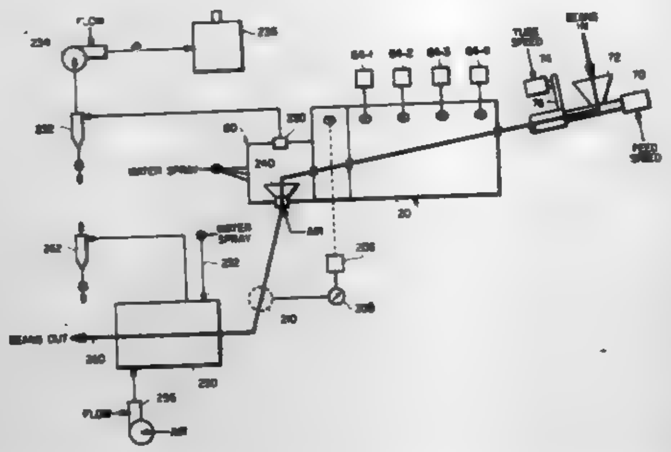
an upper heating means disposed at a top wall of said oven cavity for emitting said electric heat energy; and

a lower heating means disposed between said turntable a bottom wall of said oven cavity for emitting said electric heat energy, a substantial portion of said lower heating means extending beyond the peripheral surface of said turntable thereby forcing substantially the entire amount of said electric heat energy being emitted from said lower heating means to pass around the peripheral surface of said turntable and thereby heating the environment within said oven cavity above said turntable, a negligible amount of said electric heat energy from said lower heating means passing through said turntable, said foodstuff being cooked during said electric heating mode solely by said electric heat energy disposed within the environment of the oven cavity above said turntable.

4,326,114
APPARATUS FOR MICROWAVE ROASTING OF COFFEE BEANS

John E. Gerling, Cupertino, and John P. O'Meara, Orinda, both of Calif., assignors to Gerling-Moore, Inc., Santa Clara, Calif.
Division of Ser. No. 968,012, Dec. 11, 1978, abandoned. This application Oct. 14, 1980, Ser. No. 196,388
Int. Cl.³ H05B *6/78*
U.S. Cl. 219—10.55 A **7 Claims**

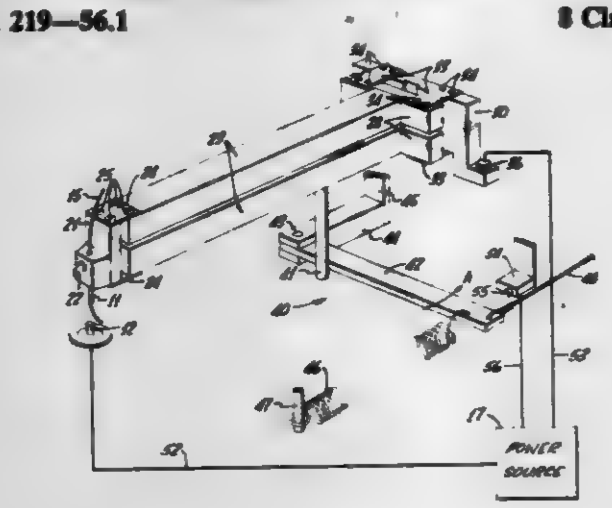
1. In apparatus for roasting coffee beans, a microwave oven having a cavity including first incoming cavity portion in which the beans are heated and the moisture driven off and further heated to an initial roasting temperature, means forming a second final cavity portion in which the beans are roasted to a final predetermined degree of roast, separate means for supplying microwave power to said first and second cavity portions, means forming a cylindrical tube transparent to microwave energy disposed in said cavity at an angle to the horizontal angle therein, means for supporting and rotating said tube within said cavity, means for delivering coffee beans to the upper end of said tube, means for controlling the micro-



wave power to said cavity portions to obtain a predetermined degree of roast, means forming a roasted bean receiving chamber at the lower end of said tube in which microwave power is not applied and which traps microwave energy which leaks through said tube, means for removing roasted beans from said chamber, means for immediately cooling beans within said bean receiving chamber as they emerge from the lower end of said tube, and means for removing the roast off-gases from said chamber.

4,326,115
CONTINUOUS THRU-WIRE WELDING MACHINE

Stephen J. Bartholet, Orange, and Paul J. Chvostal, Buena Park, both of Calif., assignors to Odetics, Inc., Anaheim, Calif.
Filed Jul. 18, 1980, Ser. No. 169,996
Int. Cl.³ B23K *11/16, 11/32*
U.S. Cl. 219—56.1 **8 Claims**



1. A welding machine for welding a conductor to a terminal comprising:

a stationary support;

at least one arm having a known weight;

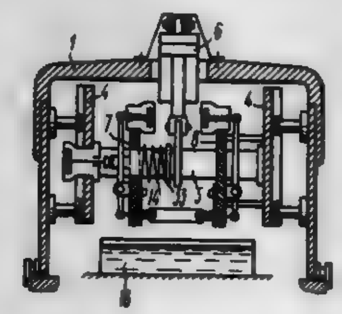
a flexible plate connected between one end of said arm and said stationary support for pivotally connecting said arm to said stationary support;

a first conductive electrode mounted on the other end of said arm, said terminal being positionable below said electrode; and

means for releasably supporting said arm with said first electrode spaced from said terminal, said supporting means being adapted to release said arm whereby said weight of said arm moves said electrode into contact with said terminal and determines the force therebetween.

4,326,116
APPARATUS FOR ELECTRIC RESISTANCE HEATING AND COOLING TUBULAR WORKPIECES

Mikhail N. Bodyako, Leninsky prospekt, 76, kv. 105; Georgy A. Semenjuk, ulitsa Kharkovskaya, 74"B", kv. 22, both of Minsk; Garik E. Zverkov, ulitsa Oktyabrskoi revoljutsii, 24, kv. 40, Smolensk; Stanislav A. Astapchik, ulitsa Kalinovskogo, 56, kv. 79, Minsk; Anatoly F. Kosov, ulitsa Nikolaeva, 23, kv. 30, Smolensk; Sergei M. Kashulin, ulitsa Gorkogo, 143, kv. 151, Minsk, and Alexandr N. Baklanov, prospekt Gagarina, 1, kv. 21, Smolensk, all of U.S.S.R.
Filed Jun. 23, 1980, Ser. No. 162,100
Int. Cl.³ B23K *37/04;* C21D *9/08*
U.S. Cl. 219—61.7 **5 Claims**



1. An apparatus for electric resistance heating and cooling tubular workpieces comprising:

a case;

vertical guides mounted on said case;

a carriage mounted on said vertical guides;

a drive for vertical movement mounted on said case and connected to said carriage;

a horizontal guide fixed on said carriage;

two brackets of which at least one is movable, is mounted on said horizontal guide and is provided with a stop;

a calibrated spring resiliently pressing said movable bracket in the direction opposite to the other of said other of brackets;

contact clamps fixed on said brackets and provided with mandrels to be inserted into the tubular workpiece;

a power cylinder mounted on said case and serving only to put said brackets closer for which purpose a rod thereof is in contact with said stop of said movable bracket;

a bath for a cooling medium mounted on said case under said brackets.

4,326,117
WELD BRAZE TECHNIQUE

William R. Kanne, Jr., Aiken; John W. Kelker, Jr., North Augusta, and Robert J. Alexander, Aiken, all of S.C., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.
Filed Apr. 15, 1975, Ser. No. 567,344
Int. Cl.³ B23K *1/02, 1/04*
U.S. Cl. 219—85 CM **6 Claims**

1. The method of forming a high-strength metal joint between first and second metal members which comprises:

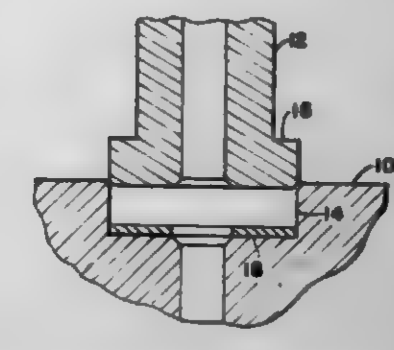
a. counterboring a first metal member to mate in interference fit with a hollow cylindrical metal member;

b. disposing a compatible braze metal between the end of said hollow cylindrical member and the bottom of said counterbore;

c. placing said hollow cylindrical metal member in position to mate in interference with the counterbore of said first metal member;

d. disposing said members within an evacuated welding apparatus; and

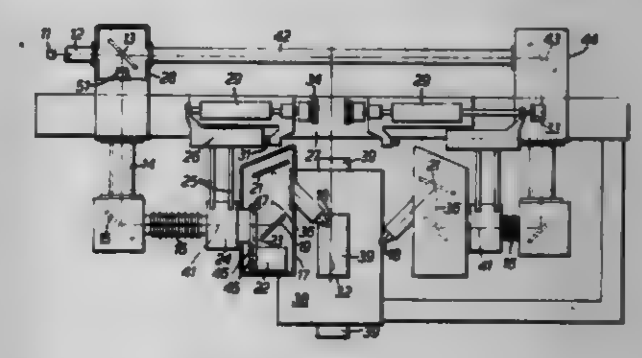
e. applying force and resistance weld energy within said apparatus to said metal members to impart relative motion



thereto until contacting said braze metal so that the energy generated forms a weld between said members and concurrently brazes the end of said hollow cylindrical member into said counterbore.

4,326,118
LASER BEAM WELDING APPARATUS

Jack J. Smith, 50 Pine Dr., Wokingham, England
PCT No. PCT/GB79/00049, § 371 Date Nov. 19, 1979, § 102(e) Date Nov. 19, 1979, PCT Pub. No. WO79/00807, PCT Pub. Date Oct. 18, 1979
PCT Filed Mar. 21, 1979, Ser. No. 173,134
Int. Cl.³ B23K *27/00*
U.S. Cl. 219—121 LC **9 Claims**



1. Laser beam welding apparatus comprising means for directing a laser beam along a reference axis to a housing carrying a laser nozzle and reflectors for supplying the beam to the nozzle, a motor arranged to rotate the housing and the nozzle about the reference axis, and jig means arranged to hold a workpiece in a fixed position relative to the reference axis, characterised by a second housing carrying a second laser nozzle and reflectors for supplying the beam to the second nozzle and a second motor arranged to rotate the second housing and the second nozzle about the reference axis, the second housing being spaced from the first housing along the reference axis, and in which the jig means is arranged to locate the workpiece in the space between the two housings.

4,326,119
PORTABLE BATTERY OPERATED ELECTRIC SMOKE GENERATOR

Edmund Swintosz, Maitland, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Apr. 4, 1980, Ser. No. 137,226
Int. Cl.³ B01J *13/00;* F22B *1/28;* H05B *3/42;* B05B *1/24*
U.S. Cl. 219—272 **18 Claims**

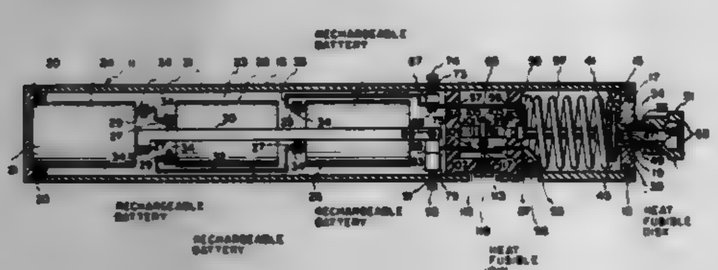
1. A portable battery operated smoke generator comprising, in combination:

a tubular housing having a first end plate at one end thereof, and a second end plate at the opposite end thereof, said first end plate having an aperture therein;

current source means mounted within said tubular housing adjacent said second end plate and having positive and negative terminals for producing a direct current;

tubular coil means mounted within said tubular housing adjacent said first end plate and having a closed end and an open end, with the open end thereof communicating with the aperture of the first end plate of said tubular housing, said tubular coil means being adapted for superheating a vaporizable smoke producing liquid stored therein to a predetermined temperature;

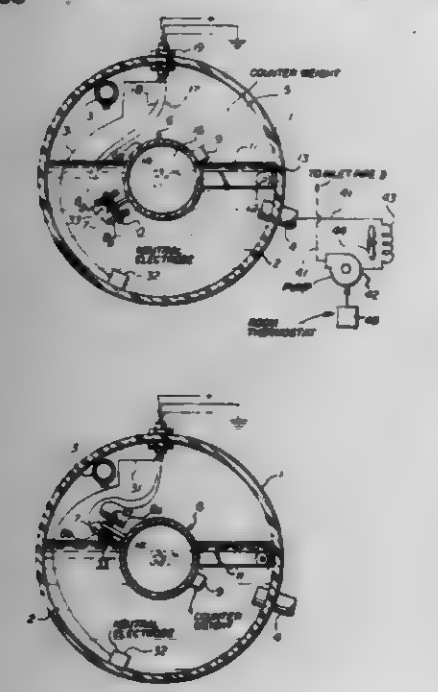
said tubular coil means having the closed end thereof connected to the positive terminal of said current source means and the open end thereof connected to the negative terminal of said current source means by electrical connection means;



said electrical connection means including switching means for energizing said tubular coil means from said current source means for a period of time sufficient to superheat the vaporizable smoke producing liquid stored in said tubular coil means; and

smoke discharging means connected to the open end of said tubular coil means and extending through the aperture of said first end plate for releasing said superheated liquid into the atmosphere as a vapor, said smoke discharging means having therein a heat fusible relief disk adapted for sealing the vaporizable smoke producing liquid within said tubular coil means until such time as the aforesaid vaporizable smoke producing liquid is superheated by the current flowing through said tubular coil means.

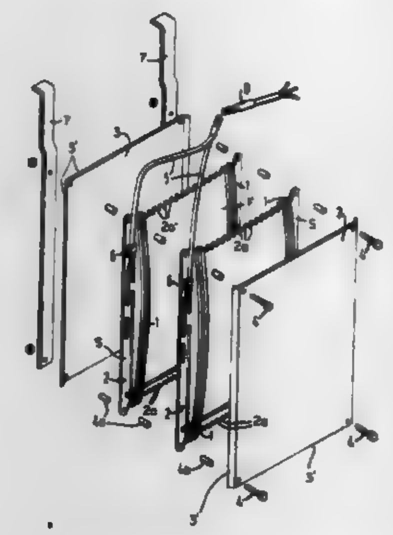
4,326,120
TEMPERATURE CONTROL SYSTEM FOR AN ELECTRODE TYPE LIQUID HEATER
Andrew H. Muhl, Sr., 2109 Huldy, Houston, Tex. 77019
Filed May 12, 1980, Ser. No. 149,237
Int. Cl.^{3} H05B *3/60;* F22B *1/30*
U.S. Cl. 219—286 12 Claims



1. An apparatus for heating an electrically conductive liquid comprising:

a tank for containing the conductive liquid; means for supplying the tank with liquid to be heated; means for removing heated liquid from the tank; means for maintaining a body of an electrically nonconductive gas over the liquid in the tank; at least two spaced apart electrodes of opposite polarity in the liquid in the tank when said tank contains liquid; means for applying a first voltage differential to the electrodes; a buoyant heating assembly having sufficient buoyancy to float in the liquid in the tank; means for mounting at least one of the electrodes with the buoyant heating assembly; means for movably mounting the buoyant heating assembly inside of the tank whereby the heating assembly rises or falls with the level of the liquid in the tank; means mounted on the means for mounting the buoyant heating assembly inside the tank and the buoyant heating assembly for allowing rotation of the heating assembly about a rotational axis on the heating assembly from a first position wherein the at least one electrode is at least partially immersed in the conductive liquid to heat the liquid to a second position wherein the at least one electrode is disposed in the body of nonconductive gas; and a thermostat for applying a rotational force to the heating assembly in response to a change in the temperature of the liquid in the tank comprising a thermostatic coil in the liquid in the tank and having first and second ends which move in arcuate paths responsive to temperature changes, the first end being connected to the buoyant heating assembly and the second end being fixed relative to the buoyant heating assembly so that a change in temperature of the liquid in the tank causes the coil to rotate the buoyant heating assembly about its rotational axis from the first position to the second position in response to an increase in temperature of the liquid and from the second to the first position in response to a decrease in temperature of the liquid.

4,326,121
ELECTRIC IMMERSION HEATER FOR HEATING CORROSIVE LIQUIDS
Dennis H. Welsby, Donning, and Alan G. Dewson, Workingham, both of England, assignors to E. Braude (London) Limited, Surrey, England
Filed Mar. 15, 1979, Ser. No. 20,721
Claims priority, application United Kingdom, Mar. 16, 1978, 10548/78; May 4, 1978, 17849/78; Dec. 12, 1978, 48188/78
Int. Cl.^{3} H05B *3/80;* F24H *1/22;* H01C *3/18*
U.S. Cl. 219—523 5 Claims



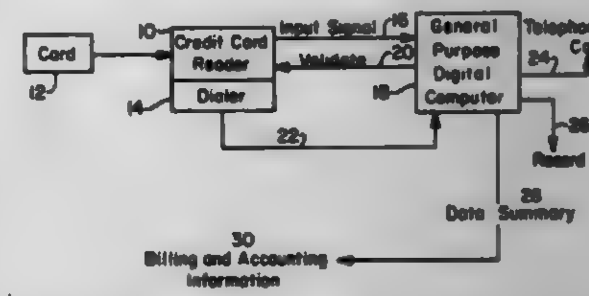
1. An electric immersion heater comprising, a support frame having opposed end portions and side members, said support frame defining a thin planar substantially rectangular frame, said side members provided with end sections extending beyond said frame end portions, an electrical resistance heating element wire wound around said frame opposed end portions to form a substantially flat wound assembly having opposite faces, said wire having conductive connections at each end and shrouded with an integral layer of an electrically insulating, heat resistive material, an imperforate covering plate having peripheral edges and coextensive with and juxtaposed each said assembly face, and spacing and securing means engaging said side members and attaching said covering plates in a spaced manner relative said assembly faces with said peripheral edges of said two covering plates likewise spaced apart whereby, a gap is formed between said two plate peripheral edges allowing for free flow of fluid through said heater between said spaced apart covering plates throughout the entire extent of the gap between said spaced apart covering plates.

4,326,122
ELECTRIC HEATER FOR NUCLEAR FUEL ROD SIMULATORS
Reginald W. McCulloch, Knoxville; Chester S. Morgan, Jr., Oak Ridge, and Ralph E. Dial, Concord, all of Tenn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.
Filed Jul. 14, 1980, Ser. No. 168,977
Int. Cl.^{3} H05B *3/44*
U.S. Cl. 219—544 6 Claims

1. An improved electric heater comprising an elongated hollow cylindrical housing, a hollow helically wound heating element disposed in said housing at a location radially inwardly spaced from the inner wall thereof and concentric with the longitudinal axis of the housing to define an annulus therebetween, boron nitride particulates filling said annulus with the basal planes of the boron nitride particulates being predominantly oriented in a radial direction with respect to said axis and with said boron nitride being at a density in the range of about 80 to 90% theoretical density, and a particulate mass comprising magnesia particulates with up to about 15 weight percent boron nitride filling the cavity defined within said hollow heating element with this fill being sufficiently tamped to provide a density of at least about 70% of theoretical density.

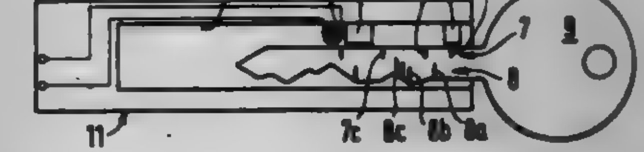
4,326,123
TELEPHONE CREDIT CARD SYSTEM
Harry L. Hosterman, Akron, Ohio, assignor to Charles Graham, Guatamala City, Guatemala
Filed Feb. 22, 1980, Ser. No. 123,904
Int. Cl.^{3} G06K *5/00*
U.S. Cl. 235—380 3 Claims

1. A telephone credit card system which includes an automatic dialer including credit card validation information, a general purpose digital computer to receive the information from the dialer, record the same, and provide interface with the telephonic network, and means to record time and numerical data necessary in conjunction with a telephone call to charge it to the credit number validated which is further characterized by: inclusion of a microprocessor to interface between the dialer and the general purpose digital computer



operating in conjunction with ROMS, RAMS, and PIA's to transmit signals through the phone line to the general purpose digital computer.

4,326,124
LOCKING APPARATUS FOR PREVENTING UNAUTHORIZED ACCESS OR ACTIONS
Rude Faude, Balingen, Fed. Rep. of Germany, assignor to BSG Schalttechnik GmbH & Co. KG., Balingen, Fed. Rep. of Germany
Continuation-in-part of Ser. No. 963,054, Nov. 21, 1978. This application Mar. 28, 1980, Ser. No. 134,825
Claims priority, application Fed. Rep. of Germany, Mar. 28, 1979, 2912258
Int. Cl.^{3} G06K *7/08*
U.S. Cl. 235—382 4 Claims



1. An apparatus for actuating a security system such as a lock including an actuator element such as a key carrying at least one track of coded information related to the authorized actuation of the security system, receiver means for receiving the actuator element, and sensor means carried by the receiver means for scanning the coded information on the actuator element in a non-mechanical manner, wherein:

said at least one track of coded information comprises means for producing a given distribution of magnetic field lines on the actuator element;

the sensor means includes at least one electrical sensor coil, in which a sequence of electrical voltage pulses are induced by the distribution of magnetic field lines during movement of the actuator element in a given direction within the receiver means relative to the sensor means;

the improvement wherein said actuator element comprises a plurality of magnetic rods for generating the distribution of magnetic field lines forming the at least one code track, each magnetic rod having an outer shell portion which is magnetically hard, i.e., difficult to magnetize, and an inner core portion which is magnetically soft, i.e., easy to magnetize, whereby each magnetic rod can be switched from a first magnetic field state into a second magnetic field state under the influence of an external magnetic field of given minimum strength and polarity, and each magnetic rod can be switched from the second magnetic field state into the first magnetic field state under the influence of another external magnetic field of given minimum strength and opposite polarity, and wherein said receiver means comprises:

a complementary element which defines a recess or receptacle having an open end for receiving said actuator element;

first conditioning magnet means, carried by said complementary element and disposed adjacent the open end of the receptacle, for switching the plurality of magnetic rods into the first magnetic state; and

second drive magnetic means, disposed along the receptacle inwardly of the conditioning magnet means, for switching the plurality of magnetic rods into the second magnetic state;

further wherein for each track, a specific sensor coil is disposed adjacent one of the conditioning and drive magnet means, whereby a voltage pulse spike can be induced in the sensor coil as a result of the switching of the magnetic state of each magnet rod by said one of the conditioning and drive magnet means.

4,326,125

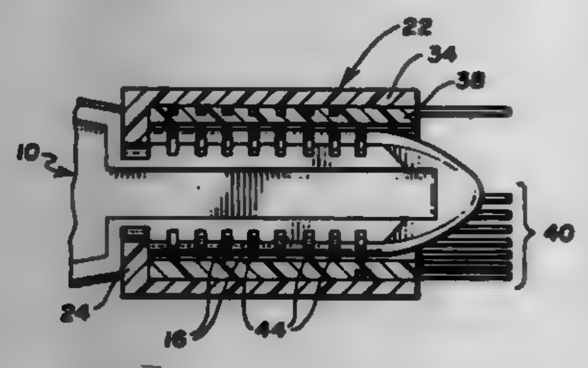
MICROELECTRONIC MEMORY KEY WITH RECEPTACLE AND SYSTEMS THEREFOR

William P. Flies, Burnsville, Minn., assignor to Datakey, Inc., Burnsville, Minn.

Filed Jun. 26, 1980, Ser. No. 163,307

Int. Cl.³ H04Q *9/00*; G06K *5/00*

U.S. Cl. 235—443 **18 Claims**



1. In combination:

a key-like device having head and insert body portions, the insert body portion being adapted for insertion into a receptacle and rotation therein to a "locked" position and including in cross-section:

a major dimension with opposing upper and lower arcuate surfaces; and

a smaller minor dimension with opposing side surfaces,

the insert body portion having a plurality of transverse grooves formed on the major surfaces thereof, said grooves including two opposing "guide" grooves adjacent to the head portion of the key and a plurality of spaced "contact" grooves, the "guide" grooves having a dimension greater than the "contact" grooves;

an electrical circuit element encapsulated within the key, the element including a plurality of electrical leads, each of which extend into one of the "contact" grooves and lie therein to form a plurality of electrical contacts; and

a receptacle defining a keyway for the insert portion of the key, the keyway including:

a plurality of spaced electrical contacts, each such keyway contact comprising a conductive lead positioned in the keyway for contacting a correspondingly spaced contact on the insert portion of the key upon rotation of the key to a "locked" position in the receptacle;

insertion guide means within the keyway for guiding the insert portion of the key during insertion of the key with the contacts thereof angularly displaced from the keyway contacts; and

stop means within the keyway for stopping rotation of the key when the key has reached the "locked" position, the receptacle having a front end wall with a keyway opening therein, the keyway opening of the receptacle shaped to cooperate with "guide" grooves on the insert portion of the key to comprise rotation guiding and locking means for preventing withdrawal of key when the key is rotated and guiding the key during rotation to the "locked" position so as to bring the correspondingly spaced insert and keyway contacts together in contacting pairs.

4,326,126

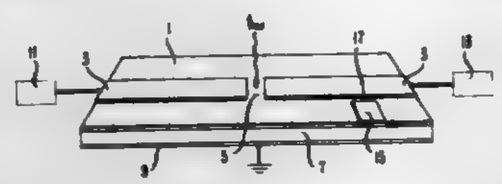
HIGH SPEED PHOTODETECTOR

David H. Auston, Mountainside, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 28, 1979, Ser. No. 107,901

Int. Cl.³ H01J *40/14*

U.S. Cl. 250—211 J **10 Claims**



1. A device comprising a substrate, a layer of an amorphous semiconductor disposed on said substrate, and having a thickness of at least two absorption lengths, first and second electrodes, said first electrode being disposed on said semiconductor, said second electrode being disposed on said substrate, and an active area,

characterized in that

said amorphous semiconductor has a localized state density of at least $10^{18}/cm^3$.

4,326,127

FOCUS DETECTING DEVICE

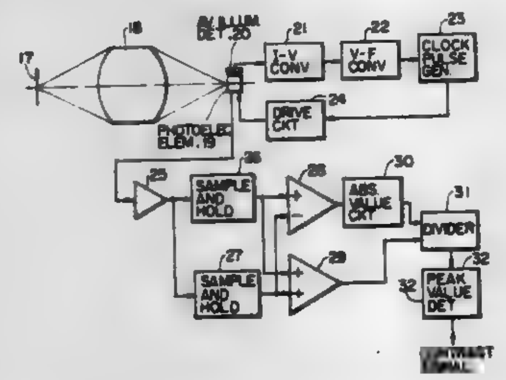
Harumi Aoki, Kiyose, and Yoshio Sawada, Tokyo, both of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 14, 1980, Ser. No. 149,803

Claims priority, application Japan, Jun. 18, 1979, 54-76578

Int. Cl.³ G01J *1/20*

U.S. Cl. 250—204 **4 Claims**



1. An automatic focus detecting device for a camera comprising:

a self-scanning type photoelectric element array having a plurality of microphotoelectric elements, said self-scanning type photoelectric element being disposed at a position equivalent to the image forming plane of a lens;

a first memory circuit for holding an output signal from said self-scanning type photoelectric element corresponding to a minute photoelectric element for a first predetermined period of time;

a second memory circuit for holding an output signal from said self-scanning type of photoelectric element array corresponding to a microphotoelectric element for a second predetermined period of time spaced a third predetermined period of time from said microphotoelectric element the output of which is held by said first memory circuit;

a calculation circuit for producing an output signal corresponding to the difference between outputs of said two memory circuits divided by the sum of said outputs; and

a peak value detecting circuit for producing a signal representing the peak value of said output signal of said calculation circuit in one scanning period.

4,326,128

INCREMENTAL ROTARY TRANSMITTER

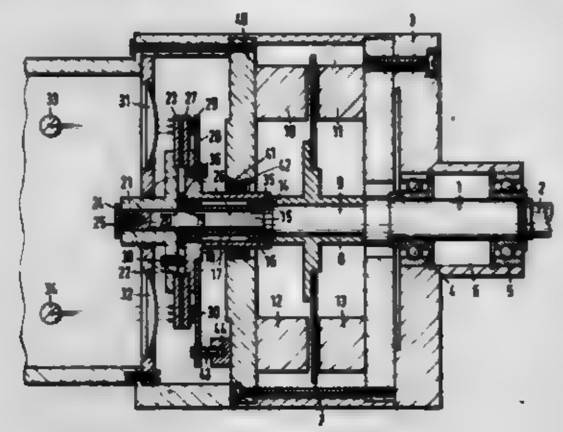
Ottokar Klein, Weiterstadt, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 2, 1980, Ser. No. 146,025

Claims priority, application Fed. Rep. of Germany, May 25, 1979, 2921103

Int. Cl.³ H01J *3/14*

U.S. Cl. 250—231 SE **2 Claims**



1. An incremental rotary transmitter comprising a pulse disc secured to a shaft for rotation therewith about the axis of the shaft and in a plane perpendicular to the axis, and a relatively stationary scanning grid arranged closely adjacent and parallel to the pulse disc,

wherein

the scanning grid is secured to a stationary sleeve which is internally freely mounted upon the shaft carrying the pulse disc and externally mounted in oscillation damping elements.

4,326,129

EVALUATION OF THE INTERACTION WITH RADIANT ENERGY OF SUBSTANCES TRAVERSED BY A BORE HOLE

Jacob Neufeld, 113 Cedar La., Oak Ridge, Tenn. 37830

Continuation-in-part of Ser. No. 904,591, May 10, 1978. This application May 12, 1980, Ser. No. 149,276

Int. Cl.³ G01V *5/00*

U.S. Cl. 250—262 **21 Claims**

1. A system of logging a bore hole traversing subterranean formations, which comprises

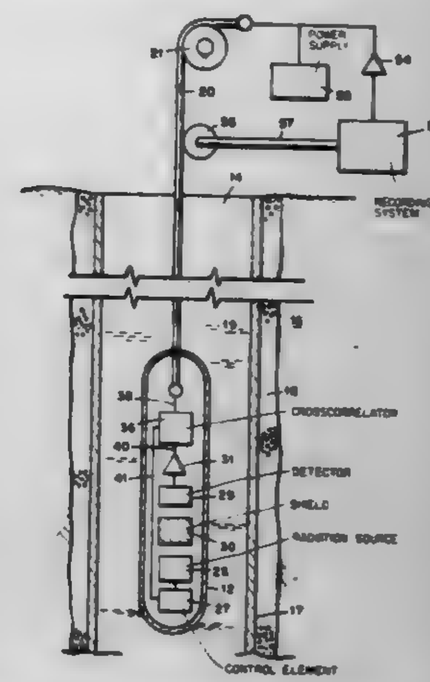
(a) a housing sized and adapted for passage through said bore hole;

(b) a source of radiant energy in said housing;

(c) a control element for said source to produce a substantially random or pseudorandom sequence of discrete bursts of radiant energy from said source to cause interactions of said bursts of radiant energy with the medium surrounding said source whereby characteristic radiations of said interactions are produced;

(d) a detector in said housing responsive to said radiations to produce first sequence of signals corresponding to said radiations; and

(e) a correlating means connected to said detector and responsive to said first sequence of signals for producing an



output signal corresponding to an impulse response function characteristic of said medium.

4,326,130

SHIELDING CONTAINER WITH NEUTRON SHIELDING FOR THE TRANSPORTATION AND/OR STORAGE OF SPENT FUEL ELEMENTS

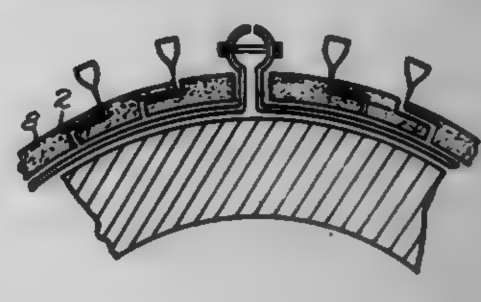
Stefan Ahner, In der Gartel 4, 6458 Rodenbach 1; Peter Srostlik, Hainstrasse 56, 6454 Bruchkobel; Helmut Schleich, Auf der Sieb 4, 6456 Langenselbold, and Hans Diem, Durerstrasse 13, 8755 Alzenau, all of Fed. Rep. of Germany

Filed Nov. 14, 1979, Ser. No. 94,188

Claims priority, application Fed. Rep. of Germany, Oct. 17, 1978, 2845129

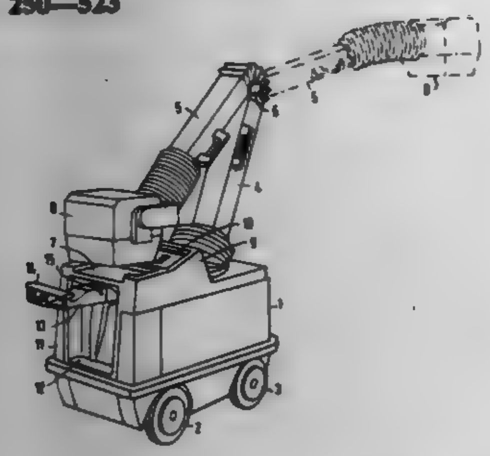
Int. Cl.³ G21C *11/00*; G02B *5/00*

U.S. Cl. 250—506 **3 Claims**



1. A shielding container for the transportation and/or storage of spent fuel elements including neutron shielding jacket means for the outer surface of the container, said jacket means comprising a series of hollow members constructed from a good heat-conducting material, each of said hollow members being filled with a neutron shielding material, means for mounting said hollow members on the outer surface of the container so as to cover the surface of the container, each of said hollow members being provided with heat-conducting fin means, said mounting means being a steel belt means and said hollow members each being secured to said steel belt means, said steel belt means having at least one hinge means and at least one tensioning means to facilitate attachment of said steel belt means to the periphery and curve of said container.

4,326,131
MOBILE X-RAY APPARATUS
Hans Waerve, Sollentuna, Sweden, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany
Continuation of Ser. No. 940,376, Sep. 7, 1978, abandoned. This application Jan. 17, 1980, Ser. No. 112,905
Claims priority, application Fed. Rep. of Germany, Oct. 3, 1977, 7730503[U]
Int. Cl.³ G03B *41/16*
U.S. Cl. 250—523 **3 Claims**

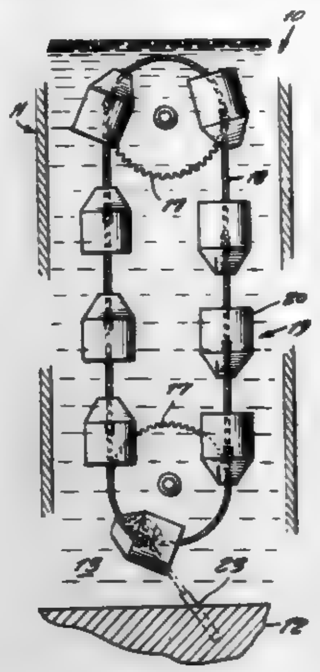


1. An improved mobile X-ray unit with a wheeled carriage having four sides and a top, a two-part articulated arm connected at a first end to a first end of the top of the cart, a housing, containing an X-ray collimator and high voltage generator, pivotably connected to a second end of the two-part articulated arm, the two-part arm is movable to permit positioning of the housing, a steering bar pivotably attached to a side, at the opposite end of the carriage, the bar extends out from the side of the carriage essentially perpendicular thereto, and is located at a height from the floor so that an operator can use a handle attached to the bar to steer the cart, the improvement comprising:

a recess in the end of the top, adjacent the side to which the steering bar is attached, said recess has a lower essentially horizontal surface substantially corresponding in size to thebottom of the housing, said essentially horizontal surface is bounded by at least two spaced apart essentially vertical sides of a selected height and length joined by a third essentially vertical side, said three sides of said recess are adapted to receive a section of the housing with the bottom of the housing positionable adjacent said essentially horizontal surface when the housing is in a parking position to protect the collimator and high voltage generator from accidental impact while the unit is being moved.

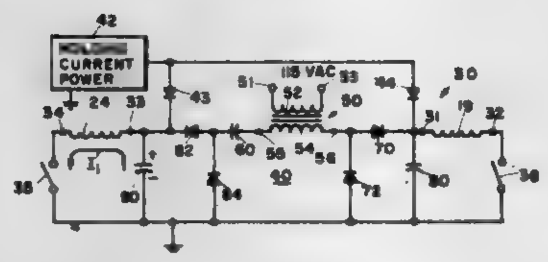
4,326,132
ULTIMATE ENERGY WHEEL DRUM
Aloys H. Bokel, 26091 Alice La., Hemet, Calif. 92343
Filed Sep. 24, 1980, Ser. No. 190,244
Int. Cl.³ F03B *9/00*
U.S. Cl. 290—1 R **3 Claims**

1. An ultimate energy wheel drum assembly, comprising, in combination, a tank filled with water, at least one wheel inside said tank affixed on a horizontal shaft supported rotatably free, a plurality of receptacles carried around a periphery of said wheel, and computerized air and gas injectors at the bottom of said tank for filling said receptacles with air and gas; said receptacles comprising capsules, and said injectors protrude upwardly at an inclined angle from said tank bottom, said



injectors being extendible for directing said air and gas through a rear opening in each said capsule and into said capsule.

4,326,133
CONTROL CIRCUIT FOR ALTERNATELY ACTUATING A PAIR OF LOADS
James D. Tasma, Grand Rapids, Mich., assignor to Rospatch Corporation, Grand Rapids, Mich.
Filed Sep. 6, 1979, Ser. No. 72,839
Int. Cl.³ H01H *47/04*
U.S. Cl. 307—26 **19 Claims**



1. A circuit for alternately and repetitively actuating a pair of loads to provide continuous alternate operation of the loads, said circuit comprising:

a source of AC current;

a voltage doubling charge storage device coupled to said source;

a charge storage device;

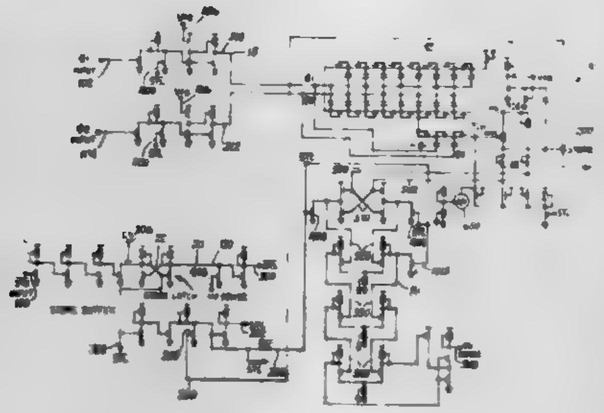
a first pair of unidirectional conductive devices coupling said source of AC current to said voltage doubling charge storage device and said first charge storage device in a first voltage doubling circuit;

a second charge storage device;

a second pair of unidirectional conductive devices coupling said source of AC current to said voltage doubling charge storage device and said second charge storage device in a second voltage doubling circuit; and

means for alternately coupling said first and second charge storage devices to first and second loads, said coupling means including first and second alternately actuatable switch means for alternately and repetitively coupling said first and second charge storage devices to first and second loads, respectively, to provide continuous alternate actuation of the loads and whereby when said first charge storage device is coupled to discharge through a first load to provide a peak initial current said second charge storage device is charged and when said second charge storage device is coupled to discharge through a second load to provide a peak initial current said first charge storage device is charged.

4,326,134
INTEGRATED RISE-TIME REGULATED VOLTAGE GENERATOR SYSTEMS
William H. Owen, Mountain View; Richard T. Simko, Los Altos, and Wallace E. Tchon, Sunnyvale, all of Calif., assignors to Xicor, Inc., Los Altos, Calif.
Filed Aug. 31, 1979, Ser. No. 71,498
Int. Cl.³ H03K *3/57*
U.S. Cl. 307—268 **12 Claims**



1. An integrated high voltage generating circuit comprising:

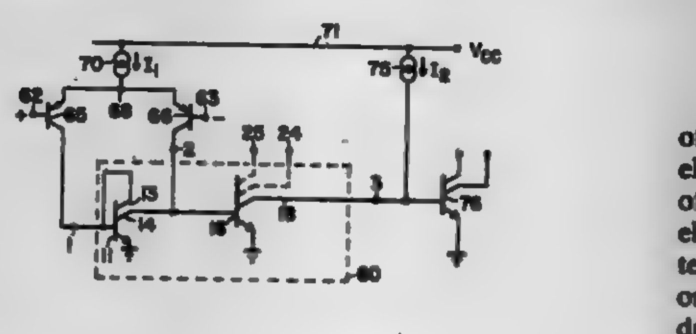
clock signal means for providing multiphase charge pumping signal,

charge pump means for utilizing said charge pumping signal for pumping charge packets along a plurality of discrete stages of increasing potential to provide an output potential at an output terminal which exceeds the potential of the charged pumping signal,

means for limiting said output potential to a predetermined reference potential, and

means for controlling the rise time of said output potential said means including means for minimizing the effect of any change in output impedance at said output terminal on said output potential rise time.

4,326,135
DIFFERENTIAL TO SINGLE-ENDED CONVERTER UTILIZING INVERTED TRANSISTORS
Robert B. Jarrett, and Wilson D. Pace, both of Tempe, Ariz., assignors to Motorola, Inc., Schaumburg, Ill.
Continuation of Ser. No. 877,625, Feb. 14, 1978, abandoned. This application Feb. 28, 1980, Ser. No. 125,409
Int. Cl.³ H01L *27/04*; H03K *19/091*
U.S. Cl. 307—355 **1 Claim**



1. A differential input to single-ended output converter fabricated as an integrated circuit comprising:

(a) first and second transistors each having emitter, base and collector electrodes, the emitter electrodes of the first and second transistors being coupled to each other, the base electrodes of the first and second transistors being coupled to first and second input terminals, respectively, for receiving a differential input signal;

(b) a first current source connected between a power supply conductor and the emitter electrodes of the first and second transistors for supplying a current of a first magnitude;

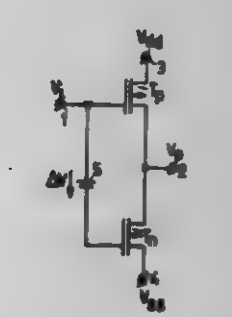
(c) a first inverted transistor having emitter, base, and first and second collector electrodes, the emitter electrode being coupled to a reference conductor, the base and first collector electrodes being coupled to the collector electrode of the first transistor, and the second collector electrode being coupled to the collector electrode of the second transistor;

(d) a second inverted transistor having emitter and base electrodes, and having N collector electrodes where N is an integer greater than 1, the emitter electrode being coupled to the reference conductor, and the base electrode being coupled to the second collector electrode of the first inverted transistor;

(e) a source of injection current being connected between each of said N collector electrodes of the second inverted transistor and the power supply conductor and having a second magnitude which is 1/N times said first magnitude such that offset error associated with the differential input to single-ended output converter is substantially zero; and

(f) integrated injection logic means for performing a switching function including an inverted switching transistor, the inverted switching transistor having emitter and base electrodes and having a plurality of collector electrodes, the emitter electrode being coupled to the reference conductor and the base electrode being coupled to at least one of said N collector electrodes of the second inverted transistor.

4,326,136
THRESHOLD CIRCUIT USING COMPLEMENTARY FIELD EFFECT TRANSISTORS
Claude J. P. F. Le Can, Nijmegen; Maurice V. Whelan, Eindhoven, and Karel Hart, Nijmegen, all of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed May 4, 1979, Ser. No. 35,977
Claims priority, application Netherlands, May 11, 1978, 7805068
Int. Cl.³ H03K *19/094, 19/017*
U.S. Cl. 307—451 **16 Claims**



1. A threshold circuit comprising a first field-effect transistor of a first conductivity type with a gate electrode, a source electrode and a drain electrode, a second field-effect transistor of a second complementary conductivity type with a gate electrode, a source electrode and a drain electrode, an input terminal connected to the gate electrodes of the first and second field-effect transistors, an output terminal connected to the drain electrodes of the first and second field-effect transistors, first and second power supply terminals connected respectively to the source electrodes of the first and second field-effect transistors, first means for applying a supply voltage between the first and second power supply terminals, and second means for applying a direct voltage between the gate electrodes of the first and second field-effect transistors, which voltage has the same polarity as the supply voltage to be ap-

plied and is substantially equal in value to said supply voltage less the sum of the threshold voltages of the first and second field-effect transistors.

4,326,137

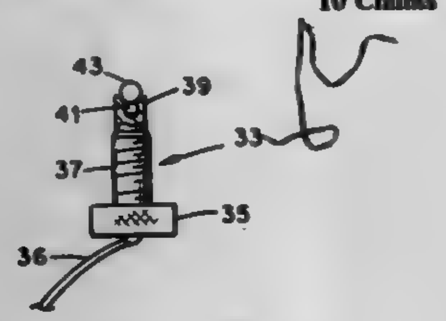
LOW-DRAG ELECTRICAL CONTACT ARRANGEMENT FOR MAINTAINING CONTINUITY BETWEEN HORIZONTALLY MOVABLE MEMBERS

R. Jack Brown, Clinton; Howard L. Gerth, Knoxville, and Samuel C. Robinson, Clinton, all of Tenn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jan. 23, 1981, Ser. No. 228,035

Int. Cl.³ H02K *41/00*

U.S. Cl. 310—12 **10 Claims**



1. An electrical contact arrangement, comprising:
upper and lower electrically conductive members which are separated by a clearance and which are mounted for relative horizontal movement, the lower member having a horizontal top surface portion which defines a cavity confronting a bottom surface of the upper member, and
a body of an electrically conductive liquid in said cavity, said body having an upwardly convex meniscus portion which spans said clearance and contacts said bottom surface, the surface tension of said liquid being sufficient to maintain said meniscus portion intact when said members are subjected to relative horizontal movement at speeds up to at least twelve inches a minute.

4,326,138

HAIR CUTTING APPARATUS

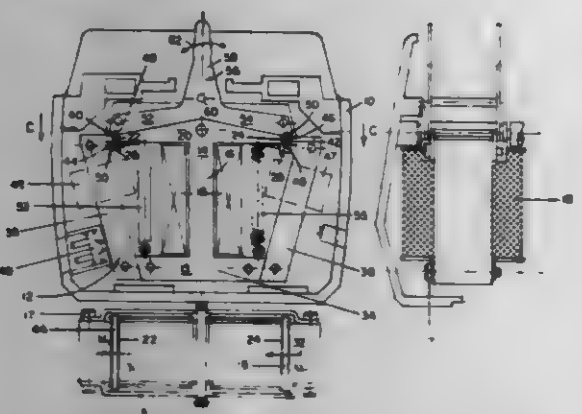
Shmuel Shtrikman, Rehovot, Israel, assignor to Yeda Research & Development Co., Ltd., Rehovot, Israel

Filed Feb. 5, 1980, Ser. No. 118,966

Claims priority, application Israel, Feb. 8, 1979, 56623

Int. Cl.³ H02K *33/06*

U.S. Cl. 310—36 **4 Claims**



1. Hair cutting apparatus comprising:
a housing;
an AC electromagnet fixed in said housing and defining a fixed gap between facing stationary pole pieces thereof;
a pair of oppositely magnetized permanent magnets arranged in side-by-side arrangement disposed for reciprocating motion in said gap and between said stationary pole pieces;
a mounting member pivotally mounting said pair of oppositely magnetized permanent magnets about an axis fixed in said housing; and
apparatus for drivingly connecting said mounting member to a hair cutting head for reciprocal motion of cutting apparatus in the cutting head in response to reciprocating motion of said at least one permanent magnet in said gap.

4,326,139

ELECTROMAGNETIC DEVICES

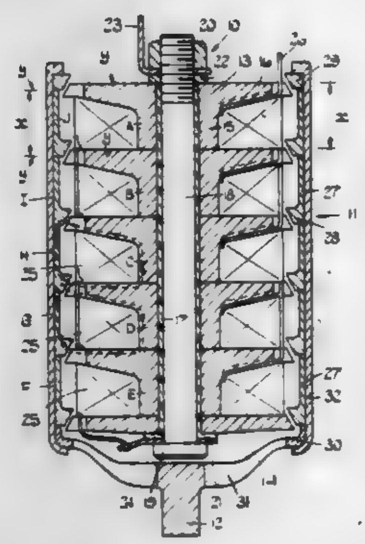
Dorian F. Mowbray, Burnham, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Jun. 18, 1980, Ser. No. 160,482

Claims priority, application United Kingdom, Sep. 8, 1979, 31257/79

Int. Cl.³ H02K *15/00*

U.S. Cl. 310—42 **8 Claims**



1. An electromagnetic device of the kind comprising a stator structure which defines a plurality of axially spaced circumferentially extending pole having the same diameter, the stator structure including windings which when supplied with electric current cause adjacent ones of said pole pieces to assume opposite magnetic polarity and an armature which surrounds the stator structure, the armature being of annular form and having on its internal peripheral surface pole pieces complementary to the pole pieces on the stator structure characterised in that the stator structure comprises a stack of stator portions each defining a central portion for facial engagement with the adjacent portion, and a rim portion which defines a pole piece and the armature comprises a stack of annular portions each of which defines a pole piece whereby the stator structure and the armature can be assembled alternately and in sequence.

4,326,140

ELECTRIC MOTOR HAVING A HOOK-SHAPED COMMUTATOR

Rolf Rohloff, Lengfeld, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Oct. 2, 1978, Ser. No. 947,523

Claims priority, application Fed. Rep. of Germany, Oct. 3, 1977, 2744419

Int. Cl.³ H02K *13/04*

U.S. Cl. 310—234 **8 Claims**

1. In an electric motor having a segmented commutator in which each commutator segment has a contact surface and a hook formed on the end of the segment nearest the motor winding, the bent, free end of the hook serving to fasten and contact at least two wires of the armature winding, the improvement comprising:
the hook formed at the face of the segment body nearest the winding, and
a depression in the segment body between the hook and the segment contact surface, the depression fitted to the diameter of a first coil wire for receiving the wire and positioning it in contact with the hook and, at least in part, below the level of the contact surface,
the body of the hook having a portion projecting radially relative to the axis of rotation of the commutator and adapted to maintain a second coil wire placed in contact with it radially above the first wire, and a portion of the hook being bent over the outermost wire in the direction of the depression.

4,326,141

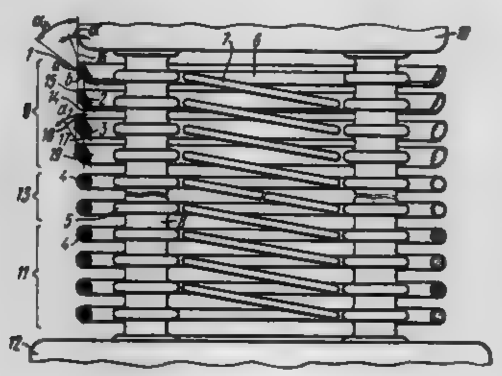
SUPPORTING INSULATING COLUMN OF HIGH VOLTAGE ACCELERATOR

Konstantin A. Reznykh, and Valentin A. Romanv, both of ploschad Bondarenko, 1, Obninsk, U.S.S.R.

Filed Nov. 28, 1980, Ser. No. 211,108

Int. Cl.³ H02K *0/00*

U.S. Cl. 310—308 **1 Claim**



1. A supporting insulating column of a high-voltage accelerator having a high-voltage terminal, comprising:
a grounded footing;
a multitude of sections having operating potential distributed among said sections, said sections forming a high potential region adjoining said high-voltage terminal, a low potential region adjoining said grounded footing and an intermediate region;
said sections comprising exterior screening electrodes made as hoops whose outer surface produces the external surface of said sections, interior electrodes whereon said exterior electrodes are secured and frames whereon said interior electrodes are secured;
components of a voltage divider, arranged on said frames of said adjoining sections;
insulators separating said sections from one another;
at least some of said exterior electrodes, made as said hoops, having an oval profile in at least one of said regions oriented so that one vertex of the oval of said oval profile is directed inside the column, whereas the other vertex is directed away from the column, and the major axis of said oval extending therethrough forms with a tangent to said outer surface an angle read from the high protential end of the column;
said oval profile of at least some electrodes in at least one off said regions, formed by joining components at least two ovals so that said angle read from the high potential end of the column is produced between the major axis of the oval of one said component and the tangent to said outer surface of said sections, and another angle is obtained between the extension of the major axis running through the vertex of the oval of another said component, directed inside the column, and the same tangent to said outer surface of said sections, which is larger than the angle read from the high potential end of the column and is also read from said high potential end of the supporting column.

4,326,142

PIEZOELECTRIC RESONATORS

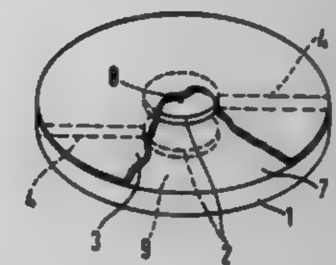
Werner Mattuschka, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Oct. 10, 1979, Ser. No. 83,261

Claims priority, application Fed. Rep. of Germany, Oct. 20, 1978, 2845807

Int. Cl.³ H01L *41/08*

U.S. Cl. 310—320 **6 Claims**



1. An operational piezoelectric resonator comprised of a thin body composed of a piezoelectric material and having two opposing major surfaces, at least one resonance electrode positioned on at least one of said major surfaces of such body, said body having regions on said major surfaces thereof free of said resonance electrodes and a relatively thin metal coating on said electrode and extending beyond said electrode onto said body regions free of electrodes, said metal coating having a maximum thickness, in nanometers, of about $682/\sigma_x$ wherein σ_x is the specific conductance of the metal forming said coating, said metal being gold.

4,326,143

PIEZOELECTRIC ACCELERATION PICK-UP

Werner Guth, Zug; Peter Wolfer, Kleinandelfingen; Hanspeter Dähler, Winterthur, and Reto Calderara, Bern, all of Switzerland, assignors to Kistler Instrumente AG, Winterthur, Switzerland

Filed Oct. 13, 1978, Ser. No. 951,045

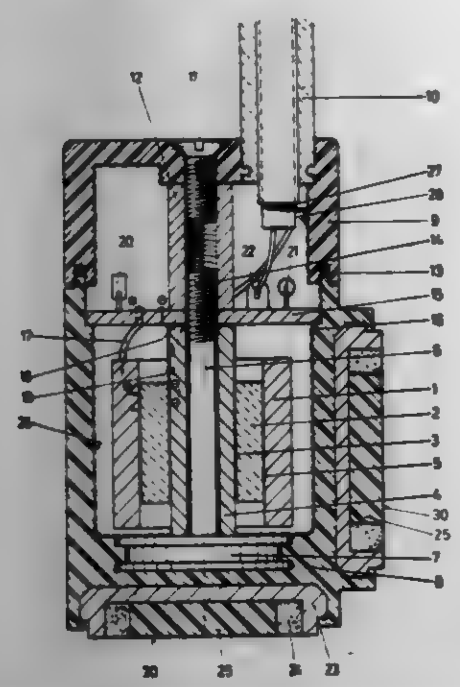
Claims priority, application Switzerland, Oct. 28, 1977, 13035/77

Int. Cl.³ H01L *41/08*

U.S. Cl. 310—329 **9 Claims**

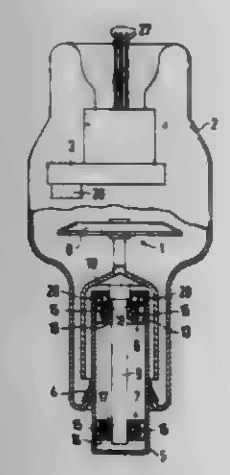
1. Vibration and acceleration pick-up comprising a mass sensor arrangement coupled with an electronic amplifier, the mass sensor arrangement and electronic amplifier being disposed within a synthetic material housing, the mass sensor arrangement being coaxially arranged about a support screw means with a mushroom shaped head which is anchored in the synthetic material housing and retains, spaces and stresses the sensor arrangement, the amplifier and a cover for the synthetic

material housing in one unit, the inner surface of the synthetic material housing being provided with a conducting layer



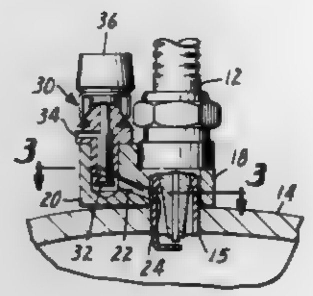
which is connected to the cable screening of an output cable of the electronic amplifier.

4,326,144
ROTATING ANODE X-RAY TUBE
Guenter Appelt, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany
Filed Feb. 25, 1980, Ser. No. 124,128
Claims priority, application Fed. Rep. of Germany, Apr. 3, 1979, 2913355
Int. Cl.³ H01J *35/10*
U.S. Cl. 313—60 2 Claims



1. A rotating anode x-ray tube comprising an x-ray tube envelope (2), a rotating anode plate (8) in the envelope, a rotatable shaft (9) supporting said anode plate for rotating, a ball bearing assembly for rotatably mounting said shaft (9) comprising a remote bearing (7) remote from the anode plate having an interior race (17) on the exterior side of the shaft (9), and a proximate bearing (6) in proximity to the anode plate (8) having an exterior race (13) fixedly arranged relative to the envelope (2), and bearing cover means for keeping the lubricant in the bearing, said bearing cover means comprising an annular bearing cover configuration (18, 19) fixedly connected with said exterior race (13) and extending radially inwardly at the side of the proximate bearing toward said anode plate (8) to provide in conjunction with the centrifugal force on the lubricant during operation, a barrier to migration of lubricant in an axial direction toward said anode plate, characterized in that a step (25) at a thickening of the shaft (9) in directin of the plate (8), is additionally provided, and characterized in that the annular bearing cover configuration comprises a sheet metal ring (18) extending from the side of said exterior race (13) which is toward said anode plate (8), and extending radially inwardly to provide an inner edge encircling said shaft on the side of said step (25) remote from said anode plate, said annular bearing cover configuration further comprising a channel shaped annular part (19) including collecton means (23) on the side of said step toward the anode plate.

4,326,145
COMPRESSION RELIEF ADAPTER
Leslie W. Foster, Wayzata, and Henry B. Tillotson, Minneapolis, both of Minn., assignors to The Toro Company, Minneapolis, Minn.
Filed Jan. 28, 1980, Ser. No. 116,269
Int. Cl.³ F02N *17/08*
U.S. Cl. 313—120 6 Claims



1. A compression relief adapter for relieving compression in a combustion chamber of an internal combustion engine, which adapter is suited for use with a spark plug having a threaded lower end and an upper end including a tightening nut and an enlarged portion below the nut, which adapter is also suitable for use with a pressure relief bleed valve having a threaded lower end and a selectively openable relief passageway therein, which comprises:

a one-piece body member that includes an inlet portion and an exit portion, wherein the inlet portion includes an opening extending therethrough sized to receive the lower end of the spark plug, wherein the inlet portion also includes a seat against which the enlarged portion of the spark plug bears when the threaded lower end of the spark plug is threadedly received in the combustion chamber to clamp the body member to the engine, wherein the exit portion is offset to one side of the inlet portion and includes an elongated bore therein, wherein the bore is threaded to receive the lower end of the bleed valve to couple the bleed valve thereto such that the bleed valve is operable in the threaded bore of the exit portion to communicate the threaded bore to atmosphere when the relief passageway of the bleed valve is opened, and further including a connecting passageway for connecting the bore in the exit portion to the combustion chamber of the engine.

4,326,146
BASE AND TERMINAL-PIN ASSEMBLY FOR ELECTRIC LAMPS AND SIMILAR DEVICES
Vernon L. Plagge, East Orange, and Clair M. Rively, Middletown Township, Monmouth County, both of N.J., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Apr. 2, 1980, Ser. No. 136,649
Int. Cl.³ H01J *5/48, 5/50*
U.S. Cl. 313—318 10 Claims

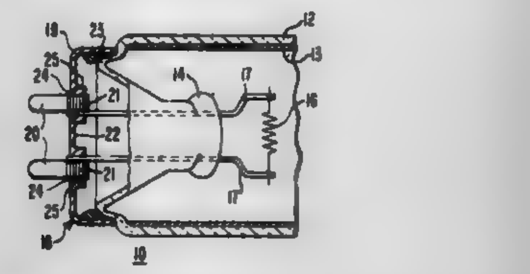
1. In an electric lamp or similar device that has an envelope with an end portion which includes a protruding lead-in conductor and is secured to a base structure, the improvement comprising the combination of;

an insulator component of plastic resin material that constitutes an end wall portion of the base structure and has an aperture therein, said lead-in conductor being of such length and being so arranged that the end thereof extends into the aperture in the plastic insulator component, and

a rigid metal pin of predetermined length having an end segment in force-fitted frictional engagement with the apertured portion of said plastic insulator component and mechanically locked thereby in positive electrical contact with the end of the lead-in conductor that is disposed in said aperture,

the end of said conductor being tightly clamped between the force-fitted portions of the metal pin and plastic insulator component, and the free end segment of said metal pin extending outwardly from the base structure and plastic insulator component a distance such that the pin constitutes an elongated exposed terminal of controlled size and configuration for the electric lamp or similar device.

4. In an electric discharge lamp of the low-pressure type having a vitreous tubular envelope with an end portion that has a pair of protruding lead-in wires and is secured to a base structure, the improvement comprising the combination of;

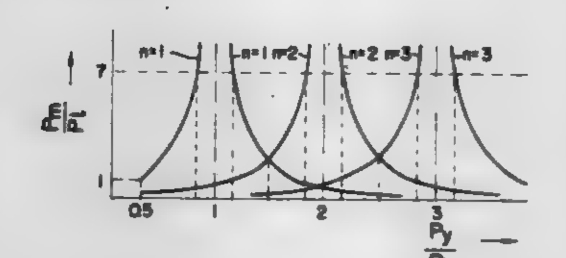


an insulator component of plastic resin material that constitutes an end wall portion of the base structure and has a pair of spaced apertures therein, said pair of lead-in wires being of such length and being so arranged that the ends thereof are substantially straight and extend into the respective apertures in the plastic insulator component, and

a pair of rigid metal pins of predetermined length having end segments in force-fitted frictional engagement with the apertured portions of said plastic insulator component and mechanically locked thereby in positive electrical contact with the substantially straight ends of the lead-in wires disposed in the respective apertures,

the substantially straight ends of the lead-in wires being tightly clamped between the force-fitted portions of the metal pins and plastic insulator component, and the free end segments of said pins extending outwardly from the base structure and plastic insulator component distances such that the metal pins constitute a pair of spaced elongated exposed terminals of controlled size and configuration for the electric discharge lamp.

4,326,147
SLOTTED SHADOW MASK HAVING APERTURES SPACED TO MINIMIZE MOIRÉ
Takeshi Nakayama, Tokyo; Takehiko Nishimoto, Kodaira; Machio Kawashima, Mobara; Kozi Takahashi, Mobara, and Kuniharu Osakabe, Mobara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Continuation of Ser. No. 714,198, Aug. 13, 1976, abandoned. This application Nov. 9, 1979, Ser. No. 92,976
Claims priority, application Japan, Aug. 18, 1975, 50-99534
Int. Cl.³ H01J *29/07, 29/32*
U.S. Cl. 313—403 7 Claims



1. A color picture tube having a shadow mask provided with a plurality of juxtaposed aperture rows each comprising a plurality of apertures aligned with a predetermined pitch P_y, wherein among a deviation Δy between the apertures of the adjacent aperture rows, a pitch P_l of scanning lines and said pitch P_y, there exist the following relations:

$$\frac{(m-0.35)P_y}{2n} \leqq \Delta y \leqq \frac{(m+0.35)P_y}{2n},$$

where n is 1, 2 or 3 and m is a positive odd number smaller than 2n, and

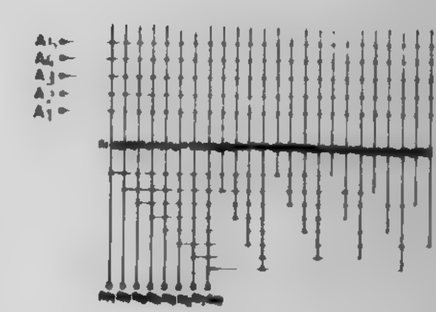
$1.17 \leqq P_y/P_l \leqq 1.50$ for $n(=1)$,

$1.50 \leqq P_y/P_l \leqq 1.75$ or

$2.33 \leqq P_y/P_l \leqq 2.50$ for $n(=2)$, and

$2.50 \leqq P_y/P_l \leqq 2.63$ for $n(=3)$.

4,326,148
GAS DISCHARGE DISPLAY DEVICE
Takio Okamoto, Kusatsu; Tamisuke Atsumi, Kobe; Yoshio Nakagawa, Otsu, and Hidezo Akutsu, Kobe, all of Japan, assignors to Matsushita Electronics Corporation, Kadoma, Japan
Filed Jul. 10, 1979, Ser. No. 56,307
Claims priority, application Japan, Jul. 14, 1978, 53-86468
Int. Cl.³ H01Q *13/10*
U.S. Cl. 315—169.2 3 Claims



1. A gas discharge display device comprising an array of a number of parallel disposed anodes and an array of a number of parallel disposed cathodes said anodes and said cathodes being disposed crosswise with small discharging gaps filled with gas therebetween, thereby forming a gas discharging matrix having a number of gas discharging cells thereon at cross points of said anodes and said cathodes, wherein a discharging spot scans from a cell at one end of said gas discharging cells to a cell at the other end thereof by being transferred sequentially from one discharge cell to the next one,

wherein the cathodes are divided into a plurality of subarrays disposed in sequence from one side to the other side of the cathode array, each cathode in a sub-array being commonly connected to a cathode in the other respective sub-arrays, thereby forming a plurality of groupings of commonly-connected cathodes, and

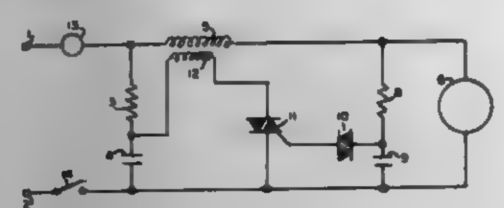
the improvement is that

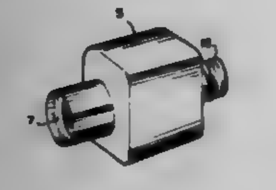
adjacent cathodes in any one of the sub-arrays are respectively commonly connected to non adjacent cathodes in the others of the sub-arrays.

4,326,149
ADAPTOR FOR HIGH INTENSITY ARC DISCHARGE LAMPS

Elliott F. Wyner, Peabody; Orville R. Burr, Beverly, both of Mass., and Robert L. Garrison, Henniker, N.H., assignors to GTE Products Corporation, Stamford, Conn.

Continuation of Ser. No. 808,126, Jun. 20, 1977, abandoned. This application Sep. 22, 1980, Ser. No. 189,550
Int. Cl.³ H05B *41/16*
U.S. Cl. 315—289 2 Claims



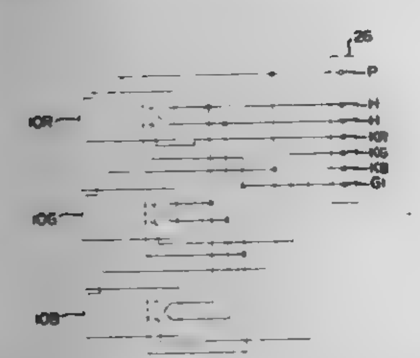


1. An adaptor for operation of a high intensity arc discharge lamp comprising: a housing containing an inductor having a trigger winding, an electronic circuit and an electrical outlet; an external electrical plug connected to said housing; said inductor being connected as a current limiting means between said electrical plug and outlet; the electronic circuit including a diac-triac condition and a resistor in series with a capacitor, one side of the diac being connected to the gate of the triac, the other side of the diac being connected to a point between the resistor and the capacitor; the triac being in series with the trigger winding; and said series resistor and capacitor being connected directly acros said electrical outlet.

4,326,150
CATHODE RAY TUBE DEVICE FOR DISPLAY SYSTEM

Hiroo Kobayashi, Nagaokakyo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 20, 1980, Ser. No. 132,163
Claims priority, application Japan, Mar. 24, 1979, 54-35917; Mar. 24, 1979, 54-35918
Int. Cl.³ G09F *13/00*
U.S. Cl. 315—325 12 Claims

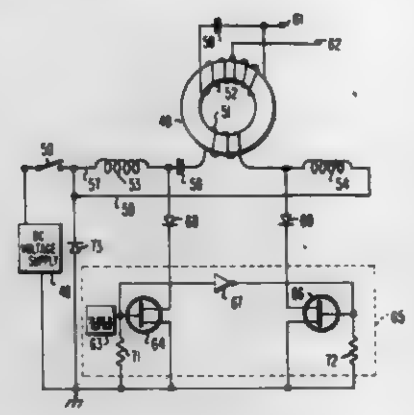


1. A cathode ray tube device used with a display system including a multitude of light sources arranged in a predetermined pattern to emit light in a plurality of colors, said device comprising one set of cathode ray tubes each including a monochromatic phosphor screen and an electron gun for generating an unfocused beam of electrons, said set of cathode ray tubes luminescing in at least red, green and blue in response to said unfocused beams of electrons respectively, a cylindrical housing having said set of cathode ray tubes fixedly disposed therein, and connecting means for connecting together common electrodes of said cathode ray tubes, said connecting means extending externally of said cylindrical housing whereby said cathode ray tube device forms each of said light sources.

4,326,151
SCANNING WAVEFORM GENERATOR FOR FLAT PANEL DISPLAY DEVICES

Sherman Weisbrod, Somerville, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 16, 1980, Ser. No. 216,908
Int. Cl.³ H01J *29/74*
U.S. Cl. 315—410 15 Claims



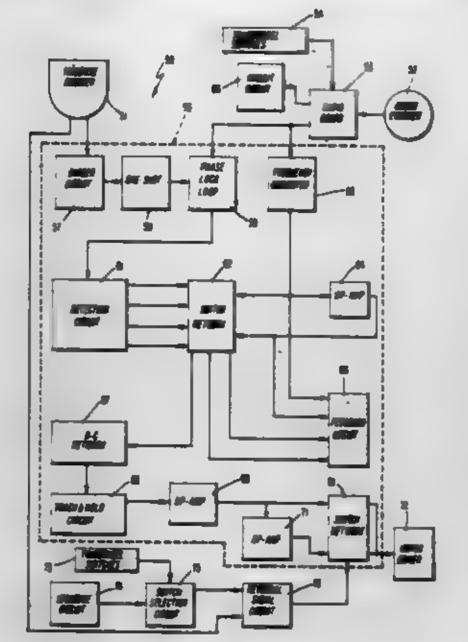
1. In an electron display device having a plurality of internal support walls dividing said display device into a plurality of channels and including scanning electrodes for transversely scanning electron beams across said channels, a waveform generator for applying a triangular waveform to said scanning electrodes comprising:
a power supply including a constant current source;
means for coupling said power supply to said scanning electrodes;
charge storage means responsive to said constant current source;
means for providing a switching signal having alternate positive and negative polarities;
switching means responsive to said switching signal for alternately connecting said constant current source to said means for coupling means in opposite directions in response to said positive and negative polarities;
unidirectional conducting means between said switching means and said means for coupling for blocking current flow as said switching means changes polarities; and
means for discharging said means for coupling and said charge storage means in response to disconnection of said constant current source from said means for coupling.

4,326,152
SYSTEM FOR CONTROLLING THE IN-PHASE OPERATION OF A PAIR OF MOTORS

James M. Blackburn, Whitsett, and Douglas C. Paschall, Welcome, both of N.C., assignors to Western Electric Co., Inc., New York, N.Y.

Filed Oct. 15, 1979, Ser. No. 85,343
Int. Cl.³ H02P *5/46*; B65H *57/28*
U.S. Cl. 318—85 11 Claims

1. A system for controlling the in-phase operation of two motors, which comprises:
means for generating a first frequency signal in response to the speed of the first motor;
means for generating a second frequency signal in response to the speed of the second motor;
means responsive to the generation of the first frequency signal for developing a voltage signal at a voltage level representative of the speed of the first motor;
means for comparing the phase relationship between the first and second frequency signals and for developing a phase relationship signal indicative of the phase relationship between the first and second frequency signals;
means for selectively establishing different amplification levels for the voltage signals;
means, responsive to the phase relationship signal, for adjusting the voltage signal to one of the amplification levels required to control and facilitate the adjustment of the speed

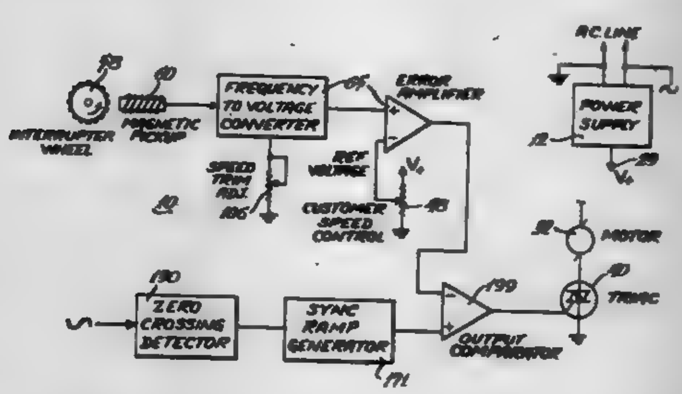


of the second motor until the first and second frequency signals are in phase;
means for controlling the speed of the second motor; and
means for feeding the voltage signal from the adjusting means to the controlling means of the second motor to adjust the speed of the second motor until the first and second frequencies are in phase.

4,326,153
FEEDBACK MOTOR CONTROL CIRCUIT

Robert F. Contri, Villa Park, Ill., assignor to Sunbeam Corporation, Chicago, Ill.

Filed Jul. 11, 1980, Ser. No. 167,627
Int. Cl.³ H02D *5/16*
U.S. Cl. 318—327 8 Claims

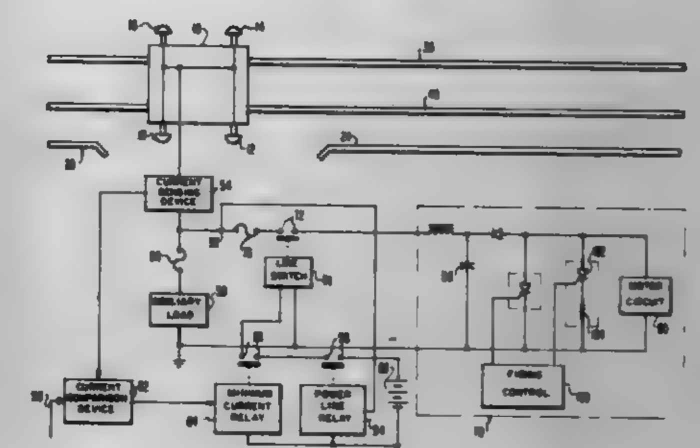


1. A feedback motor speed control circuit comprising a tachometer producing a time-varying signal having a frequency proportional to a rotational speed of an electric motor, means for converting said time-varying signal to a speed signal having an amplitude proportional to said frequency of said time-varying signal, means for processing said speed signal to produce an error signal, means for producing a periodic timing signal synchronized with the alternating current power source having a zero voltage crossing detector with at least one comparator which resets the periodic timing signal portion to zero at each half cycle of said alternating current power source, means for producing a trigger signal when said error signal and said timing signal are in a preselected relation, and means for supplying electric power to said electric motor in response to said trigger signal.

4,326,154
REGENERATIVE BRAKING CONTROL FOR A TRANSIT VEHICLE

Robert R. Lewis, Churchill Borough, and Donald C. Graham, Monroeville Borough, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 8, 1978, Ser. No. 967,821
Int. Cl.³ H02P *3/14*
U.S. Cl. 318—376 6 Claims

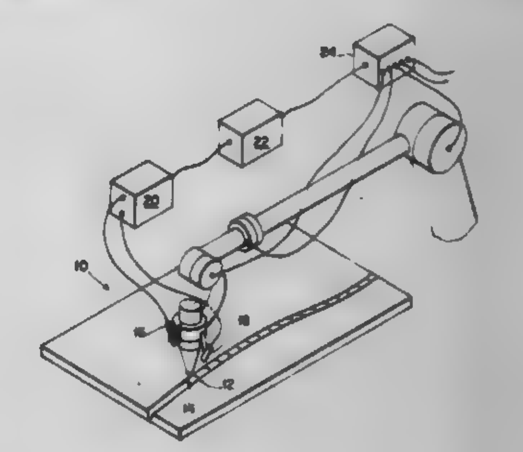


1. In regenerative braking control apparatus for a transit vehicle having a propulsion motor circuit and an auxiliary load and being operative in a brake mode with a power source conductor, the combination of:
first means for determining the connection of the propulsion motor circuit to said power source conductor for supplying regenerated current to said conductor during the braking operation of the vehicle,
second means for sensing the actual current supply to the auxiliary load by the power source conductor, and
third means for comparing said actual current with a predetermined reference current and being operative with the first means to disconnect the propulsion motor circuit from the power source conductor when said actual current is less than the reference current.

4,326,155
SHOCKWAVE PROBE

Elmer L. Griebeler, 5111 W. Doherty Rd., West Bloomfield, Mich. 48033

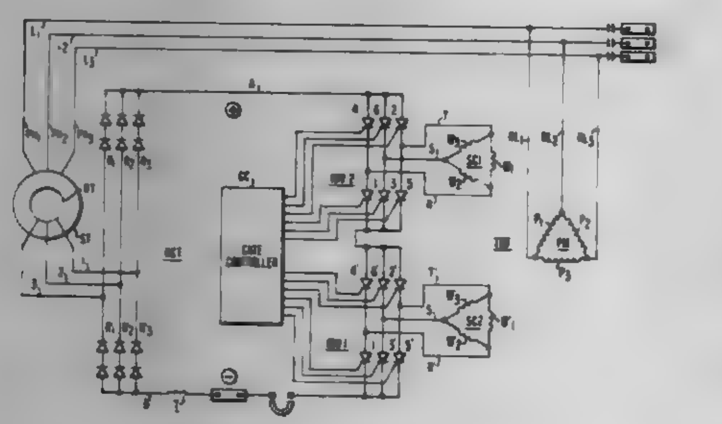
Filed Jun. 3, 1980, Ser. No. 155,944
Int. Cl.³ G05B *19/33*
U.S. Cl. 318—576 20 Claims



1. In a control system for a tool-positioning robot,
a work-sensing probe that senses the locus of work to be performed, including the loci of a continuum of such work, without physically contacting the work, comprising
means for generating a focused shockwave,
means for receiving the reflection of a focused shockwave,

means for differentiating the time/pressure parameters of the original shockwave from those of its reflection,
and means for translating the observed parametric differences into an electric signal within the control system to direct the robot to position the tool at the sensed locus of the work.

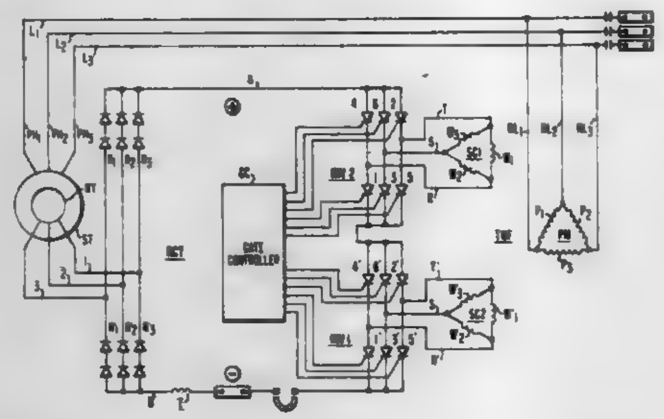
4,326,156
ASYMMETRICALLY CONTROLLED STATIC SLIP-RECOVERY MOTOR DRIVE SYSTEM
Roger B. Herbert, Williamsville, N.Y., and Alan F. Wilkinson, East Kingston, N.H., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Apr. 8, 1980, Ser. No. 139,375
Int. Cl.³ H02P *5/40*
U.S. Cl. 318—809 11 Claims



1. In a slip-recovery AC motor drive comprising an induction motor having a stator and a rotor; an AC power supply for said stator; and AC/DC converter coupled with said rotor for providing a DC link between terminals; one array of static controlled power devices connected between said DC link terminals and said power supply through a transformer, the combination of:
first and second secondaries and a common primary forming said transformer;
another array of static controlled power devices connected between said DC link terminal and said power supply through said transformer;
said one and another array being connected in series between said DC link terminals, each of said arrays providing a DC voltage and an AC current for a corresponding one of said secondaries;
asymmetrical gating means for controlling said first and second arrays to create a continuously varying phase shift between the AC currents of said arrays;
said common primary combining the effects of said first and second secondaries in response to control by said asymmetrical gating means.

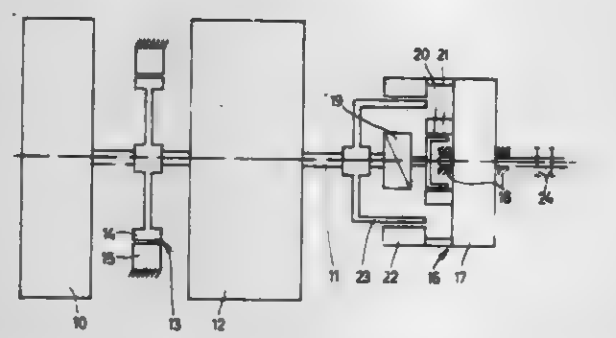
4,326,157
DOUBLE INVERTER SLIP-RECOVERY AC MOTOR DRIVE WITH ASYMMETRICAL GATING PER HALF-BRIDGE
Roger B. Herbert, Williamsville, N.Y., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Apr. 8, 1980, Ser. No. 139,377
Int. Cl.³ H02P *5/40*
U.S. Cl. 318—809 12 Claims

1. In a slip-recovery AC motor drive comprising an induction motor having a stator and a rotor; an AC power supply for said stator; an AC/DC converter coupled with said rotor for providing a DC link between terminals; one array of static controlled power devices connected between said DC link terminals and said power supply through a transformer, the combination of:
first and second secondaries and a common primary forming said transformer;
another array of static controlled power devices connected between said DC link terminal and said power supply through said transformer;
said one and another array being connected in series between said DC link terminals, each of said arrays consisting of a bridge of thyristors providing a DC voltage and an AC current for a corresponding one of said secondaries;
the thyristors of said bridges being divided into two groups of opposite polarities per bridge;



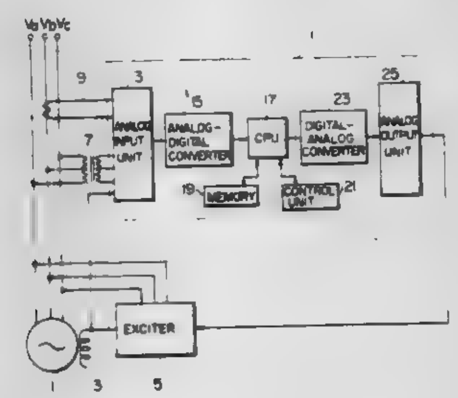
a first group of one polarity in one bridge and a first group of the other polarity in the other bridge being controlled under a common firing angle;
a second group of the other polarity in said one bridge and a second group of said one polarity in said other bridge being controlled under a common firing angle;
asymmetrical gating means for controlling said first and second array to create a continuously varying phase shift between the AC currents of said arrays;
said common primary combining the effects of said first and second secondaries in response to control by said asymmetrical gating means.

4,326,158
METHOD FOR ATTENUATING OSCILLATIONS OF A ROTATING SYSTEM
Herman Helgesen, Lund, Sweden, assignor to SAB Industri AB, Landskrona, Sweden
PCT No. PCT/SE80/00043, § 371 Date Jul. 15, 1980, § 102(e) Date Jul. 15, 1980
PCT Filed Feb. 13, 1980, Ser. No. 209,104
Claims priority, application Sweden, Feb. 14, 1979, 7901293
Int. Cl.³ G05D *13/06;* H02P *9/02;* F16F *15/18*
U.S. Cl. 322—4 6 Claims



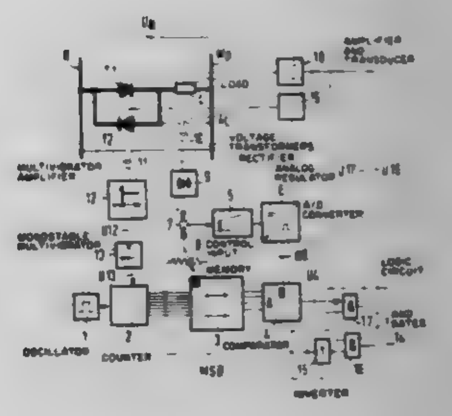
1. A method for attenuating oscillations of a rotating element in a brakable system having a driving rotary element directly coupled to drive a driven rotary element at a selected rotational speed, wherein oscillations are induced by deviations of input torque tending to cause changes in the rotational speed, comprising the steps of,
supplying a rotational energy storage means driven by said system which is selectively coupleable into said system to return rotational energy thereinto,
sensing changes in rotational speed,
energizing eddy current means as a function of changes in rotational speed,
and selectively actuating by said eddy current means braking and energy storage return into the system to maintain said substantially constant speed by attenuating oscillations wherein the sensing of changes of rotational speed is accomplished by establishing the derivative of the load angle of a rotating member in the system.

4,326,159
METHOD AND APPARATUS FOR CONTROLLING EXCITATION OF A GENERATOR
Hiroaki Aotsu, Nakaminato; Akira Isono, Hitachi; Tsutomu Inayama, Hitachi, and Mamoru Fukushima, Hitachi, all of Japan, assignors to Hitachi, Ltd. and Hitachi Engineering Co., Ltd., both of Tokyo, Japan
Filed Aug. 30, 1979, Ser. No. 71,403
Claims priority, application Japan, Aug. 1, 1979, 54-97308
Int. Cl.³ H02P *9/10*
U.S. Cl. 322—19 14 Claims



1. A method for controlling the excitation of a generator connected to an electric power system by controlling its field in response to the generator voltage comprising the steps of:
increasing, when a fault occurs in the electric power system, the field excitation such that it exceeds a level which is present before the fault occurs during a time interval after the fault is removed until the internal phase angle of the generator substantially reaches a peak value; and
decreasing the field excitation such that it falls below said level after the interval phase angle has substantially passed through the peak value.
12. Apparatus for controlling the excitation of a generator comprising:
first means for detecting, at predetermined periods, voltage, current, and field voltage of the generator connected to an electric power system;
second means for converting an output of the first means into a digital output signal;
third means for carrying out a predetermined operation processing of the digital output signal of the second means within each of the predetermined periods in accordance with a stored program;
fourth means for storing the program;
fifth means for storing the digital output signal of the second means and an output of the third means;
sixth means for storing data to be used as reference values for examination; and
seventh means for controlling the field excitation of the generator by the output of the third means,
said third means including means for computing the generator output power from the voltage and current, delivering an output for intensifying the field excitation of the generator to a predetermined value, when a computation result from the present period is decreased below a computation result from an immediately preceding period by more than a predetermined value, and thereafter delivering an output for depressing the field excitation such that it falls below a value which is present immediately before the excitation is intensified to the predetermined value, when a computation result of the generator output power which falls below a computation result from an immediately preceding period is detected.

4,326,160
CONTROL UNIT FOR STATIC CONVERTER
Rüdiger Braun, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany
Filed Sep. 19, 1979, Ser. No. 77,151
Claims priority, application Fed. Rep. of Germany, Sep. 28, 1978, 2842278
Int. Cl.³ G05F *1/455;* H02M *7/515*
U.S. Cl. 323—241 1 Claim

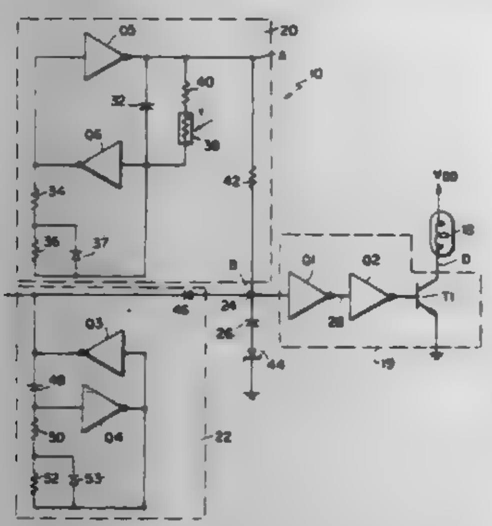


1. Apparatus for regulating the output of a static converter, the converter having valves controlled by firing pulses, by supplying firing pulses to the converter, comprising:
an oscillator;
a counter driven by the oscillator and having a predetermined sequence of address signals as an output;
a read only memory having an output and having an input coupled to the output of the counter, the memory being programmed to provide a sequence of digital outputs approximating a predetermined function in response to a predetermined sequence of address signals at the address input;
a comparator having first and second sets of inputs and having a drive control signal as an output, the first set of inputs being coupled to the output of the memory;
means, coupled to the second set of inputs of the comparator, for providing a digital control signal representing the drive of the static converter; and
logic means, having the drive control signal as an input and responsive to at least one output signal from the counter, for providing firing pulses to control the valves in the static converter.

4,326,161
BATTERY REGULATION CIRCUIT
Earl R. Kreinberg, Marietta, Ga., assignor to Protection Services, Inc., Harrisburg, Pa.
Filed Oct. 17, 1979, Ser. No. 85,802
Int. Cl.³ G05F *5/00*
U.S. Cl. 323—299 9 Claims

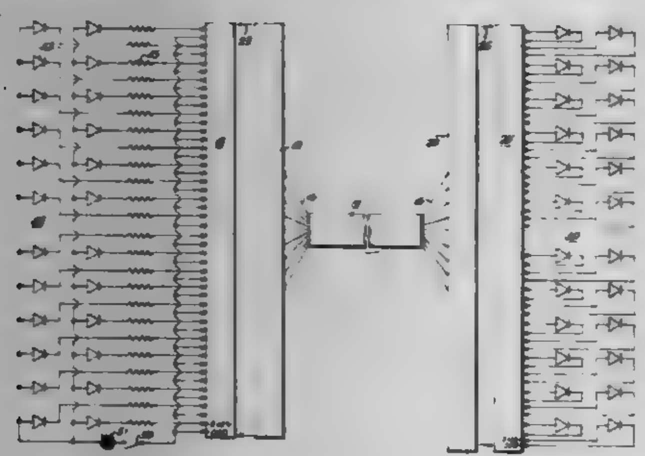
1. A circuit for regulating power delivered from a voltage source supplying a source voltage having a magnitude which varies to a load to maintain the average power consumed by the load substantially constant and independent of the magnitude of the source voltage to extend the useful life of said voltage source, comprising: a signal generator for producing a signal voltage, the magnitude of which varies between a first level and a second level, switching means having not more than a single signal input coupled to receive the signal produced by said generator and having a switching threshold which varies in a manner functionally related to the magnitude

of the varying source voltage, said switching threshold being between said first and second levels, said switching means being responsive to the magnitude of said signal voltage to switch from a first to a second state when the magnitude of the signal voltage bears a predetermined relationship to the



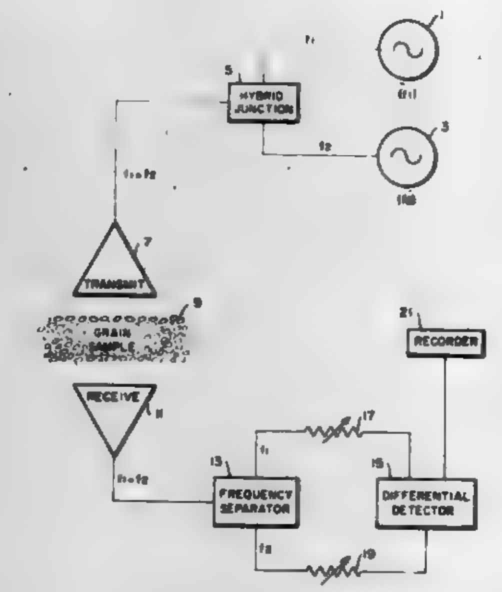
switching threshold of said switching means established by the magnitude of said source voltage to supply power to said load only when said switching means is in said second state, and to maintain the average power consumed by the load substantially constant.

4,326,162
CABLE TESTER WITH FIRST AND SECOND INTERENGAGING TEST MODULES
James H. Haskey, 1200 SW. 93 St., Miami, Fla. 33186
Filed May 2, 1980, Ser. No. 146,081
Int. Cl.³ G01R *31/02*
U.S. Cl. 324—51 4 Claims



1. A cable tester device comprising:
a first and second module, said modules each having a main face,
each main face being companionately sized and configured for mating interengagement with each other in snug nested relation,
each of said main faces having a bank of connector adapters composed of male and female pin means to connect one of the modules to each end of a cable provided with a companionate connector, said banks of pin means being composed of mating pins electrically in engagement with one another when said modules are interengaged in nesting relation with one another,
a circuit means in said first module including a conductor electrically connected to each pin and electrically in series with a separate light emitting diode and resistor in series with one another,
all of said conductors including said light emitting diodes and resistors in series therewith being in parallel with one another and in series with a main conductor circuit, said main conductor circuit including a battery in series with said parallel conductors to simultaneously energize the same and switch means for controlling energy flow from said battery through said circuit means of said first module;
the pin means of said second module being arranged in an array corresponding to the pins of said first module and said pin means of said array of said second module being in a pattern of odd and even pin means with an odd pin means between each even pin means, and a circuit in said second module connecting each adjacent odd and even pin through a light emitting diode in series therewith and comprising 24 separate circuits.

4,326,163
HIGH SPEED BULK GRAIN MOISTURE MEASUREMENT APPARATUS
Robert L. Brooke, 4700 Korvett Dr., Woodbridge, Va. 22193
Filed Jan. 30, 1980, Ser. No. 116,711
Int. Cl.³ G01R *27/04*
U.S. Cl. 324—58.5 A 9 Claims

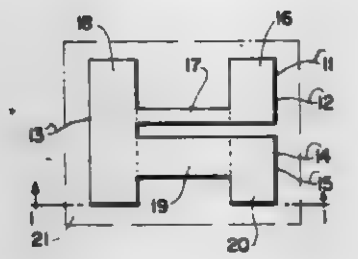


1. Apparatus for measuring the moisture content of bulk grains comprising:
a first oscillator generating signals having a frequency (f1);
a second oscillator generating signals having a frequency (f2);
transmitter means having an input coupled to said first and second oscillators and having an output adapted to produce output signals at a frequency (f1+f2);
receiver means adapted to produce said (f1+f2) signals at its output in response to said transmitter output signals, said receiver means being located opposite said transmitter such that said bulk grain whose moisture content is being measured passes between said transmitter means and said receiver means, said output signals from said transmitter means passing through said bulk grain to said receiver means; and
means coupled to said receiver output for separating said (f1+f2) signals into two separate signals and for immediately producing an output signal directly related to the difference in amplitude between said two separate signals.

4,326,164
ELECTRICAL RESISTANCE CORROSION PROBE
Joe M. Victor, Houston, Tex., assignor to Petrolite Corporation, St. Louis, Mo.
Filed Mar. 14, 1980, Ser. No. 130,322
Int. Cl.³ G01N *27/00*
U.S. Cl. 324—71 R 20 Claims

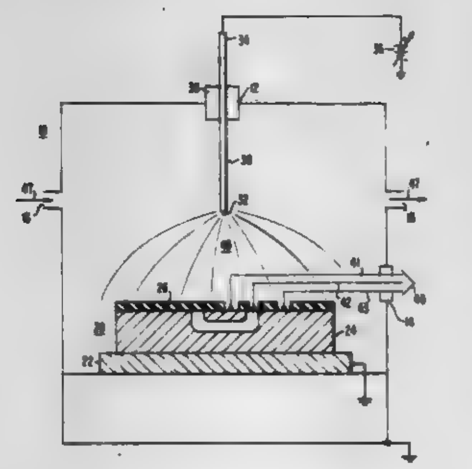
1. A probe for monitoring the corrosion caused by a corrosive medium, said probe comprising a first corrodible electrical resistance element, a second corrodible electrical resistance element having a temperature-resistance characteristic similar

to that of said first element, said elements being in the shape of rectangular prisms, each of said elements being positioned and adapted to have one lateral face exposed to said corrosive medium; the dimension of the transverse cross-section of said second element which is not exposed to the corrosive medium being greater than that of said first element; junction means connecting said element in series at one end thereof; separate terminal means connected to each said element at the end



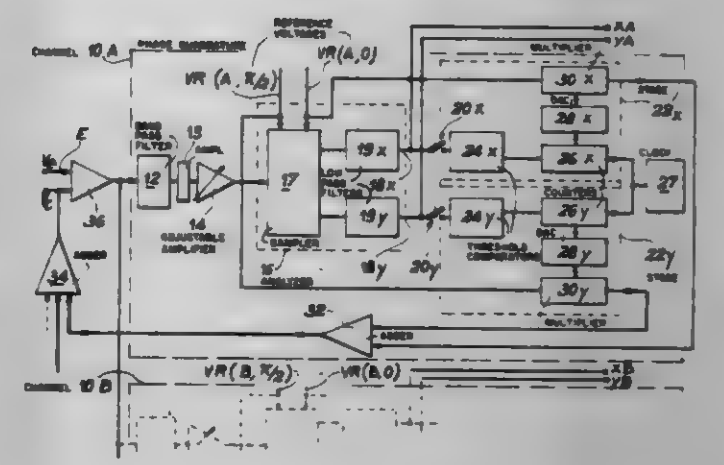
thereof opposite to the junction end; insulating means encasing said resistance elements except for said exposed lateral faces of said elements; and conductor means connected to said junction means and to said terminal means in a manner adapted to cause said first and second elements to function as adjacent but opposite resistance elements of a measurement bridge circuit and to enable connection of said probe to complementary elements of such measurement bridge circuit external to said probe.

4,326,165
CORONA CHARGING FOR TESTING RELIABILITY OF INSULATOR-COVERED SEMICONDUCTOR DEVICES
John R. Szedon, McKeesport, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Jan. 10, 1980, Ser. No. 110,980
Int. Cl.³ G01R *31/26*
U.S. Cl. 324—158 R 2 Claims



1. A method for predicting certain electrical failures in semiconductor devices after long-term operation, said method comprising the steps of:
(a) measuring a predetermined parameter of said semiconductor device for determining a standard measure of said predetermined parameter;
(b) exposing said semiconductor device to first a positive corona discharge and then to a negative corona discharge;
(c) measuring said predetermined parameter for determining a comparison measure of said predetermined parameter before and after each corona discharge; and then
(d) comparing said standard and said comparison measurements of said predetermined parameter for predicting electrical failure in said semiconductor device after long-term operation.

4,326,166
CORRECTING CIRCUIT FOR DIFFERENTIAL PICK-UP, COMPRISING DIGITAL MEANS
Michel Pigeon, Bures sur Yvette, and Robert Saglio, Antony, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France
Filed Dec. 4, 1979, Ser. No. 100,128
Claims priority, application France, Dec. 7, 1978, 78 344
Int. Cl.³ G01N *27/72*; G01R *33/14*
U.S. Cl. 324—225 2 Claims



1. In a circuit for automatically correcting an electric signal given by a differential pick-up likely to have a slight unbalance, said signal having a given frequency and containing a portion resulting from such unbalance, means for determining said portion and subtracting it from the signal given by said pick-up, said means comprising:
(a) a band-pass filter centered to said given frequency, followed by an adjustable gain amplifier;
(b) an analyzer fed by a reference voltage at said frequency and by a voltage in phase-quadrature and by the voltage delivered by said band-pass filter, said analyzer comprising a sampler fed by said reference signal and by said signal in phase-quadrature, said sampler having two outputs and two low-pass filters connected to said two outputs, said analyzer delivering two DC-voltages X and Y proportional to the two components of the voltage delivered by said band-pass filter which are respectively in phase and in phase-quadrature with respect to said reference-voltage;
(c) a first stage comprising: a threshold comparator fed by voltage X; a counter-back counter connected to said comparator; a clock for feeding said counter-back counter; a digital-analog converter connected to said counter; a multiplier with two inlets and one outlet, one of said inlets being fed by said reference voltage, while the other is connected to said converter;
(d) a second stage comprising: a threshold comparator fed by voltage Y; a counter-back counter connected to said comparator; a clock for feeding said counter-back counter, a digital-analog converter connected to said counter-back counter; a multiplier with two inlets and one outlet, one of said inlets being fed by said voltage in phase-quadrature with respect to said reference-voltage, while the other inlet is connected to said converter;
(e) an adder with two inlets and one outlet, one of said inlets being connected to the first stage multiplier outlet, while the other inlet is connected to the second stage multiplier outlet, the outlet of said adder being connected to the circuit inlet by means of a phase inverter in common for all said channels.

4,326,167

TEST CIRCUIT FOR HIGH VOLTAGE APPARATUS

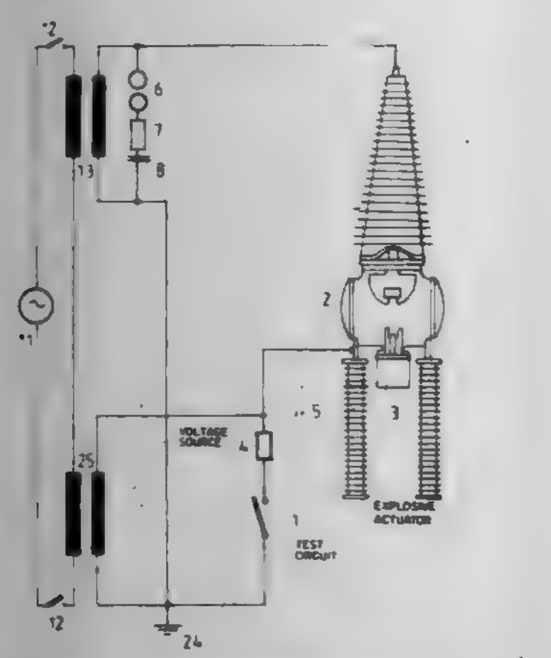
Werner Fehr, Winterthur, and Klaus Dieter Schmidt, Klingnau, both of Switzerland, assignors to BBC Brown, Boveri & Company, Ltd., Baden, Switzerland

Filed Sep. 19, 1979, Ser. No. 76,861

Claims priority, application Switzerland, Sep. 29, 1978, 10100/78

Int. Cl.[3] G01R *31/02*

U.S. Cl. 324—415 4 Claims



1. A test circuit for testing the circuit-making or circuit breaking capability of high voltage electrical apparatus, comprising:

a high voltage circuit having a first high voltage source connected to the apparatus to be tested;

a high current circuit having a source for generating a large current;

a high speed switch having an explosive actuator and being connected between said high current circuit and the apparatus to be tested for isolating said high current circuit from said high voltage circuit and the tested apparatus connected thereto during an open state thereof and for rapidly connecting said high current circuit to the tested apparatus upon ignition of said explosive actuator; and

a second voltage source disposed in said high voltage circuit and an electrical conductor for connecting said second voltage source with said explosive actuator to thereby enable said second voltage source to ignite said explosive actuator.

4,326,168

SIGNAL MONITOR SYSTEM

William F. Acker, Seminole, Fla., assignor to Honeywell Inc., Minneapolis, Minn.

Division of Ser. No. 829,705, Sep. 1, 1977, Pat. No. 4,207,523. This application Dec. 10, 1979, Ser. No. 101,961

Int. Cl.[3] H03K *5/01*

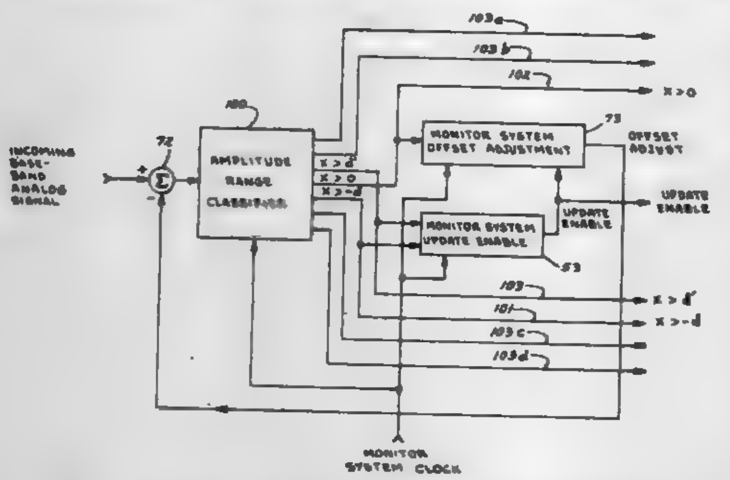
U.S. Cl. 328—162 7 Claims

1. An offset adjustment system for adjusting an input signal to shift about a reference signal level through combining a correction signal with said input signal to form a combined signal provided as a sequence of data samples, said offset adjustment system comprising:

an intended reference level crossing detector means adapted to receive said combined signal, and which has a detector output, said intended reference level crossing detector means being capable of determining, as a countable data sample, those of said data samples which correspond to and which separate members of acceptable pairs of other said data samples, a said pair of said data samples being acceptable if (i) one said member thereof has a value that substantially exceeds that value of said separating data sample corresponding thereto, and if (ii) said member thereof remaining has a value that is substantially less than that value of said separating data sample corresponding thereto, said intended reference level crossing detector means being capable of providing as a detector output signal an indication, at said detector output, as to which of said data samples are said countable data samples;

a comparator means, adapted to receive said combined signal, and which has a comparison output, said comparator means being capable of providing as a comparator output signal an indication, at said comparator output, as to which of said countable data samples have values which occur on a selected side of said reference signal level;

a counter means, connected to both said detector output and



said comparator output, and which has a counter means output, said counter means being capable of keeping a count total therein and being capable of being enabled to alter said count total by said detector output signal and said counter means being capable of being directed whether to increase or decrease said count total by said comparator output signal, said counter means being capable of providing at said counter means output, as said correction signal, a signal having a value which indicates whatever value said count total has reached in said counter means; and

a combining means connected to said counter means output and adapted to receive said input signal, said combining means being capable of combining said correction signal with said input signal.

4,326,169

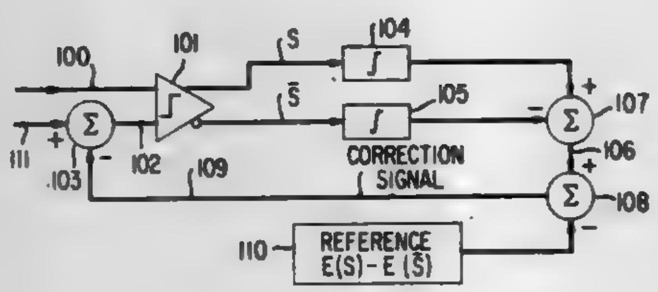
ADAPTIVE DECISION LEVEL CIRCUIT

Gerald L. Fenderson, Newton, and Mitchell A. Skinner, Seabrook, both of N.H., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 7, 1980, Ser. No. 127,936

Int. Cl.[3] H03K *5/08, 5/22*

U.S. Cl. 328—162 6 Claims



1. In a system for receiving digital signals at a number of signal levels, an adaptive decision level circuit for quantizing said digital signals about a decision level interposed between successive ones of said signal levels comprising

means (101) for slicing said digital signals with respect to said decision level and generating a complementary pair of signals (S and S̄) each capable of taking on a high and low output value (x,y), and being further CHARACTERIZED BY,

means for integrating (104, 105, 107) the difference between said complementary pair of signals,

means (110) for generating the expected value of the difference between said complementary pair of signals based on said decision level, the recited expected value being equal to the difference between said high and low output value times a proportionality constant, said constant being a function of the number of said signal levels higher and lower than said decision level, and

means (108) for comparing the integrated difference of said complementary pair of signals with the expected value of the difference between said complementary pair of signals and generating a correction signal therefrom to maintain said decision level at a constant position relative to said successive levels.

4,326,170

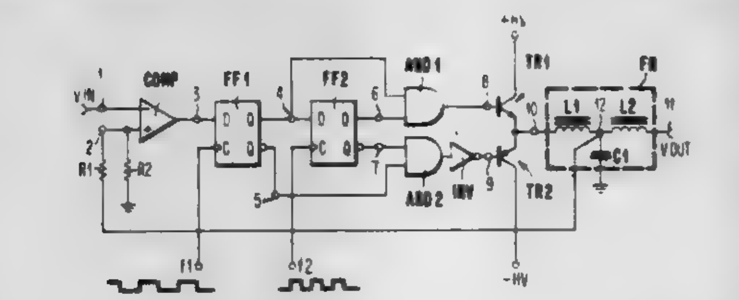
HIGH POWER AND/OR HIGH VOLTAGE SWITCHING OPERATIONAL AMPLIFIER

Allan Levy, Delray Beach, Fla., assignor to Siemens Corporation, Iselin, N.J.

Filed Jun. 9, 1980, Ser. No. 157,321

Int. Cl.[3] H03F *3/38, 1/34, 3/217*

U.S. Cl. 330—10 9 Claims



1. A switching operational amplifier comprising:

(a) a comparator having a first input, a second input and an output, said first input constituting the signal input for an AC input signal;

(b) a first bistable element having a data input, a first output and a second output of opposite signal state to the first output, wherein the signal state of the first output corresponds to the signal state of said data input, said data input of said bistable element being connected with the output of said comparator, said bistable element being triggered by a clock pulse signal having a pulse rate substantially higher than the frequency of the AC input signal;

(c) an amplifier stage having a pair of amplifier inputs each coupled to a different one of said first and second outputs of said bistable element and an amplifier output; and having a pair of alternately operating switch means, each of said switch means being connected by a control input to a respective one of said amplifier inputs and each being connected to said amplifier output and one of said switch means having an input terminal for connection to a positive voltage source and the other of said switch means having an input terminal for connection to a negative voltage source;

(d) a filter network having an input and an output, said input of the filter network connected to said amplifier output for integrating an output signal appearing at said amplifier output; and

(d) means for providing feedback from the output of said filter network to said second input of said comparator.

4,326,171

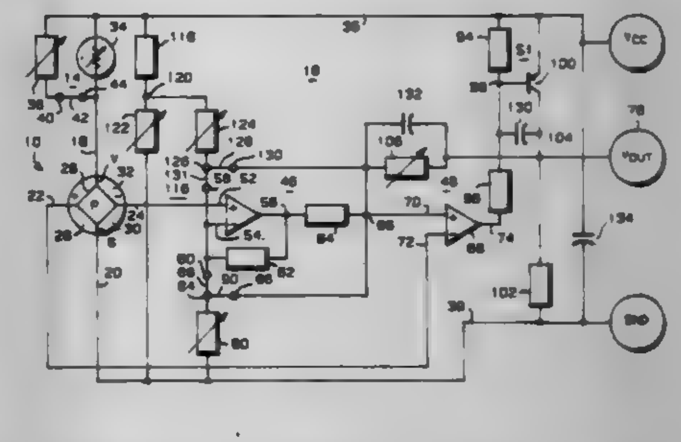
TEMPERATURE COMPENSATING PRESSURE SENSOR AMPLIFIER CIRCUITS

Mark L. Shaw, Mesa, and Ronald J. Freimark, Scottsdale, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 14, 1980, Ser. No. 140,070

Int. Cl.[3] H03F *3/45*

U.S. Cl. 330—256 8 Claims



1. An amplifier circuit suitable for temperature compensating the output voltage including in combination:

first amplifier means having a first input terminal, second input terminal and an output terminal;

second amplifier means having a first input terminal, a second input terminal and an output terminal;

first circuit means connecting said output terminal of said first amplifier means through a summing node to said first input terminal of said second amplifier means;

second circuit means for applying differential driving signals between said first input terminal of said first amplifier means and said second input terminal of said second amplifier means;

third circuit means connecting said output terminal of said second amplifier means to the output terminal of the amplifier circuit;

a first power supply conductor;

a second power supply conductor; and

temperature compensation means coupled to said summing node for enabling said output voltage of the amplifier to be substantially independent of temperature, said temperature compensation means including a first resistive element having one end connected to said first power supply conductor, a second resistive element having one end connected to a second end of said first resistive element and having another end connected to said second power supply conductor, and a third resistive element having one end connected to said second end of said first resistive means and a second end which can be selectively electrically connected to said summing node or to said second input terminal of said first amplifier means.

4,326,172

TUNABLE ACTIVE HIGH-PASS FILTER

Wolfgang Schmidt, Berlin, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jun. 26, 1980, Ser. No. 163,077

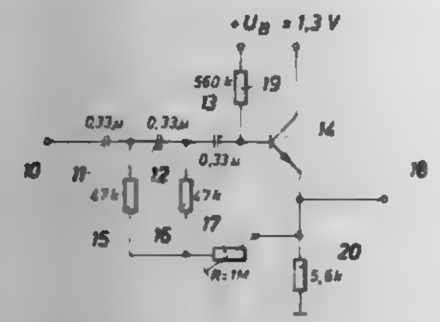
Claims priority, application Fed. Rep. of Germany, Aug. 3, 1979, 2931482

Int. Cl.[3] H03F *1/38*

U.S. Cl. 330—294 6 Claims

1. A tunable active high-pass filter comprising in combination: a transistor amplifying element, an input terminal for said filter; first, second and third series-connected capacitors connected between said input terminal of said filter and the base of said transistor; and a positive feedback path for said transistor including a first resistor connected between the junction point of said first and second capacitors and a common junction point, a second resistor connected between the junction point of said second and third capacitors and said common junction

point, and a third, adjustable resistor connected between said common junction point and a terminal of said transistor which constitutes the output of said filter; and a fourth resistor connected between the junction point of said third capacitor and said base of said transistor and a source of fixed operating voltage.



4,326,173

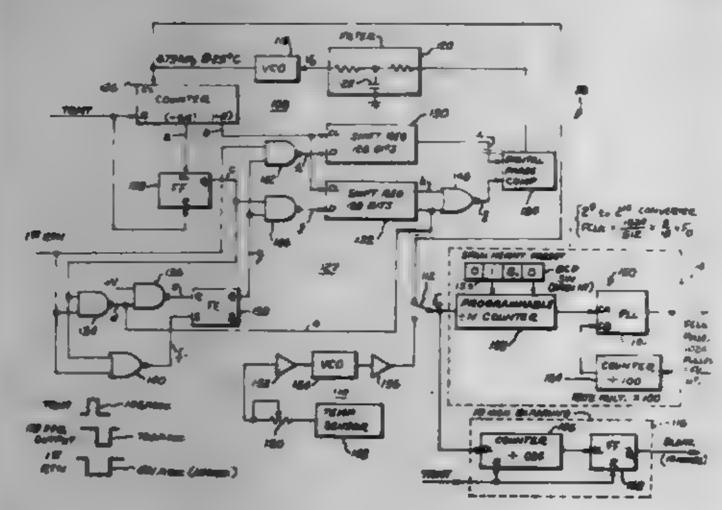
DIGITAL PHASE LOCKED LOOP FREQUENCY CONTROL SYSTEM

Raymond A. Newman, Cheektowaga, N.Y., assignor to NP Industries, Inc., Tonawanda, N.Y.

Division of Ser. No. 20,218, Mar. 14, 1979, Pat. No. 4,254,482, which is a division of Ser. No. 818,656, Jul. 25, 1977, Pat. No. 4,145,914. This application Oct. 20, 1980, Ser. No. 198,487

Int. Cl.³ H03L *7/08*

U.S. Cl. 331—1 A 3 Claims



1. A digital phase locked loop system for maintaining an output signal frequency in the absence of the second of two input control signals which comprises

a variable frequency oscillator for providing said output signal and having an error signal input for controlling the output signal frequency,

digital phase comparator means having a pair of inputs and an output providing said error signal input in accordance with the D.C. valve thereof,

a counter for counting the cycles of said oscillator output signal, said counter having a dividing ratio such that the period of the output pulses from said counter equals the period between said two input control signals when said loop is locked,

means for resetting said counter upon occurrence of the first of said two input control signals, and

digital logic means responsive to said first input control signal and said counter output pulses for providing a pair of data signals the first of which changes state periodically at a given rate and the second of which remains in the same state, said digital logic means also being responsive to the second of said input control signals for changing the state of at least one of said data signals when said second input control signal occurs, the one of said data signals which changes state depending upon the phase relationship of said input control signals, and changing the state of neither of said data signals if said second input control signal is absent, and means for applying said data signals separately to the pair of inputs of said phase comparator.

4,326,174

PASSIVE MASERS HAVING ALTERNATELY OPERATED OSCILLATOR AND CAVITY CONTROL LOOPS

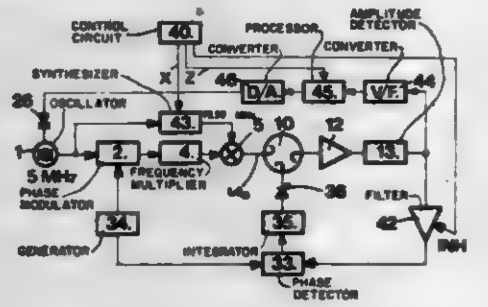
Giovanni Busca, Neuchatel, and Helmuth-Hugo Brandenberger, Sugiez, both of Switzerland, assignors to Ebauches S.A., Switzerland

Filed Feb. 5, 1980, Ser. No. 119,139

Claims priority, application France, Mar. 9, 1979, 79 06105

Int. Cl.³ H03L *7/26*

U.S. Cl. 331—3 12 Claims



1. A process for controlling a passive maser having a resonant cavity which contains a medium capable of stimulated emission, and which is excited by an injected signal, comprising the steps of producing from a signal picked off from the cavity a first error signal representing the difference between the carrier frequency of the injected signal and the frequency of the stimulated emission, using the first error signal to adjust the said carrier frequency, producing from the picked-off signal a second error signal representing the difference between the resonance frequency of the cavity and the said carrier frequency, and using the second error signal to adjust the resonance frequency, wherein production of the second error signal is periodically inhibited and that the first error signal is produced only during the inhibition periods.

4,326,175

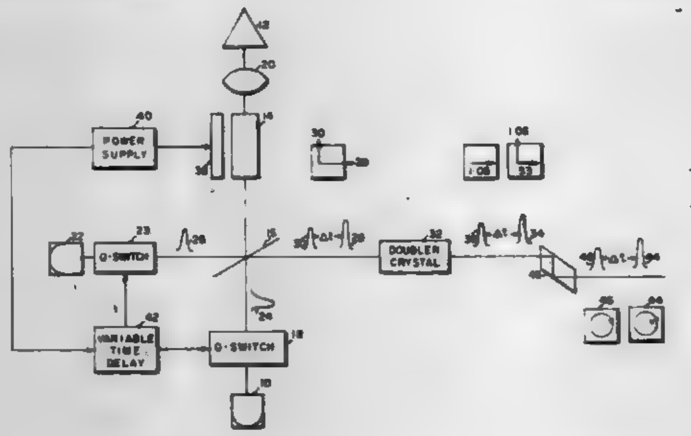
MULTI-COLOR, MULTI-PULSE LASER SYSTEM

George J. Dehney, Westford, Mass., and Gerald L. Spade, Nashua, N.H., assignors to Sanders Associates, Inc., Nashua, N.H.

Filed Dec. 2, 1976, Ser. No. 746,989

Int. Cl.³ H01S *3/05, 3/10*

U.S. Cl. 372—106 8 Claims



1. A multi-color, multi-pulse laser system, comprising:

a pluarlity of laser cavities, each having a common section;

a laser medium disposed in the common section of said cavities;

means for supplying pump energy to said laser medium;

a plurality of Q-switches disposed in the noncommon sections of said cavities;

means for actuating said Q-switches;

a polarizer/beam-splitter disposed at the junction of said common and noncommon section of said cavities such that the output from said laser cavities is taken at said polarizer/beam-splitter in the form of multiple pulses; and

means for changing the wavelength of at least one of said output pulses.

4,326,176

SEMICONDUCTOR LASER DEVICE

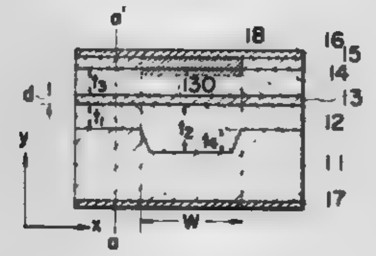
Kunio Aiki, Hachioji; Michiharu Nakamura, Tokyo, and Jun-ichi Umeda, Hachioji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 12, 1977, Ser. No. 786,758

Claims priority, application Japan, Apr. 16, 1976, 51-42469; May 26, 1976, 51-60009; Jan. 24, 1977, 52-5944; Jan. 24, 1977, 52-5945; Jan. 24, 1977, 52-5946; Mar. 9, 1977, 52-24806; Mar. 9, 1977, 52-24807

Int. Cl.³ H01S *3/19*

U.S. Cl. 372—45 37 Claims



1. In a semiconductor laser device comprising a semiconductor body of a first conductivity type having a major surface and a plurality of contiguous semiconductor layers disposed on said major surface of said body, said plurality of contiguous semiconductor layers being comprised of:

(i) a first semiconductor layer having a laser active region, a pair of end surfaces parallel to each other so as to form a cavity resonator, and two opposite plane surfaces, a first surface of which faces towards said major surface of said body and second surface of which faces away from said major surface of said body;

(ii) a second semiconductor layer disposed on said first surface, comprised of a material having a band gap broader than that of said first semiconductor layer, and having a thin region having a thickness t_1 as small as $3\times$(the distance r in which an evanescent wave along said first surface decays by 1/e) or less and a thick region having a thickness t_2 larger than 3r, and

(iii) a third semiconductor layer disposed on said second surface comprised of a material having a band gap broader than that of said first semiconductor layer.

4,326,177

GAS LASER TUBE

Tetsuro Ohtani, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Dec. 17, 1979, Ser. No. 103,892

Claims priority, application Japan, Dec. 15, 1978, 53-156116; Dec. 15, 1978, 53-156117

Int. Cl.³ H01S *3/03*

U.S. Cl. 372—92 12 Claims

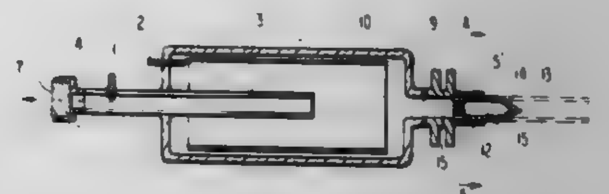
1. A gas laser tube comprising:

an axially elongated gas-containing enclosure;

a pair of mirrors disposed at the opposite ends of said enclosure and forming an optical resonator, at least one of which mirrors is a total reflection mirror;

a cylindrical member axially disposed within and at one end of said enclosure holding said total reflection mirror with a gap space between at least one part of said total reflection mirror and said cylindrical member; and

an exhaust pipe coupled coaxially to said cylindrical member and disposed oppositely in said enclosure with respect to



said total reflection mirror, said exhaust pipe being airtightly sealed-off and wherein said gap space provides a gas passageway between said enclosure and said exhaust pipe.

4,326,178

GAS DISCHARGE LASER

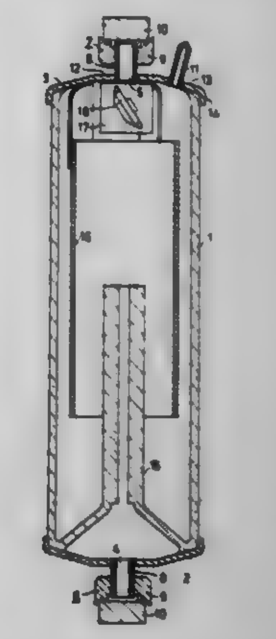
Hans G. Van den Brink, and Theodorus F. Lamboo, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 28, 1979, Ser. No. 108,207

Claims priority, application Netherlands, Aug. 3, 1979, 7905969

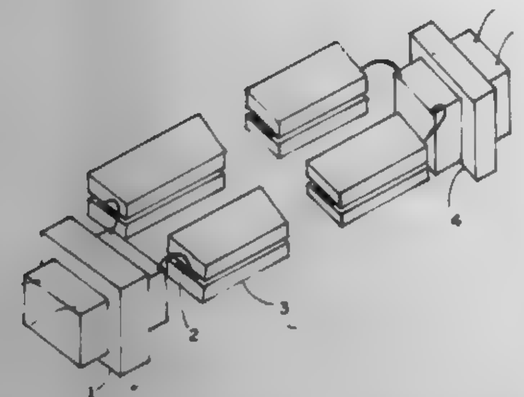
Int. Cl.³ H01S *3/05*

U.S. Cl. 372—61 5 Claims



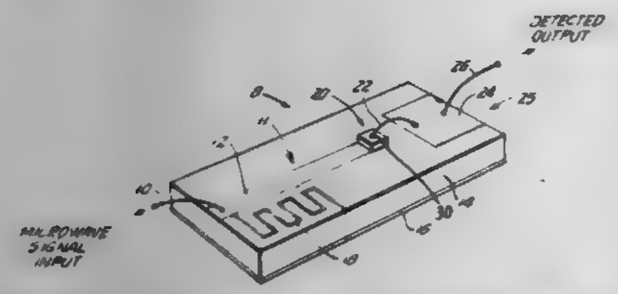
1. A gas discharge laser comprising a glass cylindrical discharge vessel containing a gas including an active lasing medium, means including a pair of reflectors at opposite ends of the discharge vessel for defining a resonant cavity, means including first and second electrodes for establishing an electric discharge in said gas, a metal cap in the shape of a truncated cone sealing one end of the discharge vessel, the truncated cone metal cap having an apical surface and a conical surface, a metal exhaust tube eccentrically located in the conical surface of the metal cap, and a reflector member including one of said reflectors and mounted in the center of the apical surface of the truncated cone metal cap.

4,326,179
ELECTRICAL POWER LINE TRANSIENT NOISE FILTERING DEVICE
Theodore Lasar, 40 First Ave., New York, N.Y. 10009
Filed Aug. 15, 1980, Ser. No. 178,303
Int. Cl.³ H03H *7/09, 7/24*
U.S. Cl. 333—177 1 Claim



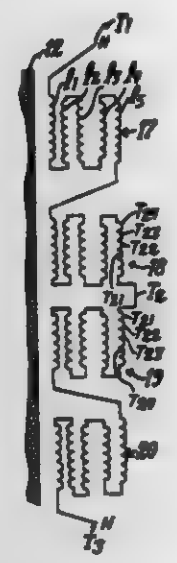
1. A filter for attenuating transient noise pulses in the supply line for sensitive electronic equipment consisting of:
(a) a step up transformer to which the input power line is connected;
(b) two continuous strips of resistive material each connected to one end of the high voltage secondary of said transformer;
(c) material of dielectric constant exceeding that of air enclosing the said resistive strips; and
(d) a step down transformer mounted as far as possible from the first transformer to the high voltage winding of which the two resistive strips are connected and from the low voltage winding of which power is taken for the sensitive electronic equipment.

4,326,180
MICROWAVE BACKDIODE MICROCIRCUITS AND METHOD OF MAKING
Romano I. Ferri, Westport, Conn., assignor to Microphase Corporation, Cos Cob, Conn.
Filed Nov. 5, 1979, Ser. No. 91,521
Int. Cl.³ H01P *3/08, 11/00;* H01L *23/50, 21/461*
U.S. Cl. 333—246 10 Claims



1. The method of making a microwave microcircuit containing a backdiode comprising the steps of:
integrating an unprocessed semiconductor diode chip with other circuit components of a microcircuit,
causing said other circuit components of the microcircuit to be resistant to the effects of a predetermined etchant,
providing an alloyed metal dot on the exposed upper surface of the semiconductor material of said chip,
connecting said metal dot into the microcircuit,
dipping the whole pre-joined and integrated microcircuit into the predetermined etchant,
monitoring the e/i characteristics of the semiconductor diode chip during the etching,
removing the pre-joined and integrated microcircuit from the etchant when the desired backdiode characteristics have been obtained, and
rinsing off all traces of the etchant from the microcircuit,
thereby completing the microwave microcircuit containing a backdiode.

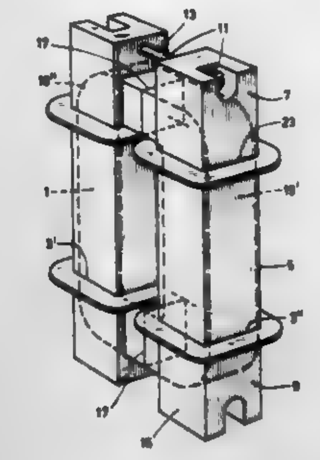
4,326,181
HIGH VOLTAGE WINDING FOR DRY TYPE TRANSFORMER
Benjamin F. Allen, Rome, Ga., assignor to General Electric Company
Continuation of Ser. No. 852,795, Nov. 18, 1977, abandoned. This application Feb. 11, 1980, Ser. No. 120,245
Int. Cl.³ H01C *33/00*
U.S. Cl. 336—12 2 Claims



1. A compact high voltage transformer of the type having three coil assemblies each of which consists of a low voltage coil concentrically arranged around a core and a high voltage coil, the high voltage coil comprising:
a multisectional coil having five layers of wire in each of four coil sections, the high voltage coils being arranged in an electrical wye connection on a coil support with a last layer of one section being electrically connected with a first layer of another section, said four coil sections consisting of a first pair of coils connected in series and a second pair of coils connected in series, said first and second coil pairs being electrically connected in parallel;
a top terminal connection proximate a top core yoke;
a bottom terminal connection proximate a bottom core yoke; and
a plurality of terminal connections intermediate the high voltage coil to provide electrical connection to each of said pairs of coil sections for providing reduced spacing between said high voltage coil and said low voltage coil and between said high voltage coil and said coil support and said top and bottom core yokes.

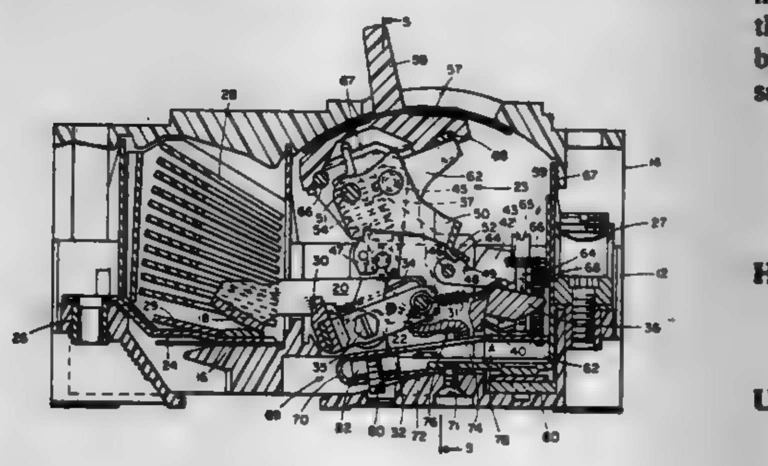
4,326,182
C-CORE TRANSFORMER
Werner Klaus, Nauborn, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Mar. 17, 1980, Ser. No. 130,890
Claims priority, application Fed. Rep. of Germany, Apr. 10, 1979, 2914447
Int. Cl.³ H01F *27/26, 27/30*
U.S. Cl. 336—198 4 Claims

1. A transformer comprising first and second separate C-shaped ferromagnetic core parts with each core part comprising a core leg including a substantially straight elongate section and first and second bends at opposite ends of the elongate section, said core parts having end faces in contact at first and second spaced locations so as to form a substantially closed core, first and said coil formers moulded around the first and second core parts, respectively, so as to be rigidly connected to the respective core legs and arranged so as not to enclose said locations where the first and second core parts contact each other, each said coil former comprising extensions which enclose the bends of the core iron adjoining the core leg and



which extend into the vicinity of the dividing line between the first and second core parts and further including fixing elements for mounting the transformer.

4,326,183
CIRCUIT BREAKER WITH SELF CONTAINED ADJUSTABLE BIMETAL
James A. Tharp, Cedar Rapids, Iowa, assignor to Square D Company, Palatine, Ill.
Filed Aug. 29, 1980, Ser. No. 182,568
Int. Cl.³ H01H *71/16*
U.S. Cl. 337—70 6 Claims

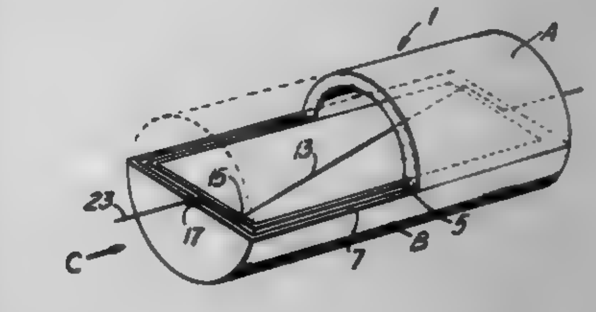


1. An electric circuit breaker comprising:
an insulating case;
a line terminal carried by said case;
a load terminal carried by said case;
a stationary contact connected to said line terminal;
a movable contact arm in said case pivotally supported adjacent one end of said arm and connected to said load terminal;
a movable contact carried by said contact arm adjacent an opposite end of said arm for engagement with said stationary contact to extend an electrical connection between said line terminal and said load terminal in response to said contact arm being in one pivotal position and to interrupt said connection in response to said contact arm being in an other position;
a toggle mechanism including a main toggle spring, said mechanism having a first position in which said spring is energized and said contact arm is in said other position and a third position in which said spring is deenergized and said contact arm is in said other position;
a latch having a first latch position for retaining said toggle mechanism in either said first or said second position, said latch biased toward a second latch position to enable release of the energy of said spring for moving said toggle mechanism to said third position;
a trip crossbar supporting said latch in said first latch position and rotatable to release said latch whereby said toggle mechanism moves to said third position;
a generally U-shaped bimetal connected intermediate and in series with said contact arm and said load terminal;
said bimetal having a lower leg fastened to said frame and an upper leg spaced a predetermined distance from said trip crossbar in operative association with said crossbar to rotate said crossbar to effect release of said latch in response to heating of the bimetal to a predetermined temperature by the passage of an electrical current of a selected magnitude therethrough;
said lower leg having portions defining a threaded aperture; a screw threaded through said aperture; and an insulator interposed between said screw and said upper leg.

4,326,184
ELECTRIC CUTOUT
Robert E. Murdock, Stone Mountain, Ga., assignor to Kearney-National Inc., Atlanta, Ga.
Filed Aug. 4, 1980, Ser. No. 174,823
Int. Cl.³ H01H *71/10*
U.S. Cl. 337—168 13 Claims

1. An electric cutout comprising a fuseholder, a conducting element mounted on one end of said fuseholder and having a pair of coaxial trunnions on opposite sides thereof, a lower terminal element including a pair of spaced jaws having bight portions arranged to receive said trunnions respectively, a pair of spaced guide surfaces on said jaws, and a pair of spaced complementary guiding surfaces on said conducting element and spaced substantially equidistant from the axis of said trunnions for engagement with said guide surfaces respectively so that said trunnions are maintained in close contact with the bight portions of said jaws during predetermined rotation of said conducting element relative to said terminal element.

4,326,185
ELECTRICAL FUSE WITH SEMI-CYLINDRICAL CASINGS
Hiroo Arikawa, Tokyo, Japan, assignor to San-O Industrial Company, Ltd., Tokyo, Japan
Filed Apr. 27, 1981, Ser. No. 257,923
Int. Cl.³ H01H *85/02*
U.S. Cl. 337—201 8 Claims



1. An electric fuse made of a pair of generally semicylindrical casings coupled to form the fuse cartridge; a body casing and a cover casing for said body casing, said cover casing having a circumferential flat edge surface and a central ridge section protruding above said flat edge surface, spanning substantially the length thereof, said body casing having a circumferential flat edge surface and a central channel recessed therein and extending substantially the length of said flat edge surface of the body casing, said ridge section being adapted to be received by and engaged into said channel so as to form a passageway between said ridge section and said channel and causing said flat edge surfaces to be brought into mating relationship when said body casing and said cover casing are

coupled to form the fuse cartridge; a fusible element stretched diagonally between the ends of said body casing, the ends of said fusible element passing through a pair of diagonally disposed grooves in the edge surface of said body casing at each end thereof and into said passageway between said ridge section and said channel, and out through a pair of grooves, each disposed at the end of said body casing at approximately the middle thereof and wherein the ends of said fusible element are soldered to the respective ends of the body casing.

4,326,186

OFF-CENTERED HOUR GLASS SHAPED COIL SPRING AND THERMAL SWITCH INCORPORATED INTO SAME

Murray G. Clay, Coral Gables, Fla., assignor to Littelfuse, Inc., Des Plaines, Ill.

Filed Mar. 10, 1980, Ser. No. 128,549

Int. Cl.³ H01H *37/76*

U.S. Cl. 337—407 7 Claims

1. An ambient thermal switch comprising: a casing of electrically conductive material; first and second leads in said casing, movable contact-forming means in said casing connected to one of said power leads and making a low resistance contact with another contact surface connected to the other lead; means for separating said movable contact-forming means including a sandwich of elements held under spring pressure between spaced points in said casing and including stressed spring means for applying said spring pressure, said stressed spring means including a compressed hour glass shaped spiral coil spring having relatively wide outer turns on the outside of the spring bearing against adjacent surfaces of said sandwich of elements and gradually inwardly spiraling intermediate turns, the outer and intermediate turns being overlapped and nestled together to minimize the length of the spring in a collapsed condition thereof, and a fusible body of material in said casing which melts at a given temperature to release said stressed spring means which separates said movable contact-forming means from said contact surface.

4,326,187

VOLTAGE NON-LINEAR RESISTOR

Tadakiku Miyoshi; Takeo Yamazaki; Kunihiro Maeda, and Ken Takahashi, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

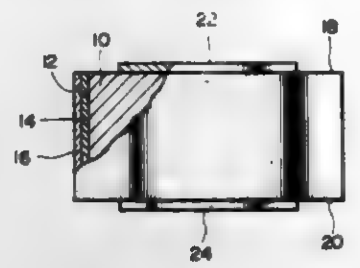
Filed Oct. 8, 1980, Ser. No. 195,257

Claims priority, application Japan, Oct. 8, 1979, 54-128916; Jan. 18, 1980, 55-3562

Int. Cl.³ H01C *7/10*

U.S. Cl. 338—21 22 Claims

1. A voltage non-linear resistor comprising a sintered body composed mainly of zinc oxide, said sintered body including confronting main faces and a side face connecting the main faces to each other, electrodes formed on said main faces of the sintered body, respectively, and a coating glass layer of a glass composition covering the side face of said sintered body, said coating glass layer containing barium oxide and being formed by coating a paste containing an organic binder and the glass composition on said sintered body, after said sintered body has



been formed by sintering, and then baking said coated sintered body.

4,326,188

MAGNETICALLY CONTROLLABLE VARIABLE RESISTOR

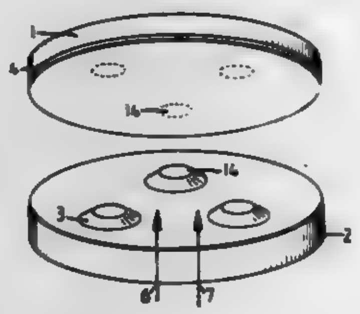
Reinhard Dahlberg, Flein, Fed. Rep. of Germany, assignor to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Fed. Rep. of Germany

Filed Jun. 27, 1980, Ser. No. 163,827

Claims priority, application Fed. Rep. of Germany, Jul. 3, 1979, 2926786

Int. Cl.³ H01L *43/08*

U.S. Cl. 338—32 S 10 Claims



1. A magnetically controllable variable resistor comprising two separate elements composed of a material selected from the group consisting of ferromagnetic and ferrimagnetic materials at least one element having a structure with at least three tapering elevations; a magnetic field sensitive layer of a material of which the specific electrical resistance varies in a magnetic field applied to at least one of said elements; both elements being joined together under mechanical pressure so that pressure contacts are formed at the areas of contact in the region of the tapering elevations by means of said layer; and an electrical field and a magnetic field being present between the two elements.

4,326,189

AIRCRAFT CONTROL/GUIDANCE DISPLAY AND MECHANISM FOR ENROUTE AND LANDING UTILITY

Carl J. Crane, Box 17745, San Antonio, Tex. 78217

Filed Apr. 23, 1979, Ser. No. 32,419

Int. Cl.³ G01C *21/00, 23/00*

U.S. Cl. 340—27 NA 4 Claims

1. In an aircraft control and guidance system, an avionics display structure including a base having a plurality of synchro receivers mounted thereon,

one synchro receiver including a rotatable shaft having a transverse axis of rotation, arm means affixed to each end of said rotatable shaft, said arm means having inwardly bent horizontal portions providing a substantially continuous horizon bar for up and down movement parallel to said base for indicating pitch with reference to a horizontally disposed lubbers line,

a tandem pair of synchro receivers, each having a shaft, the

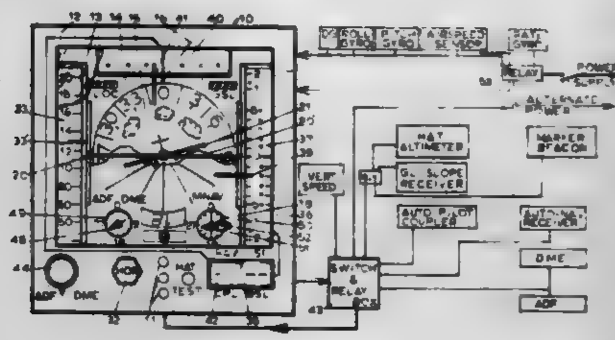
shaft of one said tandem pair of synchro receivers passing through the shaft of the other along a common longitudinal axis, an aircraft symbol pointer mounted on the shaft of one said tandem pair of synchro receivers for portraying aircraft roll to the right by clockwise rotation thereof and aircraft roll to the left on counterclockwise rotation thereof, the shaft of the other of said tandem pair of synchro receivers having affixed thereto a circular dial for clockwise rotation in response to left aircraft turns and counterclockwise rotation in response to right aircraft turns, said circular dial having delineated thereon a compass rose for indication of aircraft heading and an associated lubbers line;

an upstanding fixed partial dial interposed between said circular dial and said horizon bar for partially obscuring the substantive lower portion of said circular dial;

a first microammeter, scale and pointer and comprising a course direction indicator; and

a second microammeter, vertical scale, and vertically moving pointer and comprising means for selective indication of glide slope, vertical speed and height above touchdown;

a first vertical gyro having synchro output for driving said one synchro receiver;



a second vertical gyro having synchro output for driving said one of said tandem pair of synchro receivers having said aircraft symbol pointer mounted on the shaft thereof;

a directional gyro having synchro output for driving said one of said tandem synchro receivers having said circular dial mounted on the shaft thereof;

a VOR/LAC navigation receiver having output for operating said course direction indicator;

a glide slope receiver having output for operation of second microammeter in indicating glide slope;

a vertical speed sensor having output for operation of said second microammeter in indicating vertical speed;

a height-above-touchdown landing altimeter having output for operation of said second microammeter in indicating height above touchdown;

switch means for selective operation of said second microammeter by said glide slope receiver and vertical speed sensor;

said avionics display structure being contained with a case for viewing thereof; and

said case having electric connector plug means for operative transmission of output to said avionics display structure.

4,326,190

BOUNDARY TRACE SLOPE FEATURE DETECTION SYSTEM

David L. Borland, 400 Britain Ct., Irving, Tex. 75062, and Lyle W. Shaw, 127 Skyline Dr., Plano, Tex. 75074

Filed Aug. 30, 1978, Ser. No. 938,271

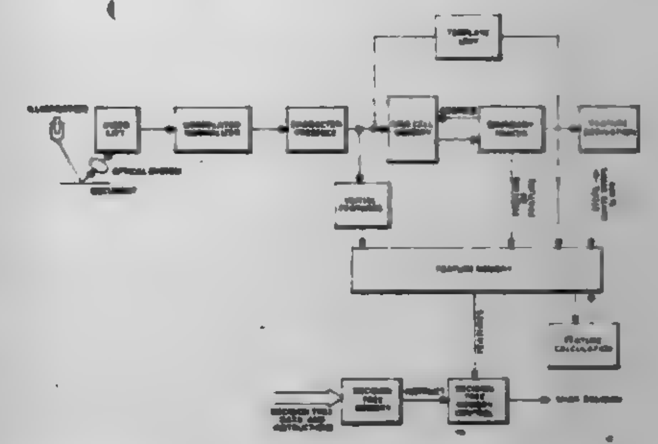
Int. Cl.³ G06K *9/48*

U.S. Cl. 340—146.3 AE 5 Claims

1. An improved method of recognizing descriptive features of characters, which have been scanned with a plurality of sensor cells, from binary representation thereof stored in a memory means, and tracing around the stored character representations, comprising the steps of

(a) deriving initial features of a character such as circumference count prior to tracing around the character;

(b) generating a single boundary trace on the boundary of the character to locate character features;



(c) defining the contours of the character without regard to size of the character based upon the character shape and features derived during the boundary trace;

(d) Weighting the derived features; and

(e) generating a character code based upon the weighted features of the character.

4,326,191

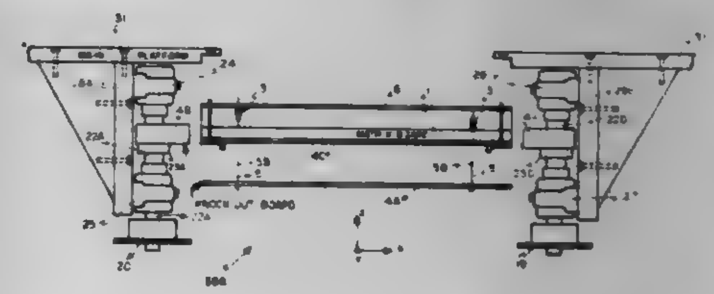
AUTOMATIC SWITCHING MATRIX

Martin F. Schlecht, Cambridge; John G. Kassakian, Newton; Anthony J. Caloggero, Lynn; Bruce Rhodes, Dorchester; David Otten, Newton, and Neil Rasmussen, Sudbury, all of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Feb. 1, 1980, Ser. No. 117,706

Int. Cl.³ H04Q *1/02*

U.S. Cl. 340—825.79 2 Claims



1. An automatic switching matrix that comprises, in combination

(a) an apertured matrix board comprising a matrix of intersecting conductors that can be interconnected at any intersection thereof, the matrix board having apertures that extend from one major surface to the other major surface thereof, each aperture mating with an intersection of intersecting conductors;

(b) a plurality of conductive connection pins, one such pin being disposed to register with each aperture and initially out of contact with the conductors located in the associated aperture;

(c) means for automatically depressing individual connection pins into selected apertures, which automatic depressing means comprises:

(i) an x-y positioning mechanism and

(ii) an electro-mechanical pin depressing mechanism which is positioned, automatically, by the x-y positioning mechanism; and

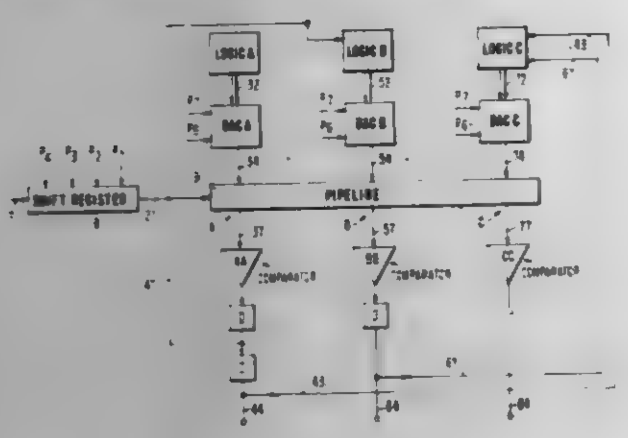
(d) an automatic reset mechanism that forces the connection pins from apertures in which they are inserted, which the automatic reset mechanism comprises a knock-out board containing a plurality of reset pins, each such reset pin being located to register with an aperture in the matrix board, and means to move the knockout board toward the matrix board so that the reset pins will enter the matrix

board and push the conductive connection pins out of the electrical connection with the conductors in the corresponding hole.

4,326,192
SEQUENTIAL SUCCESSIVE APPROXIMATION ANALOG-TO-DIGITAL CONVERTER

Richard B. Merrill, Hamden, Conn.; Lewis M. Terman, South Salem, and Yen S. Yee, White Plains, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 11, 1979, Ser. No. 47,557
Int. Cl.³ H03K *13/08*
U.S. Cl. 340—347 AD 1 Claim

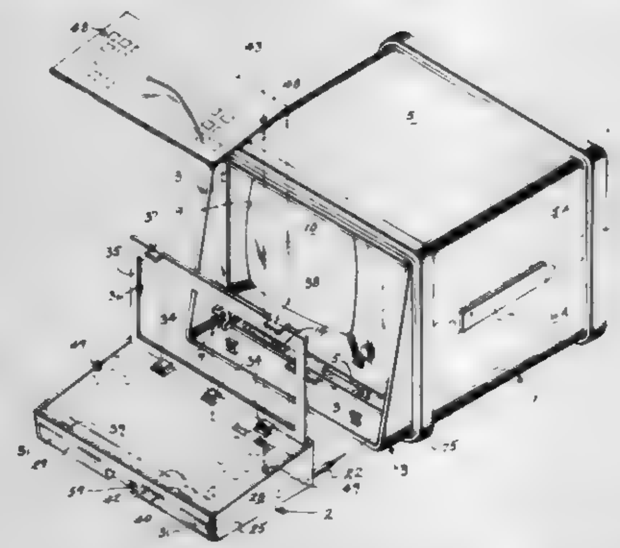


1. An analog-to-digital signal conversion system comprising:
an input for analog signal quantities of electrical charge, an analog signal pipeline circuit having a plurality of analog data temporary storage positions A,B . . . X where X represents the number of said storage positions arranged serially from higher to lower order positions with respect to proximity to said input,
means for moving said quantities of charge serially sequentially down the pipeline from the higher order ones, A,B . . . of said temporary storage positions to the lower order ones B, . . . X of said temporary storage positions, said quantities passing from stage to stage of said pipeline in delay time D,
a plurality of comparison circuits AA, BB . . . XX ranging from higher to lower order positions with one thereof being coupled to each of said temporary storage positions,
at least one reference signal source adapted for producing reference signals A,B . . . X with one associated with each of said storage positions A,B . . . X,
means for coupling said reference signals A',B . . . X' from said reference signals source to said comparison circuits A to AA, B to BB . . . and X to XX,
said reference signal source including logic DAC means for generating said reference signals A',B' . . . X' from said reference signal source,
said logic DAC means having a plurality of sets of input units B'' . . . X'' with each thereof being connected to each of the outputs of the higher order ones of said comparison circuits through delay circuits providing delay times D multipled as a function of the number of positions separating lower order ones of said sets of inputs B'' . . . X'' from higher order ones of said storage positions A,B, . . . X−1 so that a reference signal supplied to each analog data temporary storage position depends upon the outputs obtained from the higher order comparison circuits for a particular analog signal quantity passing through said pipeline circuit,
clock means for timing coupling by said means for coupling from a said reference signal source to a said comparison circuit in phased relationship with provision of corresponding analog signal quantity from said pipeline to said comparison circuit with delay time D between, and
output lines connected to provide the digital outputs of said conversion system being connected to the outputs of said comparators AA,BB . . . XX through said delay circuits,
said analog signal quantities comprise charge packets and said comparison connections couple said charge packets to said comparison means, and said control and quantification means provides reference charge packets to said comparison circuits,
and said reference charge packets are coupled to said comparison circuits through said storage positions.

4,326,193
TERMINAL WITH INTERCHANGEABLE APPLICATION MODULE

Theodore J. Markley, Mentor; Daniel J. Galdun, Huntsburg; Charles E. Clark, Eastlake; Robert G. Henderson, Wickliffe, and Frank W. Jeacen, Cleveland, all of Ohio, assignors to Allen-Bradley Company, Milwaukee, Wis.

Filed Sep. 12, 1979, Ser. No. 75,175
Int. Cl.³ G06F *3/02*
U.S. Cl. 340—365 R 9 Claims

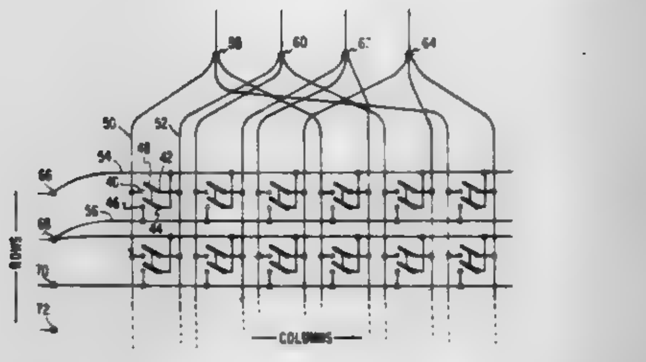


1. In a terminal for receiving data through a manual data input means and for displaying data through a data display means, the combination comprising:
a main unit for housing circuitry and including a bezel that provides a first opening through which the data display means is directed and a second opening located beneath the first opening which provides access to the circuitry within the main unit;
connector means mounted within the main unit, connected to said circuitry and oriented to face out through said second opening;
guideway means formed on the main unit and oriented to face out through said second opening;
an application module for mounting said data input means and including
(a) a housing,
(b) guide means supported by said housing for mating with said guideway means to align said housing over said second opening in the main unit, and
(c) connection means mounted within said housing and being electrically coupled to said data input means, said connection means being oriented to engage and make electrical connection with said connector means in the main unit when the guide means is completely engaged with said guideway means; and
in which said guideway means defines two cylindrical cavities, each having a longitudinal axis which is parallel to the other, and the guide means on said application module includes two guideposts which are spaced apart and parallel to one another such that they are received within said cylindrical cavities.

4,326,194
DUAL ENCODED SWITCHING MATRIX

Russell J. Pepe, Piscataway, N.J., assignor to The Singer Company, Stamford, Conn.

Continuation-in-part of Ser. No. 30,502, Apr. 16, 1979, abandoned. This application Oct. 10, 1979, Ser. No. 195,959
Int. Cl.³ G06F *3/02*
U.S. Cl. 340—365 R 3 Claims



1. An input switch arrangement comprising:
a plurality of switch members arranged in a rectangular array of columns and rows, each of said switch members being positioned at the intersection of a respective column and row of said array, each of said switch members having a first side, a second side, a third side and a fourth side adapted to be selectively connected together;
a first plurality of terminals;
a second plurality of terminals;
means for connecting the first side of all the switch members within a one of the columns to one of said first plurality of terminals and the second side of all of the switch members within said one of the columns to a different one of said first plurality of terminals so that the switch members within each column are connected to a unique pair of said first plurality of terminals and wherein the number C of columns and the number M of said first plurality of terminals satisfy the relationship

$$\frac{(M-1)(M-2)}{2} < C \leq \frac{M(M-1)}{2};$$

and
means for connecting the third side of all of the switch members within a one of the rows to one of said second plurality of terminals and the fourth side of all of the switch members within said one of the rows to a different one of said second plurality of terminals so that the switch members within each row are connected to a unique pair of said second plurality of terminals and wherein the number R of rows and the number N of said second plurality of terminals satisfy the relationship

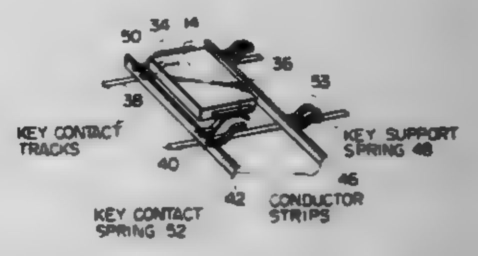
$$\frac{(N-1)(N-2)}{2} < R \leq \frac{N(N-1)}{2}$$

4,326,195
MULTI-ITEM DATA INPUT APPARATUS

Yashiro Seki, and Hideo Kobayashi, both of Tokyo, Japan, assignors to Anritsu Electric Company Limited and Systematix Co. Ltd., both of Osaka, Japan

Filed Apr. 16, 1980, Ser. No. 140,681
Claims priority, application Japan, Jun. 21, 1979, 54-78296
Int. Cl.³ G08C *1/00;* H01H *9/00;* G08C *9/00*
U.S. Cl. 340—365 R 12 Claims

1. A multi-item data input apparatus for manual generation of data to designate selected ones of a plurality of data items displayed upon a flat sheet, comprising a matrix plate having a plurality of apertures provided therein, each of said apertures corresponding in position to one of said items, a plurality of keys each being transparent in at least a portion thereof and movably supported within a corresponding one of said apertures, a plurality of row conductors consisting of conducting strips fixedly retained within said matrix plate, a plurality of column conductors disposed parallel to one another below said keys at right angles to said conducting strips, a plurality of contact springs fixedly attached and electrically connected to said conducting strips, with each of said contact springs being disposed with respect to one of said keys such as to contact one

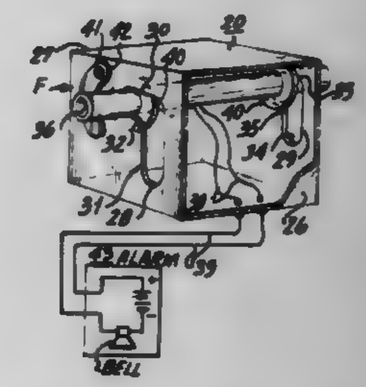


of said column conductors when said one of the keys is depressed, and a plurality of support springs fixedly attached to said conducting strips, with each of said support springs bearing against a lower face of a corresponding one of said keys and urging said key in a direction outward from said matrix plate, and wherein each of said contact springs bears against a lower face of one of said keys for urging said key in said outward direction, with each of said keys being limited with respect to movement in said outward direction by a portion thereof bearing against a lower face of said matrix plate.

4,326,196
UNIVERSAL GRAVITY OPERATED INTRUSION SENSING DEVICE

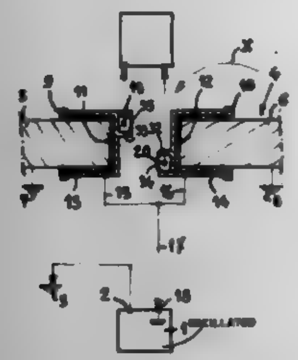
Arthur L. Plevy, 9 Yorktown Rd., East Brunswick, N.J. 08816

Filed May 8, 1980, Ser. No. 147,722
Int. Cl.³ G08B *13/08*
U.S. Cl. 340—545 10 Claims



1. A gravity operated intrusion sensing device comprising a mercury tilt switch having at least two modes of operation and a housing means to movably support said switch in a first position to produce a first operating mode and to enable said switch to move in accordance with an applied force from said first position and fall freely under the influence of gravity as constrained by said housing to a second position manifesting a reference plane indicative of tilting said switch to produce a second mode of operation.

4,326,197
PROXIMITY DETECTOR
Jean Evin, Pont a Marcq, France, assignor to Societe Logilift S.A.R.L., Lille, France
Filed Mar. 25, 1980, Ser. No. 133,670
Claims priority, application France, Mar. 28, 1979, 79 08410
Int. Cl.³ G08B *13/24, 13/22*
U.S. Cl. 340—561 **4 Claims**



1. Proximity detector for revealing the presence of a body at a certain distance from an element (5, 6) detecting the body comprising

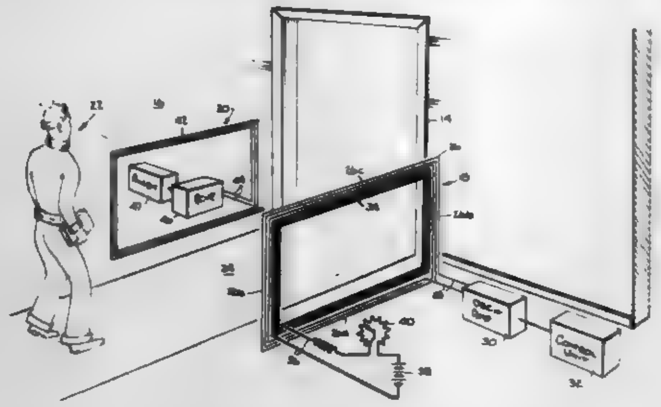
an oscillator (1) whose emission point (2) is connected to the ground (3) so as to transmit to the latter a signal of constant amplitude and frequency;

at least one monitoring antenna (19, 20) divided into several independent sections, mounted on the part (11, 12) of said element (5, 6) whose approaches are being monitored, but located outside of the direct radiation field of the elements coupled to ground which normally surround this part and act indirectly on said antenna sections;

a processing circuit for the voltages induced across each monitoring antenna section by the waves simultaneously reflected and radiated by the bodies normally surrounding the antenna as well as by any foreign body, said processing circuit functioning to emit a final signal whose intensity is modified by the existence of a foreign body in the proximity of said antenna, the antenna sections being connected to means (30, 31 and 36 to 39) in said processing circuit for sampling two distinct signals relating, one, to the "peak" value of the voltage induced across the section whose voltage is the highest and, the other, to the mean value of the voltage across the various sections, which sampling means is in turn connected to means (21, 22) of analyzing these two signals.

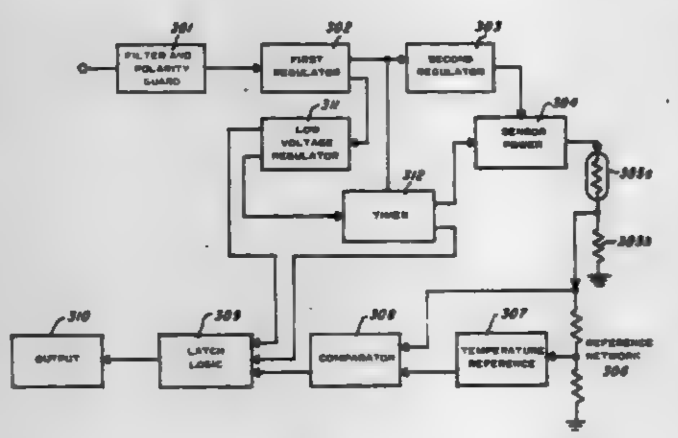
4,326,198
METHOD AND APPARATUS FOR THE PROMOTION OF SELECTED HARMONIC RESPONSE SIGNALS IN AN ARTICLE DETECTION SYSTEM
Eugene B. Novikoff, Woodbury, N.Y., assignor to Knogo Corporation, Hicksville, N.Y.
Filed Aug. 18, 1976, Ser. No. 715,568
Int. Cl.³ G01R *29/08;* G08B *21/00*
U.S. Cl. 340—572 **27 Claims**

1. Apparatus for detecting the presence of an article in an interrogation zone, said apparatus comprising a target formed of a strip of a saturable ferromagnetic material and adapted to be carried on said article, an enlarged, flat, planar interrogation antenna coil positioned adjacent to and extending along said interrogation zone, so that targets carried through said zone must pass through magnetic interrogation fields produced by said coil, electrical oscillator and drive means constructed and arranged to produce an interrogation signal at a first frequency, said interrogation antenna coil being electrically coupled to said electrical oscillator and drive means to produce a varying magnetic interrogation field at said first frequency throughout said interrogation zone, said varying magnetic field having a characteristic magnetic field pattern, magnetic bias means constructed and arranged to produce, throughout said interrogation zone a magnetic biasing field having a characteristic magnetic field pattern essentially the same as the characteristic magnetic field pattern of said varying magnetic interrogation field said magnetic bias means including a bias coil of substantially the same configuration as said interrogation antenna coil and positioned adjacent said interrogation antenna coil and means for supplying electrical current to said bias coil, said drive means, said interrogation antenna coil, and said



magnetic bias means further being arranged such that the net magnetic fields produced thereby are capable, at each location throughout said interrogation zone, of causing said target to produce target signals in the form of magnetic fields which vary at frequencies harmonically related to said first frequency and receiver means constructed and arranged to detect the presence, in said interrogation zone of said target signals.

4,326,199
AUTOREFERENCING LIQUID LEVEL SENSING APPARATUS AND METHOD
Roy W. Tarpley, Garland; Larry A. Rehn, Rowlett, and Paul H. Davis, Seagoville, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Filed Aug. 11, 1980, Ser. No. 176,836
Int. Cl.³ G08B *21/00*
U.S. Cl. 340—622 **6 Claims**



1. An autoreferencing liquid level sensing apparatus comprising:

a temperature sensitive resistance element including a silicon bulk resistor element having an impurity concentration level for causing said silicon bulk resistor element to exhibit a positive temperature coefficient of resistance within a predetermined temperature range and first and second electrodes in ohmic contact with said silicon bulk resistor, said temperature sensitive resistance element being disposed at a position whereat the presence of a liquid is to be determined;

a timing means for generating an enabling signal for a predetermined period of time;

an electric power source connected to said temperature sensitive resistance element and said timing means for applying a predetermined amount of electric power to said temperature sensitive resistance element via said first and second electrodes when said enabling signal is generated;

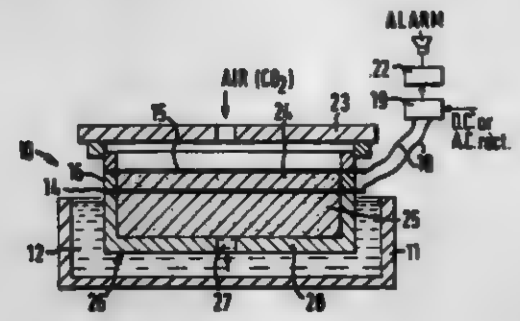
a resistance measuring means connected to said temperature sensitive resistance element for generating a temperature dependent signal corresponding to the electrical resistance of said temperature sensitive resistance element;

a temperature reference means connected to said timing means and said reference measuring means for generating a temperature reference signal having an initial value and a rate of change, each related to the temperature dependent signal at the beginning of said predetermined period of time;

a comparison means connected to said resistance measuring means and said temperature reference means for generating a comparison output signal whenever said temperature dependent signal and said temperature reference signal have a predetermined relationship; and

a latch means connected to said timing means and said comparison means for generating a latch output signal if said enabling signal and said comparison output signal are ever generated simultaneously.

4,326,200
GAS DETECTING AND MEASURING APPARATUS
John A. Bushman, London, England, assignor to Neotronics Limited, Bishops Stortford, England
Filed May 13, 1980, Ser. No. 149,525
Claims priority, application United Kingdom, May 18, 1979, 17350/79
Int. Cl.³ G08B *17/10;* G01N *27/46*
U.S. Cl. 340—632 **12 Claims**



1. Gas detecting apparatus containing no moving parts and comprising a reservoir for a liquid ionizable by dissolution therein of the gas to be detected, at least two spaced apart electrodes disposed at least adjacent the reservoir for electrical connection to an external circuit for measuring the variation in electrical resistance of said liquid between the electrodes, a wettable de-ionizing medium accessible to said gas from the ambient atmosphere and disposed in such proximity to at least one of the electrodes and to the reservoir that the said medium is wetted in use by said liquid and is effective to de-ionize said liquid between the electrodes.

4,326,201
APPARATUS FOR DISPLAYING CHARACTERS
Takatoshi Enokizono, Fussa, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan
Filed Apr. 25, 1980, Ser. No. 143,799
Claims priority, application Japan, Apr. 27, 1979, 54-51440
Int. Cl.³ G09G *1/16*
U.S. Cl. 340—717 **7 Claims**

1. An apparatus for displaying characters which divides a display screen of the raster scan type and provides display information to the respective divided sides by using a mirror reflection, comprising:

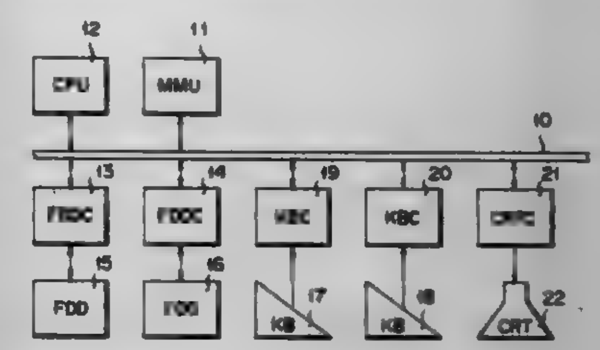
a programmable CRT controller;

a display unit for displaying dot data in a raster scan manner;

a refresh memory for storing coded data to be displayed in response to a refresh memory address obtained from the programmable CRT controller;

raster address converting circuit means which receives a raster address from the controller and converts the raster address to a converted raster address;

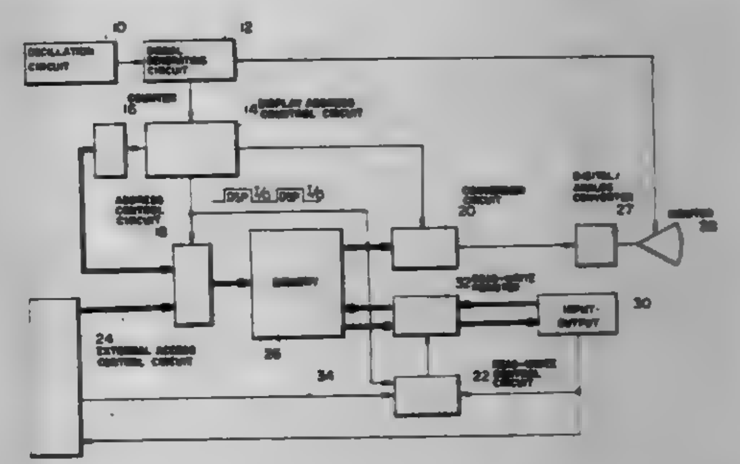
multiplexer means for selectively outputting the raster address from the controller and the converted raster address from the refresh memory address converting circuit means on the basis of control information contained in the refresh memory address;



a character generator for converting the coded data from the refresh memory into pattern data on the basis of raster address information from the multiplexer means; and

bidirectional shift register means which receives the pattern data from the character generator, determines a shift direction thereof on the basis of control information contained in the refresh memory address and produces serial dot data which is coupled to the display unit.

4,326,202
IMAGE MEMORY DEVICE
Masatsugu Kidode; Haruo Asada, and Mitsuo Tabata, all of Kawasaki, Japan, assignors to The President of the Agency of Industrial Science & Technology, Tokyo, Japan
Filed Mar. 24, 1980, Ser. No. 133,574
Claims priority, application Japan, Mar. 26, 1979, 54-34256
Int. Cl.³ G06F *3/14*
U.S. Cl. 340—799 **1 Claim**



1. In an image memory device comprising an image memory unit for storing two-dimensional data, a display device for raster display of the data stored in the image memory unit and an input-output device for reading and/or writing the data out of and/or into said image memory unit; the improvement in which the image memory unit is provided with an address control circuit which generates a display address switching signal based on a synchronous signal for operating said display device, an address switching control circuit is further provided in front of the image memory unit, which selects periodically a raster display address data and an address data from said input-output device based on said display address switching signal, and means whereby the data access takes place during the period of reading out the display data of said display address switching signal and then the accessed data is displayed

on the display device throughout the periods of transmitting the data between the image memory unit and the input-output device and of reading out the succeeding display data.

4,326,203

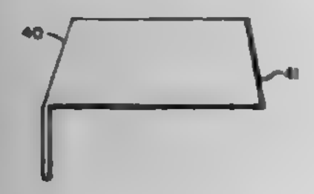
CORNER FED ELECTRIC NON RECTANGULAR MICROSTRIP DIPOLE ANTENNAS

Cyril M. Kaloi, Thousand Oaks, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation of Ser. No. 919,195, Jun. 26, 1978, Pat. No. 4,170,012, which is a division of Ser. No. 871,573, Jan. 23, 1978, Pat. No. 4,117,489, which is a continuation-in-part of Ser. No. 571,152, Apr. 24, 1975, abandoned. This application Sep. 26, 1979, Ser. No. 79,010

Int. Cl.³ H01Q *1/38*

U.S. Cl. 343—700 MS 10 Claims



1. A corner fed electric microstrip dipole antenna having low physical profile and conformal arraying capability, comprising:

a. a thin ground plane conductor;
b. a thin non-rectangular four-sided radiating element spaced from said ground plane;
c. said radiating element having two opposite sides parallel to one another and at least one of the remaining two sides at an oblique angle to the first mentioned two opposite parallel sides;
d. said radiating element being electrically separated from said ground plane by a dielectric substrate;
e. said radiating element having a feed point located at a single corner thereof;
f. the effective length of said radiating element determining the resonant frequency along the length of said antenna and the effective width determining the frequency along the width of said antenna;
g. the antenna bandwidth being variable with the effective width dimension of the radiating element and the spacing between said radiating element and said ground plane, said spacing between the radiating element and the ground plane having somewhat greater effect on the bandwidth than the element width; and
h. said oblique angle portion of said radiating element operating as a reactive load means for advancing or retarding one mode of current oscillation with respect to the other mode of current oscillation.

4,326,204

DENSITY CONTROL SYSTEM FOR JET DROP APPLICATOR

Tim Erin, Beavercreek, Ohio, assignor to The Mead Corporation, Dayton, Ohio

Filed Aug. 25, 1980, Ser. No. 180,555

Int. Cl.³ G01D *15/18*

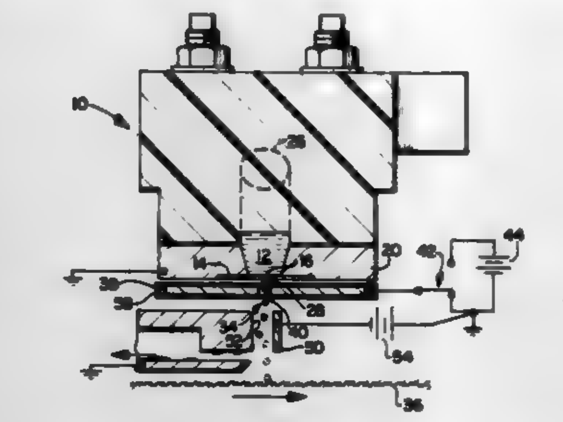
U.S. Cl. 346—75 5 Claims

5. A drop control system for jet drop coating apparatus, the said apparatus having a cyclic stimulation signal, a drop charging electrode, a coating region, means for moving a substrate material to be coated through the coating region, and means cooperating with the drop charging electrode providing for coating the substrate or inhibiting coating of the substrate, the said control system comprising:

means cooperating with the said moving substrate providing a signal responsive to the movement of said substrate material over a predetermined distance;

means cooperating with the said cyclic stimulation signal for providing a signal responsive to a manually selected predetermined number of cycles of the said cyclic stimulation signal; and

means responsive to the said signal responsive to the substrate movement and the said signal responsive to the selected number of cycles, cooperating with the said drop charging electrode, whereby the said coating apparatus coats the said substrate during the said selected number of cycles over a portion of the substrate movement of the predetermined distance and inhibits the coating of the substrate during the remainder of the predetermined distance.



4,326,205

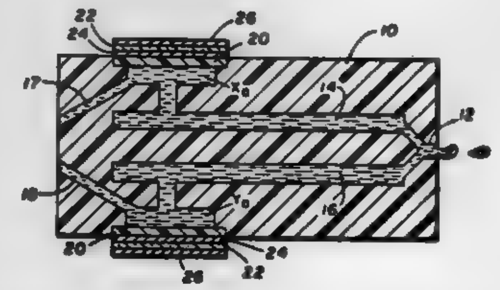
COINCIDENCE FLUID DISPLACEMENT AND VELOCITY EXPRESSION OF DROPLET

Kenneth H. Fischbeck, Dallas, and Marcus M. Schnarr, Lewisville, both of Tex., assignors to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 731,406, Oct. 12, 1976, abandoned. This application Jun. 11, 1979, Ser. No. 47,618

Int. Cl.³ G01D *15/18*

U.S. Cl. 346—140 R 11 Claims



1. In a multiple ink jet assembly comprising: at least two ink jets, each having a pressure channel with an outlet orifice at one end thereof; a first fluid chamber; first passage means communicating said first fluid chamber with the channel of one of said jets at a remote distance from the orifice thereof; a second fluid chamber; second passage means communicating said second fluid chamber with the channels of each of said jets at a remote distance from the orifice thereof; each said channel defining a predetermined fixed fluid path between the communication of said passage means therewith and its respective orifice; liquid in said first and second fluid chambers and each of said passage means and channels; means for independently decreasing the volume of each of said first and second fluid chambers and generating pressure pulses therefrom of an amplitude and duration that a pressure pulse generated by one chamber will result in inadequate fluid displacement and inadequate fluid velocity to express a droplet from any of said orifices, but the combined fluid displacement and fluid velocity, which is the result of the pressure pulse generated by said first chamber and the pressure pulse generated by said second chamber being coincident at the orifice of said one jet, will effect expression of a liquid droplet therefrom; and means for effecting coincidently at the orifice of said one jet the pressure pulse generated by said first chamber and the pressure pulse generated by said second chamber.

4,326,206

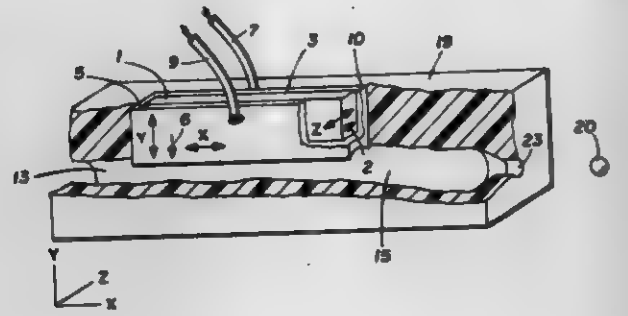
METHOD OF REDUCING CROSS TALK IN INK JET ARRAYS

Curt R. Raschke, Dallas, Tex., assignor to Xerox Corporation, Stamford, Conn.

Filed Jun. 30, 1980, Ser. No. 164,479

Int. Cl.³ G01D *15/18*

U.S. Cl. 346—140 R 2 Claims



1. A method of operating an array of pulsed droplet ejectors which comprises:

(a) determining the velocity of ink droplets ejected from a first selected ejector in the ejector array when said first ejector is operated alone at a first preset drive pulse width;
(b) determining the velocity of ink droplets ejected from said first selected ejector when at least one adjacent ejector is operated at the same time as said first ejector, said ejectors being driven by a drive pulse of the same width as said first preset drive pulse width;
(c) determining the difference in droplet velocities obtained from steps (a) and (b);
(d) selecting a drive pulse having a different pulse width than previously used in steps (a)–(c) and repeating steps (a)–(c) using said different pulse width;
(e) repeating steps (a)–(d) a sufficient number of times until a drive pulse width can be selected that provides acceptable image quality both when said first ejector is operated alone and when said first ejector is operated at the same time as adjacent ejectors; and
(f) operating an ejector array using a drive pulse having the drive pulse width selected in step (e).

4,326,207

PROGRAMMABLE SEQUENCE CONTROLLER

Hiroharu Suda, Yokohama; Keiji Hideshima, Fujisawa; Kazuyoshi Asada, Hitachi; Masaoki Takaki, Hitachi; Isao Yasuda, Hitachi, and Atsutaro Kamei, Katsuta, all of Japan, assignors to Hitachi, Ltd. and Nissan Motor Co., Ltd., both of Tokyo, Japan

Continuation of Ser. No. 906,986, May 17, 1978, abandoned. This application Apr. 14, 1980, Ser. No. 139,760

Claims priority, application Japan, Nov. 18, 1977, 52-137920

Int. Cl.³ G05B *19/12; G06F 9/06*

U.S. Cl. 364—900 7 Claims

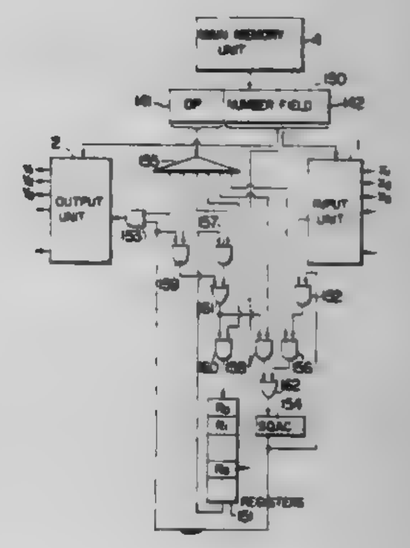
1. In a programmable sequence controller which is responsive to the states of a plurality of contacts for controlling one or more output elements, said sequence controller being programmable so as to simulate a circuit formed as a matrix consisting of contacts interconnected in rows, and columns forming branch points between rows of contacts, with said output elements being connected in selected rows of contacts, said matrix including a first voltage node at one marginal column, contacts or output elements between successive ones of said columns, and a second voltage node at the other marginal column, with branch points at selected crosspoints of the rows and the columns at which a signal passing from the first voltage node along the rows is branched along the corresponding column, said programmable sequence controller comprising:

input selection means for selectively providing on-off state signals indicating the operational state of selected contacts;

sequence program storage means for storing programmed sequence instructions which simulate said circuit formed as a matrix;

logical processing means connected to said input selection means and said sequence program storage means for generating an output control signal on the basis of said programmed sequence instructions and said on-off state signals, including

(1) second storage means for storing an on-off condition signal relating to the on-off condition of a crosspoint at the output of a contact including initially setting the stored value in accordance with the programmed sequence instructions,
(2) first logical operation means connected to said input selection means and said second storage means for producing said on-off condition signals by a first logical operation between the content of said second storage means and an on-off state signal from said input selection means and for storing the result of said first logical operation in said second storage means as the new content thereof in accordance with the execution of said programmed sequence instructions,



(3) a plurality of column flip-flops provided in one-to-one correspondence with each of said simulated matrix columns except for said marginal columns thereof for temporarily storing said on-off condition signals for those crosspoints at which there is a branch point in said simulated sequence circuit, and
(4) second logical operation means connected to said second storage means and said column flip-flops for producing said on-off condition signals by a second logical operation between the content of said second storage means and the on-off condition signal stored in a column flip-flop and for storing the result of said second logical operation in either said second storage means or said column flip-flops or both as new contents thereof in accordance with the execution of said programmed sequence instructions, and
(5) means for providing the result of the logical operation by said first or second logical operation means as said output control signal; and

output control means connected to said logical processing means for controlling a selected output element on the basis of said output control signal.

4,326,208

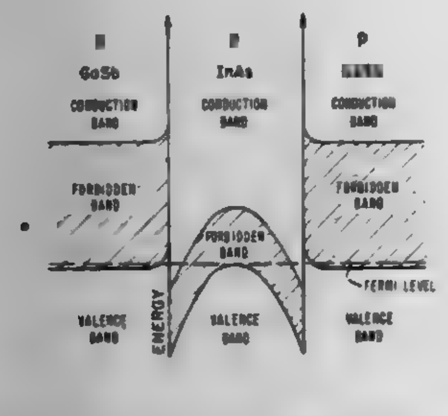
SEMICONDUCTOR INVERSION LAYER TRANSISTOR

Frank F. Fang, Yorktown Heights, and George A. Sai-Halasz, Mt. Kisco, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 26, 1980, Ser. No. 134,235

Int. Cl.³ H01L *29/161*

U.S. Cl. 357—16 **7 Claims**



1. A semiconductor transistor which is comprised of a semiconductor base which is disposed between and which forms respective junctions with a semiconductor emitter and a semiconductor collector, all of said base, emitter and collector being doped with one of donors or acceptors and said junctions having charge barriers associated therewith, at least the base-emitter charge barrier being assymmetrically conducting with respect to electrons and holes respectively, and said emitter and base being of respective semiconductor materials such that the Fermi level in the base is above the conduction band edge or below the valence band edge of said semiconductor material at the base-emitter junction but is in the forbidden band in the interior of the base, whereby an inversion layer is formed in the base at said base-emitter junction.

4,326,209

STATIC INDUCTION TRANSISTOR

Jun-ichi Nishizawa, Sendai, and Takashi Yoshida, Hamamatsu, both of Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

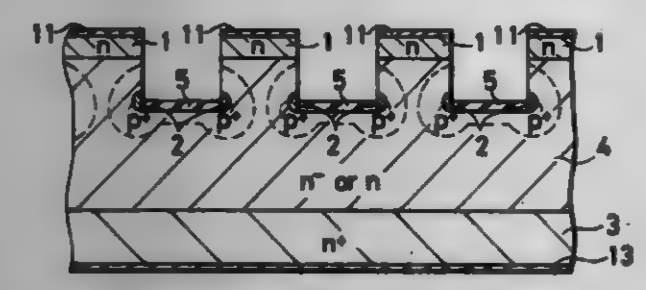
Continuation-in-part of Ser. No. 893,537, Apr. 4, 1978, Pat. No. 4,199,771. This application Oct. 19, 1979, Ser. No. 86,670

Claims priority, application Japan, Nov. 7, 1977, 52-41550

The portion of the term of this patent subsequent to Apr. 22, 1997, has been disclaimed.

Int. Cl.³ H01L *29/80*

U.S. Cl. 357—22 **19 Claims**



1. In a semiconductor device of the type comprising:

a first semiconductor region of a first conductivity type and having a first predetermined doping characteristic and first predetermined dimensions;

a second semiconductor region of a conductivity type not opposite to said first conductivity type and having a second predetermined doping characteristic and second predetermined dimensions;

a third conductive region of third predetermined dimensions;

said first and second semiconductor regions and said third conductive region being relatively disposed such that said first semiconductor region is adjacent said second semiconductor region and said second semiconductor region is adjacent said third conductive region to provide a current path through said first, second and third regions; and

gate means, responsive to a bias signal applied thereto, for producing, even at zero value of said bias signal, a depletion layer extending into said second semiconductor region to define a current channel in said second semiconductor region and at least nearly pinch off said current path at a point in said current channel,

said first predetermined doping characteristic and said first predetermined dimensions defining a resistance parameter R_{sr} with respect to the portion of said current path through said first region,

said second predetermined doping characteristic and second predetermined dimensions in conjunction with said gate means defining a resistance parameter R_{sc} with respect to the portion of said current path through said second semiconductor region between said first semiconductor region and the beginning of said current channel along said current path closest to said first semiconductor region and defining a resistance parameter R_c with respect to the portion of said current path through said second semiconductor region between said beginning of said current channel and said point in said current channel whereat said depletion layer at least nearly pinches off said current path,

said device exhibiting an apparent transconductance G_m' related to the true transconductance of said device as $G_m'=G_m/\{1+(R_{sr}+R_{sc}+R_c)G_m\}$,

the improvement wherein:

said first and second doping characteristics, said first and second dimensions are of values such that, over a substantial portion of the operational range of said device:

the product $R_c \cdot G_m$ is less than unity; and

the product $(R_{sr}+R_{sc}+R_c) \cdot G_m$ in greater than or equal to unity;

whereby said device exhibits a nearly linear current-voltage response.

4,326,210

LIGHT-RESPONSIVE FIELD EFFECT MODE SEMICONDUCTOR DEVICES

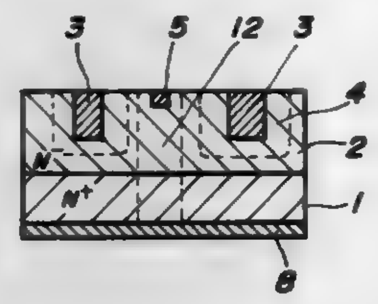
Akira Aso, Nara, and Hitoshi Kawanabe, Tenri, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 945,918, Sep. 26, 1978, abandoned. This application May 12, 1980, Ser. No. 149,258

Claims priority, application Japan, Sep. 26, 1977, 52-116209

Int. Cl.³ H01L *29/80*

U.S. Cl. 357—22 **6 Claims**



1. A radiant energy responsive field effect mode semi-conductor device comprising:

a semiconductor substrate;

a source region disposed in said substrate;

a drain region disposed on said substrate;

at least a pair of gate regions formed on said substrate between said source region and said drain region each of said pair of gate regions producing a juxtaposed depletion region between said pair of gate regions in said substrate in the absence of excitation, said depletion region pinching off the current between said drain regions;

said depletion regions contracting in response to application of radiant energy to said substrate to allow current to flow from said source region to drain region.

4,326,211

N+PP−PP−P+ AVALANCHE PHOTODIODE

Eugenius T. J. M. Smeets, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

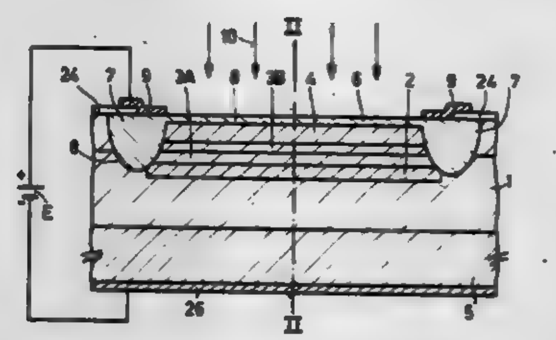
Continuation of Ser. No. 935,026, Aug. 18, 1978, abandoned.

This application Aug. 20, 1980, Ser. No. 179,865

Claims priority, application Netherlands, Sep. 1, 1977, 7709618

Int. Cl.³ H01L *21/265, 31/10*

U.S. Cl. 357—30 **11 Claims**



1. A radiation-sensitive semiconductor device having a radiation-detecting avalanche diode comprising a semiconductor layer structure having a plurality of layers of a first type conductivity located between two contact layers and a window through which incident radiation can pass to be incident on said layer structure, said layer structure comprising successively at least:

a first, lightly-doped semiconductor layer of substantially homogeneous doping;

a second semiconductor layer having a doping concentration which is higher than that of the first layer;

a third semiconductor layer having a lower doping concentration than that of said second layer; and

a fourth semiconductor layer having a higher doping concentration than that of the third layer, said fourth layer serving to improve the noise factor of said radiation-detecting avalanche diode, a first contact layer being located on the lowermost side of said layer structure and forming a nonrectifying junction with said first semiconductor layer, and a second contact layer being located on the uppermost side of said layer structure and forming a rectifying junction with the uppermost semiconductor layer of said layer structure, said fourth semiconductor layer being located between said third semiconductor layer and said second contact layer.

4,326,212

STRUCTURE AND PROCESS FOR OPTIMIZING THE CHARACTERISTICS OF I²L DEVICES

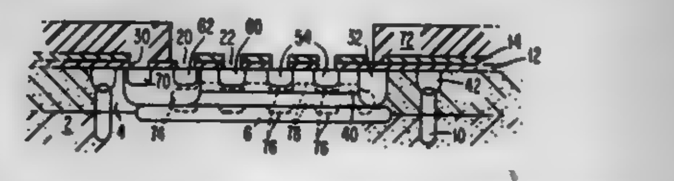
David L. Bergeron, Manassas; Zimri C. Putney, Fairfax, and Geoffrey B. Stephens, Catlett, all of Va., assignors to IBM Corporation, Armonk, N.Y.

Continuation of Ser. No. 855,869, Nov. 30, 1977, abandoned.

This application Aug. 27, 1979, Ser. No. 69,645

Int. Cl.³ H01L *27/04*; H03K *19/081*

U.S. Cl. 357—46 **2 Claims**



1. In an integrated injection logic circuit cell containing a lateral PNP transistor and a vertical NPN transistor, embodied as a buried N-type subemitter region formed between a semiconductor substrate and an N-type silicon epitaxial layer, said subemitter region extending horizontally with a first end and a second end and having an upper surface at a first depth from the upper surface of said epitaxial layer, an N-type base region formed in said epitaxial layer over said first end of said subemitter and extending vertically from said upper surface of said epitaxial layer to contact said subemitter said N-type base being contiguous to a P-type emitter, a P-type base region formed in said upper surface of said epitaxial layer over said subemitter, having a first end overlapping said N-type base region, a second end extending horizontally toward said second end of said subemitter, and a lower surface at a second depth from said upper surface of said epitaxial layer, said second depth being less than said first depth, said P-type base region serving as the base of said NPN transistor and the collector of said PNP transistor, an insulating layer on the upper surface of said epitaxial layer having a horizontal contour with first and second windows therethrough mutually spaced from each other and located over said P-type base region between said N-type base region and said second end of said P-type base region, said first window serving as an electrical contact for said P-type base region, an N-type collector region formed in said P-type base region beneath and aligned with said second window and having a lower surface at a third depth from said upper surface of said epitaxial layer, said third depth being less than said second depth, the portion of said P-type base region beneath and aligned with said N-type collector region defining an intrinsic base region and other portions of said P-type base region being an extrinsic base region;

the improvement comprising:

an ion-implanted P-type region extending horizontally from said N-type base region toward said second end of said P-type base region, with the vertical profile of its dopant concentration contour having a peak which is vertically displaced from said contour of said insulating layer, said peak being located substantially at said first depth beneath and aligned with said N-type collector region to form a concentration gradient induced electric field in said intrinsic base region which aids the upward injection of electrons from said subemitter to said N-type collector, said peak being located substantially midway between said first depth and said second depth beneath portions of said P-type base region covered by said insulating layer to form a concentration gradient induced electric field in said extrinsic base region which retards the upward injection of electrons from said subemitter to said P-type base region, said dopant concentration contour compensating said N-type conductivity of said epitaxial layer beneath said P-type base region beneath said first window and said N-type base region to form a relatively large collector area for said PNP transistor to provide increased PNP collector efficiency and current gain.

4,326,213

SEMICONDUCTOR DEVICE AND PROCESS FOR PRODUCING THE SAME

Kazunari Shirai, and Izumi Tanaka, both of Yokohama, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Nov. 29, 1978, Ser. No. 964,514

Int. Cl.³ H01L *27/02*

U.S. Cl. 357—51 **7 Claims**

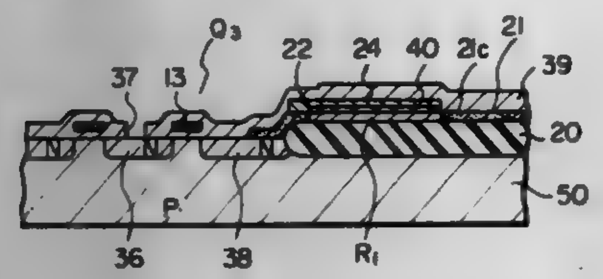
1. An integrated semiconductor circuit device comprising:

a semiconductor substrate having impurity regions for at least one active element including a respective insulated gate on said substrate;

a field insulating film selectively covering the surface of said semiconductor substrate to at least partly define each said active element;

a first polycrystalline semiconductor material layer selectively covering said field insulating film and having a shape and impurity level in respective portions to form at least one resistor element extending in a respective prede-

termined direction with a conductor portion at each end of each said resistor element;
a further insulating film covering each said resistor element; and
a second polycrystalline semiconductor material layer having a respective portion completely covering said second insulating film over each said resistor element and in electrical contact with the conductor portion at a first end of each resistor element, each said portion of the second



polycrystalline material layer that covers over a respective resistor element providing a conductor pattern from said first end of each said resistor element selectively to said at least one active element of said device, and each said portion of said second polycrystalline layer covering a respective resistor element terminating at the other end of the respective resistor element, and said second polycrystalline material layer further comprising the gate electrode of said respective gate of each said active element.

4,326,214

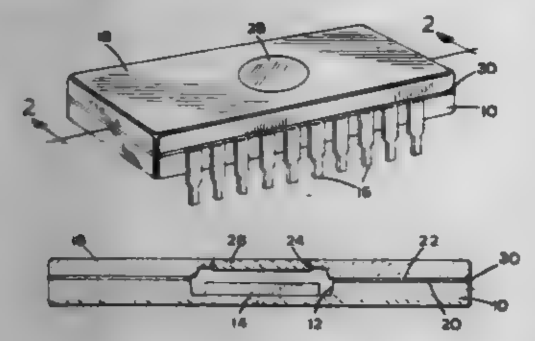
THERMAL SHOCK RESISTANT PACKAGE HAVING AN ULTRAVIOLET LIGHT TRANSMITTING WINDOW FOR A SEMICONDUCTOR CHIP

Richard K. Trueblood, San Jose, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Continuation-in-part of Ser. No. 737,520, Nov. 1, 1976, abandoned. This application Apr. 24, 1978, Ser. No. 899,540

Int. Cl.³ H01L *23/02, 23/12, 39/02*

U.S. Cl. 357—74 11 Claims



1. A hermetically sealed thermal shock resistant ultraviolet responsive semiconductor device comprising:
a ceramic base member,
an ultraviolet responsive chip mounted on said ceramic base member,
a ceramic cap constructed of the same material as said base member and having an aperture therethrough,
an ultraviolet transmitting window consisting of a sheet of ultraviolet transmitting material having a coefficient of thermal expansion that is compatible with that of the cap sealingly mounted on and bonded directly to said ceramic cap member covering and hermetically sealing said aperture, and
said ceramic base and cap members hermetically sealed together so that said window is disposed over said chip.

4,326,215

ENCAPSULATED SEMICONDUCTOR DEVICE WITH A METALLIC BASE PLATE

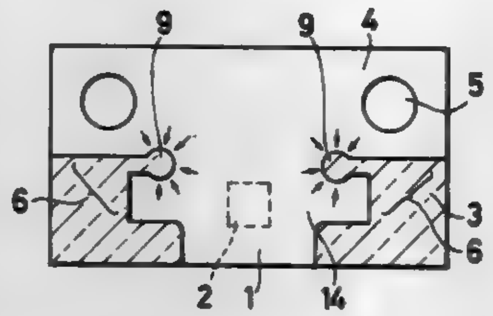
Hiromichi Suzuki, Tokyo, and Susumu Okikawa, Ohme, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 21, 1979, Ser. No. 96,387

Claims priority, application Japan, Feb. 23, 1979, 54-19830

Int. Cl.³ H01L *23/02, 23/28, 23/48*

U.S. Cl. 357—81 7 Claims



1. A resin-molded semiconductor device comprising:
a metallic base plate which includes a first sheet portion having a first pair of opposing sides, said sides defining a width of said first sheet portion, and a second sheet portion extending from another side of said first sheet portion which is located in a direction which crosses said first pair of sides of said first sheet portion, said second sheet portion having a second pair of opposing sides extending in the same direction as that of said first pair of opposing sides, the width of said second portion defined by said second pair of opposing sides being less than the corresponding width of said first sheet portion, said second sheet portion adjoining in a middle part of said another side so as to be line-symmetric with respect to a straight line to said another side;
a pair of arcuate recess portions respectively provided in said first and second sheet portions in an area where said another side and the respective second sides intersect each other;
a semiconductor element fixed to said second sheet portion;
a plastic package which covers said semiconductor element and said second sheet portion, but which does not cover said first sheet portion; and
mounting means provided in said first sheet portion for mounting said first sheet portion on an external heat sink.

4,326,216

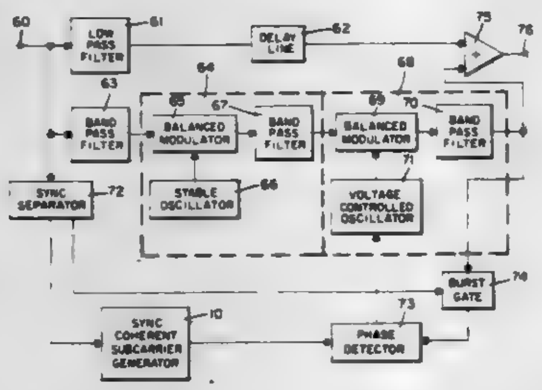
SYNCHRONOUS COLOR CONVERSION SYSTEM

Peter W. Jensen, Fremont, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed Jun. 28, 1974, Ser. No. 484,184

Int. Cl.³ H04N *9/491*

U.S. Cl. 358—8 11 Claims



1. A system for processing a composite color television signal having vertical field, horizontal line, and color burst synchronizing components and incoherent luminance and chrominance components, said luminance component being coherent with said horizontal line synchronizing component, said chrominance component being coherent with said color burst synchronizing component, and said components being at nominal transmission frequency bands, comprising:
(a) means coupled to receive said composite signal and separate said chrominance and luminance components;
(b) means responsive to said horizontal line synchronizing component to generate a first reference signal coherent with said luminance component;
(c) means for generating a second reference signal at a known nominal frequency;
(d) means responsive to the color burst synchronizing component and one of said first and second reference signals for providing a phase corrected reference signal, the other of said first and second reference signals being a phase uncorrected reference signal;
(e) decoding means coupled to receive said separated chrominance component for frequency decomposing it in response to and with respect to the phase of a decoding reference signal;
(f) encoding means coupled to receive said frequency decomposed chrominance component for reconstituting the chrominance component at said nominal transmission frequency in response to and with respect to the phase of an encoding reference signal; and
(g) one of said phase corrected and said phase uncorrected reference signals coupled to the decoding means as the decoding reference signal and the other signal coupled to the encoding means as the encoding reference signal.

4,326,217

REVERSED IMAGE SENSING APPARATUS

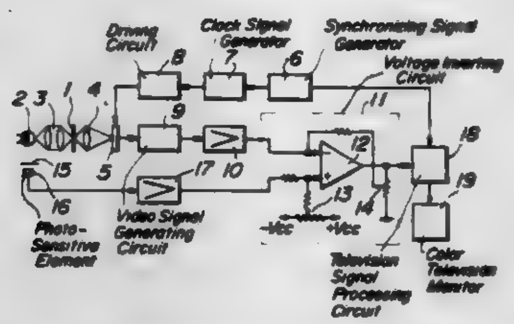
Teruo Iwasawa, Mitaka; Masafumi Yamazaki, Okaya; Kosaku Tsuboshima, Hachioji; Shuichi Takayama, Hachioji, and Yoshio Nakajima, Hachioji, all of Japan, assignors to Olympus Optical Co. Limited, Japan

Filed Oct. 22, 1979, Ser. No. 87,233

Claims priority, application Japan, Nov. 2, 1978, 53-134427

Int. Cl.³ G03F *3/10;* H04N *1/40, 1/028, 3/36*

U.S. Cl. 358—76 6 Claims



1. In a reversed image sensing apparatus comprising a light source for illuminating a record medium having recorded thereon picture images to be sensed, an image sensor formed of at least one array of charge coupled devices and a driving circuit for driving the array of charge coupled devices in accordance with clock pulses and synchronizing signals to derive a discrete pulse-like signal, a video signal generating circuit for converting the discrete pulse-like signal into a continuous video signal having an appropriate level and a differential amplifier having a first input for receiving the video signal and a second input for receiving a reference voltage generated by a reference voltage generator to produce an inverted video signal with respect to a reference level defined by said reference voltage, the improvement comprising: providing said reference voltage with a photosensitive element for receiving light emitted from said light source to produce a correction signal corresponding to the intensity variation of said light, and a controlling circuit for automatically adjusting the reference voltage in accordance with the correction signal.

4,326,218

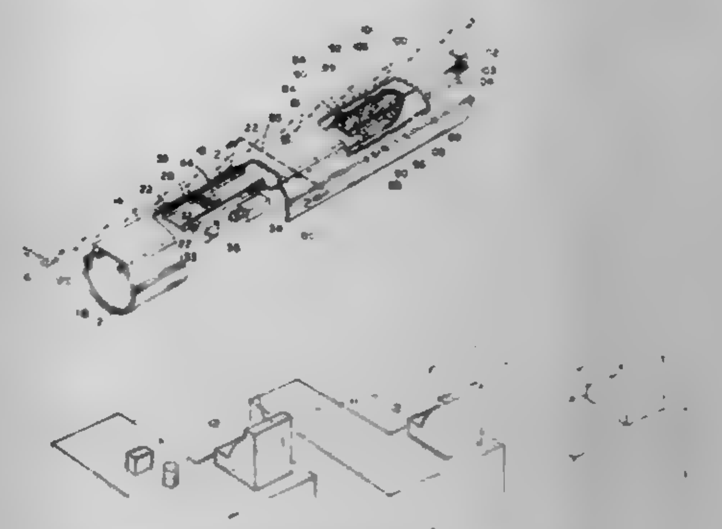
SURVEILLANCE SYSTEM

John M. Coutta, 450 Superior Ave., Decatur, Ga. 30030, and Paul A. VanDusen, 2725 Evans Mill Rd., Lithonia, Ga. 30085

Filed Nov. 14, 1980, Ser. No. 206,705

Int. Cl.³ H04M *7/18*

U.S. Cl. 358—108 9 Claims



1. A surveillance system comprising:
an elongated track positioned along a path;
a carriage adapted to be supported on and be movable along said track;
electromotive means coupled to said carriage for selectively moving said carriage along said track;
a television camera;
mounting means for pivotally supporting said camera on said carriage about an axis lying along and central to said track, and wherein the direction of view of said camera generally lies along said axis;
pivot drive means interconnected to said mounting means, and responsive to an input signal for rotating said mounting member about said axis;
a mirror supported by said mounting means and angularly positionable in a range between the position wherein its reflective surface is normal to the axis of view of said camera and a position where a reflective surface is parallel with said axis, and said mirror being positionable to intercept the view of said camera and enable viewing of a region generally to one side of said axis;
display means electrically coupled to said camera for displaying the output of said camera; and
operating means comprising:
carriage control means electrically coupled to said electromotive means for selectively positioning said carriage, and thereby said camera, along said track, and
control means for selectively providing electrical signals to said pivot drive means for effecting the tilting of said mounting means and thereby the tilting of the field of view of said camera as seen through said mirror.

4,326,219

DIGITAL ERROR MEASURING CIRCUIT FOR SHADING AND REGISTRATION ERRORS IN TELEVISION CAMERAS

Karl H. Griesshaber, San Jose, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed Apr. 11, 1980, Ser. No. 139,604

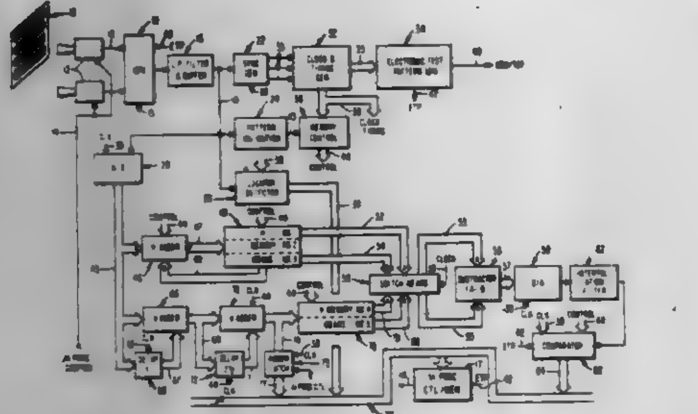
Int. Cl.³ H04N *9/62*

U.S. Cl. 358—163 18 Claims

1. A circuit for measuring H and V spatial and shading errors existing between a video test signal generated by a pickup tube of a television camera head and an electronic test pattern signal of perfect geometry, comprising the combination of;
means for receiving the video test pattern signal and for digitizing therefrom digital data A and data B correspond-

ing to summations of selected digital samples of the video test signal which contain shading error effects;

memory means coupled to the means for receiving and digitizing for selectively storing the digital data A and data B;



means coupled to the memory means for selectively subtracting data A and data B to provide digital difference data without the shading error effects; and

means coupled to the means for subtracting and to the electronic test pattern signal for comparing the digital difference data with the electronic test pattern signal to provide the spatial error information.

4,326,220

TELEVISION RECEIVER

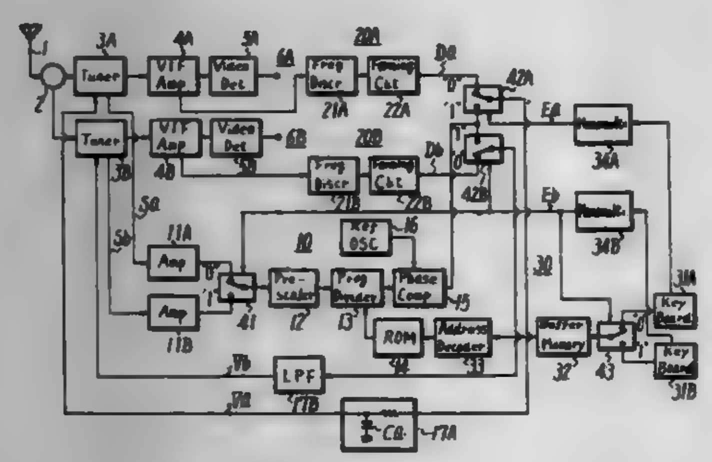
Takao Mogi, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Sep. 2, 1980, Ser. No. 183,587

Claims priority, application Japan, Sep. 5, 1979, 54-113992

Int. Cl.³ H04N *5/44*

U.S. Cl. 358—191.1 18 Claims



1. A television receiver comprising:

at least two signal receiving means, each corresponding to a respective channel and each including tuner means for selecting said respective channel in response to a tuning control signal;

storage means for storing each of said tuning control signals and for supplying said tuning control signals to said respective tuning means; and

feedback means common to each of said at least two receiving means and adapted to be selectively operative with one of said at least two signal receiving means for producing the tuning control signal for the signal receiving means with which it is operative and supplying said respective tuning control signal to said storage means.

4,326,221

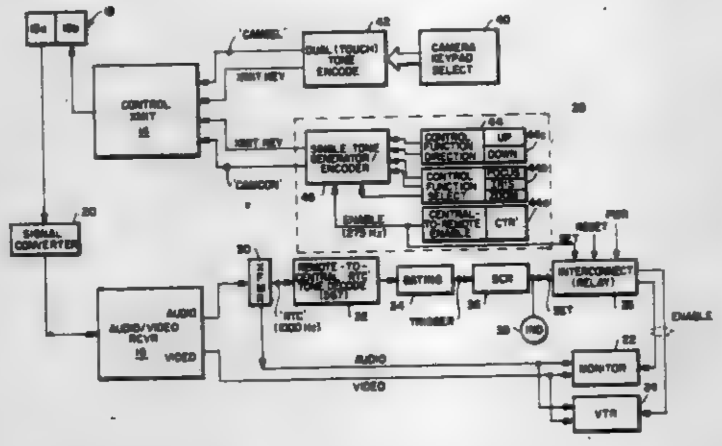
CENTRAL/REMOTE TELEVISION MONITORING SYSTEM

Gene G. Mallos, 12½ S. Main, and Lowell T. Bartholomew, 920 S. Jefferson, both of Webb City, Mo. 64870

Filed Sep. 30, 1980, Ser. No. 192,169

Int. Cl.³ H04N *5/24, 7/10*

U.S. Cl. 358—210 10 Claims



1. A central/remote television monitoring system for controlling a plurality of television cameras located at a remote station, said system comprising:

a central control and monitoring station having a transmitter for transmitting control signals from the central station to the remote station and a receiver for receiving audio/video information transmitted to the central station from the remote station;

first selection and encoding means at said central station for generating coded selection signals for selecting a one of n television cameras at the remote station;

second selection and encoding means at said central station for generating encoded control signals for controlling the operation of the selected television camera, the control signals generated by said second selection and encoding means including an enable signal for enabling said remote station;

said first and said second selection and encoding means connected to said central station transmitter for transmitting the encoded selection and control signals to said remote station;

utilizing means at said central station connected to an output of said audio/video information receiver for utilizing the audio/video output signals therefrom;

decoder means at said central station connected to the output of said information receiver for decoding an encoded enable signal provided at the output thereof;

central station switching means coupled to said utilizing means for enabling said utilizing means in response to an enable signal said switch means coupled to said second selection and encoding means and said decoding means so that an enable signal provided from either said second selection and encoding means or from said decoder means will enable said switch means to enable said utilizing means;

a remote station having a plurality of television monitoring cameras connected thereto, a control signal receiver for receiving the encoded control signals transmitted from the central station transmitter, and an audio/video transmitter for transmitting audio/video information from at least one of said n cameras to said audio/video receiver at said central station;

first decoder means connected to said receiver at said remote station for decoding the encoded control signals transmitted from said central station for selecting a one of said n cameras;

second decoder means connected to said receiver at said remote station for decoding the encoded control signals transmitted from said central station for effecting control over the selected one of said n cameras and the encoded enable signal transmitted from said central station;

remote station switching means connected to said first and second decoders and said audio/video transmitter for connecting the selected one of said n cameras to said audio/video transmitter in response to the decoded enable signal transmitted from said central station; and

an enable signal encoding means coupled to the input of said audio/video transmitter and said remote station switching means for transmitting an enable signal to said central station to enable same and to enable said remote station switching means.

4,326,222

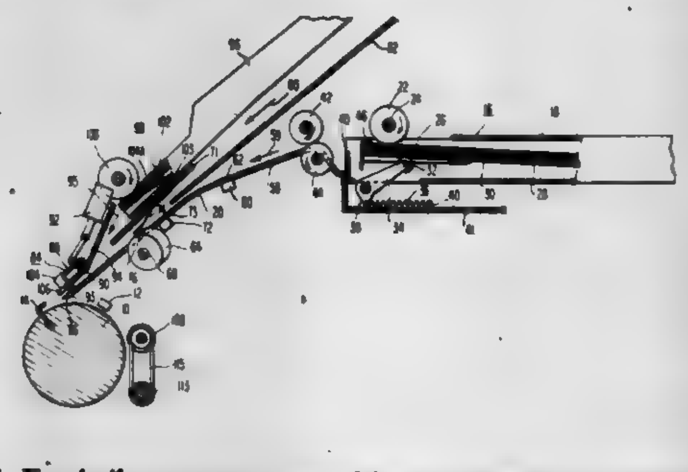
METHOD OF AND APPARATUS FOR FACSIMILE SHEET FEEDING

John L. Connin; G. William Hartman, Jr., both of Longwood, and Ronald F. Schley, Ocoee, all of Fla., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Feb. 11, 1980, Ser. No. 120,339

Int. Cl.³ H04N *1/08*

U.S. Cl. 358—292 19 Claims



1. Facsimile apparatus comprising scanning means adapted to scan a sheet and improved sheet transport means comprising:

sheet storage means adapted to store a plurality of sheets;

a transport path from said sheet storage means to said scanning means;

rear feed means for moving sheets along said path;

forward feed means for moving sheets longitudinally along and laterally with respect to said path;

sensor means for sensing the position of said sheets at an intermediate position along said transport path; and

means coupled to said sensor means for disengaging said rear feed means while said forward feed means engage said sheets.

4,326,223

VIDEO SIGNAL RECORDING AND/OR REPRODUCING APPARATUS WITH GAIN CONTROL

Kazuo Yamagiwa, Tokyo, and Yukihiko Machida, Kawasaki, both of Japan, assignors to Sony Corporation, Tokyo, Japan

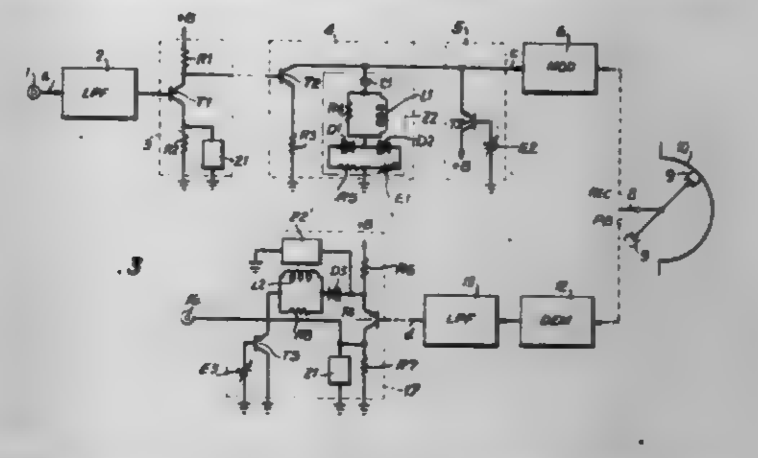
Filed Apr. 30, 1979, Ser. No. 34,749

Claims priority, application Japan, May 2, 1978, 53-53108

Int. Cl.³ H04N *5/79*

U.S. Cl. 360—33 26 Claims

1. Apparatus having a section for reproducing an information signal from a recording medium on which said signal has been recorded with portions of said information signal greater than a predetermined level having been clipped, said section comprising a restoring circuit for restoring the clipped portion of the reproduced information signal including a gain control element having a variable gain, and compensating means DC coupled to said gain control element to cause the latter to have a first gain when said reproduced information signal is below said predetermined level and to have a second, higher gain for



each said portion of said reproduced information signal when the latter reaches said predetermined level.

4,326,224

AUTOMATIC SIGNAL COMPENSATION RECORDING AND REPRODUCING APPARATUS

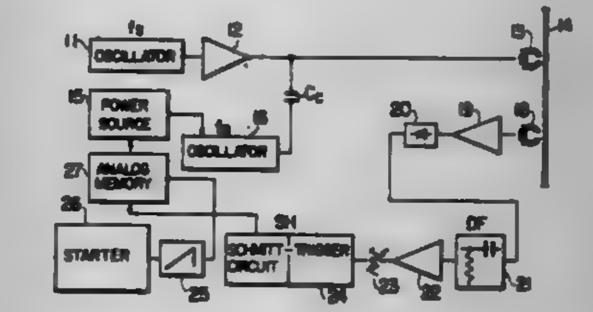
Takuyo Kogure, Neyagawa, and Hidemasa Kitagawa, Toyonaka, both of Japan, assignors to Matsushita Electric Industrial Co. Ltd., Osaka, Japan

Division of Ser. No. 956,366, Oct. 31, 1978. This application Apr. 30, 1980, Ser. No. 145,359

Claims priority, application Japan, Aug. 15, 1977, 52-109201[U]; Apr. 20, 1978, 53-47343

Int. Cl.³ G11B *5/45, 5/02*

U.S. Cl. 360—65 4 Claims



1. A magnetic recording and reproducing apparatus including a recording characteristic adjusting device comprising:

means for generating a square wave signal;

amplifier means having a gain versus frequency characteristic wherein a gain of said amplifier means varies with the frequency of an input signal applied thereto, said amplifier including means for adjusting said gain versus frequency characteristic;

means for recording said square wave signal on a magnetic recording medium;

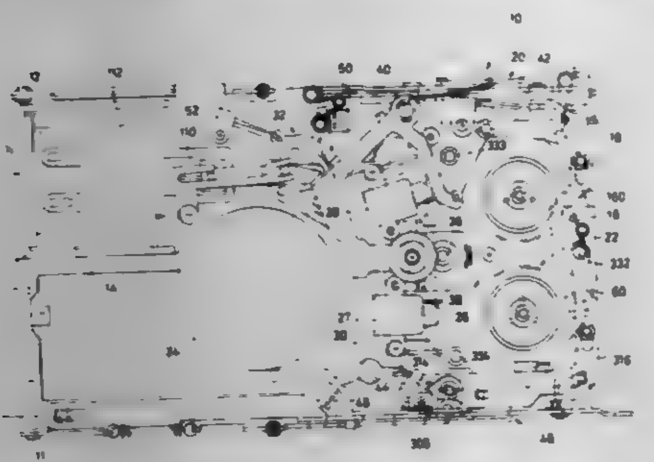
means for reproducing said recorded square signal from said magnetic recording medium;

means for extracting first and second frequency signal components from said reproduced square wave signal, said extracted signal components including at least one higher harmonic component from said reproduced square wave signal;

means for comparing said extracted signal components; and,

means for controlling said adjusting means to adjust said gain versus frequency characteristic in a frequency region around said higher harmonic component in response to the output of said comparing means.

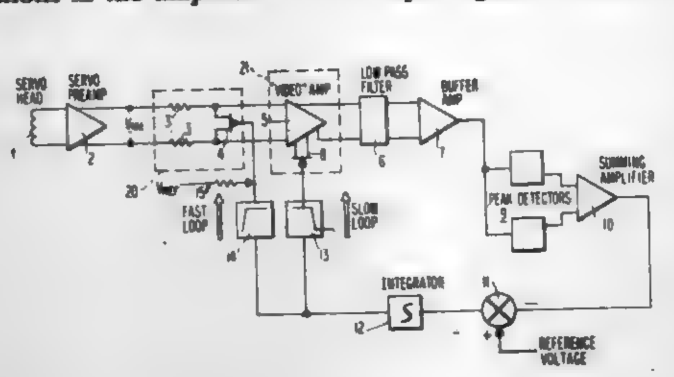
4,326,225
AUTOMATIC REVERSE CASSETTE TAPE RECORDER
Akira Osanai, Hachiouji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan
Filed Mar. 10, 1980, Ser. No. 128,488
Claims priority, application Japan, Mar. 22, 1979, 54-33698
Int. Cl.³ G11B *15/44, 21/08*
U.S. Cl. 360—74.1 8 Claims



8. An automatic reverse cassette tape recorder which comprises:
a chassis;
operation control members including a recording mode-setting member;
a pair of magnetic heads;
a rotatable magnetic head-supporting board which supports said pair of magnetic heads spaced from each other;
means for rotatably mounting said head-supporting board to said chassis so that said head-supporting board is rotatable about a rotation center which is disposed between said magnetic heads;
means for detecting the terminal end of a tape;
means responsive to at least one of said end of tape detecting means and said operation control members for causing rotation of said head-supporting board to bring one of the paired magnetic heads to a projected position suitable for contact with a tape; and
cassette ejecting means coupled to said head-supporting board to eject a cassette and to rotate said head-supporting board about said rotation center to cause a prescribed magnetic head to be brought to said projected position only when prescribed one of the paired magnetic heads is not in said projected position for contact with the tape, thereby always causing said prescribed magnetic head to be projected to a position suitable for contact with the tape when a cassette is ejected by said ejecting means.

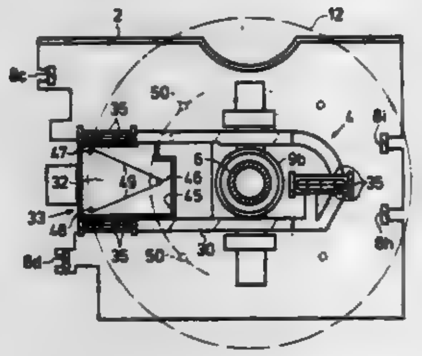
4,326,226
CONSTANT BANDWIDTH AUTOMATIC GAIN CONTROL
James J. Touchton, Boulder, and Richard J. Pederson, Louisville, both of Colo., assignors to Storage Technology Corporation, Louisville, Colo.
Filed May 8, 1980, Ser. No. 147,724
Int. Cl.³ G11B *21/10, 5/02*
U.S. Cl. 360—77 10 Claims

1. In apparatus for the control of the position of a recording head with respect to a magnetic data storage media, said position being controlled by drive means, said drive means being controlled by a servo system, said servo system receiving signals from one of said magnetic disks and comprising an automatic gain control circuit for control of amplification applied to said servo data, the improvement which comprises said automatic gain control circuit comprising first and second gain control loops, each of said loops comprising a variable gain element, one of said variable gain elements responding to substantially slower variations in the amplitude of said servo signals and one of said loops responding to substantially faster variations in the amplitude of said input signal, whereby the



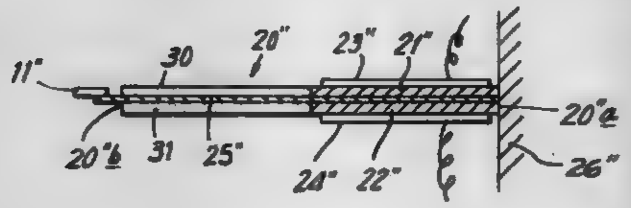
automatic gain control circuit of said servo loop is of substantially constant bandwidth.

4,326,227
APPARATUS FOR RECORDING AND READING DATA FROM A MAGNETIC PLATE
Peter Schlüter, Landau, Fed. Rep. of Germany, assignor to Schlüter Electronic GmbH, Landau, Fed. Rep. of Germany
Filed Feb. 14, 1980, Ser. No. 121,640
Claims priority, application Fed. Rep. of Germany, Feb. 15, 1979, 2905836
Int. Cl.³ G11B *5/56*
U.S. Cl. 360—99 7 Claims



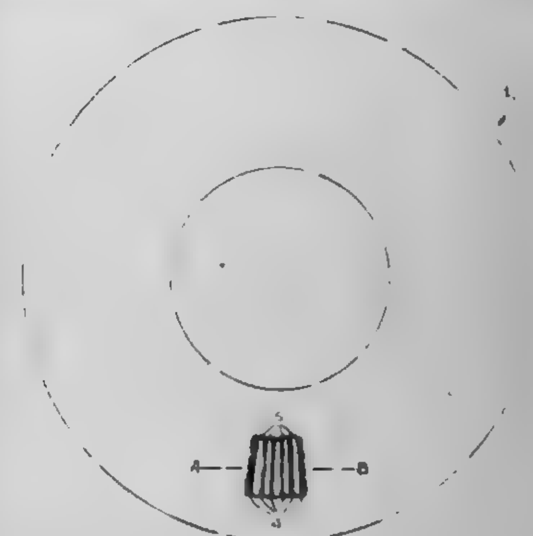
1. An apparatus for recording and reading-out data from a circular, foil-like magnetic plate, which is movably arranged in an interchangeable cassette having slot-like openings on both sides, and has a centrally arranged perforation, said apparatus comprising in combination:
a first drive shaft on which said perforation of said magnetic plate is capable of being coupled in such a way as to bring about rotation of said magnetic plate;
a first linear motor for driving said first drive shaft of said magnetic plate;
a second drive shaft;
a second linear motor for driving said second drive shaft;
a screw spindle in the form of a track spring operatively connected with said second drive shaft;
a recording-reading head carriage of synthetic material movably supported along said track spring;
a recording-reading head held by said recording-reading head carriage;
a feeler pin mounted on a carrier plate for engaging said track spring and advancing said recording-reading head carriage and said recording-reading head therealong radially of said magnetic plate;
means mountable on said recording-reading head carriage for pressing said recording-reading head through said slot-like openings of said cassette against said magnetic tape for adjusting said recording-reading head to predetermined information tracks of said magnetic tape; and
a measuring device which operates in conjunction with a control electronic circuit for controlling the rotations of said first linear motor for turning said magnetic plate, and the rotations of said second linear motor for moving said recording-reading head carriage, said measuring device including: a measuring wire tensioned in an acute angle and arranged on said recording-reading head carriage in a plane parallel to the turning plane of said first linear motor, the bisection of the angle of said measuring wire coinciding with the direction of movement of said recording-reading head carriage, the ends of the legs of said angle-forming measuring wire being connected with said control electronic system; and at least one magnetic pin operatively arranged on said first linear motor, said measuring wire electromagnetically cooperating with said at least one magnetic pin in such a way that the latter is capable of being passed close to said measuring wire transverse to the bisection of the angle of said measuring wire during rotation of said first linear motor for generating a voltage impulse during every passage over a leg of said measuring wire, the time interval between the passage of said at least one magnetic pin over the first leg of said measuring wire, and passage over the second leg of said measuring wire being capable of being measured in said control electronic system, with the resulting value being used as a basis for the desired control of the movements of said magnetic plate and said recording-reading head carriage of synthetic material by an exact access of said recording-reading head for every suitable location of the magnetic plate directly to measure exact adjustment of said recording-reading head with greatest possible accuracy without adjustment of the device regardless of finishing and age tolerances of said recording-reading head carriage of synthetic material.

4,326,228
MAGNETIC TRANSDUCER SUPPORTING APPARATUS
Hitoshi Sakamoto, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Feb. 29, 1980, Ser. No. 126,019
Claims priority, application Japan, Mar. 9, 1979, 54-27541
Int. Cl.³ G11B *21/18, 21/24*
U.S. Cl. 360—109 23 Claims



1. A head assembly comprising
a cantilevered support member having a first portion at which said support member is adapted to be mounted,
magnetic transducer means secured to said support member at a free end portion of the latter remote from said first portion,
at least a part of said support member extending from said first portion toward said free end portion being electrostrictive, and
conductive layers on at least a portion of said electrostrictive part of the support member for causing flexing thereof in response to application of a drive signal to said conductive layers, said electrostrictive part having said conductive layers thereon for a distance from said first portion which is only a fraction of the distance between said first and free end portions so as to exclude said free end portion from flexing in response to said drive signal.

4,326,229
MAGNETIC RECORD MEMBER AND PROCESS FOR MANUFACTURING THE SAME
Masahiro Yanagisawa, Tokyo, Japan, assignor to Nippon Electric Co. Ltd., Tokyo, Japan
Filed Dec. 12, 1979, Ser. No. 102,731
Claims priority, application Japan, Dec. 19, 1978, 53-160842
Int. Cl.³ G11B *5/82*
U.S. Cl. 360—135 10 Claims



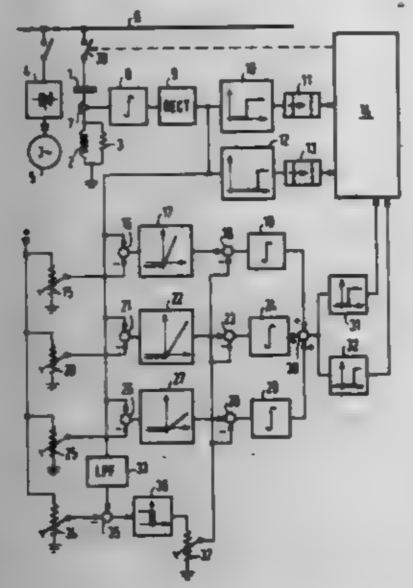
1. A magnetic record member comprising:
a disk-shaped recording medium base having a specular magnetic recording medium surface; and
a protective film formed on said base and having a surface roughness of 0.02 to 0.05 microns with sinusoidal jogs which are distributed at a pitch of 10 to 200 microns and extend radially between the inner and outer circumferences of said base.
2. A magnetic record member as defined in claim 1, wherein said base comprises an aluminum alloy disk, a nickel-phosphorous alloy layer formed thereon, and a cobalt-nickel-phosphorous alloy layer formed on said nickel-phosphorous alloy layer and serving as a recording medium.
10. In a spin-coating process for forming a protective coating on a disk-shaped magnetic recording medium base having a recording medium surface roughness of a thickness less than 0.02 microns, an improvement comprising the steps of
depositing onto said base a solution of coating material comprising a solvent having a boiling point of about 70° C. to about 100° C.; and
controlling the spin rate of the recording medium base to a rate at which a protective film is formed whose surface is characterized by radially extending jogs defining a protective film surface roughness which is greater than the surface roughness of the underlying recording medium and equal to or less than 0.05 microns.

4,326,230
CIRCUIT FOR MONITORING THE VOLTAGE STRESS OF A CAPACITOR
Michael Becker, Uttenreuth; Klaus Renz, Fürth; Manfred Weibelzahl, Weiher; Alfons Fendt, Erlangen; Dusan Povh, Nuremberg; Gerhard Schuch, Erlangen, and Hermann Waldmann, Weiher, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany
Filed Jul. 3, 1980, Ser. No. 165,809
Claims priority, application Fed. Rep. of Germany, Jul. 19, 1979, 2929272
Int. Cl.³ H02H *7/16*
U.S. Cl. 361—17 4 Claims

1. A circuit for monitoring the voltage stress of a capacitor CHARACTERIZED IN THAT there are provided
a. means for producing a first signal representative of the voltage stress of the capacitor,

b. comparison means for comparing said first signal with a predetermined over-voltage value,

c. characteristic-curve generator means having a predetermined transfer function and connected to said comparison means for producing a second signal responsive to said first signal and said transfer function when said first signal exceeds said predetermined over-voltage value,



d. integration means having a predetermined integration time constant and connected to said characteristic-curve generator means for integrating said second signal and producing an overload signal, and

e. continuous value means for producing a reverse integration signal which is responsive to a predetermined permissible continuous capacitor stress value and which is conducted to said integration means for adjusting the level of said overload signal.

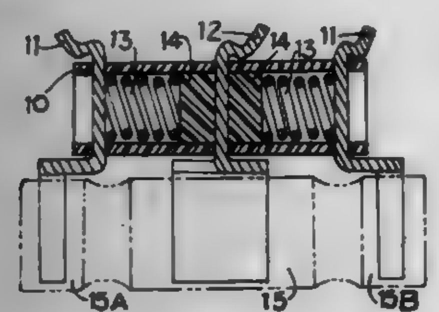
4,326,231
CLIP-ON PROTECTOR

Gerald Coren, 18 Willben La., Plainview, N.Y. 11803

Continuation of Ser. No. 49,801, Jun. 18, 1979, abandoned, and a continuation-in-part of Ser. No. 880,756, Feb. 24, 1978, Pat. No. 4,191,987. This application Mar. 19, 1981, Ser. No. 245,501

Int. Cl.³ H02H *9/04*

U.S. Cl. 361—119 — 4 Claims



1. A clip-on protection device for use with an over-voltage protector that is defined by spaced electrodes one of which is common or grounded, comprising a housing, contact means disposed in insulated spaced array in said housing, heat conduction means disposed in said housing and electrically insulated and spaced from said contact means, each of said contact means and heat conduction means including means extending from said housing and adapted detachably to engage the spaced electrodes of the protector such that said heat conduction means is in thermal and electrical communication with the grounded electrode of the protector and each of said contact means is in respective electrical communication with a line-electrode of the protector, and movable means disposed in said housing and adapted electrically to ground a respective one of said contact means, said movable means including fusible means in thermal contact with said heat conduction means such that movable means is normally electrically insulated from said heat conduction means until a sustained overload condition causes said fusible means to fuse whereupon said movable means engages said heat conduction means electrically to short said contact means to ground.

4,326,232
LIGHTNING ARRESTER

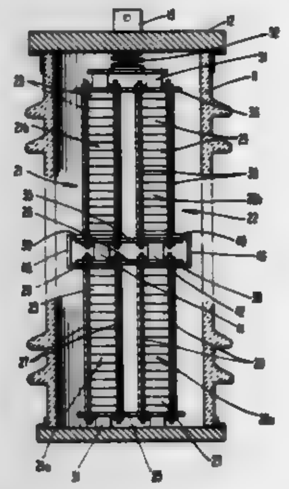
Susumu Nishiwaki, and Toshikazu Satoh, both of Yokohama, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Apr. 9, 1980, Ser. No. 138,675

Claims priority, application Japan, Apr. 16, 1979, 54-49426[U]

Int. Cl.³ H02H *9/04*

U.S. Cl. 361—127 — 9 Claims



1. A lightning arrestor comprising:
a housing;
a plurality of elongated electrical resistor stacks disposed in side-by-side relation in said housing and electrically connected in parallel;
each of said stacks including a plurality of sub-stacks formed by stacked, non-linear resistor elements of uniform size, said sub-stacks of each stack being aligned end-to-end;
means electrically connecting adjacent sub-stacks in each stack;
the sub-stacks of each stack having the same number of resistor elements as the adjacent sub-stack of a parallel stack;
and means mechanically connecting but electrically insulating adjacent sub-stacks of parallel stacks.

4,326,233
LIGHTNING ARRESTER

Satoru Yanabu, Machida; Susumu Nishiwaki, and Toshikazu Satoh, both of Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

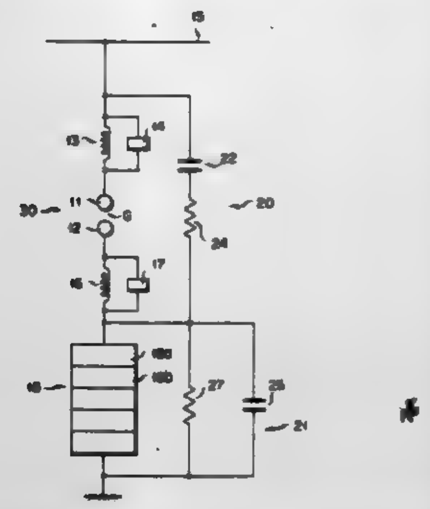
Filed Jul. 30, 1980, Ser. No. 173,478

Claims priority, application Japan, Aug. 2, 1979, 54-98135; Mar. 17, 1980, 55-34831

Int. Cl.³ H02H *1/04*

U.S. Cl. 361—127 — 8 Claims

1. A lightning arrester which comprises:
a valve block formed of a plurality of nonlinear resistor elements;
discharge gap means which is connected in series to said valve block and defines a prescribed space therebetween; and
impedance circuit means which varies a ratio between a level of voltage impressed on said valve block and that applied to said gap means in accordance with the waveform of lightning surge voltage impressed on the lightning arrester, thereby maintaining the spark-starting voltage of said gap means substantially at a fixed level, said impedance circuit means being formed of at least first and second impedance elements respectively connected in parallel to said valve block and gap means, said first impe-



dance element being constituted by a parallel circuit of a resistor and capacitor, and said second impedance element being formed of a series circuit of a resistor and capacitor.

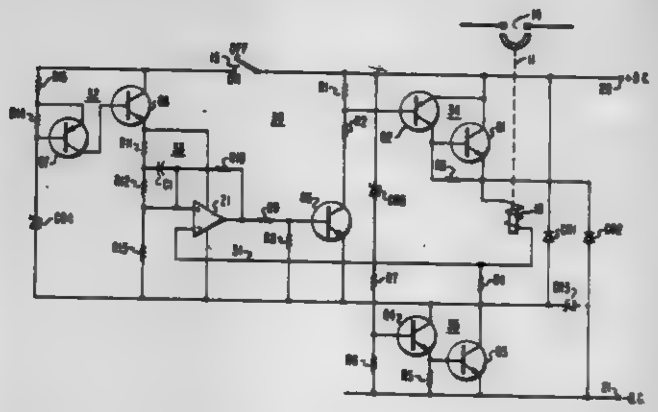
4,326,234
ELECTRICALLY HELD POWER RELAY CIRCUIT WITH REDUCED POWER DISSIPATION

Kenneth C. Shuey, Cridersville, Ohio, assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 6, 1980, Ser. No. 156,960

Int. Cl.³ H01H *47/32*

U.S. Cl. 361—154 — 2 Claims



1. Relay circuitry, for holding an electrically held relay closed with minimized power dissipation, comprising:
a relay coil in a series current path between DC input voltage terminals;
a switching current regulator for permitting an applied DC input voltage to develop current in said coil reaching a level sufficient to close the relay and then to remove applied voltage from said coil during which a current sufficient to hold the relay closed is maintained by the coil inductance and restoring applied voltage to said relay before the coil current drops below the minimum holding current level;
said switching current regulator comprising a gated series voltage regulator for maintaining a regulated voltage on a resistive voltage divider connected to one input of a voltage comparator, a resistive shunt in series with said relay coil connected to apply a coil current indicating voltage to the other input of said comparator, and a first transistor switch in series with said relay coil and responsive to the output of said comparator to turn off said series current path when coil current has reached the closing level and to turn on said series current path when the coil current drops to a level approaching the holding current level.

4,326,235
CONTAINER

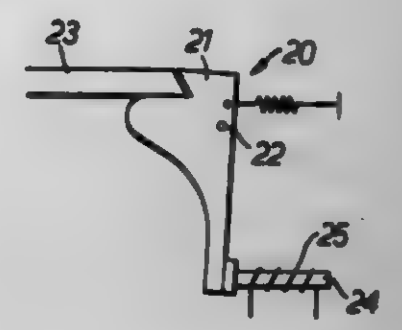
Norman K. Hopkins, Orchard House, Whinstones Rd., Ascot, SL5 9HW, and Lawrence Klyne, 179B Haverstock Hill, London, NW. 3, both of England

Filed Jan. 28, 1980, Ser. No. 117,531

Claims priority, application United Kingdom, Jan. 26, 1979, 02796/79

Int. Cl.³ H01H *47/32*; E05C *3/26*

U.S. Cl. 361—156 — 8 Claims



1. A container having a lid resiliently loaded towards an open position and a catch for holding the lid in a closed position, the catch including
a member movable between a first position in which the member is capable of holding the lid in the closed position and a second position in which the member is not capable of holding the lid,
a permanent magnet arranged to hold the member when in the first position,
means to urge the member from the first position to the second position including an inclined edge portion of the lid arranged to engage a part of the member and to transmit there-to a force derived from the force of the resilient loading of the lid, and
an electromagnet so arranged that when energised the electromagnet produces a field which opposes the field of the permanent magnet sufficiently to allow the member to be released from the first position.

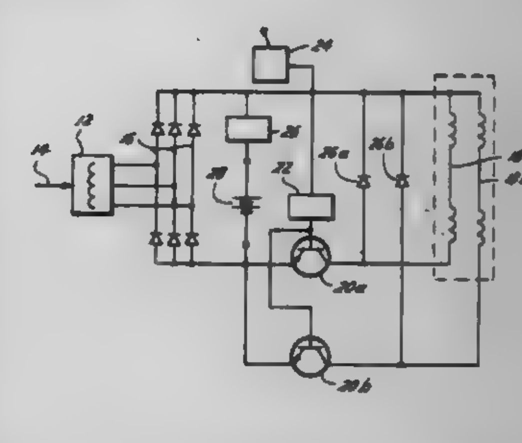
4,326,236
CONTROL SYSTEM FOR AN ELECTRO-MAGNETIC BRAKE

Willie L. McNair; Donald L. Lipke, both of Fort Bend County; Stanley H. Van Wambeck, Harris County, and Conrad J. Huelsman, Fort Bend County, all of Tex., assignors to Baylor Company, Sugar Land, Tex.

Filed Sep. 10, 1979, Ser. No. 74,205

Int. Cl.³ F16D *67/06*

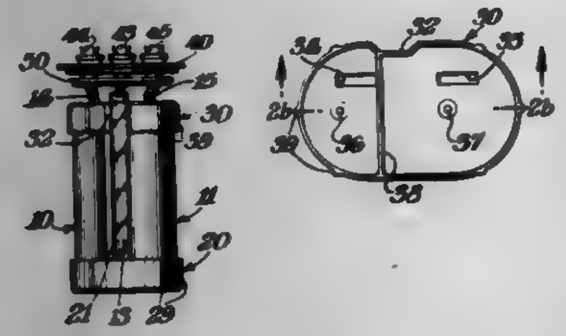
U.S. Cl. 361—170 — 7 Claims



1. A control system for providing controllable direct current power for energizing an electromagnetic brake comprising,
an alternating current power supply,
power rectifier means connected to the alternating current

power supply for supplying direct current power to said brake,
power switch means connected between the rectifier and the brake for controlling the direct current power supplied to the brake,
a control circuit controlling the actuating of said power switch means including,
a brake control connected to a variable output transformer, the input of said transformer being connected to a fixed control voltage supply and whose output is varied by said brake control,
means connected between the transformer output and said power switch means for providing a variable pulse width direct current signal in which the pulse width varies with the transformer voltage output for actuating said power switch means, and
wherein the means for providing a variable pulse width signal includes,
a rectifier connected to the transformer,
an oscillator providing a sawtooth output, and
a comparator connected to the rectifier and sawtooth oscillator to provide the variable pulse width signal.

4,326,237
DUAL AC MOTOR-RUN CAPACITORS
Paul M. Markarian, North Adams, Mass., and David C. Howe, Stamford, Vt., assignors to Sprague Electric Company, North Adams, Mass.
Filed Jan. 2, 1981, Ser. No. 221,967
Int. Cl.³ H01G *4/38*
U.S. Cl. 361—329 **9 Claims**

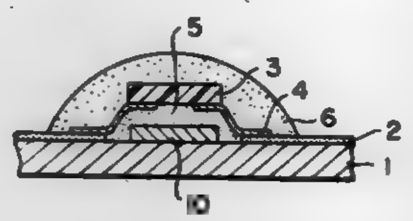


1. A dual AC motor-run capacitor comprising at least two round metallized electrode film capacitor sections having hollow winding cores, a pair of oval plastic insulative end caps having two long sides are cap an upper cap, the upper of said end caps having at least one slot therein and an indentation along one of the long sides thereof, each of said end caps having at least two upstanding pins engaging said hollow winding cores to hold said sections side-by-side, electrode tabs connecting the electrodes of said sections to terminals mounted in a cover, one of said tabs passing through said slot in said upper end cap, said sections mounted in said end caps being placed in an oval can and sealed with said cover.

4,326,238
ELECTRONIC CIRCUIT PACKAGES
Shiro Takeda, Sagamihara; Yuji Nagai, Komae; Minoru Nakajima, Kawasaki; Kunihiko Hayashi, Yokohama, and Koji Serizawa, Aizuwakamatsu, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan
Filed Dec. 21, 1978, Ser. No. 971,658
Claims priority, application Japan, Dec. 28, 1977, 52-160686; Dec. 28, 1977, 52-160687; Dec. 28, 1977, 52-160689
Int. Cl.³ H05K *7/20, 3/32;* **C08K** *3/22*
U.S. Cl. 361—386 **38 Claims**

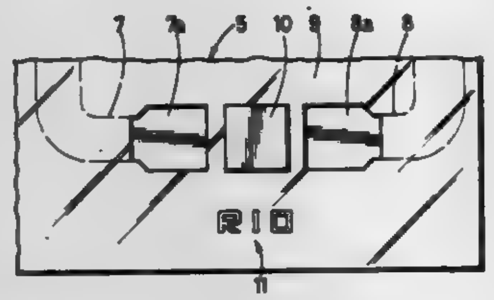
1. An electronic circuit package comprising
an insulating circuit substrate having plural wirings thereon,
at least one electronic circuit element having plural beam leads bonded onto respective one of said wirings of the circuit substrate with a gap between the circuit substrate and the electronic circuit element and its beam leads,
a first thermally conductive layer of an electrically insulating material comprising an oxidatively curable resin filling the gap in contact with said circuit element and beam leads and covering at least a portion of the circuit element and its beam leads, and
a second thermally conductive layer located within said gap between said circuit substrate and said first thermally conductive layer of material.

8. A method of mounting a plurality of electronic circuit elements on a circuit substrate, for easy selective removal if



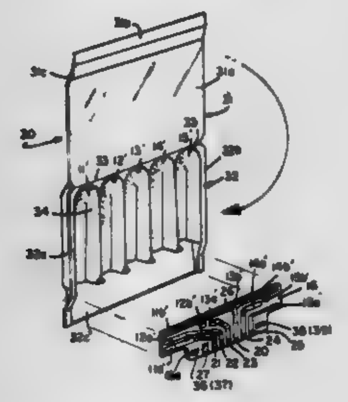
any circuit element proves defective, by bonding each said electronic circuit element onto said circuit substrate with a gap between said circuit substrate and said electronic circuit element, said method comprising:
filling a liquid comprising an oxidatively curable resin at least into said gap,
allowing at least the surface portions of said resin to be oxidatively cured by exposure to an atmosphere containing oxygen, and
removing each said defective element by applying a small force to the oxidatively cured surface portions of said resin bonding each said defective circuit element before the entire portion of the resin becomes cured.

4,326,239
PRINTED CIRCUIT BOARD
Mitsuo Ohsawa, Chigasaki; Masato Yamamura, Kamakura, and Toshio Takahashi, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan
Filed Sep. 11, 1979, Ser. No. 74,471
Claims priority, application Japan, Sep. 21, 1978, 53-129884[U]
Int. Cl.³ H05K *01/18*
U.S. Cl. 361—410 **3 Claims**



1. A printed circuit board comprising:
(a) an insulating board;
(b) at least one pair of conductive patterns arranged on said insulating board and spaced from each other by a predetermined length;
(c) a solder resisting layer having a predetermined color formed on said insulating board;
(d) an adhesive layer visual boundary guide in the form of a paint layer of insulating material formed on the solder resisting layer in the space between said conductive patterns within a predetermined range;
(e) said paint layer having another color contrasting with said predetermined color of the solder resisting layer;
(f) an adhesive layer applied onto said paint layer but not substantially beyond its boundaries;
(g) a leadless electric part being fixed in contact with said conductive patterns with said adhesive layer; and
(h) said paint layer having a good affinity with said solder resisting layer and adhesive layer such that said leadless electric part is fixed securely in position.

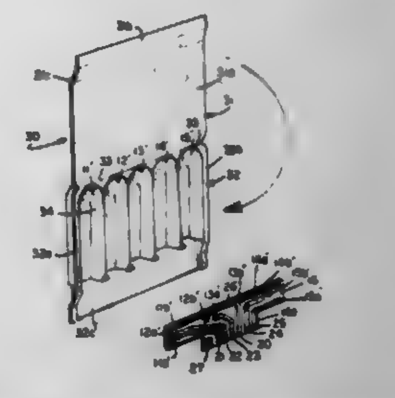
4,326,240
MULTILAMP PHOTOFLASH UNIT HAVING ENGAGEABLE CONNECTOR TAB
John W. Shaffer, Williamsport, and David R. Broadt, Lewisburg, both of Pa., assignors to GTE Products Corporation, Stamford, Conn.
Filed Aug. 27, 1980, Ser. No. 181,934
Int. Cl.³ G03B *15/02*
U.S. Cl. 362—11 **11 Claims**



1. In a multilamp photoflash unit connectable to a source of firing pulses, said unit including a printed circuit board having electrically conductive circuit patterns disposed on a surface thereof, said circuit patterns including a plurality of terminal areas at one side edge of said circuit board that are selectively interconnected with a plurality of lamp contact areas, and a plurality of flashlamps each having a pair of lead-in wires secured in electrical connection with respective ones of said lamp contact areas, all of said terminal areas and said lamp contact areas connected to said lead-in wires being disposed on the same one side of said circuit board, the improvement comprising a flat projecting tab at said one side edge of said circuit board upon which said terminal areas are located adjacent to one another, and a plurality of engageable means in the form of apertures or recesses contained in said tab and spaced apart from said terminal areas and said one side edge, said tab being insertable in a receiving socket of a firing pulse source for connecting said terminal areas to respective contacts of said firing pulse source, and said engageable means being disposed on said tab in nonalignment with any of said terminal areas with respect to the direction of insertion into said receiving socket, whereby said apertures of recesses render said tab releasably engageable by socket means independent of said firing pulse contacts for securely retaining said photoflash unit in said socket.

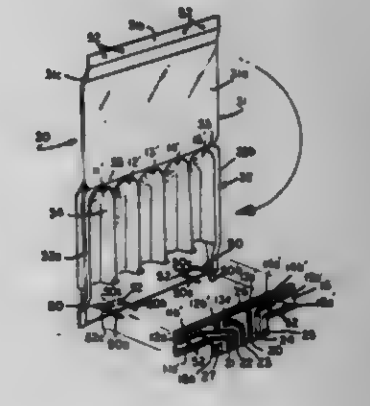
4,326,241
MULTILAMP PHOTOFLASH UNIT
David R. Broadt, Lewisburg; Donald W. Hartman; John W. Shaffer, both of Williamsport, all of Pa., and Emery G. Audesse, Beverly, Mass., assignors to GTE Products Corporation, Stamford, Conn.
Filed Aug. 27, 1980, Ser. No. 181,936
Int. Cl.³ G03B *15/02*
U.S. Cl. 362—11 **23 Claims**

1. A multilamp photoflash unit comprising, in combination, a one-piece housing member having a light-transmitting front portion folded over a back portion containing a plurality of lamp-receiving cavities, a plurality of flashlamps each disposed in a respective one of said cavities and enclosed by said folded-over housing member, and terminal means joined to said housing member and coupled to said lamps for enabling flashing of



the lamps in response to flash actuation signals applied to said terminal means.

4,326,242
MULTILAMP PHOTOFLASH UNIT HAVING SECURED HOUSING
David R. Broadt, Lewisburg; Carl F. Kackenmeister, and John W. Shaffer, both of Williamsport, all of Pa., assignors to GTE Products Corporation, Stamford, Conn.
Filed Aug. 27, 1980, Ser. No. 181,938
Int. Cl.³ G03B *15/02*
U.S. Cl. 362—11 **22 Claims**

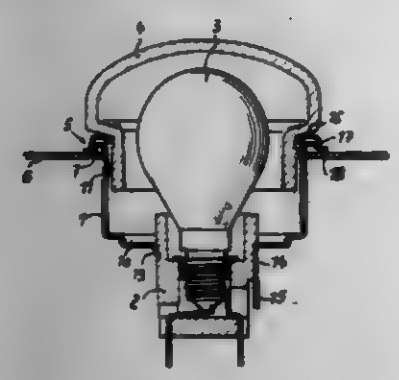


1. A multilamp photoflash unit comprising, in combination, a one-piece housing member having a light-transmitting front portion folded-over a back portion containing a plurality of lamp-receiving cavities, a plurality of flashlamps each disposed in a respective one of said cavities and enclosed by said folded-over housing member, terminal means joined to said housing member and coupled to said lamps for enabling flashing of the lamps in response to flash actuation signals applied to said terminal means, and means securing said front portion to said back portion at peripheral areas thereof comprising one or more staples, each of said staples having a pair of legs extending through both of said housing portions and having a center region bearing against an external surface of one of said portions, said legs being clinched onto an external surface of the other of said portions.

4,326,243
ELECTRIC LIGHT FIXTURE
Max Pistor, Kamp 3, 585 Schalksmühle-Hulscheid, and Ferdinand Pistor, Spielbergweg 11, 5974 Herscheid, both of Fed. Rep. of Germany
Filed May 22, 1980, Ser. No. 152,402
Claims priority, application Fed. Rep. of Germany, May 26, 1979, 2921425
Int. Cl.³ B60Q *1/00*
U.S. Cl. 362—368 **9 Claims**

1. An electric fixture for the illumination of ovens of electric ranges, comprising a pot-shaped metallic mounting part insert-

able into a cut-out in a wall of the oven and which holds the lamp socket and its lamp assembled, and a cover glass which is screwed on the front side into the mounting part, the mounting part having on its front side a stop rim and holding members corresponding to the edge of the cut-out and at its rear a central cut-out for the lamp socket which is held by spring tabs which are formed from the mounting part, the mounting part being provided on its wall with an internal thread and having over its entire length a smaller diameter than the stop rim, the mounting part having a plurality of radially outwardly extending spring tabs uniformly distributed on the periphery and cut



free laterally and towards the stop rim, which spring tabs are curved at least slightly more than corresponds to the curvature of the mounting part, and the spring tabs having noses which extend laterally outwards at their free end towards the stop rim, the stop rim being bent over towards the bottom of the mounting part and screw threads impressed radially between the spring tabs with a resiliently tensionable sealing ring of metal clamped between the stop rim and the cover glass, an axially extending radially outwardly protruding rib being formed on the mounting part and insertable in a groove in the cut-out as an anti-twisting device.

4,326,244

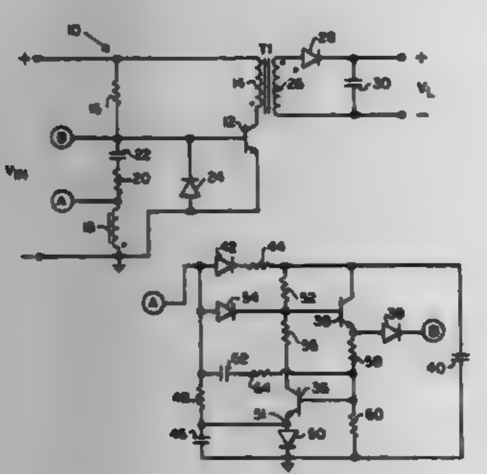
FLYBACK POWER SUPPLY BOOSTER CIRCUIT

Elliot Josephson, Los Altos, Calif., assignor to Astec Components, Ltd., Santa Clara, Calif.

Filed Dec. 18, 1980, Ser. No. 217,675

Int. Cl.³ H02H *7/122*

U.S. Cl. 363—56 9 Claims



1. In a flyback power supply having a free-running mode comprised of input intervals, wherein a switch means causes current to be fed through a power transformer primary, thereby storing energy in said transformer, alternately followed by flyback intervals, wherein said switch means causes the power transformer primary to be open-circuited, and current is output from the transformer secondary into a secondary circuit until all of said stored energy is discharged, the length of said input intervals and flyback intervals being dependent upon the load on the secondary circuit, an improvement comprising:

means for detecting a high load condition; and

means responsive to said high load condition for causing said switch means to feed current through said transformer primary prior to the end of the free-running flyback interval.

4,326,245

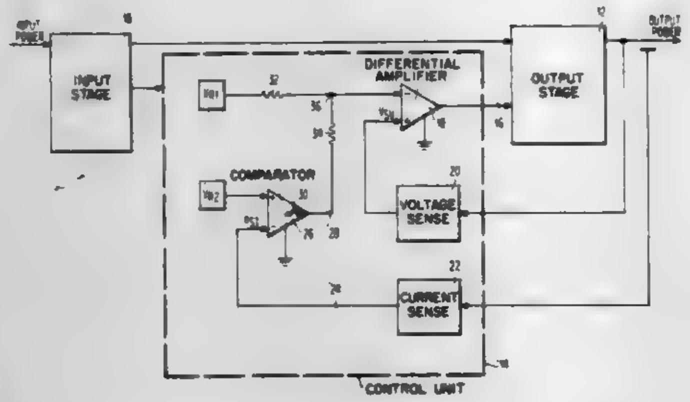
CURRENT FOLDBACK CIRCUIT FOR A DC POWER SUPPLY

Mustafa Y. M. Saleh, Margate, Fla., assignor to Siemens Corporation, Iselin, N.J.

Filed Feb. 23, 1981, Ser. No. 236,857

Int. Cl.³ H02P *13/00*

U.S. Cl. 363—79 6 Claims



1. A DC power supply comprising:

a. input means for receiving input power at an input voltage;

b. output means, connected to said input means, for producing output power at another, output voltage, said output means having a control input and being responsive to a control signal applied to said control input to vary said output voltage; and

c. control means, connected to said output means, for producing said control signal, said control means including:

1. a differential amplifier having first and second inputs and an output connected to said control input of said output means, said differential amplifier producing said control signal at said output thereof;
2. a voltage divider circuit having two resistors connected in series with a first terminal at one end of the resistor series, a second terminal at the opposite end of the resistor series and a center terminal between the two resistors, said center terminal being connected to said first input of said differential amplifier;
3. output voltage sensing means, connected to said second input of said differential amplifier, for producing a signal representative of said output voltage;
4. a first reference voltage source connected to said first terminal of said resistor series;
5. a comparator, capable of assuming two logic states and having first and second inputs and an output connected to said second terminal of said resistor series, said comparator (1) assuming a first logic state and connecting said second terminal to ground if the voltage applied to said second input thereof exceeds the voltage applied to said first input thereof, and (2) assuming a second logic state and providing an open circuit to said second terminal if the voltage applied to said second input thereof is less than the voltage applied to said first input thereof;
6. a second reference voltage source connected to said first input of said comparator; and
7. output current sensing means, connected to said second input of said comparator, for producing a signal representative of the output current supplied by said output means at said output voltage;

whereby said output voltage is reduced by a prescribed amount when the voltage applied to the second input of said comparator exceeds the voltage applied to the first input thereof.

4,326,246

CIRCUIT ARRANGEMENT OF AN INVERTED CURRENT RECTIFIER WITH SELF COMMUTATION

Jiri Winkler; Milan Koudr; Richard Jelinek; Jaroslav Hlousek; Jan Krtek; Josef Cibulka, all of Prague; Vladimir Mlynar, and Josef Simacek, both of Opava, all of Czechoslovakia, assignors to CKD Praha, oborovy podnik, Prague, Czechoslovakia

Filed Apr. 2, 1981, Ser. No. 250,251

Claims priority, application Czechoslovakia, Apr. 2, 1980, 2296-80

Int. Cl.³ H02M *1/06*

U.S. Cl. 363—138 4 Claims

1. Circuit arrangement of an inverted current rectifier with self commutation comprising a current source (1°), a block (2°) of the inverted rectifier, an accumulation rectifier (3°), accumulation capacitors (4°) with separating diodes (77, 78), a DC charging source (5°), a block (6°) for auxiliary accumulation with auxiliary accumulation thyristors (61 to 66) and a main separating diode (67), overswing reactors (7°, 8°) with overswing diodes (51, 52), commutation thyristors (21, 22, 31, 32), a commutation impulse circuit (9°), a charging inductance (10°), charging thyristors (41, 42) and limiting diodes (93, 94, 95, 96), the block (2°) of the inverted rectifier, connected by its DC inlet terminals (2.1, 2.2) to inlet terminals (1.1, 1.2) of the current source (1°), is furthermore connected over the main separating diode (67) by its outlet AC terminals (2.3, 2.4, 2.5) both to a load and to the accumulation rectifier (3°), the DC terminals (3.1, 3.2) of which are connected through separating diodes (77, 78) to external terminals (4.1, 4.3) of a series connection of accumulation capacitors (4°), to which external terminals (4.1, 4.3) a DC charging source (5°) is connected in parallel, the first external terminal (4.1) being furthermore connected to the anode of the first auxiliary accumulation thyristor (61), the cathode of which is connected to the cathode of the fourth and to the anode of the sixth auxiliary accumulation thyristor (64, 66) respectively, and to cathodes of the third and fourth limiting diode (95, 96) respectively, whereby the anode of the third limiting diode (95) is connected to the cathode of the main separating diode (67) and the anode of the fourth limiting diode (96) is connected to the negative outlet terminal (1.2) of the current source (1°), whereby the second external terminal (4.3) of the accumulating capacitors (4°) is connected both to the cathode of the second auxiliary accumulation thyristor (62), the anode of which is connected with the cathode of the fifth and anode of the third auxiliary accumulation thyristor (65, 63) respectively, and with anodes of the first and second limiting diode (93, 94) respectively, whereby the cathode of the first limiting diode (93) is connected with the anode of the third limiting diode (95), with the first terminal (7.1) of the first overswing reactor (7°) and with the anode of the first commutation thyristor (21), the cathode of which is connected both with the anode of the second commutation thyristor (22), with the second terminal (9.2) of the commutation impulse circuit (9°) and also, through the second charging thyristor (42) and charging inductance (10°), with cathodes of the third and fourth limiting diodes (95, 95) respectively, the cathode of the second commutation thyristor (22) is connected both with the anode of the fourth limiting diode (96) and, through the second overswing reactor (8°), the second overswing diode (52), the fourth commutation thyristor (32), the third commutation thyristor (31) and the first overswing diode (51), to the second terminal (7.2) of the first overswing reactor (7°), whereby the common junction of the third commutation thyristor (32) is connected both with the first terminal (9.1) of the commutation impulse circuit (9°) and, through the first charging thyristor (41), with anodes of the first and second limiting diodes (93, 94), respectively, the common junction of the fourth commutation thyristor (32) and of the second overswing diode (52) is connected to the anode of the second limiting diode (78), the common junction of the first overswing diode (51) and of the third commutation thyristor (31) is connected to the cathode of the first overswing diode (77), furthermore the cathode of the third and the anode of the fourth auxiliary accumulation thyristor (63, 64), respectively are mutually interconnected and connected to the central terminal (4.2) of the accumulating capacitors (4°), the anode of the fifth auxiliary accumulation thyristor (65) is connected with the anode of the main separating diode (67), the cathode of the sixth auxiliary accumulation thyristor (66) is connected with the cathode of the main separating diode (67) and the auxiliary accumulation block (6°) is connected between the cathode of the fifth and the anode of the sixth auxiliary accumulation thyristor (65, 66), respectively.

4,326,247

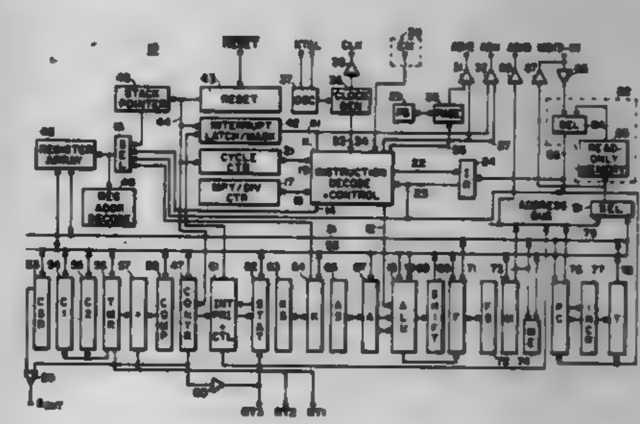
ARCHITECTURE FOR DATA PROCESSOR

George P. Chamberlin, Tempe, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 25, 1978, Ser. No. 946,222

Int. Cl.³ G06F *9/16*

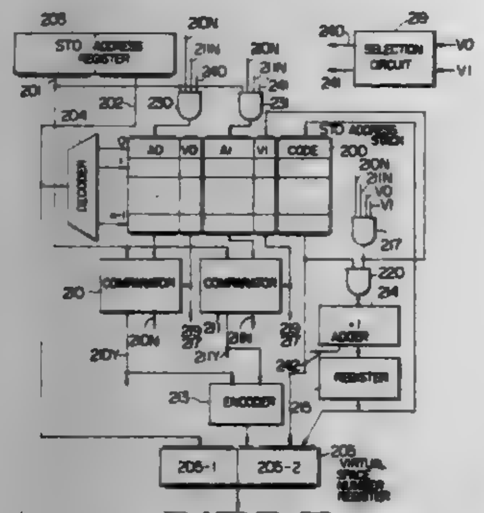
U.S. Cl. 364—200 4 Claims

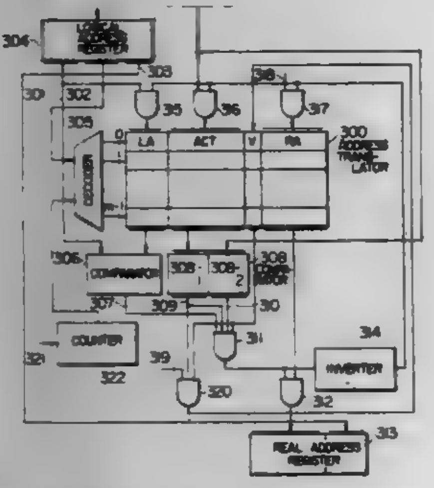


1. A data processing system having an N-bit data bus, an M-bit data bus, and an M+N bit data address bus, and comprising: an instruction decoder for decoding instructions for the data processing system; an instruction register coupled to the instruction decoder for holding instructions to be decoded by the instruction decoder; an array of registers for storing variable data, the array of registers being coupled to the N-bit data bus; an arithmetic and logic unit coupled to the N-bit data bus and coupled to the instruction decoder, the arithmetic and logic unit being capable of performing operations on the data stored in the array of registers; a program counter for controlling sequence of instructions, the program counter being coupled to the address bus; a timer register capable of being incremented by one at a continuous rate, the timer register being coupled to the N-bit data bus; at least one capture register being capable of being loaded from the timer register, the at least one capture register being coupled to the N-bit data bus, to the timer register, and to an input terminal of the data processor system to allow the at least one capture register to be loaded from the timer register whenever a signal transition occurs on the input terminal; a compare register coupled to the N-bit data bus, the compare register being capable of being continuously compared for equality with the timer register to provide a signal when equality exists, the timer register thereby being capable of providing an output to the at least one capture register and of providing an output to be compared; and a

command shift register coupled to the N-bit data bus and to an output terminal of the data processing system, the command shift register providing temporary storage of data and shifting the data out to the output terminal upon a predetermined command.

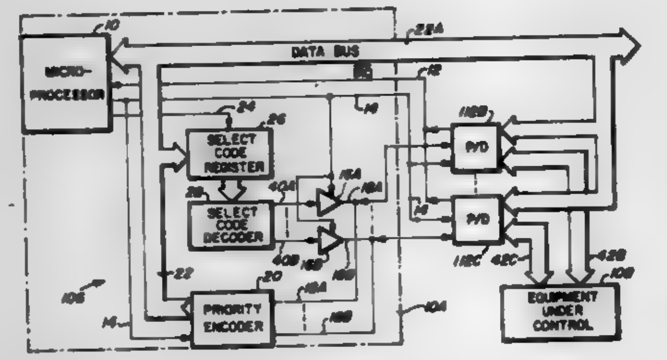
4,326,248
MULTIPLE VIRTUAL STORAGE CONTROL SYSTEM
Mamoru Hinai; Chikahiko Izumi, and Kazuo Hibi, all of Hadano, Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Feb. 22, 1979, Ser. No. 14,274
Claims priority, application Japan, Feb. 22, 1978, 53-18471
Int. Cl.³ G06F *9/36, 13/00*
U.S. Cl. 364—200 **6 Claims**





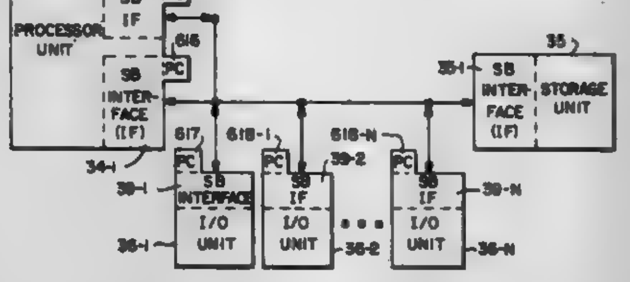
1. A multiple virtual storage control system for a data processing system for handling a plurality of virtual spaces and having a translation table for translating virtual addresses indicative of addresses in the virtual spaces to real addresses, comprising:
first means for assigning a virtual space number to a supplied first address of said translation table;
said first means including a plurality of first storage locations for storing said first address and said virtual space number assigned to said first address;
said first means assigning, upon absence of said supplied first address in said first storage locations, a virtual space number to said first address, storing said first address and said virtual space number assigned to the first address in said first storage location and outputting said virtual space number;
said first means outputting, upon presence of said supplied first address in said first storage locations, the virtual space number assigned to said first address; and
second means for producing real addresses which correspond to the supplied virtual addresses and the virtual space numbers, said second means including a plurality of second storage locations for storing the real addresses and the virtual space numbers in correspondence thereto,
the improvement wherein said first means comprises output means for assigning a predetermined number of the virtual space numbers which predetermined number is larger in number than the number of said first storage locations, said output means including means for producing a signal when a predetermined virtual space number is assigned so as to indicate that the predetermined number of virtual space numbers larger than the number of first storage locations has been assigned and that a new virtual space in excess of the predetermined number of virtual space numbers has been selected, and said second means comprises invalidating means responsive to the signal from said output means for invalidating the content of those second storage locations which hold the virtual space numbers corresponding to a plurality of virtual space numbers in accordance with the virtual space number from said first means.

4,326,249
INTERRUPT SYSTEM AND METHOD
Ernest E. Godsey, Tucson, Ariz., assignor to Burr-Brown Research Corp., Tucson, Ariz.
Division of Ser. No. 890,121, Mar. 27, 1978, Pat. No. 4,181,941. This application Apr. 6, 1979, Ser. No. 27,903
Int. Cl.³ G06F *3/00*
U.S. Cl. 364—200 **2 Claims**



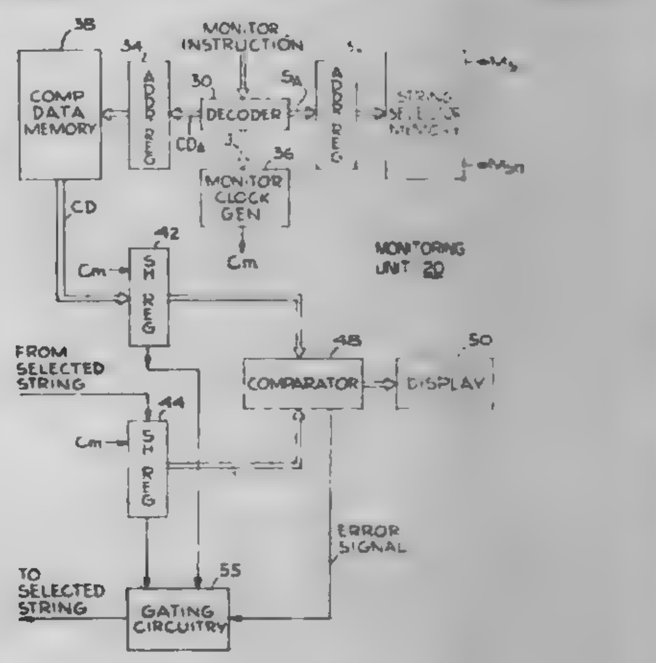
1. A method of operating a control system including a control computer and a plurality of input/output subsystems each including first and second groups of peripheral devices coupling said control computer to input and/or output elements of an equipment system to effect accessing of various ones of said peripheral devices, each of said input/output subsystems including a respective microcomputer and an internal bus having first and second groups of conductors, said method comprising the steps of:
(a) transmitting first and second groups of peripheral address bits from said control computer to said microcomputers in said input/output subsystems;
(b) transmitting said first and second groups of peripheral address bits from said respective microcomputers along first and second groups of conductors, respectively, of said internal buses of each of said input/output subsystems, said second group of peripheral address bits containing information that is different than a first predetermined code;
(c) selecting said second group of peripheral devices in a first one of said input/output subsystems to be accessed by said microcomputer of said first input/output subsystem if said second group of peripheral address bits matches a second predetermined code stored in said first input/output subsystems, said second predetermined code being different from said first predetermined code;
(d) accessing a one of said peripheral devices of said second group in said first input/output subsystem and determined by said first group of peripheral address bits;
(e) transmitting a group of bits containing said first predetermined code from said microcomputer of said first input/output subsystem along said second group of conductors of said internal bus of a second input/output subsystem;
(f) selecting said first group of peripheral devices in said second input/output subsystem in response to said transmitted group of bits containing said first predetermined code; and
(g) accessing a one of said peripheral devices that is determined by any first group of peripheral address bits transmitted by the microcomputer of said second input/output subsystem and that is in said first group of said second input/output subsystem.

4,326,250
DATA PROCESSING APPARATUS WITH SERIAL AND PARALLEL PRIORITY
Robert B. McCullough, Milpitas, Calif., assignor to Magnuson Computer Systems, Inc., San Jose, Calif.
Filed Oct. 10, 1979, Ser. No. 83,239
Int. Cl.³ G06F *15/16*
U.S. Cl. 364—200 **11 Claims**



1. In a data processing system including a plurality of units and including a system bus for interconnecting said units, where each of said units includes means for providing a bus request signal for signalling a request for access to the system bus and includes means responsive to an enabling signal for enabling access to the system bus, priority apparatus for determining priority of access to said system bus by said units, said priority apparatus comprising,
a plurality of priority circuit means, one for each of said units, each one of said priority circuit means connected for controlling the enabling signal of a corresponding one of said units, each one of said priority circuit means including a parallel priority circuit and a serial priority circuit,
parallel priority bus means connected in parallel among said parallel priority circuits for carrying parallel priority signals representing a priority level,
said parallel priority circuit for each one of said priority circuit means including,
means for setting a parallel priority level for said parallel priority circuit,
means for gating said parallel priority level onto said parallel priority bus to generate parallel priority signals when enabled by said bus request signal from an associated one of said units,
means for comparing said parallel priority signals from said parallel priority bus with said parallel priority level to provide a parallel priority enable signal when said parallel priority level is equal to or greater than the parallel priority signals from said parallel priority bus, and when enabled by said bus request signal from an associated one of said units,
means for preselecting the parallel priority level the same for each one of a first group of said priority circuit means,
said serial priority circuit for each of said priority circuit means including,
logic means, connected to receive a serial priority input signal and said bus request signal for providing a serial priority output signal whenever either said serial priority input signal or said bus request signal is active,
means for connecting each said serial priority circuit within said first group of said priority circuit means in an ordered series with each serial priority output signal connected to provide the serial priority input signal of a next lower-order one of said serial priority circuits, and means for providing a fixed serial priority input signal to the highest order one of said serial priority circuits within said first group,
each of said priority circuit means including means responsive to said parallel priority enable signal being active and said serial priority input signal being inactive to provide said enabling signal to enable access to said system bus.

4,326,251
MONITORING SYSTEM FOR A DIGITAL DATA PROCESSOR
Sheila G. Davis, Los Angeles; Robert E. Franks, San Gabriel, both of Calif., and Alfred J. De Santis, Berwyn, Pa., assignors to Burroughs Corporation, Detroit, Mich.
Filed Oct. 16, 1979, Ser. No. 85,277
Int. Cl.³ G06F *13/06*
U.S. Cl. 364—200 **7 Claims**



1. In a digital data processing system, the combination comprising:
a plurality of storage devices providing for digital storage in said system, each storage device providing for the storage of a plurality of bits which can be inputted or outputted in series or in parallel;
logic circuitry interconnecting said storage devices for the performance of parallel data processing operations by said system;
said logic circuitry also including selectably controllable means for interconnecting said storage devices so as to form a plurality of separately selectable strings, wherein each string comprises at least two serially connected storage devices; and
monitoring means for performing monitoring of digital data applied thereto from a selected string;
said monitoring means including means for selectably generating one of a plurality of monitor enable signals and for also selectively generating a predetermined plurality of monitor clock signals which are applied to said selectably controllable means and to the storage devices of a selected string corresponding to the applied monitor enable signal so as to cause the bits stored therein to be serially propagated to and from said monitoring means with the bits of the storage devices of the selected string being returned to states determined by said monitoring means.

4,326,252

METHOD OF RECONSTRUCTING CROSS-SECTION IMAGE

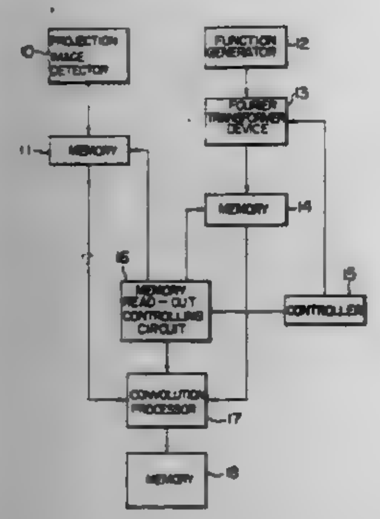
Hideki Kohno, Tokyo; Hidemi Shiono, Akikawa, and Shinji Yamamoto, Hachioji, all of Japan, assignors to Hitachi Medical Corporation, Tokyo, Japan

Continuation of Ser. No. 854,672, Nov. 25, 1977, abandoned. This application Dec. 10, 1979, Ser. No. 101,769

Claims priority, application Japan, Nov. 29, 1976, 51-142256

Int. Cl.³ G01N *23/00*

U.S. Cl. 364—414 7 Claims



1. An apparatus for detecting an object by means of permeable radiation rays, comprising:

irradiation source means for generating said permeable rays to irradiate said object therewith so that said radiation rays transmit through a planar cross-section of said object;

detector means for detecting the radiation rays transmitted through said object to provide an electrical signal corresponding to plural blurred projection images of said cross-section depending upon the transmitted radiation rays;

function generator means for generating an inverse Fourier transformed function including a correction factor for correction of the plural blurred projection images in that the function second differentiation is positive in at least a predetermined range of a spacial frequency domain and has a positive first-differential coefficient at a point where the spacial frequency is equal to zero; and

convolution processor means for receiving said electrical signal from said detector means and said inverse Fourier transformed function from said function generator to perform a convolution integral operation on said electrical signal with said inverse Fourier transformed function used as a weighting function to reconstruct an unblurred three-dimensional image of the planar cross-section of said object.

4,326,253

LIFT CONTROL SYSTEM FOR AIRCRAFT VERTICAL PATH GUIDANCE

Michael G. Cooper, Renton, and Alessandro P. Sassi, Bellevue, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Mar. 31, 1980, Ser. No. 136,121

Int. Cl.³ G06G *7/78*

U.S. Cl. 364—435 4 Claims

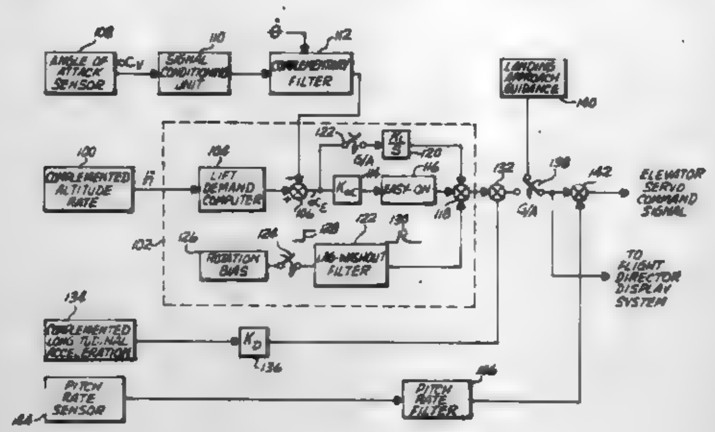
1. An aircraft vertical path guidance system comprising:

means for producing a signal h corresponding to the aircraft's vertical velocity;

lift computer means for producing a reference lift demand angle of attack signal α_{ref}, said α_{ref} signal being a continuously variable function of h between predetermined maximum and minimum angle of attack values, α_{max} and α_{min}, respectively, said function of h being independent of other aircraft parameters;

means for producing a signal α corresponding to the aircraft's actual angle of attack;

error signal means for producing an error signal α_ϵ corresponding to the difference between said reference lift



demand angle of attack signal α_{ref} and said actual angle of attack signal α; and

utilization means for utilizing said α_ϵ signal as a control to the aircraft's dynamics for controlling the vertical lift characteristic of the aircraft.

4,326,254

POSTAL CHARGE PROCESSING SYSTEM

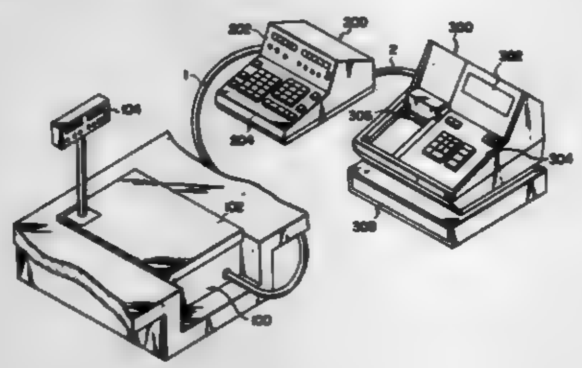
Mitsuo Uchimura, Numazu; Masao Oana, and Yoshiharu Nishimura, both of Mishima, all of Japan, assignors to Tokyo Electric Co., Ltd., Tokyo, Japan

Filed Feb. 25, 1980, Ser. No. 124,479

Claims priority, application Japan, Mar. 7, 1979, 54-26465; Apr. 24, 1979, 54-50671; Apr. 24, 1979, 54-50672

Int. Cl.³ G06F *15/20;* G01G *19/413*

U.S. Cl. 364—466 1 Claim



1. A postal charge processing system comprising:

weight measuring means for measuring the weight of a postal article and producing weight data representing the weight of said postal article;

first switching means for setting postal conditions at least including the way of mailing and region of mailing destination;

first and second display means;

third display means for displaying weight data from said weight measuring means;

first memory means for storing weight data from said weight measuring means;

second memory means for storing weight data representing the maximum permissible weight of mailable postal article;

third memory means;

second switching means for producing indicated price data which is equivalent to the price for mailing a postal article;

fourth memory means for storing indicated price data produced in accordance with the operation of said second switching means;

a plurality of third switching means for producing special

charge data regarding special charges including at least additional charge and special delivery fee;

fifth memory means for storing special charge data produced in accordance with the operation of said third switching means; and

data processing means for calculating the postal charge based on the weight data from said weight measuring means and postal condition data produced in accordance with the operation of said first switching means and supplying the postal charge data thus obtained to said third memory means for writing therein and also to said first display means for display thereon, said data processing means further including:

means for calculating the overweight data based on the weight data stored in said first memory means and the maximum permissible weight data stored in said second memory means and to supply the overweight data thus obtained to said second display means for display thereon,

means responsive to the operation of said second switching means to inhibit the transfer of data from said first and third memory means to said respective third and first display means and to drive said first and third display means as display mens for displaying indicated price data from said fourth memory means,

means responsive to the operation of said second switching means to calculate price indication charge data corresponding to data produced in accordance with the operation of said second switching means, add the price indication charge data thus obtained to the postal charge data stored in said third memory means and write the result of said addition of the price indication charge data and the postal charge data into said third memory means, and

means responsive to the operation of said third switching means to display in said first display means the special charge data stored in said fifth memory means for a predetermined period of time, and to then clear the display data stored in said fifth memory means, add the charge data produced from said third memory means and one of the special charge data produced with the operation of said third switching means and to supply, when detecting that the contents of said fifth memory means are cleared, the result of said last mentioned addition to said first display means for display thereon in lieu of the charge data stored in said third memory means.

4,326,255

APPARATUS FOR CONTROLLING PLASTICIZING PROCESS OF IN-LINE SCREW-TYPE INJECTION MOLDING MACHINE

Shigeru Fujita, Numazu, Japan, assignor to Toshiba Kikai Kabushiki Kaisha, Tokyo, Japan

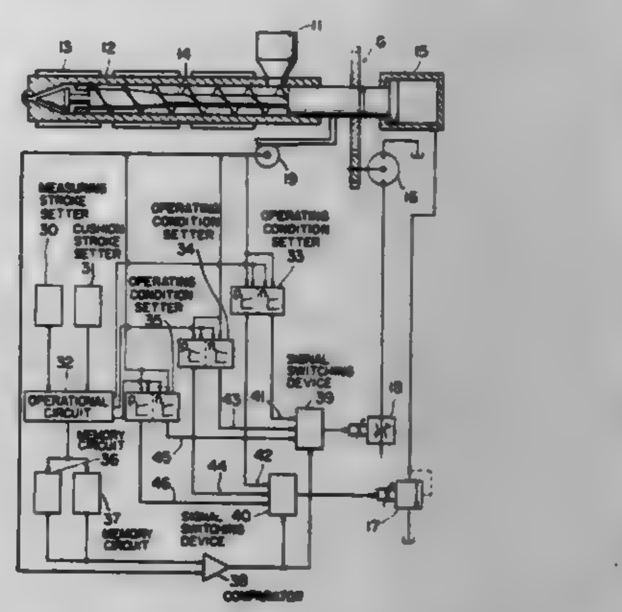
Continuation-in-part of Ser. No. 28,552, Apr. 9, 1979, abandoned. This application Feb. 2, 1981, Ser. No. 231,214

Claims priority, application Japan, Apr. 13, 1978, 53-43575; Apr. 27, 1978, 53-50572; Jun. 19, 1978, 53-73939; Jun. 19, 1978, 53-73940

Int. Cl.³ B29F *1/06;* G06F *7/66*

U.S. Cl. 364—476 5 Claims

3. In an apparatus for controlling a plasticizing process of a resin of an in-line screw-type injection molding machine of the type in which the number of revolutions and the back pressure of a screw disposed in a heating cylinder of the injection molding machine are controlled during the resin plasticizing process and comprising hydraulic means for reciprocating and rotating said screw, means for detecting a process variable which represents a position of the screw during the plasticizing process, memory means in which are set programs regarding the number of revolutions and the back pressure of the screw in first and second steps of a resin measuring process, and an operation controller responsive to the output of said detecting means for controlling and determining a control function regarding an operating condition for uniformizing the resin to be injected so as to compensate for the distribution of the temperature of the resin, the improvement which comprises means for setting positions at which a resin filling stroke is divided, means for setting positions at which injection pressures at the divided regions are detected, a first comparator which compares an output signal from said detecting means with that from said means for setting injection pressure detecting position, a memory circuit for memorizing an output signal from said first comparator and an injection pressure at said divided position, an operational circuit which determines a control function



based on an output signal from said memory circuit and generates a signal which is selectively applied to said memory means, a second comparator which compares an output signal from said detecting means with that from said dividing position setting means, and switching means which are operated by an output signal from said second comparator for controlling said hydraulic means in accordance with the predetermined programs stored in said memory means thereby to control the number of revolutions and the back pressure of the screw.

4,326,256

FREQUENCY DISCRIMINATING CIRCUIT

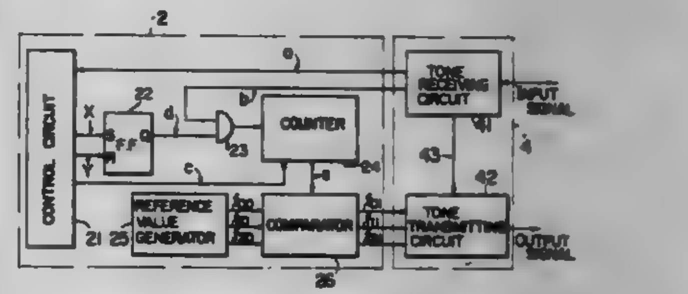
Takayuki Furumoto, Yokohama, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 10, 1979, Ser. No. 74,147

Claims priority, application Japan, Sep. 8, 1978, 53-109822

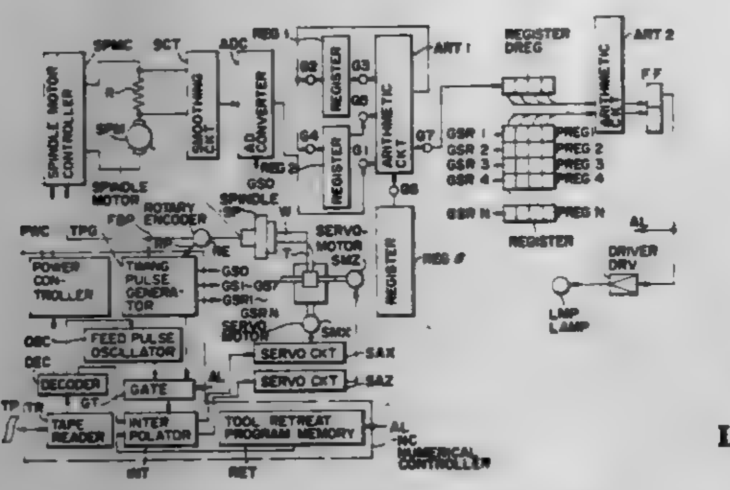
Int. Cl.³ G01R *23/00;* H04M *1/00*

U.S. Cl. 364—484 8 Claims



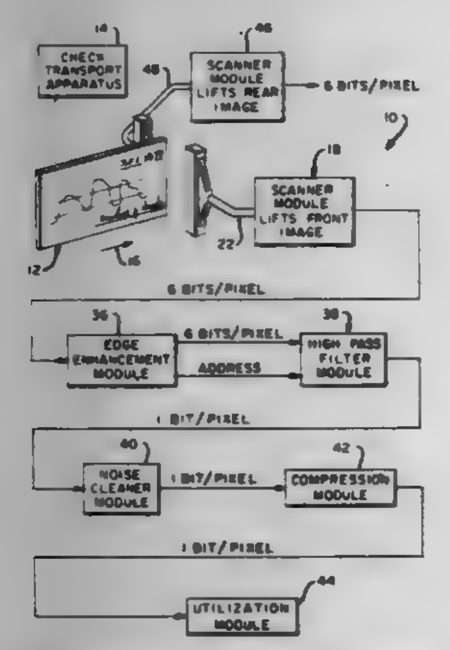
1. A frequency discriminating circuit for determining whether a received input signal has a predetermined frequency wherein the input signal is converted to a digital signal and the digital-converted input signal is gate-controlled for a given period of time by a count enable signal, and further wherein a count value of a counter which counts the number of pulses of the gate-controlled digital input signal is compared in a comparator with respective reference values representing predetermined frequencies generated by a reference value generator to determine if the input signal corresponds to one of said predetermined frequencies.

4,326,257
TOOL BREAKDOWN DETECTING SYSTEM
Toshio Sata, Hoya, and Katsumori Matsushima, Tokyo, both of Japan, assignors to Fujitsu Fanuc Ltd., Tokyo, Japan
Filed Nov. 21, 1979, Ser. No. 96,512
Claims priority, application Japan, Nov. 21, 1978, 53-143617
Int. Cl.³ G06F *15/46*
U.S. Cl. 364—508 **21 Claims**



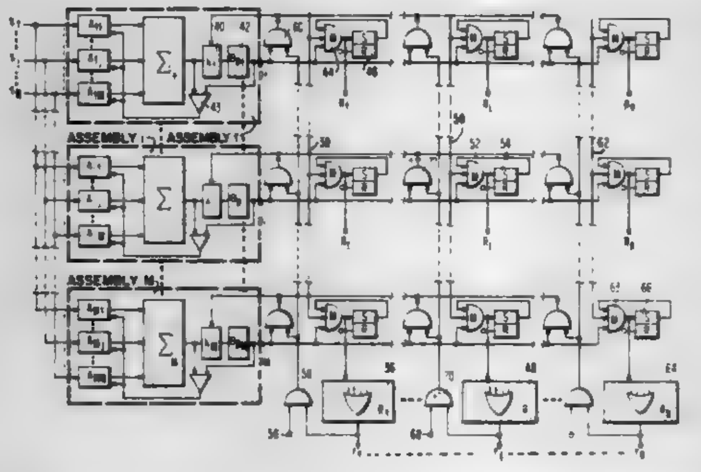
1. A tool breakdown detecting system comprising:
memory means for storing at least one predetermined change pattern of the cutting resistance of a tool corresponding to a tool breakdown condition during working;
means for detecting the actual cutting resistance of the tool during working and forming a change pattern of the actual cutting resistance of the tool; and
comparing means for comparing the predetermined change pattern stored in the memory means with the actual change pattern of the cutting resistance of the tool during working, wherein coincidence of the two change patterns thus compared indicates a tool breakdown condition.

4,326,258
METHOD AND APPARATUS FOR REDUCING THE GRAY SCALE RESOLUTION OF A DIGITIZED IMAGE
Mario F. de la Guardia, Miami, Fla., assignor to NCR Canada LTD - NCR Canada LTEE, Mississauga, Canada
Filed Jan. 31, 1980, Ser. No. 117,329
Int. Cl.³ H04N *1/40*
U.S. Cl. 364—515 **15 Claims**



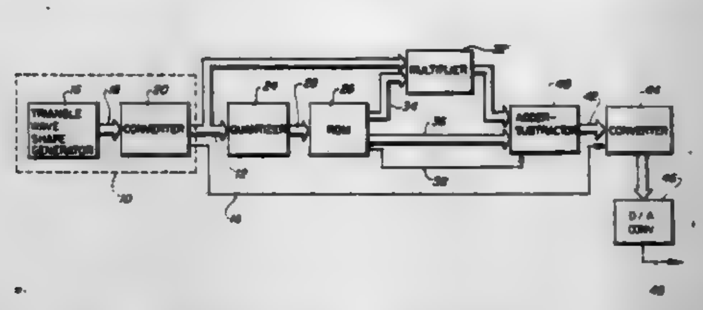
1. An apparatus for reducing the gray scale resolution of a document comprising:
means for scanning said document along x and y coordinates with regard thereto for generating pixels representing gray scale values for discrete areas of said document along said x and y coordinates; each said pixel having a predetermined number of binary bits;
means for summing the associated pixels within a matrix of said pixels along said x and y coordinates, with said matrix being hereinafter referred to as a window to produce a window sum as said window is moved relatively along coordinates corresponding to said x and y coordinates; and
means for comparing a selected pixel within a said window with the associated said window sum and predetermined criteria and for generating first and second outputs in accordance with said comprising; said first and second output values having fewer binary bits than the associated said selected pixel.

4,326,259
SELF ORGANIZING GENERAL PATTERN CLASS SEPARATOR AND IDENTIFIER
Leon N. Cooper; Charles Elbaum, and Douglas L. Reilly, all of Providence, R.I., assignors to Nestor Associates, Stonington, Conn.
Filed Mar. 27, 1980, Ser. No. 134,571
Int. Cl.³ G06F *15/18*
U.S. Cl. 364—715 **28 Claims**



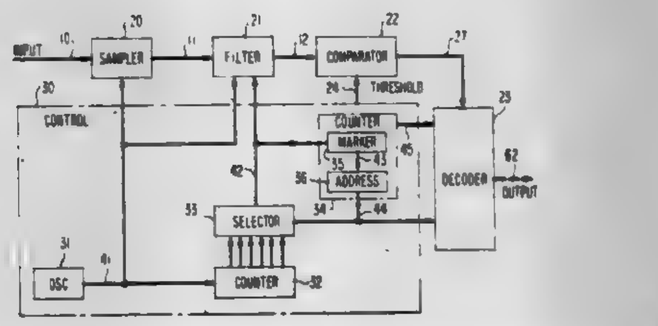
1. An information processing system for separating classes of non-linearly as well as linearly separable patterns, each of said patterns being represented by a plurality N of input signals $s_1, s_2, \ldots s_j \ldots s_N$, said system comprising, in combination:
(a) a plurality N of input terminals, each terminal (j) adapted to receive one of the N input signals (s_j);
(b) a plurality M of summing means, each summing means (i) having N inputs and an output and being operative to provide a signal (p'_i) at its output representing the sum of the signal representations applied to its inputs;
(c) a plurality N×M of junction elements, each junction element (ij) coupling one of said input terminals (j) with one summing means (i) and providing a transfer of information from the respective input terminal j to the respective summing means i in dependence upon the signal (s_j) appearing at the input terminal and upon the element transfer function A_{ij};
(d) a plurality M of threshold means, each threshold means (i) coupled to the output of one of said summing means (i) and adapted to produce an output (p_i) whenever the output signal (p'_i) produced by the respective summing means exceeds a given threshold value (θ_{pi}),
whereby the output P represented by the respective output signals $p_1, P_2 \ldots p_i \ldots p_M$ of said threshold means provide a separation of the patterns represented by said input signals $s_1, s_2, \ldots s_j \ldots s_N$ into classes.

4,326,260
LINEAR PIECEWISE WAVEFORM GENERATOR FOR AN ELECTRONIC MUSICAL INSTRUMENT
Glenn M. Gross, Chicago, Ill., assignor to Norlin Industries, Inc., White Plains, N.Y.
Filed Jul. 7, 1980, Ser. No. 166,237
Int. Cl.³ G06F *1/02*
U.S. Cl. 364—718 **10 Claims**



1. A digital waveform generator comprising:
means for developing a binary signal sequentially changing in value at a selected rate;
memory means storing each of a plurality of parameter instructions at a respective memory address, each of said respective memory addresses corresponding to a continuous group of values of said binary signal;
means for addressing each of said respective memory addresses in response to said binary signal assuming a value within the group of values corresponding thereto; and
output means for modifying said binary signal in accordance with said addressed parameter instructions for developing a desired output waveform signal.

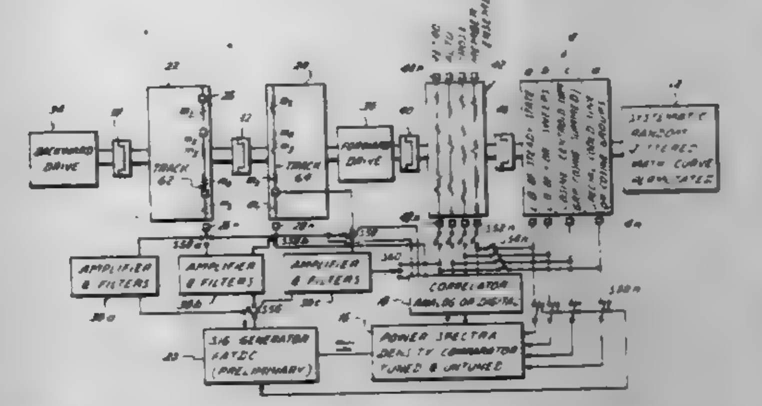
4,326,261
SINGLE TONE DETECTOR
John T. Peoples, 20 Dorset Rd., Berkeley Heights, N.J. 07922
Filed Jun. 23, 1980, Ser. No. 162,260
Int. Cl.³ G01R *23/14*
U.S. Cl. 364—724 **10 Claims**



1. Circuitry for detecting and estimating the frequency of a discretized input tone
characterized by
discrete-time means (21,30), including a discrete-time filter (21) having operating states represented by an initial frequency characteristic and expanded frequency characteristics derived from said initial characteristic, for receiving and processing said discretized tone by expanding said filter to operate sequentially in each of said states to produce a corresponding sequence of outputs; and
means (22,23), coupled to said discrete-time means, for identifying said input tone from said sequence of outputs.

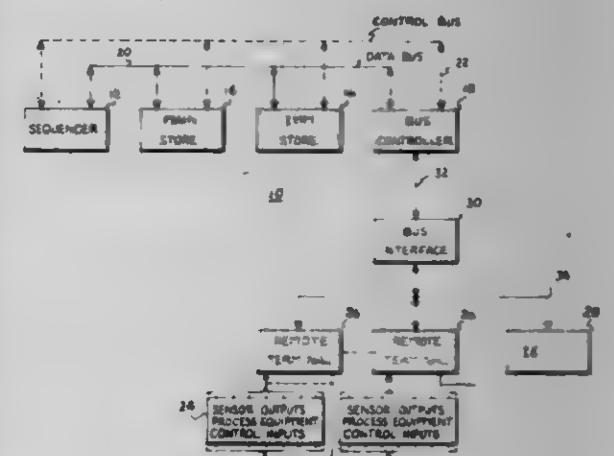
4,326,262
UNIVERSAL SIGNAL GENERATOR AND SIGNAL PARAMETER COMPARATOR
Alvin H. Clement, 4924 Greenville, Dallas, Tex. 75206
Filed Oct. 16, 1978, Ser. No. 951,447
Int. Cl.³ G06G *7/19, 7/26*
U.S. Cl. 364—851 **24 Claims**

19. A method of generating a signal for transmission through the earth having selected, desired characteristics, which comprises providing a library of pre-recorded signals for playback, selecting and playing back one of said signals, varying said



selected signal during playback in a selected manner, and transmitting said varied signal into the earth.

4,326,263
METHOD AND APPARATUS FOR CONTROLLING A PLURALITY OF LIKE EQUIPMENTS
Arthur P. Given, Roanoke, Va., and Michael F. O'Meara, Fos-Sur-Mer, France, assignors to General Electric Company, Salem, Va.
Filed Jul. 3, 1974, Ser. No. 485,571
Int. Cl.³ G06F *15/46*
U.S. Cl. 364—900 **9 Claims**



1. A method of developing control parameters for a plurality of like equipments through the use of a data processing system having an executive program for directing communications between the equipments and the data processing system and further including a store for the storage of instructions and data comprising the steps:
(A) storing a simulated control circuit appropriate to all of said like equipments by instruction words, each including a portion defining an operation to be performed and an address portion;
(B) storing representations of operating parameters for each of said like equipments in a plurality of designated address locations, like parameters of like equipments being stored in respective locations which differ from each other by an index factor associated with each like equipment;
(C) retrieving the stored instruction words sequentially from said store to perform the operations thereby specified;
(D) combining the address portion of the instruction word retrieved with the index factor associated with the equipment then being controlled to develop a parameter address;
(E) retrieving the representation of the appropriate operating parameter utilizing said parameter address;
(F) performing the operation defined by each retrieved instruction word using the retrieved representation of the

appropriate operating parameter to thereby develop a control parameter for an equipment; and,

(G) repeating the steps of C, D, E and F above for each of said equipments being controlled.

4,326,264

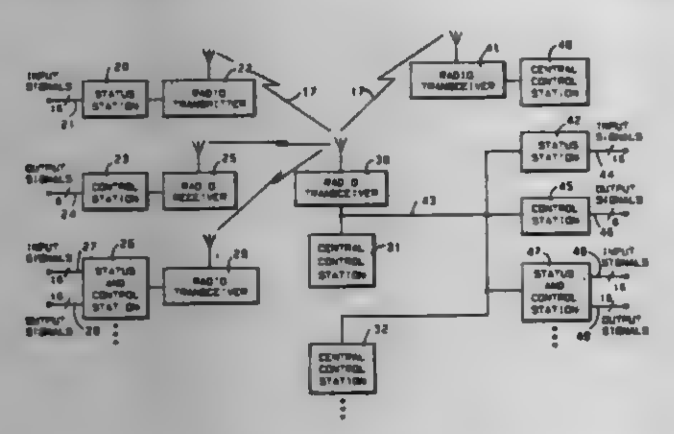
DISPLAY SYSTEM FOR A SUPERVISORY CONTROL SYSTEM

Yitzhak Cohen, Yahud; Yigal Brandman, Ramat Hasharon, both of Israel, and Zvi Eckstien, Highland Park, Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Division of Ser. No. 807,850, Jun. 20, 1977, Pat. No. 4,161,718. This application Dec. 4, 1978, Ser. No. 966,280

Int. Cl.³ G06F *3/14*

U.S. Cl. 364—900 2 Claims



1. A display system for a supervisory system having a plurality of stations that provide respective status signals, the display system comprising:

a predetermined number of display elements;

a plurality of memory elements connected to the plurality of stations and to the display elements for receiving and storing the status signals in words and transmitting the status signals to the display elements;

means for providing a train of first clock pulses;

first counting means connected to the means for providing a train of first clock pulses;

an enable source connected to the first counting means to apply an enable signal to the first counting means to cause the first counting means to count a predetermined number of first clock pulses in successive words and provide a first output pulse for each of the words; and

second counting means connected to the first counting means, to the enable source, and to the plurality of memory elements, the second counting means responsive to the enable signal for counting a predetermined number of the first output pulses and providing a second output pulse to the plurality of memory elements to direct storage of the status signals in the memory elements.

4,326,265

VARIABLE FUNCTION PROGRAMMED CALCULATOR

Gary W. Boone, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 856,932, Dec. 2, 1977, Pat. No. 4,242,075, which is a continuation of Ser. No. 420,999, Dec. 3, 1973, abandoned, which is a continuation of Ser. No. 163,565, Jul. 19, 1971, abandoned. This application Jan. 12, 1979, Ser. No. 2,814

Int. Cl.³ G06F *3/02, 3/147, 9/00*

U.S. Cl. 364—900 5 Claims

1. An electronic system implemented with a monolithic semiconductor unit included as a part thereof, comprising:

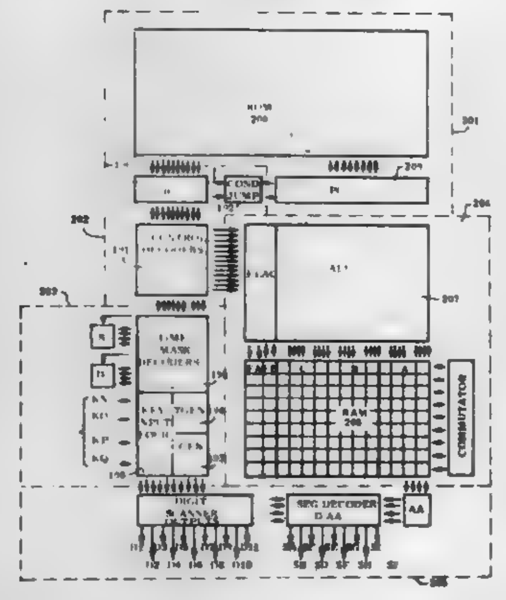
(a) addressable storage means of the read-only-memory type included in said unit for storing fixed program instructions to control the operation of the system, said storage means being programmable in manufacture to define the functions of one of a variety of different systems;

(b) control means included in said unit and including decoder means, the control means being coupled to an output of said addressable storage means and responsive to said program instructions for generating control signals in accordance with said program instructions;

(c) data memory means included in said unit and having a plurality of locations for storing a plurality of multibit data words of coded information in bit-parallel format;

(d) bit-parallel arithmetic-logic means included in said unit and connected to the control means to receive certain ones of said control signals and having an input for receiving data words, said arithmetic-logic means performing bit-parallel arithmetic and logic operations on said data words from said data memory and producing an output, one word at a time, in accordance with said control signals;

(e) selector means included in said unit and connected to the control means to receive certain ones of said control signals, said selector means coupling selected words from said data memory means to the input of the arithemtic logic means and coupling data words resulting from arithmetic-logic operations appearing at the output of the arithmetic-logic means to the data memory means, in accordance with said certain ones of said control signals; and



(f) the electronic system including, in addition to said semiconductor unit, input means and visual display means external to the monolithic semiconductor unit and coupled to input and output terminals of the semiconductor unit for entering operational commands which result in defining addressing of said storage means and displaying information from the data memory means, both under control of certain ones of said control signals, the input means including manually-operable means.

4,326,266

MONITORING SYSTEM FOR A MODULAR DIGITAL DATA PROCESSOR

Sheila G. Davis, Los Angeles; Robert E. Franks, San Gabriel, both of Calif., and Alfred J. De Santis, Berwyn, Pa., assignors to Burroughs Corporation, Detroit, Mich.

Filed Oct. 16, 1979, Ser. No. 85,278

Int. Cl.³ G06F *11/28*

U.S. Cl. 364—900 7 Claims

1. In a digital data processing system having a plurality of separately operating modules, the combination comprising:

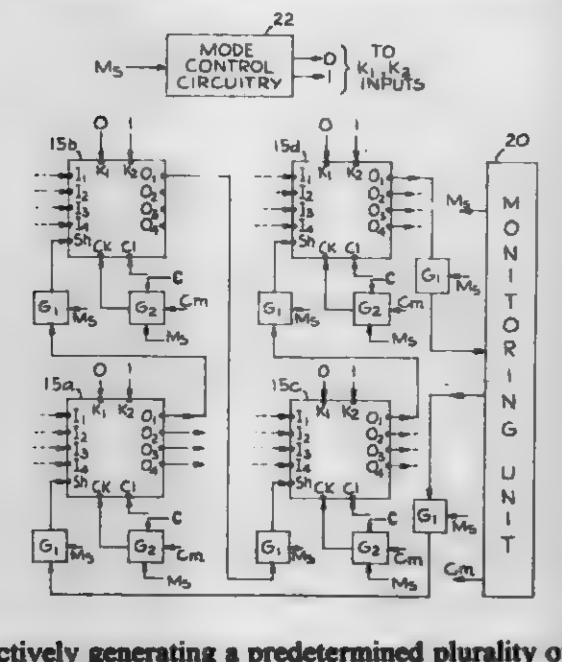
a plurality of storage devices in each module, each storage device providing for the storage of a plurality of bits such that bits can be inputed or outputed therefrom in series or in parallel;

logic circuitry provided in each module for interconnecting said storage devices for the performance of parallel data processing operations;

each logic circuitry also including selectably controllable means for reconfiguring connections to said storage devices so as to form a plurality of separately selectable strings in each module wherein each string comprises at least two serially connected storage devices; and

monitoring means for performing monitoring of digital data applied thereto from a selected string;

said monitoring means including means for selectably generating one of a plurality of monitor enable signals identifying a particular string in a particular module and for also selectively generating a predetermined plurality of monitor clock signals, said monitor enable and clock signals being applied to the identified module for causing the selectably controllable means therein to reconfigure connections to the storage devices of the identified string so as to cause the bits stored therein to be serially propagated to and from said monitoring means with the bits of the storage devices of the identified string being returned to states determined by said monitoring means.



4,326,267

DATA PROCESSING SYSTEM EMPLOYING PORTABLE CARDS AND OPERATING STATIONS MAKING USE OF MAGNETIC BUBBLE ELEMENTS

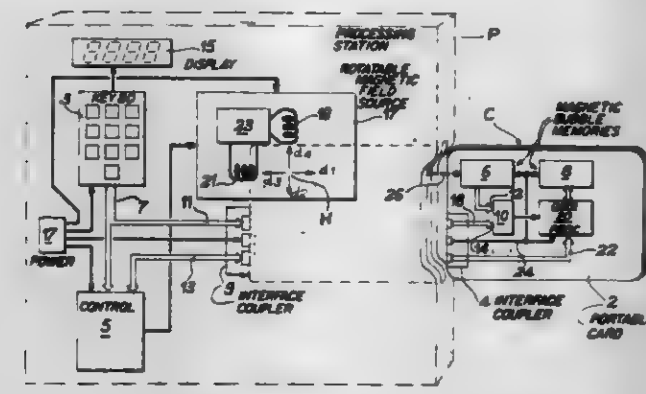
Jean-Pierre Lazzari, Montfort l'Amaury, France, assignor to Compagnie Internationale pour l'Informatique Cii-Honeywell Bull, Paris, France

Filed Nov. 1, 1979, Ser. No. 90,275

Claims priority, application France, Dec. 21, 1978, 78 36049

Int. Cl.³ G11C *7/00, 17/08*

U.S. Cl. 365—1 11 Claims



1. A data processing system adapted to employ a plurality of portable cards for processing information between said cards and an operating station, each said card including first data processing means, magnetic bubble elements forming a part of said first data processing means, said operating station including second data processing means, receiver means into which said cards may be inserted and means for coupling the first and the second data processing means upon insertion of a card into said receiver means, and said operating station having means positioned for setting up a rotatable magnetic field to be applied to the magnetic bubble elements of the card upon insertion of said card in the receiver means and coupling of the first and second data processing means.

4,326,268

MAGNETIC BUBBLE MEMORY DEVICE

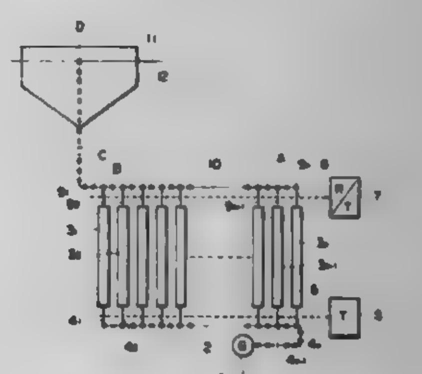
Ryo Suzuki, Kodaira; Keiichi Uehara; Teruaki Takeuchi, both of Kokubunji, and Masatoshi Takeshita, Hachioji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 1, 1980, Ser. No. 174,437

Claims priority, application Japan, Aug. 15, 1979, 54-103137

Int. Cl.³ G11C *19/08*

U.S. Cl. 365—15 5 Claims



1. A magnetic bubble memory device comprising a plurality of minor loops, a read-out major line which is disposed at one end of said minor loops through gates having at least a replicating function, and a magnetic bubble detector which includes a detecting line and which is disposed at one end of said read-out major. line, said read-out major line having the other end thereof connected through one of the gates to the one of said minor loops positioned furthest away from said magnetic bubble detector, a propagation length from the other end of said read-out major line to said detecting line of said magnetic bubble detector being a bit length which exceeds four times the number of said minor loops.

4,326,269

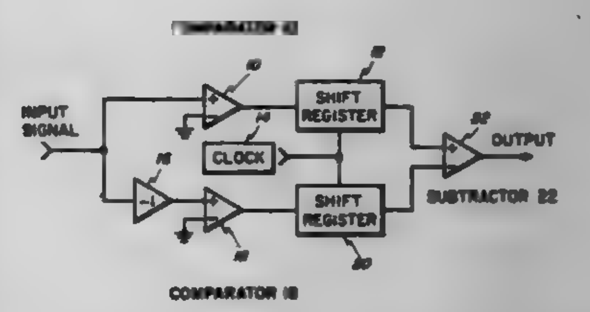
ONE BIT MEMORY FOR BIPOLAR SIGNALS

David N. Ludington, New Hartford, N.Y., assignor to General Electric Company, Utica, N.Y.

Filed Jun. 9, 1980, Ser. No. 157,756

Int. Cl.³ G11C *11/40*

U.S. Cl. 365—189 2 Claims



1. A one bit memory for a plurality of samples of a bipolar input signal comprising:

(a) a first channel having a first comparator means and a first shift register means to quantize the positive portion of said input signal into a single positive level and store them;

(b) a second channel having an inverter, a second comparator means and a second shift register means to invert and quantize the negative portion of the input signal into a single positive level and store them;

(c) means for substracting the output levels of said second

channel from the output levels of said first channel to yield a bipolar output signal having a single quantized positive level corresponding to the positive portion of said input signal and a single quatized negative level corresponding to the negative portion of said input signal whereby the level of said output signal is zero in the absence of said input signal;

(d) a clock to provide timing pulses to said first and second shift register means.

4,326,270

PRESET CIRCUIT FOR INFORMATION STORAGE DEVICES

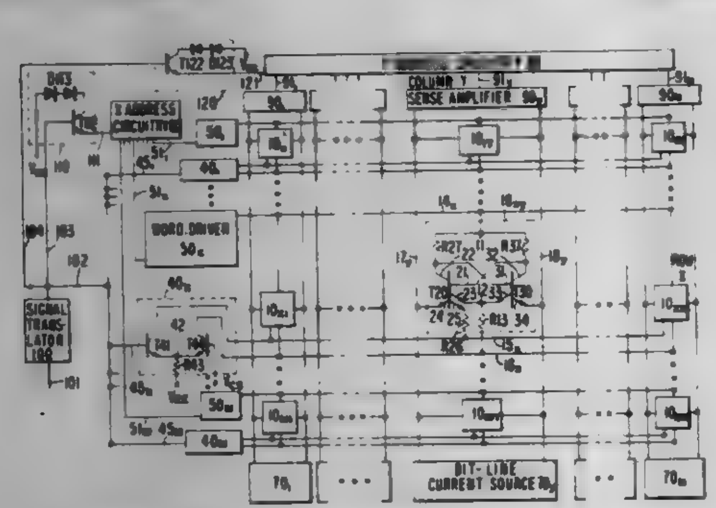
William K. Owens, Sunnyvale, and Steven R. Kahermanes, San Jose, both of Calif., assignors to Fairchild Camera and Instrument Corp., Mountain View, Calif.

Division of Ser. No. 931,637, Aug. 7, 1978. This application Jul. 19, 1979, Ser. No. 58,638

The portion of the term of this patent subsequent to Oct. 23, 1996, has been disclaimed.

Int. Cl.^{3} G11C *11/40*

U.S. Cl. 365—218 **12 Claims**



1. An electronic circuit for information bit storage having a capability for erasing an information bit contained in said circuit and entering a predetermined new information bit into said circuit which comprises:

a memory cell having M transistors (where M is a positive integer) defining at least two distinct states in which said cell may exist, a predetermined state of said distinct states corresponding to said predetermined new information bit and existing when a selected transistor of said M transistors in conducting;

a current-source conductor coupled to said cell for conducting current thereto to sustain said distinct states;

an additional current-conducting region formed as part of said selected transistor, said selected transistor conducting when current flows through said additional current-conducting region;

an additional conductor coupled to said additional current-conducting region for conducting current thereto; and

a branching current switch for selectively channelling current either to said current-source conductor or to said additional conductor.

4,326,271

METHOD AND APPARATUS FOR DETERMINING ACOUSTIC PROPERTIES IN THE EARTH

Antoni M. Ziolkowski, 11 Heatherdene Mansions, Cambridge Rd., Twickenham, Middlesex, England

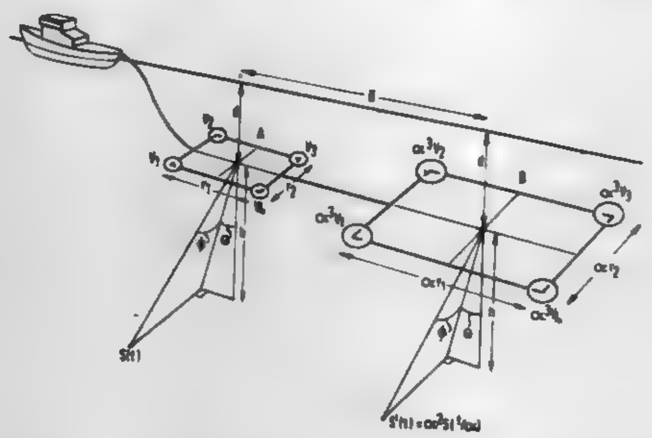
Filed Apr. 23, 1980, Ser. No. 142,925

Claims priority, application United Kingdom, Apr. 23, 1979, 14039/79

Int. Cl.^{3} G01V *1/13, 1/38*

U.S. Cl. 367—16 **17 Claims**

1. A method of determining the location in the earth of sub-surface boundaries and/or the acoustic properties of sub-surface features in the earth which method comprises employing as a first sound source one or more two-dimensional arrays of point sound sources which point sound sources in a given array are so spaced as to interact with each other, and employing as a second sound source one or more two-dimensional arrays of point sound sources which point sound sources in a given array are so spaced that interaction between the wave-fields of two or more of the point sound sources occurs, the or each of the first arrays containing the same number of point sound sources as the or each of the second arrays, respective



point sources of the first and second arrays being of the same type and in the same spatial relationship, the spacing of the point sources from each other in the or each sound array being a factor α greater than that of the point sources from each other in the or each first array, and the energy of the elastic radiation emitted by each point source of the or each second array being greater by a factor α^3 than that emitted by its equivalent point source in the or each first array, wherein α has a value greater than 1.

4,326,272

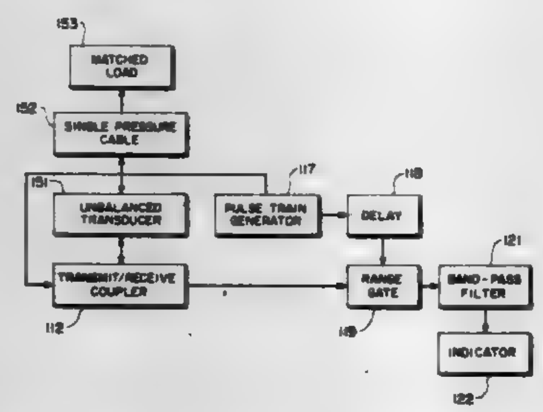
ELECTRONIC INTRUDER DETECTION SYSTEM

Otto E. Rittenbach, Monmouth County, N.J., and Reinhard G. Olesch, Kronberg, Fed. Rep. of Germany, assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation-in-part of Ser. No. 840,206, Oct. 7, 1977, Pat. No. 4,187,501. This application Dec. 26, 1978, Ser. No. 973,402

Int. Cl.^{3} G08B *13/16, 13/20*

U.S. Cl. 367—93 **1 Claim**



1. An electronic intrusion detector system comprising:

a fluid-filled cable,

an unbalanced transducer connected to one end of said cable to generate a signal when said cable is disturbed by an intruder,

a matched load connected to the other end of said cable,

a source of pulses,

means applying said pulses to said transducer and receiving a return signal,

range gating means receiving said return signal,

delay means applying delayed pulses from said source to said range gating means, and

means connected to said range gating means for indicating the location of said intruder.

4,326,273

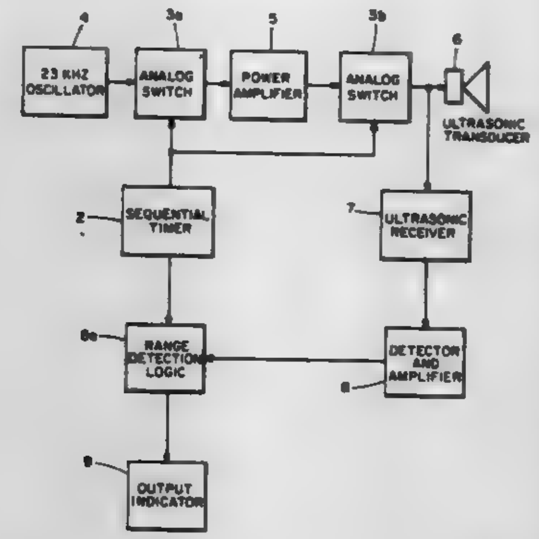
ULTRASONIC RANGING DEVICE

John Vancha, Bolingbrook, Ill., assignor to Hurst Performance, Inc., Warminster, Pa.

Filed Jul. 23, 1980, Ser. No. 171,529

Int. Cl.^{3} G01S *15/93, 15/18*

U.S. Cl. 367—112 **6 Claims**



1. An ultrasonic ranging device for use in a vehicle comprising: means for producing a continuous time varying oscillating signal, means for switching said oscillating signal, means for amplifying said time varying signal received from said switch means, second switch means connected to said amplifying means to control said amplified oscillating signal, transducer means connected to said second switch means mounted on an external portion of a vehicle and converting said amplified oscillating signal to a high frequency sound, timer means connected to said first and second switch means to control said switch means, receiver means connected to said transducer means to amplify electrical signals received from said transducer, control means connected to said timer means and said receiver means to selectively supply an output signal to output indicating means in response to a timing signal from said timer means and a receiver signal from said receiver when said return signal is received within predetermined maximum and minimum time intervals corresponding to a predetermined distance between said transducer means and an object reflecting said high frequency sound.

4,326,274

TRANSMISSION SYSTEM OF AERIAL ULTRASONIC PULSE AND ULTRASONIC TRANSMITTER AND RECEIVER USED IN THE SYSTEM

Mitsuhiko Hotta, Kyoto; Shuhei Furuichi, Shiga, and Takanori Shigihara, Hyogo, all of Japan, assignors to Kabushiki Kaisha Morita Seisakusho, Kyoto, Japan

Filed Jul. 3, 1980, Ser. No. 165,385

Claims priority, application Japan, Jul. 4, 1979, 54/85318

Int. Cl.^{3} H04R *17/00*

U.S. Cl. 367—118 **4 Claims**

1. A transmission system for aerial ultrasonic pulses comprising:

an ultrasonic transmitter and an ultrasonic receiver in opposing relationship along a straight line, said transmitter and receiver each comprising:

a thickness vibration type piezoelectric element having a front end face portion;

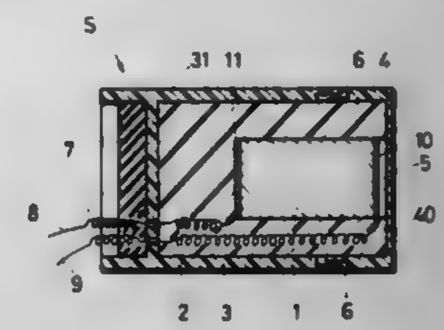
a vibration absorbing material hermetically enclosing said piezoelectric element except said front end face portion;

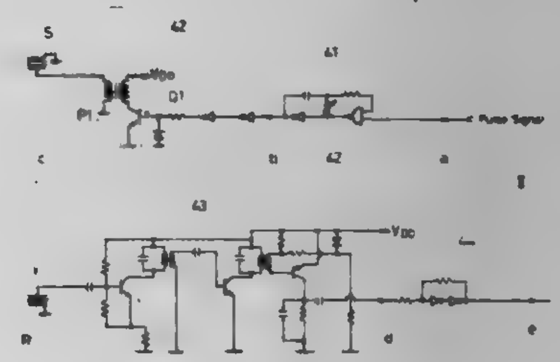
a casing enclosing said vibration absorbing material and having an open end which corresponds with said front end face portion of said piezoelectric element;

a cover closing said open end of said casing, said cover comprising a protective film having excellent sound transmissivity;

a vibration transmitting adhesive layer provided between said protective film and said front end face portion; and

a vibration absorbing adhesive provided between a periphery of said cover and said casing;





said transmitter and receiver being arranged such that said front end face portions of said transmitter and receiver face each other;

whereby when said transmitter emits an ultrasonic pulse in response to a signal pulse, said receiver receives said ultrasonic pulse and converts said ultrasonic pulse to a voltage corresponding to said signal pulse.

4,326,275

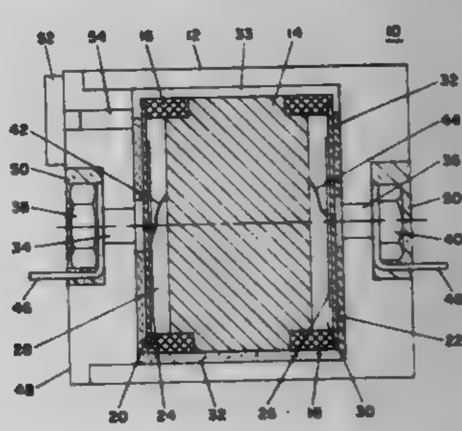
DIRECTIONAL TRANSDUCER

John L. Butler, Marshfield, Mass., assignor to Hazeltine Corporation, Greenlawn, N.Y.

Filed Sep. 27, 1979, Ser. No. 79,768

Int. Cl.^{3} H04B *17/00*

U.S. Cl. 367—160 **10 Claims**



1. A directional transducer, comprising:

a housing having an axis and defining a chamber;

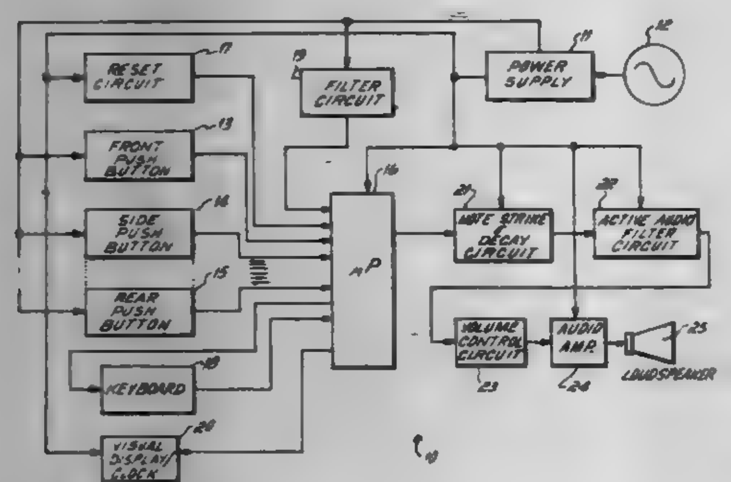
an inertial mass within said chamber;

first and second flexural transducer elements, each comprising a planar member having a periphery, said planar members being mounted by their peripheries on axially oppo-

site ends of said inertial mass substantially perpendicular to said axis thereby defining an air-filled space between said members and said mass;
force transmitting means interconnecting central portions of each of said planar members with said housing along said axis;
means for electrically connecting said transducer elements to external circuitry; and
means for dampening vibration including the air-filled space between said members and said mass and a high viscosity fluid within said chamber, said fluid located between said housing and said members.

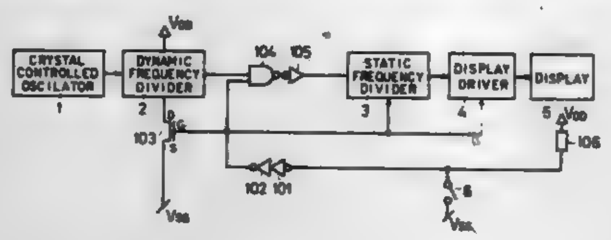
10. A directional transducer comprising at least one flexural disc transducer element mechanically, rigidly interconnecting an inertial mass and a housing, said housing having a chamber, said flexural disc transducer element and said inertial mass in said chamber, said flexural disc being connected to said inertial mass by its periphery and to said housing by its center; and means for dampening vibration by a selected amount including an air-filled space between said element and said mass and a high viscosity fluid within said chamber, said fluid located between said disc and said housing.

4,326,276
MUSICAL DOOR CHIME PREFERABLY ALSO COMBINED WITH A CLOCK FOR ANNUNCIATING THE TIME
Walter M. Scott, Jr., West Chester, Ohio, assignor to Scovill Inc., Waterbury, Conn.
Filed Dec. 4, 1979, Ser. No. 100,163
Int. Cl.³ G04B *47/00, 21/00;* G08B *3/00;* G10F *1/00*
U.S. Cl. 368—10 14 Claims



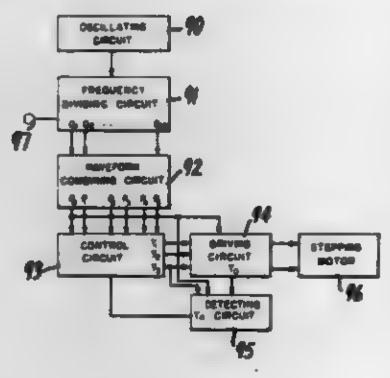
1. A musical door chime comprising:
at least one selectively actuable door pushbutton;
a keyboard including a plurality of code entry keys;
a memory for storing digitally encoded representations of the frequency and the duration of each musical note for a plurality of musical tunes;
a tone generation means connected to said at least one door pushbutton, keyboard, and memory and responsive to actuation of said at least one door pushbutton for converting each said digitally encoded musical note representation for one of said musical tunes selected by entering a code by means of said keyboard into a squarewave having said frequency and said duration of each said musical not for said selected musical tune; and
circuit means connected to said tone generation means and responsive to each said squarewave for playing a sound of each said musical note for said selected musical tune.

4,326,277
ELECTRONIC TIMEPIECE
Yasuhiko Nishikubo, Iruma, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan
Filed Feb. 13, 1979, Ser. No. 11,853
Claims priority, application Japan, Feb. 17, 1978, 53/17453
Int. Cl.³ G04C *19/00, 9/00;* H03K *21/00*
U.S. Cl. 368—86 4 Claims



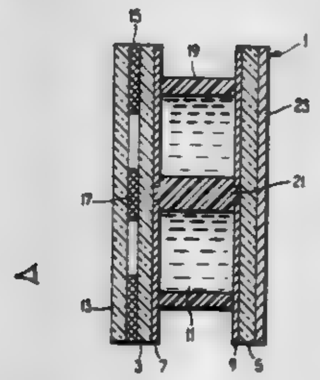
1. An electronic timepiece comprising:
oscillator means for producing a time standard signal;
dynamic frequency divider means connected to an output terminal of said oscillator means for dividing the frequency of said time standard signal;
static frequency divider means connected to an output terminal of said dynamic frequency divider means for dividing the frequency of an output signal from said dynamic frequency divider means;
display driver means connected to an output terminal of said static frequency divider means for driving a display means;
a said display means connected to an output terminal of said display driver means for providing a time information display;
reset system means connected to a reset terminal of said static frequency divider means;
switch means connected to said reset system means and disposed in the voltage supply circuit of said dynamic frequency divider means; and
gate means connected between said dynamic frequency divider means and said static frequency divider means and further connected to said reset system means,
said switch means being open when the reset system means is in the reset state,
said gate means passing the output signal from said dynamic frequency divider means when said reset system means is in the set state and fixing the output thereof when said reset system means is in the reset state.

4,326,278
ELECTRONIC TIMEPIECE
Masaharu Shida; Makoto Ueda; Akira Torisawa; Shuji Owada, and Masaaki Mandai, all of Tokyo, Japan, assignors to Kabushiki Kaisha Daini Seikosha, Japan
Filed Dec. 4, 1978, Ser. No. 966,115
Claims priority, application Japan, Dec. 2, 1977, 52-144651
Int. Cl.³ G04B *19/00;* G04F *5/00*
U.S. Cl. 368—157 12 Claims



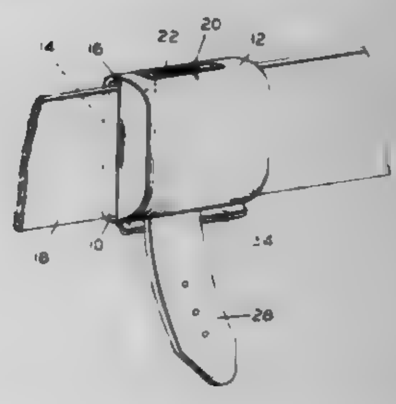
1. In an electronic timepiece having an oscillating circuit for generating a time standard signal; a dividing circuit for dividing the time standard signal into a plurality of lower frequency signals; a stepping motor including a stator, rotor and coil; and a driving circuit for applying driving pulses to the stepping motor coil to effect rotation of the rotor, the improvement comprising: a pulse combining circuit receptive of the lower frequency signals from the dividing circuit for producing correction driving pulses having sufficient effective power to drive the motor under worst case conditions; detecting means for detecting the rotation or non-rotation condition of the rotor and developing a corresponding output signal upon detection of a non-rotation condition; and control means coacting with said pulse combining circuit for producing and controlling the application of normal driving pulses to the driving circuit and responsive to the output signal from said detecting means for effecting the application of a correction driving pulse to the driving circuit when a non-rotation condition is detected, said control means including pulse power minimizing means for producing and applying to the driving circuit within predetermined periods normal driving pulses of decreasing effective power and for producing and applying to the driving circuit normal driving pulses of increasing effective power in response to the detection of a non-rotation condition of the rotor thereby reducing overall the amount of electric power required to rotationally drive the stepping motor during operation of the timepiece.

4,326,279
ANALOGUE DISPLAYS
Ian A. Shanks, Malvern, England, assignor to National Research Development Corporation, London, England
Filed Jan. 25, 1980, Ser. No. 115,535
Claims priority, application United Kingdom, Jan. 26, 1979, 02941/79
Int. Cl.³ G04C *17/02;* G06F *3/14*
U.S. Cl. 368—240 21 Claims



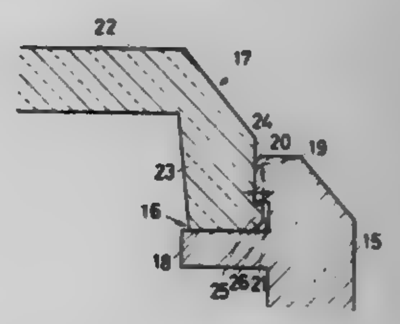
1. An analogue display including:
a display panel having an electrically sensitive medium interposed between a first and a second set of electrodes, each set mounted upon a supporting substrate, at least one of which substrates is transparent, the medium being capable of adopting in different regions thereof each of two optical states, an ON state and an OFF state respectively, according to voltage differences applied thereacross when address signals are applied to the electrodes, the two sets of eletrodes being arranged in register with each other and each configured to define by overlap thereof both a plurality of selectable positions of a shaped index character and background areas adjacent these selectable positions;
panel drive means for providing a set of address signals; and,
signal selection means having signal inputs connected to the panel drive means to receive address signals, and having at least one control input, the selection means being connected to at least one of the two sets of electrodes; the other set of electrodes being connected to receive address signals wherein, under control, the selection means is capable of channelling selected address signals to its connected electrodes, such that while address signals are applied to both sets of electrodes, like signals are applied to overlapping electrodes defining a selected one of the selectable positions, zero voltage difference being applied across the region of the medium interposed therebetween, this region being held in the OFF state, where simultaneously other regions of the medium, corresponding both to other selectable positions of the index character and to background areas, are held in the ON state.

4,326,280
WATCH MOUNTING DEVICE
Dale E. Perry, Jr., 4352 Brown Rd., Oregon, Ohio 43616
Filed Mar. 24, 1980, Ser. No. 133,454
Int. Cl.³ G04B *37/00;* A45C *11/10*
U.S. Cl. 368—277 6 Claims



1. A watch mounting device adapted to be mounted on an article of wearing apparel, comprising:
a. a base plate mounted on the wearing apparel;
b. a watch carrying cover;
c. first hinge means pivotally connecting one end of said cover along one marginal edge of said base plate;
d. first spring means normally urging said cover against said base plate;
e. a watch;
f. second hinge means pivotally connecting one end of said watch to the opposite end of said cover;
g. second spring means normally urging said watch to a position within said cover; and
h. grasping means attached to the opposite end of said watch and extending from within and beyond said cover.

4,326,281
MOUNTING STRUCTURE OF PLASTIC GLASS IN WATCH CASE
Ryuzo Tanaka, Tanashi, and Hisao Ishigaki, Tokyo, both of Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan
Continuation of Ser. No. 951,016, Oct. 12, 1978, abandoned. This application Jun. 25, 1980, Ser. No. 162,885
Claims priority, application Japan, Oct. 13, 1977, 52-137120[U]; Dec. 15, 1977, 52-168668[U]
Int. Cl.³ G04B *37/00*
U.S. Cl. 368—294 8 Claims



1. A mounting structure for mounting a plastic glass to a watch case comprising:

a recess provided on an upper portion of said watch case for receiving said plastic glass;
said recess comprising an entrance edge, an axially extending glass-fitting portion adjacent said entrance edge, and a radially extending glass-receiving portion;
an engaging groove provided adjacent the extreme end of said glass-fitting portion;
a beveled guiding portion provided in said entrance edge;
said plastic glass comprising a central portion, an axially extending portion, a fitting portion provided on the outer periphery of said axially extending portion, so as to be abutted on the entire surface of said axially extending glass-fitting portion of said recess;
an annular extending projection provided on said outer periphery and adapted to engage with said engaging groove; and
a beveled guiding portion provided in the leading edge of said annular extending projection, said beveled guiding portion of said recess and said beveled guiding portion of said glass being so arranged that both guiding portions engage with each other when the glass is put on the watch case, and said glass being adapted to be inserted into said recess with the annular extending projection sliding on the guiding portion and on the axially extending portion of the recess by the force axially applied to the glass and the annular extending projection being adapted to engage said groove at the bottom of the recess, whereby said fitting portion of the glass may be abutted on substantially the entire surface of said axially extending glass-fitting portion.

4,326,282

APPARATUS FOR REPRODUCING DIGITALLY CODED INFORMATION RECORDED ON AN OPTICALLY READABLE DISC-SHAPED RECORD CARRIER

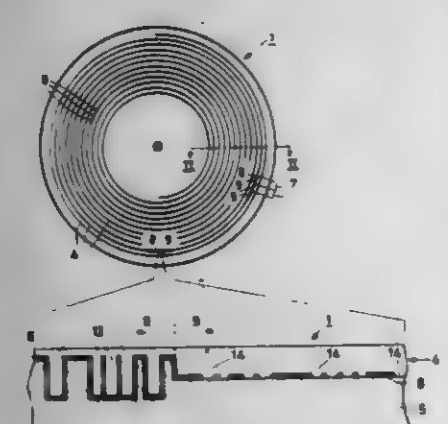
Johannes J. Verboom, and Marino G. Carasso, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

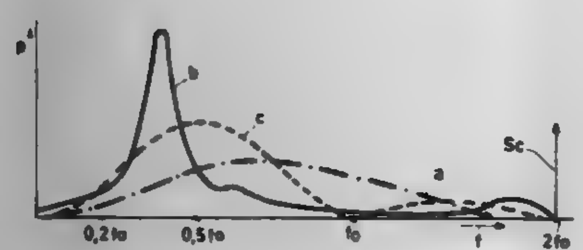
Filed Mar. 24, 1980, Ser. No. 132,743

Claims priority, application Netherlands, Jan. 9, 1980, 8000124

Int. Cl.³ G11C *13/04;* **G11B** *25/04, 27/30*

U.S. Cl. 369—48 **1 Claim**





1. An apparatus for reproducing a digitally coded signal recorded on a disc-shaped record carrier in the form of optically detectable, unit information areas arranged in a concentric or spiral track pattern; said apparatus comprising means for producing a light beam, an optical system for protecting the light beam onto the track pattern, a detector for detecting the presence of a unit area in said beam, a read circuit for reproducing the recorded digitally coded signal, and a clock-signal generation device for synchronizing the read circuit, said clock-signal generation device including a band-pass filter, having a center frequency which is substantially equal to twice the bit frequency of the recorded signal, for filtering the signal detected by the detector in order to obtain a clock signal, said bit frequency f complying with f=V/2L, where V is the nominal tangential speed of the record carrier at the location of reading and L the nominal minimum center-to-center distance of the unit areas at the location of reading.

4,326,283

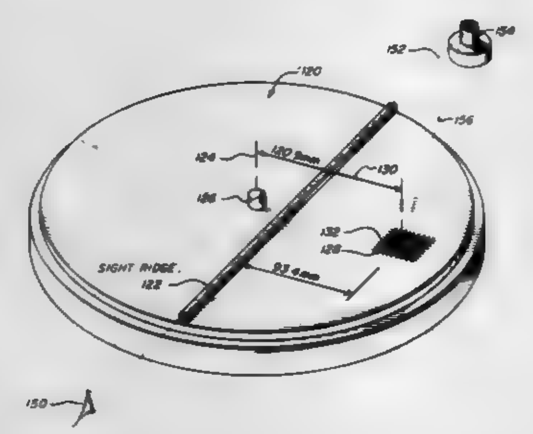
CARTRIDGE ALIGNMENT SYSTEM

Roy D. Toulan, Jr., Beverly Farms, and Richard Rensky, Burlington, both of Mass., assignors to Quality Audio Components, Inc., Woburn, Mass.

Filed Sep. 2, 1980, Ser. No. 183,180

Int. Cl.³ G11B *3/06;* **G01B** *5/24*

U.S. Cl. 369—55 **14 Claims**



1. Apparatus for assisting in the alignment of a shaft mounted stylus tip mounted to a tone arm pivoted about a vertical axis so as to track across a record located on the central spindle of a turntable comprising:
a member having an aperture therethrough adapted to fit over said spindle when placed on said turntable, said member including means fixedly positioned on one surface thereof for providing a visual line of sight to the pivot of said tone arm, which sight line is parallel to said one surface and generally perpendicular to said vertical axis, said fixedly positioned means being oriented in a predetermined direction and located at a first predetermined distance from the center of said aperture;
a mark on said one surface a second predetermined distance from the center of said aperture; and,
a grid surrounding said mark having at least one line perpendicular to a line between the center of said aperture and said mark, said first predetermined distance minus said second predetermined distance being such that when said stylus tip is placed on said mark and said shaft is aligned with said perpendicular line, said stylus tip is oriented at a point of minimum positional error.

4,326,284

VIDEO DISC PLAYER HAVING TURNTABLE ASSIST APPARATUS

Charles A. Elliott, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

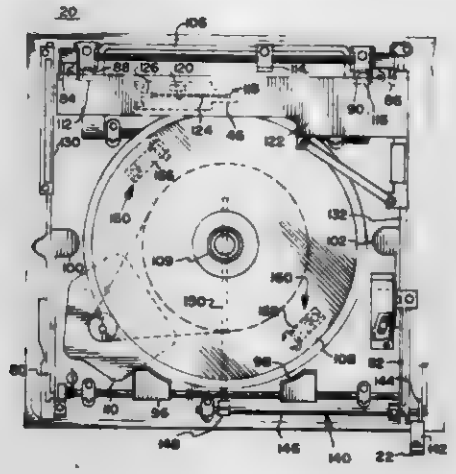
Filed May 9, 1980, Ser. No. 148,304

Int. Cl.³ G11B *17/00*

U.S. Cl. 369—77 **2 Claims**

1. In a record player for recovering prerecorded information from a disc record; said player includng a turntable for rotatably supporting and centering said record for playback; said

player having means for raising and lowering said turntable including a support member; apparatus comprising spring-loaded means subject to engagement with said turntable during translation of said turntable from a raised position to a lowered position for reducing the force exerted by said turntable on said support member; wherein said spring-loaded means comprises a spring-loaded member disposed underneath said turntable;



said spring-loaded member being located such that it does not engage said turntable when said turntable is occupying said raised position to allow said turntable to rotate without hindrance from said spring-loaded member; a pad being disposed on said spring-loaded member for engagement with the underside of said turntable during said translation of said turntable from said raised position to said lowered position to effect deceleration of said turntable.

4,326,285

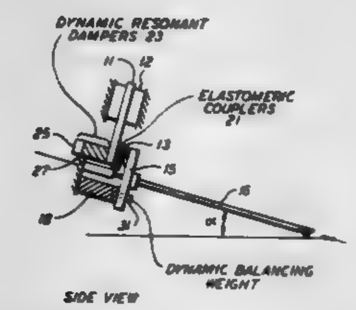
STEREO PHONOGRAPH CARTRIDGE

Norman H. Dieter, Jr., Pleasantville, and Edward Peterhoff, Nanuet, both of N.Y., assignors to Micro-Acoustics Corporation, Elmsford, N.Y.

Filed Apr. 1, 1980, Ser. No. 136,320

Int. Cl.³ H04R *17/08*

U.S. Cl. 369—137 **6 Claims**



1. In a stereo phonograph cartridge comprising:
a. a base;
b. first and second piezoelectric transducers;
c. first and second individual elastomeric means mounting said first and second transducers to said base depending downwardly in a cantilevered manner in horizontal spaced relationship;
d. first and second separate elastomeric stabilizers mounted to said base in horizontal spaced relationship with each other and directly below said first and second transducers;
e. a resolver having four connecting points coupled respectively to said first and second transducers and said first and second stabilizers;
f. a pivot anchor, stressed in tension, extending between said resolver and said base, said pivot anchor being attached to said resolver at a point which is equidistant from each of said four connecting points; and
g. a stylus bar extending from said resolver along the axis of said pivot anchor, the improvement comprising:
h. elastomeric coupling pads disposed between each of said transducers and their associated connecting points; and
i. an elastomeric bar attached to each of said transducers on the side opposite said coupling point, said elastomeric bar having one end attached to its associated transducer and a weight on the other end of said elastomeric bar.

4,326,286

AUTOMATIC RECORDER PLAYER

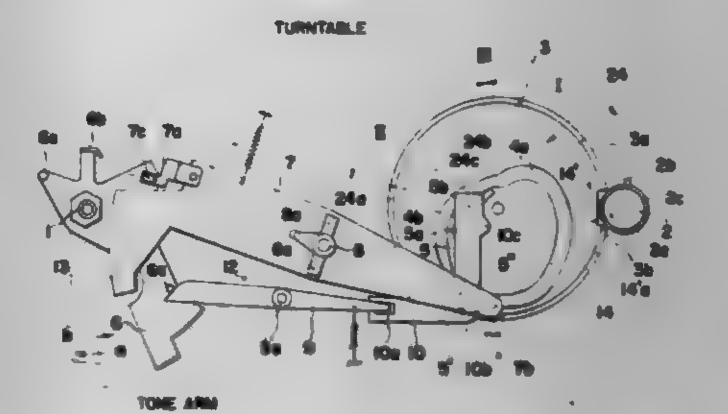
Mamoru Shimoi, Tenri, Japan, assignor to Sanyo Electric Co., Ltd., Moriguchi, Japan

Filed Mar. 31, 1980, Ser. No. 135,468

Claims priority, application Japan, Apr. 5, 1979, 54-41755; May 18, 1979, 54-61882

Int. Cl.³ G11B *17/06*

U.S. Cl. 369—226 **8 Claims**



1. In combination with an automatic record player including a turntable, a turntable spindle having a turntable gear, a tone arm supported for pivotal movement between a rest position and an operative position, and a drive motor for rotating the turntable in one direction, apparatus comprising:
a gear wheel having a generally heart-shaped cam groove and a bypass groove bypassing a bypassed portion of the heart-shaped cam groove, said gear wheel being engageable with the turntable gear to be rotated thereby;
a pivotable tone arm swinging member connected to the tone arm;
a generally elongated drive transmitting member supported to pivot in
(a) a plane parallel to the plane of rotation of the gear wheel between first and second positions, and
(b) a plane perpendicular to the plane of rotation of the gear wheel between lifting and lowering positions,
said drive transmitting member
(c) having one end which carries a follower pin that is engaged in the heart-shaped cam groove or in the bypass groove,
(d) having another end that is engageable with the swinging member, and
(e) oscillating from the first position to the second position and then back to the first position during one complete rotation of the gear wheel;
a tripping member operatively coupled to the gear wheel to engage the gear wheel with the turntable gear;
a switching lever carried by the gear wheel and pivoting between
(a) a first position in which the switching lever guides the follower pin away from the bypassed portion of the heart-shaped cam groove into the bypass groove, and
(b) a second position in which the switching lever allows the follower pin to continue to move into said bypassed portion,
the switching lever cooperating with the drive transmitting member in a manner that
(c) when the switching lever is held in the first position

and the follower pin is in the bypass groove during rotation of the gear wheel, the drive transmitting member is pivoted from the lifting position to the lowering position with said another end thereof being disengaged from the swinging member, and

(d) when the switching lever is held in the second position and the follower pin is in the bypassed portion of the heart-shaped cam groove during rotation of the gear wheel, the drive transmitting member remains in the lifting position while the swinging member pivots; and

a linkage means for cooperating with the swinging member to bring the switching lever into the second position when and for so long as the tone arm is held in the rest position and to bring the switching lever into the first position when the tone arm is moved from the rest position towards the operative position.

4,326,287

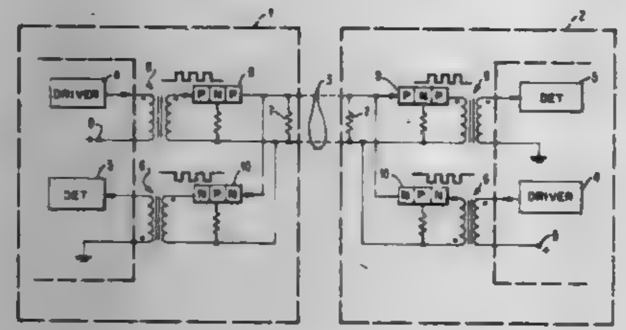
TWO WIRE BI-DIRECTIONAL DIGITAL TELEPHONE LINK

Paul Abramson, Raleigh, N.C., assignor to International Business Machines Corp., Armonk, N.Y.

Filed Jun. 30, 1980, Ser. No. 164,452

Int. Cl.³ H04L *5/14*

U.S. Cl. 370—29 6 Claims



1. A bi-directional communications system for simultaneous communication over a two-wire link comprising:

at least a first station and a second station, said stations each comprising a transmitter and a receiver connected to said two-wire link;

said transmitter at said first station being capable of producing pulses of a first polarity for application to said link;

said receiver at said first station being responsive to pulses of the opposite polarity to those transmitted by said transmitter at said first station;

said second station having a receiver responsive to pulses of the polarity transmitted by said transmitter at said first station and having a transmitter for producing pulses of the opposite polarity thereto for application to said link;

said transmitters at said first and second stations being synchronized with respect to the receipt of pulses of the polarity to which the respective receivers are responsive for applying outgoing pulses to said link at a position within the baud defined by a given transmission rate such that said pulses when delayed by the propagation delay of said link will not arrive coincident with the generation of the pulses at the opposite ends of said link.

4,326,288

METHOD AND APPARATUS FOR FREQUENCY DIVISION MULTIPLEX SYSTEM

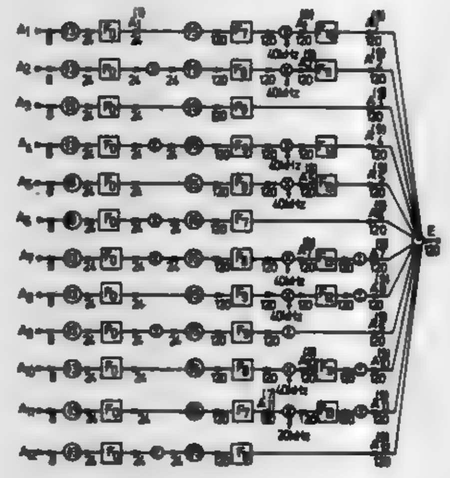
Alfred Fettweis, Bochum, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Sep. 11, 1979, Ser. No. 74,472

Claims priority, application Fed. Rep. of Germany, Sep. 15, 1978, 2840256

Int. Cl.³ H04J *1/05*

U.S. Cl. 370—70 20 Claims



1. A method for digital conversion of signals into signals of a frequency-division multiplex system, comprising the steps of limiting the band width of signals to be converted to a specific band width, and selecting a basic operating rate for generating samples of said signals having a frequency equal to six times said specific band width, selecting further operating rates which are entire multiples of said basic operating rate, forming a 12-channel group given a channel width of 4 kHz and a basic PCM sampling rate of 8 kHz, the operating rate for 12 channels is increased by the factor 3 to 24 kHz, traversing an identical filter, inverting each second scanning sample in its operational sign for some channels, increasing the operating rate for all channels by the factor 5 to 120 kHz and combining the individual channels into a 12-channel group after passing through modulators and filters at an operating rate of 120 kHz.

4,326,289

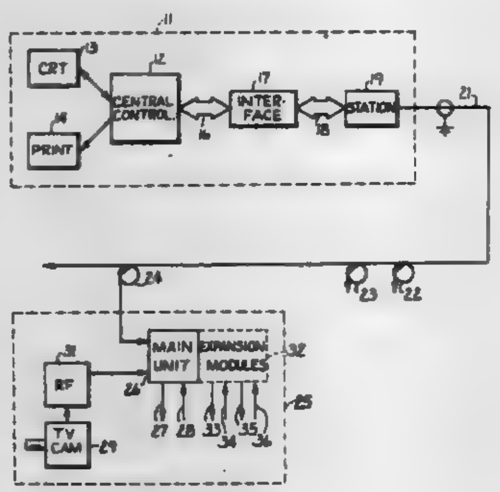
EXPANDABLE COMMUNICATION SYSTEM

Robert V. C. Dickinson, 32 Debbie Pl., Berkeley Heights, N.J. 07922

Filed Feb. 28, 1980, Ser. No. 125,440

Int. Cl.³ H04J *3/08, 3/02*

U.S. Cl. 370—85 11 Claims



1. An expandable communication system comprising:

a. a signal-carrying medium comprising a plurality of terminals at which signals can be entered into and extracted from the signal-carrying medium;

b. a control center comprising:

(1) control center transmitter means to generate at least a first carrier, the transmitter means being connected to a first one of the terminals to supply the first carrier to the medium to be conveyed away from the control center in a downstream direction,

(2) control center receiver means connected to the first terminal to receive a second carrier conveyed by the medium in an upstream direction toward the first terminal,

(3) control signal generating means to generate digital bit signals grouped into bytes, each byte including a fixed number of the bit signals, successive groups of the bytes comprising station-related signals, each group of station-related signals comprising: an initiation byte, a control byte to define certain contents of other bytes in the same group, and an address signal including at least one address byte, at least some of the station-related signals also comprising response-request signals and downstream data byte signals, the number of such downstream data bytes in a given group of station-related signals being based on the amount of data to be conveyed at that time to any station addressed by that group of station-related signals, the control signal generating means comprising incrementing circuit means to change the address signal in successive station-related signals to generate the station-related signals as polling signals to poll, in repetitive polling cycles, a group of system stations; and

c. a plurality of system stations, each connected to a respective one of the terminals downstream from the first terminal and each comprising:

(1) station receiver means to receive at least the first carrier traveling downstream along the signal-carrying medium from the control center,

(2) controlled circuit means connected to the station receiver means:

(i) to respond to the initiation byte and the control byte of each group of station-related signals and to the address signal of those station-related signals that include the address signal of that specific station, the controlled circuit means of each of the stations being capable of responding to different numbers of data bytes than other stations polled in the same polling cycle, and

(ii) to generate station digital bit signals grouped in station bytes comprising at least an address signal and a control byte signal,

(3) address circuit means connected to the station receiver means and to the controlled circuit means to control the respective system station to respond only to station-related signals including the address signal of that system station,

(4) output circuit means comprising a plurality of output terminals, the output circuit means being connected to the controlled circuit means to be controlled by signals therefrom to provide controlled output signals determined by the data signal in the respective station-related signal,

(5) input circuit means comprising a plurality of input terminals to receive signals originating at the respective system station, the input circuit means being connected to the controlled circuit means to be controlled by signals therefrom,

(6) station transmitter means to generate station signals to be carried upstream by the signal-carrying medium, such signals including at least the second carrier modified by the station digital signals, the transmitter means being connected to the input terminals to be controlled in part by the signals applied to the input terminals and being connected to the controlled circuit means to be controlled in part thereby to modify the second carrier according to selected station digital signals and to apply the station signals to the signal-carrying medium at least partly in response to the station-related signals, and

(7) expansion terminal means connected to the address circuit means to receive expansion address signals therefrom and connected to the controlled circuit means to receive expansion circuit control signals and expansion circuit data signals therefrom and to transmit expansion circuit data signals thereto.

4,326,290

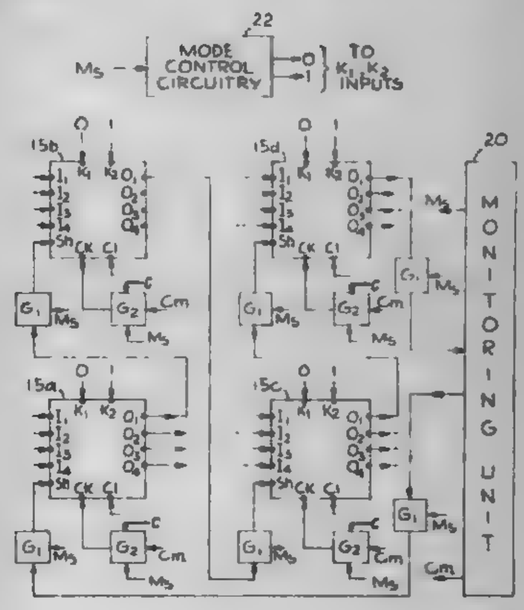
MEANS AND METHODS FOR MONITORING THE STORAGE STATES OF A MEMORY AND OTHER STORAGE DEVICES IN A DIGITAL DATA PROCESSOR

Sheila G. Davis, Los Angeles; Robert E. Franks, San Gabriel, both of Calif., and Alfred J. De Santis, Berwyn, Pa., assignors to Burroughs Corporation, Detroit, Mich.

Filed Oct. 16, 1979, Ser. No. 85,200

Int. Cl.³ G06F *11/00;* G11C *29/00*

U.S. Cl. 371—21 11 Claims



1. In a digital data processing system, the combination comprising:

a selectively addressable memory;

addressing means for said memory;

a memory output register comprising a plurality of multiple bit storage devices;

said memory being operative to read out selected storage states at locations selectd by said addressing means into said memory output register;

a plurality of multiple bit storage devices in addition to those comprising said memory output register; and

logic circuitry interconnecting said storage devices including those comprising said memory output register for the performance of data processing operations by said system;

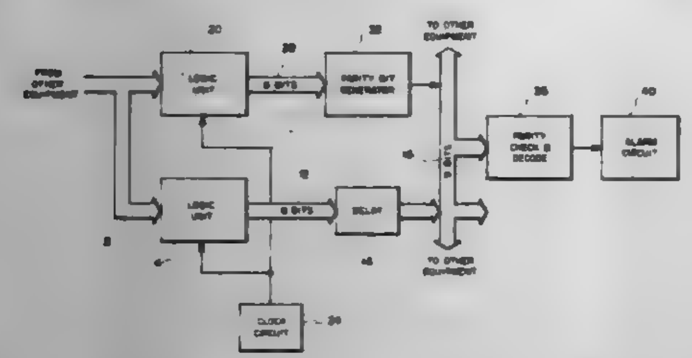
said logic circuitry including gating means for interconnecting said storage devices including those comprising said memory output register into a plurality of separately selectable strings; and

monitoring means for performing monitoring of digital data applied thereto from a selected string;

said monitoring means including means providing a memory address for said addressing means for use in reading out selected memory states into said memory output register;

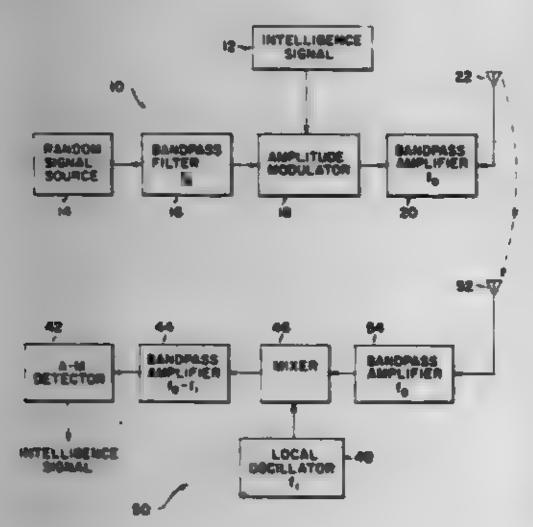
said monitoring means also including means for selectably generating one of a plurality of monitor enable signals along with a predetermined plurality of monitor clock signals which are applied to said gating means and to the storage devices of a selected string corresponding to the applied monitor enable signal so as to cause the states thereof to be propagated to and from said monitoring means with the storage devices of the selected string being returned to (their original) states determined by said monitoring means.

4,326,291
ERROR DETECTION SYSTEM
Phillip W. Marsh, Granger, and Gregory B. Wiedenman, Sandy, both of Utah, assignors to Sperry Rand Corporation, New York, N.Y.
Filed Apr. 11, 1979, Ser. No. 29,074
Int. Cl.³ G06F *11/10, 11/16*
U.S. Cl. 371—68 **8 Claims**



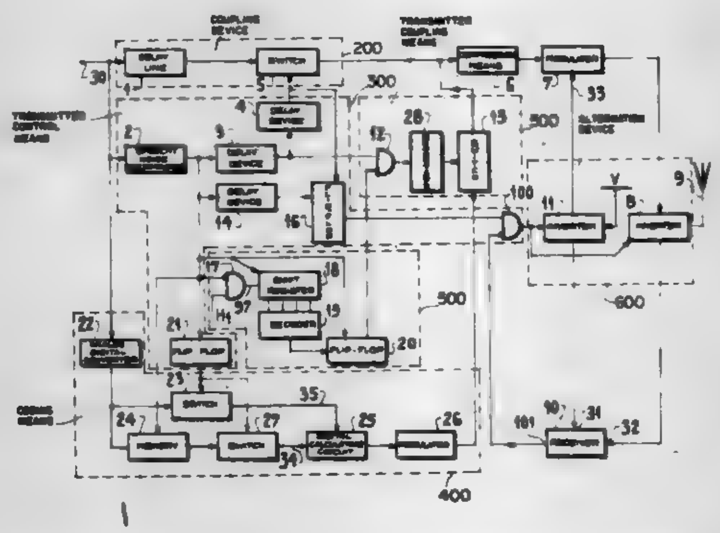
1. A throughput error checking system for checking errors which may occur in processing or operating upon data by a first logic unit, said first logic unit adapted to produce output data, said system including
 a second logic unit for operating in the same manner as said first logic unit to produce output data,
 means for generating parity check digits for the output data produced by said second logic unit,
 means for decoding data and parity check digits to determine if parity is correct and for producing an error signal if it is not,
 means for supplying output data from said first logic unit to said decoding means, and
 means for supplying parity check digits from said parity check digit generating means to said decoding means.

4,326,292
RANDOM ENERGY COMMUNICATION SYSTEM
James J. Spilker, Jr., Palo Alto, and William R. Ramsay, Mountain View, both of Calif., assignors to Lockheed Missiles & Space Company, Inc., Sunnyvale, Calif.
Filed Mar. 18, 1960, Ser. No. 16,097
Int. Cl.³ H04K *1/00*
U.S. Cl. 455—27 **5 Claims**



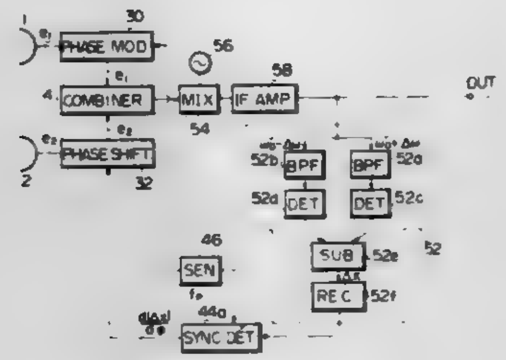
5. An intelligence communication system comprising a transmitter and a receiver; said transmitter comprising means for obtaining a relatively wide band random energy carrier signal, means for modulating said random carrier signal with an intelligence signal thereby forming a message signal, means responsive to said wide band energy obtaining means for deriving a reference signal which differs in frequency with said message signal by a definite fixed amount and means for radiating to the receiver both the message and reference random signals; said receiver comprising an antenna for picking up both the message and reference random signal simultaneously, means for operating on at least one of said message and reference random signals to obtain message and reference random signals which are recombined and mixer means for multiplying the recombined message and reference random signals to obtain a resultant signal from which the intelligence signal can be derived.

4,326,293
TRANSMITTER-RECEIVER WITH AUTOMATIC ALTERNATION CONTROL
Pierre DeMan; Alberto Pimentel; Jean-Claude Ben Sadou, and Charles de Riviere, all of Paris, France, assignors to Thomson-CSF, Paris, France
Filed Apr. 9, 1980, Ser. No. 138,509
Claims priority, application France, Apr. 13, 1979, 79 09491
Int. Cl.³ H04B *1/64, 1/46*
U.S. Cl. 455—72 **14 Claims**



10. In a communication system having a plurality of communication devices, each device including a transmitter and a receiver, wherein a transmitter of a first such communication device transmits an amplitude compressed speech signal, any amplitude variations of which are suppressed or completely eliminated, and wherein a receiver of a second such communication device reproduces the speech signal, the improvement comprising:
 means, with the transmitter of said first communication device, for determining the mean value of amplitude of a speech signal over a voice activity period transmitted thereby; coding means for generating a coded signal representing the mean value; and means for modulating the coded signals as a preamble to the speech signal of the voice activity period transmitted thereby; and
 means, within the receiver of said second communication device, for decoding the preamble and speech signal transmitted by the transmitter of said first communication device, and controlling the amplitude of the speech signal reproduced so as to accurately obtain speech corresponding in amplitude to the mean value of the speech signal as transmitted.

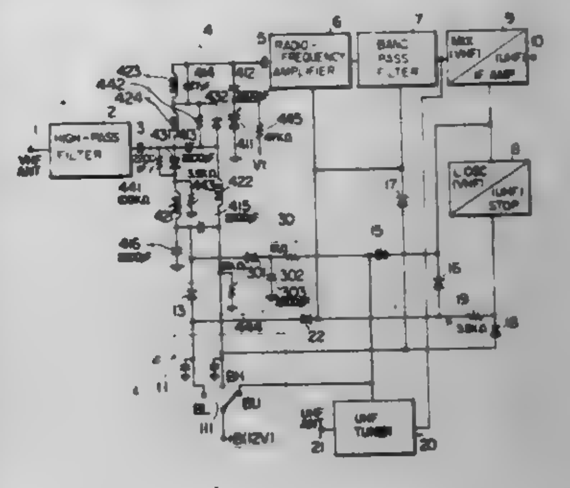
4,326,294
SPACE DIVERSITY RECEPTION SYSTEM HAVING COMPENSATION MEANS OF MULTIPATH EFFECT
Yoshiharu Okamoto, Yokosuka; Izumi Horikawa, Yokohama, and Shozo Komaki, Yokosuka, all of Japan, assignors to Nippon Telegraph & Telephone Public Corporation, Tokyo, Japan
Filed Jan. 21, 1980, Ser. No. 113,591
Claims priority, application Japan, Feb. 13, 1979, 54-14359; Mar. 28, 1979, 54-35643; Apr. 4, 1979, 54-39743; Nov. 19, 1979, 54-148867
Int. Cl.³ H04B *7/08*
U.S. Cl. 455—139 **12 Claims**



10. A space diversity reception system comprising a pair of spaced antennas, a phase shifter means connected to a first one of said antennas for shifting the phase of a signal received by said first antenna, a combiner connected to the output of said phase shifter means, phase modulating means including a sensing coupled to a second one of said antennas oscillator for phase modulating a signal received by said second antenna, said combiner also coupled to the output of said phase modulating means and control means for the control of said phase shifter means wherein said control means comprises a plurality of level detectors connected to the output of said combiner for providing levels at a plurality of frequency points in a reception pass-band, and a control circuit for controlling said phase shifter means according to the output of said level detectors and wherein said control means controls said phase shifter means so that the phase of an interference wave received by said first antenna is opposite at the input of said combiner to that received by said second antenna, and interference waves of said antennas are cancelled by each other.

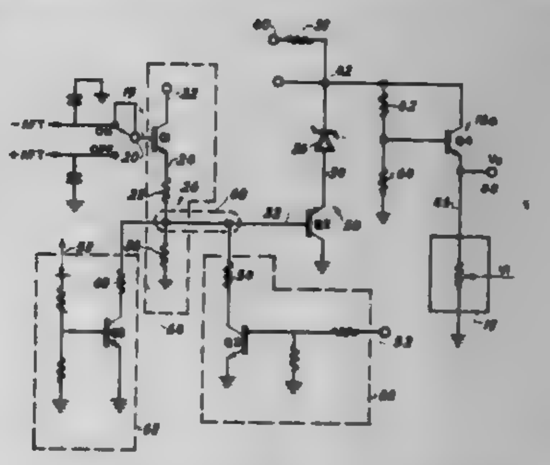
4,326,295
TELEVISION TUNER CIRCUIT
Tomomi Matsumoto, Yokohama; Kiyoshi Amemiya, Takayama, and Yukitomi Kanai, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed May 24, 1979, Ser. No. 41,893
Claims priority, application Japan, May 29, 1978, 53-63333
Int. Cl.³ H04N *5/44;* H04B *1/16*
U.S. Cl. 455—188 **8 Claims**

1. In a television tuner comprising a VHF tuner section, a UHF tuner section and a power supply device connected to said VHF and UHF tuner sections for selectively supplying the same with a single-polarity DC power as a power supply for VHF low band, VHF high band and UHF band, said VHF tuner section including an input tuning circuit which in turn includes band-switching diodes for switching a low-band tuning element and a high-band tuning element for determining the tuning band of said input tuning circuit, said diodes being subjected to on-off switching by said power supply for VHF low-band and VHF high band of said power supply device, thereby switching said input tuning circuit between two tuned modes of VHF low band and VHF high band;
 a television tuner circuit including circuit means for connecting said power supply device to said band-switching diodes of said input tuning circuit of said VHF tuner section, said power supply being introduced to said diodes when the UHF band power is selectively supplied to said UHF tuner section from said power supply device, said power supply device including a VHF low-band and VHF high-band power supply terminal connected to said VHF tuner section and a UHF band power supply terminal connected to said UHF tuner section, said circuit means including a first bias circuit for connecting said UHF band power supply terminal to a mixer/intermediate frequency amplifier common to said VHF and UHF tuner



sections and a second bias circuit for connecting said mixer/intermediate frequency amplifier in DC fashion to said band-switching diodes of said input tuning circuit of said VHF tuner section, said second bias circuit introducing the DC voltage generated in said mixer/intermediate frequency amplifier to said diodes when said single-polarity DC power is supplied to said UHF band power supply terminal during the receipt of UHF band, thereby biasing said diodes.

4,326,296
TUNING SYSTEM FOR A COLOR TELEVISION RECEIVER HAVING A VARACTOR TUNER
Patrick M. Rafter, and James E. Hitchcock, both of Knoxville, Tenn., assignors to Magnavox Consumer Electronics Co., New York, N.Y.
Filed Oct. 1, 1980, Ser. No. 192,723
Int. Cl.³ H04B *1/16, 1/26;* H04N *5/50*
U.S. Cl. 455—192 **9 Claims**



1. An improved tuning system for a color television receiver embodying a varactor tuner having a controller means and an automatic fine tuning system said controller means including a resistive element with switch selected taps for selecting the desired channel and switch means, comprising:
 a low impedance tuning voltage supply serially connected at its output with said controller means, said voltage supply applying a preselected regulated source voltage to said controller means whereby said supply voltage is substantially independent of changes in the resistive value of said controller means, and

automatic fine tuning interface serially connected between said automatic fine tuning system and said varactor tuner, said automatic fine tuning interface applying correction voltage to said varactor tuner.

4,326,297

NOISE SUPPRESSING DEVICE IN FM RECEIVER

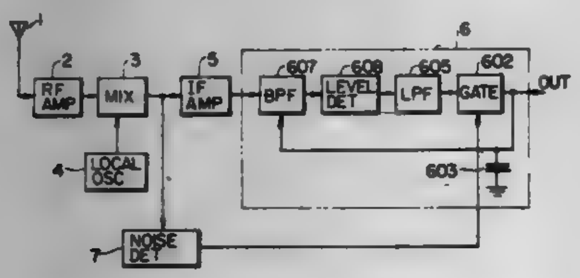
Reisuke Sato, and Yoshiro Sugai, both of Tokorozawa, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Apr. 28, 1980, Ser. No. 144,095

Claims priority, application Japan, Apr. 28, 1979, 54-52906; Apr. 28, 1979, 54-52907

Int. Cl.[3] H04B *1/10*

U.S. Cl. 455—213 2 Claims



1. A noise eliminating device in an FM receiver comprising:
an FM detector;
noise detecting means for detecting a noise component in a received signal at a stage of said receiver prior to said FM detector for producing a noise detection signal for a predetermined period of time;
said FM detector comprising:
a narrow band width band-pass filter, whose input is an IF signal derived from the received signal, having a center frequency which varies in response to an input control signal;
a level detector having an input coupled to an output of said band-pass filter;
a low-pass filter having an input coupled to an output of said level detector;
gating means having an input coupled to an output of said low-pass filter and operating in response to said noise detection signal, and an output; said input control signal being produced on the output of said gating means and
a holding capacitor coupled to said output of said gating means to hold said input control signal.

4,326,298

ARRANGEMENT FOR SIGNALING IN A VOICE COMMUNICATION SYSTEM WITH OPTICALLY FED COMPONENTS

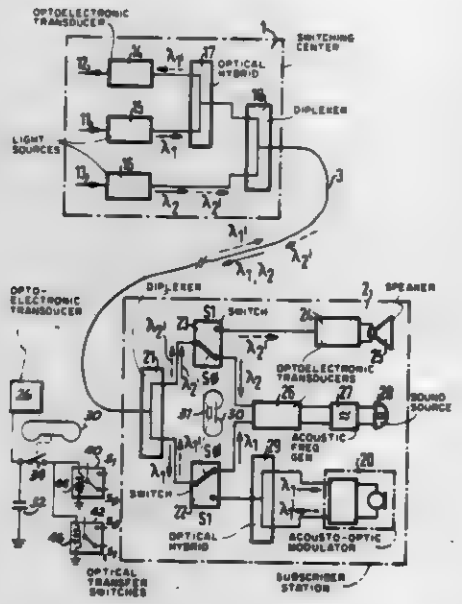
Ingrid Fromm, and Helmut Lagger, both of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jul. 16, 1980, Ser. No. 169,448

Claims priority, application Fed. Rep. of Germany, Sep. 5, 1979, 2935839

Int. Cl.[3] H04B *9/00*

U.S. Cl. 455—606 12 Claims



1. In a voice communication system of the type in which a switching center is connected to a plurality of subscriber stations via light wave guides for carrying modulated and unmodulated light signals for completing and disconnecting calls, for energy supply of the subscriber stations by way of unmodulated light of a frequency different from the light transmitted for other purposes, the improvement therein comprising:
light generating means including interrogation means in the switching center for transmitting short light pulses to the subscriber stations;
a subscriber station diplexer;
first and second optical transfer switches connected to said diplexer for receiving respective light frequencies and each having an idle position and a working position;
handset means coupled to operate said optical transfer switches to said positions corresponding to on-hook and off-hook conditions; a call signal device; and
an optoelectronic transducer connected between said idle positions of said optical transfer switches and said call signal device, said optoelectronic transducer operable to absorb short light pulses in the idle condition;
acousto optical modulator means connected to said working position of said first optical transfer switch operable in the off-hook condition to partially reflect short light pulses back toward the switching center; and
dialing means for transmitting light dialing pulses to said switching center for establishing connections;
the short light pulses dimensioned with respect to pulse length and pulse-to-pause ratio such that the optoelectronic transducer cannot respond to operate said call signal device and such that a noticeable delay in completing outgoing connections does not occur.

DESIGN PATENTS

GRANTED APR. 20, 1982

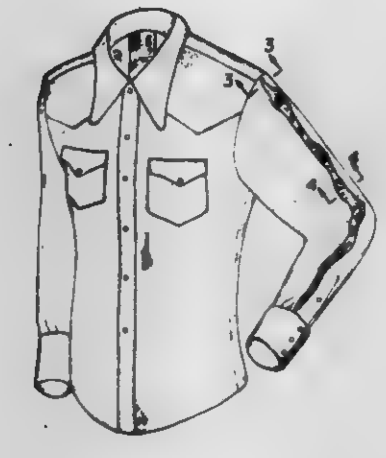
ERRATA

For CLASS	See PATENT NO.
D32-048	263,922
D32-058	263,923
D34-024	263,941
D32-021	263,959
D20-010	263,964
D32-031	264,011
D34-043	264,014

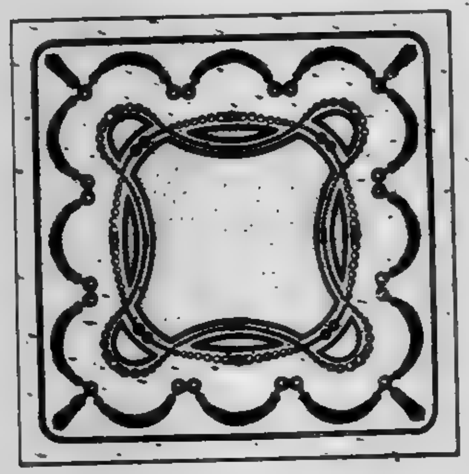
DESIGNS

APRIL 20, 1982

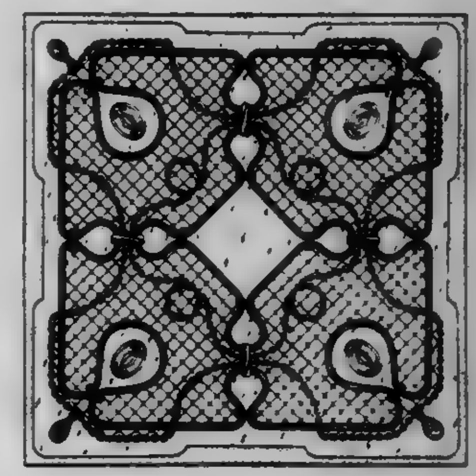
263,890
SHIRT
Beverly Dalton, 524 Altman La., Okeechobee, Fla. 33472
Filed Apr. 2, 1979, Ser. No. 26,055
Term of patent 14 years
Int. Cl. D2—*02*
U.S. Cl. D2—208



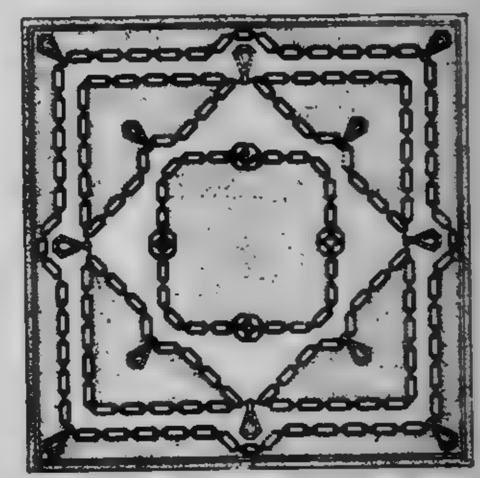
263,891
SCARF
Joseph Kanoui, Geneva, Switzerland, assignor to Interdica S.A., Villars-sur-Glane, Switzerland
Filed Dec. 27, 1979, Ser. No. 107,631
Claims priority, application Switzerland, Jun. 27, 1979, 69 016
Term of patent 14 years
Int. Cl. D2—*03*
U.S. Cl. D2—395



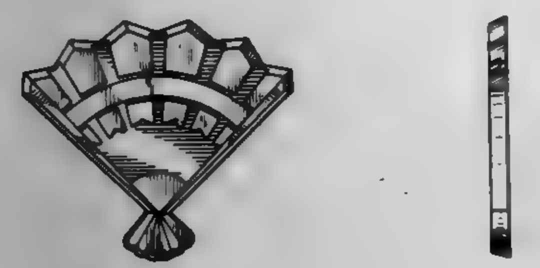
263,892
SCARF
Joseph Kanoui, Geneva, Switzerland, assignor to Interdica S.A., Villars-sur-Glane, Switzerland
Filed Dec. 27, 1979, Ser. No. 107,632
Claims priority, application Switzerland, Jun. 27, 1979, 69 016
Term of patent 14 years
Int. Cl. D2—*03*
U.S. Cl. D2—395



263,893
SCARF
Joseph Kanoui, Geneva, Switzerland, assignor to Interdica S.A., Villars-sur-Glane, Switzerland
Filed Dec. 27, 1979, Ser. No. 107,633
Claims priority, application Switzerland, Jun. 27, 1979, 69 016
Term of patent 14 years
Int. Cl. D2—*03*
U.S. Cl. D2—395



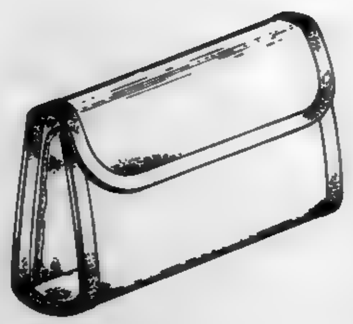
263,894
NEEDLE HOLDER
Tae Yong Chung, 478-3 Onchundong Dongraeku, Busan, D.P.R. of Korea
Filed Jan. 28, 1980, Ser. No. 116,221
Claims priority, application D.P.R. of Korea, Dec. 27, 1979, 4976
Term of patent 14 years
Int. Cl. D02—*99*
U.S. Cl. D3—21



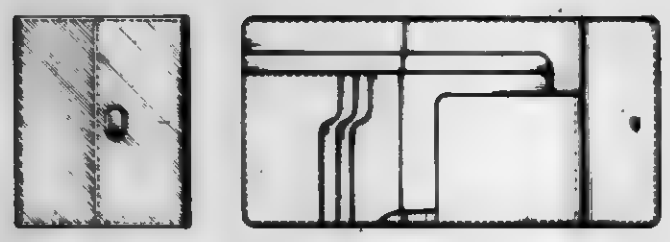
263,895
GLASS THIMBLE
Walter P. Petersen, Chicago, Ill., assignor to C.G. Crystal Glass Tube & Cylinder Co., Chicago, Ill., a part interest
Filed May 4, 1979, Ser. No. 35,849
Term of patent 14 years
Int. Cl. D02—*07*
U.S. Cl. D3—29

263,896
COMPARTMENTED STORAGE BOX
James P. Glasgow, Dallas, Tex., assignor to Mary Kay Cosmetics, Inc., Dallas, Tex.
Filed Sep. 21, 1978, Ser. No. 944,593
Term of patent 14 years
Int. Cl. D3—*99*
U.S. Cl. D3—30.1

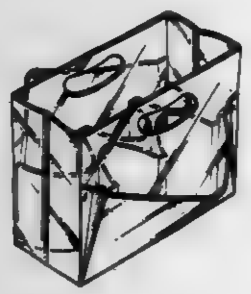
263,897
COSMETIC BAG
Susan Thornton, 5677 Cabot Dr., Oakland, Calif. 94611
Filed Jan. 7, 1980, Ser. No. 109,854
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D3—39



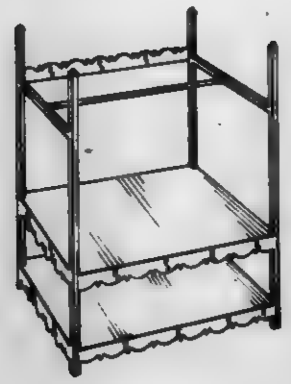
263,898
PURSE
Norbert H. J. Linke, Milan, Italy, assignor to S. T. DuPont, Paris, France
Filed Oct. 4, 1979, Ser. No. 82,181
Claims priority, application France, Apr. 4, 1979, 79 42352
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D3—56



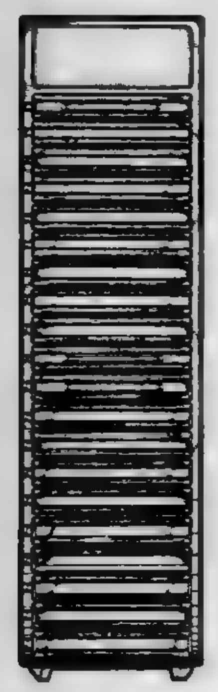
263,899
DIAPER BAG ORGANIZER
Arlyne Lynn, 1904 Crest Dr., Los Angeles, Calif. 90034
Filed Apr. 24, 1980, Ser. No. 143,353
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D3—73



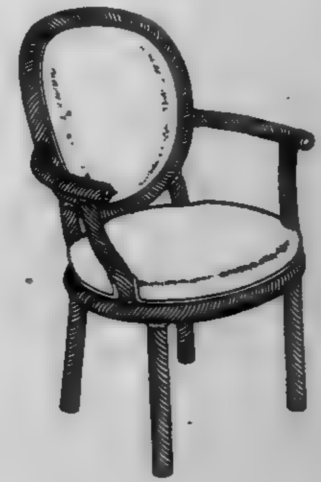
263,900
CHILD'S WARDROBE
Ann M. Stinard, 907 N. Cayuga St., Ithaca, N.Y. 14850
Filed May 21, 1979, Ser. No. 40,508
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—5



263,901
DISPLAY RACK FOR CARPET SAMPLES
Bernard Dassonville, Orleans, France, assignor to Onis, La Guerche-sur-l'Aubois, France
Filed Sep. 19, 1979, Ser. No. 76,921
Claims priority, application France, Mar. 20, 1979, 190/79
Term of patent 14 years
Int. Cl. D20—*02*
U.S. Cl. D6—23



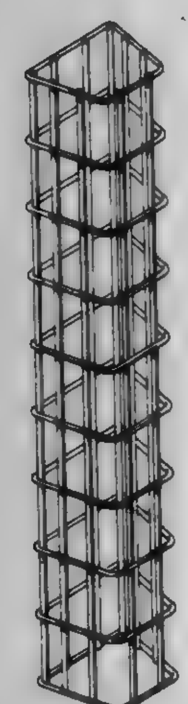
263,902
ARM CHAIR
Marcello Mioni, 9833 San Cir., Beverly Hills, Calif. 90210
Filed Aug. 7, 1978, Ser. No. 931,782
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—48



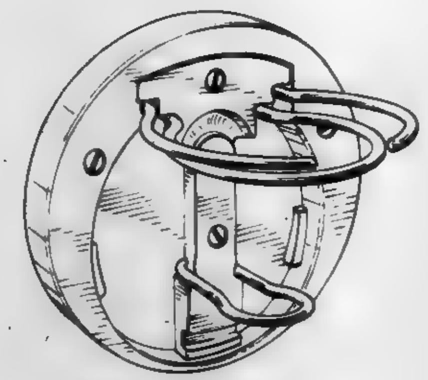
263,903
HOSE HOLDER
D. Gordon Johnston, 311 Court Ave., Ventura, Calif. 93003
Filed Mar. 10, 1980, Ser. No. 128,557
Term of patent 14 years
Int. Cl. D8—*08*; D99—*00*
U.S. Cl. D6—112

263,904
SWING SEAT OR SIMILAR ARTICLE
Barry E. Wheelock, 67 Crestwood Ave., Nutley, N.J. 07110
Filed Nov. 7, 1977, Ser. No. 849,452
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—113

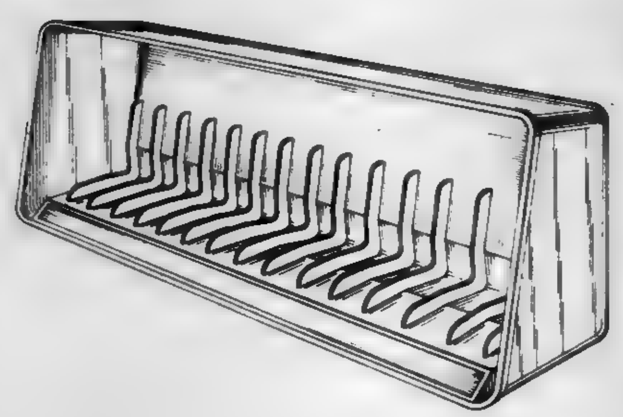
263,905
SUPPORT FOR FLEXIBLE DRYER VENT PIPE
Paul Flora, P.O. Box 370, Quinter, Kans. 67752
Filed May 1, 1979, Ser. No. 34,993
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—114



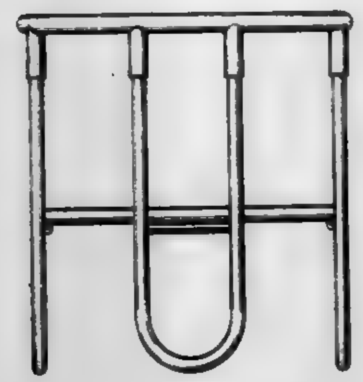
263,906
COLLAPSIBLE HOLDER FOR A CONTAINER
William Ormond, 233 Hillcrest Ave., Hamilton, Ontario, Canada (L8P 2X3)
Division of Ser. No. 901,727, May 1, 1978, Pat. No. D. 256,528. This application Oct. 23, 1979, Ser. No. 87,613
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—130



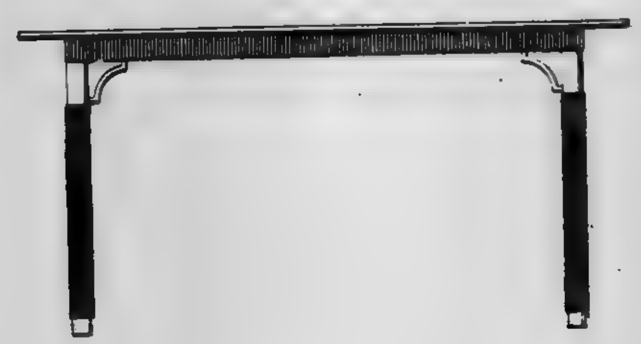
263,907
VIDEO CASSETTE STORAGE RACK
Pasquale L. Pepicelli, Jr., Chelmsford, and Edward Yonkers, Newton, both of Mass., assignors to Data Packaging Corporation, Cambridge, Mass.
Filed Feb. 22, 1980, Ser. No. 123,742
Term of patent 14 years
Int. Cl. D06—*04*
U.S. Cl. D6—130



263,908
TABLE
Marion Imber, Stamford, Conn., assignor to Ray Control Corp., New York, N.Y.
Filed Feb. 11, 1980, Ser. No. 120,171
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—146

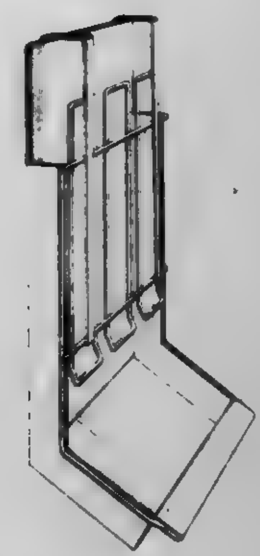


263,909
TABLE OR THE LIKE
Joseph E. Adkinson, 3807 Leland St., Chevy Chase, Md. 20015
Filed Aug. 28, 1979, Ser. No. 70,700
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—177

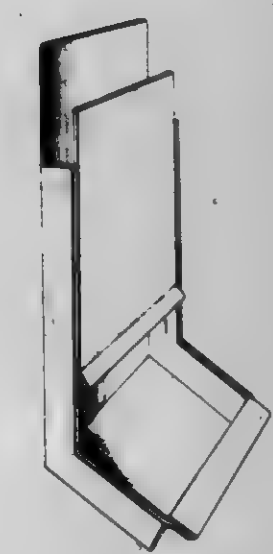


263,910
TABLE
Stephen H. Robertson, and Randall L. Ward, both of P. O. Box 30153, Raleigh, N.C. 27622
Continuation-in-part of Ser. No. 854,984, Nov. 25, 1977. This application Sep. 29, 1980, Ser. No. 191,483
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—177

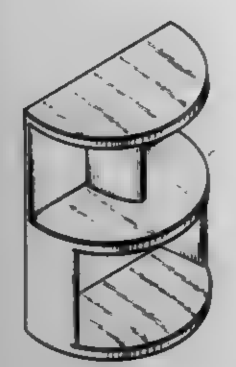
263,911
COMBINED PACKAGE DISPLAY AND DISPENSING RACK
Wolff Heinrichsdorff, Hösel, Fed. Rep. of Germany, assignor to Life Savers, Inc., New York, N.Y.
Filed Nov. 5, 1979, Ser. No. 91,667
Term of patent 14 years
Int. Cl. D06—*04*
U.S. Cl. D6—181



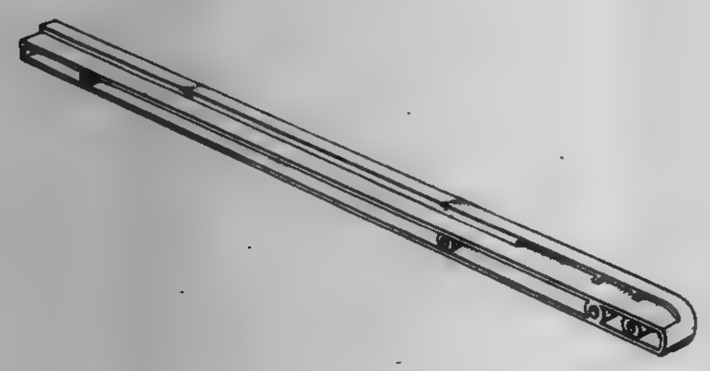
263,912
COMBINED PACKAGE DISPLAY AND DISPENSING RACK
Wolff Heinrichsdorff, Hösel, Fed. Rep. of Germany, assignor to Life Savers, Inc., New York, N.Y.
Filed Nov. 5, 1979, Ser. No. 91,670
Term of patent 14 years
Int. Cl. D06—*04*
U.S. Cl. D6—181



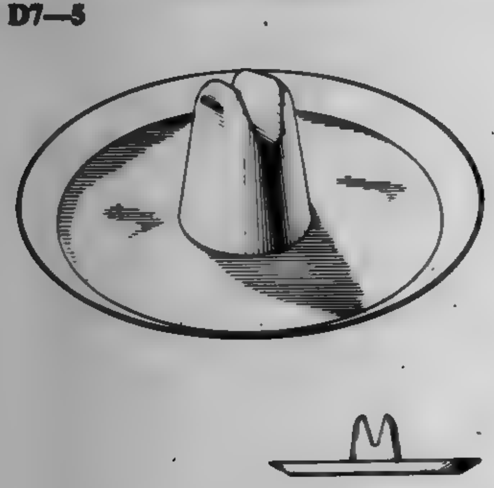
263,913
SHELVING UNIT
Frederick E. Markus, 20 Park Ave., Belmont, Mass. 02178
Filed Sep. 20, 1979, Ser. No. 77,294
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—186



263,914
DRAWER RUNNER
Leon G. Litchfield, and Terence Hardy, both of Belper, England, assignors to L.B. (Plastics) Limited, Derby, England
Filed Oct. 3, 1979, Ser. No. 81,347
Claims priority, application United Kingdom, Apr. 12, 1979, 909482
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—191



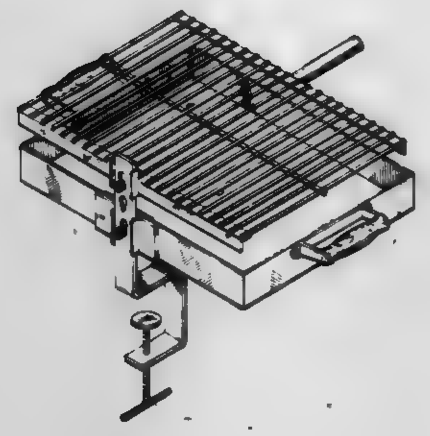
263,915
FOOD SERVICE TRAY
Vivian J. Kohan, 210 Plainfield Ave., Pen Argyl, Pa. 18072
Filed Apr. 21, 1980, Ser. No. 142,225
Term of patent 14 years
Int. Cl. D07—*01*
U.S. Cl. D7—5



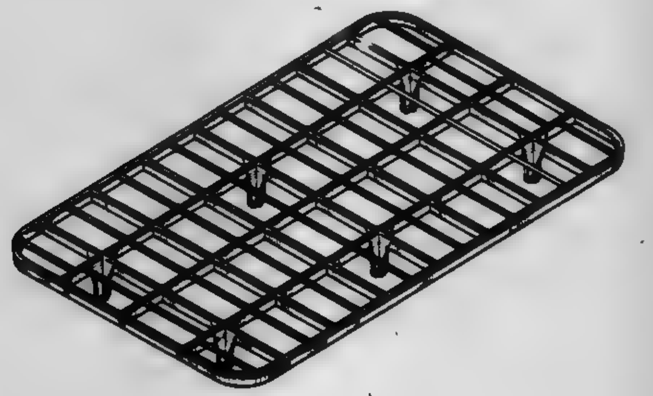
263,916
SPLASH DAMPENING CUP
Ovid B. Reece, 310 Ash St., Crawford, Nebr. 69339
Filed Aug. 10, 1979, Ser. No. 65,600
Term of patent 14 years
Int. Cl. D07—*01*
U.S. Cl. D7—9

263,917
NUT PICKER
Billy B. McCulley, Rte. 1, Box 518, Longview, Tex. 75602
Filed Mar. 10, 1980, Ser. No. 128,884
Term of patent 14 years
Int. Cl. D07—*04, 06*
U.S. Cl. D7—106

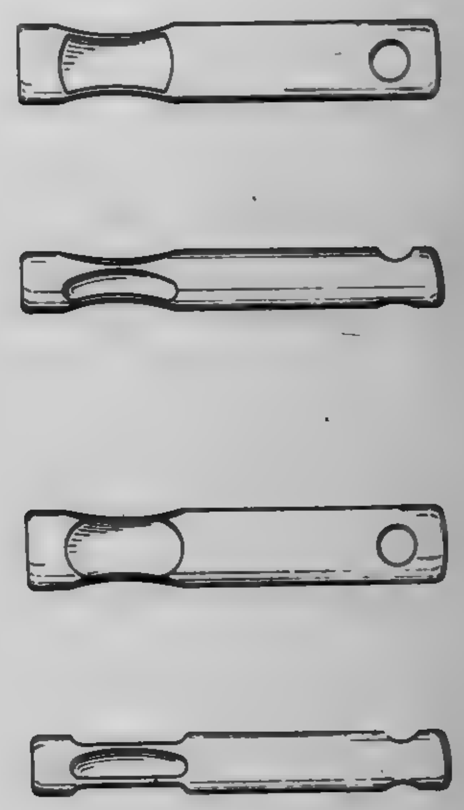
263,918
PORTABLE BARBECUE
Charles N. Boyd, 904 Joni La., Redlands, Calif. 92373
Filed Feb. 25, 1980, Ser. No. 124,583
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—107



263,919
TRIVET
William M. Anderson, Jr., Lynnwood, Wash., assignor to AMG Industries, Inc., Seattle, Wash.
Filed Feb. 20, 1980, Ser. No. 122,887
Term of patent 14 years
Int. Cl. D7—*06*
U.S. Cl. D7—130



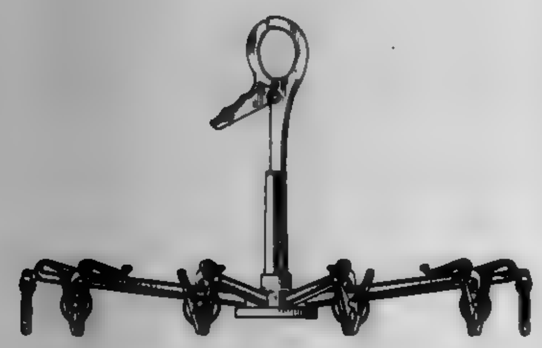
263,920
HANDLE FOR KITCHEN TOOLS, UTENSILS OR THE LIKE
Fredrich W. Usbeck, Frauenstrasse 33, D-3550 Marburg an der Lahn, Fed. Rep. of Germany
Filed Apr. 3, 1979, Ser. No. 26,612
Claims priority, application Fed. Rep. of Germany, Oct. 6, 1978, MR 276-6; Feb. 9, 1979, MR 286-9; Feb. 21, 1979, MR 257-11
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—132



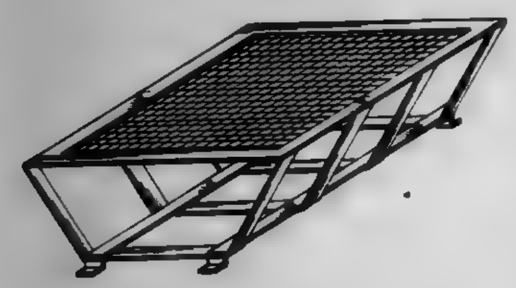
263,921
FORK OR SIMILAR ARTICLE
Vivanna T. B. Hube, Jakarta, Indonesia, assignor to Dansk International Designs Ltd., Mount Kisco, N.Y.
Filed Jul. 8, 1980, Ser. No. 166,937
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D7—137

263,922
PAINT SCRAPER HANDLE
Robert H. Bruno, Avon, Conn., assignor to The Stanley Works, New Britain, Conn.
Filed Aug. 29, 1979, Ser. No. 70,858
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D32—48

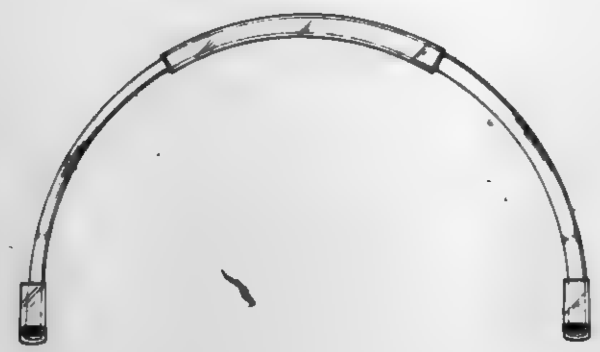
263,923
CLOTHES DRYER
Taro Koshiyama, 46, 2-chome, Minamikinomoto, Yao-shi, Osaka-fu, Japan
Filed May 31, 1979, Ser. No. 44,113
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D32—58



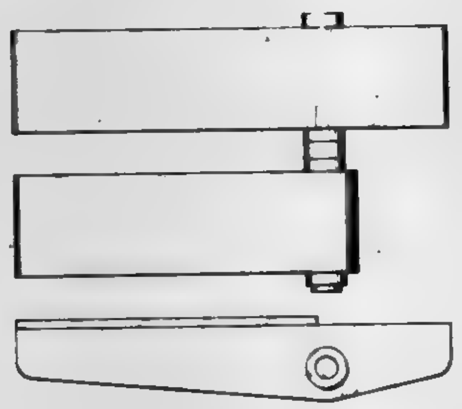
263,924
FIRE SCREEN
Kenneth R. Hinsham, 2005 McGregor Dr., Rancho Cordova, Calif. 95670
Filed Aug. 28, 1979, Ser. No. 70,698
Term of patent 14 years
Int. Cl. D7—*08*
U.S. Cl. D7—207



263,925
PANEL CARRIER
John R. Whipple, 208 W. Grant, Bozeman, Mont. 59715
Filed Oct. 19, 1979, Ser. No. 86,283
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—14

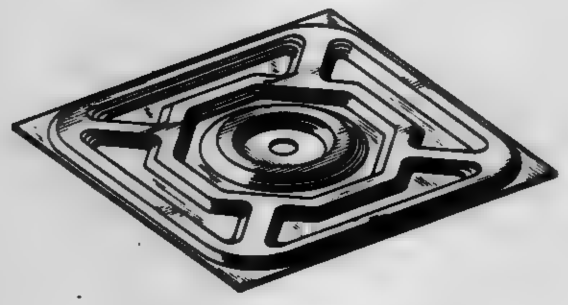


263,926
HINGE
William P. White, c/o Mechanical Applications, Inc., Wiscasset, Me. 04578
Filed Feb. 11, 1980, Ser. No. 120,555
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D8—327

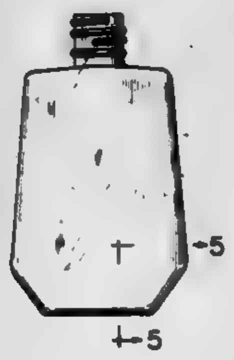


263,927
ROOF INSULATION WASHER
George G. Dewey, Prospect Heights, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.
Filed Nov. 7, 1979, Ser. No. 92,159
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—399

263,928
ROOF INSULATION WASHER
George G. Dewey, Prospect Heights, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.
Filed Nov. 7, 1979, Ser. No. 92,160
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—399

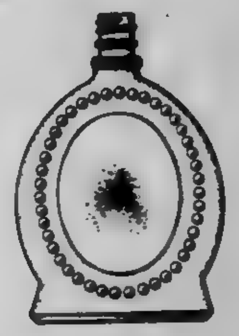


263,929
BOTTLE
John A. Grip, Wayne, N.J., assignor to American Cyanamid Company, Stamford, Conn.
Filed Feb. 13, 1980, Ser. No. 121,192
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—370

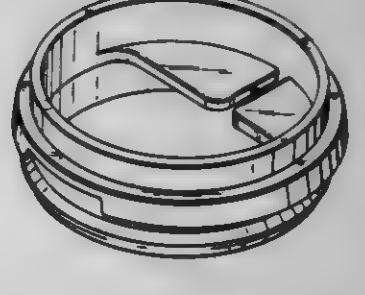


263,930
BOTTLE
John Pardo, Yonkers, N.Y., and David A. Jones, Kettering, Ohio, assignors to The Drackett Company, Cincinnati, Ohio
Filed Apr. 11, 1980, Ser. No. 139,389
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—373

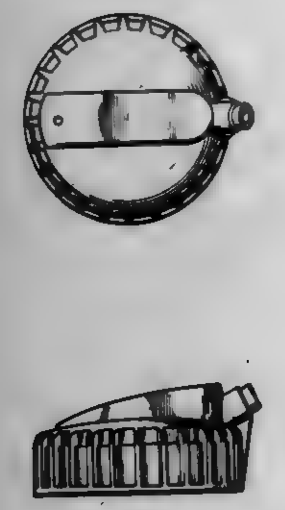
263,931
PERFUME BOTTLE
Andre de Nola, 310 Geary St., San Francisco, Calif. 94102
Filed Sep. 6, 1979, Ser. No. 73,079
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—406



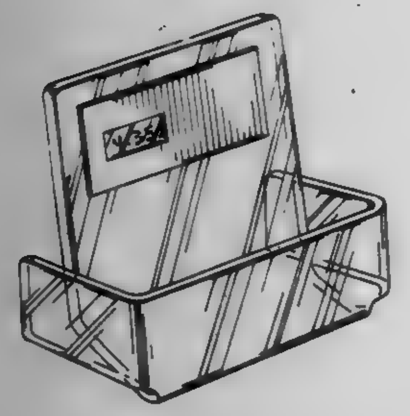
263,932
CONTAINER ADAPTOR RING OR THE LIKE
Robert H. C. M. Daenen, Hekelgem, and Pieter K. J. De Coster, Aalst, both of Belgium, assignors to Dart Industries Inc., Los Angeles, Calif.
Filed Aug. 16, 1979, Ser. No. 66,897
Term of patent 14 years
Int. Cl. D09—*99*
U.S. Cl. D9—434



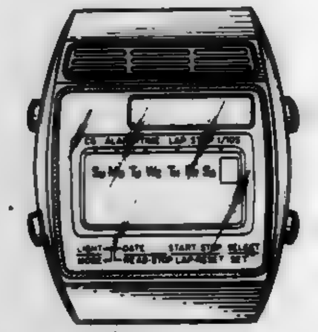
263,933
DISPENSING CAP FOR BOTTLE OR THE LIKE
Howard L. Jones, Muncie, and John M. Blackman, Brownsburg, both of Ind., assignors to Ball Corporation, Muncie, Ind.
Filed Sep. 14, 1979, Ser. No. 75,674
Term of patent 14 years
Int. Cl. D09—*07*
U.S. Cl. D9—447



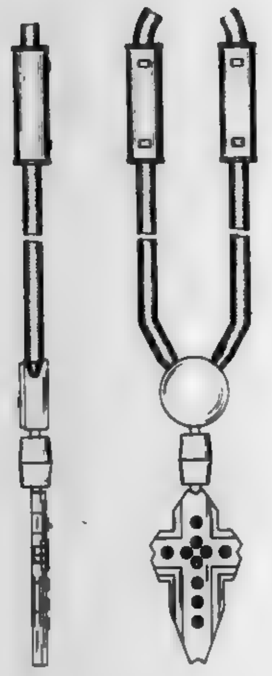
263,934
TIMEPIECE CARD HOLDER
Thomas J. Fuerneisen, Carefree, Ariz., assignor to Microtime, Incorporated, Scottsdale, Ariz.
Filed Apr. 25, 1980, Ser. No. 143,823
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D10—2



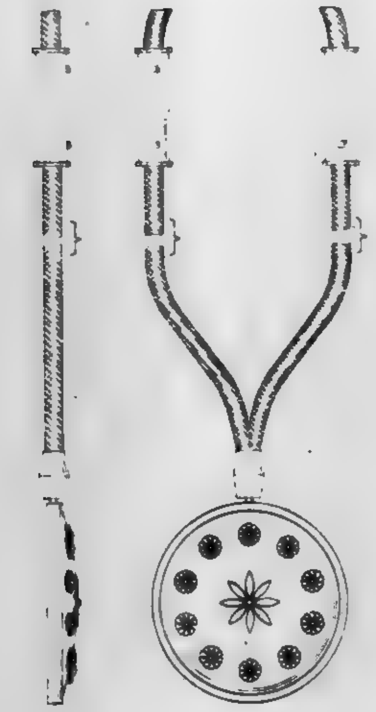
263,935
WRISTWATCH
Susumu Suzuki, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan
Filed Sep. 13, 1979, Ser. No. 75,357
Claims priority, application Japan, Mar. 13, 1979, 54-9735
Term of patent 7 years
Int. Cl. D10—*02*
U.S. Cl. D10—38



263,936
NECKLACE WITH ILLUMINABLE PENDANT
Miroslav Gordan, 2958 S. Laramie Ave., Cicero, Ill. 60650
Filed Dec. 31, 1979, Ser. No. 108,600
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—7



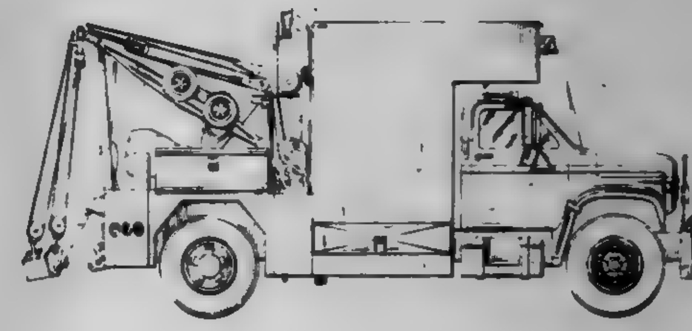
263,937
NECKLACE WITH ILLUMINABLE PENDANT
Miroslav Gordan, 2958 S. Laramie Ave., Cicero, Ill. 60650
Filed Dec. 31, 1979, Ser. No. 108,663
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—7



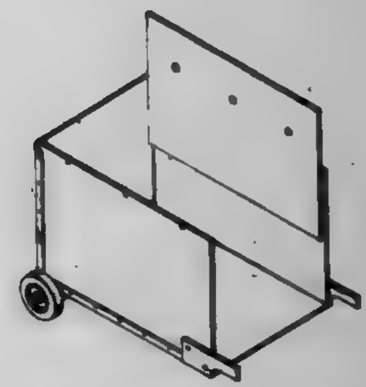
263,938
ARTIFICIAL CHRISTMAS TREE
Kenneth R. Gordon, 152 E. 53rd St., Brooklyn, N.Y. 11203
Filed Feb. 29, 1980, Ser. No. 125,936
Term of patent 14 years
Int. Cl. D11—*05*
U.S. Cl. D11—118

263,939
VASE OR SIMILAR ARTICLE
Barry D. Katcher, Lakewood, N.J., assignor to Bentz Ceramics, Jackson, N.J.
Filed Dec. 17, 1979, Ser. No. 104,031
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—143

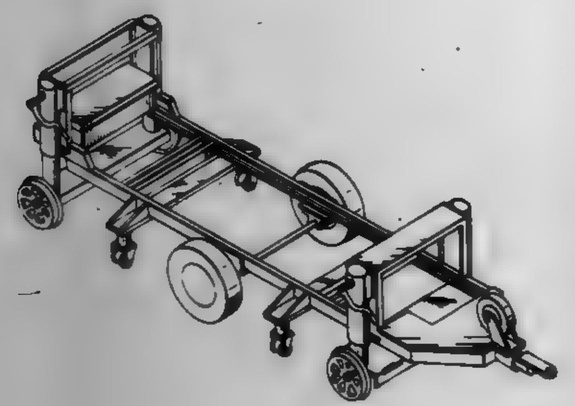
263,940
TOW TRUCK
Kenneth Williamson, 508 Smedley Ave., Media, Pa. 19063
Filed Jul. 13, 1979, Ser. No. 57,185
Term of patent 14 years
Int. Cl. D12—*13*
U.S. Cl. D12—14



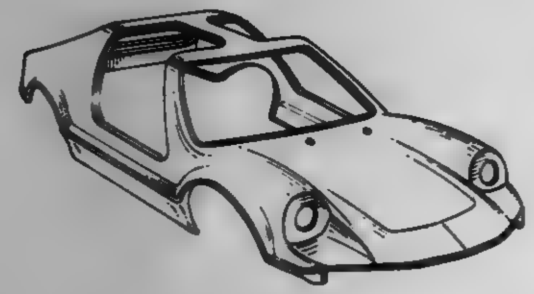
263,941
BRUSH BALER CART
Gilbert G. Lentz, 1820 La Playa Way, Sacramento, Calif. 95825
Filed Jan. 15, 1980, Ser. No. 112,208
Term of patent 14 years
Int. Cl. D12—*02*
U.S. Cl. D34—24



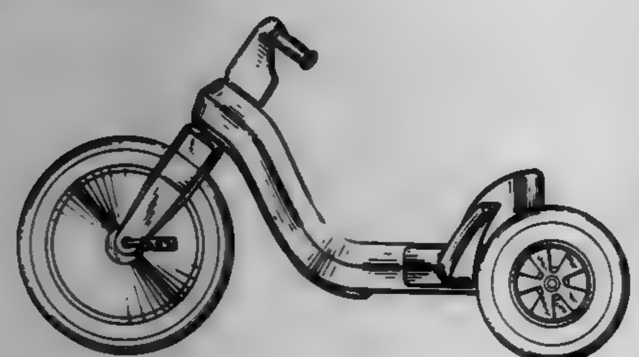
263,942
MOBILE CARRIAGE FOR COMPRESSORS OR THE LIKE
Ross H. Francis, Charlotte, N.C., assignor to Southern Machine Products, Inc., Charlotte, N.C.
Filed Aug. 27, 1979, Ser. No. 70,270
Term of patent 14 years
Int. Cl. D12—*03*
U.S. Cl. D12—36



263,943
AUTOMOBILE BODY SHELL
Larry B. Henry, 11439 Elmcrest St., El Monte, Calif. 91732
Filed Sep. 13, 1979, Ser. No. 74,965
Term of patent 14 years
Int. Cl. D12—*08*
U.S. Cl. D12—92

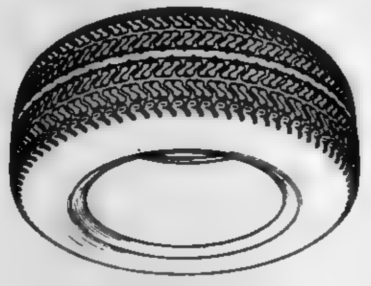


263,944
CHILD'S RIDING VEHICLE
Avi Arad, Westport, Conn., and Earl B. Kane, Flemington, N.J., assignors to Empire of Carolina, Inc., New York, N.Y.
Filed Jan. 19, 1979, Ser. No. 4,954
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—112

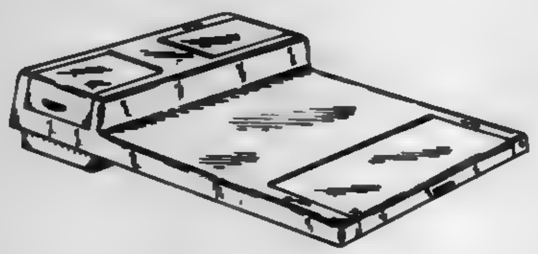


263,945
BICYCLE RACK
Douglas W. Voegeli, White Bear Lake, Minn., assignor to Thermograte, Inc., Roseville, Minn.
Filed Apr. 9, 1979, Ser. No. 28,505
Term of patent 14 years
Int. Cl. D8—*99*
U.S. Cl. D12—115

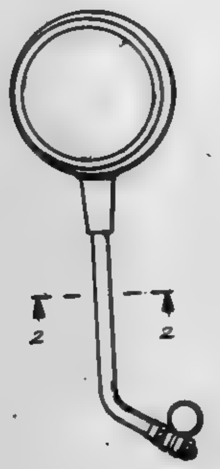
263,946
VEHICLE TIRE
Hiroshi Kojima, Hino; Hideaki Nishio, Urawa, and Hideki Yokoyama, Murayama, all of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan
Filed Dec. 20, 1979, Ser. No. 105,699
Claims priority, application Japan, Jun. 30, 1979, 54-27061
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—146



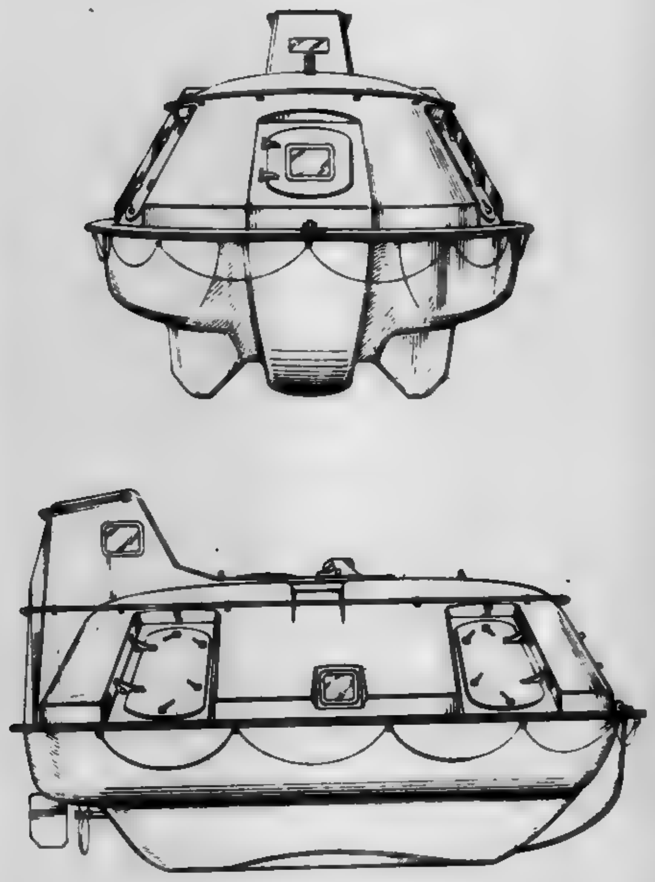
263,947
PICKUP TOPPER
David B. Hardin, 5433 Trident Dr., Kerns, Utah 84118
Filed Jun. 8, 1979, Ser. No. 46,610
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—156



263,948
VEHICLE REAR VIEW MIRROR
Fritz Niggemann, Essen, Fed. Rep. of Germany, assignor to Busch & Müller, Meinerzhagen, Fed. Rep. of Germany
Filed Jan. 16, 1979, Ser. No. 3,936
Claims priority, application Fed. Rep. of Germany, Jul. 18, 1978, 523; Sep. 18, 1978, 525
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—189

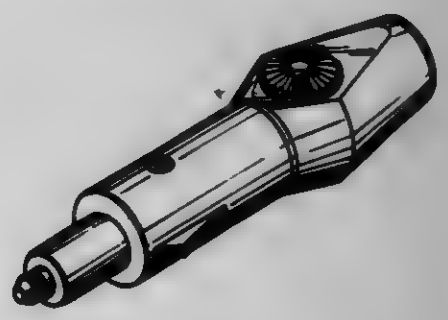


263,949
SURVIVAL CAPSULE
Eric R. Hooper, Lakeside, and Augustine J. Pagan, El Cajon, both of Calif., assignors to Whittaker Corporation, Los Angeles, Calif.
Filed Nov. 23, 1979, Ser. No. 97,062
Term of patent 14 years
Int. Cl. D12—*14*; D29—*02*
U.S. Cl. D12—315

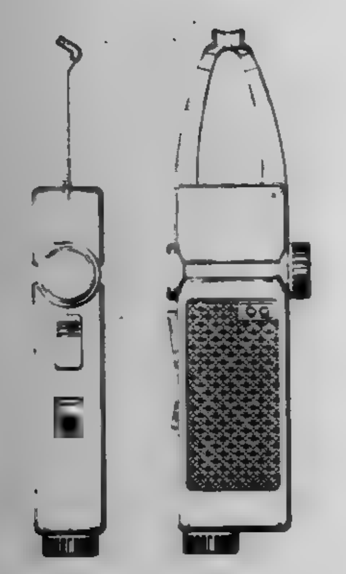


263,950
ELECTRICAL BOX HOLDER
Willis C. Broyhill, 548 Soboba, San Jacinto, Calif. 92383
Filed Dec. 3, 1979, Ser. No. 99,610
Term of patent 14 years
Int. Cl. D13—*99*
U.S. Cl. D13—12

263,951
ELECTRICAL ACCESSORY PLUG FOR AUTOMOBILE LIGHTER OUTLET
Richard Antretter, Stockdorf, and Werner Sierach, Soecking, both of Fed. Rep. of Germany, assignors to RIAN-Apparate- und Vorrichtungsbau Gesellschaft mit beschränkter Haftung, Gauting, Fed. Rep. of Germany
Filed Dec. 18, 1978, Ser. No. 970,184
Claims priority, application Fed. Rep. of Germany, Jun. 20, 1978, 11369
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—24

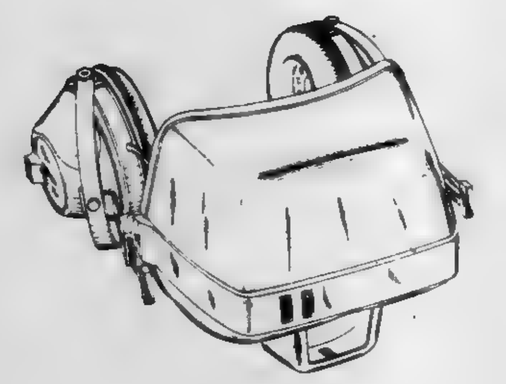


263,952
DEMAGNETIZING DEVICE
Keiichi Yoshizawa, Chiba, Japan, assignor to TDK Electronics, Tokyo, Japan
Filed Jan. 10, 1979, Ser. No. 2,576
Claims priority, application Japan, Jul. 17, 1978, 53-29747
Term of patent 14 years
Int. Cl. D13—*99*
U.S. Cl. D13—99

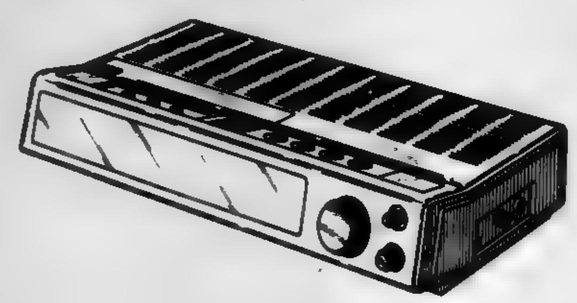


263,953
COMBINED RADIO RECEIVER AND CASSETTE TAPE RECORDER
Kunio Hoshino, Katano, and Katsutoshi Kido, Kyoto, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan
Filed Nov. 27, 1979, Ser. No. 97,941
Claims priority, application Japan, May 31, 1979, 54-22463
Term of patent 14 years
Int. Cl. D14—*01, 03*
U.S. Cl. D14—5

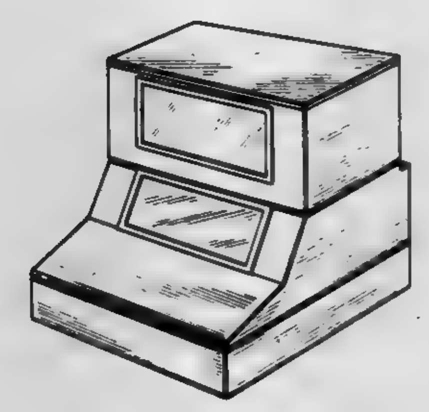
263,954
HEADGEAR TO BE USED IN RELAXATION THERAPY
Michael Stratman, Bockhorn, Fed. Rep. of Germany, assignor to Hanscarl Leuner, Göttingen, Fed. Rep. of Germany
Filed Apr. 20, 1979, Ser. No. 31,911
Claims priority, application Fed. Rep. of Germany, Oct. 23, 1978, 6MR 313
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—36



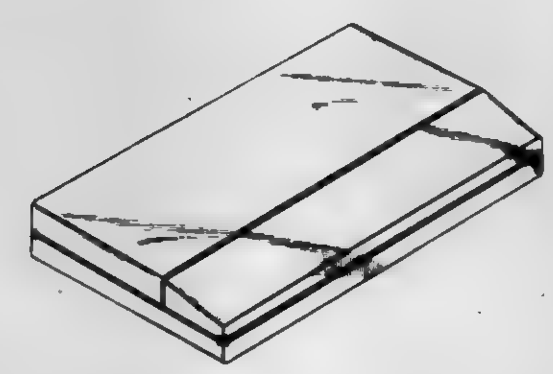
263,955
CLOCK RADIO RECEIVER
Hans T. Meelen, Geldrop, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Sep. 14, 1979, Ser. No. 75,469
Claims priority, application United Kingdom, Mar. 20, 1979, 989122/79
Term of patent 14 years
Int. Cl. D14—*03;* D10—*01*
U.S. Cl. D14—73



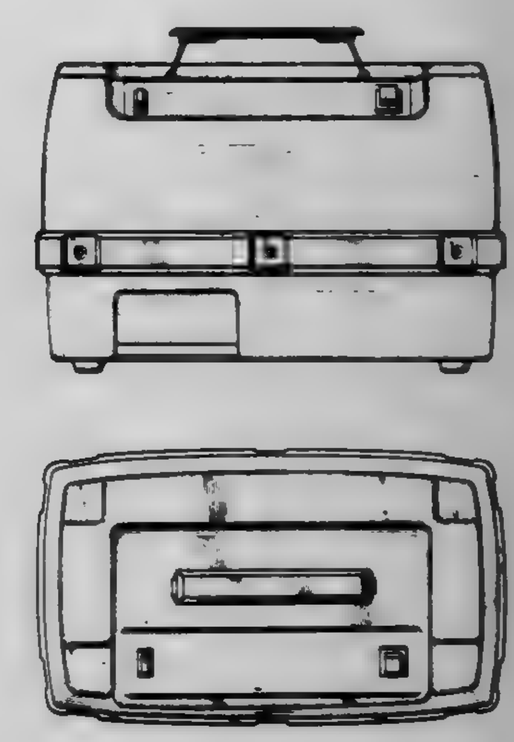
263,956
ACOUSTICAL ENCLOSURE FOR TELEPRINTERS OR THE LIKE
Donald R. Cunningham, Randolph, and James E. Sulewsky, Mendham, both of N.J., assignors to Acoustical Design Incorporated, Mendham, N.J.
Filed May 24, 1979, Ser. No. 42,242
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—03



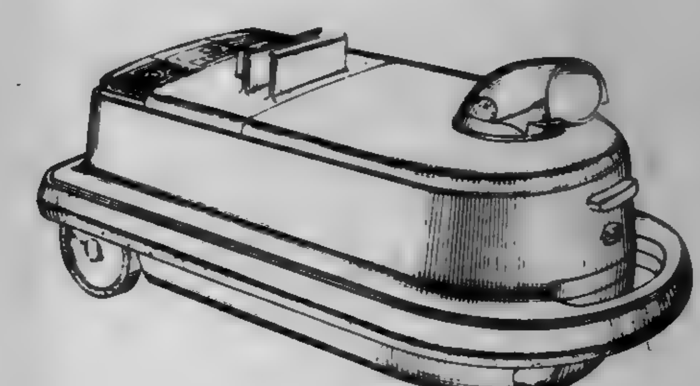
263,957
HOUSING FOR PERIPHERAL COMPONENT FOR COMPUTER
John H. Pemberton, 9 Park View, Needingworth, Cambridge PE17 3TJ, England
Filed Oct. 11, 1979, Ser. No. 83,797
Claims priority, application United Kingdom, Apr. 12, 1979, 989491/79
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D14—107



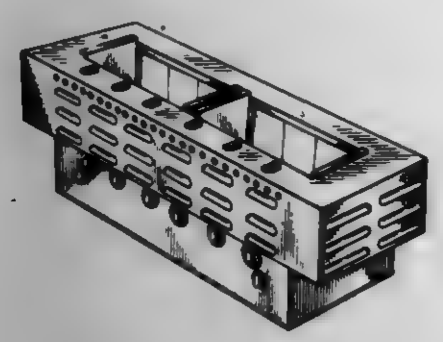
263,958
HOUSING FOR PUMP OR THE LIKE
Charles W. Pelly, Calabasas, Calif., assignor to American Hospital Supply Corporation, Evanston, Ill.
Continuation-in-part of Ser. No. 810,314, Jun. 27, 1977. This application Apr. 9, 1979, Ser. No. 27,960
Term of patent 14 years
Int. Cl. D15—*02*
U.S. Cl. D15—7



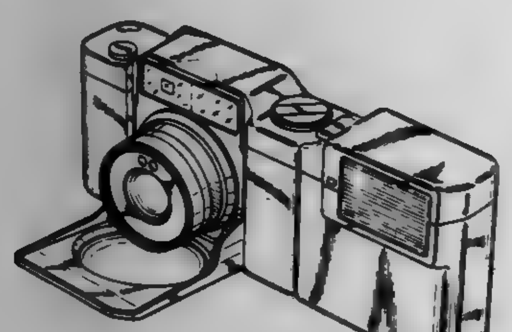
263,959
CANISTER VACUUM CLEANER
Robert O. Ernest, Oak Park; Norman A. Steinkamp, LaGrange Park, and Bernard B. Bluestein, DesPlaines, all of Ill., assignors to Sunbeam Corporation, Chicago, Ill.
Filed Jul. 9, 1980, Ser. No. 167,266
Term of patent 14 years
Int. Cl. D15—*05*
U.S. Cl. D32—21



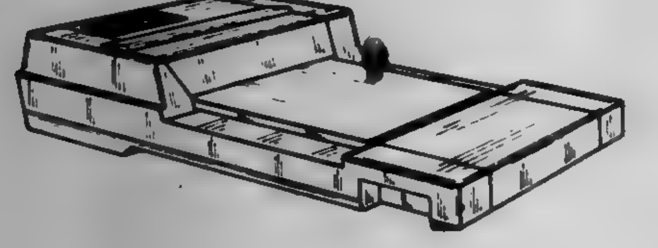
263,960
BROILER OR THE LIKE
Roger M. Berg, 5845 SW. 190th, Aloha, Oreg. 97005
Filed Aug. 17, 1979, Ser. No. 67,369
Term of patent 14 years
Int. Cl. D15—*08*
U.S. Cl. D15—104



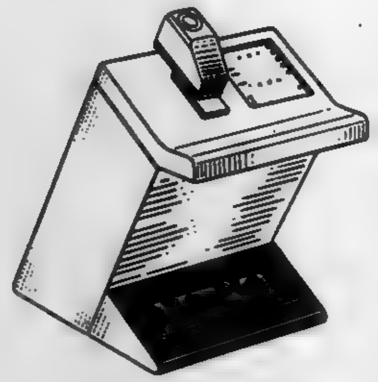
263,961
COMBINED MINIATURE CAMERA WITH FLASH UNIT
Karl-Heinz Lange, Bünde, Fed. Rep. of Germany, assignor to Balda-Werke, Bünde, Fed. Rep. of Germany
Filed May 14, 1979, Ser. No. 38,538
Term of patent 14 years
Int. Cl. D16—*01*
U.S. Cl. D16—6



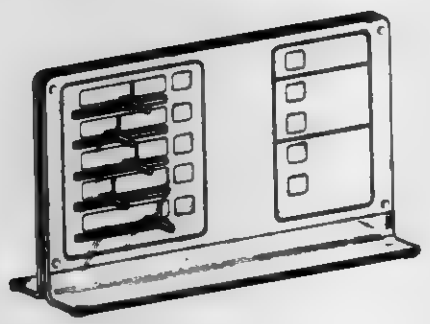
263,962
DOCUMENT FEEDING MACHINE FOR ELECTRONIC COPYING MACHINE
Shigeru Kurozumi, Osaka, Japan, assignor to Sharp Corporation, Osaka, Japan
Filed Feb. 27, 1980, Ser. No. 125,128
Claims priority, application Japan, Sep. 7, 1979, 54-37739
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D16—32



263,963
PHOTOGRAPHIC PRINTER
Norbert Schlagheck; Herbert Schultes, both of Fuerstenfeldbruck, and Lutz Rabold, Hanau, all of Fed. Rep. of Germany, assignors to AGFA-Gevaert AG, Leverkusen, Fed. Rep. of Germany
Filed Nov. 1, 1979, Ser. No. 90,327
Claims priority, application Fed. Rep. of Germany, May 2, 1979, G 161/79
Term of patent 14 years
Int. Cl. D16—*04*
U.S. Cl. D16—34

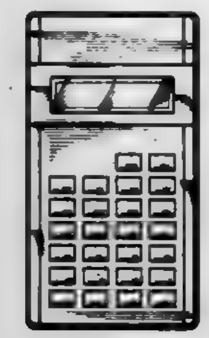


263,964
APPARATUS FOR SELECTING EYEGLASS FRAMES
John C. Butman, Concord, Mass., assignor to Itek Corporation, Lexington, Mass.
Filed Apr. 9, 1979, Ser. No. 28,413
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D20—10

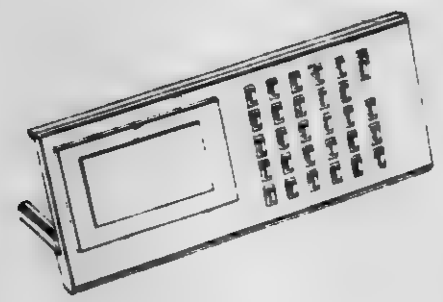


263,965
GUITAR
Gene Klein, 655 Madison Ave., New York, N.Y. 10021
Filed Feb. 29, 1980, Ser. No. 126,051
Term of patent 14 years
Int. Cl. D17—*03*
U.S. Cl. D17—18

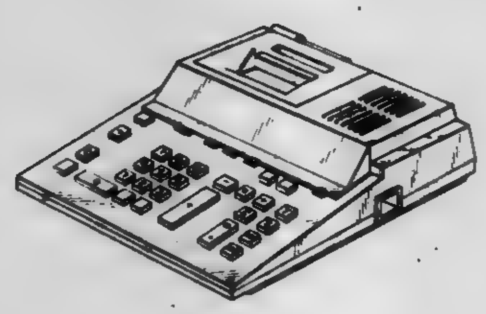
263,966
ELECTRONIC CALCULATOR WITH TIMEPIECE
Yoshiaki Kobayashi, Osaka, Japan, assignor to Sharp Corporation, Osaka, Japan
Filed Aug. 3, 1979, Ser. No. 58,468
Term of patent 14 years
Int. Cl, D18—*01*
U.S. Cl. D18—2



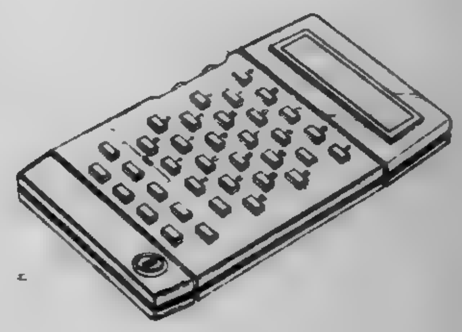
263,967
DESK TOP ELECTRONIC CALCULATOR
Masaaki Sakai, Tokyo, and Junichi Motoyoshi, Funabashi, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Feb. 28, 1980, Ser. No. 125,688
Claims priority, application Japan, Aug. 31, 1979, 36544/1979
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D18—7



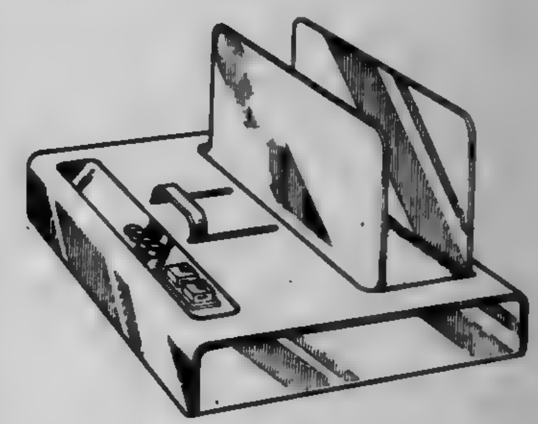
263,968
DESK-TOP ELECTRONIC CALCULATOR
Takashi Hirata, and Kazuyoshi Odagawa, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 14, 1980, Ser. No. 139,777
Claims priority, application Japan, Oct. 18, 1979, 43798/1979
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D18—7



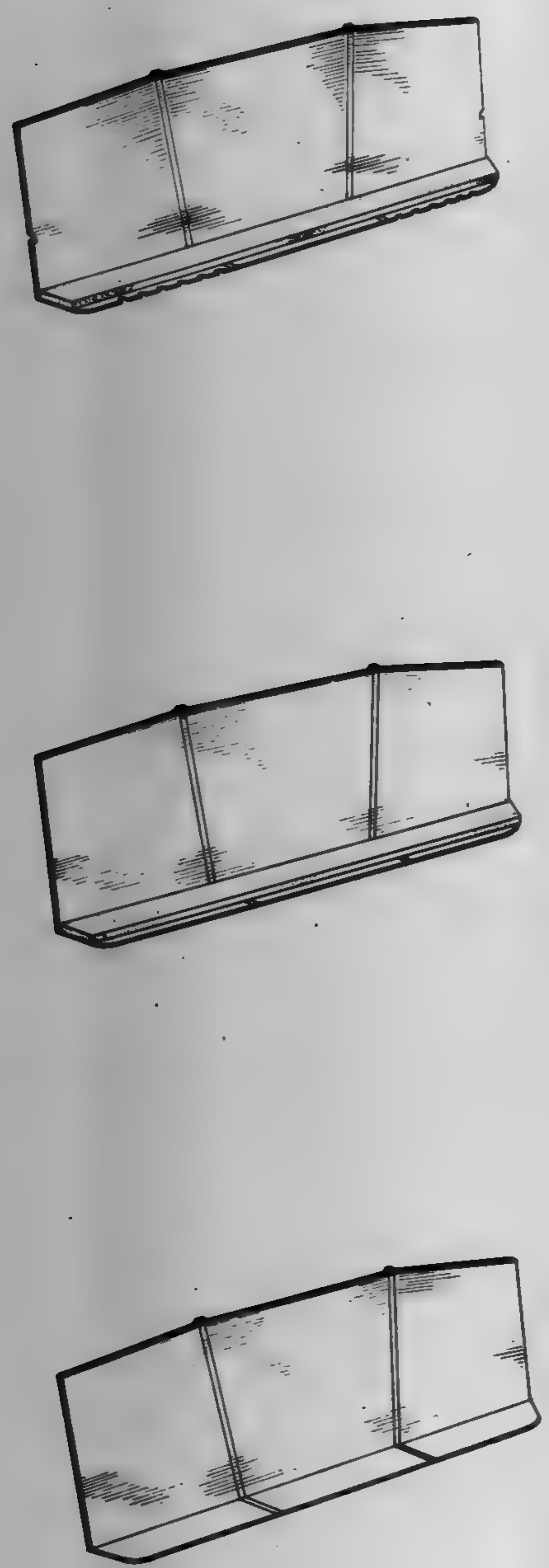
263,969
ELECTRONIC DICTIONARY
Takashi Hirata, and Kunio Hirose, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 21, 1980, Ser. No. 141,921
Claims priority, application Japan, Oct. 24, 1979, 54-44634
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D18—7



263,970
BOOK BINDING MACHINE
Sture Wiholm, Johanneshov, Sweden, assignor to Semotex AB, Stockholm, Sweden
Filed Oct. 14, 1980, Ser. No. 197,142
Claims priority, application Sweden, Apr. 15, 1980, 800783
Term of patent 14 years
Int. Cl. D19—*04*
U.S. Cl. D18—34

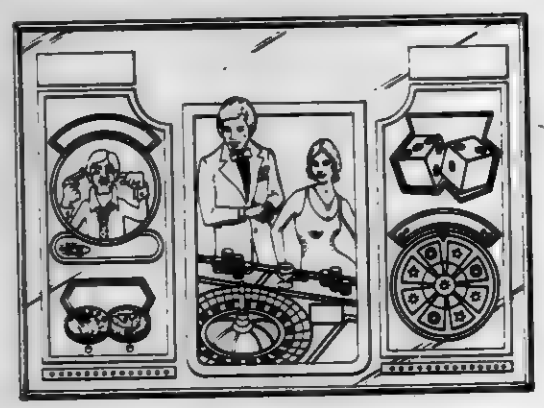


263,971
EASEL OR SIMILAR ARTICLE
Donald B. Smith, R.R. #1, Mount Brydges, Ontario, Canada (N0L 1W0)
Filed Jun. 4, 1979, Ser. No. 45,234
Term of patent 14 years
Int. Cl. D19—*02*; D06—*04*
U.S. Cl. D19—91

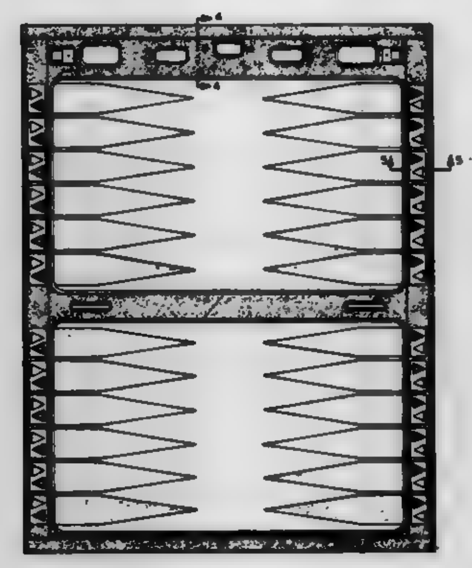


263,972
HAND HELD MESSAGE BOARD WITH CHANGEABLE MESSAGE CARDS
Herbert Pasker, Cherry Hill, N.J., assignor to Magic Marker Corporation, Cherry Hill, N.J.
Filed Jun. 28, 1978, Ser. No. 920,224
Term of patent 14 years
Int. Cl. D20—*03*
U.S. Cl. D20—10

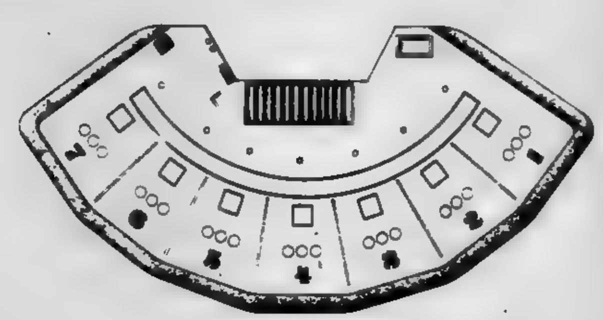
263,973
ELECTRONIC GAME HOUSING
Gabor Kadar, 4635 White Oak Ave., Encino, Calif. 91316
Filed Oct. 25, 1979, Ser. No. 87,989
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—13



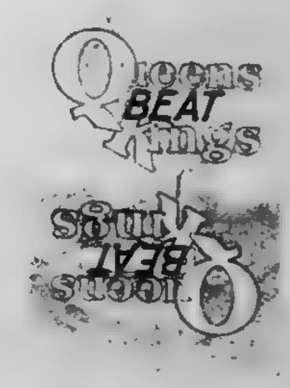
263,974
GAME PLAYING BOARD
Kim J. Brand, 1405 N. Wallace, Indianapolis, Ind. 46201
Filed Jul. 6, 1979, Ser. No. 55,451
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—16



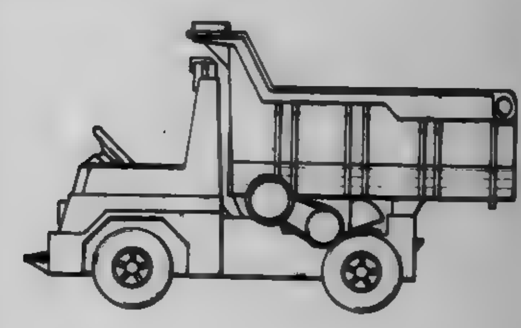
263,975
GAMING TABLE
John S. Quiroga, Las Vegas, Nev.; Edward Fishman, Encino, Calif.; David Fishman, Van Nuys, Calif., and Duke Rohlffs, Thousand Oaks, Calif., assignors to World Championship of Blackjack, Inc., Tarzana, Calif.
Filed Dec. 26, 1979, Ser. No. 107,198
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—37



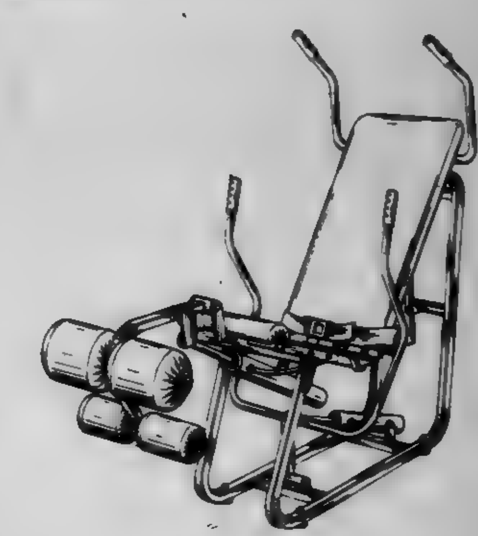
263,976
PLAYING CARD
Gregory J. Vallone, 9950 Delco, Chatsworth, Calif. 91311
Filed Aug. 30, 1979, Ser. No. 70,965
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—47



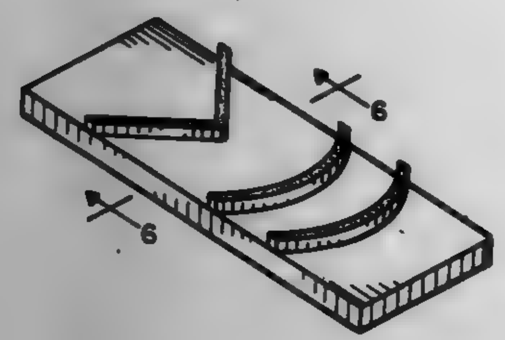
263,977
TOY DUMP TRUCK
Jack J. Breneman, Orchard Park, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Jan. 15, 1980, Ser. No. 112,355
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—134



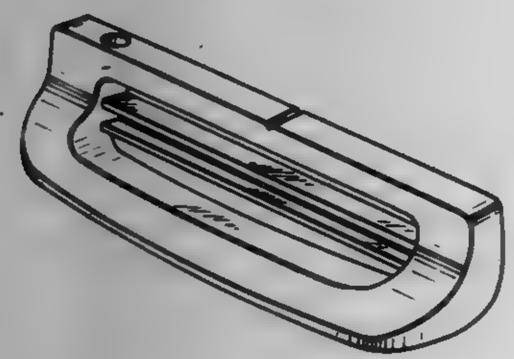
263,978
PHYSICAL EXERCISER
Jerry D. Brentham, P.O. Box 599, Belton, Tex. 76513
Filed Mar. 10, 1980, Ser. No. 128,500
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—195



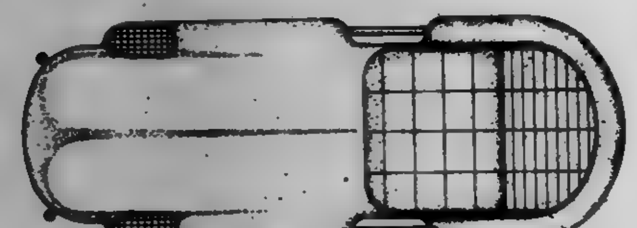
263,979
SLOW PITCH SOFTBALL PITCHER'S AID
Walter D. Van Gerpen, R.R. #1(Westgate Subd.), Ames, Nebr. 68621, and Gene F. Van Gerpen, 2227 E. Military St., Fremont, Nebr. 68025
Filed Sep. 4, 1979, Ser. No. 72,135
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—199



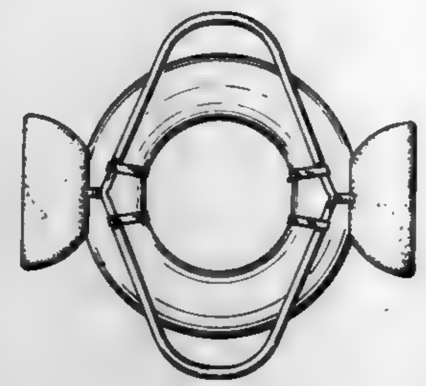
263,980
GOLF CLUB HEAD
Masashi Kobayashi, Matsudo, Japan, assignor to Maruman Golf Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 7, 1979, Ser. No. 101,137
Claims priority, application Japan, Jul. 21, 1979, 54-030462
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—219



263,981
WATER SLED
Chester L. Maddon, Rte. 5, Ada, Okla. 74820
Filed Jan. 16, 1980, Ser. No. 112,646
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—238

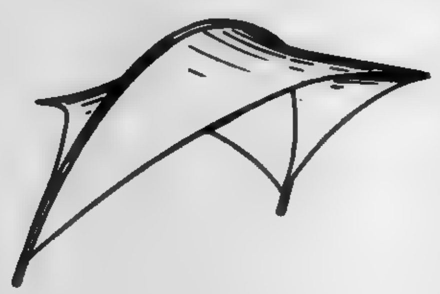


263,982
BUOYANT AMUSEMENT DEVICE
Leonard I. Behl, 436 Graystone, Kansas City, Kans. 66103
Filed Sep. 21, 1979, Ser. No. 77,782
Term of patent 14 years
Int. Cl. D21—*03*
U.S. Cl. D21—237

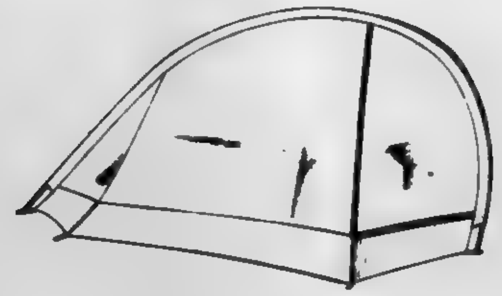


263,983
CHILD'S OUTDOOR PLAY GYM
Harold W. Carlson, Dothan, Ala., assignor to Brown Group Recreational Industries, Inc., Bedford, Pa.
Filed Nov. 13, 1978, Ser. No. 959,928
Term of patent 7 years
Int. Cl. D21—*03*
U.S. Cl. D21—245

263,984
CANOPY FOR USE WITH VEHICLE OR THE LIKE
Charles W. Moss, Moss Tent Works, Mt. Battle St., Camden, Mass. 04843
Filed Jun. 1, 1979, Ser. No. 44,591
Term of patent 14 years
Int. Cl. D21—*04*
U.S. Cl. D21—253

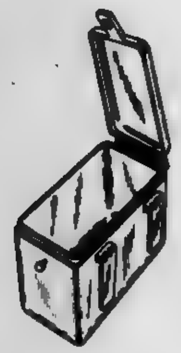


263,985
TENT
Charles W. Moss, Moss Tent Works, Mt. Battle St., Camden, Me. 04843
Filed Aug. 7, 1979, Ser. No. 64,520
Term of patent 14 years
Int. Cl. D21—*04*
U.S. Cl. D21—253

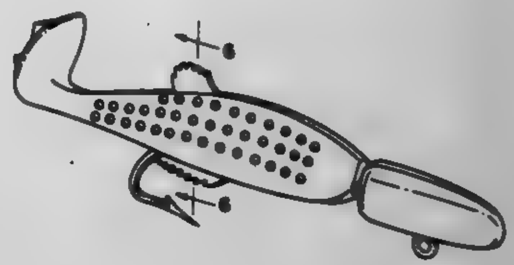


263,986
BUSH KNIFE OR THE LIKE
Sidney J. Coley, Rte. 6, Box 82, Albemarle, N.C. 28001
Filed Oct. 10, 1978, Ser. No. 949,858
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—1

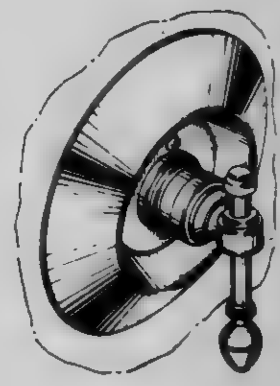
263,987
PELLET HOLDER
Keith Milliman, Fairport, N.Y., assignor to The Coleman Company, Inc., Wichita, Kans.
Filed Mar. 10, 1980, Ser. No. 129,111
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—14



263,988
ARTIFICIAL FISHING LURE
William O. Williams, Jr., Rte. 2, Box 172, Clover, S.C. 29710
Filed Dec. 14, 1979, Ser. No. 103,482
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—27



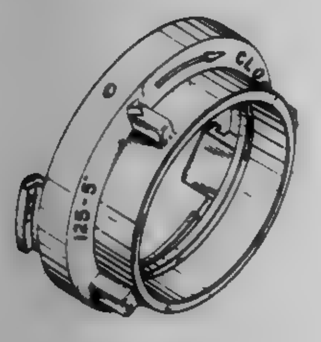
263,989
COMBINED SHOWER HANDLE AND ESCUTCHEON
Gary A. Fleischmann, Sheboygan, Wis., and Lawrence C. Peabody, Rindge, N.H., assignors to Kohler Co., Kohler, Wis.
Filed Apr. 10, 1980, Ser. No. 138,831
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—31



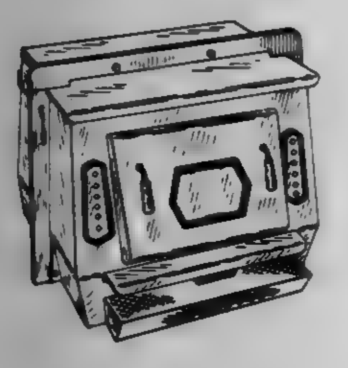
263,990
COMBINED TOILET TRIP LEVER AND ESCUTCHEON
Gary A. Fleischmann, Sheboygan, Wis., and Lawrence C. Peabody, Rindge, N.H., assignors to Kohler Co., Kohler, Wis.
Filed Apr. 10, 1980, Ser. No. 138,834
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—31

263,991
COMBINED LAVATORY SPOUT AND DRAIN CONTROL
Gary A. Fleischmann, Sheboygan, Wis., and Lawrence C. Peabody, Rindge, N.H., assignors to Kohler Co., Kohler, Wis.
Filed May 8, 1980, Ser. No. 147,751
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—32

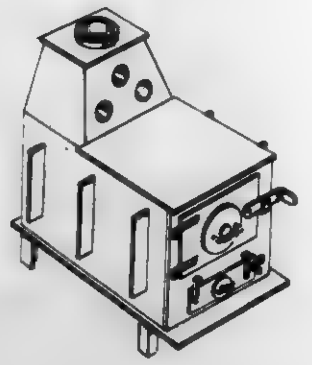
263,992
LUGGED ANNULAR COUPLING
Karl Ebert, Giengen, Fed. Rep. of Germany, assignor to Max Widenmann Armaturenfabrik, Giengen, Fed. Rep. of Germany
Filed Mar. 20, 1979, Ser. No. 22,240
Claims priority, application Fed. Rep. of Germany, Oct. 11, 1978, 7830241
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—44



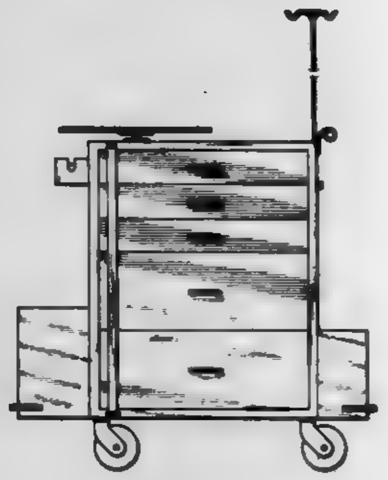
263,993
WOOD BURNING STOVE INSERT FOR FIREPLACE
Hal Larson, Walla Walla, Wash., assignor to Woodcutters Manufacturing, Inc., Walla Walla, Wash.
Filed Feb. 29, 1980, Ser. No. 126,039
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—93



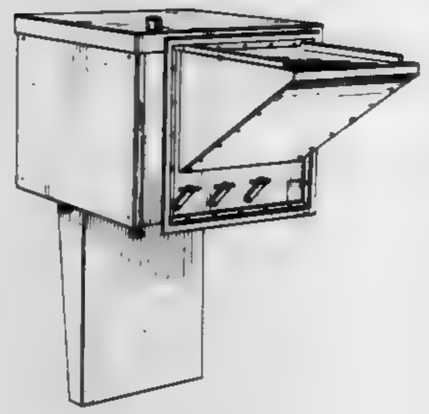
263,994
WOOD BURNING STOVE OR SIMILAR ARTICLE
Laurence J. Antone, Star Rte., Dalton, Mass. 01226
Filed Feb. 28, 1980, Ser. No. 125,377
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—97



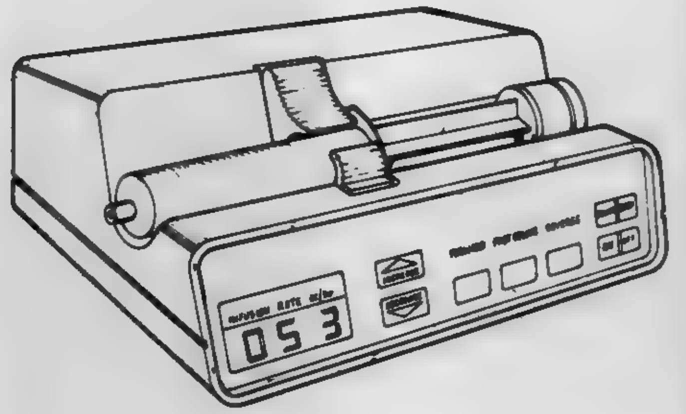
263,995
CRASH CART FOR HOSPITALS
Gerald L. Steele, Cincinnati, Ohio, assignor to Providence Hospital, Cincinnati, Ohio
Filed Sep. 12, 1979, Ser. No. 74,676
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D24—1.1



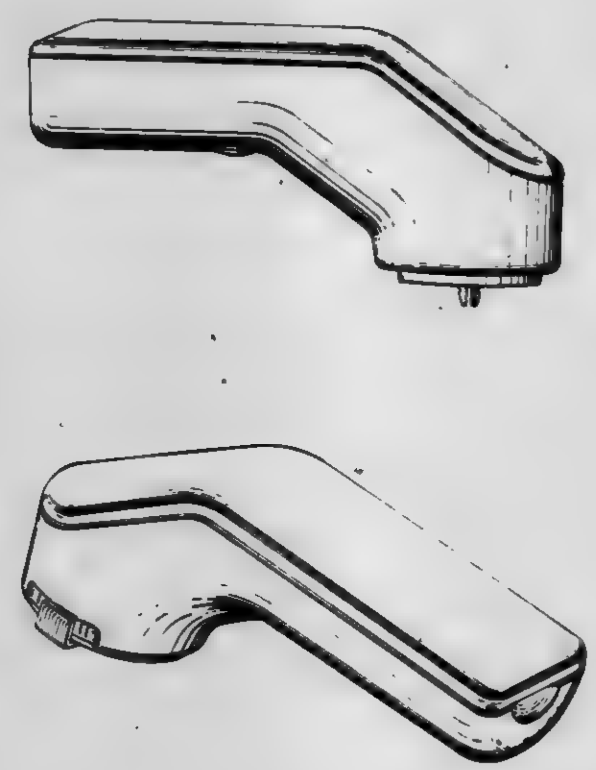
263,996
X-RAY FILM PROCESSOR
Warren G. Fischer, 4N003 Wildrose Rd., St. Charles, Ill. 60174
Filed Dec. 6, 1979, Ser. No. 100,965
Term of patent 14 years
Int. Cl. D24—*01*
U.S. Cl. D24—2



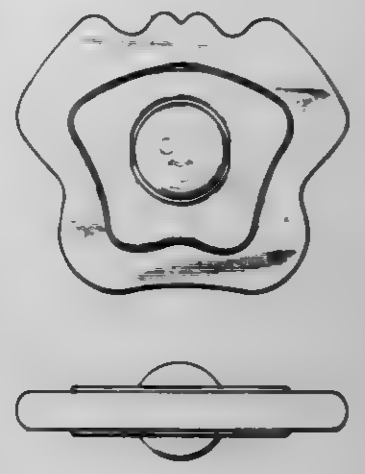
263,997
INFUSION PUMP APPARATUS
Andreas Preussner, Berkeley, Calif., assignor to Cordis Dow, Miami, Fla.
Filed Nov. 13, 1979, Ser. No. 93,579
Term of patent 14 years
Int. Cl. D24—*01;* D15—*02*
U.S. Cl. D24—8



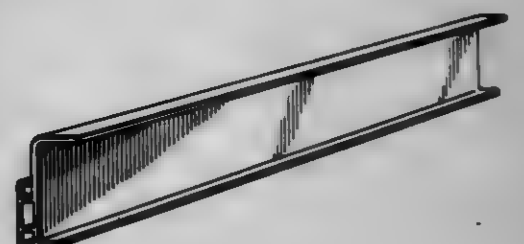
263,998
BODY MASSAGE APPLIANCE
Robert Oberheim, Liederbach, Fed. Rep. of Germany, assignor to Braun AG, Kronberg, Fed. Rep. of Germany
Filed Sep. 12, 1979, Ser. No. 74,632
Claims priority, application Fed. Rep. of Germany, Mar. 13, 1979, 73 MR 8780
Term of patent 14 years
Int. Cl. D28—*03;* D4—*02*
U.S. Cl. D24—41



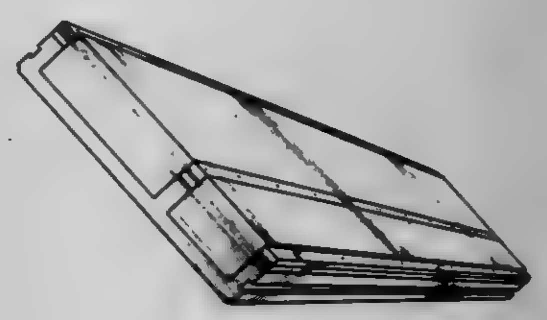
263,999
INFANT TEETHING TOY
Andrew I. Bergman, East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Oct. 26, 1979, Ser. No. 88,607
Term of patent 14 years
Int. Cl. D24—*04;* D21—*01*
U.S. Cl. D24—45



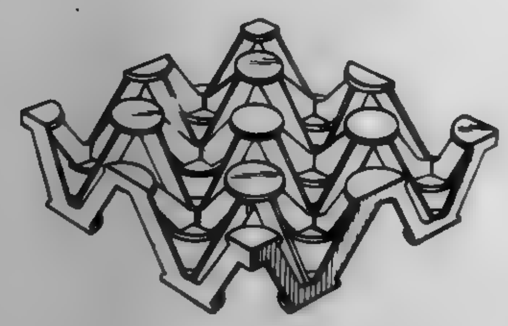
264,000
WINDOW COMPONENT EXTRUSION
Raymond Dallaire, P.O. Box 220, Lévis, P.Q., Canada
Filed Apr. 30, 1980, Ser. No. 145,255
Claims priority, application France, Nov. 14, 1979, 79 78029
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—74



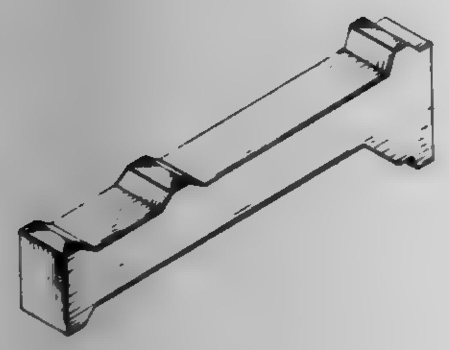
264,001
PREFABRICATED WALL CONSTRUCTION UNIT FOR HOUSES
Sven J. Ankarswed, Västerås, Sweden, assignor to Ankarswedshus AB Vasteras, Sweden
Filed Jun. 15, 1979, Ser. No. 48,923
Claims priority, application Sweden, Jan. 22, 1979, 790160
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—80



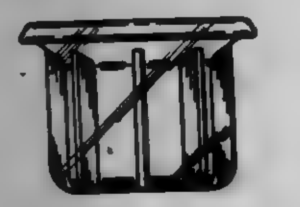
264,002
SKELETAL PANEL OR SIMILAR ARTICLE
James S. Hardigg, Conway, Mass., assignor to Hardigg Industries, Inc., South Deerfield, Mass.
Filed Dec. 17, 1979, Ser. No. 104,067
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—87



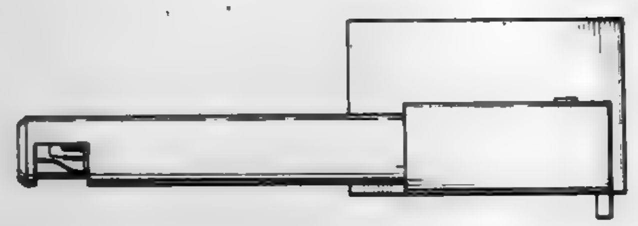
264,003
INTERLOCK CRIB
Hugh G. Campbell, 1846 S. 12th East, Salt Lake City, Utah 84105
Filed May 5, 1980, Ser. No. 146,632
Term of patent 7 years
Int. Cl. D25—*01*
U.S. Cl. D25—80



264,004
ADAPTER FOR CANDLESTICKS
John C. Swan, Elkland, Pa., assignor to Corning Glass Works, Corning, N.Y.
Filed Jul. 16, 1979, Ser. No. 58,130
Term of patent 14 years
Int. Cl. D26—*01*
U.S. Cl. D26—23

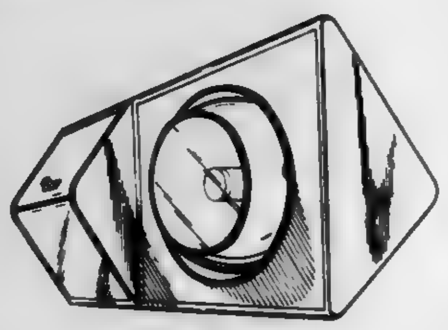


264,005
PHONOGRAPH LIGHT
Guy L. Standing, 2560 N. Holliston Ave., Altadena, Calif. 91001
Filed May 29, 1979, Ser. No. 42,934
Term of patent 3½ years
Int. Cl. D26—*04*
U.S. Cl. D26—51

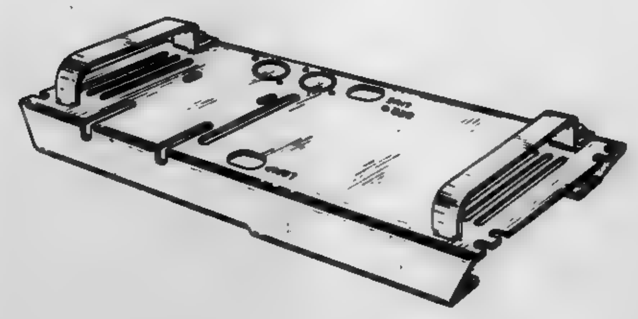


264,006
COMBINED LAMP AND PLANTER
Carlo S. Bessone, Woburn, and Richard J. Citino, Winthrop, both of Mass., assignors to GTE Products Corporation, Stamford, Conn.
Filed Dec. 28, 1979, Ser. No. 108,182
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D26—55

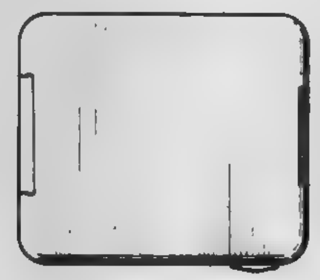
264,007
SPOTLIGHT FITTING
Robert Heritage, London, England, assignor to Rotaflex (Great Britain) Limited, London, England
Filed Jun. 14, 1979, Ser. No. 48,677
Claims priority, application United Kingdom, Jan. 25, 1979, 988,246/79
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D26—74

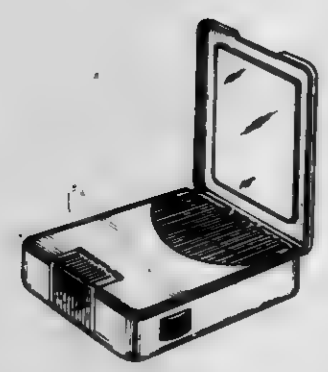


264,008
ELECTRICAL COMPONENT TRAY FOR A LUMINAIRE
Claude Barozzini, Union Grove, Wis., assignor to McGraw-Edison Company, Rolling Meadows, Ill.
Filed Aug. 13, 1979, Ser. No. 65,906
Term of patent 14 years
Int. Cl. D13—*03;* D26—*99*
U.S. Cl. D26—113

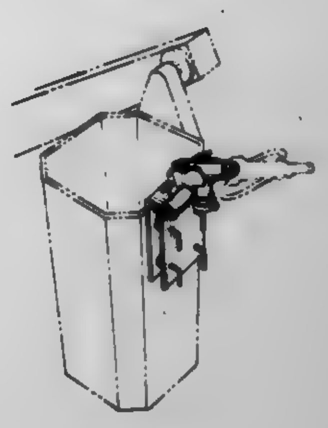


264,009
COMBINED POCKET LAMP, MIRROR AND COMB
David C. Y. Lam, Kam Bong Bldg., 6th Flr., 14, Wing Kut St., Hong Kong, Hong Kong
Filed Apr. 9, 1980, Ser. No. 138,740
Claims priority, application United Kingdom, Feb. 6, 1980, 993,494/80
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—67

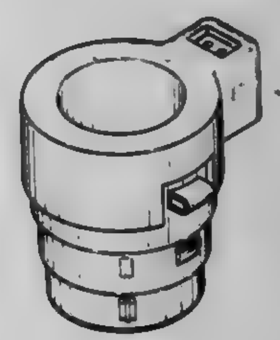




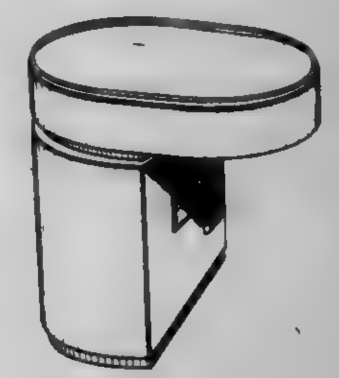
264,010
PORTABLE NOZZLE MOUNT FOR FIREFIGHTING NOZZLE
Darrell G. Graf, Box 4, Medina, N. Dak. 58467
Filed Aug. 23, 1979, Ser. No. 68,928
Term of patent 14 years
Int. Cl. D23—*01;* D29—*01*
U.S. Cl. D29—5



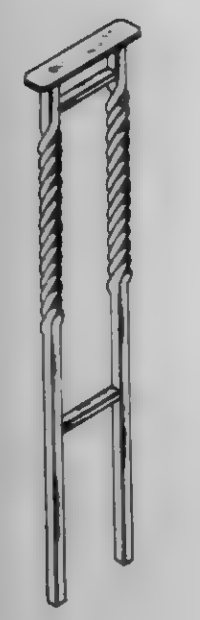
264,011
VACUUM CLEANER HOSE ADAPTER
Joseph Genoa, Freeport, N.Y., assignor to Atlantic Vacuum Parts Corp., Long Beach, N.Y.
Filed Jun. 20, 1980, Ser. No. 161,585
Term of patent 14 years
Int. Cl. D15—*05*
U.S. Cl. D32—31



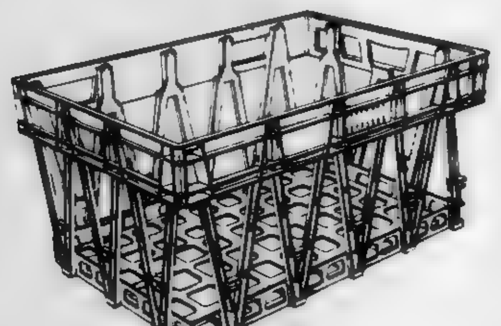
264,012
TELLER MACHINE MODULE
Charles Hauser, and Sharon Johnson, both of Atlanta, Ga., assignors to The Central Trust Company, N.A., Cincinnati, Ohio
Filed Apr. 14, 1980, Ser. No. 140,236
Term of patent 14 years
Int. Cl. D99—*00*
U.S. Cl. D99—28



264,013
SUPPORT STAND FOR A MAILBOX OR SIMILAR ARTICLE
Henry H. Sandifer, 242 Hastings Ct., Doylestown, Pa. 18901
Filed Aug. 6, 1979, Ser. No. 63,954
Term of patent 14 years
Int. Cl. D99—*00*
U.S. Cl. D99—32



264,014
TOTE TRAY
Jean Cornou, Verrieres-le-Buisson, France, assignor to Allibert Exploitation, S.A., Grenoble, France
Filed Aug. 27, 1979, Ser. No. 69,985
Claims priority, application France, Apr. 2, 1979, 79 2517
Term of patent 14 years
Int. Cl. D9—*04*
U.S. Cl. D34—43



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TO WHOM

PATENTS WERE ISSUED ON THE 20TH DAY OF APRIL, 1982

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

American Cyanamid Co.: *See*—
Brown, Dale G., 4,325,969, Cl. 424-304.000.
Sloboda, Adolph E., 4,325,949, Cl. 424-230.000.
Wright, William B., Jr.; Tomcufcik, Andrew S.; and Marisco, Joseph W., Jr., 4,325,955, Cl. 424-251.000.
American Home Products Corporation: *See*—
Helfer, Joel N., 4,325,387, Cl. 128-748.000.
American Microcar Incorporated: *See*—
Pivar, Stuart, 4,325,448, Cl. 180-215.000.
American Safety Razor Company: *See*—
Iten, Clemens A.; and Chase, David O., 4,325,392, Cl. 132-80.00R.
American Trading and Production Corp.: *See*—
Seebinger, Frederick L., 4,325,529, Cl. 248-298.000.
AMF Incorporated: *See*—
Schmidt, Otto K., 4,325,391, Cl. 131-372.000.
AMP Incorporated: *See*—
Feldman, Steven, 4,325,599, Cl. 339-103.00R.
Ampex Corporation: *See*—
Griesshaber, Karl H., 4,326,219, Cl. 358-163.000.
Jensen, Peter W., 4,326,216, Cl. 358-8.000.
Anami, Yuichi, to Kabushiki Kaisha Komatsu Seisakusho. Protector for a differential gear casing of a vehicle. 4,325,444, Cl. 180-70.00R.
Ando, Akio: *See*—
Nishida, Katsutoshi; Okada, Syoji; Ando, Akio; and Sakai, Masato, 4,325,334, Cl. 123-270.000.
Andrews, Richard J.: *See*—
Fenne, Ivor; and Andrews, Richard J., 4,325,676, Cl. 417-206.000.
Andrews, Robert E.: *See*—
Spence, Kemet D.; and Andrews, Robert E., 4,325,937, Cl. 424-16.000.
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ANIC S.p.A.: *See*—
Costanzi, Silvestro; Tessarolo, Francesco; and Ballabio, Adriano, 4,325,864, Cl. 524-104.000.
Dozzi, Giovanni; Cucinella, Salvatore; and Salvatori, Tito, 4,325,885, Cl. 260-448.00R.
Romano, Ugo; and Ioro, Giuseppe, 4,326,079, Cl. 564-393.000.
Anritsu Electric Company Limited: *See*—
Seki, Yashiro; and Kobayashi, Hideo, 4,326,195, Cl. 340-365.00R.
Antos, George J., to UOP Inc. Hydrocarbon dehydrocyclization with an attenuated superactive multimetallic catalytic composite. 4,325,816, Cl. 208-139.000.
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Aotsu, Hiroaki; Isono, Akira; Inayama, Tsutomu; and Fukushima, Mamoru, to Hitachi, Ltd.; and Hitachi Engineering Co., Ltd. Method and apparatus for controlling excitation of a generator. 4,326,159, Cl. [illegible]
Apex Foot Products Corporation: *See*—
Malkin, Howard, 4,325,380, Cl. 128-581.000.
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Appelt, Guenter, to Siemens Aktiengesellschaft. Rotating anode x-ray tube. 4,326,144, Cl. 313-60.000.
Appenzeller, Valentin: *See*—
Verboom, Hermann; Mingers, Peter F.; and Appenzeller, Valentin, 4,325,170, Cl. 29-116.0AD.
Appleby, Paul E.; Broyles, Henry D.; Hill, John E.; and Peck, Arland A., to Goodyear Tire & Rubber Company, The. Drum and method of shaping a radial tire. 4,325,764, Cl. 156-123.00R.
Arai, Hideaki: *See*—
Ito, Kenji; Matsuura, Katsumi; Sugita, Hiroshi; Kimura, Toshihiko; and Arai, Hideaki, 4,326,022, Cl. 430-546.000.
Araki, Kenji: *See*—
Suda, Toyoharu; Tayama, Katsuhiko; Araki, Kenji; Kurata, Masayuki; and Yamana, Hideo, 4,325,752, Cl. 148-12.100.
Arand, John K.; Muzio, Lawrence J.; and Teixeira, Donald P., to Electric Power Research Institute, Inc. Urea reduction of NO_x in fuel rich combustion effluents. 4,325,924, Cl. 423-235.000.
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Schleimer, Francois; Henrion, Romain; Goedert, Ferdinand; Lorang, Lucien; and Baumert, Jean, 4,325,730, Cl. 75-52.000.
Arcamone, Federico: *See*—
Bargiotti, Alberto; Cassinelli, Giuseppe; Penco, Sergio; Arcamone, Federico; and di Marco, Aurelio, 4,325,946, Cl. 424-180.000.
Penco, Sergio; Franchi, Giuliano; Arcamone, Federico; and Casazza, Annamaria, 4,325,947, Cl. 424-180.000.
Arena, Blaise J., to UOP Inc. Rare earth cation exchanged adsorbents for carbohydrate separations. 4,325,742, Cl. 127-46.200.
Arikawa, Hiroo, to San-O Industrial Company, Ltd. Electrical fuse with semi-cylindrical casings. 4,326,185, Cl. 337-201.000.
Arlt, Dieter: *See*—
Jautelat, Manfred; Arlt, Dieter; Lantzsch, Reinhard; Fuchs, Rainer; Riebel, Hans-Jochem; Schroder, Rolf; and Harnisch, Horst, 4,325,873, Cl. 260-338.000.
Arnaudeau, Marcel, to Institut Francais du Petrole. Method and device for conveying an essentially gaseous fluid through a pipe. 4,325,712, Cl. 55-48.000.
Arntyr, Oscar S.; and Engstrom, Thord I. Arrangement in rain-water drains or manholes. 4,325,572, Cl. 285-229.000.
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Sato, Hiroshi; Okamoto, Takehiko; and Asada, Akira, 4,325,915, Cl. 422-133.000.
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Kidode, Masatsugu; Asada, Haruo; and Tabata, Mitsuo, 4,326,202, Cl. 340-799.000.
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Suda, Hiroharu; Hideshima, Keiji; Asada, Kazuyoshi; Takaki, Masaoki; Yasuda, Isao; and Kamei, Atsutaro, 4,326,207, Cl. 364-900.000.
Asahi Glass Company, Ltd.: *See*—
Miyake, Haruhisa; Yamashita, Masami; and Asawa, Tatsuro, 4,326,046, Cl. 525-276.000.
Asahi Kasei Kogyo Kabushiki Kaisha: *See*—
Ogata, Takashi; Gonmori, Makoto; and Matano, Kenji, 4,325,629, Cl. 355-27.000.
Asahi Kogaku Kogyo Kabushiki Kaisha: *See*—
Aoki, Harumi; and Sawada, Yoshio, 4,326,127, Cl. 250-204.000.
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Asawa, Tatsuro: *See*—
Miyake, Haruhisa; Yamashita, Masami; and Asawa, Tatsuro, 4,326,046, Cl. 525-276.000.
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Bergman, Carl, 4,325,694, Cl. 432-247.000.
Asics Corporation: *See*—
Inohara, Masanobu, 4,325,194, Cl. 36-29.000.
Aso, Akira; and Kawanabe, Hitoshi, to Sharp Kabushiki Kaisha. Light-responsive field effect mode semiconductor devices. 4,326,210, Cl. 357-22.000.
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Bodyako, Mikhail N.; Semenjuk, Georgy A.; Zverkov, Garik E.; Astapchik, Stanislav A.; Kosov, Anatoly F.; Kashulin, Sergei M.; and Baklanov, Alexandr N., 4,326,116, Cl. 219-61.700.
Astes Components, Ltd.: *See*—
Josephson, Elliot, 4,326,244, Cl. 363-56.000.
Atlantic Richfield Company: *See*—
DiGiulio, Adolph V.; and Bauer, Jack N., 4,326,044, Cl. 521-147.000.
Everett, Gary L.; and Hu, William C., 4,325,804, Cl. 208-58.000.
Atsumi, Koukichi. Loquat-leaf moxibustion therapy and a moxa stick for use in the therapy. 4,325,371, Cl. 128-254.000.
Atsumi, Tamisuke: *See*—
Okamoto, Takio; Atsumi, Tamisuke; Nakagawa, Yoshio; and Akutsu, Hidezo, 4,326,148, Cl. 315-169.200.
Audesse, Emery G.: *See*—
Broadt, David R.; Hartman, Donald W.; Shaffer, John W.; and Audesse, Emery G., 4,326,241, Cl. 362-11.000.
Audi, Josef: *See*—
Reinmold, Heinz-Josef; and Audi, Josef, 4,325,188, Cl. 33-1.00M.
Auracher, Franz: *See*—
Winzer, Gerhard; and Auracher, Franz, 4,325,605, Cl. 350-96.150.
Auston, David H., to Bell Telephone Laboratories, Incorporated. High speed photodetector. 4,326,126, Cl. 250-211.00J.
Auto Parts Mfg. Inc.: *See*—
Burgess, Robert K., 4,325,160, Cl. 15-250.060.
Autoclave Engineers, Inc.: *See*—
Ruyak, Robert F., 4,325,914, Cl. 422-102.000.
Autoipari Kutato Intezet: *See*—
Korosladanyi, Jozsef; Szabo, Sandor; Madi, Jeno; Vad, Laszlo; and Farkas, Otto, 4,325,541, Cl. 267-8.00R.
Ava International Corporation: *See*—
Akkerman, Neil H., 4,325,431, Cl. 166-117.500.
Avco Investment Management Corporation: *See*—
Fish, Leonard A., 4,325,494, Cl. 221-13.000.
Aziende Chimiche Riunite Angelini Francesco: *See*—
Silvestrini, Bruno; and Baiocchi, Leandro, 4,325,952, Cl. 424-250.000.
Azoian, Stepan E.: *See*—
Pelts, Boris B.; Tumasian, Beniamin A.; Egorov, Leonid P.; Zatulovsky, Lev M.; Chaikin, Petr M.; Freiman, Efim A.; Chalian, Eduard A.; Abramian, Grant I.; Azoian, Stepan E.; and Kostandian, Kliment A., 4,325,917, Cl. 422-249.000.
B. F. Goodrich Company, The: *See*—
Hallenbeck, Victor L., 4,325,852, Cl. 523-334.000.
Son, Pyong-Nae; and Layer, Robert W., 4,326,061, Cl. 546-164.000.
Son, Pyong-Nae, 4,326,063, Cl. 546-191.000.
B&W Metals Company, Inc.: *See*—
Barnhill, Donald R., 4,325,491, Cl. 220-316.000.
Babbage, Thomas A., to Trianco Redfyre Limited. Boilers. 4,325,310, Cl. 110-101.00R.
Babus, Stephen R.; and Tucker, George T., to Babus, Stephen R.; and Tucker, George T. Conversion tank for recycling asphaltic shingle tabs. 4,325,641, Cl. 366-18.000.
Badische Corporation: *See*—
Louch, James B.; Postman, William; Ward, Thomas A.; and Cole, Willis E., 4,325,322, Cl. 118-410.000.
Baer, Massimo, to Monsanto Company. Flame retardant resin compositions. 4,325,865, Cl. 523-205.000.
Bagnetto, Lucien J., Jr., to Phillips Petroleum Company. Fuel detergent compositions containing lubricating oil. 4,325,708, Cl. 44-58.000.
Bahnisch, Hans-Joachim, to UHDE GmbH. Process for the catalytic synthesis of methanol. 4,326,041, Cl. 518-702.000.
Baiocchi, Leandro: *See*—
Silvestrini, Bruno; and Baiocchi, Leandro, 4,325,952, Cl. 424-250.000.
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Blade, John C.; Ridley, John; and Wood, Geoffrey C., to Alcan Research and Development Limited. Formable aluminum alloy sheet product. 4,325,755, Cl. 148-32.000.
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Bleckmann, Ingo. Apparatus for making infusion drinks. 4,325,293, Cl. 99-300.000.
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Bourgoin, Ronald C. Process for forming ambient temperature superconducting filaments. 4,325,795, Cl. 204-180.00R.

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Brown, Lewis R. Antibiotic testing vessel. 4,326,028, Cl. 435-32.000.
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Bauer, Michael E.; and Sieder, Richard L., 4,325,350, Cl. 123-605.000.
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Faude, Rude, 4,326,124, Cl. 235-382.000.
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Bucalo, Louis. Apparatus for collecting and processing body fluids. 4,325,388, Cl. 128-768.000.
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Perna, Jiulio, 4,326,107, Cl. 179-98.000.
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Holt, Jack A.; Lathrop, Robert L.; and Torbet, Philip A., 4,325,575, Cl. 294-89.000.
Burke, James E., to Teschendorf, Harold A. Automatic reset control for direct spark ignition systems. 4,325,689, Cl. 431-70.000.
Burkhead, Robert B., to Allis-Chalmers Corporation. Snap together pocket filter arrangement. 4,325,718, Cl. 55-378.000.
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Gurian, Martin E., 4,325,469, Cl. 190-53.000.
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Burr-Brown Research Corp.: *See*—
Godsey, Ernest E., 4,326,249, Cl. 364-200.000.
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Burrage, Lawrence M.; and Guertin, Jacques P., to McGraw-Edison Company. Method and apparatus for forming compact bodies from conductive and non-conductive powders. 4,325,734, Cl. 75-225.000.
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Busca, Giovanni; and Brandenberger, Helmuth-Hugo, to Ebauches S.A. Passive masers having alternately operated oscillator and cavity control loops. 4,326,174, Cl. 331-3.000.
Bushman, John A., to Neotronics Limited. Gas detecting and measuring apparatus. 4,326,200, Cl. 340-632.000.
Butler, John L., to Hazeltine Corporation. Directional transducer. 4,326,275, Cl. 367-160.000.
Butt, William C., to Simplimatic Engineering Company. Conveyor support way. 4,325,480, Cl. 198-841.000.
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Byrne, John W.: *See*—
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C. K. Kelley and Sons, Inc.: *See*—
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Cabot Corporation: *See*—
Leon, Gonzalo S.; Fraize, John E.; and Fortier, Richard C., 4,325,686, Cl. 425-371.000.
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Bemiss, James M., 4,325,283, Cl. 89-36.00F.
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Canadian Patents & Development Ltd.: *See*—
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Ohta, Tokuya; Eida, Tsuyoshi; Yano, Yasuhiro; Matsufuji, Yohji; and Haruta, Masahiro, 4,325,735, Cl. 106-22.000.
Torigai, Akiyoshi; Morikawa, Teruo; Nakaoka, Masaki; Murata, Shinji; and Sone, Yoshiaki, 4,325,628, Cl. 355-15.000.
Canron Inc. (Montreal): *See*—
Valditerra, Sergio, 4,325,306, Cl. 104-2.000.
Cantley, Robert J. Energy management system for refrigeration systems. 4,325,223, Cl. 62-126.000.
Caperton, Charles B. Guide tube for sewer rodding machine. 4,325,206, Cl. 52-108.000.
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Verboom, Johannes J.; and Carasso, Marino G., 4,326,282, Cl. 369-48.000.
Carbo Mediec Inc.: *See*—
Slivenko, Victor; and Bokros, Jack C., 4,325,373, Cl. 128-303.00R.
Caridis, Andrew A.; Benson, Clark K.; Leary, Steven G.; and Nilsen, Arthur A., to Heat and Control, Inc. Apparatus for preparing french fried potatoes. 4,325,295, Cl. 99-339.000.
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Carlsen, W. John, to GTE Laboratories Incorporated. Apparatus for connecting optical fibers. 4,325,607, Cl. 350-96.210.
Carpenter, Michael. Flotation mattress. 4,325,152, Cl. 5-451.000.
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Lang, Richard D.; and Bolton, Theodore S., 4,325,594, Cl. 312-100.000.
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Richards, Thomas J.; Smead, Robert G.; and Staebler, Paul J., 4,325,319, Cl. 118-634.000.
Caton, Michael P. L.; Coffee, Edward C. J.; and Watkins, Gordon L., to May & Baker Limited. Cyclopentane derivatives. 4,325,967, Cl. 424-299.000.
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Wissbrun, Kurt F.; and Ide, Yoshiaki, 4,325,903, Cl. 264-176.00R.
Celotex Corporation, The: *See*—
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Chalian, Eduard A.: *See*—
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Chamberlin, George P., to Motorola, Inc. Architecture for data processor. 4,326,247, Cl. 364-200.000.
Chambers, Earl W.; and Doglietto, John L. Apparatus for collecting mineral-bearing debris. 4,325,162, Cl. 15-327.00C.
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Charlton, Walter T. Solar power building block. 4,326,012, Cl. 429-9.000.
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Kuehler, Christopher W., 4,325,801, Cl. 208-10.000.
Miller, Stephen J., 4,325,805, Cl. 208-58.000.
Rosenthal, Joel W.; and Kuehler, Christopher W., 4,325,800, Cl. 208-8.0LE.
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Scott, John W., 4,325,833, Cl. 252-417.000.
Chiang, Nei-Ho, to Yang, Yin-Lung, a part interest. Signal wave loaded pressure oil remote controller and governor. 4,325,671, Cl. 415-43.000.
Chiba, Ryoichi, to Eisai Co., Ltd. Agent for preventing or treating psoriasis. 4,325,965, Cl. 424-284.000.
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Quadranti, Marco; Maurer, Willy; and Maag, Kurt, 4,325,728, Cl. 71-90.000.
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Seitz, Karl; Riat, Henri; and Hoegerle, Karl, 4,325,869, Cl. 260-146.00D.
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Kunze, Walter A., 4,325,492, Cl. 220-335.000.
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Clark, Herbert D.; Katz, Larry L.; and Knoepfle, Thomas L., to General Motors Corporation. Modular occupant restraint system. 4,325,568, Cl. 280-731.000.

Clay, Murray G., to Littelfuse, Inc. Off-centered hour glass shaped coil spring and thermal switch incorporated into same. 4,326,186, Cl. 337-407.000.
Clegg, John E. Reflective beam concentrator. 4,325,612, Cl. 350-432.000.
Clement, Alvin H. Universal signal generator and signal parameter comparator. 4,326,262, Cl. 364-851.000.
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Cohen, Saul M.; and LeBlanc, John R., to Monsanto Company. Adducts of acrolein and isocyanuric acid. 4,326,057, Cl. 544-221.000.
Cohen, Yitzhak; Brandman, Yigal; and Eckstien, Zvi, to Motorola, Inc. Display system for a supervisory control system. 4,326,264, Cl. 364-900.000.
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Cole, Willis E.: *See*—
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Collum, William E., Jr. Surfboard fin. 4,325,154, Cl. 441-74.000.
Colon, Herman; and Maletsky, Albert. Water-activatable hot-melt adhesives. 4,325,851, Cl. 524-83.000.
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Wohlsen, William D., 4,325,786, Cl. 376-442.000.
Comer, Robert C., to Toro Company, The. Snow thrower. 4,325,195, Cl. 37-43.00D.
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Pigeon, Michel; and Saglio, Robert, 4,326,166, Cl. 324-225.000.
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Comparetto, John E. Solar heating apparatus. 4,325,358, Cl. 126-432.000.
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Contri, Robert F., to Sunbeam Corporation. Feedback motor control circuit. 4,326,153, Cl. 318-327.000.
Cook, Russell P. Back strengthening device. 4,325,547, Cl. 272-144.000.
Cooke, Gordon R., to United States of America, Navy. Compass checker. 4,325,246, Cl. 73-1.00E.
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Cooper, Leon N.; Elbaum, Charles; and Reilly, Douglas L., to Nestor Associates. Self organizing general pattern class separator and identifier. 4,326,259, Cl. 364-715.000.
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Coren, Gerald. Clip-on protector. 4,326,231, Cl. 361-119.000.
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Coulter, Wallace H.; and Mena, Walter M., to Coulter Electronics, Inc. Fluid transfer apparatus. 4,325,909, Cl. 422-63.000.
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Cox, Ronald W.: *See*—
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Reiners, Robert A., 4,325,882, Cl. 260-412.400.
Cramer, Roger E., to Research Corporation of the University of Hawaii, The. Platinum caffeine chloride anion complex and method. 4,325,950, Cl. 424-245.000.
Crane, Carl J. Aircraft control/guidance display and mechanism for enroute and landing utility. 4,326,189, Cl. 340-27.0NA.
Creton, Claude. Protection device adaptable for vertical blade cutters. 4,325,186, Cl. 30-275.000.
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Evin, Jean, to Societe Logilift S.A.R.L. Proximity detector. 4,326,197, Cl. 340-561.000.
Ewald, Ronald F., to Knight Engineering & Molding Co. Child-resistant spray through cover. 4,325,497, Cl. 222-153.000.
Excelermatic Inc.: *See—*
Kraus, Charles E., 4,325,592, Cl. 308-219.000.
Exxon Production Research Company: *See—*
Jahns, Hans O.; and Weiss, Richard T., 4,325,655, Cl. 405-217.000.
Exxon Research & Engineering Co.: *See—*
Connin, John L.; Hartman, G. William, Jr.; and Schley, Ronald F., 4,326,222, Cl. 358-292.000.
Johnson, Burnett H., 4,325,860, Cl. 324-155.000.
Metrailer, William J., 4,325,815, Cl. 208-127.000.
Worley, Arthur C., 4,325,916, Cl. 422-197.000.
Fabrig, Paul, to Womako Maschinenkonstrucktionen GmbH. Method and apparatus for aligning stacked paper sheets or the like. 4,325,545, Cl. 271-221.000.
Fairchild Camera & Instrument Corp.: *See—*
Galfo, Christopher H.; and Nalamwar, Ashok L., 4,325,984, Cl. 427-38.000.
Owens, William K.; and Kahermanes, Steven R., 4,326,270, Cl. 343-218.000.
Fang, Frank F.; and Sai-Halasz, George A., to International Business Machines Corporation. Semiconductor inversion layer transistor. 4,326,208, Cl. 357-16.000.
Farber, Karl-Heinz; and Rupp, Alexander, to Bosch-Siemens Hausgerate GmbH. Household appliance, especially a garbage compactor. 4,325,299, Cl. 100-295.000.
Farina, Peter R.; and Grattan, James A., to Baker Instruments Corporation. Process for preparation of folic acid derivatives. 4,326,060, Cl. 544-258.000.
Farkas, Otto: *See—*
Korosladanyi, Jozsef; Szabo, Sandor; Madi, Jeno; Vad, Laszlo; and Farkas, Otto, 4,325,541, Cl. 267-8.00R.
Farmitalia Carlo Erba S.p.A.: *See—*
Bargiotti, Alberto; Cassinelli, Giueseppe; Penco, Sergio; Arcamone, Federico; and di Marco, Aurelio, 4,325,946, Cl. 424-180.000.
Penco, Sergio; Franchi, Giuliano; Arcamone, Federico; and Casazza, Annamaria, 4,325,947, Cl. 424-180.000.
Farnow, Stephen A.: *See—*
Ponder, James E.; Tubbs, Graham S.; Lou, Perry W.; and Farnow, Stephen A., 4,325,169, Cl. 29-571.000.
Faude, Rude, to BSG Schalttechnik GmbH & Co. KG. Locking apparatus for preventing unautherized access or actions. 4,326,124, Cl. 335-181.000.
Faudel, Gerald B.: *See—*
Haas, Frank C.; and Faudel, Gerald B., 4,325,925, Cl. 423-239.000.
Fazio, Michael J., to Dow Chemical Company, The. Process for making N-(2-aminoethyl)amides. 4,326,067, Cl. 548-347.000.
Feeser, Larry R., to Procter & Gamble Company, The. Flip top, reclosable carton. 4,325,482, Cl. 206-625.000.
Fehr, Werner; and Schmidt, Klaus Dieter, to BBC Brown, Boveri & Company, Ltd. Test circuit for high voltage apparatus. 4,326,167, Cl. 324-413.000.
Fehrenbach, Siegfried, to Robert Bosch GmbH. Air valve for a fuel supply system. 4,325,349, Cl. 123-587.000.
Feistel, Horst: *See—*
Bouricius, Willard G.; and Feistel, Horst, 4,326,098, Cl. 178-22.080.
Feldman, Steven, to AMP Incorporated. Phone plug. 4,325,599, Cl. 339-103.00R.
Feldmann, Hellmuth: *See—*
Tiletschke, Lothar; and Feldmann, Hellmuth, 4,325,533, Cl. 249-188.000.
Feldstein, Nathan. Catalytic promoters in electroless plating catalysts added prior to a colloidal nucleation process. 4,325,983, Cl. 427-98.000.
Felt Products Mfg. Co.: *See—*
Czernik, Daniel E.; and McDowell, Donald J., 4,325,559, Cl. 277-233.000.
Fenderson, Gerald L.; and Skinner, Mitchell A., to Bell Telephone Laboratories, Incorporated. Adaptive decision level circuit. 4,326,169, Cl. 328-162.000.
Fendt, Alfons: *See—*
Becker, Michael; Renz, Klaus; Weibelzahl, Manfred; Fendt, Alfons; Povh, Dusan; Schuch, Gerhard; and Waldmann, Hermann, 4,326,230, Cl. 361-17.000.
Fenne, Ivor; and Andrews, Richard J., to Lucas Industries Limited. Liquid fuel pumping apparatus. 4,325,676, Cl. 417-206.000.
Fenton, Donald M.: *See—*
Gowdy, Hugh W.; and Fenton, Donald M., 4,325,936, Cl. 423-373.00R.
Ferrari, Gaetano, to Indracos S.r.l. Device for cleaning rotary drums, in particular for rotary drum filters. 4,325,395, Cl. 134-152.000.
Ferri, Romano L, to Microphase Corporation. Microwave backdiode microcircuits and method of making. 4,326,180, Cl. 333-246.000.
Ferrier, Donald R., to MacDermid Incorporated. Electroless copper deposition solutions with hypophosphite reducing agent. 4,325,990, Cl. 427-305.000.
Fettweis, Alfred, to Siemens Aktiengesellschaft. Method and apparatus for frequency division multiplex system. 4,326,288, Cl. 370-70.000.
Fiat-Allis Construction Machinery, Inc.: *See—*
Lynch, Larry W., 4,325,266, Cl. 74-482.000.
Fiber Glass Systems, Inc.: *See—*
Michael, Vesta F., 4,325,766, Cl. 156-171.000.
Fibinger, Vratislav: *See—*
Beranek, Jaroslav; Cermak, Jan; Dobrozemsky, Jaroslav; and Fibinger, Vratislav, 4,325,311, Cl. 110-245.000.
Figgie International Inc.: *See—*
Barker, Theodore L., 4,325,208, Cl. 53-448.000.
Filtrol Corporation: *See—*
Lim, John; and Brady, Michael, 4,325,845, Cl. 252-455.00Z.
Lim, John C.; Humphries, Adrian P.; and Stamires, Dennis M., 4,325,847, Cl. 252-455.00Z.
Filz, Charles J.: *See—*
Bowman, Donald B.; Filz, Charles J.; and Osborn, James G., 4,325,715, Cl. 55-158.000.
Finnegan, Charles. Combined screwdriver and boring apparatus. 4,325,153, Cl. 7-165.000.
Firestone Tire & Rubber Company, The: *See—*
Kang, Jung W., 4,325,884, Cl. 260-439.00R.
Fischbeck, Kenneth H.; and Schnarr, Marcus M., to Xerox Corporation. Coincidence fluid displacement and velocity expression of droplet. 4,326,205, Cl. 346-140.00R.
Fischer, Carole M., heir: *See—*
Fischer, Frederick C., deceased; and Fischer, Carole M., heir, 4,325,443, Cl. 180-6.540.
Fischer, Frederick C., deceased; and by Fischer, Carole M., heir. Turning assistance for tracked vehicles. 4,325,443, Cl. 180-6.540.
Fish, Leonard A., to Avco Investment Management Corporation. Single-bill currency dispenser. 4,325,494, Cl. 221-13.000.
Flies, William P., to Datakey, Inc. Microelectronic memory key with receptacle and systems therefor. 4,326,125, Cl. 235-443.000.
Fort, Ivan: *See—*
Kratky, Jiri; Fort, Ivan; Havel, Petr; Machacek, Vaclav; Masek, Bohuslav; and Hruban, Konstantin, 4,325,642, Cl. 366-137.000.
Fort Lock Corporation: *See—*
Scherbing, Frank J., 4,325,238, Cl. 70-18.000.
Fortier, Joseph R.; and Klett, John L., to General Motors Corporation. Die clamp arrangement. 4,325,300, Cl. 100-295.000.
Fortier, Richard C.: *See—*
Leon, Gonzalo S.; Fraize, John E.; and Fortier, Richard C., 4,325,686, Cl. 425-371.000.
Fory, Werner: *See—*
Rempfler, Hermann; Schurter, Rolf; and Fory, Werner, 4,325,729, Cl. 71-94.000.
Foss, Stephen D., to General Electric Company. Method for determining gaseous contaminants in vapor cooled transformers. 4,325,247, Cl. 73-19.000.
Foster, Charles H., to Eastman Kodak Company. Process for conversion of sterol i-methyl ethers to sterols. 4,325,880, Cl. 260-397.200.
Foster, Francis S., to Ontario Cancer Institute. Conical transducer ultrasonic scanning. 4,325,258, Cl. 73-642.000.
Foster, Leslie W.; and Tillotson, Henry B., to Toro Company, The. Compression relief adapter. 4,326,145, Cl. 313-120.000.
Foster, Stephen R., to Baker CAC, Inc. Actuator mechanism for a rotary valve or the like. 4,325,535, Cl. 251-58.000.
Fox, Rita T.: *See—*
Moniot, Jerome L.; Fox, Rita T.; and Sowinski, Francis A., 4,326,076, Cl. 564-156.000.
Fraize, John E.: *See—*
Leon, Gonzalo S.; Fraize, John E.; and Fortier, Richard C., 4,325,686, Cl. 425-371.000.
Franchi, Giuliano: *See—*
Penco, Sergio; Franchi, Giuliano; Arcamone, Federico; and Casazza, Annamaria, 4,325,947, Cl. 424-180.000.
Frank, Karl: *See—*
Barkow, Helmut; and Frank, Karl, 4,326,108, Cl. 179-164.000.
Frankhouse, Thomas J., to Teleflex Incorporated. Motion transmitting remote control assembly. 4,325,904, Cl. 264-242.000.
Franks, Robert E.: *See—*
Davis, Sheila G.; Franks, Robert E.; and De Santis, Alfred J., 4,326,251, Cl. 364-200.000.
Davis, Sheila G.; Franks, Robert E.; and De Santis, Alfred J., 4,326,266, Cl. 364-900.000.
Davis, Sheila G.; Franks, Robert E.; and De Santis, Alfred J., 4,326,290, Cl. 371-21.000.
Fransson, George E.; Johnson, Stuart J.; and Haug, Edward W., to Barber-Colman Company. Method and apparatus for checking a gear. 4,325,189, Cl. 33-179.50B.
Fredette, Maurice C. J.: *See—*
Swindells, Richard; and Fredette, Maurice C. J., 4,325,934, Cl. 423-478.000.
Freeman, James W., to Naylor, Neal & Uilkema, a part interest. Freight handling means. 4,325,667, Cl. 414-139.000.
Freiman, Efim A.: *See—*
Pelts, Boris B.; Tumasian, Beniamin A.; Egorov, Leonid P.; Zatulovsky, Lev M.; Chaikin, Petr M.; Freiman, Efim A.; Chalian, Eduard A.; Abramian, Grant I.; Azoian, Stepan E.; and Kostandian, Kliment A., 4,325,917, Cl. 422-249.000.

Freimark, Ronald J.: *See—*
Shaw, Mark L.; and Freimark, Ronald J., 4,326,171, Cl. 330-256.000.
French, Tom: *See—*
Corner, Michael R.; Kemp, Ian; Allbert, Barrie J.; and French, Tom, 4,325,422, Cl. 152-352.00R.
Freund, William R., Jr.; Grebe, John C., Jr.; and Kuhn, Paul K., to Emerson Electric Co. Pulsed DC constant current magnetic flowmeter. 4,325,261, Cl. 73-861.120.
Frick Company: *See—*
Schaeffer, Bruce S., 4,325,226, Cl. 62-238.600.
Frick, Roger L., to Rosemount Inc. Current to pressure converter apparatus. 4,325,399, Cl. 137-85.000.
Friedmann, Oswald: *See—*
Steeg, Klaus; and Friedmann, Oswald, 4,325,472, Cl. 192-48.100.
Friedrich, Robert; and Schmidt, Peter, to International Standard Electric Corporation. Arrangement for making color-picture tubes. 4,325,613, Cl. 354-1.000.
Fries, James E. Focusing solar heat collector. 4,325,359, Cl. 126-438.000.
Fritts, Robert W.: *See—*
Achten, David J.; and Fritts, Robert W., 4,325,197, Cl. 40-610.000.
Froberg, Magnus L., to Owens-Corning Fiberglas Corporation. Method for making glass. 4,325,724, Cl. 65-121.000.
Frolich, Karl-Werner: *See—*
Schippers, Heinz; Martens, Gerhard; and Frolich, Karl-Werner, 4,325,517, Cl. 242-18.100.
Fromm, Ingrid; and Lagger, Helmut, to Siemens Aktiengesellschaft. Arrangement for signaling in a voice communication system with optically fed components. 4,326,298, Cl. 455-606.000.
Fuchs, Francis J. Energy conversion apparatus. 4,325,354, Cl. 126-247.000.
Fuchs, Rainer; Maurer, Fritz; Priesnitz, Uwe; Riebel, Hans-Jochem; and Klauke, Erich, to Bayer Aktiengesellschaft. 3-Bromo-4-fluorobenzyl derivatives. 4,326,087, Cl. 568-631.000.
Fuchs, Rainer: *See—*
Jautelat, Manfred; Arlt, Dieter; Lantzsch, Reinhard; Fuchs, Rainer; Riebel, Hans-Jochem; Schroder, Rolf; and Harnisch, Horst, 4,325,873, Cl. 260-338.000.
Fuji Photo Film Co., Ltd.: *See—*
Kobayashi, Hidetoshi; and Tanaka, Mitsugu, 4,326,024, Cl. 430-557.000.
Fujieda, Mamoru: *See—*
Yamauchi, Teruo; Oyama, Yoshishige; and Fujieda, Mamoru, 4,325,341, Cl. 123-472.000.
Fujii, Akio: *See—*
Umezawa, Hamao; Takita, Tomohisa; Fujii, Akio; Muraoka, Yasuhiko; and Kunishima, Mamoru, 4,326,054, Cl. 536-17.00R.
Fujikura Cable Works, Limited, The: *See—*
Takaoka, Michio; Mohtai, Tsuneaki; Yoshida, Syotaroh; and Watanabe, Kazuo, 4,325,750, Cl. 148-6.14R.
Fujimori, Kuniaki; Suzuka, Teruo; Inoue, Yukio; and Aizawa, Shirou, to Research Association for Residual Oil Processing. Process for cracking heavy hydrocarbons into light oils and producing hydrogen. 4,325,812, Cl. 208-119.000.
Fujimoto, Hideki: *See—*
Miyajima, Mikio; Yanata, Kohsaki; Sasaki, Fujio; Hori, Fumihisa; and Fujimoto, Hideki, 4,325,645, Cl. 400-196.100.
Fujimoto, Masami, to Yamamura Glass Kabushiki Kaisha. Apparatus for producing glass bottles. 4,325,725, Cl. 65-230.000.
Fujioka, Yasuhiro: *See—*
Otsuka, Fumio; Nabeta, Teiichi; Kojima, Yasufumi; Matsushima, Takeo; Fujioka, Yasuhiro; and Wada, Eiichi, 4,325,426, Cl. 165-2.000.
Fujita, Shigeru, to Toshiba Kikai Kabushiki Kaisha. Apparatus for controlling plasticizing process of in-line screw-type injection molding machine. 4,326,255, Cl. 364-476.000.
Fujitsu Fanuc Ltd.: *See—*
Sata, Toshio; and Matsushima, Katsumori, 4,326,257, Cl. 364-508.000.
Fujitsu Limited: *See—*
Shirai, Kazunari; and Tanaka, Izumi, 4,326,213, Cl. 357-51.000.
Takeda, Shiro; Nagai, Yuji; Nakajima, Minoru; Hayashi, Kunihiko; and Serizawa, Koji, 4,326,238, Cl. 361-386.000.
Fujiwara, Hiroshi; Kobayashi, Kazutoshi; and Miyo, Shinichi, to Hitachi, Ltd. Pressure-responsive ignition timing controller for a supercharged internal combustion engine. 4,325,338, Cl. 123-407.000.
Fukushima, Mamoru: *See—*
Aotsu, Hiroaki; Isono, Akira; Inayama, Tsutomu; and Fukushima, Mamoru, 4,326,159, Cl. 322-19.000.
Funado, Akira: *See—*
Ukai, Nobuo; Funado, Akira; and Yokota, Tethuya, 4,325,296, Cl. 99-468.000.
Ukai, Nobuo; Funado, Akira; and Yokota, Tethuya, 4,325,401, Cl. 137-240.000.
Funato, Hiroyoshi, to Ricoh Co., Ltd. Optical scanning device. 4,325,601, Cl. 350-3.710.
Funderburg, Donald R.: *See—*
Funderburg, John E.; Stafford, Franklin H.; and Funderburg, Donald R., 4,325,571, Cl. 285-177.000.
Funderburg, John E.; Stafford, Franklin H.; and Funderburg, Donald R. Tube union and method for forming a joint between adjacent end portions of malleable tubing. 4,325,571, Cl. 285-177.000.
Furuichi, Shuhei: *See—*
Hotta, Mitsuhiko; Furuichi, Shuhei; and Shigihara, Takanori, 4,326,274, Cl. 367-118.000.
Furumoto, Takayuki, to Hitachi, Ltd. Frequency discriminating circuit. 4,326,256, Cl. 364-484.000.
Furuya, Kiichi: *See—*
Takeda, Harumi; Furuya, Kiichi; Takahashi, Susumu; and Tamaki, Hiroshi, 4,325,638, Cl. 356-375.000.
G.A.O. Gesellschaft fur Automation und Organisation mbH: *See—*
Gauch, Wolfgang; Hoppe, Joachim; and Haghiri-Tehrani, Yahya, 4,325,196, Cl. 40-2.200.
G. Siempelkamp GmbH & Co.: *See—*
Pesch, Jurgen, 4,325,898, Cl. 264-40.500.
G. T. Corporation: *See—*
Green, Charles J., 4,325,398, Cl. 137-39.000.
Gabellieri, Rodolfo, to Interox. Process for the culture of aerobic microorganisms. 4,326,035, Cl. 435-247.000.
Gable, Derek J., to Bosley, Denis V., a part interest. Locking mechanism. 4,325,240, Cl. 70-284.000.
GAF Corporation: *See—*
Graham, David E.; and Copes, Joseph P., deceased, 4,325,973, Cl. 424-320.000.
Sachs, Peter R.; and Sears, James W., 4,326,001, Cl. 428-161.000.
Gaines, Ethel M.: *See—*
Gaines, Frederick W., Jr.; and Gaines, Ethel M., 4,325,263, Cl. 73-864.550.
Gaines, Frederick W., Jr.; and Gaines, Ethel M. Metal sampling apparatus. 4,325,263, Cl. 73-864.550.
Galdun, Daniel J.: *See—*
Markley, Theodore J.; Galdun, Daniel J.; Clark, Charles E.; Henderson, Robert G.; and Jencen, Frank W., 4,326,193, Cl. 340-365.00R.
Galfo, Christopher H.; and Nalamwar, Ashok L., to Fairchild Camera & Instrument Corp. Plasma passivation technique for the prevention of post-etch corrosion of plasma-etched aluminum films. 4,325,984, Cl. 427-38.000.
Gallo-Torres, Hugo: *See—*
Holland, George W.; Rosen, Perry; and Gallo-Torres, Hugo, 4,325,970, Cl. 424-311.000.
Gallot, Jacques; Vingut, Georges; de Paul, Michel V.; and Thibert, Jean-Jacques, to Societe Nationale Industrielle Aerospatiale; and Office National d'Etudes etc. Blade profile for rotary wing of an aircraft. 4,325,675, Cl. 416-223.00R.
Garber, Jan W.: *See—*
Buckles, Richard G.; and Garber, Jan W., 4,326,025, Cl. 435-2.000.
Gardiner, Kenneth W.: *See—*
Swidler, Ronald; and Gardiner, Kenneth W., 4,325,627, Cl. 333-10.000.
Gardner, Leland V., to Hughes Aircraft Company. Apparatus for determining of angle of incidence of electromagnetic energy. 4,325,633, Cl. 356-141.000.
Gargano, Robert; Perez, Donald E.; and Williams, David K., to Ciba-Geigy Corporation. Process for the production of thiophosphoric acid esters. 4,326,059, Cl. 544-243.000.
Garnett, David M. Bearing assemblies for use in conveyor roller. 4,325,473, Cl. 193-35.00R.
Garrett, Arthur E. Butterfly valve with self locking disc. 4,325,536, Cl. 251-304.000.
Garrison, Robert L.: *See—*
Wyner, Elliott F.; Burr, Orville R.; and Garrison, Robert L., 4,326,149, Cl. 315-289.000.
Gauch, Wolfgang; Hoppe, Joachim; and Haghiri-Tehrani, Yahya, to G.A.O. Gesellschaft fur Automation und Organisation mbH. Multilayer identification cards with relief-like surface. 4,325,196, Cl. 40-2.200.
Gaylard, Phyllis S.: *See—*
Julian, Ernest L.; and Gaylard, Phyllis S., 4,325,668, Cl. 414-346.000.
Gehrmann, Gerd-Peter, to Von Roll AG. Apparatus for cleaning a filter press. 4,325,396, Cl. 134-181.000.
Geisen, Karl: *See—*
Hitzel, Volker; Weyer, Rudi; Geisen, Karl; and Regitz, Gunter, 4,325,963, Cl. 424-274.000.
Gelbein, Abraham P.: *See—*
Green, Marvin I.; and Gelbein, Abraham P., 4,325,803, Cl. 208-11.0LE.
Genco, Joseph M.: *See—*
Rosenberg, Harvey S.; and Genco, Joseph M., 4,325,713, Cl. 55-73.000.
General Battery Corporation: *See—*
Bevan, William G.; and Sterling, Larry L., 4,325,429, Cl. 165-80.00R.
General Electric Company: *See—*
Allen, Benjamin F., 4,326,181, Cl. 336-12.000.
Foss, Stephen D., 4,325,247, Cl. 73-19.000.
Given, Arthur P.; and O'Meara, Michael F., 4,326,263, Cl. 364-900.000.
Gordy, Lester A.; and Poff, David A., 4,325,799, Cl. 204-297.00W.
Ludington, David N., 4,326,269, Cl. 365-189.000.
McHugh, James D., 4,325,583, Cl. 308-9.000.
Pruchs, Leslie L., 4,325,178, Cl. 29-458.000.
Tefft, Edward G.; and Tuft, Bernard R., 4,325,182, Cl. 29-583.000.
Toma, Daniel N., 4,325,234, Cl. 68-133.000.
Will, Fritz G., 4,326,017, Cl. 429-228.000.
General Motors Corporation: *See—*
Clark, Herbert D.; Katz, Larry L.; and Knoepfle, Thomas L., 4,325,568, Cl. 280-731.000.
Fortier, Joseph R.; and Klett, John L., 4,325,300, Cl. 100-295.000.
Hall, Beuford C., Jr., 4,325,673, Cl. 415-113.000.

Iafret, John E., 4,325,525, Cl. 248-27.300.
Jandeska, William F., Jr.; and Netherton, Charles F., 4,325,757, Cl. 148-103.000.
Nestor, Charles R., 4,325,600, Cl. 339-116.00C.
Schuster, David A., 4,325,471, Cl. 192-85.0AA.
Winchell, Frank J., 4,325,565, Cl. 280-282.000.

Georgia Oil and Gas Company: *See—*
Strumskis, Louis, 4,325,787, Cl. 202-106.000.

Gerigk, Gunter: *See—*
Lenhart, Richard; Kostner, Armin; Gerigk, Gunter; and Bittner, Klaus-Jurgen, 4,325,413, Cl. 138-109.000.

Gerling, John E.; and O'Meara, John P., to Gerling-Moore, Inc. Apparatus for microwave roasting of coffee beans. 4,326,114, Cl. 219-10.55A.

Gerling-Moore, Inc.: *See—*
Gerling, John E.; and O'Meara, John P., 4,326,114, Cl. 219-10.55A.

Gershman, Russell J.; Hansen, W. Peter; Hochberg, Alan M.; and O'Connell, J. Garland, to Ortho Diagnostic Systems Inc. Automated detection of platelets and reticulocytes in whole blood. 4,325,706, Cl. 23-230.00B.

Gerth, Howard L.: *See—*
Brown, R. Jack; Gerth, Howard L.; and Robinson, Samuel C., 4,326,137, Cl. 310-12.000.

Gevipi A.G.: *See—*
Uhlmann, Joachim, 4,325,403, Cl. 137-315.000.

Gewerkschaft Eisenhutte Westfalia: *See—*
Plevak, Lubomir; and Weirich, Walter, 4,325,659, Cl. 405-299.000.

Geyer, Robert P.; and Herman, Frederick L., to Air Products and Chemicals, Inc. Perfluorinated N,N-dimethyl cyclohexylmethylamine emulsions. 4,325,972, Cl. 424-325.000.

Gibbons, James. Opener for split ring key holder. 4,325,273, Cl. 81-[illegible]

Gillette, Donald J.; Hajek, Bedrich; and Seales, David, to Electrostatic Equipment Corporation. Zipper chain coater. 4,325,982, Cl. 427-32.000.

Girguis, Sobhy L., to Uni-Cardan AG. Constant velocity universal joint. 4,325,232, Cl. 64-21.000.

Given, Arthur P.; and O'Meara, Michael F., to General Electric Company. Method and apparatus for controlling a plurality of like equipments. 4,326,263, Cl. 364-900.000.

Glasheen, Michael O. Manipulative toy. 4,325,552, Cl. 273-153.00P.

Glenn, William E., to New York Institute of Technology. Ultrasonic scanning head with reduced geometrical distortion. 4,325,381, Cl. 128-660.000.

Goddecke, Hubert; Reichardt, Werner; Schumacher, Kurt; and Topfer, Rainer, to U.S. Philips Corporation. Method of manufacturing a color television display tube. 4,325,166, Cl. 29-25.150.

Godsey, Ernest E., to Burr-Brown Research Corp. Interrupt system and method. 4,326,249, Cl. 364-200.000.

Godtfredsen, Wagn O.; and von Daehne, Welf, to Leo Pharmaceutical Products Ltd. A/S (Lovens Kemiske Fabrik Produktionsaktieselskab). 6-Amidinopenicillanic acid derivatives including the radical of a β-lactamase inhibitor. 4,325,960, Cl. 424-270.000.

Goebel, Joseph A.; Barkalow, Richard H.; and Ulion, Nicholas E., to United Technologies Corporation. Hot corrosion resistant coatings. 4,326,011, Cl. 428-641.000.

Goedert, Ferdinand: *See—*
Schleimer, Francois; Henrion, Romain; Goedert, Ferdinand; Lorang, Lucien; and Baumert, Jean, 4,325,730, Cl. 75-52.000.

Goffredi, Albert S.: *See—*
Edwards, Ralston G.; Goffredi, Albert S.; Liti, John; and Murphy, Gregory, 4,325,726, Cl. 65-298.000.

Gohler, Peter; Jaschke, Peter; Kretzschmer, Horst; Kuhlbrodt, Claus-Otto; Lucas, Klaus; Neumann, Berthold; Schingnitz, Manfred; Schweigel, Hans-Joachim; Berger, Friedrich; and Konig, Dieter, to Brennstoffinstitut Freiberg. Method for the operation of gasification plants for pulverized fuels. 4,325,709, Cl. 48-197.00R.

Gold, Philip, to Cordis Corporation. Tip assembly for a carbon fiber implantable lead. 4,325,389, Cl. 128-784.000.

Golda, Eugene; and Wilkes, Alan, to Polychrome Corporation. Method of making positive acting diazo lithographic printing plate. 4,326,020, Cl. 430-302.000.

Golestaneh, Ahmad A., to United States of America, Energy. Solid state engine with alternating motion. 4,325,217, Cl. 60-527.000.

Gonczy, John D.: *See—*
Niemann, Ralph C.; Mataya, Karl F.; and Gonczy, John D., 4,325,530, Cl. 248-317.000.

Gonmori, Makoto: *See—*
Ogata, Takashi; Gonmori, Makoto; and Matano, Kenji, 4,325,629, Cl. 355-27.000.

Goodyear Tire & Rubber Company, The: *See—*
Appleby, Paul E.; Broyles, Henry D.; Hill, John E.; and Peck, Arland A., 4,325,764, Cl. 156-123.00R.

Gordon G. Miller & Associates, Inc.: *See—*
Miller, Gordon G., Jr., 4,325,415, Cl. 141-1.000.

Gordy, Lester A.; and Poff, David A., to General Electric Company. Formation apparatus for electrolytic cell. 4,325,799, Cl. 204-297.00W.

Gotoh, Osamu: *See—*
Abe, Yoshiharu; Gotoh, Osamu; and Takagi, Akinobu, 4,325,348, Cl. 123-571.000.

Gouzos, John. Device for small animal escape from a pool. 4,325,462, Cl. 182-93.000.

Gowdy, Hugh W.; and Fenton, Donald M., to Union Oil Company of California. Method for removing hydrogen sulfide from gas streams. 4,325,936, Cl. 423-573.00R.

Graco Metal Products, Inc.: *See—*
Borucki, Robert L., 4,325,578, Cl. 297-281.000.

Graham, Charles: *See—*
Hosterman, Harry L., 4,326,123, Cl. 235-380.000.

Graham, David E.; and Copes, Joseph P., deceased (by Copes, Anna M., legal representative), to GAF Corporation. Hydroxyalkyl amides as fungicides to eumycotina in phanerogamia plant life. 4,325,973, Cl. 424-320.000.

Graham, Donald C.: *See—*
Lewis, Robert R.; and Graham, Donald C., 4,326,154, Cl. 318-376.000.

Graham, Thomas S., to Tom Graham & Associates. Wastewater treatment system. 4,325,823, Cl. 210-86.000.

Grant, Peter M.: *See—*
Kino, Gordon S.; Corl, Paul D.; and Grant, Peter M., 4,325,257, Cl. 73-626.000.

Grattan, James A.: *See—*
Farina, Peter R.; and Grattan, James A., 4,326,060, Cl. 544-258.000.

Graves, Daniel G.; Graves, Vernard L.; and Knudsen, Ernest W., Jr., to Universal Precision Machining Co. Method for heat sealing. 4,325,767, Cl. 156-196.000.

Graves, Vernard L.: *See—*
Graves, Daniel G.; Graves, Vernard L.; and Knudsen, Ernest W., Jr., 4,325,767, Cl. 156-196.000.

Grebe, John C., Jr.: *See—*
Freund, William R., Jr.; Grebe, John C., Jr.; and Kuhn, Paul K., 4,325,261, Cl. 73-861.120.

Green, Charles J., to G. T. Corporation. Safety and venting valves for fuel tanks carried on vehicles. 4,325,398, Cl. 137-39.000.

Green, Harold A.; Merianos, John J.; and Petrocci, Alfonso N., to Kewanee Industries, Inc. Anti-microbial, cosmetic and water-treating ionene polymeric compounds. 4,325,940, Cl. 424-70.000.

Green, Marvin I.; and Gelbein, Abraham P., to Chem Systems Inc. Process for hydrogenation/extraction of organics contained in rock. 4,325,803, Cl. 208-11.0LE.

Greene, Peter R.: *See—*
McMahon, Thomas A.; and Greene, Peter R., 4,325,546, Cl. 272-3.000.

Grewar, Lloyd C., to Commonwealth Industrial Gases Limited, The. Method and apparatus for reducing the temperature of articles. 4,325,221, Cl. 62-63.000.

Griebeler, Elmer L. Shockwave probe. 4,326,155, Cl. 318-576.000.

Griesshaber, Karl H., to Ampex Corporation. Digital error measuring circuit for shading and registration errors in television cameras. 4,326,219, Cl. 358-163.000.

Griffey, Deborah L.: *See—*
DeCanto, Joseph F.; and Griffey, Deborah L., 4,325,556, Cl. 273-393.000.

Griffith, William L.; Compere, Alicia L.; and Holleman, James W., to United States of America, Energy. Enzymatic method for improving the injectability of polysaccharides. 4,326,037, Cl. 435-274.000.

Grimes, Donald L., to Polaroid Corporation. Exposure control system with shutter operation controlled by a microcomputer. 4,325,614, Cl. 354-23.00D.

Groenig, Robert E. Fork lift. 4,325,442, Cl. 180-6.480.

Grogler, Gerhard, to Bayer Aktiengesellschaft. Isocyanatoaryl sulfonic acid esters. 4,325,887, Cl. 260-456.00P.

Grohmann, Karel: *See—*
Kalvinskas, John J.; Vasilakos, Nick; Corcoran, William H.; Grohmann, Karel; and Rohatgi, Naresh K., 4,325,707, Cl. 44-1.0SR.

Gross, Benjamin, to Mobil Oil Corporation. Catalytic cracking process utilizing a copper chromite oxidation catalyst. 4,325,814, Cl. 208-120.000.

Gross, Glenn M., to Norlin Industries, Inc. Linear piecewise waveform generator for an electronic musical instrument. 4,326,260, Cl. 364-718.000.

Grosshauser, Heinrich K., to Koenig & Bauer AG. Paper web shifting apparatus. 4,325,301, Cl. 101-217.000.

Grovag Grossventiltechnik A.G.: *See—*
Squirrell, Anton F., 4,325,411, Cl. 137-601.000.

Grove, Leslie H. Process for the production of organic fuel. 4,326,032, Cl. 435-148.000.

Grunewald, Gerhard; and Kriebel, Manfred, to Metallgesellschaft Aktiengesellschaft. Apparatus for regenerating absorbent and method of operating the apparatus. 4,325,782, Cl. 159-47.00R.

Grunewald, Peter; and Sprafke, Uwe, to Wegman & Co. GmbH. Trunnion bearing in armored housing. 4,325,284, Cl. 89-37.00E.

GTE Automatic Electric Labs Inc.: *See—*
Oehrig, Kenneth H., 4,326,103, Cl. 179-6.30R.

GTE Laboratories Incorporated: *See—*
Carlsen, W. John, 4,325,607, Cl. 350-96.210.

GTE Products Corporation: *See—*
Broadt, David R.; Hartman, Donald W.; Shaffer, John W.; and Audesse, Emery G., 4,326,241, Cl. 362-11.000.
Broadt, David R.; Kackenmeister, Carl F.; and Shaffer, John W., 4,326,242, Cl. 362-11.000.
Brower, Boyd G.; Broadt, David R.; and Shaffer, John W., 4,325,771, Cl. 156-261.000.
Mizuhara, Howard; and Cox, Ronald W., 4,325,754, Cl. 148-22.000.
Shaffer, John W.; and Broadt, David R., 4,326,240, Cl. 362-11.000.
Wyner, Elliott F.; Burr, Orville R.; and Garrison, Robert L., 4,326,149, Cl. 315-289.000.

Gubitose, Nicholas F., to RCA Corporation. Apparatus for transferring pure abrasive material from one hopper to another. 4,325,419, Cl. 141-302.000.

Gueguin, Michel, to QIT-Fer et Titane du Quebec, Inc. Method to oxidize Ti+3 during the sulfuric acid digestion of titaniferous slags. 4,325,920, Cl. 423-82.000.

Guerit, Pierre: *See—*
Hicter, Jean-Marie; and Guerit, Pierre, 4,325,539, Cl. 266-207.000.

Guertin, Jacques P.: *See—*
Burrage, Lawrence M.; and Guertin, Jacques P., 4,325,734, Cl. 75-225.000.

Gulf Oil Corporation: *See—*
Acharya, Vikramkumar; and Lakshmanan, Pallavoor R., 4,325,853, Cl. 524-272.000.

Gulf & Western Manufacturing Company: *See—*
Muzzell, Stephen E., 4,325,542, Cl. 267-85.000.

Gurian, Martin E., to Burlington Industries, Inc. Soft luggage construction. 4,325,469, Cl. 190-53.000.

Guth, Werner; Wolfer, Peter; Dahler, Hanspeter; and Calderara, Reto, to Kistler Instrumente AG. Piezoelectric acceleration pick-up. 4,326,143, Cl. 310-329.000.

Guthrie, Dale H., to REB Manufacturing, Inc. Adjustable wheelchair holding device. 4,325,576, Cl. 296-65.00R.

H. A. Schlatter AG: *See—*
Richter, Hans, 4,325,639, Cl. 356-376.000.

Haas, Frank C.; and Faudel, Gerald B., to Tosco Corporation. Method for the removal of nitric oxide from gas streams. 4,325,925, Cl. 423-239.000.

Hacha, Thomas H.: *See—*
Selover, Theodore B., Jr.; and Hacha, Thomas H., 4,326,016, Cl. 429-184.000.

Hafner, Karl E.: *See—*
Kohler, Wolfgang; and Hafner, Karl E., 4,325,342, Cl. 123-504.000.

Hafner, Udo: *See—*
Romann, Peter; and Hafner, Udo, 4,325,253, Cl. 73-204.000.

Haghiri-Tehrani, Yahya: *See—*
Gauch, Wolfgang; Hoppe, Joachim; and Haghiri-Tehrani, Yahya, 4,325,196, Cl. 40-2.200.

Hajek, Bedrich: *See—*
Gillette, Donald J.; Hajek, Bedrich; and Seales, David, 4,325,982, Cl. 427-32.000.

Halcon SD Group, Inc., The: *See—*
Jacobson, Stephen E., 4,325,874, Cl. 260-340.200.

Hale, John M.; and Weber, Eugen, to Orbisphere Corporation Wilmington, Succursale de Collonge-Bellerive. Membrane mounting method and membrane-enclosed amperometric cell. 4,325,797, Cl. 204-195.00P.

Hall, Beuford C., Jr., to General Motors Corporation. Variable vane seal. 4,325,673, Cl. 415-113.000.

Hallenbeck, Victor L., to B. F. Goodrich Company, The. Inside tire paint. 4,325,852, Cl. 523-334.000.

Halmann, Martin M.: *See—*
Vofsi, David; Halmann, Martin M.; and Yanai, Shaul, 4,325,727, Cl. 71-86.000.

Hamacher, Thomas L.: *See—*
Salim, Massoud A.; and Hamacher, Thomas L., 4,325,205, Cl. 52-79.100.

Hamajima, Shigemitsu: *See—*
Kawai, Taneichi; Nishida, Kouji; Miyake, Osamu; and Hamajima, Shigemitsu, 4,325,313, Cl. 112-103.000.

Hammann, Ingeborg: *See—*
Maurer, Fritz; Homeyer, Bernhard; Hammann, Ingeborg; and Behrenz, Wolfgang, 4,325,948, Cl. 424-200.000.

Hammerstrom, Knut: *See—*
Wust, Alfredo; and Hammerstrom, Knut, 4,325,789, Cl. 203-67.000.

Hammond, Donald F.: *See—*
Janovick, Michael; Hammond, Donald F.; and Harvey, Winston, 4,325,421, Cl. 144-326.00R.

Hammond, Grover M. Collapsible outdoor cooking apparatus. 4,325,294, Cl. 99-337.000.

Hankey, James H. Cable tester with first and second interengaging test modules. 4,326,162, Cl. 324-51.000.

Hansen, Rainer: *See—*
Benteler, Hubertus; Hansen, Rainer; Olszewski, Egon; and Wecker, Ferdinand, 4,325,268, Cl. 74-492.000.

Hansen, W. Peter: *See—*
Gershman, Russell J.; Hansen, W. Peter; Hochberg, Alan M.; and O'Connell, J. Garland, 4,325,706, Cl. 23-230.00B.
Lombardo, Igino; Barry, Donald E.; and Hansen, W. Peter, 4,325,483, Cl. 209-3.100.

Hardy, Bruce N., to Silver Street, Incorporated. Device for deadening drumheads. 4,325,280, Cl. 84-411.00M.

Hardy, Bruce N., to Silver Street, Incorporated. Drumhead ring reducer. 4,325,281, Cl. 84-411.00M.

Harms, Wolfgang; Wunderlich, Klaus; and von Oertzen, Klaus, to Bayer Aktiengesellschaft. Anthraquinone reactive dyestuffs. 4,325,705, Cl. 8-676.000.

Harnisch, Horst: *See—*
Jautelat, Manfred; Arlt, Dieter; Lantzsch, Reinhard; Fuchs, Rainer; Riebel, Hans-Jochem; Schroder, Rolf; and Harnisch, Horst, 4,325,873, Cl. 260-338.000.

Harper, Lee R.: *See—*
Champaneria, Nitin J.; Harper, Lee R.; and Hosegood, Edward A., 4,325,857, Cl. 523-412.000.

Harper, Rex M.: *See—*
Kulesza, Ralph J.; Breslow, Jeffrey D.; Morrison, Howard J.; Licitis, Gunars, Jr.; and Harper, Rex M., 4,325,551, Cl. 273-110.000.

Harris, Peter: *See—*
Brown, Charles R. T.; and Harris, Peter, 4,325,868, Cl. 260-123.500.

Harrison, William H., to Donald L. Morton & Associates. Deep heating electrode. 4,325,361, Cl. 128-1.300.

Harrow, Alastair D.; and Martin, John W., to Thomas J. Lipton, Inc. Reformed rice product. 4,325,976, Cl. 426-104.000.

Hart, Karel: *See—*
Le Can, Claude J. P. F.; Whelan, Maurice V.; and Hart, Karel, 4,326,136, Cl. 307-451.000.

Hartman, Donald W.: *See—*
Broadt, David R.; Hartman, Donald W.; Shaffer, John W.; and Audesse, Emery G., 4,326,241, Cl. 362-11.000.

Hartman, G. William, Jr.: *See—*
Connin, John L.; Hartman, G. William, Jr.; and Schley, Ronald F., 4,326,222, Cl. 358-292.000.

Hartshorn, Angus J.; and Jones, Eric, to Imperial Chemical Industries Limited. Catalyst component. 4,325,835, Cl. 252-429.00B.

Hartung, Hansjurgen, to Rollei-Werke Franke & Heidecke GmbH & Co. KG. Coupling film advance and shutter release for a still camera. 4,325,622, Cl. 354-170.000.

Haruta, Masahiro: *See—*
Ohta, Tokuya; Eida, Tsuyoshi; Yano, Yasuhiro; Matsufuji, Yohji; and Haruta, Masahiro, 4,325,735, Cl. 106-22.000.

Harvey, Winston: *See—*
Janovick, Michael; Hammond, Donald F.; and Harvey, Winston, 4,325,421, Cl. 144-326.00R.

Hashimoto, Mitsuru: *See—*
Sasaki, Masaomi; Hashimoto, Mitsuru; and Kawakami, Tomiko, 4,325,871, Cl. 260-160.000.

Haslanger, Martin F., to E. R. Squibb & Sons, Inc. Method for preparing ketopinic acid halides and the free acid thereof. 4,325,891, Cl. 260-544.00L.

Haug, Edward W.: *See—*
Fransson, George E.; Johnson, Stuart J.; and Haug, Edward W., 4,325,189, Cl. 33-179.50B.

Hauni-Werke Korber & Co. KG.: *See—*
Henle, Karl, 4,325,418, Cl. 141-182.000.

Havel, Petr: *See—*
Kratky, Jiri; Fort, Ivan; Havel, Petr; Machacek, Vaclav; Masek, Bohuslav; and Hruban, Konstantin, 4,325,642, Cl. 366-137.000.

Hayashi, Kiyoshi: *See—*
Murata, Naoaki; Yoshioka, Masahiro; Hayashi, Kiyoshi; and Tohi, Yasusuke, 4,325,626, Cl. 355-3.0DR.

Hayashi, Kunihiko: *See—*
Takeda, Shiro; Nagai, Yuji; Nakajima, Minoru; Hayashi, Kunihiko; and Serizawa, Koji, 4,326,238, Cl. 361-386.000.

Hayes, Frank W. Production of ethanol from sugar cane. 4,326,036, Cl. [illegible]

Hayes, Larry J.: *See—*
Bartish, Charles M.; and Hayes, Larry J., 4,325,834, Cl. 252-429.00R.

Hayes, Thomas E., to Johnson Controls, Inc. Gas pilot assembly for universal application and method of making same. 4,325,690, Cl. 431-78.000.

Hayner, Paul, to Sanders Associates, Inc. Single stage hydraulic valve. 4,325,412, Cl. 137-625.650.

Haynes, Charles W., to Joy Manufacturing Company. Kelly and kelly drive bushing. 4,325,233, Cl. 64-23.500.

Hayter, Steven R.: *See—*
Roark, James T.; and Hayter, Steven R., 4,325,534, Cl. 251-1.00A.

Hazeltine Corporation: *See—*
Butler, John L., 4,326,275, Cl. 367-160.000.

Heat and Control, Inc.: *See—*
Caridis, Andrew A.; Benson, Clark K.; Leary, Steven G.; and Nilsen, Arthur A., 4,325,295, Cl. 99-339.000.

Heather, James B.; and White, David R., to Upjohn Company, The. Debromination. 4,325,881, Cl. 260-397.450.

Hechenberger, Dieter: *See—*
Dickmann, Heinz H.; Hechenberger, Dieter; and Krattner, Richard, 4,325,855, Cl. 524-219.000.

Heckman, Russell W.: *See—*
Burmeister, Robert J.; Heckman, Russell W.; and Miller, Robert C., 4,325,762, Cl. 156-86.000.

Hefele, Josef, to Kufner Textilwerke KG. Raster-shaped heat-sealable adhesive coating for textiles and method of producing the same using a powder printing procedure. 4,326,004, Cl. 428-198.000.

Hefter, Erik; and Baumgarth, Rolf, to Knorr-Bremse GmbH. Device for regulating discharge of sand from a vehicle sander. 4,325,573, Cl. 291-3.000.

Hehl, Karl. Hydraulic actuator for injection molding machine. 4,325,287, Cl. 91-422.000.

Heikinheimo, Lennart O., to Plan-Sell Oy. Apparatus for the feeding of individual pieces of timber from a mat of a plurality of timber pieces. 4,325,477, Cl. 198-461.000.

Heine, Heinrich: *See—*
Biermann, Hans-Peter; Steinberger, Helmut; Botta, Artur; Naumann, Rolf; Leitner, Lutz; and Heine, Heinrich, 4,325,739, Cl. 106-290.000.

Heine, Martin W.: *See—*
Brauch, Robert B.; and Heine, Martin W., 4,325,316, Cl. 112-292.000.

Heinrich, Ernst: *See*—
Buhler, Ulrich; and Heinrich, Ernst, 4,325,870, Cl. 260-156.000.
Heinrichs, Frank W., Jr., to McGraw-Edison Company. Electrical device with insulating conductor support structure. 4,326,097, Cl. 174-155.000.
Heiser, Joachim: *See*—
Bernhardt, Wolfgang; Kleinschmidt, Heinz; and Heiser, Joachim, 4,325,410, Cl. 137-596.130.
Helfer, Joel N., to American Home Products Corporation. Sealing apparatus for intrauterine pressure catheter and the like. 4,325,387, Cl. 128-748.000.
Helgesen, Herman, to SAB Industri AB. Method for attenuating oscillations of a rotating system. 4,326,158, Cl. 322-4.000.
Hemingsley, Herbert, to English Clays Lovering Pochin & Company Limited. Comminution of minerals. 4,325,514, Cl. 241-16.000.
Henderson, Robert G.: *See*—
Markley, Theodore J.; Galdun, Daniel J.; Clark, Charles E.; Henderson, Robert G.; and Jencen, Frank W., 4,326,193, Cl. 340-[illegible]
Henderson, Wilmer P.: *See*—
King, Paul V.; Becher, Albert P.; and Henderson, Wilmer P., 4,325,309, Cl. 109-49.500.
Hendrickson, Richard T., to Bendix Corporation, The. Load-leveling air pump. 4,325,567, Cl. 280-711.000.
Henkel Kommanditgesellschaft auf Aktien: *See*—
Konrad, Gonther; and Lieske, Edgar, 4,325,704, Cl. 8-407.000.
Henle, Karl, to Hauni-Werke Korber & Co. KG. Apparatus for filling containers. 4,325,418, Cl. 141-182.000.
Henrion, Romain: *See*—
Schleimer, Francois; Henrion, Romain; Goedert, Ferdinand; Lorang, Lucien; and Baumert, Jean, 4,325,730, Cl. 75-52.000.
Henry, John T. Method of oil recovery. 4,325,432, Cl. 166-245.000.
Herbert Kannegiesser GmbH & Co.: *See*—
Kannegiesser, Martin, 4,325,324, Cl. 118-642.000.
Herbert, Roger B.; and Wilkinson, Alan F., to Westinghouse Electric Corp. Asymmetrically controlled static slip-recovery motor drive system. 4,326,156, Cl. 318-809.000.
Herbert, Roger B., to Westinghouse Electric Corp. Double inverter slip-recovery AC motor drive with asymmetrical gating per half-bridge. 4,326,157, Cl. 318-809.000.
Herfeld, Friedrich W. Mixing apparatus and method for condensing, mixing and granulating thermoplastic materials. 4,325,515, Cl. [illegible]
Herman, Frederick L.: *See*—
Geyer, Robert P.; and Herman, Frederick L., 4,325,972, Cl. 424-325.000.
Hermann, Eberhard F. Apparatus for determining and/or controlling a fixed filling level in a container. 4,325,416, Cl. 141-95.000.
Herrmann, Hans-Joachim, to Dynamit Noble Aktiengesellschaft. Process for preparation of hydrazobenzenes by catalytic hydrogenation of nitrobenzenes. 4,326,078, Cl. 564-312.000.
Hettel, David A.: *See*—
Cole, John N.; and Hettel, David A., 4,325,899, Cl. 264-86.000.
Hibi, Kazuo: *See*—
Hinai, Mamoru; Izumi, Chikahiko; and Hibi, Kazuo, 4,326,248, Cl. 364-200.000.
Hicks, John E., to Outboard Marine Corporation. Vehicle with adjustable seat. 4,325,446, Cl. 180-89.170.
Hicter, Jean-Marie; and Guerit, Pierre, to Societe de Vente de l'Aluminium Pechiney. Device for treating a molten metal or alloy using liquid and solid flux. 4,325,539, Cl. 266-207.000.
Hideshima, Keiji: *See*—
Suda, Hiroharu; Hideshima, Keiji; Asada, Kazuyoshi; Takaki, Masaoki; Yasuda, Isao; and Kamei, Atsutaro, 4,326,207, Cl. 364-900.000.
Hildon, Anthony M., to Propylox. Preparation of peracid by liquid-liquid extraction. 4,325,888, Cl. 260-502.00R.
Hill, John E.: *See*—
Appleby, Paul E.; Broyles, Henry D.; Hill, John E.; and Peck, Arland A., 4,325,764, Cl. 156-123.00R.
Hillman, Chester K. Flap holster. 4,325,505, Cl. 224-238.000.
Hilti Aktiengesellschaft: *See*—
Richter, Martin; and Regelsberger, Wolfgang, 4,325,436, Cl. 173-13.000.
Hilty, John R.: *See*—
Evans, Alyce D.; and Hilty, John R., 4,325,691, Cl. 431-190.000.
Hinai, Mamoru; Izumi, Chikahiko; and Hibi, Kazuo, to Hitachi, Ltd. Multiple virtual storage control system. 4,326,248, Cl. 364-200.000.
Hinsken, Hans; Mayerhoefer, Horst; Mueller, Wolfgang; and Schneider, Hermann, to Sandoz Ltd. Benzofuranone or indolinone compounds useful as stabilizers for organic materials. 4,325,863, Cl. 624-111.000.
Hintsch, Otto, to Sulzer Brothers Limited. Apparatus for storing filamentary material. 4,325,520, Cl. 242-47.010.
Hirano, Masachika: *See*—
Okabe, Takayuki; Hirano, Masachika; and Mukai, Kunio, 4,326,058, Cl. 544-243.000.
Hirt, Manfred, to Carl Hurth Maschinen- und Zahnradfabrik GmbH & Co. Support of a machine part which rotates on a bolt or the like. 4,325,589, Cl. 308-101.000.
Hirvonen, Reijo, to Oy, Hollming; and Hirvonen, Reijo. Tank truck vehicle for transporting fluid or pulverous material, particularly oil. 4,325,560, Cl. 280-5.00D.
Hitachi Engineering Co., Ltd.: *See*—
Aotsu, Hiroaki; Isono, Akira; Inayama, Tsutomu; and Fukushima, Mamoru, 4,326,159, Cl. 322-19.000.
Hitachi, Ltd.: *See*—
Aiki, Kunio; Nakamura, Michiharu; and Umeda, Jun-ichi, 4,326,176, Cl. 372-45.000.
Aotsu, Hiroaki; Isono, Akira; Inayama, Tsutomu; and Fukushima, Mamoru, 4,326,159, Cl. 322-19.000.
Fujiwara, Hiroshi; Kobayashi, Kazutoshi; and Miyo, Shinichi, 4,325,338, Cl. 123-407.000.
Furumoto, Takayuki, 4,326,256, Cl. 364-484.000.
Hinai, Mamoru; Izumi, Chikahiko; and Hibi, Kazuo, 4,326,248, Cl. 364-200.000.
Kanamaru, Hisanobu; Okabe, Moisei; Tohkairin, Akira; Tatsumi, Hideo; and Kurosawa, Takuzo, 4,325,678, Cl. 417-313.000.
Matsumoto, Tomomi; Amemiya, Kiyoshi; and Kanai, Yukitomi, 4,326,295, Cl. 455-188.000.
Miyoshi, Tadahiko; Yamazaki, Takeo; Maeda, Kunihiro; and Takahashi, Ken, 4,326,187, Cl. 338-21.000.
Nakayama, Takeshi; Nishimoto, Takehiko; Kawashima, Machio; Takahashi, Kozi; and Osakabe, Kuniharu, 4,326,147, Cl. [illegible]
Suda, Hiroharu; Hideshima, Keiji; Asada, Kazuyoshi; Takaki, Masaoki; Yasuda, Isao; and Kamei, Atsutaro, 4,326,207, Cl. 364-900.000.
Suzuki, Hiromichi; and Okikawa, Susumu, 4,326,215, Cl. 357-81.000.
Suzuki, Ryo; Uehara, Keiichi; Takeuchi, Teruaki; and Takeshita, Masatoshi, 4,326,268, Cl. 365-15.000.
Takahashi, Minoru; Minorikawa, Hitoshi; Iguchi, Masaru; and Kashiwazaki, Seiichi, 4,325,260, Cl. 73-726.000.
Tamura, Yoshitaka; Ishitani, Shizuo; and Shigemura, Takashi, 4,325,995, Cl. 427-428.000.
Tohyama, Shigeo, 4,325,634, Cl. 356-331.000.
Yamauchi, Teruo; Oyama, Yoshishige; and Fujieda, Mamoru, 4,325,341, Cl. 123-472.000.
Yamazaki, Masahiro, 4,325,719, Cl. 62-30.000.
Hitachi Medical Corporation: *See*—
Kohno, Hideki; Shiono, Hidemi; and Yamamoto, Shinji, 4,326,252, Cl. 364-414.000.
Hitch, Donald W.: *See*—
Elliott, James R., Jr.; Layne, Kathy L.; Hitch, Donald W.; and Marshall, Larry G., 4,325,588, Cl. 308-59.000.
Hitchcock, James E.: *See*—
Rafter, Patrick M.; and Hitchcock, James E., 4,326,296, Cl. 455-192.000.
Hitco: *See*—
Campman, Arthur R.; Shibata, George K.; and Cumming, William D., 4,325,999, Cl. 428-112.000.
Hitzel, Volker; Weyer, Rudi; Geisen, Karl; and Regitz, Gunter, to Hoechst Aktiengesellschaft. Thienopyrrolone substituted benezenesulfonylureas and their use. 4,325,963, Cl. 424-274.000.
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Leitmann, William J., 4,326,096, Cl. 174-84.00R.
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Gershman, Russell J.; Hansen, W. Peter; Hochberg, Alan M.; and O'Connell, J. Garland, 4,325,706, Cl. 23-230.00B.
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Hofer, Gerald: *See*—
Eheim, Franz; and Hofer, Gerald, 4,325,337, Cl. 123-357.000.
Hoffmann-La Roche Inc.: *See*—
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Loeliger, Peter, 4,326,055, Cl. 542-429.000.
Holdaway, Ross J., to Elastrator Company Limited. Elastic ring expander. 4,325,172, Cl. 29-235.000.
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Rek, Johannes H. M.; and Holemans, Pieter M. J., 4,325,980, Cl. 426-604.000.
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Holley, Gary R. Film and method for testing cameras. 4,325,620, Cl. 354-127.000.
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Crowley, Raymond R.; Daniels, Edward P.; and Holtz, Earl B., 4,325,440, Cl. 177-25.000.
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Kaji, Nobuhiko; Honda, Hidenobu; and Shikano, Hiroshi, 4,326,040, Cl. 501-100.000.
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Acker, William F., 4,326,168, Cl. 328-162.000.
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Gauch, Wolfgang; Hoppe, Joachim; and Haghiri-Tehrani, Yahya, 4,325,196, Cl. 40-2.200.
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Horn, Michael, to Optsonic Research Associates, Ltd. Optical bichromatic position finder. 4,325,256, Cl. 73-607.000.
Hosegood, Edward A.: *See*—
Champaneria, Nitin J.; Harper, Lee R.; and Hosegood, Edward A., 4,325,857, Cl. 523-412.000.
Hosoda, Seiichi, to Olympus Optical Co., Ltd. Light source apparatus. 4,325,618, Cl. 354-33.000.
Hosoya, Koichi: *See*—
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Hosterman, Harry L., to Graham, Charles. Telephone credit card system. 4,326,123, Cl. 235-380.000.
Hotta, Mitsuhiko; Furuichi, Shuhei; and Shigihara, Takanori, to Kabushiki Kaisha Morita Seisakusho. Transmission system of aerial ultrasonic pulse and ultrasonic transmitter and receiver used in the system. 4,326,274, Cl. 367-118.000.
Houser, Clifford F., to Molecular Energy Corp. Heating system. 4,325,355, Cl. 126-263.000.
Howard, Paul L.; Tarpley, William B., Jr.; Moulder, George R.; and McBride, William R., to Energy and Minerals Research Co. Ultrasonic apparatus and method for measuring the characteristics of materials. 4,325,255, Cl. 73-589.000.
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Markarian, Paul M.; and Howe, David C., 4,326,237, Cl. 361-329.000.
Howell, Hilda, to Koppers Company, Inc. Non-free-amine promoter system for polyester composition. 4,325,841, Cl. 252-431.00C.
Howland, Leland L., to Thermo King Corp. Method and apparatus for transport refrigeration system control. 4,325,224, Cl. 62-196.00A.
Hoxmeier, Ronald J.: *See*—
Slaugh, Lynn H.; and Hoxmeier, Ronald J., 4,325,842, Cl. 252-443.000.
Slaugh, Lynn H.; and Hoxmeier, Ronald J., 4,325,843, Cl. 252-443.000.
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Kratky, Jiri; Fort, Ivan; Havel, Petr; Machacek, Vaclav; Masek, Bohuslav; and Hruban, Konstantin, 4,325,642, Cl. 366-137.000.
Hu, William C.: *See*—
Everett, Gary L.; and Hu, William C., 4,325,804, Cl. 208-58.000.
Huang, Irene C.: *See*—
Schinski, William L.; Chan, David C. K.; and Huang, Irene C., 4,326,077, Cl. 564-211.000.
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Huelsman, Conrad J.: *See*—
McNair, Willie L.; Lipke, Donald L.; Van Wambeck, Stanley H.; and Huelsman, Conrad J., 4,326,236, Cl. 361-170.000.
Huggins, Dale K.: *See*—
Queneau, Paul B.; Beckstead, Leo W.; and Huggins, Dale K., 4,325,919, Cl. 423-61.000.
Huggins, Robert A.; and Raistrick, Ian D., to Stanford University. Electrochromic material and electro-optical display using same. 4,325,611, Cl. 350-357.000.
Hughes Aircraft Company: *See*—
Gardner, Leland V., 4,325,633, Cl. 356-141.000.
Marom, Emanuel, 4,325,603, Cl. 350-96.140.
Huinink, Heinrich: *See*—
Seitz, Hans; and Huinink, Heinrich, 4,325,423, Cl. 152-361.00R.
Hukill, Charles A. Air injection system for internal combustion engines. 4,325,332, Cl. 123-169.0PA.
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Remer, Robert K., 4,325,977, Cl. 426-534.000.
Remer, Robert K., 4,325,978, Cl. 426-534.000.
Hullen, Albert: *See*—
Behre, Horst; Hullen, Albert; Kruger, Bruno; and Steffan, Guido, 4,325,889, Cl. 260-509.000.
Humphrey, Theodore J. Speaker system which inverts and redirects the speaker backwave. 4,325,454, Cl. 181-145.000.
Humphries, Adrian P.: *See*—
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Hung, Paul P.: *See*—
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Hunn, Reginald A., to South African Inventions Development Corporation. Waterproofing of insulated electric cables. 4,326,094, Cl. 174-23.00R.
Hunter, Wood E.; Kun, Kenneth A.; and Ramsey, Wallace B., to Calgon Corporation. Combined visible light and thermally activated continuous polymerization process. 4,325,794, Cl. 204-159.230.
Hurst Performance, Inc.: *See*—
Vancha, John, 4,326,273, Cl. 367-112.000.
Husa, Marlin V. Heating apparatus. 4,325,353, Cl. 126-121.000.
Husa, Marlin V. Heat recapture device. 4,325,430, Cl. 165-135.000.
Hwang, Jaw-Yeu, to United States of America, Energy. Method for limiting heat flux in double-wall tubes. 4,325,425, Cl. 165-1.000.
Hydro Air Industries, Inc.: *See*—
Moreland, Gerald W., 4,325,149, Cl. 4-488.000.
Hydrovak Systems (Holland) B.V.: *See*—
van Waveren, Peik J.; and de Vrij, Ary, 4,325,826, Cl. 210-776.000.
Iafret, John E., to General Motors Corporation. Mounting member. 4,325,525, Cl. 248-27.300.
Ibrahim, Fayez F., to Tyler Refrigeration Corporation. Energy efficient glass door merchandizer. 4,325,227, Cl. 62-248.000.
ICI Americas Inc.: *See*—
Kruse, Walter M.; and Meshreki, Makram H., 4,326,072, Cl. 502-587.000.
Ide, Yoshiaki: *See*—
Wissbrun, Kurt F.; and Ide, Yoshiaki, 4,325,903, Cl. 264-176.00R.
Igarashi, Toshiji: *See*—
Yamatsu, Isao; Abe, Shinya; Inai, Yuichi; Igarashi, Toshiji; and Nakajima, Yoshikage, 4,325,974, Cl. 424-343.000.
Igashira, Toshihiko; Umeda, Naoki; and Abe, Seiko, to Nippon Soken, Inc. Fuel evaporator. 4,325,344, Cl. 123-549.000.
Iguchi, Masaru: *See*—
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Ikeda, Nobuo: *See*—
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Ikuno, Yuji; Kinoshita, Kunio; and Kanehira, Katsuyuki, to Olympus Optical Co., Ltd. Connector for a light guide cable of an endoscope. 4,325,606, Cl. 350-96.200.
Imperial Chemical Industries Limited: *See*—
Baker, Brian, 4,325,658, Cl. 405-264.000.
Hartshorn, Angus J.; and Jones, Eric, 4,325,835, Cl. 252-429.00B.
Punja, Nazim, 4,325,966, Cl. 424-285.000.
Improved Consumers Products, Inc.: *See*—
Paynton, Richard H.; and Paynton, William C., 4,325,291, Cl. 91-67.000.
Inai, Yuichi: *See*—
Yamatsu, Isao; Abe, Shinya; Inai, Yuichi; Igarashi, Toshiji; and Nakajima, Yoshikage, 4,325,974, Cl. 424-343.000.
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Aotsu, Hiroaki; Isono, Akira; Inayama, Tsutomu; and Fukushima, Mamoru, 4,326,159, Cl. 322-19.000.
Indracos S.r.l.: *See*—
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Industrial Resources, Inc.: *See*—
Rosenberg, Harvey S.; and Genco, Joseph M., 4,325,713, Cl. 55-73.000.
Inertia Switch Limited: *See*—
Jackman, Peter R., 4,326,111, Cl. 200-61.45R.
Inohara, Masanobu, to Asics Corporation. Sport shoe sole. 4,325,194, Cl. 36-29.000.

Inoue, Hiroshi, to Ricoh Watch [illegible], Ltd. Sealing agent for plastic liquid crystal display panels. 4,325,610, Cl. 350-343.000.
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Fujimori, Kuniaki; Suzuka, Teruo; Inoue, Yukio; and Aizawa, Shirou, 4,325,812, Cl. 208-119.000.
Inouye, Shigeharu; Tsuruoka, Takashi; and Iwamatsu, Katsuyoshi, to Meiji Seika Kaisha, Ltd. 1-Oxadethiacephalosporin derivatives and antibacterial use thereof. 4,325,951, Cl. 424-248.520.
Institut Cerac S.A.: *See*—
Morris, David G., 4,325,895, Cl. 264-23.000.
Institut Francais du Petrole: *See*—
Arnaudeau, Marcel, 4,325,712, Cl. 55-48.000.
International Business Machines Corporation: *See*—
Aboaf, Joseph A.; and Klokholm, Erik, 4,325,733, Cl. 75-170.000.
Abramson, Paul, 4,326,287, Cl. 370-29.000.
Bergeron, David L.; Putney, Zimri C.; and Stephens, Geoffrey B., 4,326,212, Cl. 357-46.000.
Bouricius, Willard G.; and Feistel, Horst, 4,326,098, Cl. 178-22.080.
Curry, Steven A., 4,325,644, Cl. 400-161.400.
Fang, Frank F.; and Sai-Halasz, George A., 4,326,208, Cl. 357-16.000.
Magno, Robert; Roller, Donald C.; and Rood, Allan J., 4,325,544, Cl. 271-221.000.
Merrill, Richard B.; Terman, Lewis M.; and Yee, Yen S., 4,326,192, Cl. 340-347.0AD.
International Harvester Company: *See*—
Cicci, George B., 4,325,209, Cl. 56-1.000.
International Standard Electric Corporation: *See*—
Friedrich, Robert; and Schmidt, Peter, 4,325,613, Cl. 354-1.000.
International Telephone and Telegraph Corporation: *See*—
Vincent, A. L., 4,325,911, Cl. 422-75.000.
Interox: *See*—
Gabellieri, Rodolfo, 4,326,035, Cl. 435-247.000.
Io, Yukito: *See*—
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Ioro, Giuseppe: *See*—
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Ishida, Masahide: *See*—
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Ishiguro, Juichi: *See*—
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Ishikawa, Tadayoshi; and Lee, Do I., to Dow Chemical Company, The. Sequential emulsion polymerization process. 4,325,856, Cl. [illegible]
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Kojima, Takashi; Okino, Eizo; and Ishimoto, Ryozo, 4,326,062, Cl. 546-166.000.
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Ishizumi, Kikuo: *See*—
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Ismar GmbH: *See*—
Ismar, Theodor, 4,325,516, Cl. 241-73.000.
Ismar, Theodor, to Ismar GmbH. Apparatus for the grinding of surplus bread. 4,325,516, Cl. 241-73.000.
Isono, Akira: *See*—
Aotsu, Hiroaki; Isono, Akira; Inayama, Tsutomu; and Fukushima, Mamoru, 4,326,159, Cl. 322-19.000.
Iten, Clemens A.; and Chase, David O., to American Safety Razor Company. Facial brush for controlling *pseudofolliculitis barbae*. 4,325,392, Cl. 132-80.00R.
Ito, Kenji; Matsuura, Katsumi; Sugita, Hiroshi; Kimura, Toshihiko; and Arai, Hideaki, to Konishiroku Photo Industry Co., Ltd. Photographic material containing a high boiling solvent. 4,326,022, Cl. 430-546.000.
ITT Industries, Inc.: *See*—
Weiler, Rolf; and Bohm, Peter, 4,325,218, Cl. 60-547.00R.
Weiler, Rolf; and Schopper, Bernd, 4,325,407, Cl. 137-493.200.
Ittel, Steven D.: *See*—
Druliner, Joe D.; Ittel, Steven D.; Krusic, Paul J.; and Tolman, Chadwick A., 4,326,084, Cl. 568-360.000.
Iwamatsu, Katsuyoshi: *See*—
Inouye, Shigeharu; Tsuruoka, Takashi; and Iwamatsu, Katsuyoshi, 4,325,951, Cl. 424-248.520.
Iwanaga, Kazuyoshi; Sugano, Kazuhiko; and Ohtsuka, Kunio, to Nissan Motor Company, Limited. Shock control arrangement in hydraulic control system of automatic power transmission. 4,325,271, Cl. 74-869.000.
Iwasawa, Teruo; Yamazaki, Masafumi; Tsuboshima, Kosaku; Takayama, Shuichi; and Nakajima, Yoshio, to Olympus Optical Co. Limited. Reversed image sensing apparatus. 4,326,217, Cl. 358-76.000.
Iwata, Hiroshi; and Yamaoka, Tetsuo, to West Electric Co., Ltd. Electronic flash device. 4,325,621, Cl. 354-145.000.
Izumi, Chikahiko: *See*—
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J. I. Case Company: *See*—
Marto, John H., 4,325,210, Cl. 56-11.600.
Jackman, Peter R., to Inertia Switch Limited. Inertia switch device. 4,326,111, Cl. 200-61.45R.
Jacobi, Edgar F.; and Madden, Mark R. Energy system. 4,326,013, Cl. 429-20.000.
Jacobs, Karlhans: *See*—
Reitz, Gunther; Kaspar, Vaclav; Jacobs, Karlhans; and Schaupp, Kurt, 4,325,890, Cl. 260-512.00C.
Jacobson, Howard W., to Du Pont de Nemours, E. I., and Company. Polymeric amine metallate coatings. 4,325,740, Cl. 106-300.000.
Jacobson, Stephen E., to Halcon SD Group, Inc., The. Process for producing alkylene carbonates. 4,325,874, Cl. 260-340.200.
Jacobsson, Kurt A. G.; Tholander, Lars H. G.; and Wide, Ulf-Erik, to Aktiebolaget IRO. Adjustable pulley. 4,325,702, Cl. 474-56.000.
Jahns, Hans O.; and Weiss, Richard T., to Exxon Production Research Company. Multiple slope structure. 4,325,655, Cl. 405-217.000.
James, Donald N.: *See*—
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Jandeska, William F., Jr.; and Netherton, Charles F., to General Motors Corporation. Method of forming thin curved rare earth-transition metal magnets from lightly compacted powder preforms. 4,325,757, Cl. 148-103.000.
Janhonen, Veikko I. Package carton and procedure for its manufacture. 4,325,507, Cl. 229-55.000.
Janovick, Michael; Hammond, Donald F.; and Harvey, Winston. Method and apparatus for cutting and trimming shingles. 4,325,421, Cl. 144-326.00R.
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Kirisawa, Atsushi, 4,325,320, Cl. 118-52.000.
Jargiello, Paul, to Polychrome Corporation. Lithographic printing plate. 4,326,018, Cl. 430-15.000.
Jarreau, Francois-Xaver; and Koenig, Jean J., to Etablissements Nativelle S.A. Amino-14 steroid derivatives and process for preparation of the same. 4,325,879, Cl. 260-349.000.
Jarrett, Robert B.; and Pace, Wilson D., to Motorola, Inc. Differential to single-ended converter utilizing inverted transistors. 4,326,135, Cl. 307-355.000.
Jaschke, Peter: *See*—
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Jautelat, Manfred; Arlt, Dieter; Lantzsch, Reinhard; Fuchs, Rainer; Riebel, Hans-Jochem; Schroder, Rolf; and Harnisch, Horst, to Bayer Aktiengesellschaft. Process for the preparation of styryl-cyclopropanecarboxylic acid esters and intermediate products for this process. 4,325,873, Cl. 260-338.000.
Jean Walterscheid GmbH: *See*—
Seigert, Peter, 4,325,587, Cl. 308-36.100.
Jelinek, Richard: *See*—
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Jencen, Frank W.: *See*—
Markley, Theodore J.; Galdun, Daniel J.; Clark, Charles E.; Henderson, Robert G.; and Jencen, Frank W., 4,326,193, Cl. 340-365.00R.
Jendrisak, Aloysius A.: *See*—
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Jensen, Peter W., to Ampex Corporation. Synchronous color conversion system. 4,326,216, Cl. 358-8.000.
Jensen, Thomas H., to PPG Industries, Inc. High pressure modular forehearth. 4,325,721, Cl. 65-1.000.
Jensen, Thomas H., to PPG Industries, Inc. Bushing environment control assembly. 4,325,722, Cl. 65-12.000.
Jochumsen, Hans B.: *See*—
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Jockel, Heinz: *See*—
Becker, Paul; Jockel, Heinz; Rudolph, Paul; and Kuhn, Manfred, 4,325,731, Cl. 75-91.000.
Johansson, B. Gooran: *See*—
Sundelin, Bo; Wahlin, Bengt R. A.; and Johansson, B. Gooran, 4,325,695, Cl. 433-91.000.
John Wyeth and Brother Limited: *See*—
Shepherd, Robin G., 4,325,953, Cl. 424-250.000.
Johnson, Burnett H., to Exxon Research & Engineering Co. Polymers characterized by 1,3-imidazolidine-1,3-diyl rings plasticized with aromatic sulfones or aromatic sulfoxides. 4,325,860, Cl. 324-155.000.
Johnson Controls, Inc.: *See*—
Bramow, Scott B.; and Holloway, Thomas M., 4,325,427, Cl. 165-27.000.
Hayes, Thomas E., 4,325,690, Cl. 431-78.000.
Johnson, Roy A.; Lincoln, Frank H.; and Pike, John E., to Upjohn Company, The. 2-Decarboxy-2-hydroxymethyl-PGI_2 compounds. 4,325,875, Cl. 260-346.220.
Johnson, Stuart J.: *See*—
Fransson, George E.; Johnson, Stuart J.; and Haug, Edward W., 4,325,189, Cl. 33-179.50B.
Jones, Eric: *See*—
Hartshorn, Angus J.; and Jones, Eric, 4,325,835, Cl. 252-429.00B.

Jones, Keith; McDonnell, Francis R. M.; Morgan, Stuart N.; and Thornthwaite, David W., to Lever Brothers Company. Process for bleaching naturally-occurring oils and fats. 4,325,883, Cl. 260-423.000.
Jones, William W., to C. K. Kelley and Sons, Inc. Single line pressure-pressure pneumatic tube system. 4,325,660, Cl. 406-84.000.
Jordan, Michael, to Technicraft, Inc. Automated multiple-purpose chemical-analysis apparatus. 4,325,910, Cl. 422-64.000.
Jordan, William. Nipple engaging tool. 4,325,276, Cl. 81-441.000.
Josefsson, Erik A. A., to SSAB Svenskt Stal Aktiebolag. Method for producing a steel strip composed of a dual-phase steel. 4,325,751, Cl. 148-12.00F.
Josephson, Elliot, to Astec Components, Ltd. Flyback power supply booster circuit. 4,326,244, Cl. 363-56.000.
Joy Manufacturing Company: *See*—
Haynes, Charles W., 4,325,233, Cl. 64-23.500.
Swindall, William S.; and Mahyera, Anil, 4,325,437, Cl. 173-131.000.
Jukes, John A., to Jukes, John A.; and Mavriks, George, a part interest. Threaded metal insert. 4,325,665, Cl. 411-176.000.
Julian Electric Inc.: *See*—
Julian, Victor J.; and Julian, Kenneth A., 4,325,760, Cl. 156-49.000.
Julian, Ernest L.; and Gaylard, Phyllis S., to Pinetree Service Corporation. Powered platform lift system for persons in wheelchairs. 4,325,668, Cl. 414-546.000.
Julian, Kenneth A.: *See*—
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Julius Blum Gesellschaft m.b.H.: *See*—
Rock, Erich, 4,325,649, Cl. 403-231.000.
Jung, Michel: *See*—
Bey, Philippe; and Jung, Michel, 4,326,071, Cl. 562-574.000.
Kabushiki Kaisha Dai-ichi Shiko: *See*—
Tsuji Kikuro; and Ishigaki, Masaya, 4,325,632, Cl. 355-86.000.
Kabushiki Kaisha Daini Seikosha: *See*—
Shida, Masaharu; Ueda, Makoto; Torisawa, Akira; Owada, Shuji; and Mandai, Masaaki, 4,326,278, Cl. 368-157.000.
Kabushiki Kaisha Komatsu Seisakusho: *See*—
Anami, Yuichi, 4,325,444, Cl. 180-70.00R.
Umeda, Haruhiko, 4,325,451, Cl. 180-294.000.
Kabushiki Kaisha Medos Kenkyusho: *See*—
Ouchi, Teruo; Ueda, Hirohisa; and Tamada, Kazukiyo, 4,325,362, Cl. 128-4.000.
Kabushiki Kaisha Morita Seisakusho: *See*—
Hotta, Mitsuhiko; Furuichi, Shuhei; and Shigihara, Takanori, 4,326,274, Cl. 367-118.000.
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Sato, Yo, 4,325,774, Cl. 156-542.000.
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Broadt, David R.; Kackenmeister, Carl F.; and Shaffer, John W., 4,326,242, Cl. 362-11.000.
Kackos, Edward M., to Vernitron Corporation. Process for quieting steam injected into water in a sterilizer. 4,325,906, Cl. 422-26.000.
Kaemmerer, Erich, to Bernard, Ingrid. Infusion device. 4,325,368, Cl. 128-214.00R.
Kaesz, Herbert D.: *See*—
Porter, Clifford R.; and Kaesz, Herbert D., 4,325,802, Cl. 208-10.000.
Kagome Co., Ltd.: *See*—
Ukai, Nobuo; Funado, Akira; and Yokota, Tethuya, 4,325,296, Cl. 99-468.000.
Ukai, Nobuo; Funado, Akira; and Yokota, Tethuya, 4,325,401, Cl. 137-240.000.
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Owens, William K.; and Kahermanes, Steven R., 4,326,270, Cl. 365-218.000.
Kahler, Richard W. Stable fluidic smoking device. 4,325,390, Cl. 131-173.000.
Kaibel, Gerd: *See*—
Wolf, Dieter; Schmidt, Rudolf; Block, Ulrich; Schoenmakers, Hartmut; Bott, Kaspar; and Kaibel, Gerd, 4,326,073, Cl. 562-609.000.
Kaji, Nobuhiko; Honda, Hidenobu; and Shikano, Hiroshi. Refractory for casting and process for producing same. 4,326,040, Cl. 501-100.000.
Kalbfeld, Jack W.: *See*—
Seckendorf, Bernard A.; and Kalbfeld, Jack W., 4,325,619, Cl. 354-121.000.
Kalbskopf, Reinhard; and Baumberger, Otto, to Societa Italiana Vetro-Siv-S.p.A. Process for the production of an electrically conducting article. 4,325,987, Cl. 427-110.000.
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Zeugner, Horst; Roemer, Dietmar; Liepmann, Hans; and Milkowski, Wolfgang, 4,325,957, Cl. 424-263.000.
Kalmar Last Maskin Verkstad AB: *See*—
Larsson, Nils-Olof, 4,325,464, Cl. 187-9.00E.
Kaloi, Cyril M., to United States of America, Navy. Corner fed electric non rectangular microstrip dipole antennas. 4,326,203, Cl. 343-700.0MS.
Kalvinskas, John J.; Vasilakos, Nick; Corcoran, William H.; Grohmann, Karel; and Rohatgi, Naresh K., to California Institute of Technology. Coal desulfurization by aqueous chlorination. 4,325,707, Cl. 44-1.0SR.
Kamei, Atsutaro: *See*—
Suda, Hiroharu; Hideshima, Keiji; Asada, Kazuyoshi; Takaki, Masaoki; Yasuda, Isao; and Kamei, Atsutaro, 4,326,207, Cl. 364-900.000.
Kaminstein, Bernard. Non-slip place mat. 4,326,006, Cl. 428-204.000.
Kamiya, Osamu; and Sekimura, Nobuyuki, to Canon Kabushiki Kaisha. Optical system of a copying machine. 4,325,608, Cl. 350-165.000.
Kanai, Yukitomi: *See*—
Matsumoto, Tomomi; Amemiya, Kiyoshi; and Kanai, Yukitomi, 4,326,295, Cl. 455-188.000.
Kanamaru, Hisanobu; Okabe, Moisei; Tohkairin, Akira; Tatsumi, Hideo; and Kurosawa, Takuzo, to Hitachi, Ltd.; and Kawamura Co., Ltd. Hydraulic pressure producing system for a hydraulic press. 4,325,678, Cl. 417-313.000.
Kanebo, Ltd.: *See*—
Otoi, Kiyoshi; and Nasuno, Toshihiro, 4,325,741, Cl. 106-308.00N.
Kanegae, Hidetoshi, to Nissan Motor Company, Limited. Apparatus for testing a control system for automotive vehicle. 4,325,251, Cl. 73-119.00A.
Kanehira, Katsuyuki: *See*—
Ikuno, Yuji; Kinoshita, Kunio; and Kanehira, Katsuyuki, 4,325,606, Cl. 355-96.200.
Kaneno, Masayuki: *See*—
Oda, Isao; and Kaneno, Masayuki, 4,326,038, Cl. 501-41.000.
Kang, Jung W., to Firestone Tire & Rubber Company, The. Method for the preparation of bis(p-aminobenzoato) cobalt. 4,325,884, Cl. 260-439.00R.
Kang, Kenneth S.; Colegrove, George T.; and Veeder, George T., to Merck & Co., Inc. Deacetylated polysaccharide S-60. 4,326,052, Cl. 536-1.000.
Kang, Kenneth S.; and Veeder, George T., to Merck & Co., Inc. Polysaccharide S-60 and bacterial fermentation process for its preparation. 4,326,053, Cl. 536-1.000.
Kanne, William R., Jr.; Kelker, John W., Jr.; and Alexander, Robert J., to United States of America, Energy. Weld braze technique. 4,326,117, Cl. 219-85.0CM.
Kannegiesser, Martin, to Herbert Kannegiesser GmbH & Co. Apparatus for stiffening textile sheets by coating with plastic. 4,325,324, Cl. 118-662.000.
Kantesaria, Prabhudas P.; and Matthews, Francis T., to Combustion Engineering, Inc. Hybrid fluidized bed combuster. 4,325,327, Cl. 122-4.000.
Kanzaka, Yoshihiro, to Yoshida Kogyo K.K. Apparatus for gapping a continuous slide fastener stringer. 4,325,185, Cl. 29-770.000.
Kao Soap Co., Ltd.: *See*—
Matsumoto, Tadao; and Koizawa, Masaaki, 4,325,933, Cl. 423-415.00P.
Okada, Eisaburo; and Sakagami, Koji, 4,325,736, Cl. 106-88.000.
Kapp, Wolfgang, to Deutsche Gesellschaft fur Schadlingsbekampfung mbH. Pesticide and process for its production. 4,325,938, Cl. 424-18.000.
Karr, Gerald W.; and Page, Robert E., to Beloit Corporation. Reel spool pneumatic core clamp. 4,325,518, Cl. 242-68.000.
Kashiwazaki, Seiichi: *See*—
Takahashi, Minoru; Minorikawa, Hitoshi; Iguchi, Masaru; and Kashiwazaki, Seiichi, 4,325,260, Cl. 73-726.000.
Kashulin, Sergei M.: *See*—
Bodyako, Mikhail N.; Semenjuk, Georgy A.; Zverkov, Garik E.; Astapchik, Stanislav A.; Kosov, Anatoly F.; Kashulin, Sergei M.; and Baklanov, Alexandr N., 4,326,116, Cl. 219-61.700.
Kaspar, Vaclav: *See*—
Reitz, Gunther; Kaspar, Vaclav; Jacobs, Karlhans; and Schaupp, Kurt, 4,325,890, Cl. 260-512.00C.
Kassakian, John G.: *See*—
Schlecht, Martin F.; Kassakian, John G.; Caloggero, Anthony J.; Rhodes, Bruce; Otten, David; and Rasmussen, Neil, 4,326,191, Cl. [illegible]
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Katsube, Junki: *See*—
Ohashi, Naohito; Mizote, Hiroyuki; Maruyama, Isamu; Nagata, Shoji; Ishizumi, Kikuo; and Katsube, Junki, 4,325,886, Cl. 260-455.00R.
Katz, Jay W. Means for treating symptoms of Meniere's disease or the like. 4,325,386, Cl. 128-733.000.
Katz, Larry L.: *See*—
Clark, Herbert D.; Katz, Larry L.; and Knoepfle, Thomas L., 4,325,568, Cl. 280-731.000.
Kawai, Taneichi; Nishida, Kouji; Miyake, Osamu; and Hamajima, Shigemitsu, to Aisin Seiki Kabushiki Kaisha. Automatic embroidery sewing machine. 4,325,313, Cl. 112-103.000.
Kawai, Toshihiko: *See*—
Nashiwa, Hajime; Kawai, Toshihiko; Takeyama, Muneyoshi; Yamaguchi, Youzi; Kobayashi, Tsuneaki; and Nagahata, Tsutomu, 4,325,748, Cl. 148-2.000.
Kawakami, Tomiko: *See*—
Sasaki, Masaomi; Hashimoto, Mitsuru; and Kawakami, Tomiko, 4,325,871, Cl. 260-160.000.
Kawamoto, Tamio, to Nissan Motor Co., Ltd. Apparatus for preventing oil leakage from a vehicle power transmission. 4,325,557, Cl. 277-65.000.
Kawamura Co., Ltd.: *See*—
Kanamaru, Hisanobu; Okabe, Moisei; Tohkairin, Akira; Tatsumi, Hideo; and Kurosawa, Takuzo, 4,325,678, Cl. 417-313.000.

Kawamura, Satoshi: *See—*
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Kawanabe, Hitoshi: *See—*
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Kawashima, Machio: *See—*
Nakayama, Takeshi; Nishimoto, Takehiko; Kawashima, Machio; Takahashi, Kozi; and Osakabe, Kuniharu, 4,326,147, Cl. 115-401.000.
Kearney-National Inc.: *See—*
Murdock, Robert E., 4,326,184, Cl. 337-168.000.
Keblys, Kestutis A., to Ethyl Corporation. Thermal process for preparing 3-phenoxybenzyl bromide. 4,326,089, Cl. 568-639.000.
Kelker, John W., Jr.: *See—*
Kanne, William R., Jr.; Kelker, John W., Jr.; and Alexander, Robert J., 4,326,117, Cl. 219-85.0CM.
Kellar, John D.; and Pereman, Gordon F., to PPG Industries, Inc. Transferring rigid sheets from one conveyor to another. 4,325,723, Cl. 65-104.000.
Keller, Ernst. System for the increase of the number of differing locking possibilities in rotary cylinder locks. 4,325,241, Cl. 70-358.000.
Kelley, Lee M. Solar heat collector. 4,325,360, Cl. 126-438.000.
Kelly, Charles A.: *See—*
Irick, Gether, Jr.; and Kelly, Charles A., 4,326,065, Cl. 548-143.000.
Kelly, Quentin T., to Pressurized Products, Inc. Pressurized portable elastic membrane liquid container. 4,325,498, Cl. 222-210.000.
Kelsey, Robert D., to Bramah Stainless Products Limited. Method of making saw blades. 4,325,272, Cl. 76-112.000.
Kemp, Ian: *See—*
Corner, Michael R.; Kemp, Ian; Allbert, Barrie J.; and French, Tom, 4,325,422, Cl. 152-352.00R.
Kemp, Raymond: *See—*
Wood, Trevor E.; Cooper, Gene R.; and Kemp, Raymond, 4,325,161, Cl. 15-304.000.
Kennecott Corporation: *See—*
Chapman, Harry S., 4,325,998, Cl. 428-36.000.
KeNova AB: *See—*
Nilson, Nils B., 4,325,369, Cl. 128-218.00D.
Kenshol, Kenneth W., to Norton Company. Flame spray gun. 4,325,512, Cl. 239-84.000.
Kern, Calvin V.; and Zepp, Lawrence P., to Eltra Corporation. Position-retentive valve seat for hydraulic cylinder. 4,325,700, Cl. 440-41.000.
Ketner, Clyde R., to Boeing Company, The. Lightweight cargo container and fittings. 4,325,488, Cl. 220-1.500.
Kewanee Industries, Inc.: *See—*
Green, Harold A.; Merianos, John J.; and Petrocci, Alfonso N., 4,325,940, Cl. 424-70.000.
Khambatta, Adi F., to Welwyn Electric Limited. Process for producing an electrical resistor having a metal foil bonded to a ceramic or glass-ceramic substrate. 4,325,183, Cl. 29-621.000.
Kidode, Masatsugu; Asada, Haruo; and Tabata, Mitsuo, to Agency of Industrial Science & Technology, The President of the. Image memory device. 4,326,202, Cl. 340-799.000.
Kim, Dae K.; and Bertolacini, Ralph J., to Standard Oil Company (Indiana). Hydrocarbon conversion catalyst system and method. 4,325,808, Cl. 208-65.000.
Kimenis, Agris A.: *See—*
Vigante, Brigita A.; Ozol, Yan-Voldemar Y.; Vitolin, Rasma O.; Silenietse, Gunta O.; Kimenis, Agris A.; and Dubur, Gunar Y., 4,326,064, Cl. 546-322.000.
Kimura, Toshihiko: *See—*
Ito, Kenji; Matsuura, Katsumi; Sugita, Hiroshi; Kimura, Toshihiko; and Arai, Hideaki, 4,326,022, Cl. 430-546.000.
Kimura, Yoshikazu; and Tanabe, Kenjiro, to Dainippon Screen Seizo Kabushiki Kaisha. Automatic masking device including an aperture extension means. 4,325,630, Cl. 355-74.000.
Kine, Masayoshi, to Shimano Industrial Company Limited. Bicycle which facilitates wheel removal. 4,325,467, Cl. 188-24.120.
King, Paul V.; Becher, Albert P.; and Henderson, Wilmer P., to United States of America, Army. Blast suppressive shielding. 4,325,309, Cl. 109-49.500.
Kino, Gordon S.; Corl, Paul D.; and Grant, Peter M. Real-time digital, synthetic-focus, acoustic imaging system. 4,325,257, Cl. 73-626.000.
Kinoshita, Kunio: *See—*
Ikuno, Yuji; Kinoshita, Kunio; and Kanehira, Katsuyuki, 4,325,606, Cl. 350-96.200.
Kinugasa, Munetaka: *See—*
Suetoshi, Tetsui; Kinugasa, Munetaka; Hosoya, Koichi; and Yamamoto, Mitsuo, 4,325,772, Cl. 156-294.000.
Kirii, Kazuo, to Yoshida Kogyo K.K. Method and apparatus for finishing a pair of elongate slide fastener stringers. 4,325,173, Cl. 19-408.000.
Kirisawa, Atsushi, to Japan Envirotic Industry Co., Ltd. Apparatus employed in surface treatment. 4,325,320, Cl. 118-52.000.
Kirkpatrick, Maurice, to Tannoy Products Limited; and Leaver Products Limited. Loudspeaker grille. 4,325,455, Cl. 181-148.000.
Kirschke, John A. Apparatus and process for repairing underground gasoline tanks. 4,325,652, Cl. 405-57.000.
Kisch, Horst, to Studiengesellschaft Kohle m.b.H. Catalysis of photochemical production of hydrogen from water. 4,325,793, Cl. 204-157.10R.
Kistler Instrumente AG: *See—*
Guth, Werner; Wolfer, Peter; Dahler, Hanspeter; and Calderara, Reto, 4,326,143, Cl. 310-329.000.
Kitabayashi, Seiichi. Throwaway type gas lighter. 4,325,692, Cl. 431-254.000.
Kitagawa, Hidemasa: *See—*
Kogure, Takuyo; and Kitagawa, Hidemasa, 4,326,224, Cl. 360-65.000.
Kitagawa, Hiroji, to Kitagawa Industries Co., Ltd. Flat cable clamp. 4,325,526, Cl. 248-73.000.
Kitagawa Industries Co., Ltd.: *See—*
Kitagawa, Hiroji, 4,325,526, Cl. 248-73.000.
Kitashima, Nobumitsu; Takahashi, Norio; Ishiguro, Juichi; and Kawamura, Satoshi, to Ebara Corporation. Coating metal for preventing the crevice corrosion of austenitic stainless steel and method of preventing crevice corrosion using such metal. 4,325,994, Cl. 427-376.800.
Kitrell, John V. Folding disabled vehicle warning symbol. 4,325,318, Cl. 116-28.00R.
Kiucihi, Hideo; Ogawa, Oyuki; and Kobayashi, Nobuyuki, to Nippondenso Co., Ltd.; and Toyota Jidosha Kogyo Kabushiki Kaisha. Fuel supply system for internal combustion engine. 4,325,893, Cl. 261-50.00A.
Kjellin, Per G.; and Persson, Carl G., to Aktiebolaget Draco. Method and pharmaceutical preparation for treating chronic obstructive airway disease and cardiac disease, and intermediates for the preparation of therapeutically active xanthine derivatives. 4,325,956, Cl. 424-253.000.
Klaue, Hermann. Disk brakes. 4,325,466, Cl. 188-71.400.
Klauke, Erich: *See—*
Fuchs, Rainer; Maurer, Fritz; Priesnitz, Uwe; Riebel, Hans-Jochem; and Klauke, Erich, 4,326,087, Cl. 568-631.000.
Klaus, Werner, to U.S. Philips Corporation. C-Core transformer. 4,326,182, Cl. 336-198.000.
Kleemann, Axel; Lehamnn, Bernd; and Klenk, Herbert, to Degussa Aktiengesellschaft. Process for the production of 4-amino-6-tert. butyl-3-mercapto-1,2,4-triazin-5-one. 4,326,056, Cl. 544-182.000.
Kleeneze Limited: *See—*
Berry, Richard M., 4,325,484, Cl. 211-66.000.
Klein, Ottokar, to Robert Bosch GmbH. Incremental rotary transmitter. 4,326,128, Cl. 250-231.0SE.
Kleinschmidt, Heinz: *See—*
Bernhardt, Wolfgang; Kleinschmidt, Heinz; and Heiser, Joachim, 4,325,410, Cl. 137-596.130.
Klenk, Herbert: *See—*
Kleemann, Axel; Lehamnn, Bernd; and Klenk, Herbert, 4,326,056, Cl. 544-182.000.
Klett, John L.: *See—*
Fortier, Joseph R.; and Klett, John L., 4,325,300, Cl. 100-295.000.
Klieman, Charles H.; and Densmore, Richard M., to Klieman, Charles H. Hemostatic clip applicator. 4,325,376, Cl. 128-325.000.
Klockner-Humboldt-Deutz Aktiengesellschaft: *See—*
Kohler, Wolfgang; and Hafner, Karl E., 4,325,342, Cl. 123-504.000.
Klokholm, Erik: *See—*
Aboaf, Joseph A.; and Klokholm, Erik, 4,325,733, Cl. 75-170.000.
Klotz, Robert J.; and Stephen, Donald W., to Combustion Engineering, Inc. Method and apparatus for measuring the reactivity of a spent fuel assembly. 4,325,785, Cl. 376-154.000.
Klyne, Lawrence: *See—*
Hopkins, Norman K.; and Klyne, Lawrence, 4,326,235, Cl. 361-156.000.
Knight Engineering & Molding Co.: *See—*
Ewald, Ronald F., 4,325,497, Cl. 222-153.000.
Knoepfle, Thomas L.: *See—*
Clark, Herbert D.; Katz, Larry L.; and Knoepfle, Thomas L., 4,325,568, Cl. 280-731.000.
Knogo Corporation: *See—*
Novikoff, Eugene B., 4,326,198, Cl. 340-572.000.
Knoll International, Inc.: *See—*
Morrison, Andrew I., 4,325,597, Cl. 312-258.000.
Knorr-Bremse GmbH: *See—*
Hefter, Erik; and Baumgarth, Rolf, 4,325,573, Cl. 291-3.000.
Knudsen, Ernest W., Jr.: *See—*
Graves, Daniel G.; Graves, Vernard L.; and Knudsen, Ernest W., Jr., 4,325,767, Cl. 156-196.000.
Kobayashi, Hideo: *See—*
Seki, Yashiro; and Kobayashi, Hideo, 4,326,195, Cl. 340-365.00R.
Kobayashi, Hidetoshi; and Tanaka, Mitsugu, to Fuji Photo Film Co., Ltd. Silver halide emulsion containing yellow-dye-forming coupler. 4,326,024, Cl. 430-557.000.
Kobayashi, Hiroo, to Mitsubishi Denki Kabushiki Kaisha. Cathode ray tube device for display system. 4,326,150, Cl. 315-325.000.
Kobayashi, Kazutoshi: *See—*
Fujiwara, Hiroshi; Kobayashi, Kazutoshi; and Miyo, Shinichi, 4,325,338, Cl. 123-407.000.
Kobayashi, Nobuo: *See—*
Umemoto, Yoshiro; Mishima, Yasuhiro; Takao, Shuichiro; Sawada, Kazunori; and Kobayashi, Nobuo, 4,325,574, Cl. 293-120.000.
Kobayashi, Nobuyuki: *See—*
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Kobayashi, Tsuneaki: *See—*
Nashiwa, Hajime; Kawai, Toshihiko; Takeyama, Muneyoshi; Yamaguchi, Youzi; Kobayashi, Tsuneaki; and Nagahata, Tsutomu, 4,325,748, Cl. 148-2.000.
Kober, Alfred E.; and Mahoney, Dennis F., to Apollo Technologies, Inc. Method of conditioning flue gas and separating the particles therefrom. 4,325,711, Cl. 55-5.000.

Koenig, Alan R.: *See—*
Rosen, Murray; Koenig, Alan R.; and Copham, John D., 4,325,849, Cl. 252-62.000.
Koenig & Bauer AG: *See—*
Grosshauser, Heinrich K., 4,325,301, Cl. 101-217.000.
Koenig, Jean J.: *See—*
Jarreau, Francois-Xaver; and Koenig, Jean J., 4,325,879, Cl. 260-349.000.
Kogure, Takuyo; and Kitagawa, Hidemasa, to Matsushita Electric Industrial Co. Ltd. Automatic signal compensation recording and reproducing apparatus. 4,326,224, Cl. 360-65.000.
Kohler, Janet K., to United States of America, Navy. Battery activate assembly. 4,326,015, Cl. 429-52.000.
Kohler, Wolfgang; and Hafner, Karl E., to Klockner-Humboldt-Deutz Aktiengesellschaft. Fuel injection pump control for internal combustion engines, especially diesel engines. 4,325,342, Cl. 123-504.000.
Kohno, Hideki; Shiono, Hidemi; and Yamamoto, Shinji, to Hitachi Medical Corporation. Method of reconstructing cross-section image. 4,326,252, Cl. 364-414.000.
Koike, Kengo: *See—*
Nakagawa, Taizo; Watanabe, Yutaka; Ohmori, Kaoru; Koike, Kengo; and Tejima, Iwao, 4,325,968, Cl. 424-300.000.
Koizawa, Masaaki: *See—*
Matsumoto, Tadao; and Koizawa, Masaaki, 4,325,933, Cl. 423-415.00R.
Kojima, Masao, to Shimano Industrial Company Limited. Bicycle control lever device having control lever movement conforming to a cyclist's fingers. 4,325,267, Cl. 74-489.000.
Kojima, Takashi; Okino, Eizo; and Ishimoto, Ryozo, to Sumitomo Chemical Company, Ltd. Manufacture of polymerized 2,2,4-trimethyl-1,2-dihydroquinoline. 4,326,062, Cl. 546-166.000.
Kojima, Yasufumi: *See—*
Otsuka, Fumio; Nabeta, Teiichi; Kojima, Yasufumi; Matsushima, Takeo; Fujioka, Yasuhiro; and Wada, Eiichi, 4,325,426, Cl. 165-2.000.
Kokubo, Eiichi: *See—*
Uchida, Isamu; Kokubo, Eiichi; and Sasaki, Toshinobu, 4,325,277, Cl. 83-205.000.
Kollonitsch, Janos; and Patchett, Arthur A., to Merck & Co., Inc. Fluorinated amino acids. 4,325,961, Cl. 424-273.00R.
Kolosov, Ivan A. Device for measuring thickness of storage cell plates in sorting. 4,325,248, Cl. 73-37.500.
Komaki, Shozo: *See—*
Okamoto, Yoshiharu; Horikawa, Izumi; and Komaki, Shozo, 4,326,294, Cl. 455-139.000.
Komatsu Ltd.: *See—*
Stang, John H.; and Yamaguchi, Hiromasa, 4,325,219, Cl. 60-599.000.
Komiya, Osamu, to Olympus Optical Co., Ltd. High frequency electrosurgical instrument for an endoscope. 4,325,374, Cl. 128-303.150.
Kondr, Milan: *See—*
Winkler, Jiri; Kondr, Milan; Jelinek, Richard; Hlousek, Jaroslav; Krtek, Jan; Cibulka, Josef; Mlynar, Vladimir; and Simacek, Josef, 4,326,246, Cl. 363-138.000.
Konig, Dieter: *See—*
Gohler, Peter; Jaschke, Peter; Kretzschmer, Horst; Kuhlbrodt, Claus-Otto; Lucas, Klaus; Neumann, Berthold; Schingnitz, Manfred; Schweigel, Hans-Joachim; Berger, Friedrich; and Konig, Dieter, 4,325,709, Cl. 48-197.00R.
Konishiroku Photo Industry Co., Ltd.: *See—*
Ito, Kenji; Matsuura, Katsumi; Sugita, Hiroshi; Kimura, Toshihiko; and Arai, Hideaki, 4,326,022, Cl. 430-546.000.
Konrad, Gonther; and Lieske, Edgar, to Henkel Kommanditgesellschaft auf Aktien. Hair dyes. 4,325,704, Cl. 8-407.000.
Koppers Company, Inc.: *See—*
Howell, Hilda, 4,325,841, Cl. 252-431.00C.
Korosladanyi, Jozsef; Szabo, Sandor; Madi, Jeno; Vad, Laszlo; and Farkas, Otto, to Autoipari Kutato Intezet; and Taurus Gumiipari Vallalat. Spring leg which has a load proportionally limited damping, consisting of an air suspension and a telescopic shock absorber for motor vehicle. 4,325,541, Cl. 267-8.00R.
Korpman, Ralf, to Permacel. Process for pressure-sensitive adhesive, coated products. 4,325,770, Cl. 156-230.000.
Korte, Siegfried: *See—*
Suling, Carlhans; Korte, Siegfried; and Neukam, Theo, 4,326,051, Cl. 528-386.000.
Kortye, Heinrich. Anchor plate. 4,325,481, Cl. 206-503.000.
Kosov, Anatoly F.: *See—*
Bodyako, Mikhail N.; Semenjuk, Georgy A.; Zverkov, Garik E.; Astapchik, Stanislav A.; Kosov, Anatoly F.; Kashulin, Sergei M.; and Baklanov, Alexandr N., 4,326,116, Cl. 219-61.700.
Kostandian, Kliment A.: *See—*
Pelts, Boris B.; Tumasian, Beniamin A.; Egorov, Leonid P.; Zatulovsky, Lev M.; Chaikin, Petr M.; Freiman, Efim A.; Chalian, Eduard A.; Abramian, Grant I.; Azoian, Stepan E.; and Kostandian, Kliment A., 4,325,917, Cl. 422-249.000.
Kostjuchenko, Vasily V.: *See—*
Tkach, Lev N.; Prikhodko, Jury N.; Vaisman, Leonid M.; Soldatenko, Vladimir I.; and Kostjuchenko, Vasily V., 4,325,848, Cl. 252-567.000.
Kostner, Armin: *See—*
Lenhart, Richard; Kostner, Armin; Gerigk, Gunter; and Bittner, Klaus-Jurgen, 4,325,413, Cl. 138-109.000.
Kowal, Witold: *See—*
Wozniczko, Wlodzimierz; Lukasik, Adam; Marczynski, Jozef; Kowal, Witold; Plaskacewicz, Edward; Pasierb, Slawomir; and Langner, Norbert, 4,325,538, Cl. 266-190.000.
Kratky, Jiri; Fort, Ivan; Havel, Petr; Machacek, Vaclav; Masek, Bohuslav; and Hruban, Konstantin, to Vysoka skola chemicko-technologicka. Storage and homogenizing tank for kaolin suspensions. 4,325,642, Cl. 366-137.000.
Krattner, Richard: *See—*
Dickmann, Heinz H.; Hechenberger, Dieter; and Krattner, Richard, 4,325,855, Cl. 524-219.000.
Kraus, Charles E., to Excelermatic Inc. Axial thrust bearing assembly. 4,325,592, Cl. 308-219.000.
Krauth, Axel: *See—*
Maier, Horst R.; Krauth, Axel; Pohlmann, Hans-Juergen; Nink, Horst; Brobeck, Helmut; Cropp, Ingo; and Bergmeier, Dieter, 4,325,647, Cl. 403-29.000.
Kreider, David R.: *See—*
Stevens, Jack F.; Lee, Kwok-fu; Rose, Philip M.; Kreider, David R.; and Lin, Chi-Hung, 4,326,048, Cl. 526-68.000.
Kreinberg, Earl R., to Protection Services, Inc. Battery regulation circuit. 4,326,161, Cl. 323-299.000.
Krepler, Albert, to Ruthner Industrieanlagen-Aktiengesellschaft. Method and an installation for obtaining or recovering hydrofluoric acid. 4,325,935, Cl. 423-483.000.
Kretzschmer, Horst: *See—*
Gohler, Peter; Jaschke, Peter; Kretzschmer, Horst; Kuhlbrodt, Claus-Otto; Lucas, Klaus; Neumann, Berthold; Schingnitz, Manfred; Schweigel, Hans-Joachim; Berger, Friedrich; and Konig, Dieter, 4,325,709, Cl. 48-197.00R.
Kriebel, Manfred: *See—*
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Krieger, Heinrich. Cascade cooling arrangement. 4,325,231, Cl. 62-335.000.
Kriegesmann, Jochen; Lipp, Alfred; and Reinmuth, Klaus, to Elektroschmelzwerk Kempten GmbH. Dense shaped articles of polycrystalline β-silicon carbide and process for the manufacture thereof by hot-pressing. 4,326,039, Cl. 501-90.000.
Krietemeier, Rickie F.; and Davis, Gary D. Artificial bird and method of making same. 4,325,996, Cl. 428-16.000.
Krtek, Jan: *See—*
Winkler, Jiri; Kondr, Milan; Jelinek, Richard; Hlousek, Jaroslav; Krtek, Jan; Cibulka, Josef; Mlynar, Vladimir; and Simacek, Josef, 4,326,246, Cl. 363-138.000.
Krug, Adolf, to Siemens Aktiengesellschaft. Track monitoring device. 4,325,524, Cl. 246-34.00R.
Kruger, Bruno: *See—*
Behre, Horst; Hullen, Albert; Kruger, Bruno; and Steffan, Guido, 4,325,889, Cl. 260-509.000.
Kruse, Walter M.; and Meshreki, Makram H., to ICI Americas Inc. Ruthenium catalyzed hydrogenation of D-glucuronic acid. 4,326,072, Cl. 562-587.000.
Krusic, Paul J.: *See—*
Druliner, Joe D.; Ittel, Steven D.; Krusic, Paul J.; and Tolman, Chadwick A., 4,326,084, Cl. 568-360.000.
Kubota Ltd.: *See—*
Bando, Niro; Watanabe, Haruo; and Miyata, Junji, 4,325,452, Cl. 180-306.000.
Kuboto, Hitoshi; and Shimizu, Kazuaki, to Nissan Motor Company, Limited. Hydraulic pressure control valve assembly for automotive hydraulic brake system. 4,325,582, Cl. 303-24.00F.
Kuehler, Christopher W., to Chevron Research Company. Three-stage coal liquefaction process. 4,325,801, Cl. 208-10.000.
Kuehler, Christopher W.: *See—*
Rosenthal, Joel W.; and Kuehler, Christopher W., 4,325,800, Cl. 208-8.0LE.
Kueter, Bernhard: *See—*
Duggleby, Peter M.; Kueter, Bernhard; Morris, Ronald M.; Poeselt, Horst; Rabitsch, Hermann; and Scowen, Reginald V., 4,325,829, Cl. 252-109.000.
Kufner Testilwerke KG: *See—*
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Kugler, Artur; and Zaunberger, Franz X., to Zahnraderfabrik Renk Aktiengesellschaft, Firma. Apparatus for controlling the cooling system of a motor-vehicle drive. 4,325,330, Cl. 123-41.120.
Kuhlbrodt, Claus-Otto: *See—*
Gohler, Peter; Jaschke, Peter; Kretzschmer, Horst; Kuhlbrodt, Claus-Otto; Lucas, Klaus; Neumann, Berthold; Schingnitz, Manfred; Schweigel, Hans-Joachim; Berger, Friedrich; and Konig, Dieter, 4,325,709, Cl. 48-197.00R.
Kuhn, Manfred: *See—*
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Kuhn, Paul K.: *See—*
Freund, William R., Jr.; Grebe, John C., Jr.; and Kuhn, Paul K., 4,325,261, Cl. 73-861.120.
Kula, Maria-Regina: *See—*
Wandrey, Christian; Wichmann, Rolf; Leuchtenberger, Wolfgang; Kula, Maria-Regina; and Buckmann, Andreas, 4,326,031, Cl. 435-146.000.
Kulesza, Ralph J.; Breslow, Jeffrey D.; Morrison, Howard J.; Licitis, Gunars, Jr.; and Harper, Rex M., to Marvin Glass & Associates. Electronically controlled game apparatus with playing array positions actuatable by a player controlled movable object. 4,325,551, Cl. 273-110.000.

Kumagai, Ryohei; and Maruta, Kazuo, to Advance Company Limited. Coffee roaster. 4,325,191, Cl. 34-54.000.
Kumasaka, Sadao; Tada, Satomi; Yoneyama, Goro; and Seki, Junichi, to Toyo Rubber Chemical Industrial Corporation. Mold equipment. 4,325,688, Cl. 425-436.00R.
Kun, Kenneth A.: *See*—
  Hunter, Wood E.; Kun, Kenneth A.; and Ramsey, Wallace B., 4,325,794, Cl. 204-159.230.
Kunishima, Mamoru: *See*—
  Umezawa, Hamao; Takita, Tomohisa; Fujii, Akio; Muraoka, Yasuhiko; and Kunishima, Mamoru, 4,326,054, Cl. 536-17.00R.
Kuno, Akira; Matsui, Takeshi; and Shinoda, Yoshio, to Nippon Soken, Inc. Electronic speed control system for automotive vehicles. 4,325,336, Cl. 123-350.000.
Kunz, Bernard L., to Emerson Electric Co. Thermostatic expansion valve with remote adjustment. 4,325,508, Cl. 236-92.00B.
Kunze, Walter A., to Cities Service Company. Covered container. 4,325,492, Cl. 220-335.000.
Kuraray Company, Limited: *See*—
  Saito, Koichi; and Ohara, Osamu, 4,325,858, Cl. 524-524.000.
Kurata, Masayuki: *See*—
  Suda, Toyoharu; Tayama, Katsuhiko; Araki, Kenji; Kurata, Masayuki; and Yamana, Hideo, 4,325,752, Cl. 148-12.100.
Kurosawa, Takuzo: *See*—
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Kusters, Eduard: *See*—
  Verboom, Hermann; Mingers, Peter F.; and Appenzeller, Valentin, 4,325,170, Cl. 29-116.0AD.
Kwantes, Cornelis; Mansell, Michael; and Stor, Bob P., to Shell Internationale Research. Well for the solution mining of salt from an underground salt formation and a method for operating said well. 4,325,579, Cl. 299-5.000.
Kwong, Peter C.: *See*—
  Boggs, Daniel R.; Kwong, Peter C.; and Laurin, Dean G., 4,325,417, Cl. 141-98.000.
Laboratoire L. Lafon: *See*—
  Lafon, Louis, 4,325,964, Cl. 424-282.000.
Laboratoires Jacques Logeais: *See*—
  Maillard, Jacques G.; Vovan, Tri; and Legeai, Jacky M., 4,325,954, Cl. 424-251.000.
Lacks, Harold G. System and method for measuring and recording blood pressure. 4,325,383, Cl. 128-677.000.
Lafon, Louis, to Laboratoire L. Lafon. Phenylamidine derivatives. 4,325,964, Cl. 424-282.000.
Lagger, Helmut: *See*—
  Fromm, Ingrid; and Lagger, Helmut, 4,326,298, Cl. 455-606.000.
Lakshmanan, Pallavoor R.: *See*—
  Acharya, Vikramkumar; and Lakshmanan, Pallavoor R., 4,325,853, Cl. 524-272.000.
Lamboo, Theodorus F.: *See*—
  Van den Brink, Hans G.; and Lamboo, Theodorus F., 4,326,178, Cl. 372-61.000.
Lan, Shih-jung: *See*—
  Natarajan, Sesha I.; Ondetti, Miguel A.; Lan, Shih-jung; and Wong, Keith K., 4,325,943, Cl. 424-177.000.
  Natarajan, Sesha I.; Ondetti, Miguel A.; Lan, Shih-jung; and Wong, Keith K., 4,325,944, Cl. 424-177.000.
  Natarajan, Sesha I.; Ondetti, Miguel A.; Lan, Shih-jung; and Wong, Keith K., 4,325,945, Cl. 424-177.000.
Lang, Armin, to Zahnradfabrik Friedrichshafen, AG. Steering valve mechanism having closed neutral position. 4,325,286, Cl. 91-373.000.
Lang, Richard D.; and Bolton, Theodore S., to Carrier Corporation. Apparatus for securing a cover to an air conditioning unit. 4,325,594, Cl. 312-100.000.
Lange, Karl H., to Balda-Werke Photographische Gerate & Kunststoff GmbH & Co. K.G. Binocular telescope. 4,325,602, Cl. 350-36.000.
Langner, Norbert: *See*—
  Wozniczko, Wlodzimierz; Lukasik, Adam; Marczynski, Jozef; Kowal, Witold; Plaskacewicz, Edward; Pasierb, Slawomir; and Langner, Norbert, 4,325,538, Cl. 266-190.000.
Lantzsch, Reinhard: *See*—
  Jautelat, Manfred; Arlt, Dieter; Lantzsch, Reinhard; Fuchs, Rainer; Riebel, Hans-Jochem; Schroder, Rolf; and Harnisch, Horst, 4,325,873, Cl. 260-338.000.
Larsen, Peder M.; and Larsen, Uffe M. Valve claw to be situated at the end of a pipe to mount a closing valve. 4,325,404, Cl. 137-316.000.
Larsen, Poul; and Jochumsen, Hans B., to Lejbolle Maskinfabrik APS. Apparatus for dissicant drying and conveying of a granulate and a valve means preferably for use with said apparatus. 4,325,192, Cl. 34-80.000.
Larsen, Uffe M.: *See*—
  Larsen, Peder M.; and Larsen, Uffe M., 4,325,404, Cl. 137-316.000.
Larson, Wayne F., to Supra Products, Inc. Key safe having improved bar locking system. 4,325,239, Cl. 70-139.000.
Larsson, Nils-Olof, to Kalmar Last Maskin Verkstad AB. Lifting stand of a motor-driven truck. 4,325,464, Cl. 187-9.00E.
Larter, Waynne D. Self-cleaning litter box. 4,325,325, Cl. 119-1.000.
Lasar, Theodore. Electrical power line transient noise filtering device. 4,326,179, Cl. 333-177.000.
Lathrop, Robert L.: *See*—
  Holt, Jack A.; Lathrop, Robert L.; and Torbet, Philip A., 4,325,575, Cl. 294-89.000.
Laudien, Eckehard: *See*—
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Laurel Bank Machine Co., Ltd.: *See*—
  Uchida, Isamu; Kokubo, Eiichi; and Sasaki, Toshinobu, 4,325,277, Cl. 83-205.000.
Laurin, Dean G.: *See*—
  Boggs, Daniel R.; Kwong, Peter C.; and Laurin, Dean G., 4,325,417, Cl. 141-98.000.
Law, Andrew B.: *See*—
  Lewis, Sheldon N.; Miller, George A.; and Law, Andrew B., 4,325,201, Cl. 47-57.600.
Layer, Robert W.: *See*—
  Son, Pyong-Nae; and Layer, Robert W., 4,326,061, Cl. 546-164.000.
Layne, Kathy L.: *See*—
  Elliott, James R., Jr.; Layne, Kathy L.; Hitch, Donald W.; and Marshall, Larry G., 4,325,588, Cl. 308-59.000.
Lazrus, Julian: *See*—
  Bauer, Peter; and Lazrus, Julian, 4,325,235, Cl. 68-3.0SS.
Lazzari, Jean-Pierre, to Compagnie Internationale pour l'Informatique Cii-Honeywell Bull. Data processing system employing portable cards and operating stations making use of magnetic bubble elements. 4,326,267, Cl. 365-1.000.
Leary, Steven G.: *See*—
  Caridis, Andrew A.; Benson, Clark K.; Leary, Steven G.; and Nilsen, Arthur A., 4,325,295, Cl. 99-339.000.
LeBlanc, John R.: *See*—
  Cohen, Saul M.; and LeBlanc, John R., 4,326,057, Cl. 544-221.000.
Le Can, Claude J. P. F.; Whelan, Maurice V.; and Hart, Karel, to U.S. Philips Corporation. Threshold circuit using complementary field effect transistors. 4,326,136, Cl. 307-451.000.
Lechner, Hubert: *See*—
  Meisser, Claudio; Strasser, Hans; and Lechner, Hubert, 4,325,262, Cl. 73-861.280.
Lectromelt Corporation: *See*—
  Persson, John A., 4,326,093, Cl. 373-101.000.
Lee, Do I.: *See*—
  Ishikawa, Tadayoshi; and Lee, Do I., 4,325,856, Cl. 523-201.000.
Lee, Gary D.: *See*—
  Chafetz, Harry; and Lee, Gary D., 4,325,876, Cl. 260-346.740.
Lee, Hyosong M., to Alfa-Laval AB. Arrangement for cleaning cutting fluid. 4,325,663, Cl. 409-136.000.
Lee, Kwok-fu: *See*—
  Stevens, Jack F.; Lee, Kwok-fu; Rose, Philip M.; Kreider, David R.; and Lin, Chi-Hung, 4,326,048, Cl. 526-68.000.
Lee, Shaw-Guang: *See*—
  Holleman, William H.; Lee, Shaw-Guang; and Hung, Paul P., 4,326,033, Cl. 435-212.000.
Legeai, Jacky M.: *See*—
  Maillard, Jacques G.; Vovan, Tri; and Legeai, Jacky M., 4,325,954, Cl. 424-251.000.
Lehamnn, Bernd: *See*—
  Kleemann, Axel; Lehamnn, Bernd; and Klenk, Herbert, 4,326,056, Cl. 544-182.000.
Leitmann, William J., to Hobson Bros., Inc. Electrical connector. 4,326,096, Cl. 174-84.00R.
Leitner, Lutz: *See*—
  Biermann, Hans-Peter; Steinberger, Helmut; Botta, Artur; Naumann, Rolf; Leitner, Lutz; and Heine, Heinrich, 4,325,739, Cl. 106-290.000.
Lejbolle Maskinfabrik APS: *See*—
  Larsen, Poul; and Jochumsen, Hans B., 4,325,192, Cl. 34-80.000.
Lemon, Ronald. Auxiliary brake for tractor-trailer rig. 4,325,465, Cl. 188-4.00R.
Lenhart, Richard; Kostner, Armin; Gerigk, Gunter; and Bittner, Klaus-Jurgen, to Hoechst Aktiengesellschaft. Supporting sheath for a longitudinally shirred packaging tube. 4,325,413, Cl. 138-109.000.
Lenver Products Limited: *See*—
  Kirkpatrick, Maurice, 4,325,455, Cl. 181-148.000.
Leo Pharmaceutical Products Ltd. A/S (Lovens Kemiske Fabrik Produktionsaktieselskab): *See*—
  Godtfredsen, Wagn O.; and von Daehne, Welf, 4,325,960, Cl. 424-270.000.
Leon, Gonzalo S.; Fraize, John E.; and Fortier, Richard C., to Cabot Corporation. Apparatus for densifying powders of sub-micron particle size. 4,325,686, Cl. 425-371.000.
Leonardo, Ignazio, to Diamond Communication Products, Inc. Ground clamp for grounding coaxial cable. 4,325,598, Cl. 339-14.00L.
Lepselter, Martin P., to Bell Telephone Laboratories, Incorporated. High capacity etching process. 4,325,778, Cl. 156-643.000.
Lermann, Peter: *See*—
  Ungnadner, Peter; Blockinger, Peter; Winkler, Friedrich; and Lermann, Peter, 4,325,523, Cl. 242-205.000.
Leuchtenberger, Wolfgang: *See*—
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Lever Brothers Company: *See*—
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  Duggleby, Peter M.; Kueter, Bernhard; Morris, Ronald M.; Poeselt, Horst; Rabitsch, Hermann; and Scowen, Reginald V., 4,325,829, Cl. 252-109.000.
  Jones, Keith; McDonnell, Francis R. M.; Morgan, Stuart N.; and Thornthwaite, David W., 4,325,883, Cl. 260-423.000.
  Postlethwaite, Dennis, 4,325,828, Cl. 252-102.000.
  Rek, Johannes H. M.; and Holemans, Pieter M. J., 4,325,980, Cl. 426-804.000.
Levy, Allan, to Siemens Corporation. High power and/or high voltage switching operational amplifier. 4,326,170, Cl. 330-10.000.

Lewis, Derek C. Method of producing ammonia. 4,325,931, Cl. 423-363.000.
Lewis, Robert R.; and Graham, Donald C., to Westinghouse Electric Corp. Regenerative braking control for a transit vehicle. 4,326,154, Cl. 318-376.000.
Lewis, Sheldon N.; Miller, George A.; and Law, Andrew B., to Rohm and Haas Company. Seed treatment with 3-isothiazolones. 4,325,201, Cl. 47-57.600.
LGZ Landis & Gyr Zug AG: *See*—
  Meisser, Claudio; Strasser, Hans; and Lechner, Hubert, 4,325,262, Cl. 73-861.280.
Li, George S.; and Rosen, Irving, to Standard Oil Company, The. Thermoplastic resins containing coumarone-indene resin or polyindene. 4,326,045, Cl. 525-206.000.
Liard, Maurice. Knock-down plant pot. 4,325,202, Cl. 47-73.000.
Libit, Sidney M. Sealing and locking thread system. 4,325,487, Cl. 215-330.000.
Licentia Patent-Verwaltungs-G.m.b.H.: *See*—
  Dahlberg, Reinhard, 4,326,188, Cl. 338-32.00S.
  Minner, Willy; Rodenheber, Rainer; and Reitz, Erhard, 4,326,106, Cl. 179-81.00B.
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  Kulesza, Ralph J.; Breslow, Jeffrey D.; Morrison, Howard J.; Licitis, Gunars, Jr.; and Harper, Rex M., 4,325,551, Cl. 273-110.000.
Liepmann, Hans: *See*—
  Zeugner, Horst; Roemer, Dietmar; Liepmann, Hans; and Milkowski, Wolfgang, 4,325,957, Cl. 424-263.000.
Lieske, Edgar: *See*—
  Konrad, Gonther; and Lieske, Edgar, 4,325,704, Cl. 8-407.000.
Lim, John; and Brady, Michael, to Filtrol Corporation. Zeolite catalysts and method of producing the same. 4,325,845, Cl. 252-455.00Z.
Lim, John C.; Humphries, Adrian P.; and Stamires, Dennis M., to Filtrol Corporation. Use of additional alumina for extra zeolite stability in FCC catalyst. 4,325,847, Cl. 252-455.00Z.
Lin, Chi-Hung: *See*—
  Stevens, Jack F.; Lee, Kwok-fu; Rose, Philip M.; Kreider, David R.; and Lin, Chi-Hung, 4,326,048, Cl. 526-68.000.
Lincoln, Frank H.: *See*—
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Lindell, James W.; and Barnett, Arthur F. Reinforcing arrangement for improving the strength and durability of a firearm holster. 4,325,506, Cl. 224-243.000.
Lindon, John A.; and Malin, Arthur. Mineralized drinking water and method of making same. 4,325,975, Cl. 426-66.000.
Lingner and Fischer GmbH: *See*—
  Dickmann, Heinz H.; Hechenberger, Dieter; and Krattner, Richard, 4,325,855, Cl. 524-219.000.
Lipke, Donald L.: *See*—
  McNair, Willie L.; Lipke, Donald L.; Van Wambeck, Stanley H.; and Huelsman, Conrad J., 4,326,236, Cl. 361-170.000.
Lipp, Alfred: *See*—
  Kriegesmann, Jochen; Lipp, Alfred; and Reinmuth, Klaus, 4,326,039, Cl. 501-90.000.
Lisi, John: *See*—
  Edwards, Ralston G.; Goffredi, Albert S.; Lisi, John; and Murphy, Gregory, 4,325,726, Cl. 65-298.000.
Littelfuse, Inc.: *See*—
  Clay, Murray G., 4,326,186, Cl. 337-407.000.
Livemore, Gerald S. V. Mixing chamber in combination with a dust cyclone separator. 4,325,716, Cl. 55-265.000.
Livernois, John, to Canada Cycle and Motor Company Limited. Uniforms for ice hockey players. 4,325,148, Cl. 2-2.000.
Livne, Avinoam: *See*—
  Trop, Moshe; and Livne, Avinoam, 4,325,979, Cl. 426-570.000.
Ljungstrom, Olle. Wind turbine of cross-flow type. 4,325,674, Cl. 416-19.000.
Lockheed Missiles & Space Company, Inc.: *See*—
  Spilker, James J., Jr.; and Ramsay, William R., 4,326,292, Cl. 455-27.000.
Loeliger, Peter, to Hoffmann-La Roche Inc. Stilbene derivatives. 4,326,055, Cl. 542-429.000.
Lofquist, Robert A., to Allied Chemical Corporation. Method to reduce pressure drop in polyamide process piping. 4,325,397, Cl. 137-13.000.
Lohse, Friedrich: *See*—
  Stockinger, Friedrich; Eldin, Sameer H.; and Lohse, Friedrich, 4,326,069, Cl. 560-169.000.
Lombardo, Igino; Barry, Donald E.; and Hansen, W. Peter, to Ortho Diagnostics, Inc. Method for detecting and controlling flow rates of the droplet forming stream of an electrostatic particle sorting apparatus. 4,325,483, Cl. 209-3.100.
Lorang, Lucien: *See*—
  Schleimer, Francois; Henrion, Romain; Goedert, Ferdinand; Lorang, Lucien; and Baumert, Jean, 4,325,730, Cl. 75-52.000.
Lord Corporation: *See*—
  Sherrick, James W., 4,325,510, Cl. 238-341.000.
Lou, Perry W.: *See*—
  Ponder, James E.; Tubbs, Graham S.; Lou, Perry W.; and Farnow, Stephen A., 4,325,169, Cl. 29-571.000.
Louch, James B.; Postman, William; Ward, Thomas A.; and Cole, Willis E., to Badische Corporation. Liquid applicator for textile yarns. 4,325,322, Cl. 118-410.000.
Louderback, Allan L., to Beckman Instruments, Inc. Enzyme reference composition. 4,325,832, Cl. 252-408.000.
Lowe, Alan S.: *See*—
  Wilkinson, Robert S.; and Lowe, Alan S., 4,325,345, Cl. 123-557.000.
Lowe, Edward J., to Albright & Wilson Limited. Rock treatment process. 4,325,928, Cl. 423-320.000.
Lower, Louie H. Sound box for musical instrument. 4,325,279, Cl. 84-275.000.
Lu, Chin H.; and Erhardt, Peter F., to Xerox Corporation. Positive toners containing long chain hydrazinium compounds. 4,326,019, Cl. 430-108.000.
Lucas Industries Limited: *See*—
  Fenne, Ivor; and Andrews, Richard J., 4,325,676, Cl. 417-206.000.
  Mowbray, Dorian F., 4,326,139, Cl. 310-42.000.
  Pickering, John F., 4,325,581, Cl. 303-22.00R.
Lucas, Klaus: *See*—
  Gohler, Peter; Jaschke, Peter; Kretzschmer, Horst; Kuhlbrodt, Claus-Otto; Lucas, Klaus; Neumann, Berthold; Schingnitz, Manfred; Schweigel, Hans-Joachim; Berger, Friedrich; and Konig, Dieter, 4,325,709, Cl. 48-197.00R.
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Lynn, Gary S. Nesting patient transport tables. 4,325,561, Cl. 280-33.99R.
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  Reed, Kenneth J.; and Lythgoe, Alan L., 4,326,005, Cl. 428-201.000.
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  Rees, Werner, 4,325,303, Cl. 101-365.000.
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  Kratky, Jiri; Fort, Ivan; Havel, Petr; Machacek, Vaclav; Masek, Bohuslav; and Hruban, Konstantin, 4,325,642, Cl. 366-137.000.
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  Yamagiwa, Kazuo; and Machida, Yukihiko, 4,326,223, Cl. 360-33.000.
Mack, Michael H. Self-energizing water treatment accessory. 4,325,798, Cl. 210-248.000.
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  Jacobi, Edgar F.; and Madoen, Mark R., 4,326,013, Cl. 429-20.000.
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  Rafter, Patrick M.; and Hitchcock, James E., 4,326,296, Cl. 455-193.000.
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  Donovan, Lawrence P., III; Maguire, Eileen; and Dillard, David A., 4,325,991, Cl. 427-307.000.
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Maier, Horst R.; Krauth, Axel; Pohlmann, Hans-Juergen; Nink, Horst; Brobeck, Helmut; Cropp, Ingo; and Bergmeier, Dieter, to Rosenthal Technik A.G.; and Aktiengesellschaft Kuehnle, Kopp & Kausch. Element and method for connecting ceramic and metallic parts. 4,325,647, Cl. 403-29.000.
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Maille, Michel, to Thomson-Brandt. Low frequency cabinet, in particular for a triphonic audio network. 4,326,099, Cl. 179-1.0GA.
Maletsky, Albert: *See*—
Colon, Herman; and Maletsky, Albert, 4,325,851, Cl. 524-83.000.
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Lindon, John A.; and Malin, Arthur, 4,325,975, Cl. 426-66.000.
Malkin, Howard, to Apex Foot Products Corporation. Orthotic device for the heel of a person's foot. 4,325,380, Cl. 128-581.000.
Mallet, Bernard, to Nadella. Composite bearing having deformable washer. 4,325,593, Cl. 308-163.000.
Mallos, Gene G.; and Bartholomew, Lowell T. Central/remote television monitoring system. 4,326,221, Cl. 358-210.000.
Malpas, Jon H., to Diemoulders Proprietary Limited. Filling-dispensing closure for a bag-like container. 4,325,496, Cl. 222-83.000.
Malpass, Dennis B., to Texas Alkyls, Inc. Organomagnesium complexes. 4,325,840, Cl. 252-431.00R.
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Olmsted, Bruce C., Jr., 4,325,844, Cl. 252-448.000.
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Markley, Theodore J.; Galdun, Daniel J.; Clark, Charles E.; Henderson, Robert G.; and Jencen, Frank W., to Allen-Bradley Company. Terminal with interchangeable application module. 4,326,193, Cl. 340-365.00R?
Marling, Douglas S. Game using air blowers to move object. 4,325,555, Cl. 273-355.000.
Marom, Emanuel, to Hughes Aircraft Company. Electro-optic analog-to-digital converter. 4,325,603, Cl. 350-96.140.
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Martin, Jack T. Bracket mounting. 4,325,528, Cl. 248-217.200.
Martin, John W.: *See*—
Harrow, Alastair D.; and Martin, John W., 4,325,976, Cl. 426-104.000.
Martin, Mack M. Muffler diffuser. 4,325,459, Cl. 181-248.000.
Martin, Patrick H.; and Michaels, Stephen L., to Dow Chemical Company, The. Use of aqueous triethylamine/phosphoric acid salt solutions to extract water and triethylamine from solutions thereof in organic solvents. 4,326,082, Cl. 564-497.000.
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Maruyama, Isamu: *See*—
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Kulesza, Ralph J.; Breslow, Jeffrey D.; Morrison, Howard J.; Licitis, Gunars, Jr.; and Harper, Rex M., 4,325,551, Cl. 273-110.000.
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Schlecht, Martin F.; Kassakian, John G.; Caloggero, Anthony J.; Rhodes, Bruce; Otten, David; and Rasmussen, Neil, 4,326,191, Cl. [illegible]
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Culp, David W.; and Mastell, Dale P., 4,326,102, Cl. 179-2.00C.
Masui, Kiyoshi: *See*—
Sugiura, Takeo; Miyajima, Keiji; Nagatomo, Hideo; and Masui, Kiyoshi, 4,325,981, Cl. 427-7.000.
Matano, Kenji: *See*—
Ogata, Takashi; Gonmori, Makoto; and Matano, Kenji, 4,325,629, Cl. 355-27.000.
Mataya, Karl F.: *See*—
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Ohta, Tokuya; Eida, Tsuyoshi; Yano, Yasuhiro; Matsufuji, Yohji; and Haruta, Masahiro, 4,325,735, Cl. 106-22.000.
Matsui, Seiichi: *See*—
Yamada, Kozo; Ohba, Yasuhiro; and Matsui, Seiichi, 4,325,562, Cl. 280-62.000?
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Kuno, Akira; Matsui, Takeshi; and Shinoda, Yoshio, 4,325,336, Cl. 123-350.000.
Matsumoto, Tadao; and Koizawa, Masaaki, to Kao Soap Co., Ltd. Process for stabilization of sodium percarbonate. 4,325,933, Cl. 423-415.00P.
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Matsushima, Katsumori: *See*—
Sata, Toshio; and Matsushima, Katsumori, 4,326,257, Cl. 364-508.000.
Matsushima, Takeo: *See*—
Otsuka, Fumio; Nabeta, Teiichi; Kojima, Yasufumi; Matsushima, Takeo; Fujioka, Yasuhiro; and Wada, Eiichi, 4,325,426, Cl. 165-2.000.
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Kogure, Takuyo; and Kitagawa, Hidemasa, 4,326,224, Cl. 360-65.000.
Tanaka, Junzo; Ikeda, Nobuo; and Yoshimura, Hirofumi, 4,326,112, Cl. 219-10.55F.
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Okamoto, Takio; Atsumi, Tamisuke; Nakagawa, Yoshio; and Akutsu, Hidezo, 4,326,148, Cl. 315-169.200.
Matsuura, Katsumi: *See*—
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Matthews, Donald P., to Dow Chemical Company, The. Hypoglycemic 4-(((1,3,4 thiadiazolyl)benzoic acids, esters and amides. 4,325,959, Cl. 424-270.000.
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Matthews, Hugh B., to Sperry Corporation. Geothermal irrigation pump. 4,325,681, Cl. 417-379.000.
Mattson, Charles A.; Zink, George M.; and Milliken, Douglas A., to Allegretti & Company. Portable blower-vacuum unit. 4,325,163, Cl. 15-330.000.
Mattuschka, Werner, to Siemens Aktiengesellschaft. Piezoelectric resonators. 4,326,142, Cl. 310-320.000.
Maurer, Fritz; Homeyer, Bernhard; Hammann, Ingeborg; and Behrenz, Wolfgang, to Bayer Aktiengesellschaft. Combating pests with 2-cycloalkyl-pyrimidin-5-yl-(thiono) (thiol)-phosphoric (phosphonic) acid esters and ester-amides. 4,325,948, Cl. 424-200.000.
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Fuchs, Rainer; Maurer, Fritz; Priesnitz, Uwe; Riebel, Hans-Jochem; and Klauke, Erich, 4,326,087, Cl. 568-631.000.
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Quadranti, Marco; Maurer, Willy; and Maag, Kurt, 4,325,728, Cl. 71-90.000.
Mavriks, George: *See*—
Jukes, John A., 4,325,665, Cl. 411-176.000.
May & Baker Limited: *See*—
Caton, Michael P. L.; Coffee, Edward C. J.; and Watkins, Gordon L., 4,325,967, Cl. 424-299.000.
Mayerhoefer, Horst: *See*—
Hinsken, Hans; Mayerhoefer, Horst; Mueller, Wolfgang; and Schneider, Hermann, 4,325,863, Cl. 624-111.000.
McBride, William R.: *See*—
Howard, Paul L.; Tarpley, William B., Jr.; Moulder, George R.; and McBride, William R., 4,325,255, Cl. 73-589.000.
McCombs, Charles A., to Eastman Kodak Company. Process for preparing 21-lower alkoxyoxalylprogesterones. 4,325,878, Cl. 260-397.100.
McCullion, Francis E., Jr., to Cymaticolor Corporation. Method of color printing. 4,325,631, Cl. 355-77.000.
McCulloch, Reginald W.; Morgan, Chester S., Jr.; and Dial, Ralph E., to United States of America, Energy. Electric heater for nuclear fuel rod simulators. 4,326,122, Cl. 219-544.000.
McCullough, Robert B., to Magnuson Computer Systems, Inc. Data processing apparatus with serial and parallel priority. 4,326,250, Cl. 364-200.000.
McDaniel, Max P., to Phillips Petroleum Company. Impregnated second valence chromium compound in supported catalyst. 4,325,839, Cl. 252-430.000.
McDonnell, Francis R. M.: *See*—
Jones, Keith; McDonnell, Francis R. M.; Morgan, Stuart N.; and Thornthwaite, David W., 4,325,883, Cl. 260-423.000.
McDowell, Donald J.: *See*—
Czernik, Daniel E.; and McDowell, Donald J., 4,325,559, Cl. 277-235.00R.
McEdwards, Timothy K. Engine sound simulator. 4,325,199, Cl. 46-232.000?
McFarlin, David J., to United Technologies Corporation. Cryoadsorption pumps having panels with zeolite plates. 4,325,220, Cl. 62-55.500.

McGee, William F.; and Mikhael, Wasfy B., to Northern Telecom Limited. Apparatus for coupling a two-way transmission path to a one-way transmitting path and a one-way receiving path. 4,326,109, Cl. 179-170.0NC.
McGraw-Edison Company: *See*—
Burrage, Lawrence M.; and Guertin, Jacques P., 4,325,734, Cl. 75-225.000.
Heinrichs, Frank W., Jr., 4,326,097, Cl. 174-155.000.
McHugh, James D., to General Electric Company. Low axial stiffness thrust bearing. 4,325,583, Cl. 308-9.000.
McKellin, Wilbur H., to Abbott Laboratories. Process for making haloalkyltrialkoxyphenone. 4,326,083, Cl. 568-322.000.
McLean, John R., to Reynolds Metals Company. Sheet material dispensing mechanism. 4,325,519, Cl. 242-75.410.
McMahon, Thomas A.; and Greene, Peter R. Modular athletic playing surface with tuned compliance. 4,325,546, Cl. 272-3.000.
McNair, Willie L.; Lipke, Donald L.; Van Wambeck, Stanley H.; and Huelsman, Conrad J., to Baylor Company. Control system for an electro-magnetic brake. 4,326,236, Cl. 361-170.000.
McNinney, Richard P., Jr.; and Thompson, Robert E. Blast room floor. 4,325,292, Cl. 98-115.0SB.
McRae, Edwin C. Torque converter mechanism. 4,325,270, Cl. 74-677.000.
Mead Corporation, The: *See*—
Cole, John N.; and Hettel, David A., 4,325,899, Cl. 264-86.000.
Erin, Tim, 4,326,204, Cl. 346-75.000.
Meckler, Milton. Column supported platform and lift with prestressed damping system. 4,325,654, Cl. 405-196.000.
Medway, John G.: *See*—
Blackwood, Rodger; and Medway, John G., 4,325,684, Cl. 425-62.000.
Meiji Seika Kaisha, Ltd.: *See*—
Inouye, Shigeharu; Tsuruoka, Takashi; and Iwamatsu, Katsuyoshi, 4,325,951, Cl. 424-248.520.
Meisser, Claudio; Strasser, Hans; and Lechner, Hubert, to LGZ Landis & Gyr Zug AG. Apparatus for measuring liquid flow. 4,325,262, Cl. 73-861.280.
Memorial Hospital for Cancer and Allied Diseases: *See*—
Miodownik, Saul, 4,325,382, Cl. 128-673.000.
Mena, Walter M.: *See*—
Coulter, Wallace H.; and Mena, Walter M., 4,325,909, Cl. 422-63.000.
Menzel, Gunter, to Siemens Aktiengesellschaft. Method for preparing coarse-crystal or single-crystal metal films. 4,325,776, Cl. 156-610.000.
Menzie, Larry L., to O'Neill, James G. Lock plug for glad hand brake line coupler. 4,325,237, Cl. 70-14.000.
Merck & Co., Inc.: *See*—
Kang, Kenneth S.; Colegrove, George T.; and Veeder, George T., 4,326,052, Cl. 536-1.000.
Kang, Kenneth S.; and Veeder, George T., 4,326,053, Cl. 536-1.000.
Kollonitsch, Janos; and Patchett, Arthur A., 4,325,961, Cl. 424-273.00R.
Merianos, John J.: *See*—
Green, Harold A.; Merianos, John J.; and Petrocci, Alfonso N., 4,325,940, Cl. 424-70.000.
Mermis, Ronald F. Thermodynamic flotation engine. 4,325,216, Cl. 60-496.000?
Merrell Toraude et Compagnie: *See*—
Bey, Philippe; and Jung, Michel, 4,326,071, Cl. 562-574.000.
Merrill, Richard B.; Terman, Lewis M.; and Yee, Yen S., to International Business Machines Corporation. Sequential successive approximation analog-to-digital converter. 4,326,192, Cl. 340-347.0AD.
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Winter, Robert A.; and Steger, David J., 4,325,537, Cl. 254-405.000.
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Kruse, Walter M.; and Meshreki, Makram H., 4,326,072, Cl. 562-587.000.
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Bschorr, Oskar; and Laudien, Eckehard, 4,325,458, Cl. 181-227.000.
Bschorr, Oskar, 4,325,461, Cl. 181-286.000.
Metallgesellschaft Aktiengesellschaft: *See*—
Becker, Paul; Jockel, Heinz; Rudolph, Paul; and Kuhn, Manfred, 4,325,731, Cl. 75-91.000.
Grunewald, Gerhard; and Kriebel, Manfred, 4,325,782, Cl. 159-47.00R.
Metcalf, Brian W.; and Adams, Jerry L., to Richardson-Merrell Inc. Production of intermediates for enzyme inhibitors. 4,325,877, Cl. 260-349.000.
Metrailer, William J., to Exxon Research & Engineering Co. Catalytic fluid coking and gasification process. 4,325,815, Cl. 208-127.000.
Metros, Gus: *See*—
Peters, James K., II; and Metros, Gus, 4,325,701, Cl. 440-113.000.
Meyer, Peter J. N.; and Nieuwkamp, Johannes G. M., to Stamicarbon, B.V. Process for the preparation of a 2-pyrrolidone. 4,325,872, Cl. 260-326.5FN.
Michael, Vesta F., to Fiber Glass Systems, Inc. Method for the formation of corrosion-resistant bodies and apparatus for forming the same. 4,325,766, Cl. 156-171.000.
Michaels, Stephen L.: *See*—
Martin, Patrick H.; and Michaels, Stephen L., 4,326,082, Cl. 564-497.000.
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Dieter, Norman H., Jr.; and Peterhoff, Edward, 4,326,285, Cl. 369-137.000.
Micro Air Systems, Inc.: *See*—
Reams, Donald J., 4,325,394, Cl. 134-141.000.
Microphase Corporation: *See*—
Ferri, Romano I., 4,326,180, Cl. 333-246.000.
Mikhael, Wasfy B.: *See*—
McGee, William F.; and Mikhael, Wasfy B., 4,326,109, Cl. 179-170.0NC.
Milevski, Tome. Paint repellent composition and method. 4,325,745, Cl. 134-4.000.
Milkowski, Wolfgang: *See*—
Zeugner, Horst; Roemer, Dietmar; Liepmann, Hans; and Milkowski, Wolfgang, 4,325,957, Cl. 424-263.000.
Miller, George A.: *See*—
Lewis, Sheldon N.; Miller, George A.; and Law, Andrew B., 4,325,201, Cl. 47-57.600.
Miller, Gordon G., Jr., to Gordon G. Miller & Associates, Inc. Battery cleaning apparatus. 4,325,415, Cl. 141-1.000.
Miller, John H. Pet litter separator. 4,325,822, Cl. 209-251.000.
Miller, Robert C.: *See*—
Burmeister, Robert J.; Heckman, Russell W.; and Miller, Robert C., 4,325,762, Cl. 156-86.000.
Miller, Robert J.: *See*—
Bier, Kenneth C.; and Miller, Robert J., 4,325,339, Cl. 123-440.000.
Miller, Stephen J., to Chevron Research Company. Lubricating oil stabilization. 4,325,805, Cl. 208-58.000.
Miller, Thomas G.; and Rogers, Billie O., to United States of America, Army. Power measuring device for pulsed lasers. 4,325,252, Cl. 73-190.0EW.
Milligan, Edward J., to Western Electric Company, Inc. Heat treatment for high chromium high carbon stainless steel. 4,325,758, Cl. 148-135.000.
Milliken, Douglas A.: *See*—
Mattson, Charles A.; Zink, George M.; and Milliken, Douglas A., 4,325,163, Cl. 15-330.000.
Milner, Nathan. Fastener and method of fastening. 4,325,175, Cl. 19-444.000?
Mingers, Peter F.: *See*—
Verboom, Hermann; Mingers, Peter F.; and Appenzeller, Valentin, 4,325,170, Cl. 29-116.0AD.
Mink, Robert I.: *See*—
Epstein, Ronald A.; and Mink, Robert I., 4,325,836, Cl. 252-419.00B?
Minner, Willy; Rodenheber, Rainer; and Reitz, Erhard, to Licentia Patent-Verwaltungs GmbH; and Telefonbau und Normalzeit GmbH. Telephone amplifier circuit. 4,326,106, Cl. 179-81.00B.
Minnesota Mining & Manufacturing Company: *See*—
Achten, David J.; and Fritts, Robert W., 4,325,197, Cl. 40-610.000.
Rasmussen, Jerald K., 4,326,049, Cl. 526-91.000.
Minolta Camera Kabushiki Kaisha: *See*—
Sahara, Masayoshi; and Taniguchi, Nobuyuki, 4,325,617, Cl. [illegible]
Yamada, Seiji, 4,325,615, Cl. 354-24.000.
Minorikawa, Hitoshi: *See*—
Takahashi, Minoru; Minorikawa, Hitoshi; Iguchi, Masaru; and Kashiwazaki, Seiichi, 4,325,260, Cl. 73-726.000.
Miodownik, Saul, to Memorial Hospital for Cancer and Allied Diseases. Process and apparatus for the real time adaptive filtering of catheter pressure measurements. 4,325,382, Cl. 128-673.000.
Mishima, Yasuhiro: *See*—
Umemoto, Yoshiro; Mishima, Yasuhiro; Takao, Shuichiro; Sawada, Kazunori; and Kobayashi, Nobuo, 4,325,574, Cl. 293-120.000.
Miszak, Pawel, to Sulzer Brothers Limited. Vapor generator having a pair of combustion chambers. 4,325,328, Cl. 122-6.00A.
Mita Industrial Co., Ltd.: *See*—
Murata, Naoaki; Yoshioka, Masahiro; Hayashi, Kiyoshi; and Tobi, Yasusuke, 4,325,626, Cl. 355-3.0DR.
Mitchell, Samuel S.; and Vijlee, Abbas F., to Schroeder Brothers Corporation. Unhooking dirty filter alarm. 4,325,824, Cl. 210-90.000.
Mitel Corporation: *See*—
Vaughan, Brian J. N.; and Pascas, Brian J., 4,326,105, Cl. 179-[illegible]
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Kobayashi, Hiroo, 4,326,150, Cl. 315-325.000.
Mitsubishi Petrochemical Co., Ltd.: *See*—
Yukawa, Hideaki; Nara, Terukazu; and Takayama, Yoshihiro, 4,326,029, Cl. 435-109.000.
Mitsuda, Yutaka: *See*—
Tanaka, Hideyuki; Moriya, Yoshihisa; Saito, Kiyotaka; Hori, Shozo; and Mitsuda, Yutaka, 4,325,838, Cl. 252-429.00B.
Miyajima, Keiji: *See*—
Sugiura, Takeo; Miyajima, Keiji; Nagatomo, Hideo; and Masui, Kiyoshi, 4,325,981, Cl. 427-7.000.
Miyajima, Mikio; Yanata, Kohsaki; Sasaki, Fujio; Hori, Fumihisa; and Fujimoto, Hideki, to Alps Electric Co., Ltd. Inked ribbon cartridge having a guide plate. 4,325,645, Cl. 400-196.100.
Miyaka, Haruhisa; Yamashita, Masami; and Asawa, Tatsuro, to Asahi Glass Company, Ltd. Process for producing modified polytetrafluoroethylene. 4,326,046, Cl. 525-276.000.
Miyake, Osamu: *See*—
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Miyata, Junji: *See*—
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Miyazawa, Kiyoshi, to Sankyo Electric Company Limited. Scroll-type compressor with rotation prevention and anti-deflection means. 4,325,683, Cl. 418-55.000.
Miyo, Shinichi: *See—*
Fujiwara, Hiroshi; Kobayashi, Kazutoshi; and Miyo, Shinichi, 4,325,338, Cl. 123-407.000.
Miyoshi, Tadahiko; Yamazaki, Takeo; Maeda, Kunihiro; and Takahashi, Ken, to Hitachi, Ltd. Voltage non-linear resistor. 4,326,187, Cl. 338-21.000.
Mizote, Hiroyuki: *See—*
Ohashi, Naohito; Mizote, Hiroyuki; Maruyama, Isamu; Nagata, Shoji; Ishizumi, Kikuo; and Katsube, Junki, 4,325,886, Cl. 260-455.00R.
Mizuhara, Howard; and Cox, Ronald W., to GTE Products Corporation. Flexible brazing alloy tape and method of making same. 4,325,754, Cl. 148-22.000.
Mizukami, Norio: *See—*
Nakatsubo, Toshio; Ohyoshi, Kaoru; Nishikawa, Masaji; Sato, Eiichi; Mizukami, Norio; Shimizu, Akira; Yanagisawa, Kazuhisa; Oinoue, Kenichi; Tsuda, Naotsune; and Suzuki, Yoshiro, 4,325,625, Cl. 355-3.0SC.
Mlynar, Vladimir: *See—*
Winkler, Jiri; Kondr, Milan; Jelinek, Richard; Hlousek, Jaroslav; Krtek, Jan; Cibulka, Josef; Mlynar, Vladimir; and Simacek, Josef, 4,326,246, Cl. 363-138.000.
Mobil Oil Corporation: *See—*
Gross, Benjamin, 4,325,814, Cl. 208-120.000.
Moeller, Horst. Delabeler. 4,325,775, Cl. 156-584.000.
Mogi, Takao, to Sony Corporation. Television receiver. 4,326,220, Cl. 358-191.100.
Mohring, Edgar; Muller, Hanns P.; and Wagner, Kuno, to Bayer Aktiengesellschaft. Process for the preparaton of low molecular weight polyhydroxyl compounds. 4,326,086, Cl. 568-388.000.
Mohtai, Tsuneaki: *See—*
Takaoka, Michio; Mohtai, Tsuneaki; Yoshida, Syotaroh; and Watanabe, Kazuo, 4,325,750, Cl. 148-6.14R.
Mokris, Michael M., to Pulsonics Corporation. Storage bin activator device and method for restoring bulk material free flow. 4,325,495, Cl. 222-1.000.
Molecular Energy Corp.: *See—*
Houser, Clifford F., 4,325,355, Cl. 126-263.000.
Molins Limited: *See—*
Bolt, Reginald C.; Dowding, John G.; and Williams, Robert E., 4,325,250, Cl. 73-38.000.
Moniot, Jerome L.; Fox, Rita T.; and Sowinski, Francis A., to E. R. Squibb & Sons, Inc. Method for preparing the optically active isomer of 2,2-[[5-[3-[(1,1-dimethylethyl)amino]-2-hydroxypropoxy]-1,2,3,4-tetrahydro-2,3-naphthalene-diyl]bis(oxy)]bis[N,N-dipropylacetamide]. 4,326,076, Cl. 564-156.000.
Monsanto Company: *See—*
Baer, Massimo, 4,325,865, Cl. 523-205.000.
Cohen, Saul M.; and LeBlanc, John R., 4,326,057, Cl. 544-221.000.
Yu, Jing-peir; and Bromely, James E., 4,325,765, Cl. 156-167.000.
Montedison S.p.A.: *See—*
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Moore, Robert C., to Tropel, Inc. Phase modulation of grazing incidence interferometer. 4,325,637, Cl. 356-359.000.
Moreland, Gerald W., to Hydro Air Industries, Inc. Air supply system for spas. 4,325,149, Cl. 4-488.000.
Morgan, Chester S., Jr.: *See—*
McCulloch, Reginald W.; Morgan, Chester S., Jr.; and Dial, Ralph E., 4,326,122, Cl. 219-544.000.
Morgan, Stuart N.: *See—*
Jones, Keith; McDonnell, Francis R. M.; Morgan, Stuart N.; and Thornthwaite, David W., 4,325,883, Cl. 260-423.000.
Mori, Yoshikatsu, to Sumitomo Electric Industries, Ltd. Cutting tool. 4,325,664, Cl. 409-234.000.
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Morris, David G., to Institut Cerac S.A. Method of producing large objects from rapidly quenched non-equilibrium powders. 4,325,895, Cl. 264-23.000.
Morris, Ronald M.: *See—*
Duggleby, Peter M.; Kueter, Bernhard; Morris, Ronald M.; Poeselt, Horst; Rabitsch, Hermann; and Scowen, Reginald V., 4,325,829, Cl. 252-109.000.
Morrison, Andrew I., to Knoll International, Inc. Furniture systems. 4,325,597, Cl. 312-258.000.
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Morrison-Knudsen Co., Inc.: *See—*
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Morton, David C.: *See—*
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Motonami, Masanao: *See—*
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Motorola, Inc.: *See—*
Chamberlin, George P., 4,326,247, Cl. 364-200.000.
Cohen, Yitzhak; Brandman, Yigal; and Eckstien, Zvi, 4,326,264, Cl. 364-900.000.
Jarrett, Robert B.; and Pace, Wilson D., 4,326,135, Cl. 307-355.000.
Shaw, Mark L.; and Freimark, Ronald J., 4,326,171, Cl. 330-256.000.
Moulder, George R.: *See—*
Howard, Paul L.; Tarpley, William B., Jr.; Moulder, George R.; and McBride, William R., 4,325,255, Cl. 73-589.000.
Moussette, Robert A. Pneumatic headset. 4,325,453, Cl. 181-135.000.
Mowbray, Dorian F., to Lucas Industries Limited. Electromagnetic devices. 4,326,139, Cl. 310-42.000.
Moyse, Clarence L.: *See—*
Moyse, Richard J.; and Moyse, Clarence L., 4,325,769, Cl. 156-217.000.
Moyse, Richard J.; and Moyse, Clarence L. Method of making bellows. 4,325,769, Cl. 156-217.000.
MSI Data Corporation: *See—*
Culp, David W.; and Mastell, Dale P., 4,326,102, Cl. 179-2.00C.
Muck, Gerhard; and Peter, Kurt. Cartridge load for revolvers. 4,325,198, Cl. 42-89.000.
Mueller, Walter B., to W. R. Grace & Co. Processing and product enhancement additives for polyolefin film. 4,325,850, Cl. 524-228.000.
Mueller, Wolfgang: *See—*
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Muhl, Andrew H., Sr. Temperature control system for an electrode type liquid heater. 4,326,120, Cl. 219-286.000.
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Muller, Hanns P.: *See—*
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Umezawa, Hamao; Takita, Tomohisa; Fujii, Akio; Muraoka, Yasuhiko; and Kunishima, Mamoru, 4,326,054, Cl. 536-17.00R.
Murata, Naoaki; Yoshioka, Masahiro; Hayashi, Kiyoshi; and Tohi, Yasusuke, to Mita Industrial Co., Ltd. Electrostatic copying apparatus. 4,325,626, Cl. 355-3.0DR.
Murata, Shinji: *See—*
Torigai, Akiyoshi; Morikawa, Teruo; Nakaoka, Masaki; Murata, Shinji; and Sone, Yoshiaki, 4,325,628, Cl. 355-15.000.
Murdock, Robert E., to Kearney-National Inc. Electric cutout. 4,326,184, Cl. 337-168.000.
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Muzzell, Stephen E., to Gulf & Western Manufacturing Company. Seat construction. 4,325,542, Cl. 267-85.000.
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Nashiwa, Hajime; Kawai, Toshihiko; Takeyama, Muneyoshi; Yamaguchi, Youzi; Kobayashi, Tsuneaki; and Nagahata, Tsutomu, 4,325,748, Cl. 148-2.000.
Nagai, Yuji: *See—*
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Nagano, Masashi, to Shimano Industrial Company Limited. Wire guide for a bicycle. 4,325,269, Cl. 74-501.00R.
Nagata, Shoji: *See—*
Ohashi, Naohito; Mizote, Hiroyuki; Maruyama, Isamu; Nagata, Shoji; Ishizumi, Kikuo; and Katsube, Junki, 4,325,886, Cl. 260-455.00R.
Nagatomo, Hideo: *See—*
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Nakagawa, Taizo; Watanabe, Yutaka; Ohmori, Kaoru; Koike, Kengo; and Tejima, Iwao, to Nippon Kayaku Kabushiki Kaisha. Benzenethiocarbamate derivatives. 4,325,968, Cl. 424-300.000.
Nakagawa, Yoshio: *See—*
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Nakamura, Teruo; and Otani, Masami, to Nissan Motor Company, Limited; and Diesel Kiki Company, Limited. Device responsive to unusual temperature change in refrigerant compressor. 4,325,222, Cl. 62-126.000.
Nakaoka, Masaki: *See—*
Torigai, Akiyoshi; Morikawa, Teruo; Nakaoka, Masaki; Murata, Shinji; and Sone, Yoshiaki, 4,325,628, Cl. 355-15.000.
Nakatani, Hiroshi; Ishida, Masahide; and Yamamoto, Hachizou, to Sharp Kabushiki Kaisha. Error alarm system in a combined electronic weighing scale and electronic cash register. 4,325,441, Cl. 177-25.000.
Nakatsubo, Toshio; Ohyoshi, Kaoru; Nishikawa, Masaji; Sato, Eiichi; Mizukami, Norio; Shimizu, Akira; Yanagisawa, Kazuhisa; Oinoue, Kenichi; Tsuda, Naotsune; and Suzuki, Yoshiro, to Olympus Optical Company Limited. Electrophotographing method. 4,325,625, Cl. 355-3.0SC.
Nakayama, Takeshi; Nishimoto, Takehiko; Kawashima, Machio; Takahashi, Kozi; and Osakabe, Kuniharu, to Hitachi, Ltd. Slotted shadow mask having apertures spaced to minimize moire. 4,326,147, Cl. 313-403.000.
Nalamwar, Ashok L.: *See—*
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Yukawa, Hideaki; Nara, Terukazu; and Takayama, Yoshihiro, 4,326,029, Cl. 435-109.000.
Narayan, Thirumurti; and Patton, John T., Jr., to BASF Wyandotte Corporation. Process for the preparation of polyisocyanurate dispersions modified with halogenated alcohols and compositions prepared therefrom. 4,326,043, Cl. 521-137.000.
Narumi China Corporation: *See—*
Yamaguchi, Teruo, 4,326,095, Cl. 174-52.0FP.
Nashiwa, Hajime; Kawai, Toshihiko; Takeyama, Muneyoshi; Yamaguchi, Youzi; Kobayashi, Tsuneaki; and Nagahata, Tsutomu, to Sumitomo Metal Industries, Ltd. Method for producing steel plate having excellent resistance to hydrogen induced cracking. 4,325,748, Cl. 148-2.000.
Nasuno, Toshihiro: *See—*
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Natarajan, Sesha I.; Ondetti, Miguel A.; Lan, Shih-jung; and Wong, Keith K., to E. R. Squibb & Sons, Inc. Mixed disulfides. 4,325,943, Cl. 424-177.000.
Natarajan, Sesha I.; Ondetti, Miguel A.; Lan, Shih-jung; and Wong, Keith K., to E. R. Squibb & Sons, Inc. Mixed disulfides. 4,325,944, Cl. 424-177.000.
Natarajan, Sesha I.; Ondetti, Miguel A.; Lan, Shih-jung; and Wong, Keith K., to E. R. Squibb & Sons, Inc. Mixed disulfides. 4,325,945, Cl. 424-177.000.
National Distillers & Chemical Corp.: *See—*
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National Reseach Development Corporation: *See—*
Teasdale, Raymond G., 4,325,653, Cl. 405-68.000.
National Research Development Corporation: *See—*
Shanks, Ian A., 4,326,279, Cl. 368-240.000.
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Trueblood, Richard K., 4,326,214, Cl. 357-74.000.
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Biermann, Hans-Peter; Steinberger, Helmut; Botta, Artur; Naumann, Rolf; Leitner, Lutz; and Heine, Heinrich, 4,325,739, Cl. 106-290.000.
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de la Guardia, Mario F., 4,326,258, Cl. 364-515.000.
Neal, Edwin S. Overhead glass stemware rack. 4,325,486, Cl. 211-71.000.
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Bar, Alfredo, 4,325,680, Cl. 417-569.000.
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Nestor Associates: *See—*
Cooper, Leon N.; Elbaum, Charles; and Reilly, Douglas L., 4,326,259, Cl. 364-715.000.
Nestor, Charles R., to General Motors Corporation. Pigtail assembly. 4,325,600, Cl. 339-116.00C.
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Jandeska, William F., Jr.; and Netherton, Charles F., 4,325,757, Cl. 148-103.000.
Neti, Radhakrishna M.: *See—*
Sawa, Kenneth B.; and Neti, Radhakrishna M., 4,325,912, Cl. 422-95.000.
Neufeld, Jacob. Evaluation of the interaction with radiant energy of substances traversed by a bore hole. 4,326,129, Cl. 250-262.000.
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Suling, Carlhans; Korte, Siegfried; and Neukam, Theo, 4,326,051, Cl. 528-386.000.
Neumann, Berthold: *See—*
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Neuzil, Richard W., to UOP Inc. Process for the separation of meta-xylene. 4,326,092, Cl. 585-828.000.
Nevyas, Herbert J. Instrument for inserting and removing intraocular lens. 4,325,375, Cl. 128-321.000.
New York Institute of Technology: *See—*
Glenn, William E., 4,325,381, Cl. 128-660.000.
Newman, Raymond A., to NP Industries, Inc. Digital phase locked loop frequency control system. 4,326,173, Cl. 331-1.00A.
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Oda, Isao; and Kaneno, Masayuki, 4,326,038, Cl. 501-41.000.
NGK Spark Plug Co., Ltd.: *See—*
Tanaka, Hiroshi; and Yamamoto, Yoshihiro, 4,325,710, Cl. 313-209.000.
Niem, Wolfgang, to Union Special G.m.b.H. Thread control mechanism for sewing machines. 4,325,314, Cl. 112-199.000.
Niemann, Ralph C.; Mataya, Karl F.; and Gonczy, John D., to United States of America, Energy. Cryogenic structural support. 4,325,530, Cl. 248-317.000.
Nieuwkamp, Johannes G. M.: *See—*
Meyer, Peter J. N.; and Nieuwkamp, Johannes G. M., 4,325,872, Cl. 260-326.3PN.
Nikolic, Branko: *See—*
De Bliquy, Michael C.; and Nikolic, Branko, 4,325,648, Cl. 403-218.000.
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Maier, Horst R.; Krauth, Axel; Pohlmann, Hans-Juergen; Nink, Horst; Brobeck, Helmut; Cropp, Ingo; and Bergmeier, Dieter, 4,325,647, Cl. 403-29.000.
Nippon Electric Co., Ltd.: *See—*
Ohtani, Tetsuro, 4,326,177, Cl. 372-92.000.
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Utsumi, Kazuaki; Yonezawa, Masatomo; and Ohno, Tomeji, 4,325,763, Cl. 156-89.000.
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Nippon Gakki Seizo Kabushiki Kaisha: *See—*
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Nippon Kayaku Kabushiki Kaisha: *See—*
Nakagawa, Taizo; Watanabe, Yutaka; Ohmori, Kaoru; Koike, Kengo; and Tejima, Iwao, 4,325,968, Cl. 424-300.000.
Nippon Kokan Kabushiki Kaisha: *See—*
Adaniya, Takeshi; and Ohmura, Masaru, 4,325,790, Cl. 204-27.000.
Suda, Toyoharu; Tayama, Katsuhiko; Araki, Kenji; Kurata, Masayuki; and Yamana, Hideo, 4,325,752, Cl. 148-12.100.
Nippon Mining Co., Ltd.: *See—*
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Nippon Soken, Inc.: *See—*
Igashira, Toshihiko; Umeda, Naoki; and Abe, Seiko, 4,325,344, Cl. 123-549.000.
Kuno, Akira; Matsui, Takeshi; and Shinoda, Yoshio, 4,325,336, Cl. 123-350.000.
Nippon Steel Corporation: *See—*
Seki, Masahiko; and Io, Yukito, 4,325,540, Cl. 266-243.000.
Nippon Telegraph & Telephone Public Corporation: *See—*
Okamoto, Yoshiharu; Horikawa, Izumi; and Komaki, Shozo, 4,326,294, Cl. 455-139.000.
Nippondenso Co., Ltd.: *See—*
Kiucihi, Hideo; Ogawa, Oyuki; and Kobayashi, Nobuyuki, 4,325,893, Cl. 261-50.00A.
Otsuka, Fumio; Nabeta, Teiichi; Kojima, Yasufumi; Matsushima, Takeo; Fujioka, Yasuhiro; and Wada, Eiichi, 4,325,426, Cl. 165-2.000.
Nishida, Katsutoshi; Okada, Syoji; Ando, Akio; and Sakai, Masato, to Tokyo Shibaura Denki Kabushiki Kaisha. Prechamber cup for an internal combustion engine. 4,325,334, Cl. 123-270.000.
Nishida, Kouji: *See—*
Kawai, Taneichi; Nishida, Kouji; Miyake, Osamu; and Hamajima, Shigemitsu, 4,325,313, Cl. 112-103.000.
Nishikawa, Masaji: *See—*
Nakatsubo, Toshio; Ohyoshi, Kaoru; Nishikawa, Masaji; Sato, Eiichi; Mizukami, Norio; Shimizu, Akira; Yanagisawa, Kazuhisa; Oinoue, Kenichi; Tsuda, Naotsune; and Suzuki, Yoshiro, 4,325,625, Cl. 355-3.0SC.
Nishikubo, Yasuhiko, to Citizen Watch Co., Ltd. Electronic timepiece. 4,326,277, Cl. 368-86.000.
Nishimoto, Takehiko: *See—*
Nakayama, Takeshi; Nishimoto, Takehiko; Kawashima, Machio; Takahashi, Kozi; and Osakabe, Kuniharu, 4,326,147, Cl. 313-403.000.
Nishimura, Yoshiharu: *See—*
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Nishiwaki, Susumu; and Satoh, Toshikazu, to Tokyo Shibaura Denki Kabushiki Kaisha. Lightning arrester. 4,326,232, Cl. 361-127.000.
Nishiwaki, Susumu: *See—*
Yanabu, Satoru; Nishiwaki, Susumu; and Satoh, Toshikazu, 4,326,233, Cl. 361-127.000.
Nishizawa, Jun-ichi; and Yoshida, Takashi, to Nippon Gakki Seizo Kabushiki Kaisha. Static induction transistor. 4,326,209, Cl. 357-22.000.

Nissan Motor Company, Limited: *See*—
Iwanaga, Kazuyoshi; Sugano, Kazuhiko; and Ohtsuka, Kunio, 4,325,271, Cl. 74-869.000.
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Kawamoto, Tamio, 4,325,557, Cl. 277-65.000.
Kuboto, Hitoshi; and Shimizu, Kazuaki, 4,325,582, Cl. 303-24.00F.
Nakamura, Teruo; and Otani, Masami, 4,325,222, Cl. 62-126.000.
Suda, Hiroharu; Hideshima, Keiji; Asada, Kazuyoshi; Takaki, Masaoki; Yasuda, Isao; and Kamei, Atsutaro, 4,326,207, Cl. 164-900.000.
Yamaguchi, Hiroshi, 4,325,347, Cl. 123-571.000.
Nobles, Elon J., to Econo-Therm Energy Systems Corporation. Means and method for sealing heat exchanger walls. 4,325,171, Cl. 29-157.30C.
Nomura, Toshio: *See*—
Date, Tasuku; and Nomura, Toshio, 4,325,894, Cl. 261-66.000.
Nonnenmacher, Gerhard, to Robert Bosch GmbH. Arrangement for the regulation of the output and for limiting the output fluid pressure of an adjustable pump. 4,325,677, Cl. 417-218.000.
Norlin Industries, Inc.: *See*—
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Northern Telecom Limited: *See*—
Hope nee Swiecicki, Tomasz S., 4,325,212, Cl. 57-15.000.
McGee, William F.; and Mikhael, Wasfy B., 4,326,109, Cl. 179-170.0NC.
Zuber, Bretislav P., 4,325,214, Cl. 57-293.000.
Norton Company: *See*—
Kenshol, Kenneth W., 4,325,512, Cl. 239-84.000.
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Newman, Raymond A., 4,326,173, Cl. 331-1.00A.
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Wallace, Richard B., 4,325,985, Cl. 427-54.100.
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Papay, Andrew G.; and O'Brien, Joseph P., 4,325,827, Cl. 252-51.50A.
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Suzuki, Ichiro; Motonami, Masanao; and Ogawa, Hisashi, 4,325,569, Cl. 280-804.000.
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Kiucihi, Hideo; Ogawa, Oyuki; and Kobayashi, Nobuyuki, 4,325,893, Cl. 261-50.00A.
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Nakagawa, Taizo; Watanabe, Yutaka; Ohmori, Kaoru; Koike, Kengo; and Tejima, Iwao, 4,325,968, Cl. 424-300.000.
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Utsumi, Kazuaki; Yonezawa, Masatomo; and Ohno, Tomeji, 4,325,763, Cl. 156-89.000.
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Okada, Eisaburo; and Sakagami, Koji, to Kao Soap Co., Ltd. Process for preparation of AE concrete or AE mortar. 4,325,736, Cl. 106-81.000.
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Okamoto, Takio; Atsumi, Tamisuke; Nakagawa, Yoshio; and Akutsu, Hidezo, to Matsushita Electronics Corporation. Gas discharge display device. 4,326,148, Cl. 315-169.200.
Okamoto, Yoshiharu; Horikawa, Izumi; and Komaki, Shozo, to Nippon Telegraph & Telephone Public Corporation. Space diversity reception system having compensation means of multipath effect. 4,326,294, Cl. 455-139.000.
Oki Electric Industry Co., Ltd.: *See*—
Sasaki, Masao, 4,325,646, Cl. 400-196.100.
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Suzuki, Hiromichi; and Okikawa, Susumu, 4,326,215, Cl. 357-81.000.
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Kojima, Takashi; Okino, Eizo; and Ishimoto, Ryozo, 4,326,062, Cl. 546-166.000.
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Blaser, Reinhard; Olach, Klaus; and Scheldach, Max, 4,325,384, Cl. 128-696.000.
Olesch, Reinhard G.: *See*—
Rittenbach, Otto E.; and Olesch, Reinhard G., 4,326,272, Cl. 367-93.000.
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Popplewell, James M.; and Dempsey, Martin H., 4,325,746, Cl. 134-10.000.
Yarwood, John C.; Tyler, Derek E.; and Winter, Joseph, 4,325,777, Cl. 156-620.000.
Olmsted, Bruce C., Jr., to Manville Service Corporation. Method of preparing diatomite for rapid calcination. 4,325,844, Cl. 252-448.000.
Olszewski, Egon: *See*—
Benteler, Hubertus; Hansen, Rainer; Olszewski, Egon; and Wecker, Ferdinand, 4,325,268, Cl. 74-492.000.
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Hosoda, Seiichi, 4,325,618, Cl. 354-33.000.
Ikuno, Yuji; Kinoshita, Kunio; and Kanehira, Katsuyuki, 4,325,606, Cl. 350-96.200.
Iwasawa, Teruo; Yamazaki, Masafumi; Tsuboshima, Kosaku; Takayama, Shuichi; and Nakajima, Yoshio, 4,326,217, Cl. 358-76.000.
Komiya, Osamu, 4,325,374, Cl. 128-303.150.
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Osanai, Akira, 4,326,225, Cl. 360-74.100.
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Gerling, John E.; and O'Meara, John P., 4,326,114, Cl. 219-10.55A.
O'Meara, Michael F.: *See*—
Given, Arthur P.; and O'Meara, Michael F., 4,326,263, Cl. 364-900.000.
Omholt, Bruce D. Apparatus for removably securing a container to a carrier rack. 4,325,531, Cl. 248-553.000.
Omori, Shigenori, to Yoshida Kogyo K.K. Apparatus for manufacturing coiled coupling elements for slide fasteners. 4,325,184, Cl. 29-766.000.
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O'Neill, James G.: *See*—
Menzie, Larry L., 4,325,237, Cl. 70-14.000.
Ontario Cancer Institute: *See*—
Foster, Francis S., 4,325,258, Cl. 73-642.000.
Optsonic Research Associates, Ltd.: *See*—
Horn, Michael, 4,325,256, Cl. 73-607.000.
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Hale, John M.; and Weber, Eugen, 4,325,797, Cl. 204-195.00P.
Ormiston, Peter T., to Solartron Electronic Group Limited, The. Pyrotechnic devices and systems and firing circuits therefor. 4,325,304, Cl. 102-200.000.

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Gershman, Russell J.; Hansen, W. Peter; Hochberg, Alan M.; and O'Connell, J. Garland, 4,325,706, Cl. 23-230.00B.
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Lombardo, Igino; Barry, Donald E.; and Hansen, W. Peter, 4,325,483, Cl. 209-3.100.
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Suetoshi, Tetsui; Kinugasa, Munetaka; Hosoya, Koichi; and Yamamoto, Mitsuo, 4,325,772, Cl. 156-294.000.
Osakabe, Kuniharu: *See*—
Nakayama, Takeshi; Nishimoto, Takehiko; Kawashima, Machio; Takahashi, Kozi; and Osakabe, Kuniharu, 4,326,147, Cl. 313-403.000.
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Bowman, Donald B.; Filz, Charles J.; and Osborn, James G., 4,325,715, Cl. 55-158.000.
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Akutin, Modest S.; Dimakov, Sergei K.; Ostapchuk, Stanislav V.; Pashinin, Boris P.; and Perepelkin, Vitaly P., 4,325,687, Cl. 425-387.100.
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Nakamura, Teruo; and Otani, Masami, 4,325,222, Cl. 62-126.000.
Otis Engineering Corporation: *See*—
Roark, James T.; and Hayter, Steven R., 4,325,534, Cl. 251-1.00A.
Otoi, Kiyoshi; and Nasuno, Toshihiro, to Kanebo, Ltd. Fibroin-coated pigment and processes for producing same. 4,325,741, Cl. 106-308.00N.
Otsuka, Fumio; Nabeta, Teiichi; Kojima, Yasufumi; Matsushima, Takeo; Fujioka, Yasuhiro; and Wada, Eiichi, to Nippondenso Co., Ltd.; and Toyota Jidosha Kogyo Kabushiki Kaisha. Air conditioner system. 4,325,426, Cl. 165-2.000.
Otten, David: *See*—
Schlecht, Martin F.; Kassakian, John G.; Caloggero, Anthony J.; Rhodes, Bruce; Otten, David; and Rasmussen, Neil, 4,326,191, Cl. 340-825.790.
Otto, Dennis L., to Timken Company, The. Sealed and unitized bearing. 4,325,591, Cl. 308-187.200.
Otto Durr: *See*—
Wood, Trevor E.; Cooper, Gene R.; and Kemp, Raymond, 4,325,161, Cl. 15-304.000.
Ouchi, Teruo; Ueda, Hirohisa; and Tamada, Kazukiyo, to Kabushiki Kaisha Medos Kenkyusho. Endoscope. 4,325,362, Cl. 128-4.000.
Outboard Marine Corporation: *See*—
Hicks, John E., 4,325,446, Cl. 180-89.170.
Ovarnstrom, Bengt G. L. Method and apparatus for filling seedling pots. 4,325,200, Cl. 47-1.00A.
Owada, Shuji: *See*—
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Owen, William H.; Simko, Richard T.; and Tchon, Wallace E., to Xicor, Inc. Integrated rise-time regulated voltage generator systems. 4,326,134, Cl. 307-268.000.
Owens-Corning Fiberglas Corporation: *See*—
Froberg, Magnus L., 4,325,724, Cl. 65-121.000.
Roberts, Michael G.; and Tanner, Joseph F., 4,325,854, Cl. 524-476.000.
Owens-Illinois, Inc.: *See*—
Burmeister, Robert J.; Heckman, Russell W.; and Miller, Robert C., 4,325,762, Cl. 156-86.000.
Edwards, Ralston G.; Goffredi, Albert S.; Lisi, John; and Murphy, Gregory, 4,325,726, Cl. 65-298.000.
Owens, William K.; and Kabermanes, Steven R., to Fairchild Camera and Instrument Corp. Preset circuit for information storage devices. 4,326,270, Cl. 365-218.000.
Oxford Pendaflex Corp.: *See*—
Solomon, Jack, 4,325,595, Cl. 312-183.000.
Oy, Hollming: *See*—
Hirvonen, Reijo, 4,325,560, Cl. 280-5.00D.
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Ozbey, Ahmet M. Derriere exerciser. 4,325,379, Cl. 128-540.000.
Ozol, Yan-Voldemar Y.: *See*—
Vigante, Brigita A.; Ozol, Yan-Voldemar Y.; Vitolin, Rasma O.; Silenietse, Gunta O.; Kimenis, Agris A.; and Dubur, Gunar Y., 4,326,064, Cl. 546-322.000.
P. A. Rentrop, Hubbert & Wagner Fahrzeugausstattungen GmbH & Co. KG: *See*—
Berneking, Hans-Jurgen, 4,325,527, Cl. 248-394.000.
P T Components, Inc.: *See*—
Elliott, James R., Jr.; Layne, Kathy L.; Hitch, Donald W.; and Marshall, Larry G., 4,325,588, Cl. 308-59.000.
Pace, Joseph A., to R. P. Scherer Corporation. Two-piece hardshell, soluble and digestible liquid containing gelatin capsule. 4,325,761, Cl. 156-69.000.
Pace, Wilson D.: *See*—
Jarrett, Robert B.; and Pace, Wilson D., 4,326,135, Cl. 307-355.000.
Page, Robert E.: *See*—
Karr, Gerald W.; and Page, Robert E., 4,325,518, Cl. 242-68.000.
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Paige, Richard E., 4,325,493, Cl. 220-416.000.
Paige, Richard E., to Paige Company Containers, Inc., The. Collapsible carton. 4,325,493, Cl. 220-416.000.
Panayappan, Ramanathan; and Venezky, David L., to United States of America, Navy. Method and composition for cleaning metal surfaces with a film-forming composition. 4,325,744, Cl. 134-4.000.
Papay, Andrew G.; and O'Brien, Joseph P., to Edwin Cooper, Inc. Fuel and lubricating compositions containing N-hydroxymethyl succinimides. 4,325,827, Cl. 252-51.50A.
Paper Converting Machine Company: *See*—
Spalding, Michael H., 4,325,475, Cl. 198-429.000.
Paris, Sandra L.: *See*—
Luke, Donald A.; Magdics, Alex; Paris, Sandra L.; and Worthington, Ralph E., 4,325,918, Cl. 423-10.000.
Parker, Carl D.: *See*—
Swisher, George W., Jr.; Smith, Donald W.; and Parker, Carl D., 4,325,580, Cl. 299-39.000.
Pascas, Brian J.: *See*—
Vaughan, Brian J. N.; and Pascas, Brian J., 4,326,105, Cl. 179-16.0EA.
Paschall, Douglas C.: *See*—
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Pashinin, Boris P.: *See*—
Akutin, Modest S.; Dimakov, Sergei K.; Ostapchuk, Stanislav V.; Pashinin, Boris P.; and Perepelkin, Vitaly P., 4,325,687, Cl. 425-387.100.
Pasierb, Slawomir: *See*—
Wozniczko, Wlodzimierz; Lukasik, Adam; Marczynski, Jozef; Kowal, Witold; Plaskacewicz, Edward; Pasierb, Slawomir; and Langner, Norbert, 4,325,538, Cl. 266-190.000.
Pastine, Donald J., to United States of America, Navy. Electrical augmentation of detonation wave. 4,325,305, Cl. 102-201.000.
Patchett, Arthur A.: *See*—
Kollonitsch, Janos; and Patchett, Arthur A., 4,325,961, Cl. 424-273.00R.
Patton, John T., Jr.: *See*—
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Paul Wurth S.A.: *See*—
Ulveling, Leon, 4,325,312, Cl. 110-347.000.
Paynton, Richard H.; and Paynton, William C., to Improved Consumers Products, Inc. Chimney cap and securement. 4,325,291, Cl. 98-67.000.
Paynton, William C.: *See*—
Paynton, Richard H.; and Paynton, William C., 4,325,291, Cl. 98-67.000.
Peck, Arland A.: *See*—
Appleby, Paul E.; Broyles, Henry D.; Hill, John E.; and Peck, Arland A., 4,325,764, Cl. 156-123.00R.
Pederson, Richard J.: *See*—
Touchton, James J.; and Pederson, Richard J., 4,326,226, Cl. 360-77.000.
Pedroli, Walter E., to Polaroid Corporation. Self-developing type film processor kit. 4,325,624, Cl. 354-304.000.
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Pellman, Arnold: *See*—
Dreyfus, Marc G.; and Pellman, Arnold, 4,325,640, Cl. 356-376.000.
Pelts, Boris B.; Tumasian, Beniamin A.; Egorov, Leonid P.; Zatulovsky, Lev M.; Chaikin, Petr M.; Freiman, Efim A.; Chalian, Eduard A.; Abramian, Grant I.; Azoian, Stepan E.; and Kostandian, Kliment A. Method and apparatus for producing sapphire tubes. 4,325,917, Cl. 422-249.000.
Penco, Sergio; Franchi, Giuliano; Arcamone, Federico; and Casazza, Annamaria, to Farmitalia Carlo Erba S.p.A. 4-Demethoxy-4'-deoxydoxorubicin. 4,325,947, Cl. 424-180.000.
Penco, Sergio: *See*—
Bargiotti, Alberto; Cassinelli, Giuseppe; Penco, Sergio; Arcamone, Federico; and di Marco, Aurelio, 4,325,946, Cl. 424-180.000.
Pentanyl Technologies, Inc.: *See*—
Porter, Clifford R.; and Kaesz, Herbert D., 4,325,802, Cl. 208-10.000.
Peoples, John T. Single tone detector. 4,326,261, Cl. 364-724.000.
Pepe, Russell J., to Singer Company, The. Dual encoded switching matrix. 4,326,194, Cl. 340-365.00R.
PepsiCo, Inc.: *See*—
Tibbetts, Merrick S.; and Templeman, Gareth J., 4,325,743, Cl. 137-46.200.
Pereman, Gordon F.: *See*—
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Perepelkin, Vitaly P.: *See*—
Akutin, Modest S.; Dimakov, Sergei K.; Ostapchuk, Stanislav V.; Pashinin, Boris P.; and Perepelkin, Vitaly P., 4,325,687, Cl. 425-387.100.
Perez, Donald E.: *See*—
Gargano, Robert; Perez, Donald E.; and Williams, David K., 4,326,059, Cl. 544-243.000.
Fermacel: *See*—
Korpman, Ralf, 4,325,770, Cl. 156-230.000.
Perna, Jiulio, to Bunker Ramo Corporation. Communication system and means for interconnection of same. 4,326,107, Cl. 179-98.000.
Peron, Mario: *See*—
Christ, Alfred; and Peron, Mario, 4,325,584, Cl. 308-9.000.
Perry, Dale E., Jr. Watch mounting device. 4,326,280, Cl. 368-277.000.

Persson, Carl G.: *See—*
Kjellin, Per G.; and Persson, Carl G., 4,325,956, Cl. 424-253.000.
Persson, John A., to Lectromelt Corporation. Electrode contact assembly. 4,326,093, Cl. 373-101.000.
Pesch, Jurgen, to G. Siempelkamp GmbH & Co. Method of operating a platen press. 4,325,898, Cl. 264-40.500.
Peter, Kurt: *See—*
Muck, Gerhard; and Peter, Kurt, 4,325,198, Cl. 42-89.000.
Peterhoff, Edward: *See—*
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Peters, James K., II; and Metros, Gus. Protective device. 4,325,701, Cl. 440-113.000.
Peters, Kenneth D., to UOP Inc. Multiple stage hydrocarbon conversion with gravity flowing catalyst particles. 4,325,806, Cl. 208-64.000.
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Petersen, Joseph C.: *See—*
Plancher, Henry; and Petersen, Joseph C., 4,325,738, Cl. 106-277.00M.
Petersen, Walter J.: *See—*
Witt, Robert H.; and Petersen, Walter J., 4,325,211, Cl. 56-15.800.
Pethis, James J., to Textron Inc. Self-contained pre-loaded antifriction bearing assembly. 4,325,590, Cl. 308-184.00R.
Petrocci, Alfonso N.: *See—*
Green, Harold A.; Merianos, John J.; and Petrocci, Alfonso N., 4,325,940, Cl. 424-70.000.
Petrolite Corporation: *See—*
Victor, Joe M., 4,326,164, Cl. 324-71.00R.
Phillips, Charles O. Belt guiding device. 4,325,703, Cl. 474-130.000.
Phillips Petroleum Company: *See—*
Bagnetto, Lucien J., Jr., 4,325,708, Cl. 44-58.000.
Capshew, Charles E.; Short, James N.; Welch, M. Bruce; and Dietz, Richard E., 4,325,837, Cl. 252-429.00B.
Eddy, William R., 4,325,476, Cl. 198-448.000.
McDaniel, Max P., 4,325,839, Cl. 252-430.000.
Phipps, Roger N. Bicycle trailer. 4,325,564, Cl. 280-204.000.
Piccini, Silvio D. Kicking device. 4,325,548, Cl. 273-55.00B.
Pickering, John F., to Lucas Industries Limited. Vehicle load sensing arrangement. 4,325,581, Cl. 303-22.00R.
Pigeon, Michel; and Saglio, Robert, to Commissariat a l'Energie Atomique. Correcting circuit for differential pick-up, comprising digital means. 4,326,166, Cl. 324-225.000.
Pike, John E.: *See—*
Johnson, Roy A.; Lincoln, Frank H.; and Pike, John E., 4,325,875, Cl. 260-346.230.
Pimentel, Alberto: *See—*
DeMan, Pierre; Pimentel, Alberto; Ben Sadou, Jean-Claude; and de Riviere, Charles, 4,326,293, Cl. 455-72.000.
Pina, Octavio U.; and Spector, George. Toothbrush holder. 4,325,485, Cl. 211-66.000.
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Pinetree Service Corporation: *See—*
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Pioneer Electronic Corporation: *See—*
Sato, Reisuke; and Sugai, Yoshiro, 4,326,297, Cl. 455-213.000.
Pirovano, Camillo; and Vergani, Umberto. Feed conveyor. 4,325,479, Cl. 198-733.000.
Pistor, Ferdinand: *See—*
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Pistor, Max; and Pistor, Ferdinand. Electric light fixture. 4,326,243, Cl. 362-368.000.
Pitney Bowes Inc.: *See—*
Crowley, Raymond R.; Daniels, Edward P.; and Holtz, Earl B., 4,325,440, Cl. 177-25.000.
Pivar, Stuart, to American Microcar Incorporated. Three-wheeled, motor-powered, pedal-started vehicle. 4,325,448, Cl. 180-215.000.
Plagge, Vernon L.; and Rively, Clair M., to Westinghouse Electric Corp. Base and terminal-pin assembly for electric lamps and similar devices. 4,326,146, Cl. 313-318.000.
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Heikinheimo, Lennart O., 4,325,477, Cl. 198-461.000.
Plancher, Henry; and Petersen, Joseph C., to United States of America, Energy. Tertiary nitrogen heterocyclic material to reduce moisture-induced damage in asphalt-aggregate mixtures. 4,325,738, Cl. 106-277.00M.
Plaskacewicz, Edward: *See—*
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Plevy, Arthur L. Universal gravity operated intrusion sensing device. 4,326,196, Cl. 340-545.000.
Poeselt, Horst: *See—*
Duggleby, Peter M.; Kueter, Bernhard; Morris, Ronald M.; Poeselt, Horst; Rabitsch, Hermann; and Scowen, Reginald V., 4,325,829, Cl. 252-109.000.
Poff, David A.: *See—*
Gordy, Lester A.; and Poff, David A., 4,325,799, Cl. 204-297.00W.
Poggio, Mario, to SAIAG S.p.A. Assembly consisting of a seal gasket for valve stems and a spring support cap. 4,325,558, Cl. 277-189.000.
Pohlmann, Hans-Juergen: *See—*
Maier, Horst R.; Krauth, Axel; Pohlmann, Hans-Juergen; Nink, Horst; Brobeck, Helmut; Cropp, Ingo; and Bergmeier, Dieter, 4,325,647, Cl. 403-29.000.
Polacsek, David D. Combination automobile sun visor and speaker assembly. 4,326,100, Cl. 179-1.0VE.
Polaroid Corporation: *See—*
Dietz, Milton S., 4,325,616, Cl. 354-27.000.
Grimes, Donald L., 4,325,614, Cl. 354-23.00D.
Pedroli, Walter E., 4,325,624, Cl. 354-304.000.
Polychrome Corporation: *See—*
Golda, Eugene; and Wilkes, Alan, 4,326,020, Cl. 430-302.000.
Jargiello, Paul, 4,326,018, Cl. 430-15.000.
Ponder, James E.; Tubbs, Graham S.; Lou, Perry W.; and Farnow, Stephen A., to Texas Instruments Incorporated. Method of making CMOS device allowing three-level interconnects. 4,325,169, Cl. 29-571.000.
Poole, Robert E.: *See—*
Sixsmith, Herbert; and Poole, Robert E., 4,325,672, Cl. 415-53.00T.
Popplewell, James M.; and Dempsey, Martin H., to Olin Corporation. System for cleaning metal strip. 4,325,746, Cl. 134-10.000.
Porter, Clifford R.; and Kaesz, Herbert D., to Pentanyl Technologies, Inc. Method of liquefaction of carbonaceous materials. 4,325,802, Cl. 208-10.000.
Postlethwaite, Dennis, to Lever Brothers Company. Detergent bleach compositions. 4,325,828, Cl. 252-102.000.
Postman, William: *See—*
Louch, James B.; Postman, William; Ward, Thomas A.; and Cole, Willis E., 4,325,322, Cl. 118-410.000.
Poubeau, Pierre: *See—*
Hubert, Bernard; and Poubeau, Pierre, 4,325,586, Cl. 308-10.000.
Povh, Dusan: *See—*
Becker, Michael; Renz, Klaus; Weibelzahl, Manfred; Fendt, Alfons; Povh, Dusan; Schuch, Gerhard; and Waldmann, Hermann, 4,326,230, Cl. 361-17.000.
Poyser, Robert H.; and Turner, David H., to Beecham Group Limited. Metoclopramide/paracetamol tablets. 4,325,971, Cl. 424-324.000.
PPG Industries, Inc.: *See—*
Jensen, Thomas H., 4,325,721, Cl. 65-1.000.
Jensen, Thomas H., 4,325,722, Cl. 65-12.000.
Kellar, John D.; and Pereman, Gordon F., 4,325,723, Cl. 65-104.000.
Wagner, William E., 4,325,988, Cl. 427-160.000.
Pressurized Products, Inc.: *See—*
Kelly, Quentin T., 4,325,498, Cl. 222-210.000.
Price, David L., II, to Eaton Corporation. Electronic temperature control. 4,325,225, Cl. 62-229.000.
Priesnitz, Uwe: *See—*
Fuchs, Rainer; Maurer, Fritz; Priesnitz, Uwe; Riebel, Hans-Jochem; and Klauke, Erich, 4,326,087, Cl. 568-631.000.
Prikhodko, Jury N.: *See—*
Tkach, Lev N.; Prikhodko, Jury N.; Vaisman, Leonid M.; Soldatenko, Vladimir I.; and Kostjuchenko, Vasily V., 4,325,848, Cl. 252-567.000.
Procter & Gamble Company, The: *See—*
Feeser, Larry R., 4,325,482, Cl. 206-625.000.
Proctor, George M.: *See—*
Russell, Leslie T.; Proctor, George M.; and Bowes, William H., 4,325,207, Cl. 52-641.000.
Propylox: *See—*
Hildon, Anthony M., 4,325,888, Cl. 260-502.00R.
Proske, Gerhard; Van der Piepen, Rolf; and Bittner, Hans-Joachim, to Luwa AG. Co-current evaporator. 4,325,781, Cl. 159-13.00A.
Protection Services, Inc.: *See—*
Kreinberg, Earl R., 4,326,161, Cl. 323-299.000.
Pruehs, Leslie L., to General Electric Company. Screw anchoring device and method. 4,325,178, Cl. 29-458.000.
Pulsonics Corporation: *See—*
Mokris, Michael M., 4,325,495, Cl. 222-1.000.
Punja, Nazim, to Imperial Chemical Industries Limited. Fungicidal compounds, compositions and processes. 4,325,966, Cl. 424-285.000.
Putney, Zimri C.: *See—*
Bergeron, David L.; Putney, Zimri C.; and Stephens, Geoffrey B., 4,326,212, Cl. 357-46.000.
QIT-Fer et Titane du Quebec, Inc.: *See—*
Gueguin, Michel, 4,325,920, Cl. 423-82.000.
Quadranti, Marco; Maurer, Willy; and Maag, Kurt, to Ciba-Geigy Corporation. Herbicidal compositions containing N-(3-trifluoromethyl-1,2,4-thiadiazolyl-5)-N'-methyl-N'-methoxy urea and α-[4-(3'-5'-dichloropyridyl-2'-oxy)-phenoxy]-propionic acid propargyl ester for control of weeds in wheat cultures. 4,325,728, Cl. 71-90.000.
Quality Audio Components, Inc.: *See—*
Toulan, Roy D., Jr.; and Rensky, Richard, 4,326,283, Cl. 369-55.000.
Queneau, Paul B.; Beckstead, Leo W.; and Huggins, Dale K., to AMAX Inc. Autoclave soda digestion of scheelite concentrates with feedback control. 4,325,919, Cl. 423-61.000.
R. P. Scherer Corporation: *See—*
Pace, Joseph A., 4,325,761, Cl. 156-69.000.
Rabitsch, Hermann: *See—*
Duggleby, Peter M.; Kueter, Bernhard; Morris, Ronald M.; Poeselt, Horst; Rabitsch, Hermann; and Scowen, Reginald V., 4,325,829, Cl. 252-109.000.
Rae, George, to Rexnord Inc. Slip friction roller drive. 4,325,474, Cl. 198-781.000.

Rafter, Patrick M.; and Hitchcock, James E., to Magnavox Consumer Electronics Co. Tuning system for a color television receiver having a varactor tuner. 4,326,296, Cl. 455-192.000.
Rainer, Georg, to Byk-Gulden Lomberg Chemische Fabrik GmbH. Pharmaceutical compositions comprising a pyrazole derivative and method of use. 4,325,962, Cl. 424-273.00P.
Raistrick, Ian D.: *See—*
Huggins, Robert A.; and Raistrick, Ian D., 4,325,611, Cl. 350-357.000.
Ralph McKay Limited: *See—*
Young, Hartley F., 4,325,511, Cl. 238-349.000.
Ramsay, William R.: *See—*
Spilker, James J., Jr.; and Ramsay, William R., 4,326,292, Cl. 455-27.000.
Ramsey, Wallace B.: *See—*
Hunter, Wood E.; Kun, Kenneth A.; and Ramsey, Wallace B., 4,325,794, Cl. 204-159.230.
Rapid Engineering Inc.: *See—*
Dirkes, James V., 4,325,352, Cl. 126-110.00A.
Rapson, W. Howard: *See—*
Reeve, Douglas W.; and Rapson, W. Howard, 4,325,783, Cl. 162-88.000.
Raschke, Curt R., to Xerox Corporation. Method of reducing cross talk in ink jet arrays. 4,326,206, Cl. 346-140.00R.
Rasmussen, Jerald K., to Minnesota Mining and Manufacturing Company. Phase transfer free-radical polymerization. 4,326,049, Cl. 526-91.000.
Rasmussen, Neil: *See—*
Schlecht, Martin F.; Kassakian, John G.; Caloggero, Anthony J.; Rhodes, Bruce; Otten, David; and Rasmussen, Neil, 4,326,191, Cl. 340-825.790.
Ratcliffe, Charles T.; Soled, Stuart L.; Signorelli, Anthony J.; and Mador, Irving L., to Allied Corporation. Conversion of mononitro aromatic compounds to amino compounds by hydrogen sulfide. 4,326,081, Cl. 564-416.000.
Raue, Roderich: *See—*
Eckstein, Udo; Raue, Roderich; and Schellhammer, Carl-Wolfgang, 4,326,066, Cl. 548-256.000.
RCA Corporation: *See—*
Elliott, Charles A., 4,326,284, Cl. 369-77.000.
Gubitose, Nicholas F., 4,325,419, Cl. 141-302.000.
Russell, John P.; and Carroll, Charles B., 4,325,489, Cl. 220-2.200.
Weisbrod, Sherman, 4,326,151, Cl. 315-410.000.
Reagan, William J.: *See—*
Brown, Stanley M.; Reagan, William J.; and Woltermann, Gerald M., 4,325,813, Cl. 208-120.000.
Reams, Donald J., to Micro Air Systems, Inc. Submersible motor chemical processing apparatus. 4,325,394, Cl. 134-141.000.
REB Manufacturing, Inc.: *See—*
Guthrie, Dale H., 4,325,576, Cl. 296-65.00R.
Reber, Jean-Francois: *See—*
Steiger, Rolf; and Reber, Jean-Francois, 4,326,021, Cl. 430-427.000.
Reed, Kenneth J.; and Lythgoe, Alan L., to Reed, Kenneth James. Dry release transfer. 4,326,005, Cl. 428-201.000.
Reed, Kenneth James: *See—*
Reed, Kenneth J.; and Lythgoe, Alan L., 4,326,005, Cl. 428-201.000.
Rees, Werner, to M.A.N.-Roland Druckmaschinen Aktiengesellschaft. Printing machine ink doctor blade adjustment apparatus. 4,325,303, Cl. 101-365.000.
Reeve, Douglas W.; and Rapson, W. Howard, to Erco Industries Limited. Bleaching procedure using chlorine dioxide and chlorine solutions. 4,325,783, Cl. 162-88.000.
Regan, David M.; and Beverley, Kenneth I., to United States of America, Air Force. Method and apparatus for measuring hand-eye coordination while tracking a changing size image. 4,325,697, Cl. 434-258.000.
Regelsberger, Wolfgang: *See—*
Richter, Martin; and Regelsberger, Wolfgang, 4,325,436, Cl. 173-13.000.
Regitz, Gunter: *See—*
Hitzel, Volker; Weyer, Rudi; Geisen, Karl; and Regitz, Gunter, 4,325,963, Cl. 424-274.000.
Rehn, Larry A.: *See—*
Tarpley, Roy W.; Rehn, Larry A.; and Davis, Paul H., 4,326,199, Cl. 340-622.000.
Reichardt, Werner: *See—*
Goddecke, Hubert; Reichardt, Werner; Schumacher, Kurt; and Topfer, Rainer, 4,325,166, Cl. 29-25.150.
Reilly, Douglas L.: *See—*
Cooper, Leon N.; Elbaum, Charles; and Reilly, Douglas L., 4,326,259, Cl. 364-715.000.
Reiners, Robert A., to CPC International Inc. Extraction of oil from high oil-bearing seed materials. 4,325,882, Cl. 260-412.400.
Reinmold, Heinz-Josef; and Audi, Josef, to Saint Gobain Industries. Tracing table for recording the program for an automatic machine, in particular for cutting glass. 4,325,188, Cl. 33-1.00M.
Reinmuth, Klaus: *See—*
Kriegesmann, Jochen; Lipp, Alfred; and Reinmuth, Klaus, 4,326,039, Cl. 501-90.000.
Reitz, Erhard: *See—*
Minner, Willy; Rodenheber, Rainer; and Reitz, Erhard, 4,326,106, Cl. 179-81.00B.
Reitz, Gunther; Kaspar, Vaclav; Jacobs, Karlhans; and Schaupp, Kurt, to Bayer Aktiengesellschaft. Phenol-formaldehyde condensates, their preparation and their use as dispersing agents, liquefaction agents and tanning agents. 4,325,890, Cl. 260-512.00C.
Rek, Johannes H. M.; and Holemans, Pieter M. J., to Lever Brothers Company. Process for producing a margarine having a reduced tendency to spattering. 4,325,980, Cl. 426-604.000.
Rembaum, Alan, to California Institute of Technology. Protein specific fluorescent microspheres for labelling a protein. 4,326,008, Cl. 424-401.000.
Remer, Robert K., to Hull-Smith Chemicals, Inc. Bland whey product and process of preparation. 4,325,977, Cl. 426-534.000.
Remer, Robert K., to Hull-Smith Chemicals, Inc. Process for imparting blandness to cheese. 4,325,978, Cl. 426-534.000.
Rempfler, Hermann; Schurter, Rolf; and Fory, Werner, to Ciba-Geigy Corporation. Herbicidal and plant growth regulating pyridyloxy-phenoxy-propionic acid derivatives. 4,325,729, Cl. 71-94.000.
Rensky, Richard: *See—*
Toulan, Roy D., Jr.; and Rensky, Richard, 4,326,283, Cl. 369-55.000.
Renz, Klaus: *See—*
Becker, Michael; Renz, Klaus; Weibelzahl, Manfred; Fendt, Alfons; Povh, Dusan; Schuch, Gerhard; and Waldmann, Hermann, 4,326,230, Cl. 361-17.000.
Research Association for Residual Oil Processing: *See—*
Fujimori, Kuniaki; Suzuka, Teruo; Inoue, Yukio; and Aizawa, Shirou, 4,325,812, Cl. 208-119.000.
Research Corporation of the University of Hawaii, The: *See—*
Cramer, Roger E., 4,325,950, Cl. 424-245.000.
Rexnord Inc.: *See—*
Delmer, Philip T., 4,325,298, Cl. 100-214.000.
Rae, George, 4,325,474, Cl. 198-781.000.
Reynolds Metals Company: *See—*
McLean, John R., 4,325,519, Cl. 242-75.410.
Rezvykh, Konstantin A.; and Romanv, Valentin A. Supporting insulating column of high voltage accelerator. 4,326,141, Cl. 310-308.000.
Rhodes, Bruce: *See—*
Schlecht, Martin F.; Kassakian, John G.; Caloggero, Anthony J.; Rhodes, Bruce; Otten, David; and Rasmussen, Neil, 4,326,191, Cl. 340-825.790.
Rhone-Poulenc Industries: *See—*
Botton, Roger; and Cosserat, Dominique, 4,325,923, Cl. 423-234.000.
Riat, Henri: *See—*
Seitz, Karl; Riat, Henri; and Hoegerle, Karl, 4,325,869, Cl. 260-146.00D.
Richard, Gerard Y., to Societe d'Applications de Procedes Industriels et Chimiques. Transport belt intended for transporting products at a high temperature, and a transport means equipped with this belt. 4,325,478, Cl. 198-699.000.
Richard Wolf GmbH: *See—*
Boebel, Manfred, 4,325,377, Cl. 128-326.000.
Richards, Thomas J.; Smead, Robert G.; and Staebler, Paul J., to Caterpillar Tractor Co. Air flow system for the charging conductor in an electrostatic painting system. 4,325,319, Cl. 118-634.000.
Richardson-Merrell Inc.: *See—*
Metcalf, Brian W.; and Adams, Jerry L., 4,325,877, Cl. 260-349.000.
Richardson-Vicks Inc.: *See—*
Shah, Nutan B., 4,325,939, Cl. 424-55.000.
Richter, Hans, to H. A. Schlatter AG. Method for measuring distances and apparatus for performing the method. 4,325,639, Cl. 356-376.000.
Richter, Martin; and Regelsberger, Wolfgang, to Hilti Aktiengesellschaft. Hammer drill or chipping hammer device. 4,325,436, Cl. 173-13.000.
Rico, Laureano P. Paint drip catcher. 4,325,159, Cl. 15-248.00A.
Ricoh Co., Ltd.: *See—*
Funato, Hiroyoshi, 4,325,601, Cl. 350-3.710.
Sasaki, Masaomi; Hashimoto, Mitsuru; and Kawakami, Tomiko, 4,325,871, Cl. 260-160.000.
Ricoh Watch Co., Ltd.: *See—*
Inoue, Hiroshi, 4,325,610, Cl. 350-343.000.
Ridley, John: *See—*
Blade, John C.; Ridley, John; and Wood, Geoffrey C., 4,325,755, Cl. 148-32.000.
Riebel, Hans-Jochem: *See—*
Fuchs, Rainer; Maurer, Fritz; Priesnitz, Uwe; Riebel, Hans-Jochem; and Klauke, Erich, 4,326,087, Cl. 568-631.000.
Jautelat, Manfred; Arlt, Dieter; Lantzsch, Reinhard; Fuchs, Rainer; Riebel, Hans-Jochem; Schroder, Rolf; and Harnisch, Horst, 4,325,873, Cl. 260-338.000.
Riegel Textile Corporation: *See—*
Teed, Richard K., 4,325,372, Cl. 128-287.000.
Rightmire, Robert A.: *See—*
Alford, Harvey E.; and Rightmire, Robert A., 4,325,810, Cl. 208-112.000.
Rinde, James A., to United States of America, Energy. Metal-doped organic foam. 4,325,737, Cl. 106-122.000.
Rioux, Jean P. Collapsible paint tray carrier and paint spatter protector. 4,325,323, Cl. 118-504.000.
Ristow, Dietrich, to Siemens Aktiengesellschaft. Method of making a MESFET having same type conductivity for source, drain, and gate regions. 4,325,747, Cl. 148-1.500.
Rittenbach, Otto E.; and Olesch, Reinhard G., to United States of America, Army. Electronic intruder detection system. 4,326,272, Cl. 367-93.000.
Ritter, Kenneth J.: *See—*
Sattler, Joseph P.; Worchesky, Terrance L.; and Ritter, Kenneth J., 4,325,635, Cl. 356-349.000.

Rively, Clair M.: *See*—
Plagge, Vernon L.; and Rively, Clair M., 4,326,146, Cl. 313-318.000.
Roark, James T.; and Hayter, Steven R., to Otis Engineering Corporation. Manually operated blowout preventer and hydraulic operator therefor. 4,325,534, Cl. 251-1.00A.
Robert Bosch GmbH: *See*—
Eheim, Franz; and Hofer, Gerald, 4,325,337, Cl. 123-357.000.
Fehrenbach, Siegfried, 4,325,349, Cl. 123-587.000.
Klein, Ottokar, 4,326,128, Cl. 250-231.0SE.
Nonnenmacher, Gerhard, 4,325,677, Cl. 417-218.000.
Romann, Peter; and Hafner, Udo, 4,325,253, Cl. 73-204.000.
Schmidt, Wolfgang, 4,326,172, Cl. 330-294.000.
Roberts, Clifford J., Jr., to Scott Paper Company. Soft, absorbent, unitary, laminate-like fibrous web. 4,326,000, Cl. 428-153.000.
Roberts, Michael G.; and Tanner, Joseph F., to Owens-Corning Fiberglas Corporation. Solvent solutions of chemically modified asphalts. 4,325,854, Cl. 524-476.000.
Roberts, William M., to Baker International Corporation. Pilot valve for subsea test valve system for deep water. 4,325,409, Cl. 137-596.140.
Roberts, William M., to Baker International Corporation. Tubing shut off valve. 4,325,434, Cl. 166-321.000.
Robinson, Samuel C.: *See*—
Brown, R. Jack; Gerth, Howard L.; and Robinson, Samuel C., 4,326,137, Cl. 310-12.000.
Rocheleau, Richard E.: *See*—
Baron, Bill N.; Rocheleau, Richard E.; and Russell, T. W. Fraser, 4,325,986, Cl. 427-74.000.
Rock, Erich, to Julius Blum Gesellschaft m.b.H. Joining device for connecting two furniture parts. 4,325,649, Cl. 403-231.000.
Rodenheber, Rainer: *See*—
Minner, Willy; Rodenheber, Rainer; and Reitz, Erhard, 4,326,106, Cl. 179-81.00B.
Rodgers, John L., Jr., to Solid Controls, Inc. Electro-hydraulic ram control apparatus. 4,325,896, Cl. 264-40.100.
Roemer, Dietmar: *See*—
Zeugner, Horst; Roemer, Dietmar; Liepmann, Hans; and Milkowski, Wolfgang, 4,325,957, Cl. 424-263.000.
Rogers, Billie O.: *See*—
Miller, Thomas G.; and Rogers, Billie O., 4,325,252, Cl. 73-190.0EW.
Rohatgi, Naresh K.: *See*—
Kalvinskas, John J.; Vasilakos, Nick; Corcoran, William H.; Grohmann, Karel; and Rohatgi, Naresh K., 4,325,707, Cl. 44-1.0SR.
Rohloff; Rolf, to Siemens Aktiengesellschaft. Electric motor having a hook-shaped commutator. 4,326,140, Cl. 310-234.000.
Rohm and Haas Company: *See*—
Lewis, Sheldon N.; Miller, George A.; and Law, Andrew B., 4,325,201, Cl. 47-57.600.
Rollei-Werke Franke & Heidecke GmbH & Co. KG: *See*—
Hartung, Hansjurgen, 4,325,622, Cl. 354-170.000.
Roller, Donald C.: *See*—
Magno, Robert; Roller, Donald C.; and Rood, Allan J., 4,325,544, Cl. 271-221.000.
Romann, Peter; and Hafner, Udo, to Robert Bosch GmbH. Apparatus for measuring the mass of a flowing medium. 4,325,253, Cl. 73-204.000.
Romano, Ugo; and Ioro, Giuseppe, to Anic, S.P.A. Process for preparing aromatic alkylamines. 4,326,079, Cl. 564-393.000.
Romanv, Valentin A.: *See*—
Rezvykh, Konstantin A.; and Romanv, Valentin A., 4,326,141, Cl. 110-108.000.
Rood, Allan J.: *See*—
Magno, Robert; Roller, Donald C.; and Rood, Allan J., 4,325,544, Cl. 271-221.000.
Rose, Philip M.: *See*—
Stevens, Jack F.; Lee, Kwok-fu; Rose, Philip M.; Kreider, David R.; and Lin, Chi-Hung, 4,326,048, Cl. 526-68.000.
Rosemount Inc.: *See*—
Frick, Roger L., 4,325,399, Cl. 137-85.000.
Rosen, Irving: *See*—
Li, George S.; and Rosen, Irving, 4,326,045, Cl. 525-206.000.
Rosen, Meyer R.: *See*—
Braun, David B.; and Rosen, Meyer R., 4,325,861, Cl. 523-205.000.
Rosen, Murray; Koenig, Alan R.; and Copham, John D., to Celotex Corporation, The. Method for making a slurry containing particulate matter and fibers for a preformed insulation product. 4,325,849, Cl. 252-62.000.
Rosen, Perry: *See*—
Holland, George W.; Rosen, Perry; and Gallo-Torres, Hugo, 4,325,970, Cl. 424-311.000.
Rosenberg, Harvey S.; and Genco, Joseph M., to Industrial Resources, Inc. Air pollution control process and apparatus. 4,325,713, Cl. 55-73.000.
Rosenberg, Jean M. L. Process for the manufacture of rolled capacitors. 4,325,167, Cl. 29-25.420.
Rosendall, Henry J., to Bissell, Inc. Floor sweeper with improved construction. 4,325,156, Cl. 15-41.00R.
Rosenstatter, Otto; and Straihammer, Reinhard, to Siemens Aktiengesellschaft. Dental handpiece arrangement. 4,325,696, Cl. 433-131.000.
Rosenthal, Joel W.; and Kuehler, Christopher W., to Chevron Research Company. Two-stage coal liquefaction process with interstage guard bed. 4,325,800, Cl. 208-8.0LE.
Rosenthal Technik A.G.: *See*—
Maier, Horst R.; Krauth, Axel; Pohlmann, Hans-Juergen; Nink, Horst; Brobeck, Helmut; Cropp, Ingo; and Bergmeier, Dieter, 4,325,647, Cl. 403-29.000.
Roser, Erich, to Rudolf Hubner GmbH & Co. Compressed air motor. 4,325,285, Cl. 91-341.00R.
Rospatch Corporation: *See*—
Tasma, James D., 4,326,133, Cl. 307-26.000.
Rossetti, James J., to Beatrice Foods Co. Method for shaping and finishing a workpiece. 4,325,779, Cl. 156-651.000.
Rovnyak, George C., to E. R. Squibb & Sons, Inc. Bis-amidine ketones, compositions containing same and method of use. 4,325,958, Cl. 424-267.000.
Royer, Garfield P. Polymeric particulate carrier. 4,326,009, Cl. 428-407.000.
Ruckle, Duane L.: *See*—
Brown, Edgar E.; and Ruckle, Duane L., 4,325,756, Cl. 148-32.500.
Rudolf Hubner GmbH & Co.: *See*—
Roser, Erich, 4,325,285, Cl. 91-341.00R.
Rudolph, Paul: *See*—
Becker, Paul; Jockel, Heinz; Rudolph, Paul; and Kuhn, Manfred, 4,325,731, Cl. 75-91.000.
Rupp, Alexander: *See*—
Farber, Karl-Heinz; and Rupp, Alexander, 4,325,299, Cl. 100-295.000.
Russell, John P.; and Carroll, Charles B., to RCA Corporation. Envelope for flat panel display devices. 4,325,489, Cl. 220-2.200.
Russell, Leslie T.; Proctor, George M.; and Bowes, William H., to Canadian Patents & Development Ltd. Arch forming assembly. 4,325,207, Cl. 52-641.000.
Russell, T. W. Fraser: *See*—
Baron, Bill N.; Rocheleau, Richard E.; and Russell, T. W. Fraser, 4,325,986, Cl. 427-74.000.
Ruthner Industrieanlagen-Aktiengesellschaft: *See*—
Krepler, Albert, 4,325,935, Cl. 423-483.000.
Ruyak, Robert F., to Autoclave Engineers, Inc. Laboratory pressure vessel. 4,325,914, Cl. 422-102.000.
SAB Industri AB: *See*—
Helgesen, Herman, 4,326,158, Cl. 322-4.000.
Sachs, Peter R.; and Sears, James W., to GAF Corporation. Radiation cured coating and process therefor. 4,326,001, Cl. 428-161.000.
SAG Siegener AG: *See*—
Ackermann, Werner; and Vollhardt, Frohmut, 4,325,693, Cl. 432-195.000.
Saglio, Robert: *See*—
Pigeon, Michel; and Saglio, Robert, 4,326,166, Cl. 324-225.000.
Sahara, Masayoshi; and Taniguchi, Nobuyuki, to Minolta Camera Kabushiki Kaisha. Camera exposure control device. 4,325,617, Cl. 354-31.000.
Sai-Halasz, George A.: *See*—
Fang, Frank F.; and Sai-Halasz, George A., 4,326,208, Cl. 357-16.000.
SAIAG S.p.A.: *See*—
Poggio, Mario, 4,325,558, Cl. 277-189.000.
Saint Gobain Industries: *See*—
Reinmold, Heinz-Josef; and Audi, Josef, 4,325,188, Cl. 33-1.00M.
Saito, Kiyotaka: *See*—
Tanaka, Hideyuki; Moriya, Yoshihisa; Saito, Kiyotaka; Hori, Shozo; and Mitsuda, Yutaka, 4,325,838, Cl. 252-429.00B.
Saito, Koichi; and Ohara, Osamu, to Kuraray Company, Limited. Aqueous dispersion type coating compositions with an improved vibration-damping characteristic. 4,325,858, Cl. 524-524.000.
Sakagami, Koji: *See*—
Okada, Eisaburo; and Sakagami, Koji, 4,325,736, Cl. 106-88.000.
Sakai, Masato: *See*—
Nishida, Katsutoshi; Okada, Syoji; Ando, Akio; and Sakai, Masato, 4,325,334, Cl. 123-270.000.
Sakamoto, Hitoshi, to Sony Corporation. Magnetic transducer supporting apparatus. 4,326,228, Cl. 360-109.000.
Sakoe, Hiroaki, to Nippon Electric Co., Ltd. System for recognizing a word sequence by dynamic programming and by the use of a state transition diagram. 4,326,101, Cl. 179-1.0SD.
Saleh, Mustafa Y. M., to Siemens Corporation. Current foldback circuit for a DC power supply. 4,326,245, Cl. 363-79.000.
Salim, Massoud A.; and Hamacher, Thomas L., to Tios Corporation. Modular solar building construction. 4,325,205, Cl. 52-79.100.
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Dozzi, Giovanni; Cucinella, Salvatore; and Salvatori, Tito, 4,325,885, Cl. 260-448.00R.
San-O Industrial Company, Ltd.: *See*—
Arikawa, Hiroo, 4,326,185, Cl. 337-201.000.
Sanders Associates, Inc.: *See*—
Dehney, George J.; and Spade, Gerald L., 4,326,175, Cl. 372-109.000.
Hayner, Paul, 4,325,412, Cl. 137-625.650.
Sandoz Ltd.: *See*—
Hinsken, Hans; Mayerhoefer, Horst; Mueller, Wolfgang; and Schneider, Hermann, 4,325,863, Cl. 624-111.000.
Schuster, Johann, 4,325,862, Cl. 524-87.000.
Sankyo Electric Company Limited: *See*—
Miyazawa, Kiyoshi, 4,325,683, Cl. 418-55.000.
Sanyo Electric Co., Ltd.: *See*—
Shimoi, Mamoru, 4,326,286, Cl. 369-226.000.
Sarkar, Siddhartha, to University of California, The Regents of the. Method for fractionating cells. 4,326,026, Cl. 435-2.000.

Sasaki, Fujio: *See*—
Miyajima, Mikio; Yanata, Kohsaki; Sasaki, Fujio; Hori, Fumihisa; and Fujimoto, Hideki, 4,325,645, Cl. 400-196.100.
Sasaki, Kyoichi, to Nippon Electric Industry Co., Ltd. Offset pivot hinges with door closing devices. 4,325,164, Cl. 16-55.000.
Sasaki, Masao, to Oki Electric Industry Co., Ltd. Inkribbon cartridge. 4,325,646, Cl. 400-196.100.
Sasaki, Masaomi; Hashimoto, Mitsuru; and Kawakami, Tomiko, to Ricoh Company, Ltd. Ortho-Bis (2-substituted azostyryl) benzene compounds. 4,325,871, Cl. 260-160.000.
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Uchida, Isamu; Kokubo, Eiichi; and Sasaki, Toshinobu, 4,325,277, Cl. 63-205.000.
Sashida, Toshiiku. Supersonic vibration driven motor device. 4,325,264, Cl. 74-88.000.
Sassi, Alessandro P.: *See*—
Cooper, Michael G.; and Sassi, Alessandro P., 4,326,253, Cl. 364-435.000.
Sata, Toshio; and Matsushima, Katsumori, to Fujitsu Fanuc Ltd. Tool breakdown detecting system. 4,326,257, Cl. 364-508.000.
Sato, Eiichi: *See*—
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Sato, Hiroshi; Okamoto, Takehiko; and Asada, Akira, to Toray Industries, Inc. Bulk polymerization reactor. 4,325,915, Cl. 422-135.000.
Sato, Reisuke; and Sugai, Yoshiro, to Pioneer Electronic Corporation. Noise suppressing device in FM receiver. 4,326,297, Cl. 455-213.000.
Sato, Yo, to Kabushiki Kaisha Sato Kenkyusho. Correction label applying device for portable label printing machine. 4,325,774, Cl. 156-542.000.
Satoh, Toshikazu: *See*—
Nishiwaki, Susumu; and Satoh, Toshikazu, 4,326,232, Cl. 361-127.000.
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Sattler, Joseph P.; Worchesky, Terrance L.; and Ritter, Kenneth J., to United States of America, Army. Heterodyne indicial refractometer. 4,325,635, Cl. 356-349.000.
Sauber, Charles J. Reel brake clamping assembly. 4,325,522, Cl. 242-86.700.
Savin Corporation: *See*—
Swidler, Ronald; and Gardiner, Kenneth W., 4,325,627, Cl. 355-10.000.
Sawa, Kenneth B.; and Neti, Radhakrishna M., to Beckman Instruments, Inc. Carbon monoxide detection apparatus. 4,325,912, Cl. 422-95.000.
Sawada, Kazunori: *See*—
Umemoto, Yoshiro; Mishima, Yasuhiro; Takao, Shuichiro; Sawada, Kazunori; and Kobayashi, Nobuo, 4,325,574, Cl. 293-120.000.
Sawada, Yoshio: *See*—
Aoki, Harumi; and Sawada, Yoshio, 4,326,127, Cl. 250-204.000.
Schaefer, Rudolf. Hollow body assemblies. 4,325,414, Cl. 138-155.000.
Schaeffer, Bruce S., to Frick Company. Refrigeration system condenser heat recovery at higher temperature than normal condensing temperature. 4,325,226, Cl. 62-238.600.
Schaenzer, Mark. Unitized case resizer and trimmer. 4,325,282, Cl. 86-24.000.
Schafer, George. Pallet loading and unloading method. 4,325,669, Cl. 414-786.000.
Schaldach, Max: *See*—
Blaser, Reinhard; Olach, Klaus; and Schaldach, Max, 4,325,384, Cl. 128-696.000.
Scharm, Klaus: *See*—
Zerle, Ludwig; and Scharm, Klaus, 4,325,897, Cl. 264-40.300.
Schaupp, Kurt: *See*—
Reitz, Gunther; Kasper, Vaclav; Jacobs, Karlhans; and Schaupp, Kurt, 4,325,890, Cl. 260-512.00C.
Scheffer, Karl D. System and process for abatement of casting pollution, reclaiming resin bonded sand, and/or recovering a low BTU fuel from castings. 4,325,424, Cl. 164-5.000.
Scheinthal, Bernard M.; and Chafetz, Lester, to Warner-Lambert Company. Theophylline test. 4,325,908, Cl. 422-61.000.
Schellhammer, Carl-Wolfgang: *See*—
Eckstein, Udo; Raue, Roderich; and Schellhammer, Carl-Wolfgang, 4,326,066, Cl. 548-256.000.
Scherbing, Frank J., to Fort Lock Corporation. Cable lock. 4,325,238, Cl. 70-18.000.
Schierenbeck, Reinhard. Cast grate, especially for pig stables. 4,325,326, Cl. 119-28.000.
Schiffner, Gerhard, to Siemens Aktiengesellschaft. Interferometer with a single-mode waveguide coil. 4,325,636, Cl. 356-350.000.
Schingnitz, Manfred: *See*—
Gohler, Peter; Jaschke, Peter; Kretzschmer, Horst; Kuhlbrodt, Claus-Otto; Lucas, Klaus; Neumann, Berthold; Schingnitz, Manfred; Schweigel, Hans-Joachim; Berger, Friedrich; and Konig, Dieter, 4,325,709, Cl. 48-197.00R.
Schinski, William L.; Chan, David C. K.; and Huang, Irene C., to Chevron Research Company. N-Haloacetylphenylamino carbonyl cyclic intermediates. 4,326,077, Cl. 564-211.000.
Schippers, Heinz; Martens, Gerhard; and Frolich, Karl-Werner, to Barmag Barmer Maschinenfabrik. Method and apparatus for winding textile yarns. 4,325,517, Cl. 242-18.100.
Schlecht, Martin F.; Kassakian, John G.; Caloggero, Anthony J.; Rhodes, Bruce; Otten, David; and Rasmussen, Neil, to Massachusetts Institute of Technology. Automatic switching matrix. 4,326,191, Cl. 340-825.790.
Schlegel (UK) Limited: *See*—
Holding, David; and Chancellor, John D., 4,325,900, Cl. 264-103.000.
Holding, David; and Chancellor, John D., 4,325,901, Cl. 264-146.000.
Holding, David; 4,325,902, Cl. 264-146.000.
Schleich, Helmut: *See*—
Ahner, Stefan; Srostlik, Peter; Schleich, Helmut; and Diem, Hans, 4,326,130, Cl. 250-506.000.
Schleimer, Francois; Henrion, Romain; Goedert, Ferdinand; Lorang, Lucien; and Baumert, Jean, to Arbed S.A. Process for conditioning slag during the refining of a metal bath. 4,325,730, Cl. 75-52.000.
Schley, Ronald F.: *See*—
Connin, John L.; Hartman, G. William, Jr.; and Schley, Ronald F., 4,326,222, Cl. 358-292.000.
Schluter Electronic GmbH: *See*—
Schluter, Peter, 4,326,227, Cl. 360-99.000.
Schluter, Peter, to Schluter Electronic GmbH. Apparatus for recording and reading data from a magnetic plate. 4,326,227, Cl. 360-99.000.
Schmidt, Glenn H.: *See*—
Thompson, Stanley C.; and Schmidt, Glenn H., 4,325,550, Cl. 273-80.00C.
Schmidt, Klaus Dieter: *See*—
Fehr, Werner; and Schmidt, Klaus Dieter, 4,326,167, Cl. 324-415.000.
Schmidt, Otto K., to AMF Incorporated. Instantaneous slurry preparation on a continuous basis. 4,325,391, Cl. 131-372.000.
Schmidt, Peter: *See*—
Friedrich, Robert; and Schmidt, Peter, 4,325,613, Cl. 354-1.000.
Schmidt, Rudolf: *See*—
Wolf, Dieter; Schmidt, Rudolf; Block, Ulrich; Schoenmakers, Hartmut; Bott, Kaspar; and Kaibel, Gerd, 4,326,073, Cl. 562-609.000.
Schmidt, Wolfgang, to Robert Bosch GmbH. Tunable active high-pass filter. 4,326,172, Cl. 330-294.000.
Schnarr, Marcus M.: *See*—
Fischbeck, Kenneth H.; and Schnarr, Marcus M., 4,326,205, Cl. 346-140.00R.
Schneider, Hermann: *See*—
Hinsken, Hans; Mayerhoefer, Horst; Mueller, Wolfgang; and Schneider, Hermann, 4,325,863, Cl. 624-111.000.
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Schopper, Bernd: *See*—
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Schroder, John G. Wood preservation process. 4,325,993, Cl. 427-315.000.
Schroder, Rolf: *See*—
Jautelat, Manfred; Arlt, Dieter; Lantzsch, Reinhard; Fuchs, Rainer; Riebel, Hans-Jochem; Schroder, Rolf; and Harnisch, Horst, 4,325,873, Cl. 260-338.000.
Schroeder Brothers Corporation: *See*—
Mitchell, Samuel S.; and Vijlee, Abbas F., 4,325,824, Cl. 210-90.000.
Schuch, Gerhard: *See*—
Becker, Michael; Renz, Klaus; Weibelzahl, Manfred; Fendt, Alfons; Povh, Dusan; Schuch, Gerhard; and Waldmann, Hermann, 4,326,230, Cl. 361-17.000.
Schulz, Galyn A., to American Can Company. Method of manufacturing fibrous sheet structure. 4,325,768, Cl. 156-206.000.
Schulz, Galyn A., to American Can Company. Apparatus for manufacturing fibrous sheet structure. 4,325,773, Cl. 156-471.000.
Schulz, Galyn A., to American Can Company. Multi-ply fibrous sheet structure and its manufacture. 4,326,002, Cl. 428-178.000.
Schulz, Robert M., Sr. Method of making a printed circuit board. 4,325,780, Cl. 156-659.100.
Schulze, Heinz; Zimmerman, Robert L.; and Waddill, Harold G., to Texaco Development Corporation. Process and product. 4,326,050, Cl. 528-94.000.
Schumacher, Kurt: *See*—
Goddecke, Hubert; Reichardt, Werner; Schumacher, Kurt; and Topfer, Rainer, 4,325,166, Cl. 29-25.150.
Schurter, Rolf: *See*—
Rempfler, Hermann; Schurter, Rolf; and Fory, Werner, 4,325,729, Cl. 71-94.000.
Schuster, David A., to General Motors Corporation. Piston position control mechanism. 4,325,471, Cl. 192-85.0AA.
Schuster, Johann, to Sandoz Ltd. Solid pigment compositions containing C_4-C_6 methacrylate-amino acrylate copolymers. 4,325,862, Cl. 524-87.000.
Schutte, Heinz, to Hoechst Aktiengesellschaft. Separator. 4,325,825, Cl. 210-371.000.
Schuurman, Pieter J., to Shell Oil Company. Heat exchanger. 4,325,428, Cl. 165-72.000.
Schweigel, Hans-Joachim: *See*—
Gohler, Peter; Jaschke, Peter; Kretzschmer, Horst; Kuhlbrodt, Claus-Otto; Lucas, Klaus; Neumann, Berthold; Schingnitz, Manfred; Schweigel, Hans-Joachim; Berger, Friedrich; and Konig, Dieter, 4,325,709, Cl. 48-197.00R.
Scientific Drilling Controls: *See*—
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Scott, John W., to Chevron Research Company. Three-stage catalyst regeneration. 4,325,833, Cl. 252-417.000.

Scott Paper Company: *See*—
Roberts, Clifford J., Jr., 4,326,000, Cl. 428-153.000.
Urion, Kenard E.; and Cleminshaw, Douglas R., 4,325,176, Cl. 29-450.000.
Scott, Waller M., Jr., to Scovill Inc. Musical door chime preferably also combined with a clock for annunciating the time. 4,326,276, Cl. 368-10.000.
Scott, William H.; and Wagdy, Mohamed K., to Sunbeam Corporation. Food-mixing apparatus comprising a driving unit and a separable arm. 4,325,643, Cl. 366-200.000.
Scovill Inc.: *See*—
Scott, Waller M., Jr., 4,326,276, Cl. 368-10.000.
Scowen, Reginald V.: *See*—
Duggleby, Peter M.; Kueter, Bernhard; Morris, Ronald M.; Poeselt, Horst; Rabitsch, Hermann; and Scowen, Reginald V., 4,325,829, Cl. 252-109.000.
Seabrook Blanching Corporation: *See*—
Weyant, Lowell E., 4,325,297, Cl. 99-625.000.
Seales, David: *See*—
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Sears, James W.: *See*—
Sachs, Peter R.; and Sears, James W., 4,326,001, Cl. 428-161.000.
Seckendorf, Bernard A.; and Kalbfeld, Jack W., to Wrist-A-Matic, Ltd. Camera. 4,325,619, Cl. 354-121.000.
Seebinger, Frederick L., to American Trading and Production Corp. Mounting bracket assembly. 4,325,529, Cl. 248-298.000.
Seigert, Peter, to Jean Walterscheid GmbH. Protective device for universal joints. 4,325,587, Cl. 308-36.100.
Seitz, Hans; and Huinink, Heinrich, to Continental Gummi-Werke Aktiengesellschaft. Pneumatic tires, especially belted tires. 4,325,423, Cl. 152-361.00R.
Seitz, Karl; Riat, Henri; and Hoegerle, Karl, to Ciba-Geigy Corporation. Novel dyes, their preparation and use. 4,325,869, Cl. 260-[illegible]
Seki, Junichi: *See*—
Kumasaka, Sadao; Tada, Satomi; Yoneyama, Goro; and Seki, Junichi, 4,325,688, Cl. 425-436.00R.
Seki, Masahiko; and Io, Yukito, to Nippon Steel Corporation. Apparatus for supplying fluids to a converter. 4,325,540, Cl. 266-243.000.
Seki, Yashiro; and Kobayashi, Hideo, to Anritsu Electric Company Limited; and Systematix Co. Ltd. Multi-item data input apparatus. 4,326,195, Cl. 340-365.00R.
Sekimura, Nobuyuki: *See*—
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Selover, Theodore B., Jr.; and Hacha, Thomas H., to Standard Oil Company, The. Swaged seal for fused salt batteries. 4,326,016, Cl. 429-184.000.
Semenjuk, Georgy A.: *See*—
Bodyako, Mikhail N.; Semenjuk, Georgy A.; Zverkov, Garik E.; Astapchik, Stanislav A.; Kosov, Anatoly F.; Kashulin, Sergei M.; and Baklanov, Alexandr N., 4,326,116, Cl. 219-61.700.
Serizawa, Koji: *See*—
Takeda, Shiro; Nagai, Yuji; Nakajima, Minoru; Hayashi, Kunihiko; and Serizawa, Koji, 4,326,238, Cl. 361-386.000.
Sethofer, Nicholas L., to Timex Corporation. Three ring dioxane liquid crystalline compounds. 4,325,830, Cl. 252-299.610.
SGB Group Limited: *See*—
Blank, Wilhelm W. A. O., 4,325,532, Cl. 249-26.000.
Shaffer, John W.; and Broadt, David R., to GTE Products Corporation. Multilamp photoflash unit having engageable connector tab. 4,326,240, Cl. 362-11.000.
Shaffer, John W.: *See*—
Broadt, David R.; Hartman, Donald W.; Shaffer, John W.; and Audesse, Emery G., 4,326,241, Cl. 362-11.000.
Broadt, David R.; Kackenmeister, Carl F.; and Shaffer, John W., 4,326,242, Cl. 362-11.000.
Brower, Boyd G.; Broadt, David R.; and Shaffer, John W., 4,325,771, Cl. 156-261.000.
Shah, Nutan B., to Richardson-Vicks Inc. Zinc derivatives and their use in dental compositions. 4,325,939, Cl. 424-55.000.
Shanks, Ian A., to National Research Development Corporation. Analogue displays. 4,326,279, Cl. 368-240.000.
Sharp Kabushiki Kaisha: *See*—
Aso, Akira; and Kawanabe, Hitoshi, 4,326,210, Cl. 357-22.000.
Nakatani, Hiroshi; Ishida, Masahide; and Yamamoto, Hachizou, 4,325,441, Cl. 177-25.000.
Toyoda, Munemitsu; and Adachi, Koichiro, 4,326,113, Cl. 219-[illegible]
Shaw, Lyle W.: *See*—
Borland, David L.; and Shaw, Lyle W., 4,326,190, Cl. 340-[illegible]3AE.
Shaw, Mark L.; and Freimark, Ronald J., to Motorola, Inc. Temperature compensating pressure sensor amplifier circuits. 4,326,171, Cl. 330-256.000.
Shay, Joseph J., to Ethyl Products Company. Extended spray pump. 4,325,499, Cl. 222-321.000.
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Kwantes, Cornelis; Mansell, Michael; and Stor, Bob P., 4,325,579, Cl. 299-5.000.
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Maas, Rudolf J.; and Visser, Rene M., 4,326,091, Cl. 585-828.000.
Schuurman, Pieter J., 4,325,428, Cl. 165-72.000.
Slaugh, Lynn H.; and Hoxmeier, Ronald J., 4,325,842, Cl. 252-443.000.
Slaugh, Lynn H.; and Hoxmeier, Ronald J., 4,325,843, Cl. 252-443.000.
Shepherd, Robin G., to John Wyeth and Brother Limited. 4-Aryl-4-aryloxypiperidines. 4,325,953, Cl. 424-250.000.
Sheppard, Peter H. Power steering gear with initial lockable spring adjusting nuts. 4,325,288, Cl. 91-422.000.
Sherex Chemical Company, Inc.: *See*—
Escalera, Saul J., 4,325,821, Cl. 209-166.000.
Sherrick, James W., to Lord Corporation. Adjustable spring clip. 4,325,510, Cl. 238-341.000.
Sherwood, William L. Rolling mill stand. 4,325,245, Cl. 72-248.000.
Shibata, George K.: *See*—
Campman, Arthur R.; Shibata, George K.; and Cumming, William D., 4,325,999, Cl. 428-112.000.
Shibata, Hirotaka, to Yamaha, Hatsudoki, Kabushiki, Kaisha. Two stroke engine having exhaust timing control valve means. 4,325,335, Cl. 123-323.000.
Shibata, Kozo. Adsorbent materials for oils and fats. 4,325,846, Cl. 252-455.00R.
Shida, Masaharu; Ueda, Makoto; Torisawa, Akira; Owada, Shuji; and Mandai, Masaaki, to Kabushiki Kaisha Daini Seikosha. Electronic timepiece. 4,326,278, Cl. 368-157.000.
Shigemura, Takashi: *See*—
Tamura, Yoshitaka; Ishitani, Shizuo; and Shigemura, Takashi, 4,325,995, Cl. 427-428.000.
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Shimano Industrial Company Limited: *See*—
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Nakatsubo, Toshio; Ohyoshi, Kaoru; Nishikawa, Masaji; Sato, Eiichi; Mizukami, Norio; Shimizu, Akira; Yanagisawa, Kazuhisa; Oinoue, Kenichi; Tsuda, Naotsune; and Suzuki, Yoshiro, 4,325,625, Cl. 355-3.0SC.
Shimizu, Kazuaki: *See*—
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Shimoi, Mamoru, to Sanyo Electric Co., Ltd. Automatic recorder player. 4,326,286, Cl. 369-226.000.
Shinoda, Yoshio: *See*—
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Shirai, Kazunari; and Tanaka, Izumi, to Fujitsu Limited. Semiconductor device and process for producing the same. 4,326,213, Cl. 357-51.000.
Short, James N.: *See*—
Capshew, Charles E.; Short, James N.; Welch, M. Bruce; and Dietz, Richard E., 4,325,837, Cl. 252-429.00B.
Shtrikman, Shmuel, to Yeda Research & Development Co., Ltd. Hair cutting apparatus. 4,326,138, Cl. 310-36.000.
Shuey, Kenneth C., to Westinghouse Electric Corp. Electrically held power relay circuit with reduced power dissipation. 4,326,234, Cl. 361-154.000.
Siemens Aktiengesellschaft: *See*—
Appelt, Guenter, 4,326,144, Cl. 313-60.000.
Becker, Michael; Renz, Klaus; Weibelzahl, Manfred; Fendt, Alfons; Povh, Dusan; Schuch, Gerhard; and Waldmann, Hermann, 4,326,230, Cl. 361-17.000.
Braun, Rudiger, 4,326,160, Cl. 323-241.000.
Fettweis, Alfred, 4,326,288, Cl. 370-70.000.
Fromm, Ingrid; and Lagger, Helmut, 4,326,298, Cl. 455-606.000.
Krug, Adolf, 4,325,524, Cl. 246-34.00R.
Mattuschka, Werner, 4,326,142, Cl. 310-320.000.
Menzel, Gunter, 4,325,776, Cl. 156-610.000.
Ristow, Dietrich, 4,325,747, Cl. 148-1.500.
Rohloff, Rolf, 4,326,140, Cl. 310-234.000.
Rosenstatter, Otto; and Straihammer, Reinhard, 4,325,696, Cl. [illegible]
Schiffner, Gerhard, 4,325,636, Cl. 356-350.000.
Waerve, Hans, 4,326,131, Cl. 250-523.000.
Winzer, Gerhard; and Auracher, Franz, 4,325,605, Cl. 350-96.150.
Witte, Hans-H., 4,325,604, Cl. 350-96.150.
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Levy, Allan, 4,326,170, Cl. 330-10.000.
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Sigma Bauelemente GmbH: *See*—
Tiletschke, Lothar; and Feldmann, Hellmuth, 4,325,533, Cl. 249-188.000.
Signorelli, Anthony J.: *See*—
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Silenietse, Gunta O.: *See*—
Vigante, Brigita A.; Ozol, Yan-Voldemar Y.; Vitolin, Rasma O.; Silenietse, Gunta O.; Kimenis, Agris A.; and Dubur, Gunar Y., 4,326,064, Cl. 546-322.000.
Silver Street, Incorporated: *See*—
Hardy, Bruce N., 4,325,280, Cl. 84-411.00M.
Hardy, Bruce N., 4,325,281, Cl. 84-411.00M.
Silvestri, George J., Jr., to Westinghouse Electric Corp. Method for admitting steam into a steam turbine. 4,325,670, Cl. 415-1.000.
Silvestrini, Bruno; and Baiocchi, Leandro, to Aziende Chimiche Riunite Angelini Francesco. Method of treating abstinence syndrome with cycloaklyltriazoles. 4,325,952, Cl. 424-250.000.
Simacek, Josef: *See*—
Winkler, Jiri; Kondr, Milan; Jelinek, Richard; Hlousek, Jaroslav; Krtek, Jan; Cibulka, Josef; Mlynar, Vladimir; and Simacek, Josef, 4,326,246, Cl. 363-138.000.
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Owen, William H.; Simko, Richard T.; and Tchon, Wallace E., 4,326,134, Cl. 307-268.000.
Simonsen & Weel's EFTF. A/S: *See*—
Holte, Bo, 4,325,385, Cl. 128-712.000.
Simplimatic Engineering Company: *See*—
Butt, William C., 4,325,480, Cl. 198-841.000.
Singer Company, The: *See*—
Brauch, Robert B.; and Heine, Martin W., 4,325,316, Cl. 112-292.000.
Pepe, Russell J., 4,326,194, Cl. 340-365.00R.
Totino, Peter J.; and Voza, Alfonse N., 4,325,315, Cl. 112-266.100.
Siorek, Richard W., to United States of America, Army. Suspension control valve using coned spring disks. 4,325,468, Cl. 188-282.000.
Sixsmith, Herbert; and Poole, Robert E., to Utile Engineering Company Limited, The. Regenerative turbo machine. 4,325,672, Cl. 415-53.00T.
Skinner, Mitchell A.: *See*—
Fenderson, Gerald L.; and Skinner, Mitchell A., 4,326,169, Cl. 328-162.000.
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Slaugh, Lynn H.; and Hoxmeier, Ronald J., to Shell Oil Company. Process for preparing a supported tungsten carbide composition. 4,325,843, Cl. 252-443.000.
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Bauer, Michael E.; and Sleder, Richard L., 4,325,350, Cl. 123-605.000.
Slivenko, Victor; and Bokros, Jack C., to Carbo Mediec Inc. Apparatus for forming an osteotomy for a dental implant. 4,325,373, Cl. 128-303.00R.
Sloboda, Adolph E., to American Cyanamid Company. Combinations of agents which give enhanced anti-inflammatory activity. 4,325,949, Cl. 424-230.000.
Smead, Robert G.: *See*—
Richards, Thomas J.; Smead, Robert G.; and Staebler, Paul J., 4,325,319, Cl. 118-634.000.
Smeets, Eugenius T. J. M., to U.S. Philips Corporation. N+PP−PP−P+ Avalanche photodiode. 4,326,211, Cl. 357-30.000.
Smith, Derek R.; and Worgan, Gordon P., to Union Carbide Corporation. Composite drive shafts. 4,325,174, Cl. 29-434.000.
Smith, Donald W.: *See*—
Swisher, George W., Jr.; Smith, Donald W.; and Parker, Carl D., 4,325,580, Cl. 299-39.000.
Smith, Gary L.: *See*—
Smith, Robert L.; and Smith, Gary L., 4,325,513, Cl. 239-112.000.
Smith International, Inc.: *See*—
Vezirian, Edward, 4,325,439, Cl. 175-329.000.
Smith, Jack J. Laser beam welding apparatus. 4,326,118, Cl. 219-121.0LC.
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Smith, Robert L.; and Smith, Gary L. Gun for dispensing a plural component system. 4,325,513, Cl. 239-112.000.
Smith, Roger W., to White Consolidated Industries, Inc. Oil pump for hermetic compressor. 4,325,679, Cl. 417-372.000.
Snyder, Wesley L. Distillation apparatus with solar tracker. 4,325,788, Cl. 202-234.000.
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Castoldi, Luigi, 4,325,699, Cl. 440-47.000.
Societa Italiana Vetro-Siv-S.p.A.: *See*—
Kalbskopf, Reinhard; and Baumberger, Otto, 4,325,987, Cl. [illegible]
Societe Anonyme Francaise du Ferodo: *See*—
Dauvergne, Jean L. R., 4,325,447, Cl. 180-132.000.
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Richard, Gerard Y., 4,325,478, Cl. 198-699.000.
Societe de Vente de l'Aluminium Pechiney: *See*—
Hicter, Jean-Marie; and Guerit, Pierre, 4,325,539, Cl. 266-207.000.
Societe Europeenne de Propulsion: *See*—
Vallet, Andre M., 4,325,930, Cl. 423-345.000.
Societe Logilift S.A.R.L.: *See*—
Evin, Jean, 4,326,197, Cl. 340-561.000.
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Gallot, Jacques; Vingut, Georges; de Paul, Michel V.; and Thibert, Jean-Jacques, 4,325,675, Cl. 416-223.00R.
Hubert, Bernard; and Poubeau, Pierre, 4,325,586, Cl. 308-10.000.
Solartron Electronic Group Limited, The: *See*—
Ormiston, Peter T., 4,325,304, Cl. 102-200.000.
Soldatenko, Vladimir I.: *See*—
Tkach, Lev N.; Prikhodko, Jury N.; Vaisman, Leonid M.; Soldatenko, Vladimir I.; and Kostjuchenko, Vasily V., 4,325,848, Cl. 252-567.000.
Soled, Stuart L.: *See*—
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Solid Controls, Inc.: *See*—
Rodgers, John L., Jr., 4,325,896, Cl. 264-40.100.
Solomon, Jack, to Oxford Pendaflex Corp. Card file. 4,325,595, Cl. 312-183.000.
Son, Pyong-Nae; and Layer, Robert W., to B. F. Goodrich Company, The. Substituted decahydroquinolines. 4,326,061, Cl. 546-164.000.
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Sone, Yoshiaki: *See*—
Torigai, Akiyoshi; Morikawa, Teruo; Nakaoka, Masaki; Murata, Shinji; and Sone, Yoshiaki, 4,325,628, Cl. 355-15.000.
Sony Corporation: *See*—
Mogi, Takao, 4,326,220, Cl. 358-191.100.
Ohsawa, Mitsuo; Yamamura, Masato; and Takahashi, Toshio, 4,326,239, Cl. 361-410.000.
Sakamoto, Hitoshi, 4,326,228, Cl. 360-109.000.
Yamagiwa, Kazuo; and Machida, Yukihiko, 4,326,223, Cl. 360-33.000.
Sorrentino, Ciro D., to Standard Oil Company (Indiana). Catalytic cracking with reduced emission of noxious gas. 4,325,811, Cl. 208-113.000.
South African Inventions Development Corporation: *See*—
Hunn, Reginald A., 4,326,094, Cl. 174-23.00R.
Sowinski, Francis A.: *See*—
Moniot, Jerome L.; Fox, Rita T.; and Sowinski, Francis A., 4,326,076, Cl. 564-156.000.
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Dehney, George J.; and Spade, Gerald L., 4,326,175, Cl. 372-106.000.
Spalding, Michael H., to Paper Converting Machine Company. Method and apparatus for stacking. 4,325,475, Cl. 198-429.000.
Spector, George: *See*—
Driscoll, Mark; and Spector, George, 4,325,230, Cl. 62-293.000.
Pina, Octavio U.; and Spector, George, 4,325,485, Cl. 211-66.000.
Spence, Kemet D.; and Andrews, Robert E., to Battelle Development Corporation. Microbial insecticide. 4,325,937, Cl. 424-16.000.
Sperry Corporation: *See*—
Matthews, Hugh B., 4,325,681, Cl. 417-379.000.
Sperry Rand Corporation: *See*—
Marsh, Phillip W.; and Wiedenman, Gregory B., 4,326,291, Cl. 371-68.000.
Spilker, James J., Jr.; and Ramsay, William R., to Lockheed Missiles & Space Company, Inc. Random energy communication system. 4,326,292, Cl. 455-27.000.
Sprafke, Uwe: *See*—
Grunewald, Peter; and Sprafke, Uwe, 4,325,284, Cl. 89-37.00E.
Sprague Electric Company: *See*—
Markarian, Paul M.; and Howe, David C., 4,326,237, Cl. 361-329.000.
Square D Company: *See*—
Tharp, James A., 4,326,183, Cl. 337-70.000.
Squirrell, Anton F., to Grovag Grossventiltechnik A.G. Seals for gas isolators. 4,325,411, Cl. 137-601.000.
Srostlik, Peter: *See*—
Ahner, Stefan; Srostlik, Peter; Schleich, Helmut; and Diem, Hans, 4,326,130, Cl. 250-506.000.
SSAB Svenskt Stal Aktiebolag: *See*—
Josefsson, Erik A. A., 4,325,751, Cl. 148-12.00F.
Staebler, Paul J.: *See*—
Richards, Thomas J.; Smead, Robert G.; and Staebler, Paul J., 4,325,319, Cl. 118-634.000.
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Funderburg, John E.; Stafford, Franklin H.; and Funderburg, Donald R., 4,325,571, Cl. 285-177.000.
Stamicarbon B.V.: *See*—
De Cooker, Mario G. R. T., 4,326,085, Cl. 568-366.000.
Meyer, Peter J. N.; and Nieuwkamp, Johannes G. M., 4,325,872, Cl. 260-326.5FN.
Stamires, Dennis M.: *See*—
Lim, John C.; Humphries, Adrian P.; and Stamires, Dennis M., 4,325,847, Cl. 252-455.00Z.
Stan Thompson Golf Club Company: *See*—
Thompson, Stanley C.; and Schmidt, Glenn H., 4,325,550, Cl. 273-80.00C.
Standard Oil Company, The: *See*—
Alford, Harvey E.; and Rightmire, Robert A., 4,325,810, Cl. 208-112.000.
Li, George S.; and Rosen, Irving, 4,326,045, Cl. 525-206.000.
Selover, Theodore B., Jr.; and Hacha, Thomas H., 4,326,016, Cl. 429-184.000.
Standard Oil Company (Indiana): *See*—
Kim, Dae K.; and Bertolacini, Ralph J., 4,325,808, Cl. 208-65.000.
Sorrentino, Ciro D., 4,325,811, Cl. 208-113.000.
Stevens, Jack F.; Lee, Kwok-fu; Rose, Philip M.; Kreider, David R.; and Lin, Chi-Hung, 4,326,048, Cl. 526-68.000.
Stanford University: *See*—
Huggins, Robert A.; and Raistrick, Ian D., 4,325,611, Cl. 350-357.000.

Stang, John H.; and Yamaguchi, Hiromasa, to Cummins Engine Company, Inc.; and Komatsu Ltd. Two loop engine coolant system. 4,325,219, Cl. 60-599.000.
Staodynamics, Inc.: *See*—
Svacina, Lawrence M.; and James, Donald N., 4,325,254, Cl. 73-356.000.
Stauffer Chemical Company: *See*—
Epstein, Ronald A.; and Mink, Robert L., 4,325,836, Cl. 252-429.00B.
Steeg, Klaus; and Friedmann, Oswald, to Luk Lamellen und Kupplungsbau GmbH. Flywheel connected to an internal-combustion engine. 4,325,472, Cl. 192-48.100.
Steffan, Guido: *See*—
Behre, Horst; Hullen, Albert; Kruger, Bruno; and Steffan, Guido, 4,325,889, Cl. 260-509.000.
Steger, David J.: *See*—
Winter, Robert A.; and Steger, David J., 4,325,537, Cl. 254-405.000.
Stegmaier, Alys J.: *See*—
Docherty, William G.; and Stegmaier, Alys J., 4,325,457, Cl. [illegible]
Steiger, Rolf; and Reber, Jean-Francois, to Ciba Geigy AG. Photographic negative material with at least one layer containing a desensitized silver halide emulsion. 4,326,021, Cl. 430-427.000.
Steinberger, Helmut: *See*—
Biermann, Hans-Peter; Steinberger, Helmut; Botta, Artur; Naumann, Rolf; Leitner, Lutz; and Heine, Heinrich, 4,325,739, Cl. 106-290.000.
Stephan, Gerard, to Nadella. Combined thrust and radial bearing and the assembly of such a bearing with a support structure. 4,325,566, Cl. [illegible]
Stephen, Donald W.: *See*—
Klotz, Robert J.; and Stephen, Donald W., 4,325,785, Cl. 176-154.000.
Stephens, Geoffrey B.: *See*—
Bergeron, David L.; Putney, Zimri C.; and Stephens, Geoffrey B., 4,326,212, Cl. 357-46.000.
Sterling, Larry L.: *See*—
Bevan, William G.; and Sterling, Larry L., 4,325,429, Cl. 165-80.00E.
Stevens, Jack F.; Lee, Kwok-fu; Rose, Philip M.; Kreider, David R.; and Lin, Chi-Hung, to Standard Oil Company (Indiana). Method for emergency shutdown of gas phase polyolefin reactor. 4,326,048, Cl. 526-68.000.
Stockinger, Friedrich; Eldin, Sameer H.; and Lohse, Friedrich, to Ciba-Geigy Corporation. N-Substituted aspartic acid monoesters. 4,326,069, Cl. 560-169.000.
Stor, Bob P.: *See*—
Kwantes, Cornelis; Mansell, Michael; and Stor, Bob P., 4,325,579, Cl. 299-1.000.
Storage Technology Corporation: *See*—
Touchton, James J.; and Pederson, Richard J., 4,326,226, Cl. 360-77.000.
Stowe, Robert L.; and Taylor, Wilbur B. Self-repairing wiper die. 4,325,244, Cl. 72-158.000.
Straihammer, Reinhard: *See*—
Rosenstatter, Otto; and Straihammer, Reinhard, 4,325,696, Cl. 433-153.000.
Strasser, Hans: *See*—
Meisser, Claudio; Strasser, Hans; and Lechner, Hubert, 4,325,262, Cl. 73-861.280.
Strumskis, Louis, to Georgia Oil and Gas Company. Apparatus for retorting comminuted oil shale. 4,325,787, Cl. 202-106.000.
Students, Peter A., to Chemetron Corporation. Shaper nozzle for a carbon dioxide snow cyclone separator. 4,325,720, Cl. 62-35.000.
Studiengesellschaft Kohle m.b.H.: *See*—
Kisch, Horst, 4,325,793, Cl. 204-157.10R.
Suda, Hiroharu; Hideshima, Keiji; Asada, Kazuyoshi; Takaki, Masaoki; Yasuda, Isao; and Kamei, Atsutaro, to Hitachi, Ltd.; and Nissan Motor Co., Ltd. Programmable sequence controller. 4,326,207, Cl. 364-900.000.
Suda, Toyoharu; Tayama, Katsuhiko; Araki, Kenji; Kurata, Masayuki; and Yamana, Hideo, to Nippon Kokan Kabushiki Kaisha; and Nippon Mining Co., Ltd. Method for making shadow masks. 4,325,752, Cl. 148-12.100.
Suetoshi, Tetsui; Kinugasa, Munetaka; Hosoya, Koichi; and Yamamoto, Mitsuo, to Osaka Gas Kabushiki Kaisha. Method of internally lining an installed pipe. 4,325,772, Cl. 156-294.000.
Sugai, Yoshiro: *See*—
Sato, Reisuke; and Sugai, Yoshiro, 4,326,297, Cl. 455-213.000.
Sugano, Kazuhiko: *See*—
Iwanaga, Kazuyoshi; Sugano, Kazuhiko; and Ohtsuka, Kunio, 4,325,271, Cl. 74-869.000.
Sugita, Hiroshi: *See*—
Ito, Kenji; Matsuura, Katsumi; Sugita, Hiroshi; Kimura, Toshihiko; and Arai, Hideaki, 4,326,022, Cl. 430-546.000.
Sugita, Kazuhiko, to Toyoda Koki Kabushiki Kaisha. Fluid bearing. 4,325,585, Cl. 308-9.000.
Sugiura, Takeo; Miyajima, Keiji; Nagatomo, Hideo; and Masui, Kiyoshi, to Toppan Printing Co., Ltd. Method of preventing color accurate reproductions using color photocopiers and the like. 4,325,981, Cl. 427-7.000.
Suling, Carlhans; Korte, Siegfried; and Neukam, Theo, to Bayer Aktiengesellschaft. Acrylonitrile polymerization with organic solvent. 4,326,051, Cl. 528-386.000.
Sulzer Brothers Limited: *See*—
Hintsch, Otto, 4,325,520, Cl. 242-47.010.
Miszak, Pawel, 4,325,328, Cl. 122-6.00A.
Sumitomo Chemical Company, Ltd.: *See*—
Kojima, Takashi; Okino, Eizo; and Ishimoto, Ryozo, 4,326,062, Cl. 546-166.000.
Ohashi, Naohito; Mizote, Hiroyuki; Maruyama, Isamu; Nagata, Shoji; Ishizumi, Kikuo; and Katsube, Junki, 4,325,886, Cl. 260-455.00R.
Okabe, Takayuki; Hirano, Masachika; and Mukai, Kunio, 4,326,058, Cl. 544-243.000.
Sumitomo Electric Industries, Ltd.: *See*—
Mori, Yoshikatsu, 4,325,664, Cl. 409-234.000.
Sumitomo Metal Industries, Ltd.: *See*—
Nashiwa, Hajime; Kawai, Toshihiko; Takeyama, Muneyoshi; Yamaguchi, Youzi; Kobayashi, Tsuneaki; and Nagahata, Tsutomu, 4,325,748, Cl. 148-2.000.
Sunbeam Corporation: *See*—
Contri, Robert F., 4,326,153, Cl. 318-327.000.
Scott, William H.; and Wagdy, Mohamed K., 4,325,643, Cl. 354-200.000.
Sundelin, Bo; Wahlin, Bengt R. A.; and Johansson, B. Gooran. Dental saliva ejector. 4,325,695, Cl. 433-91.000.
Supra Products, Inc.: *See*—
Larson, Wayne F., 4,325,239, Cl. 70-139.000.
Suzuka, Teruo: *See*—
Fujimori, Kuniaki; Suzuka, Teruo; Inoue, Yukio; and Aizawa, Shirou, 4,325,812, Cl. 208-119.000.
Suzuki, Hiromichi; and Okikawa, Susumu, to Hitachi, Ltd. Encapsulated semiconductor device with a metallic base plate. 4,326,215, Cl. 357-81.000.
Suzuki, Ichiro; Motonami, Masanao; and Ogawa, Hisashi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Emergency locking device. 4,325,569, Cl. 280-804.000.
Suzuki Jidosha Kogyo Kabushiki Kaisha: *See*—
Yokoyama, Hiroshi, 4,325,346, Cl. 123-568.000.
Suzuki, Koji; and Tano, Eiichi, to Asahi Kogaku Kogyo Kabushiki Kaisha. Shutter speed display device. 4,325,623, Cl. 354-289.000.
Suzuki, Ryo; Uehara, Keiichi; Takeuchi, Teruaki; and Takeshita, Masatoshi, to Hitachi, Ltd. Magnetic bubble memory device. 4,326,268, Cl. 365-15.000.
Suzuki, Yoshiro: *See*—
Nakatsubo, Toshio; Ohyoshi, Kaoru; Nishikawa, Masaji; Sato, Eiichi; Mizukami, Norio; Shimizu, Akira; Yanagisawa, Kazuhisa; Oinoue, Kenichi; Tsuda, Naotsune; and Suzuki, Yoshiro, 4,325,625, Cl. 355-3.0SC.
Svacina, Lawrence M.; and James, Donald N., to Staodynamics, Inc. Temperature indicative hotpack. 4,325,254, Cl. 73-356.000.
Sweeney, Dean, Jr.: *See*—
Ward, James E., 4,325,450, Cl. 180-247.000.
Swentzel, Kipling C. File for a chain saw. 4,325,168, Cl. 29-78.000.
Swiatosz, Edmund, to United States of America, Navy. Portable battery operated electric smoke generator. 4,326,119, Cl. 219-272.000.
Swidler, Ronald; and Gardiner, Kenneth W., to Savin Corporation. Method and apparatus for liquid-developing latent electrostatic images. 4,325,627, Cl. 355-10.000.
Swindall, William S.; and Mahyera, Anil, to Joy Manufacturing Company. Anvil with trapped fluid. 4,325,437, Cl. 173-131.000.
Swindells, Richard; and Fredette, Maurice C. J., to Erco Industries Limited. Production of chlorine dioxide with conversion of by-product solid phase sodium acid sulphate to its neutral form. 4,325,934, Cl. 423-478.000.
Swinney, Glen E. Painter's belt-on brush and bucket holder and carrier. 4,325,503, Cl. 224-148.000.
Swisher, George W., Jr.; Smith, Donald W.; and Parker, Carl D., to CMI Corporation. Roadway planing apparatus. 4,325,580, Cl. 299-39.000.
Swiss Aluminium Ltd.: *See*—
Baur, Rudolf, 4,325,753, Cl. 148-20.300.
Systematix Co. Ltd.: *See*—
Seki, Yashiro; and Kobayashi, Hideo, 4,326,195, Cl. 340-365.00R.
Szabo, Sandor: *See*—
Korosladanyi, Jozsef; Szabo, Sandor; Madi, Jeno; Vad, Laszlo; and Farkas, Otto, 4,325,541, Cl. 267-8.00R.
Szedon, John R., to Westinghouse Electric Corp. Corona charging for testing reliability of insulator-covered semiconductor devices. 4,326,165, Cl. 324-158.00R.
Szegi, Alexander. Protected traffic controller spikes. 4,325,651, Cl. 404-6.000.
Tabata, Mitsuo: *See*—
Kidode, Masatsugu; Asada, Haruo; and Tabata, Mitsuo, 4,326,202, Cl. 340-799.000.
Tabor, Carl J. Valve and method for use with a tracheotomy tube. 4,325,366, Cl. 128-207.160.
Tacoma Products, Inc.: *See*—
Darling, Stephen D.; Jendrisak, Aloysius A.; and Bokmiller, David J., 4,325,698, Cl. 434-278.000.
Tada, Satomi: *See*—
Kumasaka, Sadao; Tada, Satomi; Yoneyama, Goro; and Seki, Junichi, 4,325,688, Cl. 425-436.00R.
Tadiran Israel Electronics Industries Ltd.: *See*—
Bergida, Ephraim, 4,326,104, Cl. 179-16.0AA.
Takagi, Akinobu: *See*—
Abe, Yoshiharu; Gotoh, Osamu; and Takagi, Akinobu, 4,325,348, Cl. 123-571.000.
Takahashi, Keiichi, to Tokan Kogyo Co., Ltd. Method for producing a double-walled paper container. 4,325,905, Cl. 264-516.000.

Takahashi, Ken: *See*—
Miyoshi, Tadahiko; Yamazaki, Takeo; Maeda, Kunihiro; and Takahashi, Ken, 4,326,187, Cl. 338-21.000.
Takahashi, Kozi: *See*—
Nakayama, Takeshi; Nishimoto, Takehiko; Kawashima, Machio; Takahashi, Kozi; and Osakabe, Kuniharu, 4,326,147, Cl. 313-403.000.
Takahashi, Minoru; Minorikawa, Hitoshi; Iguchi, Masaru; and Kashiwazaki, Seiichi, to Hitachi, Ltd. Pressure transducer. 4,325,260, Cl. 73-726.000.
Takahashi, Norio: *See*—
Kitashima, Nobumitsu; Takahashi, Norio; Ishiguro, Juichi; and Kawamura, Satoshi, 4,325,994, Cl. 427-376.800.
Takahashi, Susumu: *See*—
Takeda, Harumi; Furuya, Kiichi; Takahashi, Susumu; and Tamaki, Hiroshi, 4,325,638, Cl. 356-375.000.
Takahashi, Toshio: *See*—
Ohsawa, Mitsuo; Yamamura, Masato; and Takahashi, Toshio, 4,326,239, Cl. 361-410.000.
Takahira, Hideo: *See*—
Taki, Kazuo; and Takahira, Hideo, 4,325,942, Cl. 424-94.000.
Takaki, Masaoki: *See*—
Suda, Hiroharu; Hideshima, Keiji; Asada, Kazuyoshi; Takaki, Masaoki; Yasuda, Isao; and Kamei, Atsutaro, 4,326,207, Cl. 364-900.000.
Takao, Shuichiro: *See*—
Umemoto, Yoshiro; Mishima, Yasuhiro; Takao, Shuichiro; Sawada, Kazunori; and Kobayashi, Nobuo, 4,325,574, Cl. 293-120.000.
Takaoka, Michio; Mohtai, Tsuneaki; Yoshida, Syotaroh; and Watanabe, Kazuo, to Fujikura Cable Works, Limited, The. Method for manufacturing a stranded conductor for an electric power cable. 4,325,750, Cl. 148-6.14R.
Takayama, Shuichi: *See*—
Iwasawa, Teruo; Yamazaki, Masafumi; Tsuboshima, Kosaku; Takayama, Shuichi; and Nakajima, Yoshio, 4,326,217, Cl. 358-76.000.
Takayama, Yoshihiro: *See*—
Yukawa, Hideaki; Nara, Terukazu; and Takayama, Yoshihiro, 4,326,029, Cl. 435-109.000.
Takeda, Harumi; Furuya, Kiichi; Takahashi, Susumu; and Tamaki, Hiroshi, to Tokyo Kogaku Kikai Kabushiki Kaisha. Electro-optical distance measuring apparatus. 4,325,638, Cl. 356-375.000.
Takeda, Shiro; Nagai, Yuji; Nakajima, Minoru; Hayashi, Kunihiko; and Serizawa, Koji, to Fujitsu Limited. Electronic circuit packages. 4,326,238, Cl. 361-386.000.
Takeshita, Masatoshi: *See*—
Suzuki, Ryo; Uehara, Keiichi; Takeuchi, Teruaki; and Takeshita, Masatoshi, 4,326,268, Cl. 365-15.000.
Takeuchi, Teruaki: *See*—
Suzuki, Ryo; Uehara, Keiichi; Takeuchi, Teruaki; and Takeshita, Masatoshi, 4,326,268, Cl. 365-15.000.
Takeyama, Muneyoshi: *See*—
Nashiwa, Hajime; Kawai, Toshihiko; Takeyama, Muneyoshi; Yamaguchi, Youzi; Kobayashi, Tsuneaki; and Nagahata, Tsutomu, 4,325,748, Cl. 148-2.000.
Taki, Kazuo; and Takahira, Hideo, to Eisai Co., Ltd. Ubidecarenone compositions having enhanced absorption properties. 4,325,942, Cl. 424-94.000.
Takita, Tomohisa: *See*—
Umezawa, Hamao; Takita, Tomohisa; Fujii, Akio; Muraoka, Yasuhiko; and Kunishima, Mamoru, 4,326,054, Cl. 536-17.00R.
Tamada, Kazukiyo: *See*—
Ouchi, Teruo; Ueda, Hirohisa; and Tamada, Kazukiyo, 4,325,362, Cl. 128-4.000.
Tamaki, Hiroshi: *See*—
Takeda, Harumi; Furuya, Kiichi; Takahashi, Susumu; and Tamaki, Hiroshi, 4,325,638, Cl. 356-375.000.
Tamura, Yoshitaka; Ishitani, Shizuo; and Shigemura, Takashi, to Hitachi, Ltd. Method and an apparatus for thin film formation. 4,325,995, Cl. 427-418.000.
Tanabe, Kenjiro: *See*—
Kimura, Yoshikazu; and Tanabe, Kenjiro, 4,325,630, Cl. 355-74.000.
Tanahashi, Toshio: *See*—
Kato, Takashi; and Tanahashi, Toshio, 4,325,333, Cl. 123-260.000.
Tanaka, Hideyuki; Moriya, Yoshihisa; Saito, Kiyotaka; Hori, Shozo; and Mitsuda, Yutaka, to Denki Kagaku Kogyo Kabushiki Kaisha. Catalysts for polymerization of olefins. 4,325,838, Cl. 252-429.00B.
Tanaka, Hiroshi; and Yamamoto, Yoshihiro, to NGK Spark Plug Co., Ltd. Sintered ceramics for cutting tools and manufacturing process thereof. 4,325,710, Cl. 51-309.000.
Tanaka, Izumi: *See*—
Shirai, Kazunari; and Tanaka, Izumi, 4,326,213, Cl. 357-51.000.
Tanaka, Junzo; Ikeda, Nobuo; and Yoshimura, Hirofumi, to Matsushita Electric Industrial Co., Ltd. Microwave oven having a tubular L-shaped antenna. 4,326,112, Cl. 219-10.55F.
Tanaka, Mitsugu: *See*—
Kobayashi, Hidetoshi; and Tanaka, Mitsugu, 4,326,024, Cl. 430-557.000.
Tanaka, Ryuzo; and Ishigaki, Hisao, to Citizen Watch Co., Ltd. Mounting structure of plastic glass in watch case. 4,326,281, Cl. 368-294.000.
Taniguchi, Nobuyuki: *See*—
Sahara, Masayoshi; and Taniguchi, Nobuyuki, 4,325,617, Cl. 354-31.000.
Tanner, Joseph F.: *See*—
Roberts, Michael G.; and Tanner, Joseph F., 4,325,854, Cl. 524-476.000.
Tannoy Products Limited: *See*—
Kirkpatrick, Maurice, 4,325,455, Cl. 181-148.000.
Tano, Eiichi: *See*—
Suzuki, Koji; and Tano, Eiichi, 4,325,623, Cl. 354-289.000.
Tapper, Robert. Iontophoretic treatment apparatus. 4,325,367, Cl. 128-207.210.
Tarpley, Roy W.; Rehn, Larry A.; and Davis, Paul H., to Texas Instruments Incorporated. Autoreferencing liquid level sensing apparatus and method. 4,326,199, Cl. 340-622.000.
Tarpley, William B., Jr.: *See*—
Howard, Paul L.; Tarpley, William B., Jr.; Moulder, George R.; and McBride, William R., 4,325,255, Cl. 73-589.000.
Taschler, Felix. Igniter for portable gas appliances. 4,325,356, Cl. 126-413.000.
Tasma, James D., to Rospatch Corporation. Control circuit for alternately actuating a pair of loads. 4,326,133, Cl. 307-26.000.
Tatsumi, Hideo: *See*—
Kanamaru, Hisanobu; Okabe, Moisei; Tohkairin, Akira; Tatsumi, Hideo; and Kurosawa, Takuzo, 4,325,678, Cl. 417-313.000.
Taurus Gumiipari Vallalat: *See*—
Korosladanyi, Jozsef; Szabo, Sandor; Madi, Jeno; Vad, Laszlo; and Farkas, Otto, 4,325,541, Cl. 267-8.00R.
Tayama, Katsuhiko: *See*—
Suda, Toyoharu; Tayama, Katsuhiko; Araki, Kenji; Kurata, Masayuki; and Yamana, Hideo, 4,325,752, Cl. 148-12.100.
Taylor, Dale W. W. Low angular acceleration putter and method. 4,325,553, Cl. 273-167.00F.
Taylor, Frank E. Sawhorse. 4,325,463, Cl. 182-155.000.
Taylor, Thomas G. Method and apparatus for producing alcohol and an alcohol-petroleum fuel mix. 4,325,329, Cl. 123-3.000.
Taylor, Wilbur B.: *See*—
Stowe, Robert L.; and Taylor, Wilbur B., 4,325,244, Cl. 72-158.000.
Tchon, Wallace E.: *See*—
Owen, William H.; Simko, Richard T.; and Tchon, Wallace E., 4,326,134, Cl. 307-268.000.
Teasdale, Raymond G., to National Reseach Development Corporation. Oil containment booms. 4,325,653, Cl. 405-68.000.
Technicraft, Inc.: *See*—
Jordan, Michael, 4,325,910, Cl. 422-64.000.
Teed, Richard K., to Riegel Textile Corporation. Elastic leg disposable diaper. 4,325,372, Cl. 128-287.000.
Tefft, Edward G.; and Tuft, Bernard R., to General Electric Company. Fast isolation diffusion. 4,325,182, Cl. 29-583.000.
Teijin Seiki Company Limited: *See*—
Yamamoto, Toru, 4,325,215, Cl. 60-450.000.
Teixeira, Donald P.: *See*—
Arand, John K.; Muzio, Lawrence J.; and Teixeira, Donald P., 4,325,924, Cl. 423-235.000.
Tejima, Iwao: *See*—
Nakagawa, Taizo; Watanabe, Yutaka; Ohmori, Kaoru; Koike, Kengo; and Tejima, Iwao, 4,325,968, Cl. 424-300.000.
Teleflex Incorporated: *See*—
Frankhouse, Thomas J., 4,325,904, Cl. 264-242.000.
Telefonbau und Normalzeit GmbH: *See*—
Barkow, Helmut; and Frank, Karl, 4,326,108, Cl. 179-164.000.
Minner, Willy; Rodenheber, Rainer; and Reitz, Erhard, 4,326,106, Cl. 179-81.00B.
Templeman, Gareth J.: *See*—
Tibbetts, Merrick S.; and Templeman, Gareth J., 4,325,743, Cl. 177-46.200.
Terman, Lewis M.: *See*—
Merrill, Richard B.; Terman, Lewis M.; and Yee, Yen S., 4,326,192, Cl. 340-347.0AD.
Teschendorf, Harold A.: *See*—
Burke, James E., 4,325,689, Cl. 431-70.000.
Tessarolo, Francesco: *See*—
Costanzi, Silvestro; Tessarolo, Francesco; and Ballabio, Adriano, 4,325,864, Cl. 524-104.000.
Testco, Inc.: *See*—
Evans, Alyce D.; and Hilty, John R., 4,325,691, Cl. 431-190.000.
Texaco Development Corporation: *See*—
Schulze, Heinz; Zimmerman, Robert L.; and Waddill, Harold G., 4,326,050, Cl. 528-94.000.
Texaco Inc.: *See*—
Chafetz, Harry; and Lee, Gary D., 4,325,876, Cl. 260-346.740.
Woodle, Robert A., 4,325,818, Cl. 208-326.000.
Zimmerman, Robert L., 4,326,042, Cl. 521-115.000.
Texas Alkyls, Inc.: *See*—
Malpass, Dennis B., 4,325,840, Cl. 252-431.00R.
Texas Instruments Incorporated: *See*—
Boone, Gary W., 4,326,265, Cl. 364-900.000.
Curran, Patrick A., 4,325,180, Cl. 29-571.000.
Ponder, James E.; Tubbs, Graham S.; Lou, Perry W.; and Farnow, Stephen A., 4,325,169, Cl. 29-571.000.
Tarpley, Roy W.; Rehn, Larry A.; and Davis, Paul H., 4,326,199, Cl. 340-622.000.
Textron Inc.: *See*—
Pethis, James J., 4,325,590, Cl. 308-184.00R.
Tharp, James A., to Square D Company. Circuit breaker with self contained adjustable bimetal. 4,326,183, Cl. 337-70.000.
Thebaud, Sacha. Foldable chair. 4,325,577, Cl. 297-45.000.
Thermo King Corp.: *See*—
Howland, Leland L., 4,325,224, Cl. 62-196.00A.

Thibert, Jean-Jacques: *See—*
Gallot, Jacques; Vingut, Georges; de Paul, Michel V.; and Thibert, Jean-Jacques, 4,325,675, Cl. 416-223.00R.
Tholander, Lars H. G.: *See—*
Jacobsson, Kurt A. G.; Tholander, Lars H. G.; and Wide, Ulf-Erik, 4,325,702, Cl. 474-56.000.
Thomas J. Lipton, Inc.: *See—*
Harrow, Alastair D.; and Martin, John W., 4,325,976, Cl. [illegible]
Thomas, Louis N. Hair strand separating implement. 4,325,393, Cl. [illegible]
Thompson, Marc J., to Virtis Company, Inc., The. Shelf arrangement for freeze drying apparatus. 4,325,193, Cl. 34-92.000.
Thompson, Robert E.: *See—*
McNinney, Richard P., Jr.; and Thompson, Robert E., 4,325,292, Cl. 98-115.0SB.
Thompson, Stanley C.; and Schmidt, Glenn H., to Stan Thompson Golf Club Company. Putter with shaft axis focussed at blade keel. 4,325,550, Cl. 273-80.00C.
Thomson-Brandt: *See—*
Maille, Michel, 4,326,099, Cl. 179-1.0GA.
Thomson-CSF: *See—*
DeMan, Pierre; Pimentel, Alberto; Ben Sadou, Jean-Claude; and de Riviere, Charles, 4,326,293, Cl. 455-72.000.
Thornthwaite, David W.: *See—*
Jones, Keith; McDonnell, Francis R. M.; Morgan, Stuart N.; and Thornthwaite, David W., 4,325,883, Cl. 260-423.000.
Tibbetts, Merrick S.; and Templeman, Gareth J., to PepsiCo, Inc. Process for the enhancement of caramel colorant. 4,325,743, Cl. 127-46.200.
Tickins, Jack J. Drill bit end protectors. 4,325,661, Cl. 408-239.00A.
Tietz, Werner, to ZEISS IKON AG Goerzwerk. Multi-level lock system and method. 4,325,242, Cl. 70-401.000.
Tiffany Industries, Inc.: *See—*
Bell, Joseph M., 4,325,596, Cl. 312-194.000.
Tiletschke, Lothar; and Feldmann, Hellmuth, to Sigma Bauelemente GmbH. Housing device for isolating connecting reinforcements at joints between first and subsequently poured concrete structures. 4,325,533, Cl. 249-188.000.
Tillotson, Henry B.: *See—*
Foster, Leslie W.; and Tillotson, Henry B., 4,326,145, Cl. [illegible]
Timex Corporation: *See—*
Sethofer, Nicholas L., 4,325,830, Cl. 252-299.610.
Timken Company, The: *See—*
Otto, Dennis L., 4,325,591, Cl. 308-187.200.
Tios Corporation: *See—*
Salim, Massoud A.; and Hamacher, Thomas L., 4,325,205, Cl. [illegible]
Tkach, Lev N.; Prikhodko, Jury N.; Vaisman, Leonid M.; Soldatenko, Vladimir I.; and Kostjuchenko, Vasily V. Cellulose-based electric insulation material containing boric anhydride and process for producing same. 4,325,848, Cl. 252-567.000.
Tohi, Yasusuke: *See—*
Murata, Naoaki; Yoshioka, Masahiro; Hayashi, Kiyoshi; and Tohi, Yasusuke, 4,325,626, Cl. 355-3.0DR.
Tohkairin, Akira: *See—*
Kanamaru, Hisanobu; Okabe, Moisei; Tohkairin, Akira; Tatsumi, Hideo; and Kurosawa, Takuzo, 4,325,6[illegible], Cl. 417-313.000.
Tohyama, Shigeo, to Hitachi, Ltd. Slit width calibrator for monochromator. 4,325,634, Cl. 356-331.000.
Tokan Kogyo Co., Ltd.: *See—*
Takahashi, Keiichi, 4,325,905, Cl. 264-516.000.
Tokyo Electric Co., Ltd.: *See—*
Uchimura, Mitsuo; Oana, Masao; and Nishimura, Yoshiharu, 4,326,254, Cl. 364-466.000.
Tokyo Kogaku Kikai Kabushiki Kaisha: *See—*
Takeda, Harumi; Furuya, Kiichi; Takahashi, Susumu; and Tamaki, Hiroshi, 4,325,638, Cl. 356-375.000.
Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Enokizono, Takatoshi, 4,326,201, Cl. 340-717.000.
Nishida, Katsutoshi; Okada, Syoji; Ando, Akio; and Sakai, Masato, 4,325,334, Cl. 123-270.000.
Nishiwaki, Susumu; and Satoh, Toshikazu, 4,326,232, Cl. [illegible]
Yanabu, Satoru; Nishiwaki, Susumu; and Satoh, Toshikazu, 4,326,233, Cl. 361-127.000.
Tolman, Chadwick A.: *See—*
Druliner, Joe D.; Ittel, Steven D.; Krusic, Paul J.; and Tolman, Chadwick A., 4,326,084, Cl. 568-360.000.
Tom Graham & Associates: *See—*
Graham, Thomas S., 4,325,823, Cl. 210-86.000.
Toma, Daniel N., to General Electric Company. Adjustable stoke agitation system. 4,325,234, Cl. 68-133.000.
Tomcufcik, Andrew S.: *See—*
Wright, William B., Jr.; Tomcufcik, Andrew S.; and Marisco, Joseph W., Jr., 4,325,955, Cl. 424-251.000.
Topfer, Rainer: *See—*
Goddecke, Hubert; Reichardt, Werner; Schumacher, Kurt; and Topfer, Rainer, 4,325,166, Cl. 29-25.150.
Toppan Printing Co., Ltd.: *See—*
Sugiura, Takeo; Miyajima, Keiji; Nagatomo, Hideo; and Masui, Kiyoshi, 4,325,981, Cl. 427-7.000.
Toray Industries, Inc.: *See—*
Sato, Hiroshi; Okamoto, Takehiko; and Asada, Akira, 4,325,915, Cl. [illegible]
Torbet, Philip A.: *See—*
Holt, Jack A.; Lathrop, Robert L.; and Torbet, Philip A., 4,325,575, Cl. 294-89.000.
Torigai, Akiyoshi; Morikawa, Teruo; Nakaoka, Masaki; Murata, Shinji; and Sone, Yoshiaki, to Canon Kabushiki Kaisha. Cleaning device for an image forming apparatus. 4,325,628, Cl. 355-15.000.
Torisawa, Akira: *See—*
Shida, Masaharu; Ueda, Makoto; Torisawa, Akira; Owada, Shuji; and Mandai, Masaaki, 4,326,278, Cl. 368-157.000.
Toro Company, The: *See—*
Comer, Robert C., 4,325,195, Cl. 37-43.00D.
Foster, Leslie W.; and Tillotson, Henry B., 4,326,145, Cl. 313-120.000.
Witt, Robert H.; and Petersen, Walter J., 4,325,211, Cl. 56-15.800.
Tosco Corporation: *See—*
Haas, Frank C.; and Faudel, Gerald B., 4,325,925, Cl. 423-239.000.
Toshiba Kikai Kabushiki Kaisha: *See—*
Fujita, Shigeru, 4,326,255, Cl. 364-476.000.
Totino, Peter J.; and Voza, Alfonse N., to Singer Company, The. Method for sewing a monogram pattern. 4,325,315, Cl. 112-266.100.
Touchton, James J.; and Pederson, Richard J., to Storage Technology Corporation. Constant bandwidth automatic gain control. 4,326,226, Cl. 360-77.000.
Toulan, Roy D., Jr.; and Rensky, Richard, to Quality Audio Components, Inc. Cartridge alignment system. 4,326,283, Cl. 369-55.000.
Toyo Rubber Chemical Industrial Corporation: *See—*
Kumasaka, Sadao; Tada, Satomi; Yoneyama, Goro; and Seki, Junichi, 4,325,688, Cl. 425-436.00R.
Toyoda Koki Kabushiki Kaisha: *See—*
Sugita, Kazuhiko, 4,325,585, Cl. 308-9.000.
Toyoda, Minoru, to Aisin Seiki Company, Limited. Key holder. 4,325,243, Cl. 70-456.00R.
Toyoda, Munemitsu; and Adachi, Koichiro, to Sharp Kabushiki Kaisha. Heater disposed below a turntable in a combination microwave and electric oven. 4,326,113, Cl. 219-10.55D.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Kato, Takashi; and Tanahashi, Toshio, 4,325,333, Cl. 123-260.000.
Kiucihi, Hideo; Ogawa, Oyuki; and Kobayashi, Nobuyuki, 4,325,893, Cl. 261-50.00A.
Otsuka, Fumio; Nabeta, Teiichi; Kojima, Yasufumi; Matsushima, Takeo; Fujioka, Yasuhiro; and Wada, Eiichi, 4,325,426, Cl. [illegible]
Suzuki, Ichiro; Motonami, Masanao; and Ogawa, Hisashi, 4,325,569, Cl. 280-804.000.
Yamamoto, Toru, 4,325,215, Cl. 60-450.000.
Toyota Jidosho Kogyo Kabushiki Kaisha: *See—*
Umemoto, Yoshiro; Mishima, Yasuhiro; Takao, Shuichiro; Sawada, Kazunori; and Kobayashi, Nobuo, 4,325,574, Cl. 293-120.000.
Trianco Redfyre Limited: *See—*
Babbage, Thomas A., 4,325,310, Cl. 110-101.00R.
Trop, Moshe; and Livne, Avinoam, to Ben-Gurion University of the Negev Research and Development Authority. Powdered compositions for cream toppings. 4,325,979, Cl. 426-570.000.
Tropel, Inc.: *See—*
Moore, Robert C., 4,325,637, Cl. 356-359.000.
Trueblood, Richard K., to National Semiconductor Corporation. Thermal shock resistant package having an ultraviolet light transmitting window for a semiconductor chip. 4,326,214, Cl. 357-74.000.
Tsuboshima, Kosaku: *See—*
Iwasawa, Teruo; Yamazaki, Masafumi; Tsuboshima, Kosaku; Takayama, Shuichi; and Nakajima, Yoshio, 4,326,217, Cl. [illegible]
Tsuda, Naotsune: *See—*
Nakatsubo, Toshio; Ohyoshi, Kaoru; Nishikawa, Masaji; Sato, Eiichi; Mizukami, Norio; Shimizu, Akira; Yanagisawa, Kazuhisa; Oinoue, Kenichi; Tsuda, Naotsune; and Suzuki, Yoshiro, 4,325,625, Cl. 355-3.0SC.
Tsui, Yu-Ming. Process for manufacturing regenerated leather. 4,325,236, Cl. 69-21.000.
Tsuji Kikuro; and Ishigaki, Masaya, to Dainippon Screen Seizo Kabushiki Kaisha; and Kabushiki Kaisha Dai-ichi Shiko. Method of photographic printing and a photographic original plate for use therein. 4,325,632, Cl. 355-86.000.
Tsuruoka, Takashi: *See—*
Inouye, Shigeharu; Tsuruoka, Takashi; and Iwamatsu, Katsuyoshi, 4,325,951, Cl. 424-248.520.
Tubbs, Graham S.: *See—*
Ponder, James E.; Tubbs, Graham S.; Lou, Perry W.; and Farnow, Stephen A., 4,325,169, Cl. 29-571.000.
Tucker, Donald F.: *See—*
Bartish, Charles M.; and Tucker, Donald F., 4,325,932, Cl. 423-402.000.
Tucker, George T.: *See—*
Babus, Stephen R.; and Tucker, George T., 4,325,641, Cl. 366-18.000.
Tuft, Bernard R.: *See—*
Tefft, Edward G.; and Tuft, Bernard R., 4,325,182, Cl. 29-583.000.
Tumasian, Beniamin A.: *See—*
Pelts, Boris B.; Tumasian, Beniamin A.; Egorov, Leonid P.; Zatulovsky, Lev M.; Chaikin, Petr M.; Freiman, Efim A.; Chalian, Eduard A.; Abramian, Grant I.; Azoian, Stepan E.; and Kostandian, Kliment A., 4,325,917, Cl. 422-249.000.
Turner, David H.: *See—*
Poyser, Robert H.; and Turner, David H., 4,325,971, Cl. 424-324.000.
Turner, William F. Fuel metering system. 4,325,343, Cl. 123-527.000.

Tyler, Derek E.: *See—*
Yarwood, John C.; Tyler, Derek E.; and Winter, Joseph, 4,325,777, Cl. 156-620.000.
Tyler Refrigeration Corporation: *See—*
Ibrahim, Fayez F., 4,325,227, Cl. 62-248.000.
Uchida, Isamu; Kokubo, Eiichi; and Sasaki, Toshinobu, to Laurel Bank Machine Co., Ltd. Dispenser for making payment of pre-packed paper sheets. 4,325,277, Cl. 83-205.000.
Uchimura, Mitsuo; Oana, Masao; and Nishimura, Yoshiharu, to Tokyo Electric Co., Ltd. Postal charge processing system. 4,326,254, Cl. 364-466.000.
Ueda, Hirohisa: *See—*
Ouchi, Teruo; Ueda, Hirohisa; and Tamada, Kazukiyo, 4,325,362, Cl. 128-4.000.
Ueda, Makoto: *See—*
Shida, Masaharu; Ueda, Makoto; Torisawa, Akira; Owada, Shuji; and Mandai, Masaaki, 4,326,278, Cl. 368-157.000.
Uehara, Keiichi: *See—*
Suzuki, Ryo; Uehara, Keiichi; Takeuchi, Teruaki; and Takeshita, Masatoshi, 4,326,268, Cl. 365-15.000.
UHDE GmbH: *See—*
Bahnisch, Hans-Joachim, 4,326,041, Cl. 518-702.000.
Uhlmann, Joachim, to Gevipi A.G. Single-control mixing cock with plates made of hard material. 4,325,403, Cl. 137-315.000.
Ukai, Nobuo; Funado, Akira; and Yokota, Tethuya, to Kagome Co., Ltd. Apparatus for adjusting internal pressure of aseptic storage tank. 4,325,296, Cl. 99-468.000.
Ukai, Nobuo; Funado, Akira; and Yokota, Tethuya, to Kagome Co., Ltd. Aseptic valve. 4,325,401, Cl. 137-240.000.
Ulion, Nicholas E.: *See—*
Goebel, Joseph A.; Barkalow, Richard H.; and Ulion, Nicholas E., 4,326,011, Cl. 428-641.000.
Ulveling, Leon, to Paul Wurth S.A. Method and installation of injection of solid fuels into a shaft furnace. 4,325,312, Cl. 110-347.000.
Umeda, Haruhiko, to Kabushiki Kaisha Komatsu Seisakusho. Electric power plant for vehicles. 4,325,451, Cl. 180-294.000.
Umeda, Jun-ichi: *See—*
Aiki, Kunio; Nakamura, Michiharu; and Umeda, Jun-ichi, 4,326,176, Cl. 372-45.000.
Umeda, Naoki: *See—*
Igashira, Toshihiko; Umeda, Naoki; and Abe, Seiko, 4,325,344, Cl. 123-549.000.
Umemoto, Yoshiro; Mishima, Yasuhiro; Takao, Shuichiro; Sawada, Kazunori; and Kobayashi, Nobuo, to Toyota Jidosho Kogyo Kabushiki Kaisha. Shock absorbing bumper of a vehicle. 4,325,574, Cl. 293-120.000.
Umezawa, Hamao; Takita, Tomohisa; Fujii, Akio; Muraoka, Yasuhiko; and Kunishima, Mamoru, to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai. Cleomycins and process for producing same. 4,326,054, Cl. [illegible]
UNC Recovery Corporation: *See—*
Luke, Donald A.; Magdics, Alex; Paris, Sandra L.; and Worthington, Ralph E., 4,325,918, Cl. 423-10.000.
Ungnadner, Peter; Blockinger, Peter; Winkler, Friedrich; and Lermann, Peter, to AGFA-Gevaert Aktiengesellschaft. Film advancing arrangement. 4,325,523, Cl. 242-205.000.
Uni-Cardan AG: *See—*
Girguis, Sobhy L., 4,325,232, Cl. 64-21.000.
Union Carbide Corporation: *See—*
Braun, David B.; and Rosen, Meyer R., 4,325,861, Cl. 523-205.000.
Smith, Derek R.; and Worgan, Gordon P., 4,325,174, Cl. 29-434.000.
Watson, Stuart L.; and Westfall, Paul M., 4,325,831, Cl. 252-354.000.
Union Oil Company of California: *See—*
Gowdy, Hugh W.; and Fenton, Donald M., 4,325,936, Cl. 423-573.00R.
Young, Dean A., 4,325,929, Cl. 423-339.000.
Union Special G.m.b.H.: *See—*
Niem, Wolfgang, 4,325,314, Cl. 112-199.000.
United McGill Corporation: *See—*
Bryant, Mark A., 4,325,922, Cl. 423-210.000.
United States of America
Air Force: *See—*
Regan, David M.; and Beverley, Kenneth I., 4,325,697, Cl. [illegible]
Army: *See—*
King, Paul V.; Becher, Albert P.; and Henderson, Wilmer P., 4,325,309, Cl. 109-49.500.
Miller, Thomas G.; and Rogers, Billie O., 4,325,252, Cl. 73-190.0EW.
O'Neill, Cormac G., 4,325,340, Cl. 123-447.000.
Rittenbach, Otto E.; and Olesch, Reinhard G., 4,326,272, Cl. 367-93.000.
Sattler, Joseph P.; Worchesky, Terrance L.; and Ritter, Kenneth J., 4,325,635, Cl. 356-349.000.
Siorek, Richard W., 4,325,468, Cl. 188-282.000.
Voigt, H. William, Jr.; and Banker, Bernard R., 4,325,759, Cl. 149-19.920.
Energy: *See—*
Brown, R. Jack; Gerth, Howard L.; and Robinson, Samuel C., 4,326,137, Cl. 310-12.000.
Golestaneh, Ahmad A., 4,325,217, Cl. 60-527.000.
Griffith, William L.; Compere, Alicia L.; and Holleman, James W., 4,326,037, Cl. 435-274.000.
Hwang, Jaw-Yeu, 4,325,425, Cl. 165-1.000.
Kanne, William R., Jr.; Kelker, John W., Jr.; and Alexander, Robert J., 4,326,117, Cl. 219-85.0CM.
McCulloch, Reginald W.; Morgan, Chester S., Jr.; and Dial, Ralph E., 4,326,122, Cl. 219-544.000.
Niemann, Ralph C.; Mataya, Karl F.; and Gonczy, John D., 4,325,530, Cl. 248-317.000.
Planchér, Henry; and Petersen, Joseph C., 4,325,738, Cl. 106-273.00N.
Rinde, James A., 4,325,737, Cl. 106-122.000.
Waldrop, Forrest B.; and Washington, Charles A., 4,325,791, Cl. [illegible]
Navy: *See—*
Cooke, Gordon R., 4,325,246, Cl. 73-1.00E.
Kaloi, Cyril M., 4,326,203, Cl. 343-700.0MS.
Kohler, Janet K., 4,326,015, Cl. 429-52.000.
Panayappan, Ramanathan; and Venezky, David L., 4,325,744, Cl. [illegible]
Pastine, Donald J., 4,325,305, Cl. 102-201.000.
Swiatosz, Edmund, 4,326,119, Cl. 219-272.000.
Yoder, Max N., 4,325,181, Cl. 29-571.000.
U.S. Philips Corporation: *See—*
Goddecke, Hubert; Reichardt, Werner; Schumacher, Kurt; and Topfer, Rainer, 4,325,166, Cl. 29-25.150.
Klaus, Werner, 4,326,182, Cl. 336-198.000.
Le Can, Claude J. P. F.; Whelan, Maurice V.; and Hart, Karel, 4,326,136, Cl. 307-451.000.
Smeets, Eugenius T. J. M., 4,326,211, Cl. 357-30.000.
Van den Brink, Hans G.; and Lamboo, Theodorus F., 4,326,178, Cl. 372-61.000.
Verboom, Johannes J.; and Carasso, Marino G., 4,326,282, Cl. 369-48.000.
United States Steel Corporation: *See—*
Aiken, John E.; and Didycz, William J., 4,325,921, Cl. 423-210.000.
United Technologies Corporation: *See—*
Brown, Edgar E.; and Ruckle, Duane L., 4,325,756, Cl. 148-32.500.
Goebel, Joseph A.; Barkalow, Richard H.; and Ulion, Nicholas E., 4,326,011, Cl. 428-641.000.
McFarlin, David J., 4,325,220, Cl. 62-55.500.
Universal Precision Machining Co.: *See—*
Graves, Daniel G.; Graves, Vernard L.; and Knudsen, Ernest W., Jr., 4,325,767, Cl. 156-196.000.
University of California, The Regents of the: *See—*
Sarkar, Siddhartha, 4,326,026, Cl. 435-2.000.
University of Delaware: *See—*
Baron, Bill N.; Rocheleau, Richard E.; and Russell, T. W. Fraser, 4,325,986, Cl. 427-74.000.
Williams, Ferd E.; and Morton, David C., 4,326,007, Cl. [illegible]
University of Southern California: *See—*
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Werwa, Harold. Process for fabricating a self-contained ink applicator for continuous imprinting on non-absorbent surfaces. 4,325,179, Cl. 29-458.000.
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Willertz, Lothar E., 4,325,259, Cl. 73-653.000.
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Wicks, Jerome L. Patio door and window guard system invention. 4,325,203, Cl. 49-57.000.
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Wilford, E. Burke. Aircraft carrier. 4,325,317, Cl. 114-261.000.
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Will, Fritz G., to General Electric Company. Positive electrode for lead acid battery. 4,326,017, Cl. 429-228.000.
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Williams, Ferd E.; and Morton, David C., to University of Delaware. Electo-luminescent structure. 4,326,007, Cl. 428-333.000.
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Winchell, Frank J., to General Motors Corporation. Cambering vehicle. 4,325,565, Cl. 280-282.000.
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Winkler, Jiri; Kondr, Milan; Jelinek, Richard; Hlousek, Jaroslav; Krtek, Jan; Cibulka, Josef; Mlynar, Vladimir; and Simacek, Josef, to CKD Praha, oborovy podnik. Circuit arrangement of an inverted current rectifier with self commutation. 4,326,246, Cl. 363-138.000.
Winter, Joseph: *See*—
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Winzer, Gerhard; and Auracher, Franz, to Siemens Aktiengesellschaft. Branching element for monomode light waveguides and the method of manufacture. 4,325,605, Cl. 350-96.150.
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Witte, Hans-H., to Siemens Aktiengesellschaft. Input and output coupler device. 4,325,604, Cl. 350-96.150.
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Wolf, Herman B. Geothermal heating and cooling system. 4,325,228, Cl. 62-160.000.
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Wood, Trevor E.; Cooper, Gene R.; and Kemp, Raymond, to Otto Durr. Workpiece cleansing apparatus. 4,325,161, Cl. 15-304.000.
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Wright, William B., Jr.; Tomcufcik, Andrew S.; and Marsico, Joseph W., Jr., to American Cyanamid Company. Substituted 3-benzhydrylthiazolo(3,2-a)pyrimidines. 4,325,955, Cl. 424-251.000.
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Wu, An C. Cooling pillow with heat dissipator. 4,325,151, Cl. 5-441.000.
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Wynne, John R. Fluid flow equalizing valve arrangement. 4,325,400, Cl. 137-101.000.
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Yamada, Kozo; Ohba, Yasuhiro; and Matsui, Seiichi, to Honda Giken Kogyo Kabushiki Kaisha. Three-wheeled vehicle with a container. 4,325,562, Cl. 280-62.000.
Yamada, Seiji, to Minolta Camera Kabushiki Kaisha. Exposure control system for single lens reflex cameras. 4,325,615, Cl. 354-24.000.
Yamagiwa, Kazuo; and Machida, Yukihiko, to Sony Corporation. Video signal recording and/or reproducing apparatus with gain control. 4,326,223, Cl. 360-33.000.
Yamaguchi, Hiromasa: *See—*
Stang, John H.; and Yamaguchi, Hiromasa, 4,325,219, Cl. 60-599.000.
Yamaguchi, Hiroshi, to Nissan Motor Company, Limited. Method of controlling fluid flow rate using on-off type electromagnetic valve. 4,325,347, Cl. 123-571.000.
Yamaguchi, Teruo, to Narumi China Corporation. Casing comprising a barrier for intercepting alpha particles from a sealing layer. 4,326,095, Cl. 174-52.0FP.
Yamaguchi, Youzi: *See—*
Nashiwa, Hajime; Kawai, Toshihiko; Takeyama, Muneyoshi; Yamaguchi, Youzi; Kobayashi, Tsuneaki; and Nagahata, Tsutomu, 4,325,748, Cl. 148-2.000.
Yamaha, Hatsudoki, Kabushiki, Kaisha: *See—*
Shibata, Hirotaka, 4,325,335, Cl. 123-323.000.
Yamamoto, Hachizou: *See—*
Nakatani, Hiroshi; Ishida, Masahide; and Yamamoto, Hachizou, 4,325,441, Cl. 177-25.000.
Yamamoto, Mitsuo: *See—*
Suetoshi, Tetsui; Kinugasa, Munetaka; Hosoya, Koichi; and Yamamoto, Mitsuo, 4,325,772, Cl. 156-294.000.
Yamamoto, Shinji: *See—*
Kohno, Hideki; Shiono, Hidemi; and Yamamoto, Shinji, 4,326,252, Cl. 364-414.000.
Yamamoto, Toru, to Teijin Seiki Company Limited; and Toyota Jidosha Kogyo Kabushiki Kaisha. Hydraulic apparatus. 4,325,215, Cl. 60-450.000.
Yamamoto, Yoshihiro: *See—*
Tanaka, Hiroshi; and Yamamoto, Yoshihiro, 4,325,710, Cl. 51-309.000.
Yamamura Glass Kabushiki Kaisha: *See—*
Fujimoto, Masami, 4,325,725, Cl. 65-230.000.
Yamamura, Masato: *See—*
Ohsawa, Mitsuo; Yamamura, Masato; and Takahashi, Toshio, 4,326,239, Cl. 361-410.000.
Yamana, Hideo: *See—*
Suda, Toyoharu; Tayama, Katsuhiko; Araki, Kenji; Kurata, Masayuki; and Yamana, Hideo, 4,325,752, Cl. 148-12.100.
Yamaoka, Tetsuo: *See—*
Iwata, Hiroshi; and Yamaoka, Tetsuo, 4,325,621, Cl. 354-145.000.
Yamashita, Masami: *See—*
Miyaka, Haruhisa; Yamashita, Masami; and Asawa, Tatsuro, 4,326,046, Cl. 525-276.000.
Yamatsu, Isao; Abe, Shinya; Inai, Yuichi; Igarashi, Toshiji; and Nakajima, Yoshikage, to Eisai Co., Ltd. β, γ-Dihydropolyprenyl alcohol and hypotensive pharmaceutical composition containing same. 4,325,974, Cl. 424-343.000.
Yamauchi, Teruo; Oyama, Yoshishige; and Fujieda, Mamoru, to Hitachi, Ltd. Fuel control device for fuel injection system for internal combustion engine. 4,325,341, Cl. 123-472.000.
Yamazaki, Masafumi: *See—*
Iwasawa, Teruo; Yamazaki, Masafumi; Tsuboshima, Kosaku; Takayama, Shuichi; and Nakajima, Yoshio, 4,326,217, Cl. 118-76.000.
Yamazaki, Masahiro, to Hitachi, Ltd. Process for recovering nitrogen under pressure in air separation apparatus. 4,325,719, Cl. 62-30.000.
Yamazaki, Takeo: *See—*
Miyoshi, Tadahiko; Yamazaki, Takeo; Maeda, Kunihiro; and Takahashi, Ken, 4,326,187, Cl. 338-21.000.
Yanabu, Satoru; Nishiwaki, Susumu; and Satoh, Toshikazu, to Tokyo Shibaura Denki Kabushiki Kaisha. Lightning arrester. 4,326,233, Cl. 361-127.000.
Yanagisawa, Kazuhisa: *See—*
Nakatsubo, Toshio; Ohyoshi, Kaoru; Nishikawa, Masaji; Sato, Eiichi; Mizukami, Norio; Shimizu, Akira; Yanagisawa, Kazuhisa; Oinoue, Kenichi; Tsuda, Naotsune; and Suzuki, Yoshiro, 4,325,625, Cl. 355-3.0SC.
Yanagisawa, Masahiro, to Nippon Electric Co. Ltd. Magnetic record member and process for manufacturing the same. 4,326,229, Cl. 360-133.000.
Yanai, Shaul: *See—*
Vofsi, David; Halmann, Martin M.; and Yanai, Shaul, 4,325,727, Cl. 71-86.000.
Yanata, Kohsaki: *See—*
Miyajima, Mikio; Yanata, Kohsaki; Sasaki, Fujio; Hori, Fumihisa; and Fujimoto, Hideki, 4,325,645, Cl. 400-196.100.
Yang, Yin-Lung: *See—*
Chiang, Nei-Ho, 4,325,671, Cl. 415-43.000.
Yano, Yasuhiro: *See—*
Ohta, Tokuya; Eida, Tsuyoshi; Yano, Yasuhiro; Matsufuji, Yohji; and Haruta, Masahiro, 4,325,735, Cl. 106-22.000.
Yarwood, John C.; Tyler, Derek E.; and Winter, Joseph, to Olin Corporation. Method and apparatus for reforming an improved strip of material from a starter strip of material. 4,325,777, Cl. 156-620.000.
Yasuda, Isao: *See—*
Suda, Hiroharu; Hideshima, Keiji; Asada, Kazuyoshi; Takaki, Masaoki; Yasuda, Isao; and Kamei, Atsutaro, 4,326,207, Cl. 364-900.000.
Yates, Ronald L., to Dow Chemical Company, The. Process for reacting alkylene oxides with hydroxyl-containing initiator compounds. 4,326,047, Cl. 525-507.000.
Yeda Research & Development Co., Ltd.: *See—*
Shtrikman, Shmuel, 4,326,138, Cl. 310-36.000.
Vofsi, David; Halmann, Martin M.; and Yanai, Shaul, 4,325,727, Cl. 71-86.000.
Yee, Yen S.: *See—*
Merrill, Richard B.; Terman, Lewis M.; and Yee, Yen S., 4,326,192, Cl. 340-347.0AD.
Yen, Teh Fu; and Chan, Mankin, to University of Southern California. Pre-caustic flood treatment. 4,325,433, Cl. 166-273.000.
Yoder, Max N., to United States of America, Navy. Simplified fabrication method for high-performance FET. 4,325,181, Cl. 29-571.000.
Yokoo, Masahide: *See—*
Wakatsuki, Goroei; and Yokoo, Masahide, 4,325,265, Cl. 74-7.00R.
Yokota, Tethuya: *See—*
Ukai, Nobuo; Funado, Akira; and Yokota, Tethuya, 4,325,296, Cl. 99-468.000.
Ukai, Nobuo; Funado, Akira; and Yokota, Tethuya, 4,325,401, Cl. 137-240.000.
Yokoyama, Hiroshi, to Suzuki Jidosha Kogyo Kabushiki Kaisha. Four-cycle internal combustion engine. 4,325,346, Cl. 123-568.000.
Yoneyama, Goro: *See—*
Kumasaka, Sadao; Tada, Satomi; Yoneyama, Goro; and Seki, Junichi, 4,325,688, Cl. 425-436.00R.
Yonezawa, Masatomo: *See—*
Utsumi, Kazuaki; Yonezawa, Masatomo; and Ohno, Tomeji, 4,325,763, Cl. 156-89.000.
York, Floyd R. Saw buck. 4,325,543, Cl. 269-295.000.
Yoshida Kogyo K.K.: *See—*
Kanzaka, Yoshihiro, 4,325,185, Cl. 29-770.000.
Kirii, Kazuo, 4,325,173, Cl. 29-408.000.
Omori, Shigenori, 4,325,184, Cl. 29-766.000.
Yoshida, Syotaroh: *See—*
Takaoka, Michio; Mohtai, Tsuneaki; Yoshida, Syotaroh; and Watanabe, Kazuo, 4,325,750, Cl. 148-6.14R.
Yoshida, Takashi: *See—*
Nishizawa, Jun-ichi; and Yoshida, Takashi, 4,326,209, Cl. 357-22.000.
Yoshimura, Hirofumi: *See—*
Tanaka, Junzo; Ikeda, Nobuo; and Yoshimura, Hirofumi, 4,326,112, Cl. 219-10.55F.
Yoshioka, Masahiro: *See—*
Murata, Naoaki; Yoshioka, Masahiro; Hayashi, Kiyoshi; and Tohi, Yasusuke, 4,325,626, Cl. 355-3.0DR.
Young, Dean A., to Union Oil Company of California. Method of preparing crystalline silica polymorph. 4,325,929, Cl. 423-339.000.
Young, Hartley F., to Ralph McKay Limited. Method for forming rail clips. 4,325,511, Cl. 238-349.000.
Young, Janis Marie: *See—*
Young, Ruperto S., 4,325,370, Cl. 128-245.000.
Young, Ruperto S., to Young, Janis Marie; and Wessendorf, Roberta H. Disposable device for fixation of the barium enema tip. 4,325,370, Cl. 128-245.000.
Yu, Jing-peir; and Bromely, James E., to Monsanto Company. High speed spinning of large dpf polyester yarn. 4,325,765, Cl. 156-167.000.
Yuasa, Sueto. Coacting wheel ball emitting device of tennis training system. 4,325,351, Cl. 124-78.000.
Yukawa, Hideaki; Nara, Terukazu; and Takayama, Yoshihiro, to Mitsubishi Petrochemical Co., Ltd. Process for production of L-aspartic acid. 4,326,029, Cl. 435-109.000.
Zahnraderfabrik Renk Aktiengesellschaft, Firma: *See—*
Kugler, Artur; and Zaunberger, Franz X., 4,325,330, Cl. 123-41.120.
Zahnradfabrik Friedrichshafen, AG.: *See—*
Lang, Armin, 4,325,286, Cl. 91-373.000.
Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai: *See—*
Umezawa, Hamao; Takita, Tomohisa; Fujii, Akio; Muraoka, Yasuhiko; and Kunishima, Mamoru, 4,326,054, Cl. 536-17.00R.
Zatulovsky, Lev M.: *See—*
Pelts, Boris B.; Tumasian, Beniamin A.; Egorov, Leonid P.; Zatulovsky, Lev M.; Chaikin, Petr M.; Freiman, Efim A.; Chalian, Eduard A.; Abramian, Grant I.; Azoian, Stepan E.; and Kostandian, Kliment A., 4,325,917, Cl. 422-249.000.
Zaunberger, Franz X.: *See—*
Kugler, Artur; and Zaunberger, Franz X., 4,325,330, Cl. 123-41.120.
Zdanys, John, Jr., to CTS Corporation. Preprogrammed slide switch assembly. 4,326,110, Cl. 200-16.00R.

ZEISS IKON AG Goerzwerk: *See—*
Tietz, Werner, 4,325,242, Cl. 70-401.000.
Zeloof, Haskel. Apparatus for preparing wood for bending. 4,325,420, Cl. 144-271.000.
Zepp, Lawrence P.: *See—*
Kern, Calvin V.; and Zepp, Lawrence P., 4,325,700, Cl. 440-61.000.
Zerle, Ludwig; and Scharm, Klaus. Method and apparatus for controlling size of extruded tube. 4,325,897, Cl. 264-40.300.
Zeugner, Horst; Roemer, Dietmar; Liepmann, Hans; and Milkowski, Wolfgang, to Kali-Chemie Pharma GmbH. 2-Acylaminomethyl-1,4-benzodiazepine derivatives and their salts and pharmaceutical compositions thereof. 4,325,957, Cl. 424-263.000.
Zimmerman, Robert L., to Texaco Inc. Morpholine and piperazine derivatives in a catalyst system for polyester-based polyurethane foams. 4,326,042, Cl. 521-115.000.
Zimmerman, Robert L.: *See—*
Schulze, Heinz; Zimmerman, Robert L.; and Waddill, Harold G., 4,326,050, Cl. 528-94.000.
Zink, George M.: *See—*
Mattson, Charles A.; Zink, George M.; and Milliken, Douglas A., 4,325,163, Cl. 15-330.000.
Ziolkowski, Antoni M. Method and apparatus for determining acoustic properties in the earth. 4,326,271, Cl. 367-16.000.
Zuber, Bretislav P., to Northern Telecom Limited. Apparatus for stranding wire. 4,325,214, Cl. 57-293.000.
Zuvela, Bernard R., to Scientific Drilling Controls. Lengthening drill string containing an instrument. 4,325,438, Cl. 175-50.000.
Zverkov, Garik E.: *See—*
Bodyako, Mikhail N.; Semenjuk, Georgy A.; Zverkov, Garik E.; Astapchik, Stanislav A.; Kosov, Anatoly F.; Kashulin, Sergei M.; and Baklanov, Alexandr N., 4,326,116, Cl. 219-61.700.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 20TH DAY OF APRIL, 1982

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Ameron, Inc.: *See*—
Law, Gabriel H.; and Gysegem, Albert P., Re. 30,909, Cl. 71-67.000.
Aoki, Eiichiro: *See*—
Hiyoshi, Teruo; Nakada, Akira; Suzuki, Tsutomu; Aoki, Eiichiro; and Yamaga, Eiichi, Re. 30,906, Cl. 84-1.260.
Burnett, James E., to Mead Corporation, The. Optical scanning and encoding device. Re. 30,911, Cl. 358-75.000.
Coles Crane Ltd.: *See*—
Lester, Robert J.; and Murta, Raymond, Re. 30,905, Cl. 52-115.000.
Friedline, Ernest J.; and Warren, Donald W., to Kennametal Inc. Cutting insert. Re. 30,908, Cl. 407-114.000.
Gauch, Hermann; and Schopf, Dieter, to Union Special G.m.b.H. Cooling device for sewing machines. Re. 30,907, Cl. 112-280.000.
Gysegem, Albert P.: *See*—
Law, Gabriel H.; and Gysegem, Albert P., Re. 30,909, Cl. 71-67.000.
Hiyoshi, Teruo; Nakada, Akira; Suzuki, Tsutomu; Aoki, Eiichiro; and Yamaga, Eiichi, to Nippon Gakki Seizo Kabushiki Kaisha. Envelope generator. Re. 30,906, Cl. 84-1.260.
Intellectual Property Development Corporation: *See*—
Weigand, Alan H., Re. 30,910, Cl. 424-238.000.
Kennametal Inc.: *See*—
Friedline, Ernest J.; and Warren, Donald W., Re. 30,908, Cl. 407-114.000.
Law, Gabriel H.; and Gysegem, Albert P., to Ameron, Inc. Siloxane-tin coatings and their use for protecting materials from growth of pestiferous organisms. Re. 30,909, Cl. 71-67.000.
Lester, Robert J.; and Murta, Raymond, to Coles Crane Ltd. Multi-section telescopic boom. Re. 30,905, Cl. 52-115.000.
Mead Corporation, The: *See*—
Burnett, James E., Re. 30,911, Cl. 358-75.000.
Murta, Raymond: *See*—
Lester, Robert J.; and Murta, Raymond, Re. 30,905, Cl. 52-115.000.
Nakada, Akira: *See*—
Hiyoshi, Teruo; Nakada, Akira; Suzuki, Tsutomu; Aoki, Eiichiro; and Yamaga, Eiichi, Re. 30,906, Cl. 84-1.260.
Nippon Gakki Seizo Kabushiki Kaisha: *See*—
Hiyoshi, Teruo; Nakada, Akira; Suzuki, Tsutomu; Aoki, Eiichiro; and Yamaga, Eiichi, Re. 30,906, Cl. 84-1.260.
Schopf, Dieter: *See*—
Gauch, Hermann; and Schopf, Dieter, Re. 30,907, Cl. 112-280.000.
Suzuki, Tsutomu: *See*—
Hiyoshi, Teruo; Nakada, Akira; Suzuki, Tsutomu; Aoki, Eiichiro; and Yamaga, Eiichi, Re. 30,906, Cl. 84-1.260.
Union Special G.m.b.H.: *See*—
Gauch, Hermann; and Schopf, Dieter, Re. 30,907, Cl. 112-280.000.
Warren, Donald W.: *See*—
Friedline, Ernest J.; and Warren, Donald W., Re. 30,908, Cl. 407-114.000.
Weigand, Alan H., to Intellectual Property Development Corporation. Reducing cholesterol levels. Re. 30,910, Cl. 424-238.000.
Yamaga, Eiichi: *See*—
Hiyoshi, Teruo; Nakada, Akira; Suzuki, Tsutomu; Aoki, Eiichiro; and Yamaga, Eiichi, Re. 30,906, Cl. 84-1.260.

LIST OF DESIGN PATENTEES

Acoustical Design Incorporated: *See*—
Cunningham, Donald R.; and Sulewsky, James E., 263,956, Cl. D14-03.000.
Adkinson, Joseph E. Table or the like. 263,909, 4-20-82, Cl. D6-177.000.
AGFA-Gevaert AG: *See*—
Schlagbeck, Norbert; Schultes, Herbert; and Rabold, Lutz, 263,963, Cl. D16-34.000.
Allibert Exploitation, S.A.: *See*—
Cornou, Jean, 264,014, Cl. D34-43.000.
American Cyanamid Company: *See*—
Grip, John A., 263,929, Cl. D9-370.000.
American Hospital Supply Corporation: *See*—
Pelly, Charles W., 263,958, Cl. D15-7.000.
AMG Industries, Inc.: *See*—
Anderson, William M., Jr., 263,919, Cl. D7-130.000.
Anderson, William M., Jr., to AMG Industries, Inc. Trivet. 263,919, 4-20-82, Cl. D7-130.000.
Ankarswed, Sven J., to Ankarswedshus AB Vasteras. Prefabricated wall construction unit for houses. 264,001, 4-20-82, Cl. D25-80.000.
Ankarswedshus AB Vasteras: *See*—
Ankarswed, Sven J., 264,001, Cl. D25-80.000.
Antone, Laurence J. Wood burning stove or similar article. 263,994, 4-20-82, Cl. D23-97.000.
Antretter, Richard; and Siersch, Werner, to RIAN-Apparate-und Vorrichtungsbau Gesellschaft mit beschrankter Haftung. Electrical accessory plug for automobile lighter outlet. 263,951, 4-20-82, Cl. D13-28.000.
Arad, Avi; and Kane, Earl B., to Empire of Carolina, Inc. Child's riding vehicle. 263,944, 4-20-82, Cl. D12-112.000.
Atlantic Vacuum Parts Corp.: *See*—
Genoa, Joseph, 264,011, Cl. D32-31.000.
Baatz Ceramics Inc.: *See*—
Katcher, Barry D., 263,939, Cl. D11-143.000.
Balda-Werke: *See*—
Lange, Karl-Heinz, 263,961, Cl. D16-6.000.
Ball Corporation: *See*—
Jones, Howard L.; and Blackman, John M., 263,933, Cl. D9-447.000.
Barozzini, Claude, to McGraw-Edison Company. Electrical component tray for a luminaire. 264,008, 4-20-82, Cl. D26-113.000.
Behl, Leonard I. Buoyant amusement device. 263,982, 4-20-82, Cl. D21-237.000.
Berg, Roger M. Broiler or the like. 263,960, 4-20-82, Cl. D15-104.000.
Bergman, Andrew I., to Quaker Oats Company, The. Infant teething toy. 263,999, 4-20-82, Cl. D24-45.000.
Bessone, Carlo S.; and Citino, Richard J., to GTE Products Corporation. Combined lamp and planter. 264,006, 4-20-82, Cl. D26-55.000.
Blackman, John M.: *See*—
Jones, Howard L.; and Blackman, John M., 263,933, Cl. D9-447.000.
Bluestein, Bernard B.: *See*—
Ernest, Robert O.; Steinkamp, Norman A.; and Bluestein, Bernard B., 263,959, Cl. D32-21.000.
Boyd, Charles N. Portable barbecue. 263,918, 4-20-82, Cl. D7-107.000.
Brand, Kim J. Game playing board. 263,974, 4-20-82, Cl. D21-16.000.
Braun AG: *See*—
Oberheim, Robert, 263,998, Cl. D24-41.000.
Breneman, Jack J., to Quaker Oats Company, The. Toy dump truck. 263,977, 4-20-82, Cl. D21-134.000.
Brentham, Jerry D. Physical exerciser. 263,978, 4-20-82, Cl. D21-195.000.
Bridgestone Tire Company Limited: *See*—
Kojima, Hiroshi; Nishio, Hideaki; and Yokoyama, Hideki, 263,946, Cl. D12-146.000.
Brown Group Recreational Industries, Inc.: *See*—
Carlson, Harold W., 263,983, Cl. D21-245.000.
Broyhill, Willis C. Electrical box holder. 263,950, 4-20-82, Cl. D13-11.000.
Bruno, Robert H., to Stanley Works, The. Paint scraper handle. 263,922, 4-20-82, Cl. D32-48.000.
Busch & Muller: *See*—
Niggemann, Fritz, 263,948, Cl. D12-189.000.
Butman, John C., to Itek Corporation. Apparatus for selecting eyeglass frames. 263,964, 4-20-82, Cl. D20-10.000.
C.G. Crystal Glass Tube & Cylinder Co.: *See*—
Petersen, Walter P., 263,895, Cl. D3-29.000.
Campbell, Hugh G. Interlock crib. 264,003, 4-20-82, Cl. D25-80.000.

Canon Kabushiki Kaisha: *See*—
Hirata, Takashi; and Odagawa, Kazuyoshi, 263,968, Cl. D18-7.000.
Hirata, Takashi; and Hirose, Kunio, 263,969, Cl. D18-7.000.
Sakai, Masaaki; and Motoyoshi, Junichi, 263,967, Cl. D18-7.000.
Carlson, Harold W., to Brown Group Recreational Industries, Inc. Child's outdoor play gym. 263,983, 4-20-82, Cl. D21-245.000.
Central Trust Company, N.A., The: *See*—
Hauser, Charles; and Johnson, Sharon, 264,012, Cl. D99-28.000.
Chung, Tae Yong. Needle holder. 263,894, 4-20-82, Cl. D3-21.000.
Citino, Richard J.: *See*—
Bessone, Carlo S.; and Citino, Richard J., 264,006, Cl. D26-55.000.
Coleman Company, Inc., The: *See*—
Milliman, Keith, 263,987, Cl. D22-14.000.
Coley, Sidney J. Bush knife or the like. 263,986, 4-20-82, Cl. D22-1.000.
Cordis Dow: *See*—
Preussner, Andreas, 263,997, Cl. D24-8.000.
Corning Glass Works: *See*—
Swan, John C., 264,004, Cl. D26-23.000.
Cornou, Jean, to Allibert Exploitation, S.A. Tote tray. 264,014, 4-20-82, Cl. D34-43.000.
Cunningham, Donald R.; and Sulewsky, James E., to Acoustical Design Incorporated. Acoustical enclosure for teleprinters or the like. 263,956, 4-20-82, Cl. D14-03.000.
Daenen, Robert H. C. M.; and De Coster, Pieter K. J., to Dart Industries Inc. Container adaptor ring or the like. 263,932, 4-20-82, Cl. D9-434.000.
Dallaire, Raymond. Window component extrusion. 264,000, 4-20-82, Cl. D25-74.000.
Dalton, Beverly. Shirt. 263,890, 4-20-82, Cl. D2-208.000.
Dansk International Designs Ltd.: *See*—
Hube, Vivanna T. B., 263,921, Cl. D7-137.000.
Dart Industries Inc.: *See*—
Daenen, Robert H. C. M.; and De Coster, Pieter K. J., 263,932, Cl. D9-434.000.
Dassonville, Bernard, to Onis. Display rack for carpet samples. 263,901, 4-20-82, Cl. D6-23.000.
Data Packaging Corporation: *See*—
Pepicelli, Pasquale L., Jr.; and Yonkers, Edward, 263,907, Cl. D6-130.000.
De Coster, Pieter K. J.: *See*—
Daenen, Robert H. C. M.; and De Coster, Pieter K. J., 263,932, Cl. D9-434.000.
de Nola, Andre. Perfume bottle. 263,931, 4-20-82, Cl. D9-406.000.
Dewey, George G., to Illinois Tool Works Inc. Roof insulation washer. 263,927, 4-20-82, Cl. D8-399.000.
Dewey, George G., to Illinois Tool Works Inc. Roof insulation washer. 263,928, 4-20-82, Cl. D8-399.000.
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Pardo, John; and Jones, David A., 263,930, Cl. D9-373.000.
Ebert, Karl, to Max Widenmann Armaturenfabrik. Lugged annular coupling. 263,992, 4-20-82, Cl. D23-44.000.
Empire of Carolina, Inc.: *See*—
Arad, Avi; and Kane, Earl B., 263,944, Cl. D12-112.000.
Ernest, Robert O.; Steinkamp, Norman A.; and Bluestein, Bernard B., to Sunbeam Corporation. Canister vacuum cleaner. 263,959, 4-20-82, Cl. D32-21.000.
Fischer, Warren G. X-ray film processor. 263,996, 4-20-82, Cl. D24-1.000.
Fishman, David: *See*—
Quiroga, John S.; Fishman, Edward; Fishman, David; and Rohlffs, Duke, 263,975, Cl. D21-37.000.
Fishman, Edward: *See*—
Quiroga, John S.; Fishman, Edward; Fishman, David; and Rohlffs, Duke, 263,975, Cl. D21-37.000.
Fleischmann, Gary A.; and Peabody, Lawrence C., to Kohler Co. Combined shower handle and escutcheon. 263,989, 4-20-82, Cl. D23-31.000.
Fleischmann, Gary A.; and Peabody, Lawrence C., to Kohler Co. Combined toilet trip lever and escutcheon. 263,990, 4-20-82, Cl. D23-31.000.
Fleischmann, Gary A.; and Peabody, Lawrence C., to Kohler Co. Combined lavatory spout and drain control. 263,991, 4-20-82, Cl. D23-32.000.
Flora, Paul. Support for flexible dryer vent pipe. 263,905, 4-20-82, Cl. D6-114.000.
Francis, Ross H., to Southern Machine Products, Inc. Mobile carriage for compressors or the like. 263,942, 4-20-82, Cl. D12-36.000.
Fuerneisen, Thomas J., to Microtime, Incorporated. Timepiece card holder. 263,934, 4-20-82, Cl. D10-2.000.
Genoa, Joseph, to Atlantic Vacuum Parts Corp. Vacuum cleaner hose adapter. 264,011, 4-20-82, Cl. D32-31.000.
Glasgow, James P., to Mary Kay Cosmetics, Inc. Compartmented storage box. 263,896, 4-20-82, Cl. D3-30.100.
Gordan, Miroslav. Necklace with illuminable pendant. 263,936, 4-20-82, Cl. D11-7.000.
Gordan, Miroslav. Necklace with illuminable pendant. 263,937, 4-20-82, Cl. D11-7.000.
Gordon, Kenneth R. Artificial Christmas tree. 263,938, 4-20-82, Cl. D11-118.000.
Graf, Darrell G. Portable nozzle mount for firefighting nozzle. 264,010, 4-20-82, Cl. D29-5.000.
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527 4,325,343
549 4,325,344
557 4,325,345
568 4,325,346
571 4,325,347
4,325,348
587 4,325,349
605 4,325,350

CLASS 124
78 4,325,351

CLASS 126
110 A 4,325,352
121 4,325,353
247 4,325,354
263 4,325,355
413 4,325,356
427 4,325,357
432 4,325,358
438 4,325,359
4,325,360

CLASS 127
46.2 4,325,742
4,325,743

CLASS 128
1.3 4,325,361
8 4,325,362
75 4,325,363
201.13 4,325,364
4,325,365
207.16 4,325,366
207.21 4,325,367
214 R 4,325,368
218 D 4,325,369
245 4,325,370
254 4,325,371
287 4,325,372
303 R 4,325,373
303.13 4,325,374
321 4,325,375
325 4,325,376
326 4,325,377
501 4,325,378
540 4,325,379
581 4,325,380
660 4,325,381
675 4,325,382
677 4,325,383
696 4,325,384
712 4,325,385
733 4,325,386
748 4,325,387
788 4,325,388
784 4,325,389

CLASS 131
173 4,325,390
372 4,325,391

CLASS 133
80 R 4,325,392
160 4,325,393

CLASS 134
4 4,325,744
4,325,745
10 4,325,746
141 4,325,394
152 4,325,395
181 4,325,396

CLASS 137
13 4,325,397
39 4,325,398
85 4,325,399
101 4,325,400
240 4,325,401
270 4,325,402
315 4,325,403
316 4,325,404
371 4,325,405
492.5 4,325,406
493.1 4,325,407
596.13 4,325,410
596.14 4,325,409
596.2 4,325,408
601 4,325,411
625.65 4,325,412

CLASS 138
109 4,325,413
155 4,325,414

CLASS 141
1 4,325,415
95 4,325,416
98 4,325,417
182 4,325,418
308 4,325,419

CLASS 144
271 4,325,420
326 R 4,325,421

CLASS 148
1.5 4,325,747
2 4,325,748
6.14 R 4,325,749
4,325,750
12 F 4,325,751
12.1 4,325,752
20.3 4,325,753
22 4,325,754
32 4,325,755
32.5 4,325,756
103 4,325,757
135 4,325,758

CLASS 149
19.92 4,325,759

CLASS 152
152 R 4,325,422
361 R 4,325,423

CLASS 156
64 4,325,760
69 4,325,761
86 4,325,762
89 4,325,763
123 R 4,325,764
167 4,325,765
171 4,325,766
196 4,325,767
206 4,325,768
217 4,325,769
230 4,325,770
261 4,325,771
294 4,325,772
471 4,325,773
542 4,325,774
584 4,325,775
610 4,325,776
630 4,325,777
643 4,325,778
651 4,325,779
659.1 4,325,780

CLASS 160
13 A 4,325,781
47 R 4,325,782

CLASS 162
88 4,325,783
135 4,325,784

CLASS 164
5 4,325,424

CLASS 165
1 4,325,425
2 4,325,426
27 4,325,427
72 4,325,428
80 E 4,325,429
135 4,325,430

CLASS 166
117.5 4,325,431
245 4,325,432
373 4,325,433
381 4,325,434

CLASS 172
102 4,325,435

CLASS 173
13 4,325,436
131 4,325,437

CLASS 174
21 R 4,326,094
52 FP 4,326,095
84 R 4,326,096
155 4,326,097

CLASS 175
50 4,325,438
329 4,325,439

CLASS 177
25 4,325,440
4,325,441

CLASS 178
22.08 4,326,098

CLASS 179
1 GA 4,326,099
1 SD 4,326,101
1 VE 4,326,100
2 C 4,326,102

6.3 R	4,326,103
16 AA	4,326,104
16 EA	4,326,105
81 B	4,326,106
98	4,326,107
164	4,326,108
170 NC	4,326,109
CLASS 180	
6.48	4,325,442
6.54	4,325,443
70 R	4,325,444
74	4,325,445
89.17	4,325,446
132	4,325,447
215	4,325,448
217	4,325,449
247	4,325,450
294	4,325,451
306	4,325,452
CLASS 181	
135	4,325,453
145	4,325,454
148	4,325,455
159	4,325,456
210	4,325,457
227	4,325,458
248	4,325,459
259	4,325,460
286	4,325,461
CLASS 183	
93	4,325,462
155	4,325,463
CLASS 187	
9 E	4,325,464
CLASS 188	
4 R	4,325,465
24.12	4,325,467
71.4	4,325,466
282	4,325,468
CLASS 190	
53	4,325,469
CLASS 192	
16	4,325,470
48.1	4,325,472
85 AA	4,325,471
CLASS 193	
35 R	4,325,473
CLASS 194	
429	4,325,475
448	4,325,476
461	4,325,477
499	4,325,478
733	4,325,479
781	4,325,474
841	[illegible]
CLASS 200	
16 R	4,326,110
61.45 R	4,326,111
CLASS 202	
106	4,325,787
234	4,325,788
CLASS 203	
67	4,325,789
CLASS 204	
27	4,325,790
32 R	4,325,791
151	4,325,792
157.1 R	4,325,793
159.23	4,325,794
180 G	4,325,796
180 R	4,325,795
195 P	4,325,797
248	4,325,798
297 W	4,325,799
CLASS 206	
503	4,325,481
625	4,325,482
CLASS 208	
8 LE	4,325,800
10	4,325,801
	4,325,802
11 LE	4,325,803
58	4,325,804
	4,325,805
64	4,325,806
	4,325,807
65	4,325,808
91	4,325,809
112	4,325,810
113	4,325,811
119	4,325,812
120	4,325,813
	4,325,814
127	4,325,815

139	4,325,816
164	4,325,817
326	4,325,818
CLASS 209	
3.1	4,325,483
10	4,325,819
127 R	4,325,820
166	4,325,821
251	4,325,822
CLASS 210	
86	4,325,823
90	4,325,824
371	4,325,825
776	4,325,826
CLASS 211	
66	4,325,484
	4,325,485
71	4,325,486
CLASS 215	
330	4,325,487
CLASS 219	
10.55 A	4,326,114
10.55 D	4,326,113
10.55 F	4,326,112
56.1	4,326,115
61.7	4,326,116
85 CM	4,326,117
121 LC	4,326,118
272	4,326,119
286	4,326,120
523	4,326,121
544	4,326,122
CLASS 220	
1.5	4,325,488
2.2	4,325,489
269	4,325,490
318	4,325,491
335	4,325,492
416	4,325,493
CLASS 221	
11	4,325,494
CLASS 222	
1	4,325,495
83	4,325,496
153	4,325,497
210	4,325,498
321	4,325,499
	4,325,500
	4,325,501
504	4,325,502
CLASS 224	
148	4,325,503
183	4,325,504
238	4,325,505
343	4,325,506
CLASS 229	
53	4,325,507
CLASS 235	
380	4,326,123
382	4,326,124
443	4,326,125
CLASS 236	
92 B	4,325,508
CLASS 237	
51	4,325,509
CLASS 238	
341	4,325,510
349	4,325,511
CLASS 239	
84	4,325,512
112	4,325,513
CLASS 241	
16	4,325,514
57	4,325,515
73	4,325,516
CLASS 242	
18.1	4,325,517
47.01	4,325,520
68	4,325,518
75.41	4,325,519
86.2	4,325,521
86.7	4,325,522
205	4,325,523
CLASS 246	
34 R	4,325,524
CLASS 248	
27.3	4,325,525
73	4,325,526
217.2	4,325,528
298	4,325,529

317	4,325,530
394	4,325,527
553	4,325,531
CLASS 249	
26	4,325,532
188	4,325,533
CLASS 250	
204	4,326,127
211 J	4,326,126
231 SE	4,326,128
262	4,326,129
506	4,326,130
523	4,326,131
CLASS 251	
1 A	4,325,534
58	4,325,535
308	4,325,536
CLASS 252	
51.5 A	4,325,827
62	4,325,849
102	4,325,828
109	4,325,829
199.61	4,325,830
354	4,325,831
408	4,325,832
417	4,325,833
429 B	4,325,835
	4,325,836
	4,325,837
	4,325,838
429 R	4,325,834
430	4,325,839
431 C	4,325,841
431 R	4,325,840
443	4,325,842
	4,325,843
448	4,325,844
455 R	4,325,846
455 Z	4,325,845
	4,325,847
567	4,325,848
CLASS 254	
405	4,325,537
CLASS 260	
112 B	4,325,866
	4,325,867
123.5	4,325,868
146 D	4,325,869
156	4,325,870
160	4,325,871
326.5 FN	4,325,872
338	4,325,873
340.2	4,325,874
346.22	4,325,875
346.74	4,325,876
349	4,325,877
	4,325,879
397.1	4,325,878
397.2	4,325,880
397.45	4,325,881
412.4	4,325,882
423	4,325,883
439 R	4,325,884
448 R	4,325,885
455 R	4,325,886
456 P	4,325,887
502 R	4,325,888
509	4,325,889
512 C	4,325,890
544 L	4,325,891
CLASS 263	
50 A	4,325,893
66	4,325,894
CLASS 264	
23	4,325,895
40.1	4,325,896
40.3	4,325,897
40.5	4,325,898
86	4,325,899
103	4,325,900
146	4,325,901
	4,325,902
176 R	4,325,903
243	4,325,904
316	4,325,905
CLASS 266	
190	4,325,538
207	4,325,539
243	4,325,540
CLASS 267	
8 R	4,325,541
85	4,325,542
CLASS 269	
295	4,325,543
CLASS 271	
221	4,325,544

	4,325,545
CLASS 272	
3	4,325,546
144	4,325,547
CLASS 273	
55 B	4,325,548
73 R	4,325,549
80 C	4,325,550
110	4,325,551
153 P	4,325,552
167 F	4,325,553
274	4,325,554
355	4,325,555
393	4,325,556
CLASS 277	
65	4,325,557
189	4,325,558
235 B	4,325,559
CLASS 280	
5 D	4,325,560
33.99 R	4,325,561
62	4,325,562
154.5 R	4,325,563
204	4,325,564
282	4,325,565
668	4,325,566
711	4,325,567
731	4,325,568
804	4,325,569
CLASS 283	
7	4,325,570
CLASS 285	
177	4,325,571
229	4,325,572
CLASS 290	
1 R	4,326,132
CLASS 291	
3	4,325,573
CLASS 293	
120	4,325,574
CLASS 294	
89	4,325,575
CLASS 296	
65 R	4,325,576
CLASS 297	
45	4,325,577
281	4,325,578
CLASS 299	
5	4,325,579
39	4,325,580
CLASS 303	
22 R	4,325,581
24 F	4,325,582
CLASS 307	
26	4,326,133
268	4,326,134
355	4,326,135
451	4,326,136
CLASS 308	
9	4,325,583
	4,325,584
	4,325,585
10	4,325,586
36.1	4,325,587
59	4,325,588
101	4,325,589
163	4,325,593
184 R	4,325,590
187.2	4,325,591
219	4,325,592
CLASS 310	
12	4,326,137
36	4,326,138
42	4,326,139
234	4,326,140
308	4,326,141
320	4,326,142
329	4,326,143
CLASS 312	
100	4,325,594
183	4,325,595
194	4,325,596
258	4,325,597
CLASS 313	
60	4,326,144
120	4,326,145
318	4,326,146
403	4,326,147

CLASS 315	
169.2	4,326,148
289	4,326,149
325	4,326,150
410	4,326,151
CLASS 318	
85	4,326,152
327	4,326,153
376	4,326,154
576	4,326,155
809	4,326,156
	4,326,157
CLASS 322	
4	4,326,158
19	4,326,159
CLASS 323	
241	4,326,160
299	4,326,161
CLASS 324	
51	4,326,162
58.5 A	4,326,163
71 R	4,326,164
155	4,325,860
158 R	4,326,165
225	4,326,166
415	4,326,167
CLASS 328	
162	4,326,168
	4,326,169
CLASS 330	
10	4,326,170
256	4,326,171
294	4,326,172
CLASS 331	
1 A	4,326,173
3	4,326,174
CLASS 333	
177	4,326,179
246	4,326,180
CLASS 336	
12	4,326,181
198	4,326,182
CLASS 337	
70	4,326,183
168	4,326,184
201	4,326,185
407	4,326,186
CLASS 338	
21	4,326,187
32 S	4,326,188
CLASS 339	
14 L	4,325,598
103 R	4,325,599
116 C	4,325,600
CLASS 340	
27 NA	4,326,189
146.3 AE	4,326,190
347 AD	4,326,192
365 R	4,326,193
	4,326,194
	4,326,195
545	4,326,196
561	4,326,197
572	4,326,198
622	4,326,199
632	4,326,200
717	4,326,201
799	4,326,202
825.79	4,326,191
CLASS 343	
700 MS	4,326,203
CLASS 346	
75	4,326,204
140 R	4,326,205
	4,326,206
CLASS 350	
3.71	4,325,601
36	4,325,602
96.14	4,325,603
96.15	4,325,604
	4,325,605
96.20	4,325,606
96.21	4,325,607
165	4,325,608
293	4,325,609
343	4,325,610
357	4,325,611
432	4,325,612
CLASS 354	
1	4,325,613
23 D	4,325,614

24	4,325,615
27	4,325,616
31	4,325,617
33	4,325,618
121	4,325,619
127	4,325,620
145	4,325,621
170	4,325,622
289	4,325,623
304	4,325,624
CLASS 355	
3 DR	4,325,626
3 SC	4,325,625
10	4,325,627
15	4,325,628
27	4,325,629
74	4,325,630
77	4,325,631
86	4,325,632
CLASS 356	
141	4,325,633
331	4,325,634
349	4,325,635
350	4,325,636
359	4,325,637
375	4,325,638
376	4,325,639
	4,325,640
CLASS 357	
16	4,326,208
22	4,326,209
	4,326,210
30	4,326,211
46	4,326,212
51	4,326,213
74	4,326,214
81	4,326,215
CLASS 358	
8	4,326,216
75	Re.30,911
76	4,326,217
108	4,326,218
163	4,326,219
191.1	4,326,220
210	4,326,221
292	4,326,222
CLASS 360	
33	4,326,223
65	4,326,224
74.1	4,326,225
77	4,326,226
99	4,326,227
109	4,326,228
135	4,326,229
CLASS 361	
17	4,326,230
119	4,326,231
127	4,326,232
	4,326,233
154	4,326,234
156	4,326,235
170	4,326,236
329	4,326,237
386	4,326,238
410	4,326,239
CLASS 362	
11	4,326,240
	4,326,241
	4,326,242
368	4,326,243
CLASS 363	
56	4,326,244
79	4,326,245
138	4,326,246
CLASS 364	
200	4,326,247
	4,326,248
	4,326,249
	4,326,250
	4,326,251
414	4,326,252
435	4,326,253
466	4,326,254
476	4,326,255
484	4,326,256
508	4,326,257
515	4,326,258
715	4,326,259
718	4,326,260
724	4,326,261
851	4,326,262
900	4,326,207
	4,326,263
	4,326,264
	4,326,265
	4,326,266

CLASS 365	
1	4,326,267
15	4,326,268
189	4,326,269
218	4,326,270
CLASS 366	
18	4,325,641
137	4,325,642
200	4,325,643
CLASS 367	
16	4,326,271
93	4,326,272
112	4,326,273
118	4,326,274
160	4,326,275
CLASS 368	
10	4,326,276
86	4,326,277
157	4,326,278
240	4,326,279
277	4,326,280
294	4,326,281
CLASS 369	
48	4,326,282
55	4,326,283
77	4,326,284
137	4,326,285
226	4,326,286
CLASS 370	
29	4,326,287
70	4,326,288
85	4,326,289
CLASS 371	
21	4,326,290
68	4,326,291
CLASS 372	
45	4,326,176
61	4,326,178
92	4,326,177
106	4,326,175
CLASS 373	
101	4,326,093
CLASS 376	
154	4,325,785
442	4,325,786
CLASS 400	
161.4	4,325,644
196.1	4,325,645
	4,325,646
CLASS 403	
29	4,325,647
218	4,325,648
231	4,325,649
372	4,325,650
CLASS 404	
6	4,325,651
CLASS 405	
57	4,325,652
68	4,325,653

196	4,325,654
217	4,325,655
	4,325,656
259	4,325,657
264	4,325,658
299	4,325,659
CLASS 406	
84	4,325,660
CLASS 407	
114	Re.30,908
CLASS 408	
239 A	4,325,661
CLASS 409	
82	4,325,662
136	4,325,663
234	4,325,664
CLASS 411	
176	4,325,665
CLASS 414	
24.5	4,325,666
139	4,325,667
546	4,325,668
786	4,325,669
CLASS 415	
1	4,325,670
43	4,325,671
53 T	4,325,672
113	4,325,673
CLASS 416	
19	4,325,674
223 R	4,325,675
CLASS 417	
206	4,325,676
218	4,325,677
313	4,325,678
372	4,325,679
379	4,325,681
569	4,325,680
CLASS 418	
48	4,325,682
55	4,325,683
CLASS 422	
26	4,325,906
54	4,325,907
61	4,325,908
63	4,325,909
64	4,325,910
75	4,325,911
95	4,325,912
100	4,325,913
102	4,325,914
135	4,325,915
187	4,325,916
249	4,325,917
CLASS 423	
10	4,325,918
61	4,325,919
82	4,325,920
210	4,325,921
	4,325,922

234	4,325,923
235	4,325,924
239	4,325,925
244	4,325,926
310	4,325,927
320	4,325,928
339	4,325,929
345	4,325,930
363	4,325,931
402	4,325,932
415 P	4,325,933
478	4,325,934
483	4,325,935
573 R	4,325,936
CLASS 424	
16	4,325,937
18	4,325,938
55	4,325,939
70	4,325,940
84	4,325,941
94	4,325,942
177	4,325,943
	4,325,944
	4,325,945
180	4,325,946
	4,325,947
200	4,325,948
230	4,325,949
238	Re.30,910
245	4,325,950
248.52	4,325,951
250	4,325,952
	4,325,953
251	4,325,954
	4,325,955
253	4,325,956
263	4,325,957
267	4,325,958
270	4,325,959
	4,325,960
273 P	4,325,962
273 R	4,325,961
274	4,325,963
282	4,325,964
284	4,325,965
285	4,325,966
299	4,325,967
300	4,325,968
304	4,325,969
311	4,325,970
320	4,325,973
324	4,325,971
325	4,325,972
343	4,325,974
CLASS 425	
62	4,325,684
183	4,325,685
371	4,325,686
387.1	4,325,687
436 R	4,325,688
CLASS 426	
66	4,325,975
104	4,325,976
534	4,325,977
	4,325,978
570	4,325,979
604	4,325,980

CLASS 427	
7	4,325,981
32	4,325,982
38	4,325,984
54.1	4,325,985
74	4,325,986
98	4,325,983
110	4,325,987
160	4,325,988
	4,325,989
305	4,325,990
307	4,325,991
	4,325,992
315	4,325,993
376.8	4,325,994
428	4,325,995
CLASS 428	
16	4,325,996
31	4,325,997
36	4,325,998
112	4,325,999
153	4,326,000
161	4,326,001
178	4,326,002
198	4,326,003
	4,326,004
201	4,326,005
204	4,326,006
333	4,326,007
403	4,326,008
407	4,326,009
483	4,326,010
641	4,326,011
CLASS 429	
9	4,326,012
20	4,326,013
48	4,326,014
52	4,326,015
184	4,326,016
228	4,326,017
CLASS 430	
15	4,326,018
108	4,326,019
302	4,326,020
427	4,326,021
546	4,326,022
550	4,326,023
557	4,326,024
CLASS 431	
70	4,325,689
78	4,325,690
190	4,325,691
254	4,325,692
CLASS 432	
195	4,325,693
247	4,325,694
CLASS 433	
91	4,325,695
133	4,325,696
CLASS 434	
258	4,325,697
278	4,325,698

CLASS 435	
3	4,326,025
	4,326,026
7	4,326,027
32	4,326,028
109	4,326,029
184	4,326,030
146	4,326,031
148	4,326,032
161	4,326,036
212	4,326,033
241	4,326,034
247	4,326,035
274	4,326,037
CLASS 440	
47	4,325,699
61	4,325,700
113	4,325,701
CLASS 441	
74	4,325,154
CLASS 455	
27	4,326,292
72	4,326,293
139	4,326,294
188	4,326,295
192	4,326,296
213	4,326,297
606	4,326,298
CLASS 474	
56	4,325,702
130	4,325,703
CLASS 501	
41	4,326,038
90	4,326,039
100	4,326,040
CLASS 516	
702	4,326,041
CLASS 521	
115	4,326,042
137	4,326,043
147	4,326,044
CLASS 523	
201	4,325,856
205	4,325,861
	4,325,865
334	4,325,852
412	4,325,857
CLASS 524	
83	4,325,851
87	4,325,862
96	4,325,859
104	4,325,864
219	4,325,855
228	4,325,850
272	4,325,853
476	4,325,854
524	4,325,858
CLASS 525	
206	4,326,045
276	4,326,046

507	4,326,047
CLASS 526	
88	4,326,048
91	4,326,049
CLASS 528	
94	4,326,050
386	4,326,051
CLASS 536	
1	4,326,052
	4,326,053
17 R	4,326,054
CLASS 542	
429	4,326,055
CLASS 546	
182	4,326,056
221	4,326,057
243	4,326,058
	4,326,059
258	4,326,060
CLASS 548	
164	4,326,061
166	4,326,062
191	4,326,063
322	4,326,064
CLASS 549	
143	4,326,065
256	4,326,066
347	4,326,067
CLASS 556	
89	4,326,068
CLASS 560	
189	4,326,069
190	4,326,070
CLASS 562	
134	4,326,071
167	4,326,072
609	4,326,073
CLASS 564	
47	4,326,074
48	4,326,075
185	4,326,076
211	4,326,077
312	4,326,078
393	4,326,079
402	4,326,080
416	4,326,081
497	4,326,082
CLASS 568	
322	4,326,083
380	4,326,084
366	4,326,085
388	4,326,086
631	4,326,087
638	4,326,088
699	4,326,089
CLASS 585	
469	4,326,090
828	4,326,091
	4,326,092
CLASS 624	
111	[illegible]

CLASSIFICATION OF DESIGNS

D2—	208	263,890
	395	263,891
		263,892
		263,893
D3—	21	263,894
	29	263,895
	30.1	263,896
	39	263,897
	56	263,898
	73	263,899
D6—	5	263,900
	23	263,901
	68	263,902
	112	263,903
	113	263,904
	114	263,905
	130	263,906
		263,907
	146	263,908
	177	263,909
		263,910
	181	263,911
		263,912
	186	263,913
	191	263,914
D7—	5	263,915
	9	263,916
	106	263,917
	107	263,918
	130	263,919
	132	263,920
	137	263,921
	207	263,924
D8—	14	263,925
	327	263,926
	399	263,927
		263,928
D9—	370	263,929
	373	263,930
	406	263,931
	434	263,932
	447	263,933
D10—	2	263,934
	38	263,935
D11—	7	263,936
		263,937
	118	263,938
	143	263,939
D12—	14	263,940
	36	263,942
	92	263,943
	112	263,944
	115	263,945
	146	263,946
	156	263,947
	189	263,948
	315	263,949
D13—	12	263,950
	24	263,951
	99	263,952
D14—	5	263,953
	03	263,956
	36	263,954
	73	263,955
	107	263,957
D15—	7	263,958
	104	263,960
D16—	6	263,961
	32	263,962
	34	263,963
D17—	18	263,965
D18—	2	263,966
	7	263,967
		263,968
		263,969
	34	263,970
D19—	91	263,971
D20—	10	263,964
		263,972
D21—	13	263,973
	16	263,974
	37	263,975
	47	263,976
	134	263,977
	195	263,978
	199	263,979
	219	263,980
	228	263,981
	237	263,982
	245	263,983
	253	263,984
		263,985
D22—	1	263,986
	14	263,987
	27	263,988
D23—	31	263,989
		263,990
	32	263,991
	44	263,992
	93	263,993
	97	263,994
D24—	1.1	263,995
	2	263,996
	8	263,997
	41	263,998
	45	263,999
D25—	74	264,000
	80	264,001
		264,003
	87	264,002
D26—	23	264,004
	51	264,005
	55	264,006
	74	264,007
	113	264,008
D28—	67	264,009
D29—	5	264,010
D32—	21	263,959
	31	264,011
	48	263,922
	58	263,923
D34—	24	263,941
	43	264,014
D99—	28	264,012
	32	264,013

CLASSIFICATION OF PLANTS

P.—	10	4,840
	35	4,839

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PATENTS

01 :	4,325,225		4,325,665		[illegible]		4,325,599		4,325,760		4,325,187
	4,325,252		4,325,667	08 :	4,325,254		4,325,612		4,325,780		4,325,203
	4,325,270		4,325,668		4,325,544		4,325,765		4,325,804		4,325,235
	[illegible]		4,325,669		4,325,732		4,325,787		4,325,806		4,325,305
02 :	4,325,564		4,325,707		4,325,802		4,325,799		4,325,807		4,325,309
04 :	4,325,360		4,325,737		4,325,844		4,325,849		[illegible]		4,325,635
	4,325,657		4,325,754		4,325,919		4,325,909		4,325,811		4,325,744
	4,326,135		4,325,796		4,325,925		4,325,918		4,325,816	25 :	4,325,247
	4,326,171		4,325,798		4,325,996		4,326,119		4,325,882		4,325,291
	4,326,247		4,325,800		4,326,226		4,326,162		4,325,977		4,325,405
	[illegible]		4,325,801	09 :	4,325,160		4,326,168		4,325,978		4,325,483
05 :	[illegible]		[illegible]		4,325,220		4,326,170		4,326,013		4,325,546
06 :	[illegible]		4,325,823		4,325,327		4,326,186		4,326,033		4,325,547
	4,325,149		4,325,830		4,325,357		[illegible]		4,326,048		4,325,607
	4,325,150		4,325,832		4,325,387		4,326,245		[illegible]		4,325,614
	4,325,153		4,325,833		4,325,391		4,326,258		4,326,092		4,325,616
	4,325,162		4,325,845		4,325,440	13 :	4,325,165		[illegible]		4,325,624
	4,325,163		4,325,847		4,325,449		4,325,244		4,326,103		4,325,681
	4,325,199		[illegible]		4,325,590		4,325,321		4,326,107		4,325,686
	[illegible]		4,325,881		4,325,640		4,326,161		4,326,153		4,325,706
	4,325,237		4,325,911		4,325,746		4,326,181		4,326,260		4,325,865
	4,325,240		4,325,912		4,325,756		4,326,184		4,326,273		4,325,972
	[illegible]		4,325,924		4,325,777		4,326,218	18 :	4,325,219		4,326,014
	4,325,257		4,325,926		4,325,785	15 :	4,325,950		4,325,234		4,326,057
	4,325,295		4,325,929		4,325,786	16 :	4,325,279		4,325,280		4,326,149
	4,325,302		4,325,936		4,325,861		[illegible]		4,325,281		4,326,175
	4,325,323		4,325,975		4,325,913		[illegible]		4,325,331		4,326,191
	4,325,340		[illegible]		4,325,982		4,325,536		4,325,556		4,326,237
	4,325,359		[illegible]		[illegible]		4,325,937		4,325,561		4,326,241
	4,325,361		4,325,992		4,326,011	17 :	4,325,189		4,325,567		4,326,275
	4,325,367		4,325,999		4,326,180		[illegible]		[illegible]		4,326,283
	4,325,373		[illegible]		4,326,192		4,325,217		4,325,673	26 :	4,325,156
	4,325,376		[illegible]	10 :	4,325,740		4,325,238		[illegible]		4,325,227
	4,325,394		[illegible]		4,325,792		4,325,290		4,325,690		4,325,275
	4,325,433		[illegible]		4,325,857		4,325,319		4,325,758		4,325,283
	[illegible]		[illegible]		4,325,986		4,325,417		4,325,959		4,325,300
	4,325,439		4,326,077		4,325,989		4,325,432		[illegible]		4,325,339
	[illegible]		[illegible]		[illegible]		4,325,487	19 :	4,326,183		4,325,352
	4,325,450		4,326,102		4,326,072		4,325,490	20 :	4,325,216		4,325,355
	[illegible]		4,326,114		[illegible]		4,325,494		4,325,463		4,325,443
	4,325,513		4,326,115	11 :	4,325,379		4,325,497		[illegible]		4,325,468
	[illegible]		4,326,132		4,326,012		4,325,504	21 :	4,325,178		4,325,471
	4,325,553		4,326,134	12 :	4,325,177		[illegible]		4,325,470		4,325,525
	4,325,570		[illegible]		4,325,179		4,325,512		4,325,644		4,325,531
	4,325,571		4,326,214		4,325,223		4,325,518		4,325,714		4,325,542
	4,325,575		4,326,216		4,325,381		4,325,522		4,325,718		4,325,565
	4,325,603		4,326,219		[illegible]		4,325,530		[illegible]		4,325,701
	4,325,611		[illegible]		[illegible]		4,325,551	22 :	4,325,535		4,325,749
	4,325,627		4,326,250		4,325,393		4,325,559		4,325,815		4,325,757
	4,325,633		4,326,251		4,325,425		4,325,643		4,325,927		4,325,875
	4,325,651		[illegible]		4,325,481		4,325,720	23 :	4,325,345		[illegible]
	4,325,654		4,326,270		4,325,485		4,325,742		4,325,543		4,325,985
	4,325,656		[illegible]		[illegible]		4,325,745	24 :	4,325,152		

	4,326,043		4,325,770		4,325,637		4,325,810		4,325,834		[illegible]
	4,326,047		4,325,778		4,325,733		4,325,821		4,325,841		4,325,843
	4,326,067		4,325,803		4,325,743		4,325,852		4,325,914		4,325,853
	4,326,089		4,325,809		4,325,769		4,325,854		4,325,921		[illegible]
	4,326,110		4,325,813		4,325,836		4,325,877		4,325,932		[illegible]
	4,326,133		4,325,814		4,325,851		4,325,884		4,325,940		[illegible]
	4,326,155		4,325,817		4,325,876		[illegible]		[illegible]		4,326,120
27 :	4,325,171		4,325,820		4,325,939		4,325,922		4,325,998		4,326,164
	4,325,195		4,325,874		4,325,949		[illegible]		4,326,010		4,326,189
	4,325,197		4,325,891		4,326,001		4,326,016		[illegible]		4,326,190
	4,325,211		4,325,903		[illegible]		4,326,045		[illegible]		4,326,199
	4,325,224		4,325,906		4,326,017		[illegible]		[illegible]		4,326,205
	4,325,229		[illegible]		4,326,019		[illegible]		4,326,097		[illegible]
	4,325,399		4,325,916		4,326,020		[illegible]		4,326,154		4,326,236
	4,325,460		4,325,943		4,326,023		[illegible]		4,326,165		[illegible]
	4,325,609		4,325,944		4,326,027		4,326,123		[illegible]		4,326,265
	4,325,896		4,325,945		[illegible]		4,326,193		[illegible]	49 :	4,325,205
	4,326,032		4,325,955		[illegible]		[illegible]	44 :	4,326,259		[illegible]
	4,326,049		4,325,958		[illegible]		4,326,234	45 :	4,325,322		4,326,291
	4,326,125		4,325,961		4,326,156		4,326,276		4,325,372	51 :	4,325,181
	4,326,145		[illegible]		4,326,157		[illegible]		4,325,795		4,325,230
28 :	4,326,028		4,325,970		4,326,173	40 :	4,325,580		4,325,850		4,325,358
29 :	4,325,366		4,325,973		4,326,179		4,325,666		4,326,117		4,325,392
	4,325,476		4,325,983		4,326,198		4,325,708	47 :	4,325,791		4,325,397
	4,325,506		4,326,000		4,326,208		4,325,837		4,325,819		4,325,415
	4,325,827		4,326,018		4,326,231		4,325,839		4,325,878		[illegible]
	4,326,221		4,326,074		4,326,269		4,325,907		4,325,880		4,325,503
31 :	4,325,318		4,326,075		4,326,285	41 :	4,325,158		4,325,997		4,325,519
	4,325,353		4,326,081	37 :	4,325,228		4,325,239		4,326,037		4,326,163
	4,325,430		4,326,126		4,325,297		4,325,715		4,326,065		4,326,212
	4,325,446		4,326,146		4,325,329	42 :	Re.30,908		4,326,122		4,326,263
33 :	4,325,412		4,326,151		4,325,486		4,325,201		4,326,129	52 :	4,325,325
	4,325,499		4,326,194		4,325,576		4,325,226		4,326,137	53 :	4,325,398
	4,325,500		4,326,196		4,325,717		4,325,255		4,326,296		4,325,442
	4,325,501		4,326,261		4,326,152		4,325,259	48 :	4,325,169		4,325,454
	4,325,910		4,326,272		4,326,287		4,325,261		4,325,180		[illegible]
	4,326,169		4,326,289	39 :	Re.30,911		[illegible]		4,325,233		4,326,253
34 :	Re.30,910	35 :	4,325,273		[illegible]		4,325,317		4,325,292	54 :	4,325,168
	4,325,176	36 :	4,325,154		4,325,263		4,325,332		4,325,294		4,325,831
	4,325,206		4,325,159		4,325,266		4,325,375		4,325,343	55 :	4,325,157
	4,325,315		4,325,182		4,325,276		4,325,378		[illegible]		4,325,190
	4,325,316		4,325,193		4,325,289		4,325,419		4,325,409		4,325,210
	4,325,354		4,325,256		4,325,408		4,325,429		4,325,431		4,325,282
	4,325,380		4,325,370		4,325,482		4,325,492		4,325,434		[illegible]
	4,325,420		4,325,382		4,325,491		4,325,502		4,325,459		4,325,350
	4,325,469		4,325,383		4,325,537		4,325,510		4,325,465		4,325,427
	4,325,489		4,325,386		4,325,568		4,325,528		4,325,534		4,325,475
	4,325,495		4,325,388		4,325,591		4,325,578		4,325,592		4,325,555
	4,325,498		4,325,424		4,325,600		[illegible]		[illegible]		4,325,734
	4,325,529		4,325,448		4,325,679		4,325,670		4,325,652		[illegible]
	4,325,549		[illegible]		4,325,698		[illegible]		4,325,655		4,325,773
	4,325,598		4,325,493		4,325,700		4,325,721		4,325,660		4,325,775
	4,325,631		4,325,563		4,325,703		4,325,722		4,325,766		4,325,779
	4,325,641		4,325,583		4,325,713		4,325,761		4,325,767		4,325,784
	4,325,682		4,325,594		4,325,724		4,325,771		4,325,788		4,325,822
	4,325,711		4,325,595		4,325,762		4,325,794		4,325,818		[illegible]
	4,325,726		4,325,597		4,325,764		4,325,824		[illegible]	56 :	4,325,738
	4,325,759		4,325,619								

DESIGN PATENTS

01 :	[illegible]		263,976		[illegible]		[illegible]		[illegible]		[illegible]
04 :	263,934		263,997	18 :	263,933	27 :	263,945		263,977		[illegible]
06 :	263,897		264,005		263,974	30 :	263,925		[illegible]	45 :	[illegible]
	263,899	09 :	263,908	20 :	263,905	31 :	263,916		[illegible]	48 :	[illegible]
	263,902		263,922		263,982		[illegible]		[illegible]		263,917
	263,903		263,944	23 :	263,926	32 :	263,975	37 :	263,910		[illegible]
	263,918	12 :	263,890		263,984	34 :	263,904		[illegible]	49 :	263,947
	263,924	13 :	264,012		263,985		[illegible]		[illegible]		[illegible]
	263,931	17 :	263,895	24 :	263,909		263,939	38 :	264,010	53 :	263,919
	263,941		263,927	25 :	263,907		263,956	39 :	[illegible]		[illegible]
	263,943		263,918		263,913		263,972	40 :	263,981	55 :	[illegible]
	263,949		263,936		263,964	36 :	263,900	41 :	[illegible]		[illegible]
	263,950		263,937		263,994		[illegible]	42 :	263,915		263,991
	263,958		263,959		264,002		[illegible]		[illegible]		[illegible]
	263,973										

PLANT PATENTS

25 :	4,840	53 :	4,839								

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OFFICIAL GAZETTE of the
UNITED STATES PATENT and TRADEMARK OFFICE

April 27, 1982 Volume 1017 Number 4

CONTENTS

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Patent Cooperation Treaty Information

For information concerning the PCT member countries and the most recent PCT rule changes see the notices appearing in the Official Gazette at 1001 O.G. 14 on Dec. 9, 1980 and at 1012 O.G. 20 on Nov. 17, 1981.

Note that the international fees have been increased as of Jan. 1, 1982. The current schedule of fees is as follows:

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Basic Fee (first 30 pages)	270.00
Basic Supplemental Fee (for each sheet over 30)	6.00
Designation Fees	65.00

Jan. 19, 1982.

GERALD J. MOSSINGHOFF,
Commissioner of Patents and Trademarks.

Board of Appeals Decisions Rendered in the Month of Mar. 1982

Affirmed	254
Affirmed in Part	36
Reversed	64
Total	354

Subscription Pricing Information

The annual subscription prices on the following publications have been changed, as indicated below:

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Mar. 26, 1982.

THERESA A. BRELSFORD,
Acting Assistant Commissioner for Administration.

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

4,028,433, Re. S.N. 320,929, Filed Nov. 13, 1981, Cl. 525/67, THERMOPLASTIC MOULDING COMPOUNDS, Richard Prinz, et al., Owner of Record: *Bayer Aktiengesellschaft, Leverkusen, Germany,* Attorney or Agent: Arthur G. Connolly, et al., Ex. Gp.: 143

4,145,818, Re. S.N. 353,020, Filed Mar. 1, 1982, Cl. 34/10, METHOD AND APPARATUS FOR REMOVING A VAPORIZED LIQUID FROM A GAS, FOR USE IN E.G. A PROCESS BASED ON THE FLUIDIZED BED PRINCIPLE, Hanspeter Kulling, Owner of Record: *Aeromatic AG, Muttenz, Switzerland,* Attorney or Agent: Lawrence I. Lerner, et al., Ex. Gp.: 344

4,191,139, Re. S.N. 352,726, Filed Feb. 23, 1982, Cl. 123/48A, ENGINE WITH SECONDARY PISTONS, Vincent J. Tompkins, Owner of Record: *Inventor,* Attorney or Agent: Curtis Ailes, Ex. Gp.: 342

4,191,231, Re. S.N. 354,416, Filed Mar. 3, 1982, Cl. 150/8, FLEXIBLE COLLAPSIBLE CONTAINERS AND METHOD OF MOLDING, David A. Winchell, et al., Owner of Record: *Baxter Travenol Laboratories, Inc., Deerfield, Ill.,* Attorney or Agent: Garrettson Ellis, et al., Ex. Gp.: 241

4,203,255, Re. S.N. 351,137, Filed Feb. 22, 1982, Cl. 49/399, FIRE-RESISTANT COMPOSITE WOOD STRUCTURE PARTICULARLY ADAPTED FOR USE IN FIRE DOORS, Edwin N. Naslund, et al., Owner of Record: *Cal-Wood Door, Santa Rosa, Calif.,* Attorney or Agent: Karl A. Limbach, et al., Ex. Gp.: 352

4,243,699, Re. S.N. 335,162, Filed Dec. 28, 1981, Cl. 427/183, METHOD OF POWDER COATING THE INSIDE OF PIPES WITH A CONTINUOUS FILM OF PLASTIC MATERIAL, Jack, E. Gibson, Owner of Record: *GCB, Inc., Odessa, Tex.,* Attorney or Agent: D. Carl Richards, et al., Ex. Gp.: 162

4,245,730, Re. S.N. 351,465, Filed Feb. 23, 1982, Cl. 194/1A, DISPLAY PANEL FOR A VENDING MACHINE, G. Merle Bachmann, et al., Owner of Record: *The Coca-Cola Co., Atlanta, Ga.,* Attorney or Agent: Terrell C. Birch, et al., Ex. Gp.: 311

4,249,482, Re. S.N. 354,666, Filed Mar. 4, 1982, Cl. 119/17, AIR CONDITIONED LABORATORY RACK FOR ANIMAL CAGES, James R. Harr, Owner of Record: *Inventor,* Attorney or Agent: Philip K. Fitzsimmons, Ex. Gp.: 333

4,273,685, Re. S.N. 353,774, Filed Mar. 1, 1982, Cl. 260/28.5, RUBBER MODIFIED ASPHALT COMPOSITIONS, Alfred Marzocchi, et al., Owner of Record: *Owens-Corning Fiberglas Corp., Toledo, Ohio,* Attorney or Agent: Ronald C. Hudgens, et al., Ex. Gp.: 142

4,282,202, Re. S.N. 345,474, Filed Feb. 3, 1982, Cl. 424/23, INTRAMAMMARY COMPOSITIONS, John Sidney Dowrick, Owner of Record: *Beecham Group Ltd., Brentford, Middlesex, England,* Attorney or Agent: Albert L. Jacobs, Jr., Ex. Gp.: 125

4,286,120, Re. S.N. 321,344, Filed Nov. 13, 1981, Cl. 179/90, CURRENT REGULATED PULSE DIALER CIRCUIT, John D. Sublette, Owner of Record: *GTE Automatic Electric Laboratories, Inc., Northlake, Ill.,* Attorney or Agent: Gregory G. Hendricks, Ex. Gp.: 235

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b).

4,271,149, Reexam. No. 90/000,179, Requested: Mar. 26, 1982, Cl. 424/150, GERMICIDAL IODINE COMPOSITIONS WITH ENHANCED IODINE STABILITY, Murray W. Winicov, et al., Owner of Record: *West Agro-Chemical, Inc., Westwood, Kans.,* Attorney or Agent: Howard E. Thompson, Ex. Gp.: 120, Requester: Nicholas J. Aquilino, Arlington, Va.

4,296,581, Reexam. No. 90/000,178, Requested: Mar. 24, 1982, Cl. 52/520, ROOFING STRUCTURE, Robert E. Heckelsberg, Owner of Record: *AMCA International Corp., Hanover, N.H.,* Attorney or Agent: Harness, Dickey & Pierce, Ex. Gp.: 354, Requester: Butler Manufacturing Co., Research Center, Grandview, Mo.

National Technical Information Service

U.S. GOVERNMENT-OWNED INVENTIONS

Notice of Availability for Licensing

The inventions listed below are owned by agencies of the U.S. Government and are available for licensing in the U.S. in accordance with 35 U.S.C. 207 to achieve expeditious commercialization of results of federally funded research and development. Foreign patents are filed on selected inventions to extend market coverage for U.S. companies and may also be available for licensing.

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Please cite the number and title of inventions of interest.

DOUGLAS J. CAMPION,
Program Coordinator,
Office of Government Inventions and Patents
National Technical Information Service
U.S. Department of Commerce.

SN 6-108,260. SAMPLE MOUNT FOR X-RAY DIFFRACTION. Patent 4,278,883 issued July 14, 1981 by the Dept. of Interior.

SN 6-136,126. SLIDEBOARD DEVICE FOR UNDERGROUND MINE FACE VENTILATION. Patent 4,282,802 issued Aug. 11, 1981 by the Dept. of Interior.

SN 6-168,822. PROCESS OF ELECTROPLATING A PLATINUM-RHODIUM ALLOY COATING. Patent 4,285,784 issued Aug. 25, 1981 by the Dept. of Interior.

SN 6-186,090. RECOVERY OF BISMUTH FROM CHLORIDE PROCESS SOLUTIONS. Patent 4,285,912 issued Aug. 25, 1981 by the Dept. of Interior.

SN 6-116,697. RECOVERY OF LITHIUM FROM LOW-GRADE ORES. Patent 4,285,914 issued Aug. 25, 1981 by the Dept. of Interior.

SN 6-162,542. HIGH SURFACE AREA TRANSITION METAL CATALYSTS AND METHOD OF PREPARING SAME. Patent 4,287,095 issued Sept. 1, 1981 by the Dept. of Interior.

SN 6-184,852. SPUTTERING APPARATUS FOR COATING ELONGATED TUBES AND STRIPS. Patent 4,290,877 issued Sept. 22, 1981 by the Dept. of Interior.

SN 6-211,556. CHROMATOGRAPHY DEVELOPING CHAMBER. Filed Dec. 1, 1980. Patent 4,306,977 issued Dec. 22, 1981 by Dept. of Interior.

SN 6-114,536. MOUNTING BLOCK TO ROTATE COAL CUTTER BITS. Filed Feb. 2, 1980. Patent 4,302,053 issued Nov. 24, 1981 by Dept. of Interior.

SN 6-275,033. ANTIVIRAL ACTIVITIES OF DANSYL-CADAVERINE & CLOSELY RELATED COMPOUNDS. Filed June 18, 1981 by Dept. of Health & Human Services.

SN 6-296,239. FIBER OPTIC PROBE FOR TISSUE MEASUREMENTS. Filed Aug. 25, 1981 by Dept. of Health & Human Services.

SN 6-321,689. THE USE OF CONTEXT TO SIMPLIFY TWO-DIMENSIONAL COMPUTER INPUT. Filed Nov. 16, 1981 by Dept. of Health & Human Services.

SN 6-324,464. MODULAR SCIENTILLATION CAMERA. Filed Nov. 24, 1981 by the Dept. of Health & Human Services.

SN 817,887. AUGER CONSTRUCTION PROVIDING REDUCED NOISE. Patent 4,266,830 issued May 12, 1981 by the Dept. of the Interior.

SN 968,046. AUTOMATIC FEED AND ROTATIONAL SPEED CONTROL SYSTEM OF A HYDRAULIC MOTOR OPERATED DRILL. Patent 4,271,914 issued June 9, 1981 by the Dept. of Interior.

SN 6-114,522. METAL HYDRIDE ACTUATION DEVICE. Patent 4,282,931 issued Aug. 11, 1981 by the Dept. of Interior.

SN 81,505. PASSIVE EXPLOSION BARRIER FOR MINES. Patent 4,284,144 issued Aug. 18, 1981 by the Dept. of Interior.

SN 6-268,592. OPEN SURFACE FLOTATION METHOD FOR EXTRACTED CRUDE OIL. Filed May 29, 1981 by the Dept. of Interior.

SN 6-285,247. POWER SUPPLY FOR AN INTRINSICALLY SAFE CIRCUIT. Filed July 21, 1981 by the Dept. of Interior.

SN 6-300,834. RECOVERY OF CHROMIUM FROM WASTE. Filed Sept. 10, 1981 by Dept. of Interior.

SN 6-237,617. PRODRUG DERIVATIVES OF 9-B-D-ARABINOFURANOSYL-2-FLUOROADENINE. Filed Feb. 24, 1981. Dept. of Health and Human Services.

SN 6-165,336. METHOD FOR PRODUCING TRIPDIOLIDE TRIPTOLIDE AND CELASTROL. Filed July 2, 1980. Dept. of Health and Human Services.

SN 6-310,406. B-KETOCARBOXYL AND PHOSPHONATE DIHYDROCHALCONE SWEETENERS. Filed Oct. 9, 1981. Dept. of Health and Human Services.

SN 6-314,477. VITRO CELLULAR INTERACTION WITH AMNION MEMBRANE SUBSTRATE. Filed Oct. 23, 1981. Dept. of Health and Human Services.

SN 6-300,363. FREQUENCY STABILIZATION FOR TWO-MODE LASER. Filed Sept. 8, 1981. Department of Commerce.

SN 6-329,870. A NON-TRANSFORMED THYMIDINE KINASELESS CELL LINE AND ITS USE FOR TESTING TUMORIGENIC POTENTIAL OF GENES. Filed Dec. 11, 1981. Dept. of Health and Human Services.

SN 6-321,689. THE USE OF CONTEXT TO SIMPLIFY TWO-DIMENSIONAL COMPUTER INPUT. Filed Nov. 16, 1981. Dept. of Health and Human Services.

SN 6-118,959. TRIANGULAR SHAPED CUTTING HEAD FOR USE WITH A LONGWALL MINING MACHINE. Filed Feb. 6, 1980. Patent 4,303,277 Issued Dec. 1, 1981 by Dept. of Interior.

SN 6-147,690. METHOD FOR MEASURING THE IONIC ACTIVITIES IN WATER WITH A DIFFERENTIAL PRESSURE TRANSDUCER. Patent 4,301,676 issued Nov. 24, 1981 by Dept. of Interior.

SN 6-310,584. APPARATUS FOR SPLITTING FLUID SAMPLES INTO A PLURALITY OF REPRESENTATIVE SUB-SAMPLES. Filed Oct. 13, 1981 by Dept. of the Interior.

SN 6-311,487. FROTH FLOTATION OF RUTILE. Filed Oct. 15, 1981 by the Dept. of Interior.

SN 6-317,652. APPARATUS FOR LIFTING A FLEXIBLE CABLE. Filed Nov. 2, 1981 by Dept. of Interior.

SN 6-319,862. ANTI-INCENTIVE COAL CUTTER BITS. Filed Nov. 9,1981 by Dept. of Interior.

Status of PTO Services

The following is an update of the status of PTO services as of Apr. 2, 1982:

Service Item	FY 1982 Performance Goal (Calendar Days)	Actual	Comment
Internal Mail Processing & Delivery	4	4	
Filing Receipts:			
Patents	22	92	No Comment
Trademarks	30	29	
Patent Copies:			
Window Coupons	5	48% within 5 days 99% within 30 days	Delays associated with new contractor start-up on Mar. 1. Significant improvement noted each week.
Mail Coupons	15	75% within 15 days 99% within 30 days	
Letter Orders*	20	95% within 20 days 99% within 30 days	
Certified Copies:			
Trademark Regs.	30	29	Reflects a 5 day reduction since last month.
All other	Being established	90% within 15 days 97% within 30 days	
Trademark Search Room:			
Filing Drawings	21	18	
Filing Reg. Certificates	3	3	
Patent Assignments	15	53	Backlog due to unavailable funding.
Trademark Assignments	21	95	Backlog due to unavailable funding.
Patent Official Gazette	Issue Date	On Schedule	
Patent Grants	Issue Date	On Schedule	
Trademark Official Gazette	Issue Date	On Schedule	
Trademark Registrations	Issue Date	On Schedule	

*Figures exclude mail processing and delivery time.

Apr. 2, 1982.

THERESA A. BRELSFORD,
Acting Assistant Commissioner for Administration.

PATENT NOTICES

Certificates of Correction for the Week of Apr. 27, 1982

Re. 30,791	4,284,573	4,301,119	4,308,467
3,985,539	4,285,868	4,301,295	4,310,865
4,000,165	4,287,177	4,301,327	4,310,903
4,005,093	4,289,827	4,301,516	4,310,910
4,017,334	4,290,400	4,301,889	4,311,041
4,079,353	4,290,475	4,302,123	4,311,607
4,181,791	4,291,403	4,302,222	4,311,641
4,185,325	4,291,780	4,302,229	4,311,899
4,223,233	4,292,324	4,302,460	4,312,877
4,227,135	4,292,422	4,302,809	4,314,049
4,229,740	4,293,235	4,302,921	4,314,115
4,231,312	4,293,950	4,303,164	4,314,255
4,237,424	4,294,139	4,303,359	4,314,456
4,237,957	4,294,941	4,303,881	4,314,466
4,249,558	4,295,573	4,304,238	4,314,546
4,263,006	4,295,639	4,304,766	4,315,028
4,264,482	4,296,428	4,305,385	4,315,731
4,265,252	4,296,797	4,305,396	4,316,089
4,268,872	4,297,829	4,307,127	4,316,398
4,270,953	4,298,251	4,307,343	4,316,668
4,271,509	4,298,466	4,307,572	4,317,417
4,272,592	4,298,563	4,307,940	4,317,581
4,276,098	4,299,317	4,308,063	4,317,604
4,277,760	4,299,819	4,308,101	
4,281,379	4,299,891	4,308,112	
4,284,070	4,301,037	4,308,119	

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
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California	Los Angeles Public Library	(213) 626-7555 Ext. 273
	Sacramento: California State Library	(916) 322-4572
	Sunnyvale: Patent Information Clearinghouse*	(408) 738-5580
Colorado	Denver Public Library	(303) 573-5152 Ext. 222
Delaware	Newark: University of Delaware	(302) 738-2238
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4519
Illinois	Chicago Public Library	(312) 269-2814
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
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New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7814
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 930-0850
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1321**
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 226
South Carolina	Charleston: Medical University of South Carolina	(803) 792-2372
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 528-2957
Texas	Dallas Public Library	(214) 748-9071
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

*Collection organized by subject matter.

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PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF March 20, 1982

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	6-23-80
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	1-04-80
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthdontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	3-04-81
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	3-02-81
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	1-22-81
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—S. W. ENGLE, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	6-18-80
SPECIAL LAWS ADMINISTRATION, GROUP 220—KENNETH L. CAGE, Director Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy, Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	7-09-80
INFORMATION TRANSMISSION, STORAGE, AND RETRIEVAL, GROUP 230—EARL LEVY, Director Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	4-28-80
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240—G. M. FORLENZA, Director Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling; Shaft; Impellers; Rotary Fluid Motors.	12-07-79
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	11-26-79
DESIGN, GROUP 290—KENNETH L. CAGE, Director Industrial Arts; Household, Personal and Fine Arts.	5-12-80
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	1-18-80
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—M. M. NEWMAN, Director Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	7-28-80
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. AEGERTER, Director Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	5-06-80
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	10-22-79
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—A. L. SMITH, Director Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Miscellaneous Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	5-30-80

Expiration of patents: The patents within the range of numbers indicated below expire during March 1982, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents .... Numbers 3,171,131 to 3,176,313, inclusive

Plant Patents .... Numbers 2,486 to 2,489 inclusive

REISSUES

APRIL 27, 1982

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 30,912

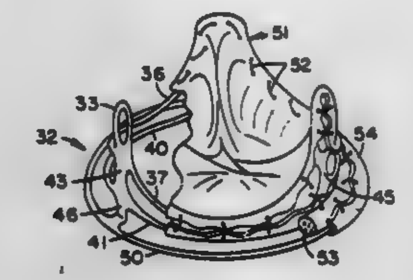
STENT FOR HEART VALVE

Warren D. Hancock, Newport Beach, Calif., assignor to Hancock Laboratories, Inc., Anaheim, Calif.

Original No. 3,570,014, dated Mar. 16, 1971, Ser. No. 759,858, Sep. 16, 1968. Application for reissue Jun. 14, 1978, Ser. No. 915,451

Int. Cl.³ A61F *1/22*

U.S. Cl. 3—1.5 **15 Claims**



35. A stent for [a] *an animal* heart valve *for supporting such a heart valve in its natural contour* comprising

a framework of annular configuration,

said framework including *three* spaced apical portions *at one end thereof* and arms interconnecting said apical portions,

for thereby providing an attachment for the commissures and cusps of a heart valve, *said arms being in two sets spaced apart axially, one of said sets being adjacent said apical portions and the other of said sets being remote from said apical portions, said arms in at least the one of said sets adjacent said apical portions being curved in a scalloped configuration so as to incline away from said apical portions intermediate said apical portions for conforming to the shape of and supporting the margins of the cusps of an animal heart valve such that the peripheral parts of said heart valve can be attached to said arms while preserving the natural contour of said heart valve,*

each of said apical portions being rounded *convexly as viewed from said one end,* and having a substantial circumferential dimension for permitting said apical portions to accommodate heart valves of different dimensions, said apical portions being annular and of generally oval shape.

Re. 30,913

SAFETY RAZOR WITH FLEXIBLE BLADE CARTRIDGE

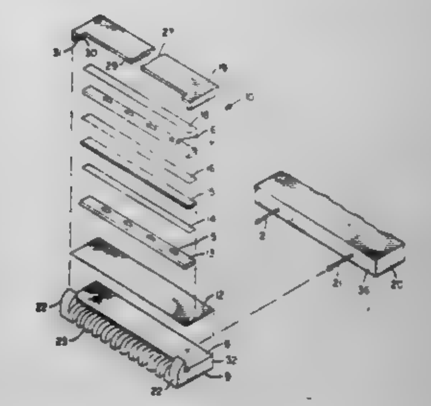
Cyril A. Cartwright, Monroe; James S. Emmett, Ansonia; Arthur E. Michael, Middletown; Anthony J. Peleckis, Fairfield, and Ernest M. Symes, Guilford, all of Conn., assignors to Warner-Lambert Company, Morris Plains, N.J.

Original No. 4,069,580, dated Jan. 24, 1978, Ser. No. 715,272, Aug. 18, 1976. Application for reissue Jan. 17, 1980, Ser. No. 112,757

Int. Cl.³ B26B *21/14*

U.S. Cl. 30—47 **30 Claims**

1. A razor assembly comprising a blade assembly including a seat member and a blade disposed thereon, the seat and blade being bonded together and flexible about an axis substantially parallel to the plane of the blade and perpendicular to its cutting edge, a razor handle for holding the blade assembly, and coupling means for connecting the blade assembly to the razor handle and permitting the blade assembly to flex [in both



convex and concave directions] *selectively in the convex or concave mode* in response to shaving forces.

Re. 30,914

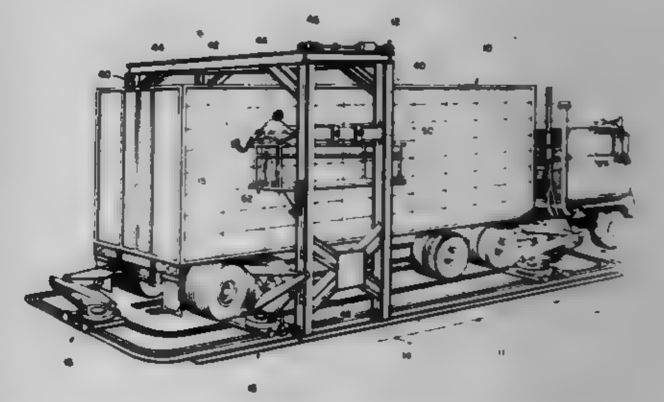
TRUCK FRAME ALIGNMENT APPARATUS

Finis L. Chisum, P.O. Box 1145, Claremore, Okla. 74017

Original No. 4,138,876, dated Feb. 13, 1979, Ser. No. 710,437, Aug. 2, 1976. Application for reissue Dec. 5, 1979, Ser. No. 100,440

Int. Cl.³ B21D *1/14*

U.S. Cl. 72—457 **12 Claims**



10. The hydraulic crane of claim 1 further including:

a second set of tracks which at least partially surround the frame upon which said object can be positioned;

an inverted U-shaped second frame having a pair of spaced vertical columns forming each arm of said inverted U, and cross beams across the top of said two pairs of spaced columns, forming a rigid rectangular second frame;

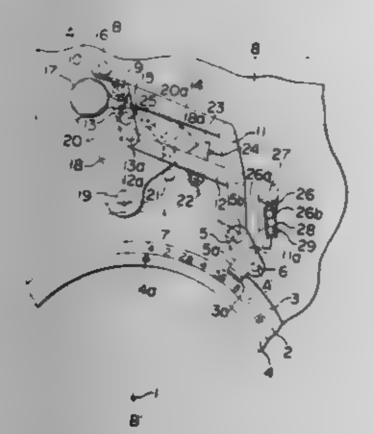
roller means on the bottom of said four columns to roll said frame along said second tracks, and means to lock said columns to said second tracks;

a vertically movable platform, supportive of a person thereon, attached to said spaced columns between the columns and said object; and

means vertically movable upon said spaced columns for applying a force of selected magnitude and direction to the object.

Re. 30,915
APERTURE INTERLOCKING DEVICE FOR A SINGLE LENS REFLEX CAMERA OF THE INTERCHANGEABLE VIEWFINDER TYPE

Sunao Ishizaka, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan
Original No. 4,085,416, dated Apr. 18, 1978, Ser. No. 749,047, Dec. 9, 1976. Application for reissue Apr. 14, 1980, Ser. No. 139,780
Claims priority, application Japan, Dec. 9, 1975, 50-150586
Int. Cl.³ G03B *13/02*
U.S. Cl. 354—219 **9 Claims**

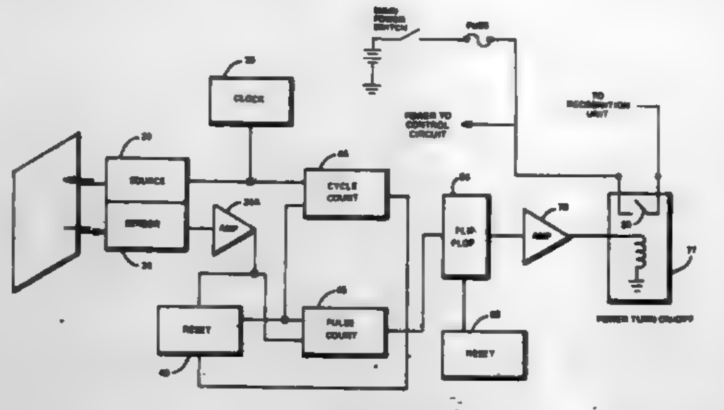


7. A picture-taking lens for use in a camera body which includes an engaging member (5) biased to a specific position for receiving aperture information from said picture-taking lens, said picture-taking lens comprising:
a fixed index mark (4a); and
an aperture ring (2) rotatable about the optical axis of said picture-taking lens and having thereon an aperture scale and an outwardly projected and circumferentially extending engaging portion (3), the engaging portion having a wider range than the entire range of said aperture scale, one shoulder (3a) of said engaging portion being engageable with said engaging member of said camera body to transmit the aperture information of said picture-taking lens to said camera body when said picture-taking lens is mounted to said camera body.

Re. 30,916
WAND TURN-ON CONTROL

Lynn McWaters, Garland, Tex., assignor to Recognition Equipment Incorporated, Irving, Tex.
Original No. 4,072,859, dated Feb. 7, 1978, Ser. No. 729,531, Oct. 4, 1976. Application for reissue Jan. 28, 1980, Ser. No. 116,381
Int. Cl.³ H01J *40/14*
U.S. Cl. 250—214 R **11 Claims**

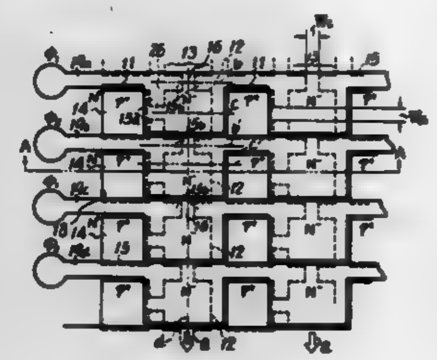
1. A control circuit for conserving power in a battery powered system comprising: a sensing means for determining when the system is placed into use and for generating pulses indicative of said use, a clock circuit for generating clock pulses, a counting circuit for counting pulses generated by said sensing means and clock and for generating a signal when said counting circuit counts to a predetermined state, and a power con-



trol circuit responsive to said generated signal for controlling power to said system when said system is placed into use.

Re. 30,917
TWO-PHASE CHARGE TRANSFER DEVICE IMAGE SENSOR

Yoshiaki Hagiwara, and Hiroshi Yamazaki, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan
Original No. 4,064,524, dated Dec. 20, 1977, Ser. No. 703,792, Jul. 9, 1976. Application for reissue Dec. 17, 1979, Ser. No. 104,270
Claims priority, application Japan, Jul. 31, 1975, 50-93746
Int. Cl.³ H01L *29/78, 27/14, 31/00;* **G11C** *19/28*
U.S. Cl. 357—24 **10 Claims**



8. A two phase charge transfer device comprising a semiconductor substrate, an insulation layer of uniform thickness formed on said substrate, a shift register having a plurality of cells formed in said substrate, an input to said shift register and an output to said shift register between which charges flow, a plurality of aligned electrodes formed over said cells on said insulation layer, each of said cells being associated with a respective electrode, and means for applying two phase clock signals to said aligned electrodes to form potential wells in said cells and to shift said charges, each of said cells comprising a transfer region and a storage region, a transfer region of a cell being located between a storage region of said cell and said input, each of said cells formed of said transfer and storage regions of said substrate having a first conductivity type, and channel stopper regions having a second conductivity type so as to maintain charge carriers in said transfer and storage regions, with the regions of said substrate forming said storage regions being defined by regions of said first conductivity type bordered in a direction transverse to the charge flow direction by channel stopper regions of said second conductivity type, and said transfer regions being defined by regions of said first conductivity type which are narrower in said transverse direction than said regions of first conductivity type in said storage regions and said regions of said first conductivity type in said transfer regions being bordered in said transverse direction by channel stopper regions of said second conductivity type to form asymmetrical potential wells in said cells, the minimum potential in a storage region of a cell being deeper than that in a transfer region of said cell.

PLANT PATENTS

GRANTED APRIL 27, 1982

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,841
CLIMBING CARIBIA

Fred Mungia, Sr., P.O. Box 338, McFarland, Calif. 93250
Filed Oct. 17, 1980, Ser. No. 198,243
Int. Cl.³ A01H *5/00*
U.S. Cl. Plt.—2 **1 Claim**

1. A new and distinct variety of rose plant of the climbing hybrid tea class, substantially as herein shown and described, characterized particularly as to novelty by its general similarity to its parent variety, "Caribia", synonym "Harry Wheatcroft" (U.S. Plant Pat. No. 3,623), but different therefrom by its pronounced climbing growth habit.

4,842
POINSETTIA NAMED TOPWHITE

Peter Jacobsen, Skibby, Denmark, assignor to Paul Ecke, Jr., Encinitas, Calif.
Filed Oct. 17, 1980, Ser. No. 197,951
Int. Cl.³ A01H *5/00*
U.S. Cl. Plt.—86 **1 Claim**

1. A new and distinct poinsettia cultivar, substantially as herein shown and described, characterized particularly by the whiter and cleaner color of its bracts and its retention of the advantageous physical and growing characteristics of its red parent variety.

PATENTS

GRANTED APR. 27, 1982

ERRATA

For CLASS	See PATENT NO.
441-005	4,326,312
200-047	4,326,627
340-594	4,326,780
376-216	4,326,917
376-272	4,326,918
376-267	4,326,919
376-205	4,326,920
376-353	4,326,921
376-435	4,326,922
524-261	4,326,999
524-285	4,327,000
524-322	4,327,001
524-114	4,327,002
523-336	4,327,003
524-745	4,327,004
524-377	4,327,005
524-315	4,327,006
524-315	4,327,007
524-104	4,327,008
524-114	4,327,009
524-388	4,327,010
524-474	4,327,011
523-203	4,327,012
524-538	4,327,013
523-116	4,327,014
524-162	4,327,015
524-180	4,327,016
156-069	4,327,147
373-009	4,327,241
322-003	4,327,337
372-089	4,327,338

PATENTS

GRANTED APRIL 27, 1982

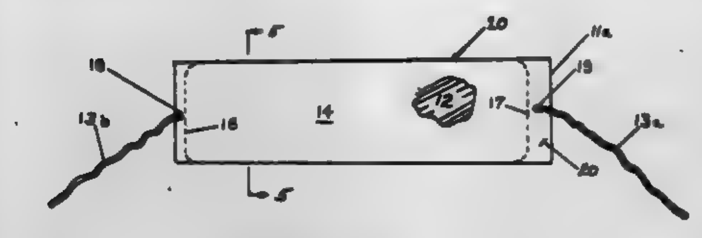
GENERAL AND MECHANICAL

4,326,299
SOCCER CUFF

Robert M. Bednar, 8506 Goldfinch Way, West Chester, Ohio 45069

Filed May 12, 1980, Ser. No. 149,038
Int. Cl.³ A41D *13/00*

U.S. Cl. 2—22 **8 Claims**



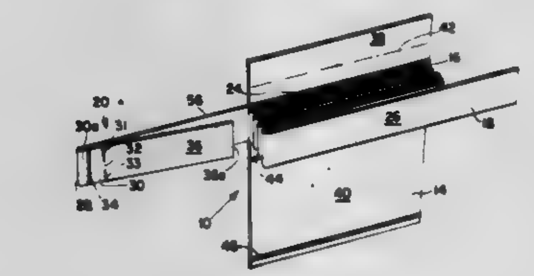
1. A soccer coff comprising:
a. An elongate member, at least a portion of which comprises a pad of resilient foam-like material;
b. fastening means proximate opposite ends of said elongate member; and
c. an elastic cuff, whereby said elongate member is attached around a wearer's ankle by said fastening means and said cuff is snugly juxtaposed around and covering said elongate member to provide protection from blows to the ankle, achilles tendon and foot of the wearer.

4,326,300
BELT PACKAGE WITH TEMPORARILY SECURED DETACHABLE BELT END

Deborah A. Bolton, Memphis, Tenn., and Jean E. Schaefer, Cincinnati, Ohio, assignors to The Buckeye Cellulose Corporation, Cincinnati, Ohio

Filed Jun. 4, 1979, Ser. No. 45,157
Int. Cl.² A41F *9/00*; A41D *13/12*

U.S. Cl. 2—114 **10 Claims**



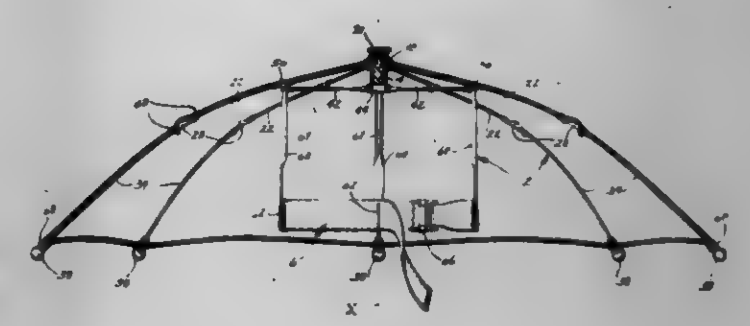
1. In a belt package for a surgical gown, a belt having a belt end extending from a belt support, the extremity of said belt end being defined by a transverse region of weakness and separable from the balance of the belt therealong, said belt end being doubled by folding it back on itself along a fold line extending transversely across the balance of the belt in a position adjacent but spaced from said region of weakness, the doubled portion being folded inwardly to position said extremity, the region of weakness and the distal end of the balance of the belt over an outer face of said belt package and underlying an adjacent portion of the belt end, said distal end being detachably secured to said outer face of said belt package.

4,326,301
COLLAPSIBLE SUNSHADE

Louis C. Brock, 13468 Forest Lac, St. Louis County, Mo. 63141

Filed May 27, 1977, Ser. No. 801,151
Int. Cl.³ A42B *1/20*; A45B *11/04*

U.S. Cl. 2—177 **11 Claims**



1. A headgear comprising: a frame including a hub having a center axis, a plurality of ribs pivotally connected to the hub, an actuating element aligned with the hub and movable toward and away from the hub along the center axis, and a plurality of struts interposed between and pivotally connected to the actuating element and the ribs, the length of the struts being such that when the actuating element is moved to a position against the hub the ribs will be in an erected position in which they radiate from the hub, but when the actuating element is moved to a spaced position away from the hub, the ribs and struts will assume a collapsed position in which they extend generally in the same direction as the center axis and lie along the center axis slightly outwardly therefrom, with the struts being located inwardly from the ribs; legs pivotally connected at their upper ends to the frame in alignment with at least some of the struts and extending downwardly away from their respective struts when the ribs and struts are in their erected position, the legs extending generally in the same direction as and being located between their respective struts and ribs when the ribs and struts are in their collapsed position, the legs further having inwardly opening channels which receive the struts when the struts and ribs are in their collapsed position; and a headband connected to the legs at their lower ends.

4,326,302
UNDERPANTS

David R. Lowe, Brinscall, and Gerard J. Hay, Chorley, both of England, assignors to Courtaulds Limited, London, England

Filed Aug. 10, 1979, Ser. No. 65,739

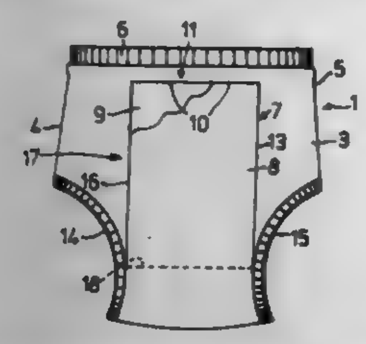
Claims priority, application United Kingdom, Aug. 25, 1978, 34702/78

Int. Cl.³ A41B *9/02*

U.S. Cl. 2—405 **3 Claims**

1. Underpants suitable for use by male persons comprising:
(a) material configured to provide a waist opening and a pair of leg openings including a front panel terminating in a free lower edge in the genital area; and
(b) an externally located elongate pouch secured to said front panel, comprising an inner panel of a liquid-permeable material and an outer panel of a liquid-impermeable material, and being provided with an opening for insertion of a fluid-absorbing pad, said pouch partially overlying the front panel and extending over and below said free lower edge into the crotch region; and

(c) a fly opening between the front panel and a side portion of the pouch overlying said front panel, whereby exit for



normal micturition is provided under said free lower edge and thence laterally out the fly opening.

4,326,303

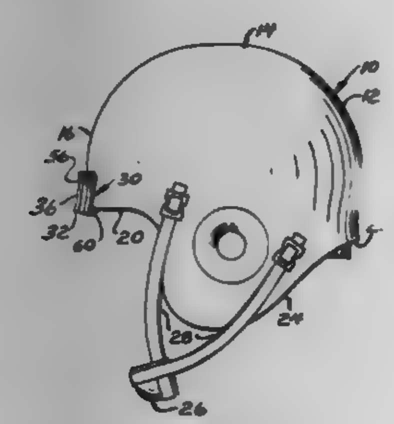
PROTECTIVE HEADGEAR

Frederick A. Rappleyea, Park Ridge, Ill., assignor to The Kendall Company, Boston, Mass.

Filed May 5, 1980, Ser. No. 146,957

Int. Cl.³ A42B *3/82*

U.S. Cl. 2—411 9 Claims



1. Protective headgear, comprising:

a relatively rigid shell for covering the wearer's head, said shell having an outer surface, and an inner surface facing toward the wearer's head; and

a bumper for the shell comprising, a flexible cover attached to a front of the shell adjacent a lower front edge of the shell, said cover having a recess facing the front surface of the shell, and including a flange extending from a lower portion of the cover around the lower front edge of the shell, said flange having an upwardly directed inner lip engaging the inner surface of the shell in an area only adjacent the edge of the shell, with said area extending continuously from the edge of the shell in a direction upwardly from the edge, and a pad of high energy attenuation material received in said recess intermediate the cover and shell and extending over only the outer surface of the shell.

4,326,304

HEART VALVE WITH PIVOTED OCCLUDER

Jerome J. Klawitter, New Orleans, La., assignor to Hemex, Inc., Austin, Tex.

Filed Sep. 17, 1980, Ser. No. 182,869

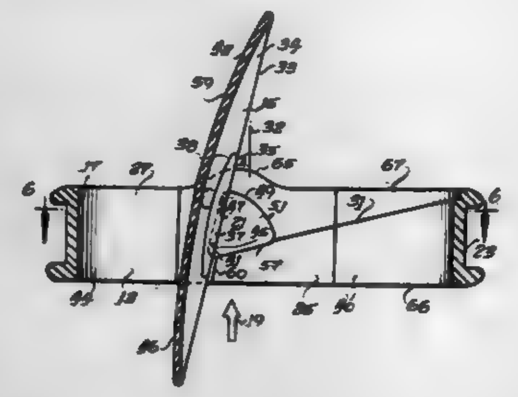
Int. Cl.³ A61F *1/22*

U.S. Cl. 3—1.5 7 Claims

1. A heart valve prosthesis comprising:

an annular valve body having a generally circular central passageway therethrough with a pair of central opposed planar sections designed to permit the flow of blood therethrough in a predetermined downstream direction and having a pair of opposed pie-shaped depressions recessed in said planar sections and each having an upstream vertex distal to the centerline of said body, an upstream straight edge, a downstream straight edge and an arcuate edge connecting said straight edges;

a single occluder having a pair of ears which extend outward from a pair of flat sides into said depressions whereby said occluder is mounted for substantially pivotal movement along an eccentric pivot axis defined by the rotation of said ears relative to said vertices of said depressions, which pivot axis divides said occluder and said valve body into major and minor portions, said single occluder being pivotable between a closed position to block blood flow through said central passageway, and an open position allowing blood flow therethrough in said predetermined downstream direction;



said occluder having a concave-convex configuration and a generally elliptical periphery and being mounted in said annular valve body with its pivotal axis parallel to its minor elliptical axis and with the concave surface facing upstream;

and a lip projecting into said passageway from said major portion of said valve body having a downstream-facing surface along which said occluder seats in said closed position and which is oriented at an angle of between about 75° and about 85° to the centerline of said valve body.

4,326,305

METHOD FOR MAKING ARTIFACTS USABLE IN VIVO AND A ARTIFACTS MADE BY SAID METHOD

Jean P. Davidas, 110, rue Lamarck, 75018 Paris, France

Filed Nov. 26, 1980, Ser. No. 210,380

Claims priority, application France, Nov. 26, 1979, 79 29038

Int. Cl.³ A61F *1/24, 1/00*

U.S. Cl. 3—1.9 5 Claims

1. A method for making artifacts usable in vivo, of the type in which a metallic armature is covered with a coating layer of a biocompatible compound, wherein the compound forming said layer is insulating, refractory, amorphous and non porous, and wherein the thickness of said layer is between 100 A° and 0.5 micron.

4,326,306

INTRAOCULAR LENS AND MANIPULATING TOOL THEREFOR

Stanley Poler, New York, N.Y., assignor to Lynell Medical Technology, Inc., New York, N.Y.

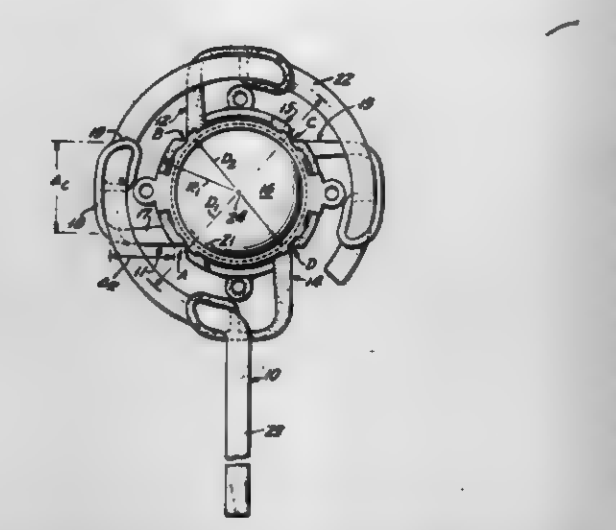
Filed Dec. 16, 1980, Ser. No. 216,787

Int. Cl.³ A61F *1/16, 1/24*

U.S. Cl. 3—13 14 Claims

1. In combination, a manipulable tool for substantially flat shipping support for an intraocular lens-and-mount assembly wherein a lens having a circular periphery is circumferentially retained, the mount of said assembly including flexibly compliant apertured iris-stabilizing feet projecting radially outward of plural angularly spaced regions of the lens-retaining circumference of said assembly, said tool comprising a generally hook-shaped end and a shank end integrally connected and with substantially constant cross-section, the apertures of said

feet being of open section to clear said substantially constant cross-section and being assembled in circumferential succession to said tool, the span of said hook-shaped end being such as to accommodate assembly to all said feet at angularly spaced locations with the lens of said mount assembly centrally positioned within said hook-shaped end and with said feet in essentially flat unstressed condition, for generally central stabilized retention of the lens during storage and/or shipment, the effective compliantly achievable length of said feet exceeding the radius of circumferential retention of the lens, whereby upon



lifting said tool, said lens and the circumferentially retaining portion of said mount become compliantly suspended beneath said hook-shaped end and said feet may be manipulated into clustered relation at the shank end of said tool, for cluster-grouped insertion of said feet into an excavated lens sac in the course of posterior-chamber implantation of the lens, so that said tool may be withdrawn to release said feet within the sac for compliant stabilizing conformance with sac inner-wall contouring to retain the lens anterior to said feet and in the posterior chamber.

4,326,307

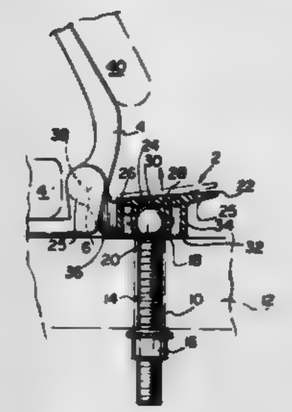
RELEASABLE TOILET SEAT CLAMP

Kenneth D. Baillie, and J. Donald Lafontan, both of 840 W. 64th Ave., Vancouver, B.C., Canada (V6P 2L4)

Continuation-in-part of Ser. No. 911,970, Jun. 2, 1978, abandoned. This application Jan. 22, 1980, Ser. No. 114,259

Int. Cl.³ A47K *13/12*

U.S. Cl. 4—236 6 Claims



1. A clamp for detachably securing a toilet seat to a toilet bowl having spaced vertical holes in the flanged portion of the rear of the upper part of the bowl, the clamp comprising a first member consisting of a spherically headed bolt and nut means to secure the bolt in seated engagement within one of the vertical holes so that the spherical head of the bolt extends out beyond the upper part of the bowl, and a second, fastener member to be associated with the toilet seat to engage the bolt, the fastener member having a smooth top circumscribed by downwardly depending sides, the lower edges of the sides to rest in contact with the upper part of the bowl when the fastener is in engagement with the bolt to impart rigidity and stability to the clamp, the lower surface of the top of the fastener member further provided with a downwardly depending centrally disposed circular wall forming a socket, the downwardly depending circular wall is essentially rigid and provided with a plurality of notches piercing the wall and extending axially from the lower edge thereof, whereby the walls are provided with sufficient resiliency to enable snapping the head of the bolt into engagement in the socket, or removal of the bolt therefrom, the head of the bolt and the socket of the fastener member being contoured for mating engagement for releasably securing the bolt and fastener member against unpurposeful disengagement; the fastener member being further provided with finger grip means to assist in intentional disengagement of the fastener means from the head of the bolt, the finger grip means being located at the rear of the top of the fastener member and laterally spaced with respect to the socket thereof, and comprising an extension of the top of the fastener member beyond the rear side thereof to provide a lip under which the fingers may be inserted for application of upward force to that portion of the fastener member, and wherein the bolt is further provided with a flange of circular periphery secured to the bolt immediately below its head, this flange to rest on the upper surface of the toilet bowl when the bolt is in position within one of the vertical holes through the flanged portion of the rear of the upper part of the bowl.

4,326,308

HYGIENIC DEVICE PROVIDING SITZ BATH, SHOWER, AND DOUCHE

Louis Silver, 5825 Collins Ave., Miami Beach, Fla. 33140

Continuation-in-part of Ser. No. 33,456, Apr. 26, 1979, Pat. No. 4,287,618. This application Apr. 18, 1980, Ser. No. 141,374

Int. Cl.³ A61H *35/00*; B05B *1/16*

U.S. Cl. 4—420.3 4 Claims

1. An apparatus useful for treatment of ailments of the perirectal area, comprising,

a conventional toilet bowl,

a toilet seat removably mounted in operable relation to said toilet bowl,

said removably mounted toilet seat being provided in lieu of the conventional hingedly mounted toilet seat, which conventional toilet seat is placed in its open position when the removably mounted seat is in use,

said removably mounted toilet seat provided with a substantially vertically aligned aperture than extends completely therethrough,

a first conduit member extending through said aperture so

that the uppermost end of said conduit member is disposed upwardly of the plane defined by said removably mounted toilet seat and so that its lowermost end is disposed downwardly of said plane,

a first elongate, flexible hose member having its opposed ends adapted for respective releasable engagement with a conventional spigot and the uppermost end of said conduit member so that fluid under pressure is carried by said hose from said spigot to said conduit,

a flow control valve disposed in the end of said flexible hose adjacent said conduit so that flow of fluid through said hose can be throttled by the user of the apparatus when such user is seated upon said apparatus,

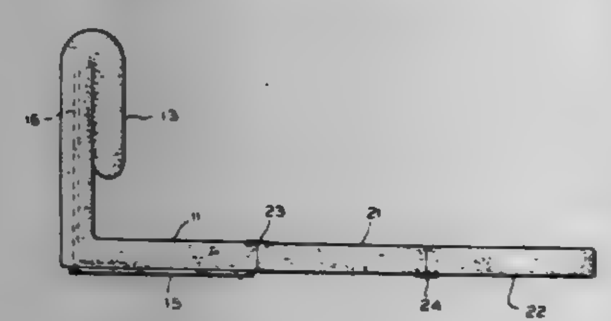
a second elongate, flexible hose member having its opposed ends respectively adapted for releasable engagement with the lowermost end of said first conduit member and with a douche implement

means for releasably connecting a shower head member to the lowermost end of said first conduit member, in lieu of said second hose member and said douche implement, so that said shower head member is disposed in cantilevered relation to said lowermost end of said first conduit member,

a basin member having an apertured bottom wall through which the operative portion of said shower head member extends, said shower head member being the sole means of supporting said basin member,

said basin member having its rim disposed in substantially coplanar relation to said removably mounted toilet seat, so that a static size bath treatment is provided when said basin member is filled with fluid and so that a dynamic size bath treatment is provided when said basin member is filled with fluid and said shower head member is discharging fluid from said source of fluid under pressure.

4,326,309
BEDDING DEVICE
Dennis M. Flamm, 260 E. Chestnut, Chicago, Ill. 60610
Filed Jun. 3, 1980, Ser. No. 156,265
Int. Cl.³ A47C *17/04, 13/00*
U.S. Cl. 5—12 R 4 Claims



1. An article of furniture, said article comprising:

a horizontally extending base member formed from heavy density rubber foam material;

a substantially vertically extending back member formed from heavy density rubber foam material,

said back member formed as a single piece;

means to support said base member and to internally support said back member,

said support means including a flat bottom plate shaped and dimensioned to be substantially coextensive with the bottom of said base member,

said bottom of said base member resting upon said bottom plate;

said support means further including a tubular member secured to said plate and substantially perpendicular in relationship thereto,

said tubular member having a central segment with a depending segment at each end thereof,

each said depending segment terminating in a foot,

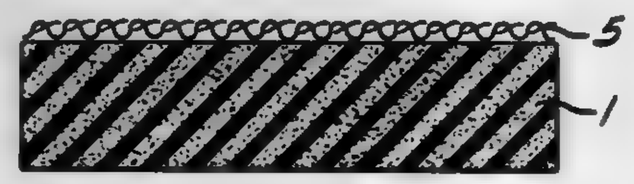
each said foot secured to said plate,

said back member having a cavity formed therein to allow insertion of said central segment and said depending segments of said tubular member,

said base member having troughs formed therein to accommodate said feet of said tubular member; and

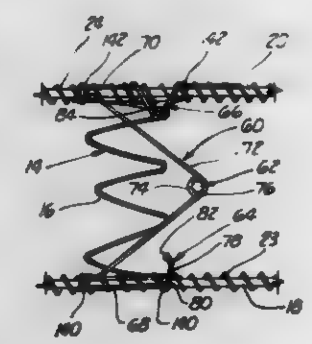
at least one seat cushion segment supported by said base member.

4,326,310
MATTRESS PAD
Carl R. Frankenberg, Oceanside, N.Y., assignor to American Foam Latex Corporation, Pittsburgh, Pa.
Division of Ser. No. 87,248, Oct. 22, 1979, Pat. No. 4,260,440. This application Aug. 21, 1980, Ser. No. 180,048
Int. Cl.³ A47C *31/00*
U.S. Cl. 5—448 2 Claims



1. A mattress pad comprising an elastomer foam pad, a porous fabric having a coating on one side of aluminum silicone such that said coated fabric is porous, the non-coated side of said fabric secured to one side of said pad with an adhesive.

4,326,311
SELF-RELEASING LOCKING UNIT FOR AN INNER SPRING ASSEMBLY
Michael D. Paripovich, 109 Flanders, Chickasha, Okla. 73018
Filed May 12, 1980, Ser. No. 148,955
Int. Cl.³ A47C *23/04, 31/08*
U.S. Cl. 5—475 35 Claims



1. An inner spring assembly comprising:

a peripheral upper frame;

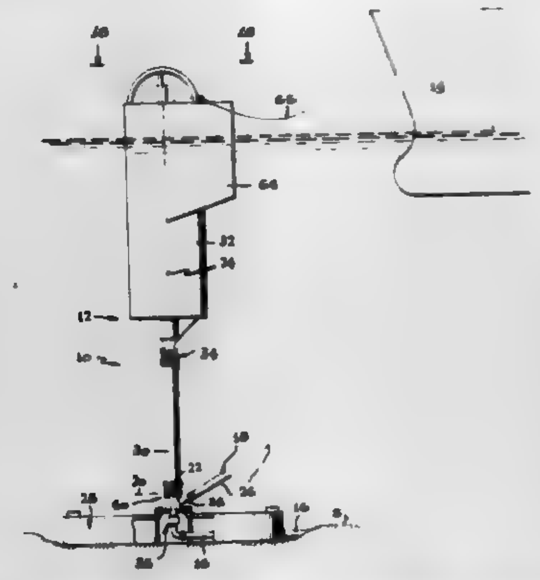
a peripheral lower frame;

resilient means for connecting the upper and the lower frame and to support the upper frame and the lower frame in a spaced apart relationship, the resilient means adapted to permit the upper and the lower frame to be moved to a first compressed condition wherein the upper and lower frames can be spaced a predetermined distance apart;

a hook disposed near one of the upper and lower frame, the hook being biased in a first position such that the hook is disposed substantially adjacent the plane of the frame near which the hook is disposed, the hook being movable to a second position wherein the hook is disposed substantially normal to the plane of the frame near which the hook is disposed; and

a hook receiver disposed near the other of the upper and lower frame, the hook receiver adapted to engage the hook when the hook is in the second position and the first and second frames are in the first compressed condition, the hook receiver further adapted to release the hook when the upper and lower frames are moved to a second compressed condition.

4,326,312
SINGLE LEG MOORING TERMINAL
Phillip H. Tang, Rosemead, Calif., assignor to Amtel, Inc., Providence, R.I.
Filed Apr. 30, 1979, Ser. No. 34,555
Int. Cl.³ B63B *21/52, 51/02*
U.S. Cl. 441—5 1 Claim



1. In a single leg mooring installation which includes a riser and buoy assembly extending up from the sea floor to near the sea surface to moor to a vessel, and a fluid conduit which can extend upwardly from the sea floor and sidewardly from an underwater location to the vessel to transfer a fluid cargo between a pipe near the sea floor and the vessel, and wherein the upper portion of the buoy assembly must be tiltable and the upper portions of both the buoy assembly and fluid conduit must be capable of rotating without limit about a substantially vertical axis to follow a drifting vessel, the improvement wherein:

said buoy assembly includes a lower nonrotatable portion, which is substantially nonrotatable about a vertical axis, an upper rotatable portion, and a vertical rotation joint disposed between them, and said buoy assembly also includes a tilt joint;

said fluid conduit includes a fluid swivel with its axis located substantially coaxial with the axis of said vertical rotation joint;

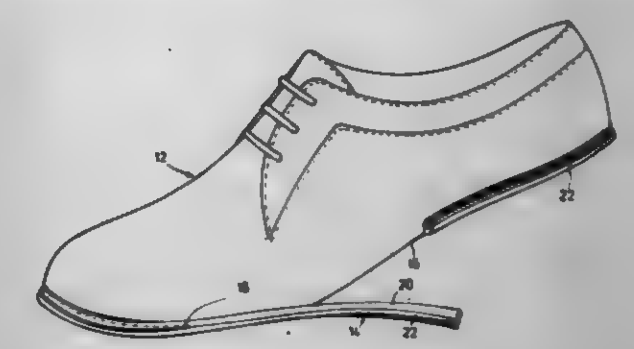
said vertical rotation joint is located below the tilt joint, said fluid swivel is located below the top of said tilt joint, and said conduit includes a sidewardly-extending portion extending from the rotatable portion of the fluid swivel and to the side of the buoy assembly at a level between the bottom of the vertical rotation joint and the top of the tilt joint; and

said vertical rotation joint includes a wide platform and a bearing assembly rotatably supporting said platform on said nonrotatable portion of said buoy assembly, the diameter of said platform being greater than the vertical height of said bearing assembly; and including

pipe support means connected to said sidewardly-extending portion of said conduit and to the radially outer portion of said platform.

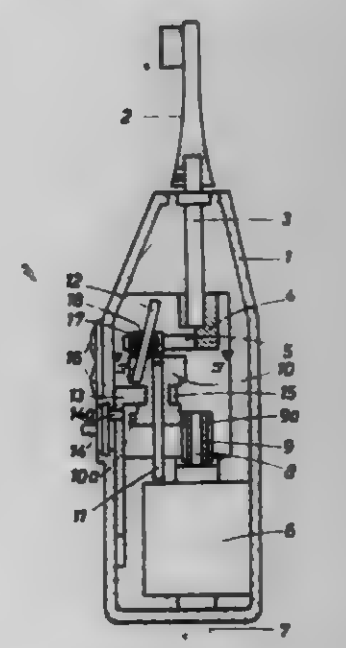
4,326,313
METHOD OF MAKING FOOTWEAR
Douglas W. Bensley, 1385 Commissioners Rd. West, London, Ontario, Canada
Filed Dec. 5, 1979, Ser. No. 100,586
Int. Cl.³ A43D *9/00;* A43B *13/18, 3/24*
U.S. Cl. 12—142 D 7 Claims

1. A method of making an article of footwear including providing a pre-formed upper having a peripheral lower edge portion, attaching a connecting strip to the peripheral lower edge portion of the upper so that the connecting strip surrounds the upper, said connecting strip having a profiled section providing a projecting extension, providing a preformed ring-like welt member, said welt member having an inner surface shaped for snapping engagement with the projecting extension of the connecting strip, snapping the welt member into engagement with the connecting strip, providing a pre-



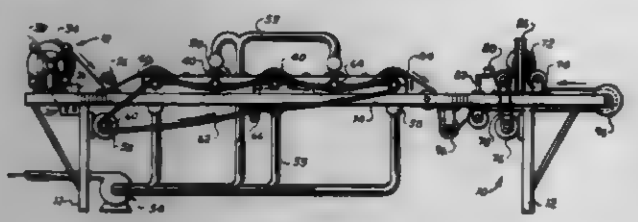
formed sole and heel unit with an upper peripheral surface engageable with a lower surface of the welt member, and attaching the sole and heel unit to the welt member by causing the upper peripheral surface of the sole and heel unit to adhere to the lower surface of the welt member.

4,326,314
ELECTRICALLY DRIVEN HAND-HELD APPARATUS FOR BODY CARE, IN PARTICULAR A TOOTHBRUSH OR MASSAGE APPARATUS
Michel-Antoine Moret, Chene Bourg, and Pierre-Jean Jousson, Geneva, both of Switzerland, assignors to Les Produits Associes. LPA, Switzerland
Filed Nov. 7, 1979, Ser. No. 92,046
Claims priority, application Switzerland, Nov. 17, 1978, 11819/78
Int. Cl.³ A46B *13/02*
U.S. Cl. 15—22 R 19 Claims



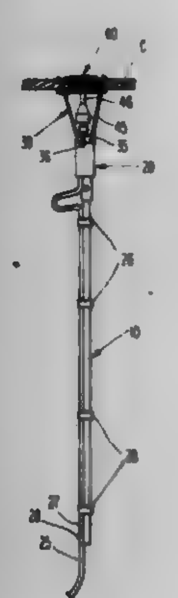
1. An electrically driven hand-held apparatus for body care such as a toothbrush or massage apparatus, comprising an instrument holder which is adapted for the attachment of a treatment instrument and which is drivable for oscillation about its longitudinal axis, a motor, a rotatably mounted support driven by the motor, an eccentric pin which is secured to the support, an inner part of the instrument holder defining a longitudinal slot which slot extends substantially radially in respect of the longitudinal axis of the instrument holder and in which the eccentric pin engages in a freely displaceable manner, and means for varying the distance between the axis of rotation of said support and the location of engagement of said eccentric pin in the longitudinal slot.

4,326,315
FILM CLEANER
Felix A. Miles, and Dale P. Roush, both of Amarillo, Tex., assignors to Ingenuity Incorporated, Amarillo, Tex.
Filed Jan. 21, 1980, Ser. No. 113,826
Int. Cl.³ A47L *15/00*; G03G *21/00*
U.S. Cl. 15—77 7 Claims



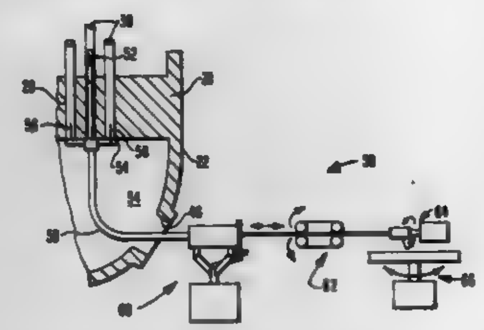
1. A machine for reprocessing a rolled web of photostatic film, the web being about 19 inches (47.5 cm) wide and about 900 feet (274.3 meters) long and very thin and easily creased which if creased renders it unusuable, said machine comprising:
a. a frame,
b. a used roll holder on the frame,
c. a series of cylindrical bunny brushes rotatably mounted on the frame,
d. a series of vacuum nozzles on the frame, one contacting each bunny brush,
e. blower means for removing air from each vacuum nozzle operatively associated therewith,
f. two rewind cylinders on the frame,
g. a reclaimed core resting on the rewind cylinders,
h. said used roll holder, all the bunny brushes, rewind cylinders and reclaimed core having axes which are parallel to each other, and
i. rotating means on the frame for rotating each of the bunny brushes and one of the rewind cylinders.

4,326,316
HOT STICK ROTARY BRUSH FOR CLEANING AERIAL CONDUCTORS
Alfred N. Dolenti, 192 Limerick Center Rd., Royersford, Pa. 19468
Filed Oct. 6, 1980, Ser. No. 194,387
Int. Cl.³ A46B *13/02*
U.S. Cl. 15—246 9 Claims



1. A device for cleaning aerial conductors such as are used for electric power and other purposes, said device comprising:
a. a rotary brush having a circumferential groove;
b. a power drive for driving said brush rotationally;
c. means connecting said power drive to said rotary brush;
d. a hanger guide having hook means at one end;
e. means mounting said hanger guide on said power drive in such position relative to said rotary brush that when said hanger guide is hooked over said aerial conductor, said conductor is engaged by said brush within the circumferential groove thereof; and
f. an insulated hot stick, one end of which is connected to the housing of said power drive.

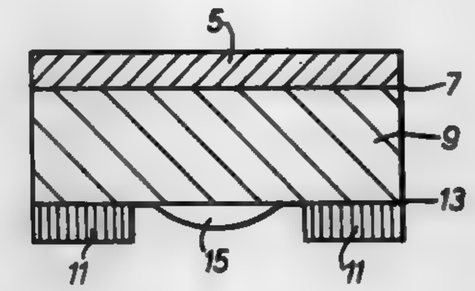
4,326,317
DECONTAMINATION APPARATUS
Edward H. Smith, Brave, Pa.; Thomas H. Dent, Bolingbrook, Ill., and Robert T. Marchese, Penn Hills Township, Allegheny County, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Oct. 16, 1979, Ser. No. 85,444
Int. Cl.³ B08B *9/02*
U.S. Cl. 15—302 8 Claims



1. Apparatus for decontaminating tubular members comprising:
a nozzle capable of being disposed in a tubular member and having a channel therein inclined at approximately 20°-40° from the longitudinal axis of said nozzle for spraying a fluid therefrom;
a helically wound tube attached to said nozzle for conducting said fluid to said nozzle;
an inner member connected to said helically wound tube and having a bore therethrough for conducting said fluid to said helically wound tube and having a passage therein for allowing said fluid to enter said bore;
an outer member disposed around said inner member for rotatably supporting said inner member; and
a brush mounted on said helically wound tube and extending into contact with the inside surface of said tubular member for removing material from said tubular member when said brush is being rotated and while said fluid is being sprayed against said tubular member thereby decontaminating said tubular member.

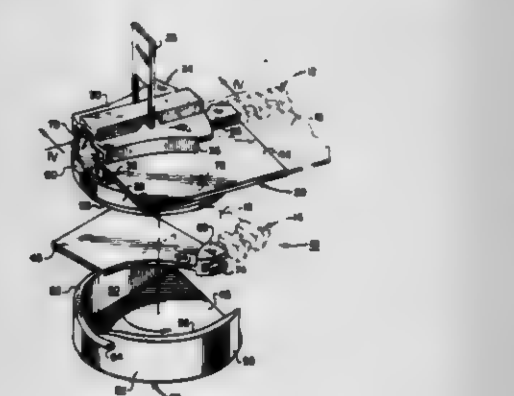
4,326,318
ELECTRODE-ACTIVE OXYGEN MONITOR
Henderikus J. DeBruin, Bellevue Heights, and Sukhvinder P. S. Badwal, Ingle Farm, both of Australia, assignors to The Flinders University of South Australia, Australia
Filed Jan. 16, 1980, Ser. No. 112,617
Claims priority, application Australia, Jan. 16, 1979, PD7374
Int. Cl.³ G01N *27/12*
U.S. Cl. 23—232 E 20 Claims

1. A method of determining the partial pressure of oxygen in an atmosphere at a known temperature, the method comprising applying a varying potential between a first metal electrode and a second metal electrode of an electrolytic cell located in said atmosphere, said electrodes being separated by an electrolyte having ionic oxygen mobility, monitoring the resistance between said first metal electrode and a third metal electrode of said electrolytic cell separated from said first metal electrode by said electrolyte and insulated from said second metal electrode, measuring the magnitude of a critical potential between said first and third electrodes at which a substantial change in the said resistance occurs, such critical potential being equal and opposite to the free energy of formation of an oxide of the first electrode metal at the said known tempera-



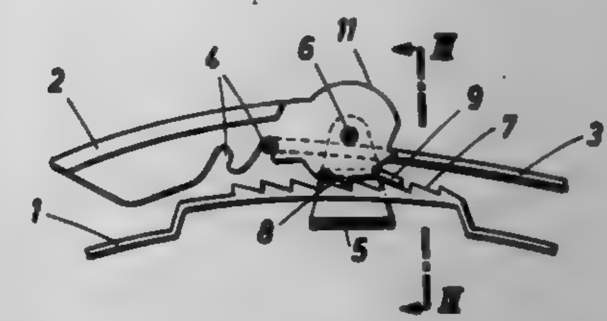
ture, whereby a quantitative determination of the partial pressure of oxygen in said atmosphere can be made.

4,326,319
SLIDE FASTENER WITH IMPROVED END CONNECTIONS
Martin F. Friedberg, 7233 Aberdeen Ave., Dallas, Tex. 75230
Continuation-in-part of Ser. No. 20,318, Mar. 15, 1979, Pat. No. 4,232,430, which is a continuation-in-part of Ser. No. 940,255, Sep. 7, 1978, Pat. No. 4,232,429, which is a continuation-in-part of Ser. No. 895,935, Apr. 13, 1978, abandoned. This application Oct. 9, 1979, Ser. No. 82,727
Int. Cl.³ A44B *19/36*
U.S. Cl. 24—205.11 R 10 Claims



1. A device for connecting the ends of a separable zipper of the type having first and second rows of teeth disposed along the opposed edges of supporting stringers, the device comprising:
a slider having top and bottom plates held in spaced-apart parallel planes by a center post, the plates having facing side rims defining first and second side slots through which the stringers pass, the front edges of the side rims defining first and second ports on opposite sides of the center post, the ports leading to a common passageway within the slider where the teeth are progressively engaged or disengaged depending on the direction of slider movement;
a base terminal disposed at the rearward end of the first row of teeth and adapted to carry the slider when the rows are fully disengaged;
a receiving terminal disposed at the rearward end of the second row of teeth, the receiving terminal including wall portions defining an aperture; and
first means affixed to the bottom of the slider, said means being insertable into the aperture in the direction generally perpendicular to said parallel planes to permit the ports of the slider to be aligned for receiving the rearmost ends of the rows of teeth upon forward movement of the slider.

4,326,320
LEVER-OPERABLE FASTENER FOR A SHOE
Tilo H. Riedel, Salzburg, Austria, assignor to Sesamat Anstalt, Schaan, Liechtenstein
Filed Nov. 7, 1979, Ser. No. 91,986
Claims priority, application Austria, Nov. 15, 1978, A8152/78
Int. Cl.³ A43C *11/00*; A43B *11/00*
U.S. Cl. 24—70 SK 18 Claims



1. A lever-operable fastener for a shoe, comprising
a rack formed with rack teeth and adapted to be attached to one part of said shoe,
a lever mount mounted on said rack and movable along the same and defining a pivotal axis,
a tension lever connected to said lever mount and pivotally movable about said pivotal axis,
a tension loop adapted to be attached to another part of said shoe and interengageable with said tension lever and adapted to be tensioned by a movement of said lever mount along said rack in a predetermined direction,
a ratchet mechanism comprising driver means carried by said lever mount and movable in unison with said tension lever and arranged to cooperate with said rack teeth during a pivotal movement of said tension lever in a predetermined sense to move said lever mount along said rack in said predetermined direction, and
releasable means arranged to restrain said lever mount against a movement along said rack opposite to said predetermined direction during a pivotal movement of said tension lever opposite to said predetermined sense.

4,326,321
EXPANDING SLEEVE FOR WRIST BAND CONNECTOR
Aldo Cologneri, 69 Lawton Ave., Cliffside Park, N.J. 07010, assignor to Aldo Cologneri; Sebastian Zapticchini, both of Cliffside and Thomas McBride, Washington Township, all of, N.J.
Filed Jan. 10, 1980, Ser. No. 158,170
Int. Cl.³ A44C *5/18*
U.S. Cl. 24—265 B 7 Claims

1. A safety sleeve and retainer in combination with a pivot pin post having reduced end portions adapted to enter and be retained in apertures provided in opposed ear portions of a wrist watch case, said safety sleeve and pivot pin post adapted to pass through a loop end as provided and formed in a wrist watch band or strap, the pivot pin post having larger pin ends sized and adapted to be received by a tubular rigid sleeve with said larger pin end slidable in said tubular rigid sleeve and urged to an outward limit by a compression spring carried within said rigid tubular sleeve, the end of the rigid tubular sleeve being turned inwardly when and where the larger pin end is slidably mounted, said pivot pin post and safety sleeve as an assembly mountable in opposed ear portions of a wrist

watch case, said safety sleeve and retainer including in its construction and configuration;

(a) a tubular outer member having a thin wall and of at least a semi-rigid composition and of selected length;

(b) an inturned end formed on an entering end of the tubular outer member and providing means for securing and retaining said tubular outer member to the outer diameter of said pivot pin post and with a determined overall length less than the distance between opposed ear portions of said wrist watch case, said means including forming this tubular outer member with a snug first end portion, and

(c) at least one expanded and outwardly extending leaf formed in a second end portion of said tubular outer member, said safety sleeve as and when the pivot pin post is mounted within said safety sleeve being a slide fit in said loop end in the wrist watch strap and with the expanded leaf portion a snugly slidable interference fit within said loop end while preventing loss and/or displacement of the pivot pin post and safety sleeve because of clearance between the inner diameter of the loop end and outer diameter of the pivot pin post.

4,326,322

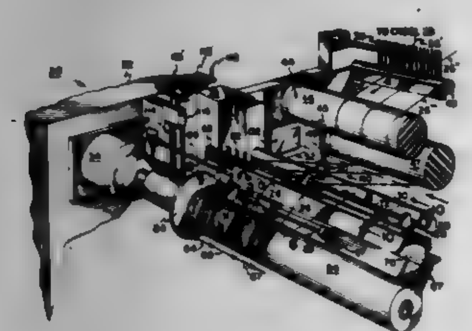
BEAMING MACHINE

Gerhard O. Gaiser, Norwalk, Conn., assignor to American Fabrics Company, Bridgeport, Conn.

Filed Mar. 15, 1979, Ser. No. 20,933

Int. Cl.³ D02H *5/00, 13/08, 13/26*

U.S. Cl. 28—187 12 Claims



1. An improved beaming machine of the type having at least one beam upon which yarn ends are wound from at least one storage creel, a motor for rotationally driving the beam, a reed, and a frame for housing the motor, beam, and reed, in which the improvement is characterized by:

(A) a plurality of beams and reeds (65);

(B) a multiple traverse assembly (53) having,

(1) means for mechanically moving in a reciprocating motion;

(2) a transverse movement translation member (102, 103 or 104) for each beam connected at one end to the reciprocating motion means and having a manually adjustable fulcrum;

(3) means for manually adjusting the fulcrum of each translation member;

(4) means, connected to each translation member and to each reed, for mechanically connecting the translation member to the reed;

whereby each reed associated with each beam is manually adjustable for any traverse movement desired.

4,326,323

CRANKSHAFT MILLING MACHINE

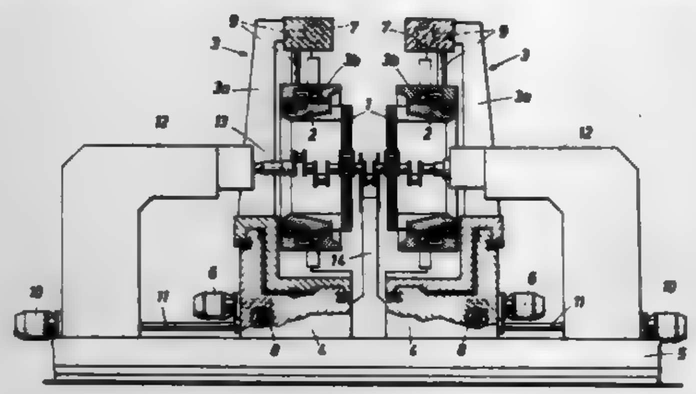
Bruno Kralowetz, and Gottfried Blaimschein, both of Steyr, Austria, assignors to GFM Gesellschaft fur Fertigungstechnik und Maschinenbau Gesellschaft m.b.H., Steyr, Austria

Filed Mar. 7, 1980, Ser. No. 127,949

Claims priority, application Austria, Mar. 8, 1979, 1728/79

Int. Cl.³ B23C *3/06*

U.S. Cl. 29—6 3 Claims



1. A machine for milling crankshafts having a plurality of cranks, comprising

a machine bed,

two workpiece supports mounted on said bed and spaced apart in a first direction and adapted to support a crankshaft workpiece and to hold it in a fixed position against rotation,

carriage means mounted on said bed and movable relative thereto in said first direction,

first and second compound slides spaced apart in said first direction and each of which comprises a base slide mounted on said carriage means and movable relative thereto in a second direction at right angles to said first direction, and a cross slide mounted on said base slide and movable relative thereto in a third direction at right angles to said first and second direction,

first and second reversible base slide drive means operatively connected to said base slides of said first and second compound slides, respectively, and operable to move said base slide in said second direction,

means for controlling said base slide drive means independently of each other in sense and speed,

first and second reversible cross slide drive means operatively connected to said cross slides of said first and second compound slides, respectively, and operable simultaneously with said first and second base slide drive means, respectively, to move said cross slides of said first and second compound slides, respectively, in said third direction, and

means for controlling said cross slide drive means independently of each other in sense and speed.

4,326,324

MANUFACTURE OF ELECTRIC LIGHT SOURCES

Stanley W. Stephens, Lightwater, England, assignor to Badalex Limited, England

Continuation of Ser. No. 965,051, Nov. 30, 1978, abandoned. This application Apr. 18, 1980, Ser. No. 141,598

Claims priority, application United Kingdom, Dec. 22, 1977, 53522/77

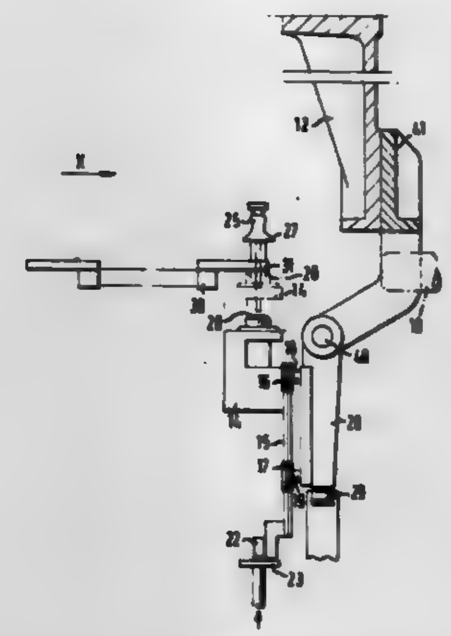
Int. Cl.³ H01J *9/00*

U.S. Cl. 29—25.19 4 Claims

1. A sealing head for a rotary turret sealing machine for sealing mounts to the ends of fluorescent lamp tubes of the type having a horizontal axis of rotation;

said sealing head being one of at least one pair of such sealing heads each of which is arranged to receive a mount assembly that includes an exhaust tubulation and which heads serve for simultaneously sealing a said mount assembly to the respective ends of a tubular lamp envelope that extends between the heads;

said sealing head including a head frame forming part of a rotary turret and a mount holding member secured to said head frame for rotation therewith by means of a connection that permits the mount holding member to be angularly displaced relative to the head frame during rotation thereof, the angular displacement being about an axis



extending at 90° to the said horizontal axis, and in a direction away from the other sealing head of said pair; and

means for effecting said angular displacement of said mount holding member about said connection relative to the head frame, between a mount sealing position in which a mount assembly held in said mount holding member is oriented with the axis of said tubulation parallel and noncoplanar with the said horizontal axis of rotation.

4,326,325

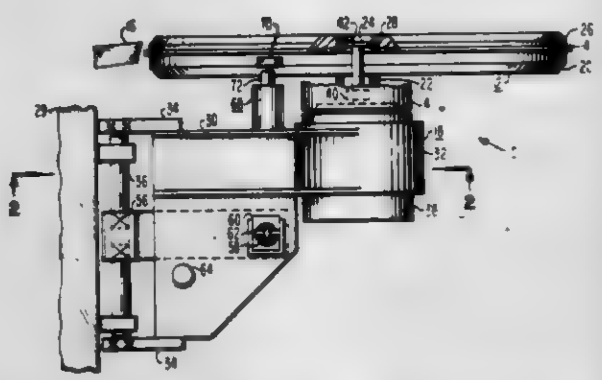
METHOD AND APPARATUS FOR DEFLASHING MOLDED RECORDED DISCS

Robert W. Chambers, Willingboro, and Frank Cuomo, Jr., Princeton, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Jul. 21, 1980, Ser. No. 170,814

Int. Cl.³ B23B *7/00, 1/00;* B23C *1/00*

U.S. Cl. 29—27 C 10 Claims



1. Apparatus for removing flash from the edge of a flat, circular, recorded disc comprising

means for supporting the disc for rotation about the center of the disc;

a rotary cutter mounted adjacent said supporting means, and extending transversely across the peripheral edge of said supporting means;

means for selectively moving said cutter toward said supporting means so as to bring the cutter into engagement with the edge of a disc supported thereon and away from said supporting means; and

means mounted adjacent the disc support and adapted to remove a major portion of the flash from the disc prior to the cutter being moved against the disc.

4,326,326

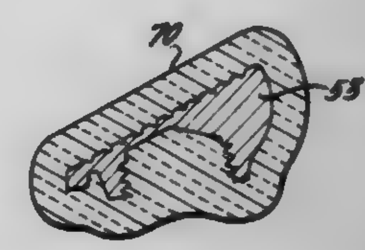
METHOD OF MAKING METAL GOLF CLUB HEAD

Paul MacDonald, Villanova, Pa., assignor to The Merion Corporation, Villanova, Pa.

Filed Jul. 9, 1980, Ser. No. 167,330

Int. Cl.³ B23P *19/00*

U.S. Cl. 29—428 2 Claims



1. In a method of making a golf club head having a lead insert positioned therein directly behind the center of the intended striking surface of said head, comprising:

providing a split mold assembly which, when assembled for casting, defines a first mold cavity of the same configuration as said golf club head;

filling said cavity with a molten wax-like material, and thereafter cooling said mold assembly to solidify said wax-like material in the form of a wax-like image of said golf club head;

separating said split mold assembly to release said wax-like image from said split mold assembly, and then forming on said removed wax-like image a frangible coating of material;

thereafter, melting said wax-like material within said coating and withdrawing it from within said coating to leave a second mold cavity in said coating of the same configuration as said golf club head;

filling said second mold cavity with molten metal;

cooling said molten metal in said second mold cavity to permit it to solidify and form said golf club head; and

thereafter removing said frangible coating from said formed golf club head.

the improvement comprising:

during said forming of said wax-like image, providing an externally-threaded protrusion on said split mold assembly in a postion such that the threaded portion of said protrusion extends into said first mold cavity forwardly from the rear side thereof, thereby to form an internally-threaded recess extending into the rear surface of said wax-like image when it has solidified;

after said solidifying of said wax-like image and before covering it with said coating material, unscrewing said threaded protrusion from said wax-like image to leave exposed said internal threads in said recess in said wax-like image, whereby said internal threads are replicated in said golf club head; and

after said cooling of said molten metal to form said club head and after said frangible coating is removed, screwing an insert comprising lead into said internal threads thereof.

4,326,327

METHOD OF ASSEMBLING A CONDUIT JOINT

Russell C. Cox, Lyman, S.C., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 926,477, Jul. 20, 1978, Pat. No. 4,245,858. This application Aug. 25, 1980, Ser. No. 180,729

Int. Cl.³ B23P *19/00*

U.S. Cl. 29—434 1 Claim

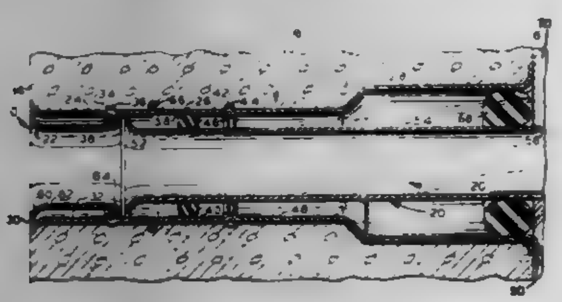
1. A method of assembly of a conduit joint having a tubular

outer housing formed of organic polymeric material capable of being fusion-welded and consisting of a medial portion and first and second opposite end portions, a first tubular inner member having at least one flared end, a second tubular inner member having opposite flared ends, and a resilient annular seal, comprising the steps of:

positioning the second end portion of said tubular outer housing in coaxial alignment with the medial portion of said tubular outer housing;

fusing the adjacent ends of the medial portion and the second end portion of said tubular outer housing so as to fixedly secure the medial portion and the second end portion together in coaxial alignment and to form an inwardly extending projection;

positioning said first tubular inner member within the medial portion and the second end portion of said tubular outer housing with the flared end of said first tubular inner member within the medial portion of said tubular outer housing and with said annular resilient seal disposed between said first tubular inner member and the medial portion of said tubular outer housing intermediate and



engageable with the flared end of said first tubular inner member and said inwardly extending projection to provide a seal between said first tubular inner member and said tubular outer housing;

positioning the first end portion of said tubular outer housing in coaxial alignment with the medial portion of said tubular outer housing;

positioning said second tubular inner member within the first end portion of said tubular outer housing; and

fusing the adjacent ends of the medial portion and the first end portion of said tubular outer housing with one flared end of said second inner member positioned within the medial portion of said tubular outer housing so as to fixedly secure the medial portion and first end portion together in coaxial alignment and to form another radially extending projection engageable with the one flared end of said second inner member positioned within the medial portion to secure said second inner member within said tubular outer housing and to retain both said annular resilient seal and said first tubular inner member within said tubular outer housing.

4,326,328
METHOD OF RELEASABLY CONNECTING A PAIR OF PIPES

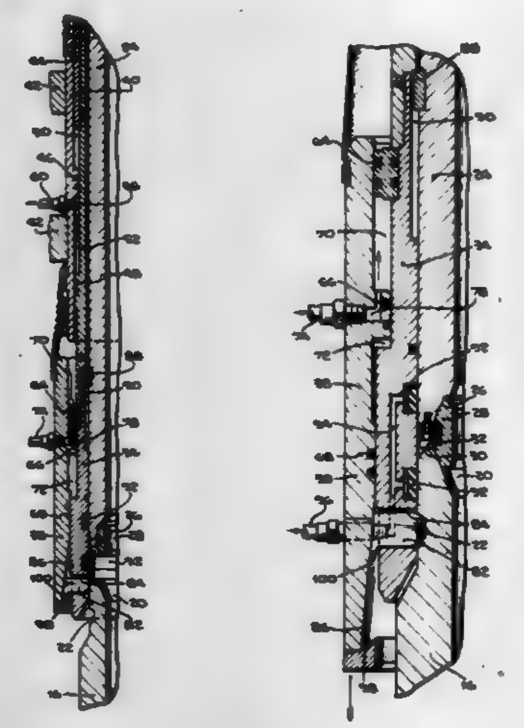
Bruce J. Watkins, Palos Verdes Estates, Calif., assignor to Regan Offshore International, Inc., Torrance, Calif.
Division of Ser. No. 875,639, Feb. 6, 1978, Pat. No. 4,200,312. This application Dec. 10, 1979, Ser. No. 101,417
Int. Cl.[3] B23Q *3/00*
U.S. Cl. 29—464 3 Claims

1. The method of releasably connecting a pair of pipes comprising the steps of:

(a) providing a first mandrel conduit connected at one end to one of the pipes and having a seating surface and an external locking surface on the other end;

(b) providing a second mandrel conduit connected at one end to the other of the pipes and having a seating surface on the other end adapted to sealably mate with said seating surface of said first mandrel conduit when said first and second mandrel conduits are disposed in end-to-end relationship along a common longitudinal axis, said second mandrel including a first sleeve disposed concentrically about said second mandrel and including movable locking means adapted for movement between a locked position engaged with said locking surface and an unlocked position disengaged from said locking surface, said first sleeve being longitudinally movable; said second mandrel further including a second sleeve disposed concentrically about said first sleeve and having an actuating surface for engaging and actuating said locking means of said first sleeve, said second sleeve being longitudinally movable;

(c) positioning said pipes to place said first and second connector mandrels in a substantially coaxial slightly spaced alignment;



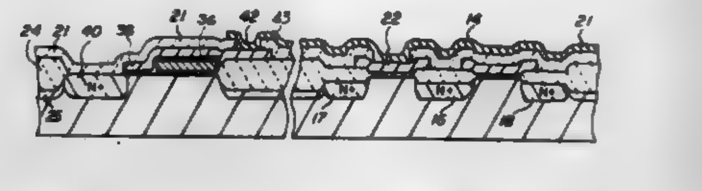
(d) extending a portion of said first sleeve beyond the end of said second mandrel conduit by sliding said sleeve from a retracted position wherein said first sleeve is retracted over said second mandrel conduit, said first sleeve being shaped such that when in said extended position said first sleeve fits concentrically about said external locking surface of said first mandrel conduit with said locking means in position for engagement with said locking surface and with said seating surfaces mated;

(e) sliding said second sleeve to a locking position where said actuating surface engages to actuate and hold said locking means in its locked position engaged with said locking surface whereby said first and second mandrel conduits are drawn together holding said seating surfaces in seated relationship.

4,326,329
METHOD OF MAKING A CONTACT PROGRAMMABLE DOUBLE LEVEL POLYSILICON MOS READ ONLY MEMORY

David J. McElroy, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Division of Ser. No. 907,235, May 18, 1978, Pat. No. 4,219,836. This application Feb. 28, 1980, Ser. No. 125,596
Int. Cl.[3] H01L *21/22, 21/28*
U.S. Cl. 29—571 9 Claims

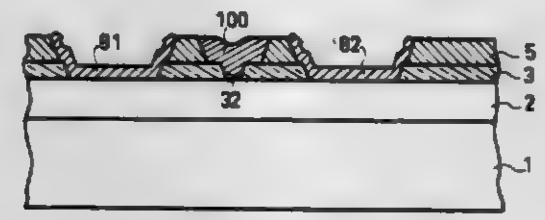
1. A method of making a read-only-memory which includes the steps of: forming a plurality of insulated gate field effect transistors in a face of a semiconductor body, each of the transistors having a source-to-drain path and a gate, the transistors being in a regular pattern of rows and columns to provide an array of memory cells; applying segments of polycrystalline silicon to said face to provide separate gates for the transistors; applying an insulating coating to the face over said gates; selectively removing said insulating coating from some of the gates; applying strips of conductive material to the face insulated from the gates by said insulating coating; except where



selectively removed; the memory being programmed by said opening of apertures in the insulating coating before applying the conductive material, the apertures directly overlying the gates and source-to-drain paths and being opened over only selected ones of the transistors.

4,326,330
PROCESS FOR PRODUCING A SELF-ALIGNED GRID FIELD-EFFECT TRANSISTOR

Joël LePage; Michel Laviron, and Henri Derewonko, all of Paris, France, assignors to Thomson-CSF, Paris, France
Filed Jul. 3, 1980, Ser. No. 165,777
Claims priority, application France, Jul. 6, 1979, 79 17603
Int. Cl.[3] H01L *21/28*
U.S. Cl. 29—571 5 Claims



1. A process for producing a self-aligned grid field-effect transistor, comprising at least the following steps:

formation, on the active semiconductor layer of the transistor, of a mask formed by a first insulating or semi-insulating material comprising windows defining the dimensions and the final location of the source, the gate and the drain of the transistor to be produced;

deposition of a layer of a second insulating material, selectively etchable by an agent which does not etch (or etches at a much slower rate) the first material;

opening, by photo-etching effected by means of said agent, of source and drain windows laying bare the semiconductor;

deposition of ohmic source and drain contacts;

opening, by photo-etching carried out by means of said agent, in the second material, of a window creating the initial gate window and laying bare therein the semiconductor; and

deposition of a gate contact.

4,326,331
HIGH COUPLING RATIO ELECTRICALLY PROGRAMMABLE ROM

Daniel C. Guterman, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed Sep. 17, 1979, Ser. No. 75,854
Int. Cl.[3] H01L *21/72*
U.S. Cl. 29—571 4 Claims

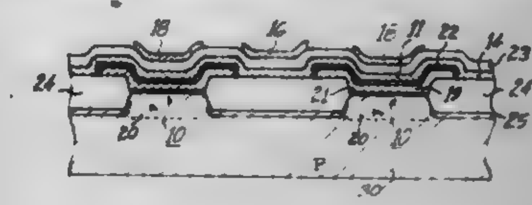
1. A method of making an electrically programmable semiconductor memory cell of the floating gate type comprising the steps of:

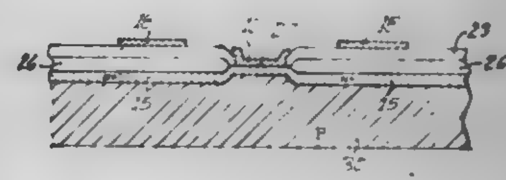
forming a first field oxide coating on a face of a body of semiconductor material, the first field oxide surrounding areas to later have transistors formed therein on said face,

forming heavily doped source and drain regions on opposite sides of a channel region in said areas, the source and drain regions being covered with a second field oxide at said face,

applying a first layer of conductive material on said face separated from the channel region by thin gate oxide,

patterning the first layer to partially define a floating gate which is much larger in area than said channel and extends out over said first field oxide by a substantial amount,



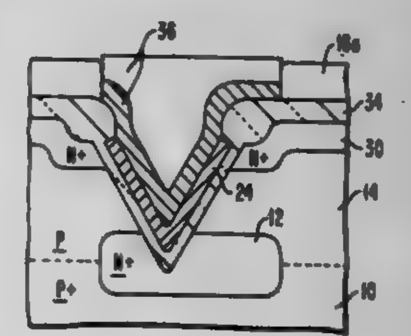


applying a second layer of conductive material on said face overlying the first layer separated therefrom by a thin insulator coating,

and thereafter patterning the second layer to define a control gate while at the same time patterning the first layer to define edges of the floating gate.

4,326,332
METHOD OF MAKING A HIGH DENSITY V-MOS MEMORY ARRAY

Donald M. Kenney, Shelburne, Vt., assignor to International Business Machines Corp., Armonk, N.Y.
Filed Jul. 28, 1980, Ser. No. 173,508
Int. Cl.[3] H01L *21/265, 21/308*
U.S. Cl. 29—571 10 Claims



1. The method of making a matrix of interconnected self-aligned semiconductor devices on the surface of a semiconductor substrate comprising the steps of:

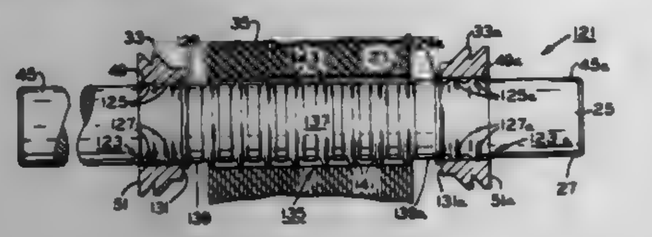
providing an first masking layer on the surface on the surface of a semiconudctor substrate of a first conductivity type, said masking layer having a first plurality of parallel spaced first regions of a first thickness separated by a second plurality of regions of a second thickness greater than said first thickness;

selectively removing a plurality of parallel strip-like regions of said masking layer in a pattern oriented substantially perpendicular to said first regions to expose the surface of said substrate only under those areas of said masking layer common to said first regions and said strip-like regions;

forming a plurality of self-aligned V-MOS semiconductor devices in said exposed areas of said substrate, each of said devices including a gate electrode layer, and then

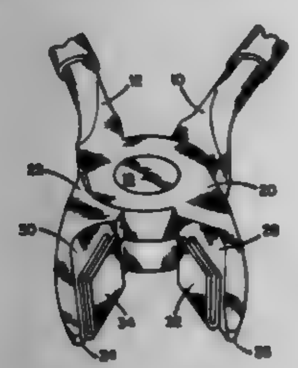
forming self-aligned conductive means in said substrate to interconnect said MOS semiconductor devices, said conductive means being defined by said first regions in said masking layer and by said gate electrode layers.

4,326,333
METHODS OF MANUFACTURING A PRIME MOVER AND A ROTATABLE ASSEMBLY THEREFORE
Charles W. Otto, DeKalb, Ill., assignor to General Electric Company, Fort Wayne, Ind.
Division of Ser. No. 889,963, Mar. 24, 1978, Pat. No. 4,215,287. This application Nov. 8, 1979, Ser. No. 92,608
Int. Cl.³ H02K *15/02*
U.S. Cl. 29—598 22 Claims



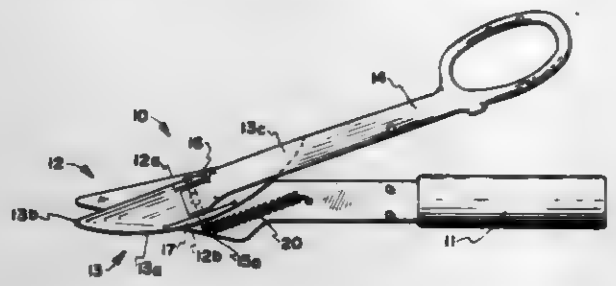
1. A method of manufacturing a rotatable assembly adapted for use in a prime mover, the rotatable assembly including a shaft having a pair of opposite end portions and a peripheral surface between the opposite end portions, the method comprising the steps of:
(a) deforming from the shaft a plurality of generally annular axially spaced apart ridges and extending at least one of the ridges of the plurality thereof in part generally radially beyond the peripheral surface of the shaft further than the other ridges of the plurality thereof; and
(b) passing a generally annular thrust device over one of the opposite ends of the shaft into gripping engagement about at least some of the other ridges and abutting a confronting portion on the thrust device with the at least one ridge.

4,326,334
HAND HELD RESTRAINING CUTTER
Steven J. Roux, Forge Village Rd., Groton, Mass. 01450
Filed Sep. 11, 1980, Ser. No. 186,113
Int. Cl.³ B26B *17/00*
U.S. Cl. 30—124 5 Claims



1. In a hand held cutting tool including: a pair of lever arms, pivotally connected about a point near one end, providing opposing handles on the longer end from the pivot point, and a pair of jaws on the shorter end from the pivot point, each jaw connected to one of said pair of lever arms: a cutting edge on each of said jaws, positioned to mate with the cutting edge on the other said jaw, with said jaws in a closed position, the improvement comprising;
a pair of resilient, work restraining members, each member being "U" shaped in cross section having one side affixed to one of said jaws; with the other side free to move, and extending parallel to and in juxtaposition with the cutting edge, wherein the base of one member abutts the base of the other member when the jaws are in the closed position, and said members adapted to roll back from the cutting edge upon application of a force caused by a workpiece being placed between the cutting edges and the jaws moved to the closed position.

4,326,335
METAL SHEARS
Ray E. Morton, 653 N. 1200 W., D101, Salt Lake City, Utah 84101
Filed Oct. 2, 1980, Ser. No. 193,037
Int. Cl.³ B26B *13/28*
U.S. Cl. 30—254 3 Claims

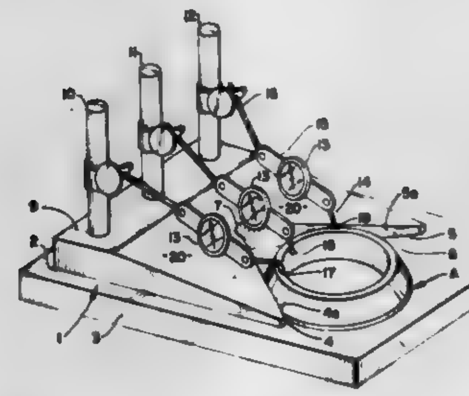


1. Reversible shears comprising
a first blade having one flat surface and a generally V-shaped configuration with the legs of the V both providing cutting surfaces terminating at a common tip;
a second blade having one flat surface and a blade edge forming a first cutting edge and a second cutting edge;
means pivotally connecting the first and second blades whereby the flat surfaces of the first and second blades are in face-to-face engagement;
first handle means fixed to the first blade and forming a rigid continuation of said first blade at an edge remote from the common tip;
a pivot pin extending transversely to the first and second cutting edges of the second blade;
means mounting the pivot pin to a surface of the second blade remote from the flat surface thereof and at a location intermediate the first and second cutting edges;
and
second handle means having one end thereof mounted to pivot around said pivot pin whereby when the second handle means is in one extreme pivoted position, it forms a handle for the first cutting surface of the second blade as said first cutting surface cooperates to provide a scissor cutting action with one cutting surface of the first blade during movment of the handles relative to one another and when the second handle means is in a second extreme position, it forms a handle for the second cutting surface of the second blade as it cooperates to provide a scissor cutting action with the other cutting surface of the first blade.

4,326,336
GAUGE
Michael J. Hreha, 415 Independence Ct., Fairport Harbor, Ohio 44077
Filed Jul. 12, 1976, Ser. No. 704,439
Int. Cl.³ G01B *5/08*
U.S. Cl. 33—174 Q 8 Claims

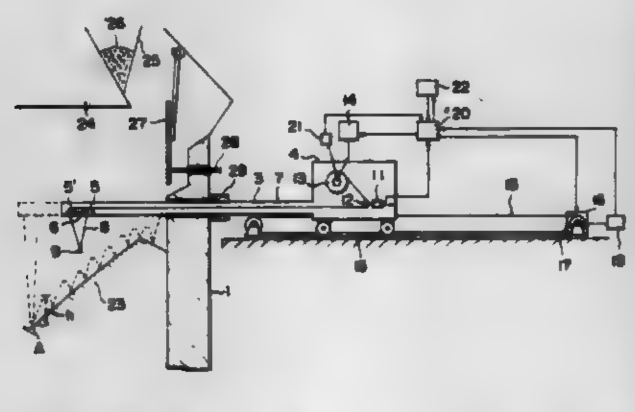
1. A gauge device comprising:
a base having a top face and a bottom underface with supporting surface areas on the lowest extremity of its underface defining a plane supporting face which is adapted to rest slidably on the upper planar face of a granite gauging block and operative to slide on said upper planar face of the block in all directions parallel to said planar face and to support the base in fixed angular relation to the plane of said planar face in all positions into which the base is moved on said planar face;
a pair of positioning jaws on, and in fixed relation to, the base and having opposed faces arranged in divergent relation from each other from a location within the periphery of the base, which location is inwardly from a side wall of the base, outwardly to, and opening through, said side wall;

said opposed faces of said pair of jaws extending entirely through the base from top to bottom;
at least one supporting post mounted on the base and extending upwardly therefrom in fixed position axially, circumferentially, and transversely of the post relative thereto,
a support,
said support being mounted on said post and movable to different positions, both axially and circumferentially relative to the post;
means connected to the support and post and operable to clamp the support fixedly in said preselected positions,
said support being adapted to detachably support an adjustable dial indicator having a movable contact feeler, in preselected positions relative to said support in all of said



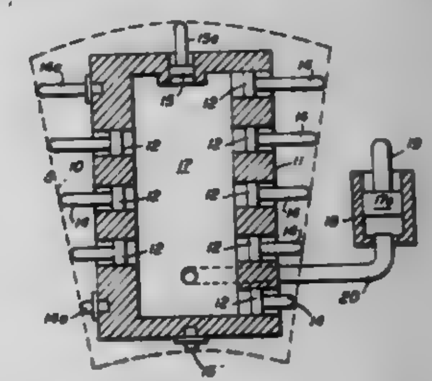
preselected fixed positions of the support, relative to the post and jaws, in which positions its movable contact feeler can be engaged, under light pressure selectively directly against various selected angularly related peripheral surface areas of an article resting on its own base on the gauge block, by movement of said gauge base on said block and while said jaws are held in engagement with said peripheral surface areas;
said defined plane supporting face on the underface of the gauge base being of such lateral extent that the gauge base, in and of itself, is capable, while resting on said planar face and supporting said post, of maintaining its said fixed angular relation to the plane of said planar supporting face.

4,326,337
MEASURING INSTRUMENT FOR THE PROFILE OF PILED CHARGE OF A BLAST FURNACE
Keiichi Akimoto, Kurashiki, and Tsuyoshi Tsuchida, Kobeshi, both of Japan, assignors to Kawasaki Seitetsu Kabushiki Kaisha, Kobeshi, Japan
Filed May 1, 1980, Ser. No. 145,697
Int. Cl.³ G01B *5/20, 7/28*
U.S. Cl. 33—174 PA 2 Claims



1. An apparatus for measuring the piling profile of a blast furnace charge, comprising:
a guide pipe including at least a distal end inserted in said blast furnace in a radial direction;
rope means with at least a part of said rope means guidingly extending through said guide pipe, said at least a part of said rope means including a loop extending out of said distal end of said guide pipe at two points;
plumb means slidably attached to said loop of said rope means;
a casing fixed to the other end of said guide pipe;
a load detector fixed to said casing and including pulley means for said rope means, said load detector adapted to detect changes in the tension of said rope means and to generate a signal dependent upon said changes in said tension;
a drum in said casing and adapted to wind and unwind said rope means;
means for rotating said drum;
first revolution counter means adapted to detect the number of revolutions of said drum;
means for moving said guide pipe and said casing in said radial direction;
second revolution counter means adapted to detect the position of said guide tube in said radial direction and to generate a signal dependent upon said position; and
detecting controller means adapted to receive said signals from said load detector and said first and second revolution counter means, and including means for calculating the profile of said charge based upon said signals;
whereby said slidable attachment of said plumb means to said loop prevents swinging of said loop during radial movement of said guide pipe.

4,326,338
AREA COMPARISON GAGE
Robert A. Plante, Irving, Mass., assignor to The L.S. Starrett Company, Athol, Mass.
Filed Sep. 10, 1980, Ser. No. 185,682
Int. Cl.³ G01B *7/28*
U.S. Cl. 33—174 PA 11 Claims



1. In a comparison gage for directly measuring the deviation in cross-sectional area of a passage from a nominal value, the gage having
means for forming an enclosed hydraulic fluid chamber,
at least a first and a second sensor piston slidably received in said chamber for displacing fluids therein according to the algebraic sum of the individual displacement of said pistons, said sensor pistons arranged for linear displacement in response to deviations from nominal values of respective dimensions of said passage along measurement axes, the ratio of the cross-sectional areas of said respective pistons being at least approximately equal to the inverse ratio of corresponding nominal dimensions of said passage along said measurement axes respectively,
an output piston in fluid flow communication with said chamber for linear displacement in proportion to the displacement of fluid by said sensor pistons,
a plurality of finger means, at least one finger means being movable along each of said measurement axes,
means for supporting first and second groups of at least one each of said finger means so that each movable finger means is in driving relation with first and second groups of at least one each of said sensor pistons respectively, and

said first and second groups of finger means being arranged to interiorly engage boundaries of a passage for substantially linear displacement along substantially prependicular first and second groups of parallel measurement axes respectively,

wherein the improvement comprises

at least one movable finger means of said first group of finger means comprising

a rotating section, said rotating section being mounted for rotational movement about a section rotation axis substantially perpendicular to a measurement axis associated with said movable finger means, and each said rotating section has

an extended measurement surface, said measurement surface aligned with and substantially intersecting said section rotation axis, whereby a center point of said measurement surface is substantially stationary as said section rotates.

4,326,339

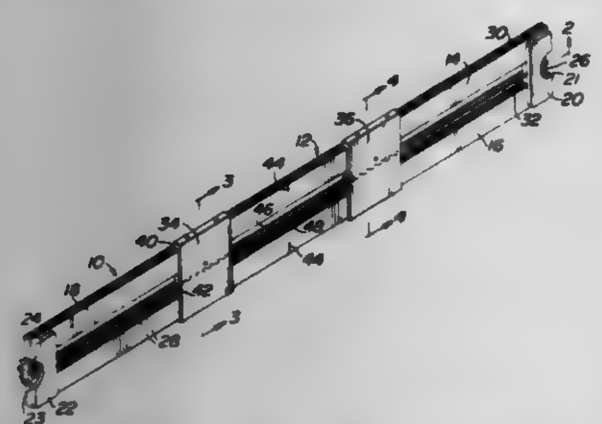
DEVICE FOR LOCATING CENTER POSITIONS

Carlo Marino, 1420 Tasker St., Philadelphia, Pa. 19145

Filed Mar. 3, 1980, Ser. No. 126,788

Int. Cl.³ G01B *3/30*

U.S. Cl. 33—191 **10 Claims**



1. A device for locating center positions, comprising:

(a) elongated frame members spaced by a slot extending substantially the longitudinal length of the frame members, a center point index marker at approximately the longitudinal midpoint of one of the frame members;

(b) two pins journaled in and extending between the frame members, one pin being at each end of the slot and disposed so that the axes of the pins lie in a plane perpendicular to the center line of the slot;

(c) an endless cord disposed within the slot and around the pins thereby forming a taut endless pulley circuit having an upper run and a lower run;

(d) two end-point markers, each marker having a passageway through which a run of said cord extends, means in each passageway joining one marker to the cord on the upper run of the pulley circuit and the other marker to the cord on the lower run of the pulley circuit, the points of affixation being such that the markers abut each other at the center point index marker of the frame; and

(e) one of the frame members being generally flat and having a length indicating distance scale provided thereon adjacent said markers.

4,326,340

DEVICE FOR AIMING OF A WEAPON

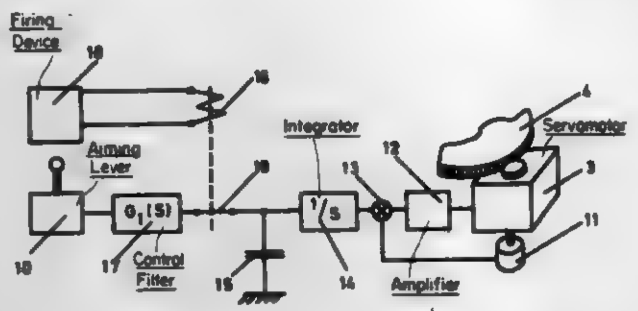
Ake Blomqvist, and Kurt Dahlberg, both of Karlskoga, Sweden, assignors to Aktiebolaget Bofors, Bofors, Sweden

Filed Dec. 29, 1978, Ser. No. 974,581

Claims priority, application Sweden, Jan. 18, 1978, 78006251

Int. Cl.³ F41G *3/08;* **G06F** *15/58*

U.S. Cl. 33—238 **20 Claims**



1. Apparatus for aiming a weapon which is movable in elevation and traverse, said apparatus comprising:

sight means operatively associated with the weapon for enabling the operator to observe a moving target;

aiming means operatively associated with the weapon for enabling the operator to aim the weapon at the target, said aiming means comprising means for adjusting the angular position and the angular velocity of the weapon in elevation, said adjusting means comprising a gear arc attached to the elevating portion of the weapon, a first servomotor for rotating said gear arc to elevate the weapon, a first amplifier having its output connected to said first servomotor, a first angular position or angular velocity generator driven by said first servomotor and connected at its output via a first summing means to the input of said first amplifier, and a first control filter connected at its output to said first summing means;

means for firing the weapon; and

means responsive to said firing means for holding constant, during the time firing is taking place, one of the angular position or the angular velocity in elevation which was in existence for the weapon just prior to actuation of said first means, said holding means comprising first sample and hold means operated by said firing means and connected between said first control filter and said first summing means for disconnecting said first control filter from said first summing means during the time firing is taking place.

4,326,341

DRYING METHOD AND APPARATUS FOR DRYING PRUNES, FISH, BREWERS GRAIN, SHELLED CORN, AND THE LIKE

Max F. Anderson, Stewardson, Ill. 62463

Filed Sep. 8, 1980, Ser. No. 185,166

Int. Cl.³ F26B *5/04*

U.S. Cl. 34—27 **11 Claims**

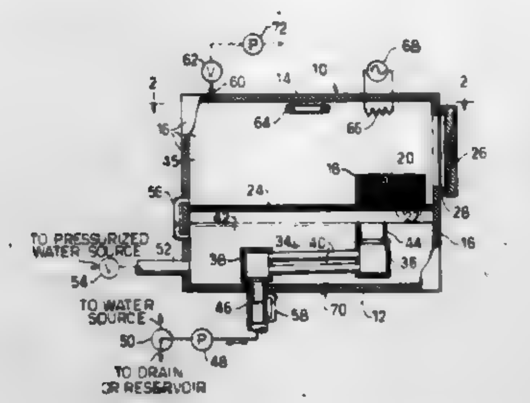
1. Apparatus for drying material comprising

a fluid-tight vacuum tank,

means for supplying liquid to the tank to partially fill the same,

means for supporting material to be dried inside the tank above the surface of the liquid contained therein,

a surface condenser inside the tank adjacent the tank bottom within said liquid for condensing vapor evaporated from said material to be dried, and



means for removing condensate from said surface condenser while preventing the entry of outside air into said tank through said surface condensor.

4,326,342

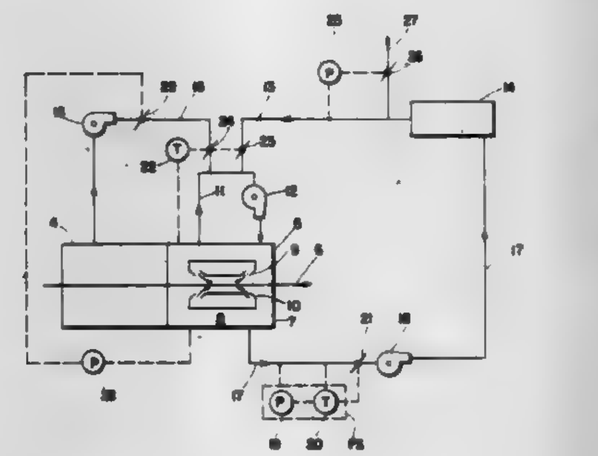
MULTI-ZONE OVEN WITH COOL AIR MODULATION

Alex J. Schregenberger, Neshanic, N.J., assignor to Midland-Ross Corporation, Cleveland, Ohio

Filed Aug. 7, 1980, Ser. No. 176,251

Int. Cl.³ F26B *13/02, 21/12*

U.S. Cl. 34—47 **17 Claims**



1. An oven, comprising:

(a) at least one chamber which is substantially sealed from the ambient atmosphere;

(b) means for guiding an element, to be heated, through the chamber in a substantially horizontal pathway;

(c) means for circulating gas, heated to a certain desired temperature, to the chamber at a predetermined desired pressure;

(d) means for circulating gas, which is cool compared to the heated gas, to the chamber for mixture with the heated gas, prior to circulation of the mixture to the chamber for impingement against the element as it travels through the chamber, to produce in the chamber a gaseous atmosphere having a predetermined desired temperature and pressure;

(e) means for exhausting gas from the chamber at a predetermined constant flow rate;

(f) means for monitoring the gas pressure within the chamber; and

(g) means for first modulating the flow of cool gas to the chamber when the gas pressure within the chamber varies from a desired norm.

4,326,343

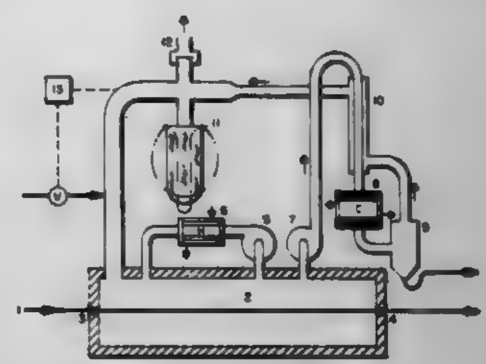
APPARATUS AND METHOD FOR RECOVERING VOLATILE COMPOUNDS

Richard K. Rathmell, 12 Pine Tree Rd., Ramsey, NJ 07446

Filed Jun. 10, 1980, Ser. No. 158,079

Int. Cl.³ F26B *21/10*

U.S. Cl. 34—51 **3 Claims**



1. Apparatus for recovering volatile compounds which are evaporated within an oven, said oven having relatively small openings to the outside atmosphere and having means to circulate the contained oven atmosphere of vapor and non-condensable gas to a cooler where part of the vapor may be condensed, and means to return the non-condensed portion of the oven atmosphere to the oven, the improvement comprising a relatively flexible expansion-contraction chamber having means to receive and become inflated with excess oven atmosphere and with relatively little increase in pressure when the rate of evaporation temporarily exceeds the rate of vapor condensation, and conversely, having means to be deflated with relatively little decrease in pressure and to return the contained atmosphere when the rate of vapor condensation temporarily exceeds the rate of evaporation.

4,326,344

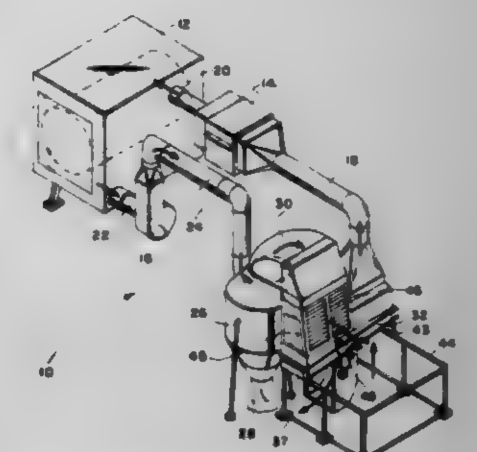
LAUNDRY DRYING SYSTEM AND METHOD

David G. Smith, Fort Wayne, Ind., assignor to Q-dot Corporation, Dallas, Tex.

Filed Nov. 8, 1976, Ser. No. 739,816

Int. Cl.³ F26B *11/04*

U.S. Cl. 34—54 **2 Claims**



1. A laundry drying system, comprising:

a drying chamber;

blower means for generating a flow of air entering the chamber and a flow of air exhausted therefrom;

heater means for heating said entering air during a drying period and ceasing to heat the entering air during a cooldown period;

a preheater, including:

a first duct carrying said flow of entering air before said entering air reaches the heater means;

a second duct carrying said flow of exhausted air, in an

approximately downward direction, said ducts being adjacent and joined for movement as a unit;

a plurality of heat pipes, each projecting into both of said ducts, with the end of each pipe in the second duct being lower than the opposite end of the pipe in the first duct; and

a plurality of planar fins in each of the ducts, each fin contacting all of the heat pipes, with the fins sufficiently close to one another that lint which may be in said exhausted air can accumulate on the edges of said fins,

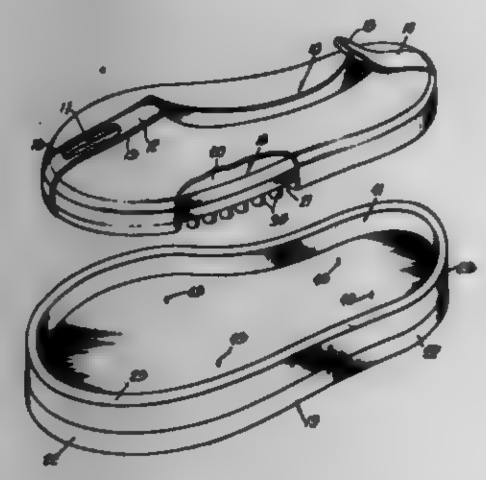
whereby heat can be transferred to said entering air in the first duct from hotter, exhausted air in the second duct;

means for filtering, by a dry method, lint from said exhausted air before the exhausted air reaches the preheater;

means for moving the preheater away from other elements of the system, for cleaning of the preheater; and

means, including a bypass damper, for routing said flow of exhausted air away from said second duct during the cool-down period.

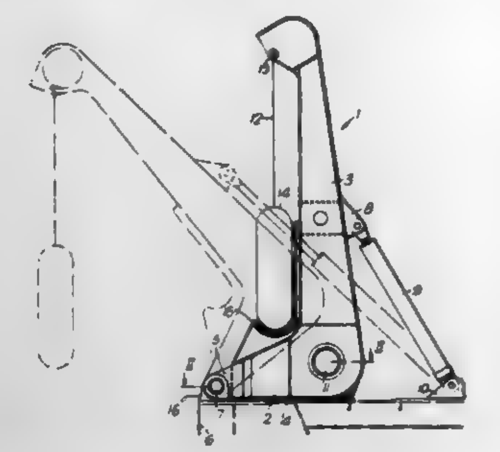
4,326,345
ARTICLE OF FOOTWEAR
Peter J. Sbicca, 2895 Lorain Rd., San Marino, Calif. 91108
Division of Ser. No. 609,395, Sep. 2, 1975, Pat. No. 3,987,510, and a continuation of Ser. No. 697,145, Jun. 17, 1976. This application Apr. 23, 1979, Ser. No. 32,166
Int. Cl.³ A43B *5/00*
U.S. Cl. 36—135 12 Claims



1. Footwear comprising an upper formed from a continuous ringlet shaped to snugly embrace the heel, toes and either side of the foot, the lower edge of said ringlet being embedded and inseparably bonded to a one-piece molded sole member of elastomeric material compounded to cure the take a set at room temperature while bonding the lower edge of said ringlet thereto, and the perimeter portion of said sole member in which the edge of said ringlet is embedded being substantially thicker than major other portions of said sole member inwardly of said perimeter portion.

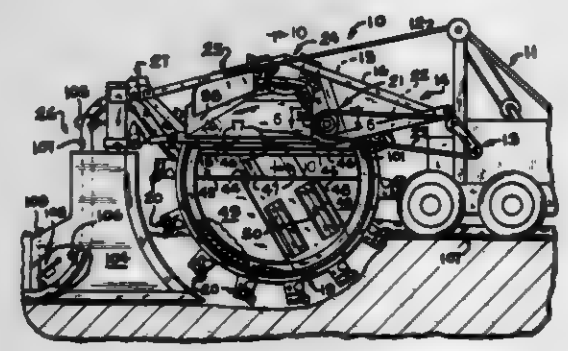
4,326,346
CRANE FOR A TOWING SUCTION DEVICE FOR A DREDGING CRAFT
Nicolaas F. van Dee, Santpoort, Netherlands, assignor to B.V. Beheermaatschappij T. denBreejen van den Bout, Overveen, Netherlands
Filed Mar. 10, 1980, Ser. No. 128,389
Claims priority, application Netherlands, Mar. 11, 1979, 7901935
Int. Cl.³ E02F *3/90*
U.S. Cl. 37—72 7 Claims

1. A crane for a towing suction device of a dredging craft for displacing a movable part of the suction device between an inboard, rest position and an outboard, dredging position, said crane including: a generally L-shaped carrying member having a shorter leg that is substantially horizontal when said crane is in the rest position and a longer substantially vertical leg, said shorter leg resting on the deck of the dredging craft and having at its outboard end a pivot connection to the deck near the board of the craft with an axis extending in the longitudinal direction of the craft, said longer leg being formed as a closed tube shaped element; a winch and drive motor mounted within



the tube shaped element in the corner of the L-shaped carrying member; winch cables extending through said tube shaped element from said winch to the movable part of the suction device; and means for pivoting said carrying member about said pivot to move the towing suction device between the inboard and outboard positions.

4,326,347
NARROW DITCH TRENCHER
Paul V. Ballinger, Findlay, Ohio
Continuation of Ser. No. 34,672, Apr. 30, 1979, abandoned. This application Jan. 29, 1981, Ser. No. 229,741
Int. Cl.³ E02F *5/08*
U.S. Cl. 37—94 10 Claims



1. A narrow ditch trencher comprising, in combination,

a rigid frame,

a trenching wheel supported for rotation about a horizontal axis,

means intermediate said frame and said trenching wheel for supporting said wheel for rotation about said axis,

a plurality of bucket assemblies disposed about said trenching wheel, said bucket assemblies having a radially extending spoke rigidly secured to said trenching wheel, and a curved plate rigidly secured to said spoke, said curved plate having side edges spaced from said trenching wheel and said spoke, said curved plate having a trailing portion disposed substantially tangentially to said axis and a leading portion disposed at an angle to said tangential trailing portion,

a pair of circular gear racks secured to said trenching wheel,

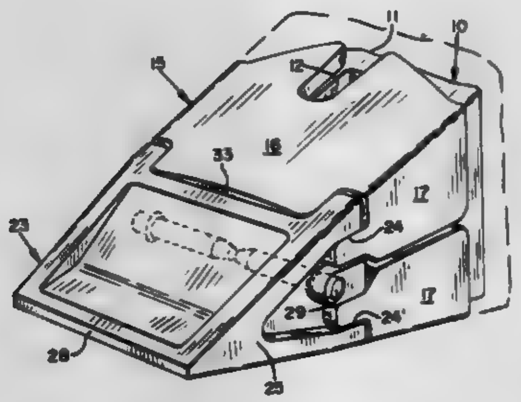
an annulus disposed on said trenching wheel intermediate said bucket assemblies and said gear racks and having a width approximately equal to the width of said curved plates,

generally planar spaced-apart sidewall members disposed within the lower portion of said trenching wheel, said sidewall members having curved marginal edges extending radially outwardly at least as far as said circular gear racks, and

a pair of spoil removal arms secured to said rigid frame and having spoil removing ends disposed adjacent said trenching wheel at distinct circumferential positions,

whereby rotation of said trenching wheel engages and lifts soil from below ground level.

4,326,348
EXCAVATING TOOTH ASSEMBLY
Robert K. Emrich, Portland, Oreg., assignor to ESCO Corporation, Portland, Oreg.
Filed Jul. 30, 1980, Ser. No. 173,769
Int. Cl.³ E02F *9/28*
U.S. Cl. 37—142 R 27 Claims



1. A tooth assembly for earth working equipment comprising

an adapter having top, bottom and side surfaces and means at the rear end thereof for projecting the same forwardly from said equipment and point coupling means at the forward end for receiving a point attachable on said adapter by movement along a predetermined axis, said point coupling means terminating in a pair of spaced apart stabilizing surfaces arranged on opposite sides of said axis, said adapter also having mounting means for supporting a wear cap on said top surface to protect said adapter against wear from earth passing thereover,

a wear cap removably mounted on said adapter covering at least a portion of said top surface, said wear cap having at least one axially extending joint means,

a point removably coupled to said adapter and having a bit at the forward end thereof and the complement to said coupling means at the rear end thereof, said complement to said coupling means terminating in a pair of spaced apart stabilizing surfaces arranged on opposite sides of said axis, said point having forwardly extending sidewalls, a complement to said joint means in at least one sidewall adapted to receive said joint means whereby said joint means and complement thereto cooperate with said stabilizing surfaces in resisting the beam component of externally applied forces on said point, and

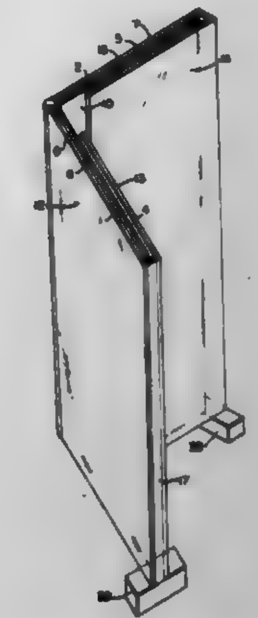
lock means releasably securing said point to said adapter.

4,326,349
GREETING CARD DISPLAY DEVICE
Georgia A. Daughtry, 1107 Cedar St., Elizabeth City, N.C. 27909
Filed Dec. 21, 1979, Ser. No. 106,103
Int. Cl.³ A47G *1/06*; G09F *1/00, 3/18, 7/02*
U.S. Cl. 40—152.1 3 Claims

1. An article for displaying greeting cards having at least two leaves, comprising:

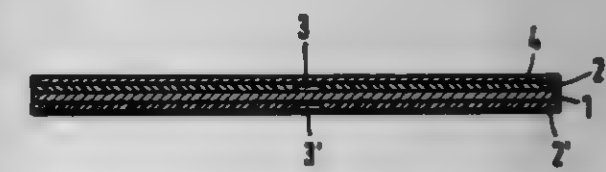
a. a first leaf support and first means for receiving one greeting card leaf;

b. a second leaf support and a second means for receiving a second greeting card leaf, said second leaf support having a frame means; and



c. separable connecting means connected to said first leaf support for connecting with said frame means of said second leaf support.

4,326,350
ALUMINUM FOIL LABEL FOR BOTTLES
Dieter Roske, Hann.-Münden, Fed. Rep. of Germany, assignor to Haendler & Natermann GmbH, Hann.-Münden, Fed. Rep. of Germany
Filed May 27, 1980, Ser. No. 153,221
Claims priority, application Fed. Rep. of Germany, May 26, 1979, 2921462
Int. Cl.³ G09F *3/00*
U.S. Cl. 40—310 13 Claims

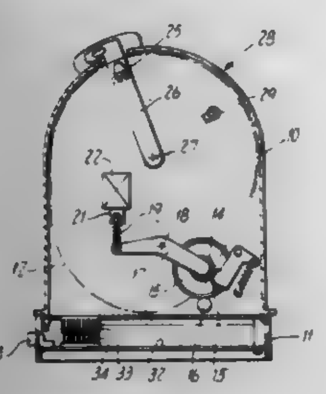


1. In an aluminum foil label for bottles, which has on both sides a colorless or colored coating which is insoluble in an alkaline cleaning liquor said coating provided with mutually opposite weak areas.

4,326,351
DISPLAY DEVICES
Joseph R. Heywood, 118 Morgan St., Kingsgrove, New South Wales, and Leonard H. Ainsworth, 108 Dunning Ave., Rosebery, New South Wales, both of Australia
Filed Jun. 2, 1980, Ser. No. 155,752
Claims priority, application Australia, Nov. 6, 1979, PD9145
Int. Cl.³ G09F *11/12, 11/18*; A63B *71/00*; G01D *9/00*
U.S. Cl. 40—467 13 Claims

1. A display device for an amusement or game machine wherein a series of indicia on a movable member are viewed through a window in a housing of the machine comprising a housing member formed by walls enclosing a space, a base surrounding said housing, at least one window through a wall of said housing, at least one endless, flexible, closed loop tape disposed within said housing, a series of indicia on at least one surface of said tape, drive means for driving said tape around its closed loop path, means for supporting and guiding said tape past the inside of said window so that at least one of said indicia can be viewed therethrough, means for starting and

stopping said drive means, electronic sensing means for sensing the position of said tape with respect to its path of travel, and control means operatively associated with said sensing means

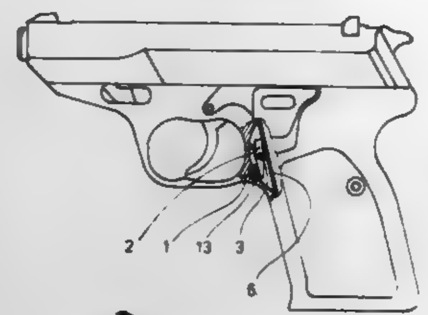


for controlling said starting and stopping means in response to said sensing means whereby said tape is stopped in a predetermined position with at least one of said indicia in said window.

4,326,352
SIGN POST
Duane D. Barth, Burnsville, Minn., assignor to Heritage Products Intl., Inc., Burnsville, Minn.
Filed Dec. 6, 1979, Ser. No. 100,890
Int. Cl.³ G09F *15/00;* F16M *13/00*
U.S. Cl. 40—607 18 Claims

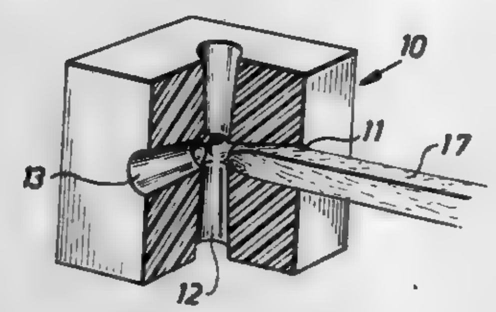
1. A sign post for holding a sign above the surface of the ground comprising:
an elongated stake having a small cross-sectional dimension for easy insertion into the ground;
a post having a substantially larger cross-sectional dimension than said stake;
means for removably attaching said post to said stake, said attaching means holding said post in a vertically-disposed orientation when said stake is inserted into the ground;
a support member;
a guide member having an upper portion extending above said support member and a lower portion extending below said support member; and
a cap member fitted about the upper portion of said guide member;
said guide member for holding said post, said support member and said cap member together.

4,326,353
MAGAZINE CATCH RELEASE FOR A HAND FIREARM
Walter Ludwig, Ulm, Fed. Rep. of Germany, and Franziska Schmid, deceased, late of Langenau, Fed. Rep. of Germany (by Hans Schmid, heir), assignors to Carl Walther GmbH, Ulm, Fed. Rep. of Germany
Filed Feb. 7, 1980, Ser. No. 119,407
Claims priority, application Fed. Rep. of Germany, Feb. 15, 1979, 2905770
Int. Cl.³ F41C *25/06*
U.S. Cl. 42—7 8 Claims



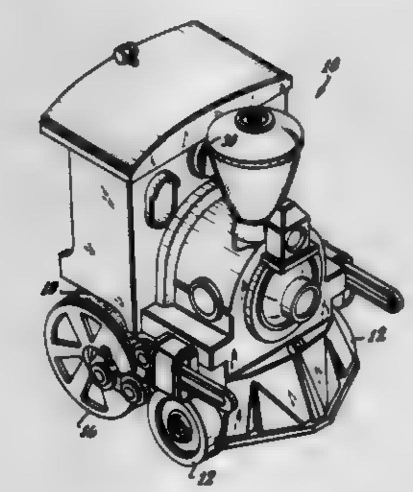
1. A device for retaining a magazine in a hand firearm comprising means on the firearm for releaseably locking a magazine within a butt of the firearm, and actuating means on both sides of the firearm and operatively connected to said locking means, said actuating means being actuable from either one of both sides of the firearm by the hand of the user holding the firearm whereby the user can unlock the magazine with either hand holding the firearm.

4,326,354
RECREATIONAL KIT FOR CONSTRUCTING OBJECTS
Carl E. Hagberg, Sandelsgaten 37, S-115 33 Stockholm, Sweden
Continuation of Ser. No. 888,645, Mar. 21, 1978, abandoned.
This application Apr. 14, 1980, Ser. No. 140,309
Claims priority, application Sweden, Mar. 24, 1977, 7703359
Int. Cl.³ A63H *33/10, 33/04;* B25G *3/28, 3/00*
U.S. Cl. 46—26 39 Claims



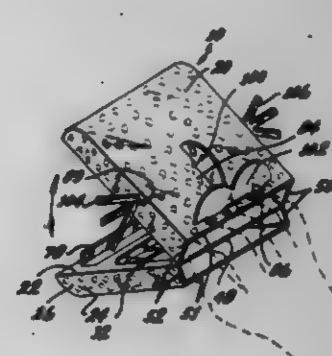
1. A kit for recreational purposes for the building of at least user designable objects comprising toy-like configurations having at least one geometrically selectable shape, said kit comprising:
a plurality of blocks having exterior surfaces, each of said exterior surfaces having at least an extreme outer surface portion, a central region circumscribed by said extreme outer surface portion; at least one aperture on the exterior surface of each of said blocks, said at least one aperture defining a hole, said hole having a substantially central longitudinal axis extending substantially immediately from said outer surface generally toward said central region, said hole having varying cross-sectional area which decreases from said exterior surface towards said central region progressively along at least a portion of the length of said longitudinal axis, and
a plurality of elongated elements being hand-breakable by the user into desired lengths, and formed of substantially a deformable material throughout and having ends which have a non-mating cross-section adapted to be insertable into the holes in said blocks at least for inter-connecting a selectable portion of said blocks one with the other, said hole having such a profile with respect to said cross-section of the elongated elements that a selectable end of each said elongated elements is compressibly grippable by deformation in and by a corresponding hole, at one of at least several locations along said portion of decreasing cross-sectional area of the hole.

4,326,355
TOY SIMULATING STEAM LOCOMOTIVE, AND WHISTLE
Saburo Watanabe, Gardena, Calif., assignor to Tomy Kogyo, Co., Inc., Tokyo, Japan
Filed Jan. 30, 1980, Ser. No. 116,904
Int. Cl.³ A63H *33/26;* G10K *5/00, 9/10*
U.S. Cl. 46—44 16 Claims



1. A toy steam locomotive which comprises:
a housing;
means for producing a sound simulating a steam locomotive mounted on said housing;
means for producing a sound simulating a steam locomotive whistle mounted on said housing;
means for producing a visual simulation of a fire in a steam locomotive firebox mounted on said housing, said latter means including at least one member mounted for relative movement on said housing, the movement of said member simulating the flickering movement of a flame;
power means operatively connected to said means for producing a sound simulating a steam locomotive, said means for producing a sound simulating a steam locomotive whistle, and said means for producing a visual simulation of a fire;
switch means connected to said power means for turning said power means off and on;
first control means operatively connected to said means for producing a sound simulating a steam locomotive whistle and capable of controlling said means for producing a sound simulating a steam locomotive whistle between an on position wherein said whistle sound occurs and an off position wherein said whistle sound does not occur;
second control means operatively connected to said means for producing a sound simulating a steam locomotive for modulation of said simulated steam locomotive sound .
3. A sound producing apparatus for a toy which comprises:
a resonator means located in said toy such that a portion of said resonator means is free to vibrate producing a sound audible outside of said toy;
an activator means located in said toy and including a power means for continuously activating said activator means;
a variable vibration means located in said toy and means associating it with said resonator means such that vibration can be transferred from said variable vibration means to said resonator means for producing said sound;
cycling means located in said toy and including means associating said cycling means with said power means whereby said power means moves said cycling means in a cyclic manner;
said variable vibration means attaching to said cycling means, said variable vibration means cyclically associating and disassociating with said activator means in response to said cyclic movement of said cycling means such that vibrations are induced in said variable vibration means when said variable vibration means is associated with said activator means and said vibrations are allowed to dissipate when said variable vibration means is disassociated from said activator means.
15. An apparatus for producing a whistling sound which comprises:
a chamber having an air inlet and air outlet, a fan means located in said chamber;
an independent whistle means associated with said air outlet of said chamber;
an inlet closure means associated with said air inlet and including a closure member capable of sealing said air inlet to ingress of air into said chamber, control means operatively connected to said closure member and capable of moving said closure member with respect to said chamber allowing air to ingress into said chamber and be propelled from said chamber by said fan means through said outlet into said whistle means;
said fan means comprising a disk rotatably mounted within the interior of said chamber and including a plurality of fan blades extending perpendicular to said disk from the outer perimeter of said disk toward the center of said disk;
said outlet of said chamber being located beyond the periphery of said disk, said inlet in said chamber being located directly over the central section of said disk;
said closure member comprising a flat plate hinged on said chamber and movable between a position wherein said flat plate is located over said inlet to a position wherein said flat plate is removed from said inlet.

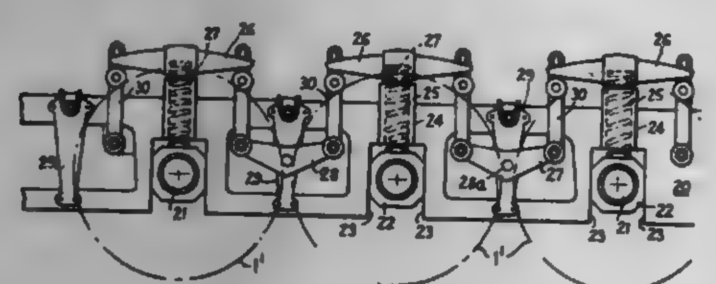
4,326,356
CARDBOARD FOOD TRAY AND PUPPET DEVICE
Thomas A. Mason, Racine, Wis., assignor to Western Publishing Company, Inc., Racine, Wis.
Filed Sep. 15, 1980, Ser. No. 186,947
Int. Cl.³ A63H *3/14, 33/00;* B65D *5/20*
U.S. Cl. 46—154 4 Claims



1. A generally rectangular sheet of self-supporting material for forming, in a folded condition, a carrying tray convertible into a hand puppet, comprising:
at least one opening in said sheet for receiving a food item;
a first pair of parallel fold lines extending along a length of said sheet to form a first tray side portion flanked on one side by one edge of a top panel and on the other side by one edge of a bottom panel;
a second pair of parallel fold lines extending along a length of said sheet adjacent the other edge of said top panel to form a second tray side portion for cooperating with said first tray side portion in said folded condition to space apart said top panel from said bottom panel to form a tray cavity, each end of said first and second tray side portions being provided with an arcuate surface;

a hinge line extending across one of said panels, said hinge line substantially bisecting said one of said panels;
a perforated tear line provided on said sheet in colinear relationship with said hinge line and extending continuously from said hinge line to opposite edges of said sheet, whereby said hand puppet may be provided by separating said tray along said tear line and folding said tray about said hinge line;
cut lines in one of said panels and in at least one of said tray side portions for receiving decorative elements extending from said panels and said side portions;
a side retaining tab extending from one of said second pair of parallel fold lines, said side retaining tab being adapted to be engaged under the other edge of said bottom panel to secure said sheet in said folded condition;
a transverse fold line extending across the width of each panel adjacent each end thereof, a first end of each of said arcuate surfaces on said first tray side portion abutting an associated one of the transverse fold lines on said top panel and a second end of each of said arcuate surfaces on said first tray side portion abutting an associated one of the transverse fold lines on said bottom panel;
an end wall extending from each of said transverse fold lines;
a retaining slot provided in each of the end walls on one of said panels;
a retaining tab extending from each of the end walls on the other of said panels, each of said retaining tabs being provided with arcuate hook portions for retaining receipt by an associated one of said slots for closing the ends of said carrying tray when said sheet is in said folded condition; and
a set of simulated teeth provided on said top panel adjacent each of said end walls on said top panel, each set of said simulated teeth being formed by providing cut lines in said top panel, whereby each set of simulated teeth may be folded to a position approximately normal to the surface of said top panel.

4,326,357
MODEL LOCOMOTIVE SUSPENSION SYSTEM
Christopher W. Shaw, Kirkbymoorside, England, assignor to Micro Metalsmiths Limited, N. Yorkshire, England
Filed Apr. 15, 1980, Ser. No. 140,613
Claims priority, application United Kingdom, Apr. 19, 1979, 13815/79
Int. Cl.³ A63H *19/02*
U.S. Cl. 46—217 1 Claim

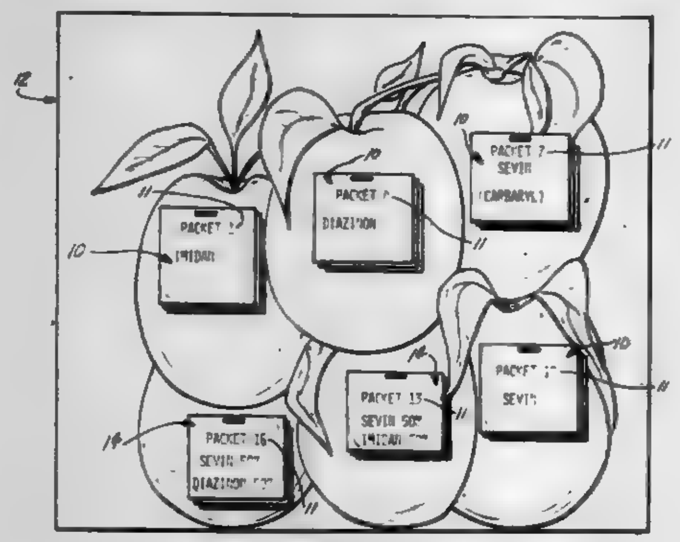


1. In a model of a locomotive which includes a chassis, wheel axles mounted at parallel spaced positions along said chassis, and an equalized or compensated suspension system comprising means mounting said axles for generally vertically reciprocating movement relatively to said chassis, a set of leaf spring members arranged generally horizontally in spaced relation at a first level along each side of said chassis, a set of suspension lever members disposed between adjacent ones of said leaf spring members and arranged generally horizontally at a second level along each side of said chassis, at least one of said sets of leaf spring members and suspension lever members forming spanning members disposed in spanning relation with said wheel axles respectively, link means arranged generally vertically along each side of said chassis and interconnecting said leaf spring members with adjacent ones of said suspension lever members, holder means fixed to said chassis between each of said spanning members and its respective axle mounting means, each said holder means being open at upper and lower ends adjacent its respective spanning member and axle mounting means, and a pillar member vertically slidable in each said holder means and bearing at upper and lower ends on said respective spanning member and axle mounting means, whereby said suspension system supports said chassis on said wheel axles; means for facilitating small scale modelling of said suspension system with an appearance closely resembling the full size system and functioning similarly thereto, whereby to render said model a more precise reproduction of the full size locomotive, said means comprising said leaf spring members modelled as rigid dummy leaf springs, and said pillar members formed as compression coil springs, each said spanning member bearing on said upper end of its respective holder means for rocking movement thereon, having a recess adjacent said respective holder means in which is engaged the upper end of said coil spring, and being arranged to be movable in a generally vertical direction.

4,326,358
HYBRIDS
Robert H. Lawrence, Jr., Tarrytown, N.Y., and Phillip E. Hill, Hollister, Calif., assignors to Agrigenetics Research Associates Limited, Denver, Colo.
Filed Jul. 17, 1980, Ser. No. 169,876
Int. Cl.³ A01G *1/00*
U.S. Cl. 47—58 14 Claims

1. A process for rapidly developing hybrids and commercially producing hybrid seeds, comprising:
(a) selecting a first parent plane and a second parent plant;
(b) crossing said first parent plant with said second parent plant to obtain original-parent-derived hybrids that are phenotypically uniform;
(c) cloning said first parent plant to produce a first cloned parental line; and
(d) crossing plants of said first cloned parental line with said second parent plant or with a second parental line produced therefrom to obtain hybrid seeds which yield hybrids that are phenotypically uniform, provided that when said second parent plant is heterozygous and a second parental line produced therefrom is used in the crossing of step (d), said second parental line must be produced by cloning.

4,326,359
DEVICE AND PROCESS FOR FRUIT TREE INSECT CONTROL
Frank E. Tabacchi, 4531 Cass Elizabeth, Pontiac, Mich. 48054
Filed Aug. 28, 1980, Ser. No. 181,979
Int. Cl.³ A01G *1/00*
U.S. Cl. 47—58 9 Claims

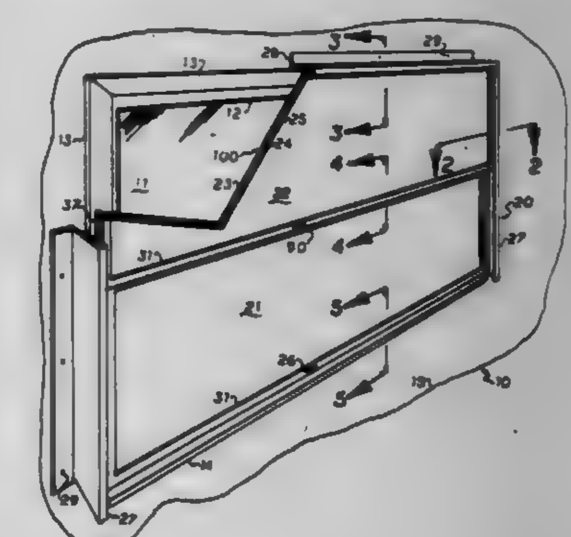


1. A home gardener's method for fungus and insect control

for pome fruit trees for an entire season avoiding repetitious application and the development of an insecticide resistant strain of insects using a first water soluble insecticide, a second water soluble insecticide, a third water soluble insecticide and a water soluble fungicide comprising the steps of:
(a) mixing a pre-packaged amount of a first insecticide with a pre-determined amount of water to form an aqueous solution, and spraying a fruit tree with the aqueous solution when the tree leaf buds show green;
(b) mixing a pre-packaged amount of a water soluble fungicide with a pre-determined amount of water to form an aqueous solution thereof and spraying the fruit tree ten days after step (a).
(c) repeating the application of the aqueous fungicide solution of step (b) when the fruit buds begin to open;
(d) mixing a pre-packaged amount of a second water soluble insecticide with a pre-determined amount of water and spraying the tree after three-fourths of the petals have dropped;
(e) mixing a pre-packaged amount of the first water soluble insecticide with a pre-determined amount of water and spraying the tree approximately ten days following step (d);
(f) spraying the tree approximately ten days following step (e) when no rain is predicted using an aqueous solution prepared as in step (d);
(g) mixing a pre-packaged amount of a third water soluble insecticide with a pre-determined amount of water to form an aqueous solution and spraying the tree approximately ten days following step (b) when no rain is predicted;
(h) mixing a pre-measured amount of the second insecticide and the third insecticide in a pre-determined amount of water to form an aqueous solution and spraying the tree with the aqueous solution approximately ten days following step (g) when no rain is predicted;
(i) mixing a pre-measured amount of the first insecticide with a pre-determined amount of water to form an aqueous solution and spraying the tree with the aqueous solution approximately ten days following step (h) when no rain is predicted;
(j) mixing a pre-packaged amount of the third insecticide with a pre-determined amount of water to form an aqueous solution and spraying the tree with the aqueous solution approximately ten days following step (i) when no rain is predicted;
(k) mixing a pre-packaged amount of the second insecticide with a predetermined amount of water to form an aqueous solution and spraying the tree with the aqueous solution approximately ten days following step (j) when no rain is predicted; and
(l) mixing a pre-packaged amount of the third insecticide with a pre-determined amount of water to form an aqueous solution and spraying the tree with the aqueous solution ten days following step (k) when no rain is predicted.

4,326,360
SHUTTER SHIELDS (R) VERTICAL TRAVEL ET AL.
James D. Davidson, 67 Grantour Ct., Pontiac, Mich. 48055
Filed Aug. 7, 1979, Ser. No. 64,354
Int. Cl.³ E05B *65/04*
U.S. Cl. 49—63 4 Claims

1. An improved insulated shutter shield device in combination with a glass area mounted in a building structure having upright walls, said glass area including a glass area frame, said shutter shield device having track means spaced inwardly of and parallel to the plane of said glass area means;
laminate insulative shutter shield means mounted in said track means for movement between positions located above said glass area means and in front thereof, to block off the entirety of said glass area means,
said laminate insulative shutter shield means including a frame movably supported in said track means and having an imperforate surface layer and an insulation material layer mounted side by side in the frame, said imperforate surface layer providing a surface against which is engaged with insulative material, said insulative material having little resistance against breakage when forces are applied in direction perpendicular to the plane thereof, said imperforate surface layer providing a protective barrier from the outside and a rigidification of said insulative material against the effects caused by forces applied from the outside in direction perpendicular to the plane thereof; and seal means for effecting a seal around the periphery of said glass area means and between said glass area means and said insulated shutter shield means, thereby defining a sealed chamber,
wherein the improvement comprises:
means for mounting said track means in a parallel mode adjacent to the vertical side edges of said glass area frame means, spaced equadistant from the vertical center line of said glass area means, said track means being fastened to the building wall structural framing defining the building wall rough opening for receiving said glass area frame means;
means for mounting a horizontal header seal bar located above and at 90 degrees to said parallel vertical track means, said header seal bar is fastened to the building wall structural framing defined as the glass area rough opening header;



means for installing at least one stationary thermal shutter shield means in said vertical track means, closely fitted and sealed at said header seal bar, said stationary shutter shield means is maintained in a stationary mode in said track means, said maintaining means is a compressible expandable low friction slide means attached to the vertical sides of said insulated shutter shield device, compressed against said vertical track means, thereby preventing movement;
means for movably supporting at least one insulated shutter shield means in said vertical track means, said movable support means being compressible expandable low friction slide means, fastened to the vertical sides of said insulated shutter shield means and compressed against said vertical track means, maintaining said insulated shutter shield means equadistant around said device means vertical center line and in a stationary mode in any desired location in said vertical track means, said movable shutter shield means being manually movable to seal on said glass area sill means; and
means for sealing between said stationary shutter shield means and said movable shutter shield means in a closed mode maintaining said sealed chamber.

4,326,361

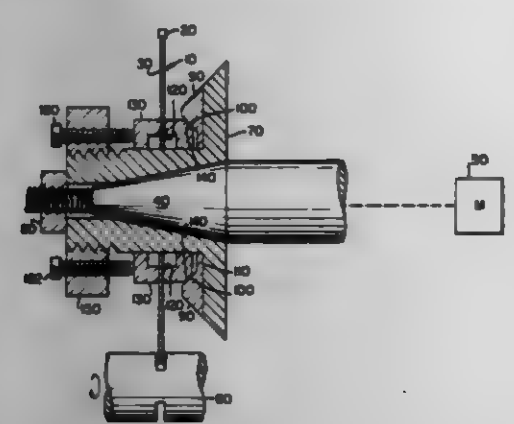
ADJUSTABLE HUB MOUNT FOR CIRCULAR SAW BLADE

William C. McGill, San Marcos, Calif., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Jun. 27, 1980, Ser. No. 163,513

Int. Cl.³ B24B *45/00*

U.S. Cl. 51—168 **1 Claim**



1. An adjustable hub for rotating saw comprising a hub member for surroundably engaging a motor spindle of a rotating saw such that the rotational axis of said hub member and motor spindle are coincident; a ring member having its rotational axis coincident with the rotational axis of the hub member and having a flat bearing surface at an angle of about 45° with the rotational axis of said hub member; a first flange member having its rotational axis coincident with the rotational axis of said hub member and having a rounded bearing surface in contact with said flat bearing surface; a second flange member having its rotational axis coincident with the rotational axis of the hub member and located adjacent said first flange member for engaging a circular saw between first and second flange member; a threaded ring member having its rotational axis coincident with the rotational axis of said hub member and threadably engaged to said hub member; at least two pairs of independently adjustable screws engaged with said threaded ring member and passing through said threaded ring member parallel to the rotational axis of the hub member to contact said second flange member, said adjustable screws being located equidistant from the axis of the hub member and from each other.

4,326,362

SHOT BLAST MACHINE

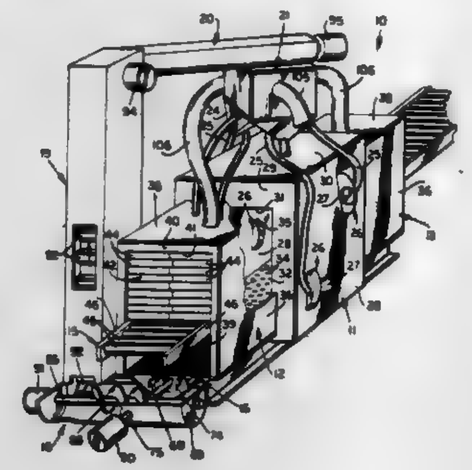
Virgil R. Williams, 2055 Webb Jin House Rd., Snellville, Ga. 30278, and James M. Williams, Jr., 2980 Payton Rd., NE., Atlanta, Ga. 30345

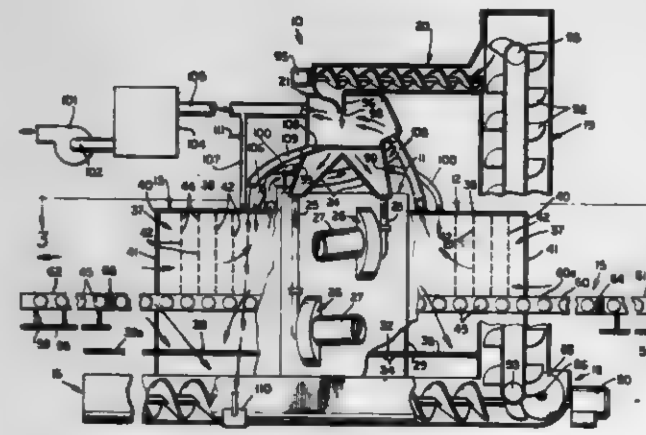
Filed Feb. 19, 1980, Ser. No. 122,366

Int. Cl.³ B24C *3/14, 9/00*

U.S. Cl. 51—417 **4 Claims**

1. A shot blast machine comprising a blast housing defining a blast chamber, aligned entrance and exit openings on opposite sides of said blast housing, an entrance vestibule housing in abutment with said blast housing and defining an entrance vestibule about the entrance opening of said blast housing, an exit vestibule housing in abutment with said blast housing and defining an exit vestibule about the exit opening of said blast housing, said vestibule housings each defining openings therein in alignment with the entrance and exit openings of said blast housing, shot propelling means mounted to said blast housing for propelling shot inwardly into said blast housing, shot hopper means positioned over said blast housing for delivering shot to said shot propelling means, an open surface conveyor means for moving objects to be blasted along a substantially rectilinear path through the openings of said entrance vestibule housing, said blast housing and said exit vestibule housing, shot recirculation apparatus for collecting the shot beneath said blast chamber and the entrance and exit vestibules and moving the shot toward and delivering the shot to said shot hopper means, said shot recirculation apparatus including a canopy extending along the length of and beneath said open surface conveyor means, a conveyor recess positioned below said canopy and extending parallel to said canopy and including walls sloped downwardly from about opposite sides of said canopy, a central auger conveyor extending along the length of said recess beneath said canopy, elevator means for receiving shot from said central auger conveyor and delivering shot to said shot hopper, a hopper overflow means for directing shot from said shot hopper downwardly through said open surface conveyor to said canopy, said canopy defining openings with said conveyor recess on opposite sides of said auger





screw at a level lower than the upper portion of the auger screw so that shot from said blast housing and said entrance and exit vestibule housings falls through the open surface conveyor means to and accumulates on and about the canopy of said auger conveyor and progressively feeds through said side openings to the lower portion of said auger screw, air circulation means comprising means for moving air from outside said shot blast machine inwardly through the openings of said vestibule housings and into the vestibule housings, and from the vestibule housings through air filter means to the atmosphere.

4,326,363

WAISTED ENVELOPE FOR TUBULAR BUILDING STRUCTURES

Fritz Leonhardt; Wolfhart André; Wilhelm Zellner; Jörg Schlaich, and Gunter Mayr, all of Lenzhalde 16, D-7000 Stuttgart, Fed. Rep. of Germany

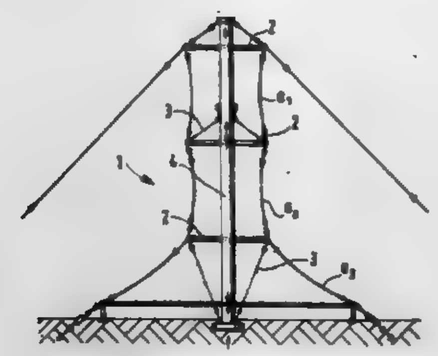
Filed Oct. 17, 1979, Ser. No. 85,702

Claims priority, application Fed. Rep. of Germany, Oct. 17, 1978, 2845194

Int. Cl.³ E04B *1/32*

U.S. Cl. 52—80 **5 Claims**

1. An envelope for building structures comprising at least one envelope part each characterized by a membrane of waisted shape, a system for supporting each envelope part comprising at least a pair of stiffening rings, each said envelope part being pretensioned in substantially the axial direction and individually connected at both top and bottom locations to one of said stiffening rings, and means for supporting the uppermost stiffening ring thereby to take up the vertical component



of a pulling force exerted by each envelope part, and wherein each envelope part is of a membrane design and material which in a pulled condition takes up pulling forces within its plane in all directions resulting in stabilization of the envelope part to a self-supporting condition.

4,326,364

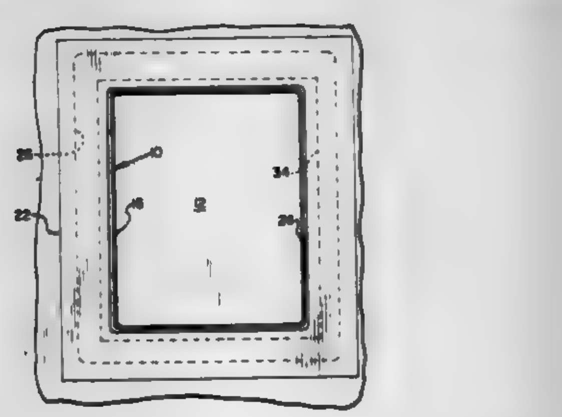
IN-GROUND, INSULATED SWIMMING POOL CONSTRUCTION AND METHOD

Elmer R. Silvey, 1231 Dutton Rd., Eagle Point, Oreg. 97524

Filed Feb. 1, 1980, Ser. No. 117,544

Int. Cl.³ E02D *27/00*

U.S. Cl. 52—169.7 **14 Claims**



6. An in-ground swimming pool construction comprising:
an in-ground excavation including an excavation floor and sidewalls,
a swimming pool comprising cementious swimming pool side and bottom walls within said excavation but spaced inwardly of said excavation bottom and sidewalls to define spaces therebetween,
and a granular fill material filling said spaces to define a thermal insulating barrier between said excavation and pool bottom and sidewalls,
said granular fill material comprising volcanic cinders.

4,326,365

JOINT SYSTEM FOR WALLS, DOORS AND THE LIKE

Gunnar Svensson, Jönköping, Sweden, assignor to AB Svenska Flaktfabriken, Nacka, Sweden

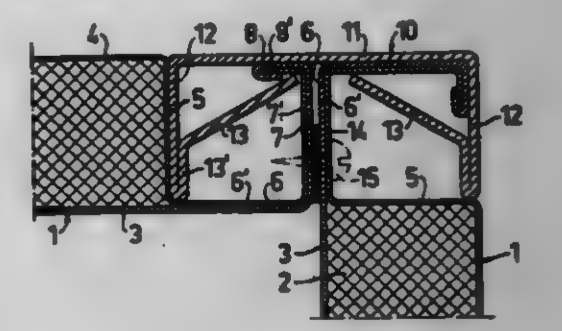
Continuation of Ser. No. 884,852, Mar. 9, 1978, abandoned. This application Jan. 24, 1980, Ser. No. 115,025

Claims priority, application Fed. Rep. of Germany, Mar. 10, 1977, 207/77[URA]; Sweden, Mar. 10, 1977, 7702695

Int. Cl.³ E04C *2/38;* E04D *1/36*

U.S. Cl. 52—204 **12 Claims**

1. A joint system for first and second structural panels, each panel having spaced opposite side wall surfaces, at least one edge of each panel being constructed as a U-shaped edge, and a joint strip designed to cooperate with two adjacent edges of said first and second panels, said joint strip having a relatively flat U-shaped cross section which grips around said two adjacent U-shaped edges and locks these to one another, characterized in that
each U-shaped edge comprises a short side leg spanning between the opposite surfaces of the panel, a base extending outward at a right angle from one edge of said side leg, and a clamp leg spaced apart and parallel to the short side leg extending from said base and terminating in a projecting portion which is shorter than said base and bent in toward the short side leg, said short side leg, base and clamping leg being of approximately the same width, said projecting portion being located in a plane parallel to and inside the plane of the adjacent side wall surface by a predetermined distance, said short leg, base, clamp leg and projecting portion forming a generally square guideway between said clamp leg and said short side leg, said guideway extending along the length of said one edge of the panel and being open between said projecting portion and the short side leg to slidably receive the joint strip, and
each joint strip comprises



a body portion of a thickness corresponding to said predetermined distance, and a width corresponding to twice the width of said base,
arms extending perpendicular to said body and at the opposite edges thereof, said arms being approximately one-half of the width of the body and substantially the same width as said short side leg so that when the joint strip is in place within the guideway of one of said panel edges, the outer surface of the body portion is substantially coplanar with the adjacent side wall surface and one arm projects into the guideway alongside said side leg, and
locking strip means extending toward the central area of the body portion, the arm and locking strip means at each edge of the body portion being designed to slide longitudinally within the guideway of one U-shaped edge, each locking strip being of a width that the opposite edges of said locking strip are slidable longitudinally in the guideway between said short side leg and said clamp leg to retain the one panel edge in its location relative to the adjacent panel edge.

4,326,366

SUPPORT PLATE FOR GUIDING HEATING PIPES OF A FLOOR OR WALL HEATING SYSTEM

Beat Werner, Dietlikon, Switzerland, assignor to Thermowag AG, Zürich, Switzerland

Filed Dec. 17, 1979, Ser. No. 104,175

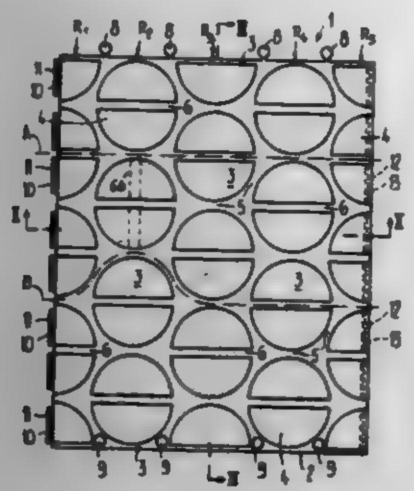
Claims priority, application Switzerland, Jan. 8, 1979, 123/79

Int. Cl.³ E04B *5/48*

U.S. Cl. 52—220 **17 Claims**

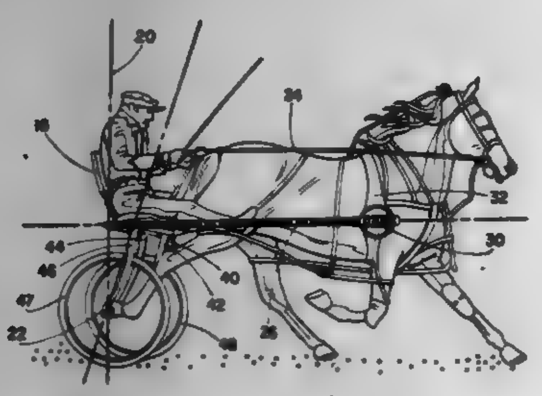
1. A support plate for guiding heating pipes of a floor or wall heating system, comprising:
a plate body having a plate top surface;
substantially cylindrically raised portions having a substantially flat top surface and being arranged at the plate top surface in mutually parallel rows;
each two neighboring raised portions forming therebetween an intermediate space;

all of said raised portions having substantially the same dimensions;
the raised portions of one row being offset with respect to the raised portions of both neighboring rows in the lengthwise direction of said rows;



at least part of the raised portions having a recess extending therethrough for receiving a heating pipe; and
said recess opens towards the top surface of the raised portion.

4,326,367
RACING SULKY AND HARNESS
Richard J. Cashman, Columbus, Ohio, assignor to Produce Processors International Corporation, Columbus, Ohio
Filed Jun. 30, 1980, Ser. No. 164,138
Int. Cl.³ B62C *1/08*; B68B *3/00*
U.S. Cl. 54—2 **2 Claims**

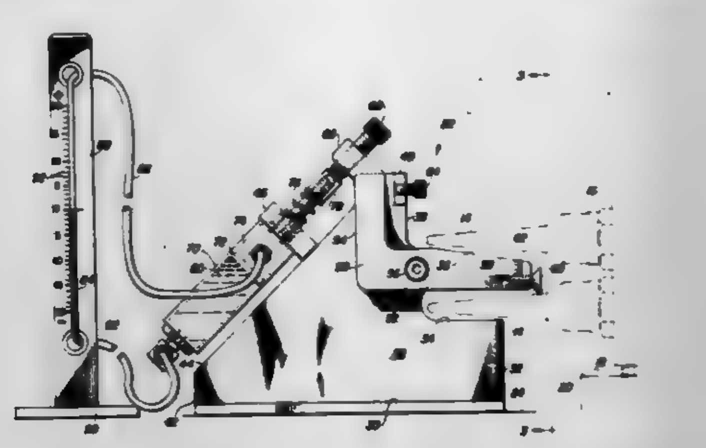


1. An improved sulky and harness for attachment to a horse, said sulky being of the type having a pair of shafts extending forwardly on opposite sides of the horse, wherein the improvement comprises a pair of ball joints one extending inwardly from each of said shafts into attachment with said harness, each of said ball joints more particularly comprising a trough member connected to the ball portion of said joint by a connector means, said trough member having an end portion of its associated shaft seated in the trough member and a plurality of straps tightly surrounding said shaft and trough member for binding said shaft to said trough member, each of said shafts having a pair of spaced annular flanges attached to the shaft at opposite ends of said trough member to prevent longitudinal slippage of the shaft and wherein the socket portion of said ball joint comprises:
(a) a disk having a central depression for seating against said ball and interposed between said ball and said trough member, said disk having a central hole for receipt of and larger than said connector means; and
(b) a leather pocket interposed between said disk and said trough member and fastened to said harness to form a pocket for containing said disk and said ball.

4,326,368
CLUTCH AND BRAKE FOR ROTARY LAWN MOWER
Stephen J. Hoff, Richmond, Ind., assignor to Hoffco, Inc., Richmond, Ind.
Filed Jun. 12, 1980, Ser. No. 158,700
Int. Cl.³ A01D *69/10*
U.S. Cl. 56—11.3 **16 Claims**

1. A clutch-brake mechanism for mounting a lawn mower blade on a drive shaft and controlling the operation thereof, comprising in combination:
a rotary driving drum rotatable in a predetermined direction,
a driven carrier rotatable on the axis of the drum,
a pair of clutch-brake shoe assemblies pivotally mounted on said carrier and including clutch shoes positioned for engagement with the inner surface of the driving drum and brake drum segments positioned outward of said driving drum and connected for moving the clutch shoes to disengaged position,
means for biasing the shoe assemblies to clutch-engaged position,
and a brake band encircling said brake drum segments and engageable therewith to apply braking drag thereon and to mechanically move the segments in a direction to disengage the clutch shoes,
said shoes being pivotally mounted on the carrier at the leading ends thereof in the direction of rotation so as to cause the same to have a self-energizing action when engaged with the driving drum,
said driving drum being of steel, and each shoe being of compressed and sintered powdered iron and having an arcuate drum-engaging face of limited area on a radius greater than the radial distance from the drum axis to the shoe pivot axis and spaced rearward of such pivot axis and extending over an arcuate length approximately twice the angular length of such rearward spacing,
the brake drum segments having brake faces which extend in a trailing direction from the shoe pivot axis a substantial distance beyond said shoe faces and have leading portions which extend forward a substantial distance beyond said pivot axis, and said brake faces being disposed to lie at a distance from the axis of rotation which progressively increases from their leading ends to their trailing ends so as to be initially engaged at their trailing ends by the encircling brake band as such band is contracted against them and thereby to be swung inward so as to disengage the clutch shoes.

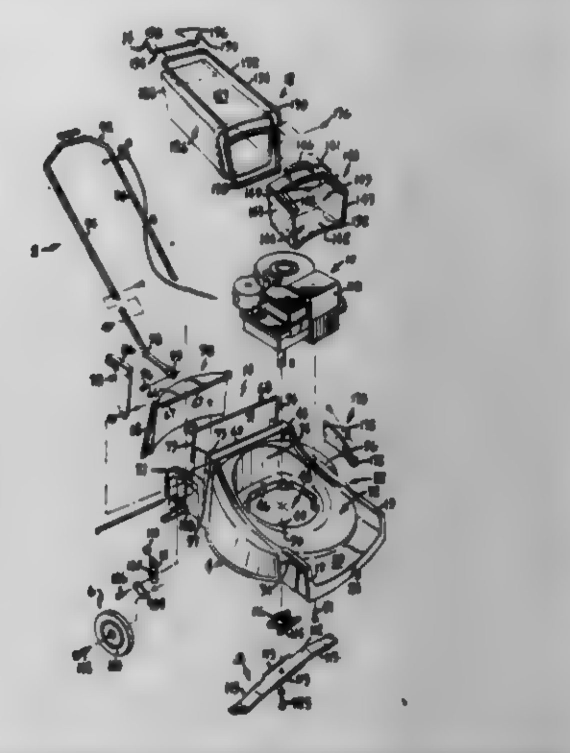
4,326,369
APPARATUS FOR CHECKING THE SPINDLE PLANE ON A COTTON HARVESTER
Merl S. Schillerstrom, Des Moines, and Robert A. Tafts, Bondurant, both of Iowa, assignors to Deere & Company, Moline, Ill.
Filed Jul. 21, 1980, Ser. No. 170,407
Int. Cl.³ A01D *46/16*
U.S. Cl. 56—41 **15 Claims**



1. For a cotton harvester which includes a rotatable picker drum carried in a picker unit housing and having a plurality of vertically adjustable upright spindle-supporting bars defining spaced columns of picker spindles, each column of spindles movable vertically with the corresponding bar as it is adjusted, each spindle moving in a generally horizontal path as the drum is rotated with corresponding spindles on adjacent bars moving in approximately the same path, a device for checking the relative height of the spindle supporting bars, comprising:
a support comprising a base adapted for support by the unit housing, and upright structure connected to the base;
means for fixing the base with respect to the unit housing with the upright structure located adjacent the path of a preselected set of spindles;
spindle sensing means movably supported by the upright structure in said path for sensing the vertical location of each said spindle on each bar relative to the housing as the picker drum is rotated;
stop means limiting the vertical movement of the spindle sensing means and maintaining the latter in substantial alignment with the spindles in the path when in a non-contacting relationship between adjacent columns of spindles for permitting each spindle in the path to move the spindle sensing means as the picker drum is rotated a complete revolution;
indicator means operably associated with the sensing means and responsive to the vertical movement of said sensing means for providing an indication of the relative vertical position of each of the preselected spindles.

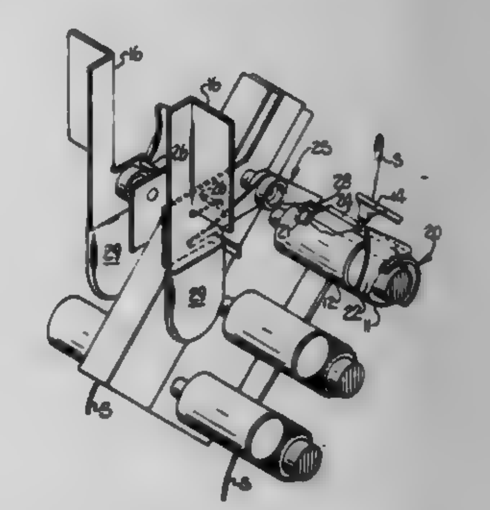
4,326,370
ROTARY LAWN MOWER
Richard A. Thorud, Bloomington, Minn., assignor to The Toro Company, Minneapolis, Minn.
Division of Ser. No. 44,168, May 31, 1979, abandoned. This application Sep. 18, 1980, Ser. No. 188,293
Int. Cl.³ A01D *35/26*
U.S. Cl. 56—202 **10 Claims**

9. A rotary lawn mower for cutting grass or the like, which comprises:
(a) a housing having a discharge port through which particles of cut grass may be discharged;
(b) means for movably supporting the housing;
(c) means for cutting grass at a predetermined height above the ground and for throwing the particles of grass through the discharge port;
(d) means releasably associated with the discharge port for receiving and retaining the cut grass particles discharged therethrough;
(e) wherein the housing includes a substantially U-shaped and upwardly facing seat adjacent the discharge port in which seat the receiving means is releasably received, the seat having upwardly extending side wings which extend along and outwardly from each side of the discharge port, wherein the side wings are sufficiently sized to intercept objects which may be accidentally thrown through the



discharge port when the receiving means is not associated therewith; and
(f) pivotal door means on the housing for closing the discharge port when the receiving means is not associated therewith, wherein the door means is biased into a normally closed position.

4,326,371
SUPPLY STRAND INTERRUPTION MECHANISM FOR TEXTILE YARN SPINNING MACHINE
Brian Soar, Moorside, England, assignor to Parks-Cramer Company, Fitchburg, Mass.
Filed Mar. 3, 1980, Ser. No. 126,965
Int. Cl.³ D01H *13/18*
U.S. Cl. 57—87 **7 Claims**



1. In the combination of
a textile yarn spinning machine having a plurality of drafting units arranged in a series, each drafting unit having a pair of back rolls, and a plurality of supply strand packages each normally delivering a corresponding supply strand to a corresponding back roll pair for drafting into a corresponding attenuated strand,
means movable along the spinning machine and having

detector means for monitoring production of attenuated strands and actuator means for responding to breakage of an attenuated strand, and

means mounted on the spinning machine and selectively remotely actuable by the actuator means for interrupting feeding of the corresponding supply strand,

an improvement in the interrupting means which facilitates reinstitution of supply strand feeding, the improvement comprising, for each such interrupting means:

wedge means engaging one roll of the corresponding back roll pair and movable relative thereto between an interruption position of insertion into the nip of said corresponding back roll pair and a normal running position withdrawn from said nip,

actuation means mounted above and overlying the corresponding drafting unit for movement relative thereto between a normal position and a tripped position in response to said actuator means and operatively interconnected with said wedge means for normally maintaining said wedge means in said withdrawn position and for responding to actuation by disconnecting from and thereby releasing said wedge means for movement into said interruption position,

said wedge means and said actuation means cooperating for entrapping and maintaining a supply strand in the nip of a corresponding back roll pair following breakage of the corresponding attenuated strand and accommodating restoration of drafting of the strand without necessitating rethreading of the drafting unit.

4,326,372

APPARATUS FOR BRAKING AND POSITIONING A SPINNING OR TWISTING SPINDLE

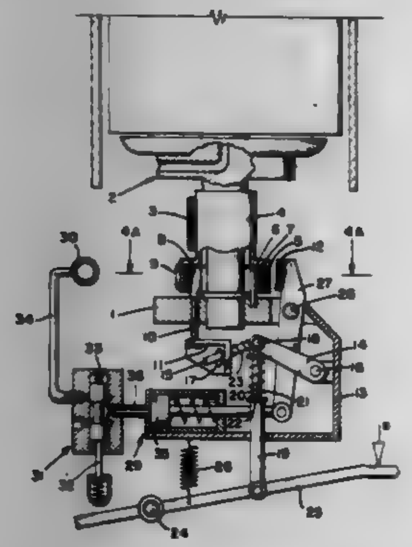
Siegfried Inger, Krefeld, Fed. Rep. of Germany, assignor to Palitex Project-Company GmbH, Krefeld, Fed. Rep. of Germany

Filed Sep. 24, 1980, Ser. No. 190,378

Claims priority, application Fed. Rep. of Germany, Oct. 2, 1979, 2939862

Int. Cl.³ D01H *7/22*

U.S. Cl. 57—88 **14 Claims**



1. An apparatus for braking and positioning a spindle rotor of a spinning or twisting spindle in a specific position comprising: a spindle having a rotary section, a spindle brake engageable with said spindle rotary section, spindle positioning means separate from said spindle brake, said rotary section of said spindle having a periphery, said positioning means including an additional braking surface extending over said periphery, an additional movable brake shoe, and means for urging braking engagement between said movable brake shoe and said additional braking surface.

4,326,373

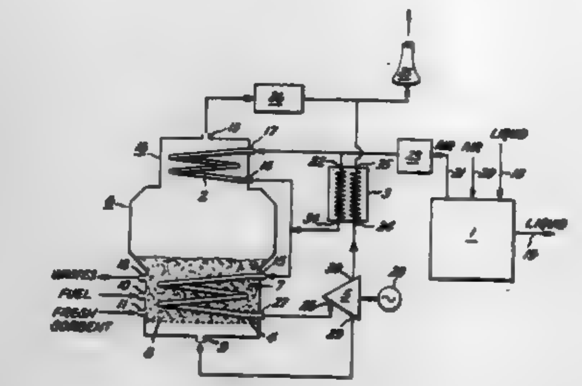
INTEGRATED GAS TURBINE POWER GENERATION SYSTEM AND PROCESS

Walter B. Giles, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed May 29, 1980, Ser. No. 154,233

Int. Cl.³ F02C *3/26*

U.S. Cl. 60—39.02 **9 Claims**



1. An integrated gas turbine power generation system comprising:

(a) a fluidized bed combustor adapted for the combustion of carbonaceous fuel at nearly atmospheric pressure, said combustor including a bed of fluidizable particles, a freeboard region disposed to conduct effluent gases from said fluidizable bed out of said combustor, means for admitting said particles and carbonaceous fuel to said fluidizable bed, and an inlet for receiving a fluidizing and combustion gas at nearly atmospheric pressure;

(b) a gas expansion turbine having an inlet for receiving heated compressed gas, a first outlet in flow communication with said combustor inlet for discharging thereto a first quantity of expanded gas, and a second outlet for discharging a second quantity of expanded gas;

(c) a first air heater disposed within said combustor in contact with the particles in said fluidizable bed and having an outlet for discharging heated compressed gas in flow communication with said turbine inlet, and an inlet for receiving preheated compressed gas;

(d) a second air heater disposed within said combustor freeboard region and having an outlet for discharging preheated compressed gas in flow communication with said first air heater inlet, and an inlet for receiving compressed gas;

(e) a hydraulic compressor means for substantially isothermally compressing a flow of gas, said compressor means having a first outlet for discharging compressed gas in flow communication with said second air heater inlet, a second outlet for discharging liquid, a first inlet for a flow of gas to be compressed, and a second inlet for said liquid; and

(f) a heat exchanger means having a first inlet in flow communications with said second turbine outlet for receiving said second quantity of expanded gas, a second inlet in flow communication with said compressor means first outlet for receiving compressed gas, a first outlet for discharging said second quantity of expanded gas, a second outlet for discharging preheated compressed gas in flow communication with said first air heater inlet, and means within said heat exchanger means to enable the indirect transfer of heat from said second quantity of expanded gas to said compressed gas.

4,326,374

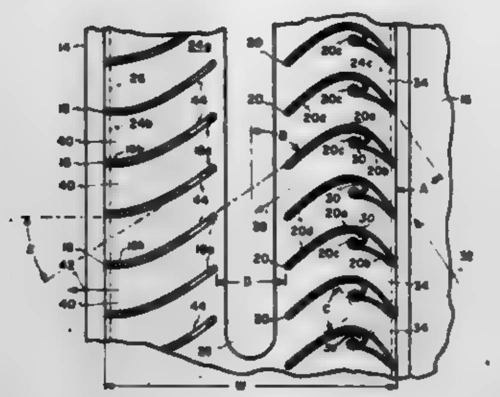
HIGH VELOCITY EXHAUST DIFFUSER AND WATER BAFFLE

Herbert R. Streb, Gig Harbor, Wash., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 18, 1980, Ser. No. 131,341

Int. Cl.³ F07C *7/00*

U.S. Cl. 60—39.09 P **9 Claims**



1. An exhaust gas diffuser and water baffle device for use in combination with a watercraft having an engine that produces high velocity exhaust gases which are carried through a substantially horizontal duct for overboard discharge, said device comprising:

inner and outer rows of elongated, parallel spaced vanes disposed in the flow path of said gases substantially immediately prior to said discharge;

frame means for supporting opposite ends of said vanes with a predetermined gap between said rows;

said vanes each being curved in section to present convex and concave sides, said vanes of said inner and said outer rows being curved in opposite directions such that the vanes of said inner row define first curved flow channels therebetween that effect a first predetermined angular bend in said flow path and the vanes of said outer row define second curved flow channels that effect a reverse, second predetermined angular bend in said flow path; and

said vanes of said inner row being characterized by hook shaped projections on the concave sides thereof defining grooves that have openings facing with the direction of flow of said gases;

whereby water propelled into said device in directions counter to flow of said gases with sufficient force to cross said gap is arrested in said grooves so as to prevent entry into said duct and engine.

4,326,375

GAS TURBINE-TRANSMISSION PLANT

Sven-Olof Kronogard, Karstorpsvägen 31, Lomma, Sweden (23400)

Division of Ser. No. 835,035, Sep. 20, 1977, Pat. No. 4,220,057. This application Feb. 22, 1980, Ser. No. 123,727

Claims priority, application Sweden, Sep. 24, 1976, 7610579

Int. Cl.³ F02C *3/10*

U.S. Cl. 60—39.16 S **5 Claims**

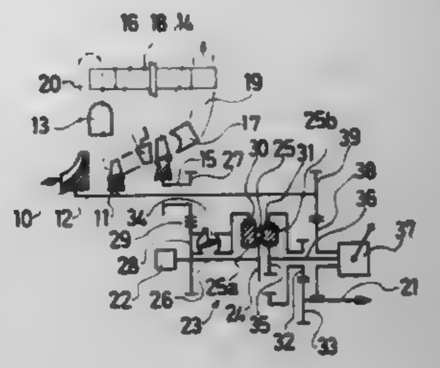
1. An automotive gas turbine-transmission plant comprising a compressor, a first turbine driving the same, at least one power turbine, as well as conventional auxiliaries,

(A) said first turbine being undersized with respect to the power consumption of the compressor during normal operation,

(B) stepped planetary gearing interconnecting said first and said at least one power turbine and including a planet carrier supporting a set of stepped planet gear wheels, a planet gear wheel having a small diameter at one end thereof and a planet gear wheel having a big diameter at the other end and further including one sun wheel, as well as at least one ring wheel meshing with said set of planet gear wheels,

(C) first means to transfer power input from said at least one power turbine to said gearing,

(D) second means to extract power from the gearing to an output shaft,



(E) third means for continuously changing the gear ratio between input and output at the gearing, said third means including an infinitely variable transmission acting together with either of said first or second means, and

(F) fourth means including a variable transmission to extract power for augmenting said first turbine from said gearing.

4,326,376

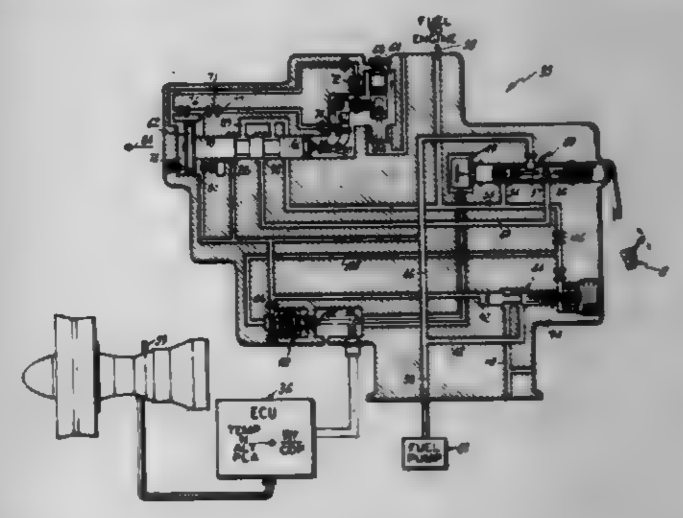
GOVERNORLESS GAS TURBINE FUEL CONTROL

Charles F. Stearns, East Longmeadow, Mass.; David L. Chapski, West Suffield, and Kenneth F. Vosseller, Enfield, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Aug. 23, 1979, Ser. No. 69,141

Int. Cl.³ F02C *9/04*

U.S. Cl. 60—39.28 R **4 Claims**



1. A fuel control for controlling fuel flow to a gas turbine engine in response to different engine power settings, comprising:

three parallel fuel flow circuits between a common fuel input port and a common fuel output port, and

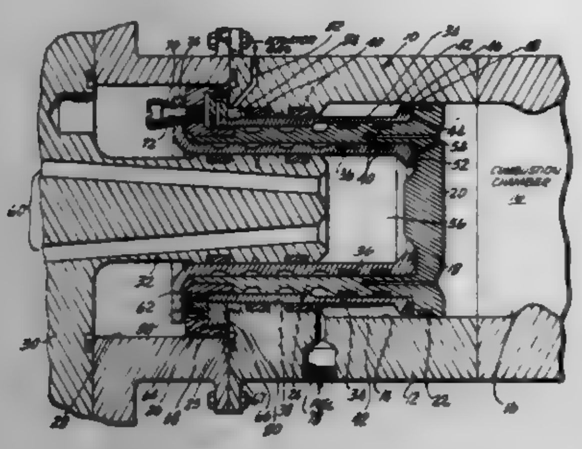
means for maintaining constant fuel pressure between said input and output ports,

a first of said circuits including means providing a minimum fuel flow to the engine at a preselected minimum power setting, corresponding to a minimum engine operating level, said minimum flow decreasing in an inverse relationship to power setting,

a second of said circuits including means providing fuel flow as a function of engine compressor discharge pressure,

a third of said circuits including means for providing fuel flow which increases in direct relationship to the power setting and is a function of compressor discharge pressure.

4,326,377
INJECTION SHUT-OFF VALVE FOR REGENERATIVE INJECTION
Vance W. Jaqua, Canoga Park, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.
Filed Jan. 18, 1980, Ser. No. 113,432
Int. Cl.3 F02K *9/52*
U.S. Cl. 60—247 **8 Claims**



1. A regenerative fuel injection system for injecting propellant into the combustion chamber of a fluid-fueled rocket engine, comprising:

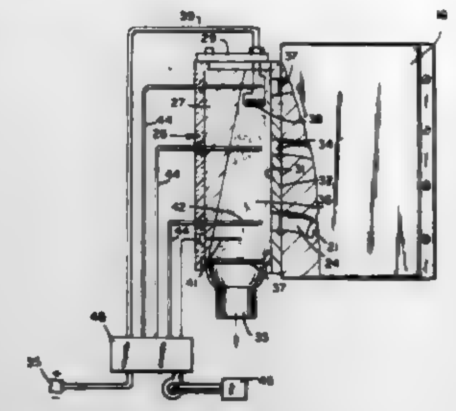
means forming a cylindrical passage closed at one end and adapted to open into the combustion chamber at the other end; a piston movable in the cylindrical passage; the piston and closed end of the passage forming an injection chamber; a portion of the piston extending through an opening in the closed end of the passage, said portion reducing the effective area of the piston in the injection chamber relative to the effective area of the piston in the combustion chamber; means forming an orifice connecting the injection chamber to the combustion chamber; valve means for controlling fluid flow through the orifice; means holding the valve means closed in response to higher fluid pressure in the injection chamber than the combustion chamber; and actuator means for momentarily opening the valve means against the fluid pressure in the injection chamber to release propellant into the combustion chamber, said actuator means including a first member supported for movement parallel to the axis of movement of said piston, means connecting said member to the valve means for opening the valve means, the first member engaging the piston when the member is moved to the valve open position, and drive means forcing said first member into engagement with the piston and the piston and drive member as a unit away from the combustion chamber toward the injection chamber to squeeze the propellant fluid out of the injection chamber through the orifice into the combustion chamber.

4,326,378
FILTER FOR AN INTERNAL COMBUSTION ENGINE HAVING REJUVENATION CAPABILITIES
William M. Sweeney, Wappingers Falls, N.Y., assignor to Texaco Inc., White Plains, N.Y.
Filed Jan. 31, 1980, Ser. No. 117,324
Int. Cl.3 F01N *3/02*
U.S. Cl. 60—311 **7 Claims**

1. Filter (26) for an internal combustion engine (10) having at least one cylinder (11) which encloses a combustion chamber (17), the latter having intake and exhaust valves (18) communicated therewith, the engine having at least one exhaust valve port (34) through which a hot exhaust gas stream is passed carrying combustible particles,

a casing (27) defining an elongated reaction chamber (31) having a progressively larger cross-section and having an inlet which communicates with said at least one exhaust gas port (34) to receive said exhaust gas stream therefrom, and said progressively larger reaction chamber (31) having an exhaust gas port (33) at the larger end thereof,

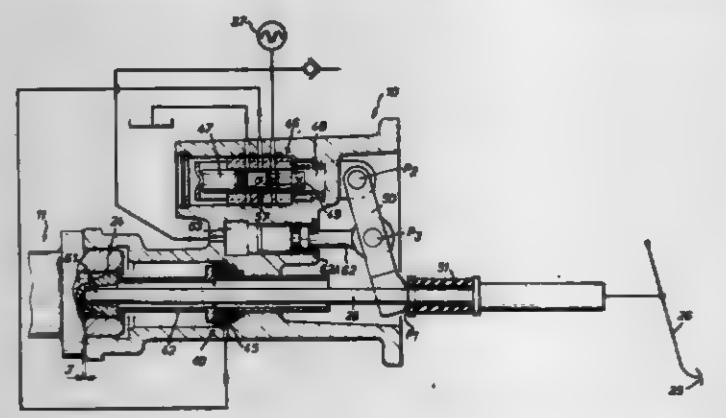
a filter bed (36) disposed in said reaction chamber (31) positioned to contact said hot exhaust gas stream and thereby retain said combustible particles from the exhaust gas stream while passing the latter therethrough,



injector means (42) communicated with a source of a gaseous coolant (45), and having at least one nozzle disposed within said filter bed (36),

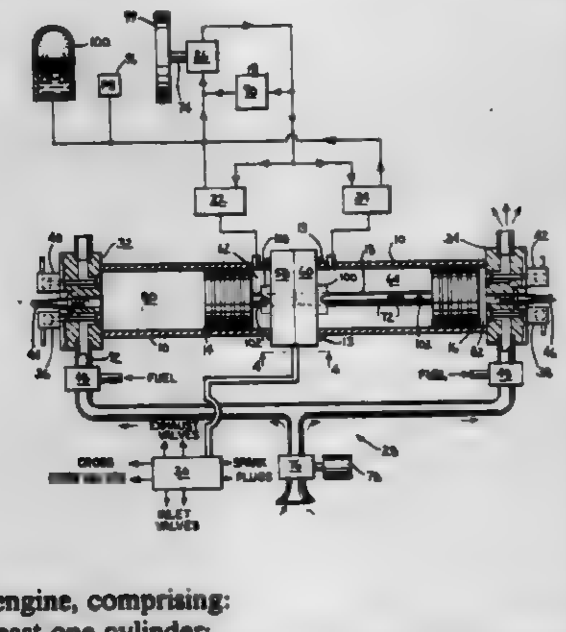
temperature control means (46) communicated with said injector means (42) and with said source of gaseous coolant (45), and being operable to regulate a flow of gaseous coolant into said filter bed (36).

4,326,379
HYDRAULIC CONTROL DEVICE FOR A MOTOR VEHICLE BRAKING CIRCUIT
Jean L. R. Dauvergne, Fosses, France, assignor to Societe Anonyme Francaise du Ferodo, Paris, France
Filed Nov. 6, 1979, Ser. No. 92,420
Int. Cl.3 B60T *13/20*
U.S. Cl. 60—550 **16 Claims**



1. A hydraulic control device for a motor vehicle brake system having at least one hydraulic brake circuit, said control device comprising a master cylinder having at least one chamber connected to said brake circuit and a master piston for controlling the pressure in said one chamber under the action of a pedal, an auxiliary hydraulic circuit having a source of pressure, a hydraulic cylinder and piston unit including a piston for cooperating with said master piston for depressing the latter, distributor means for feeding auxiliary hydraulic pressure from said source to said cylinder and piston unit, said distributor means having a slide valve which is subjected to two opposing forces, one of the opposing forces being developed by the auxiliary hydraulic pressure and the other opposing force being developed by the action of the pedal through force transmitting means between said pedal and said slide valve including elastic means that are stressed by braking movement of the pedal for simulating pedal movement, and manual back-up means operable in response to said pedal for controlling said master cylinder in the event of a failure of said auxiliary circuit, said control device having a movable member restrained against movement by said auxiliary hydraulic pressure and associated with said force transmitting means to cause said force transmitting means to stress said elastic means, said movable member being freed for movement in response to a failure of the auxiliary hydraulic pressure to relieve the stress in said elastic means, said manual back-up means, said movable member and said slide valve acting respectively along three separate and parallel axes.

4,326,380
HYDRAULIC ENGINE
Peter A. Rittmaster, 1420 N. Lake Shore Dr., Apt. 3A, Chicago, and John L. Booth, 3905 Tower Dr., Richton Park, both of Ill.
Filed Jan. 9, 1980, Ser. No. 110,771
Int. Cl.3 F02B *71/04;* **F04B** *17/00*
U.S. Cl. 60—595 **11 Claims**



1. An engine, comprising:

(a) at least one cylinder;

(b) two pistons fitting within said cylinder, each piston having two faces;

(c) rod means for connecting together said pistons, said connecting rod means joining together the first faces of said pistons, each second face of said pistons being directed outwardly towards one end of said cylinder;

(d) two cylinder heads, each head closing off an open end of said cylinder, said second face of said pistons being directed toward the inside of said cylinder heads, said second faces and said cylinder heads defining two combustion chambers;

(e) valve means, associated with each cylinder head, for directing a combustible mixture of fuel and air into said combustion chambers and for exhausting combustion gases from each of said chambers;

(f) ignition means associated with each cylinder head, for igniting said combustible mixture within said combustion chamber;

(g) plate means, interposed along said connecting rod means and cooperating with said cylinder for forming two pressurization chambers, said connecting rod means passing through said plate means, each of said pressurization chambers being defined by the space within said cylinder between said plate means and the first face of the associated piston, each pressurization chamber being joined to the exterior of said cylinder by a flow port in said cylinder wall, said plate means defining a pressure seal between said connecting rod means and the adjacent pressurization chambers, each of said pressurization chambers being filled with hydraulic fluid;

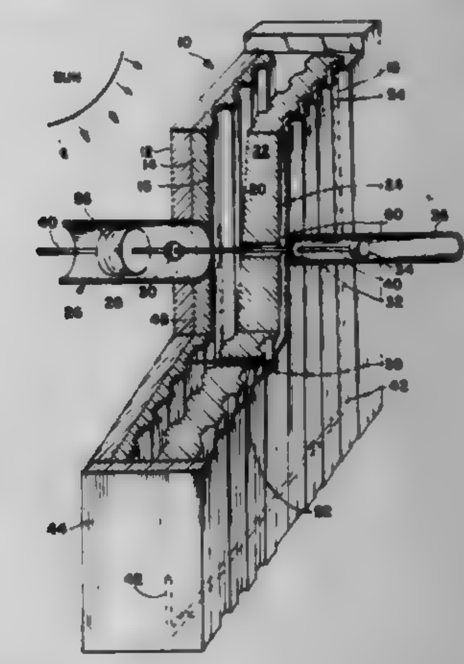
(h) control means for timing and for operating said valve means and said ignition means to reciprocate said pistons within said cylinder in a continuous cycle, said control means including proximity sensor means responding to the axial position of said connecting rod means relative to said plate means;

(i) cross-over means, joining together the fluid within said pressurization chambers via said flow ports in said cylinder wall, for sequentially directing fluid under pressure from one of said pressurization chambers to the other of said pressurization chambers, said cross-over means being operated by said control means responding to the axial position of said connecting rod means relative to said plate means;

(j) motor means, utilizing the fluid passing between said pressurization chambers and through said cross-over means, for driving a shaft in rotation, said cross-over means directing fluid through said motor means to keep said shaft rotating in the same direction, and

(k) said connecting rod means being fabricated from a nonferrous material and having a plurality of non-contact embedded ferrous inserts angularly positioned along the length of said rod for signalling the position of said connecting rod means to the proximity sensor means of said control means to define the axial position of said connecting rod means relative to said plate means.

4,326,381
SOLAR ENGINE
Ronald N. Jensen, Hampton, Va., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.
Filed Jun. 22, 1979, Ser. No. 51,275
Int. Cl.3 F03G *7/02*
U.S. Cl. 60—641.14 **11 Claims**



1. A solar engine comprising:

solar engine housing means containing a working fluid;

said engine housing means having a reaction surface housing means and a displacer housing means;

said displacer housing means including therein an absorber plate and a cooling plate;

displacer means pivotally disposed within said displacer housing means;

said displacer means adapted to alternately insulate said absorber plate and cooling plate from said working fluid;

said reaction surface housing means communicating with said displacer housing means;

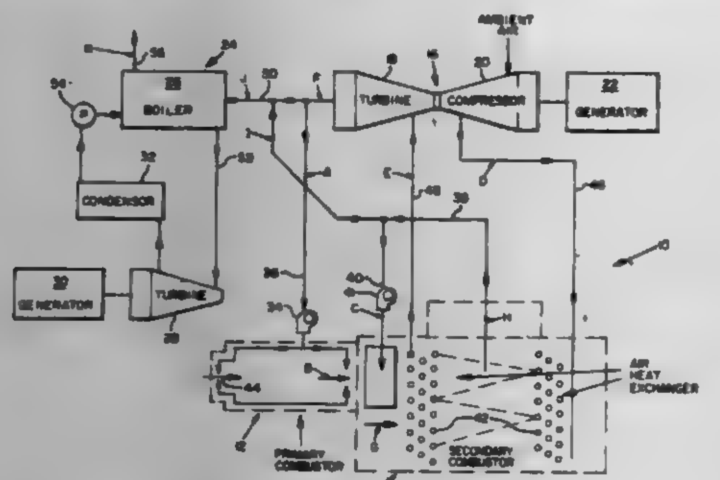
said reaction surface means slidably disposed within said reaction surface housing means and engaging and pivoting said displacer means;

said working fluid alternately being directly heated in said housing means by solar energy radiated through said absorber plate and cooled by said cooling plate through the movement of said displacer means to reciprocate said reaction surface means and produce work.

4,326,382
POWER PLANT

Andrew B. Baardson, Black Butte Ranch, Sisters, Oreg. 97759, assignor to E. H. Robbins, Eugene and Andrew B. Baardson, Sisters, both of, Oreg.

Filed Oct. 24, 1980, Ser. No. 200,543
Int. Cl.³ F01K *23/04*
U.S. Cl. 60—655 19 Claims



1. A power plant system comprising:

compressor means adapted to take in and compress air;

energy absorption means for taking in energy in the form of hot air, for using a portion of the energy, and for discharging the remainder;

a primary combustor having a first inlet for receiving exhaust air from said energy absorption means, a second inlet for receiving fuel, and an outlet for discharge of products of combustion;

a secondary combustor having a first inlet for receiving at least a portion of the products of combustion from said primary combustor, a second inlet for receiving a portion of the products of combustion of said secondary combustor, and an outlet for discharge of the products of combustion of said secondary combustor;

first conduit means for conveying a portion of the products of combustion of said secondary combustor from said secondary combustor outlet to said second inlet of said secondary combustor; and

an air heat exchanger within said secondary combustor, said heat exchanger including an inlet for receiving compressed air from said compressor means, heat exchange surface means for conveying heat from the products of combustion within said secondary combustor to the compressed air, and an outlet to direct the compressed, hot air out of said secondary combustor for passage to said energy absorption means.

4,326,383
COMPACT THERMOELECTRIC REFRIGERATOR

Kingstone L. H. Reed, and Ian Hatcher, both of Barrie, Canada, assignors to Koolatron Industries, Ltd., Barrie, Canada

Filed Aug. 4, 1980, Ser. No. 174,859
Int. Cl.³ F25B *21/02*; F25D *3/08*
U.S. Cl. 62—3 7 Claims

1. A portable thermoelectric refrigerator comprising in combination:

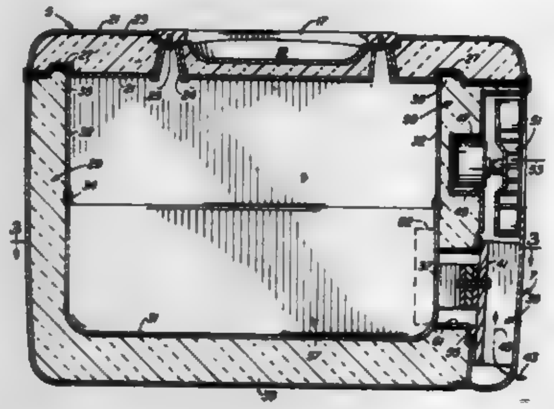
a. an insulated housing having a bottom, front and rear walls, and first and second end walls bounding a storage compartment, said thermoelectric refrigerator also including an openable cover for covering the top of said storage compartment;

b. a thermally conductive metal liner covering only the bottom of said storage compartment and the lower portions of said front, rear, and first and second end walls of said storage compartment;

c. a thermally conductive block extending through said first end wall and thermally contacting said thermally conductive metal liner;

d. a thermoelectric module thermally contacting said thermally conductive block;

e. an external heat exchanger located in a region on the opposite side of said first end wall from said storage compartment for thermally contacting said thermoelectric module, said external heat exchanger including a base of thermally conductive metal and a plurality of closely spaced parallel fins extending substantially perpendicularly from said base, each of said fins having a length that is substantially greater than a width thereof, said base and said fins being oriented vertically relative to the bottom of said thermoelectric refrigerator, said thermoelectric means removing heat from said thermally conductive metal liner, said thermally conductive liner having a thickness that causes said thermally conductive liner to produce a thermal gradient in said storage compartment from said first wall to said second wall, said thermal gradient being of sufficient magnitude to cause temperatures in portions of said storage compartment adjacent to said first end wall to be a predetermined amount colder than temperatures in portions of said storage compartment adjacent to said second end wall;



f. centrifugal fan means disposed directly above said external heat exchanger for drawing air from outside of said thermoelectric refrigerator into an elevated air inlet and forcing substantially all of that air between said fins, said centrifugal fan means including a circular plate mounted on a shaft of a fan motor and a plurality of vanes extending from a major surface of said circular plate;

g. a shroud element surrounding the upper portion of said centrifugal fan means and extending to fins on opposed sides, respectively, of said external heat exchanger; and

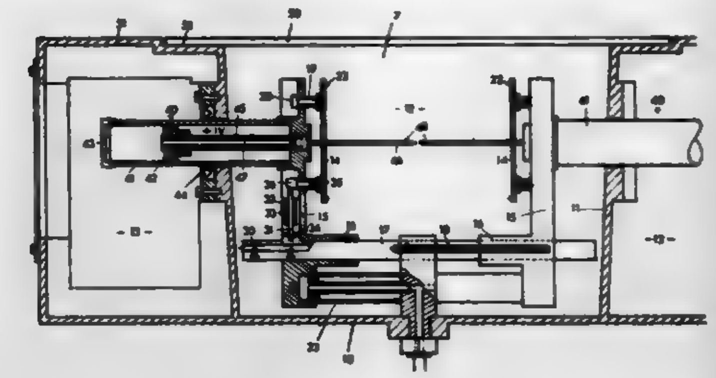
h. an end panel having said air inlet therein adjacent to said centrifugal fan means and also having an air outlet at the bottom edge of said end panel, said end panel and the outer surface of said first end wall cooperating with said shroud element to enclose said centrifugal fan means and said external heat exchanger to cause substantially all air drawn into said elevated air inlet by said centrifugal fan means to be forced to flow between various ones of said fins from the top of said external heat exchanger to the bottom thereof, said first end wall including a recess in the outer surface thereof for receiving the fan motor.

4,326,384
METHOD FOR COOLING BLOCKS OF HOT POROUS MATERIAL

William J. C. Pipe, and John B. Gray, both of Studholme St., Morrinsville, New Zealand

Division of Ser. No. 24,191, Mar. 27, 1979. This application Nov. 14, 1980, Ser. No. 206,843
Int. Cl.³ F25D *25/00*
U.S. Cl. 62—62 6 Claims

1. A method of cooling a block of porous material comprising inserting said block into a chamber, subjecting the chamber to air pressure less than that of the ambient air and inserting means into the said block to induce a flow of cooling air through the interior of the block to the said chamber, whereby

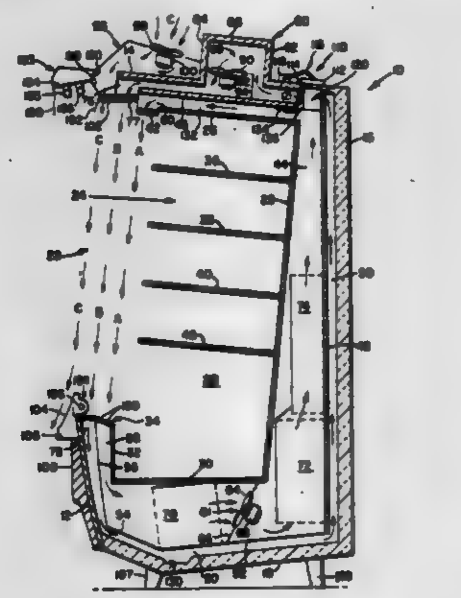


the lower pressure in the chamber causes the cooling air to flow inwardly through the means inserted in the block for cooling the block.

4,326,385
REFRIGERATED MERCHANDISER CABINET WITH AIR DEFROST PORTS

Fayez F. Ibrahim, Niles, Mich., assignor to Tyler Refrigeration Corporation, Niles, Mich.

Continuation-in-part of Ser. No. 8,927, Feb. 2, 1979, and a continuation-in-part of Ser. No. 25,473, Mar. 30, 1979, Pat. No. 4,245,482, and a continuation-in-part of Ser. No. 58,916, Jul. 19, 1979, Pat. No. 4,242,882, and a continuation-in-part of Ser. No. 101,069, Dec. 7, 1979, Pat. No. 4,265,090, and a continuation-in-part of Ser. No. 184,033, Sep. 4, 1980, and a continuation-in-part of Ser. No. 180,573, Aug. 25, 1980. This application Oct. 31, 1980, Ser. No. 202,626
Int. Cl.³ F25D *21/12*; A47F *3/04*
U.S. Cl. 62—82 41 Claims



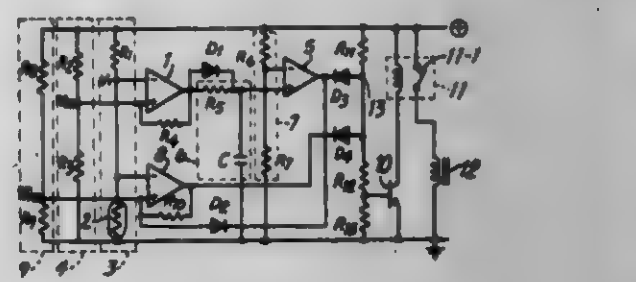
38. A method of operating an open front display cabinet having top, bottom, side and end walls defining a display space and having apertures in at least two walls thereof for communicating ambient outside air into said cabinet, the aperture means comprising an access opening for permitting products to be moved into and out of said display space and at least one air outlet port, at least one air conduit positioned about the display space for enabling circulation of a primary air band and the air conduit having an outlet opening and an inlet opening at opposite ends thereof so that air leaving the outlet opening is directed across the access opening and received into the inlet opening, an air moving means for propelling said primary air band through the air conduit during a refrigeration cycle and for propelling ambient air through the air conduit during a defrost cycle, and refrigeration means arranged within the air conduit for selective operation in a refrigeration and in a defrost cycle, gate means selectively operative to close the air outlet port during the refrigeration cycle of operation and for opening the outlet port during a defrost cycle, and a baffle plate for blocking the passage of air in the air conduit during a defrost cycle of operation; said method comprising the steps of:

circulating a refrigerated primary air band in the air conduit during a refrigeration cycle of operation in which the gate means is closed over the air outlet port, terminating operation of the refrigeration means to initiate the defrost cycle of operation, thereafter opening the gate means and causing the baffle plate to move into blocking position within the air conduit, and propelling air within the air conduit across the refrigeration means, expelling the air through the air outlet port in order to defrost the refrigeration means, at the termination of the defrost cycle of operation, closing the gate means over the air outlet port and commencing operation of the refrigeration means, and circulating the air band in the same direction in both the refrigeration and the defrost cycles of operation.

4,326,386
TEMPERATURE CONTROL CIRCUIT FOR AUTOMOBILE AIR-CONDITIONING SYSTEM

Yasushi Tamura, Ojima, Japan, assignor to Sankyo Electric Company Limited, Isesaki, Japan

Filed Sep. 18, 1980, Ser. No. 188,552
Claims priority, application Japan, Sep. 18, 1979, 54-118790; Nov. 16, 1979, 54-149312
Int. Cl.³ F25D *21/00*; F25B *1/00*
U.S. Cl. 62—150 3 Claims



1. In a temperature control circuit of an automobile air-conditioning system which has a refrigerating system including a refrigerant compressor and a refrigerant evaporator, a blower system for blowing air into the room of the automobile through said evaporator, and the temperature control circuit for controlling the operation of said refrigerant compressor in response to the temperature detected, the improvement which comprises:

first temperature detecting means for detecting the temperature of the air blown into the automobile room as an electric signal;

first reference signal source means for generating a predetermined reference signal equal to the output signal of said first temperature detecting means corresponding to a predetermined first temperature;

first comparing means for comparing the output from said first temperature detecting means with said first reference signal and providing a first output at a time when the detected temperature is higher than said first temperature and a second output at a time when the detected temperature is lower than said first temperature;

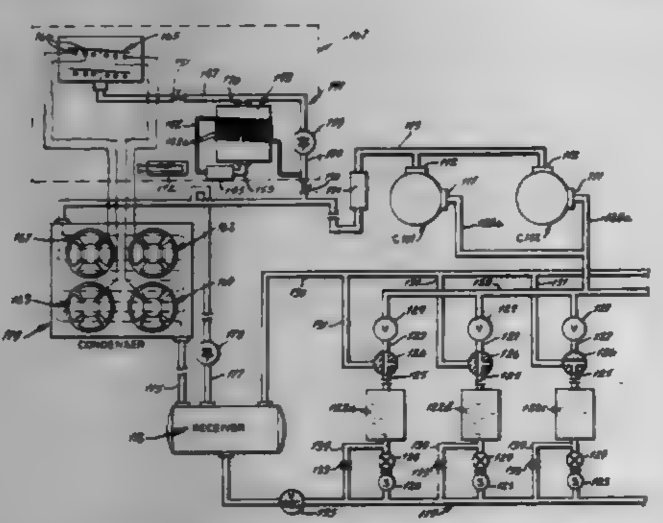
delay means for delaying said second output by a predetermined time period;

means coupled with the output of said delay means for generating a signal for stopping the operation of said refrigerant compressor;

means coupled with the output of said stop-signal generating means and with the output of said first temperature detecting means and maintaining an output signal for stopping the operation of said refrigerant compressor from the reception of the stop signal from said stop-signal generating means until a time when a predetermined second

temperature higher than said first temperature is detected by said first temperature detecting means; and
means for controlling the operation of compressor driving means and coupled with the output of said stop-signal maintaining means to thereby stop the operation of said compressor during a time period when said stop signal is present at the output of said stop-signal maintaining means.

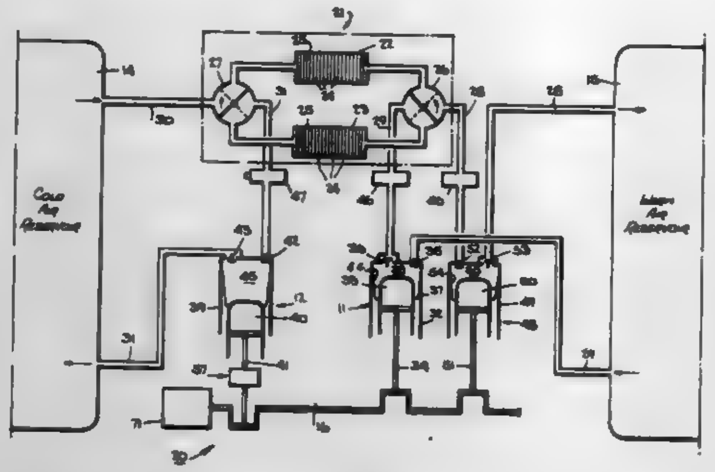
4,326,387
FLUIDIC TIME DELAY SYSTEM
Donald E. Friedman, Creve Coeur, Mo., assignor to Hussmann Refrigerator Co., Bridgeton, Mo.
Continuation-in-part of Ser. No. 892,777, Apr. 3, 1978, Pat. No. 4,184,341. This application Dec. 3, 1979, Ser. No. 95,972
Int. Cl.³ F25B *39/04, 1/00*
U.S. Cl. 62—184 11 Claims



1. In combination with a refrigeration system having multiple compressor means and condenser means including multiple condenser fans; a plurality of pressure responsive control switch means to effect sequential operations of at least one of said compressor means and said condenser fans in said refrigeration system, and a fluidic time delay system for operating said switch means in response to the fluid pressure at a predetermined location in said refrigeration system, said time delay system being disposed between the predetermined location and the control switch means and comprising unidirectional flow means and flow restrictor means in parallel by-pass relation with each other, said unidirectional means providing substantially unrestricted pressure equalization in one direction between said predetermined location and said control switch means, and said restrictor means restricting pressure communication between said predetermined location and said control switch means in the opposite direction, whereby increases and decreases in the fluid pressure at said predetermined location will be immediately equalized in said control switch means in one direction of pressure change and will be delayed in the other direction of pressure change.

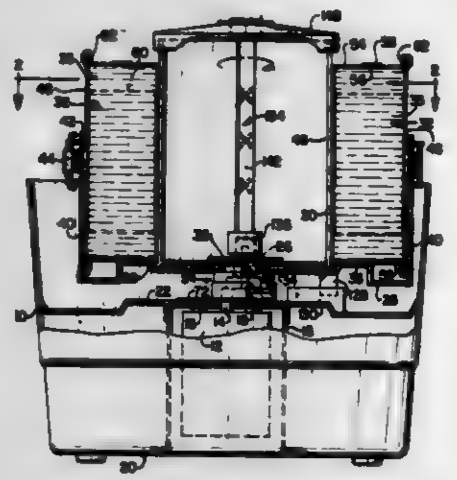
4,326,388
DUAL OPEN CYCLE HEAT PUMP AND ENGINE
Richard McFee, R.D. #1, Union Springs, N.Y. 13160
Filed May 5, 1980, Ser. No. 146,600
Int. Cl.³ F25B *13/00*
U.S. Cl. 62—324.6 16 Claims

1. A heat pump comprising:
a cold air reservoir for storing air at a first temperature and pressure;
a hot air reservoir for storing air at a second temperature greater than said first temperature and at a pressure equal to said first pressure;
a heat exchanger having a pair of regenerators therein for conducting separate flows of air therein between said reservoirs and a pair of valve means for alternately connecting each of said regenerators to said reservoirs to alternately convey a flow of cold air from said cold air reservoir to said hot air reservoir and a flow of hot air from said hot air reservoir to said cold air reservoir;
a positive displacement compressor connected to and between said hot air reservoir and an inlet of one of said valve means of said heat exchanger to compress and deliver a flow of hot air from said hot air reservoir to said one valve means; and



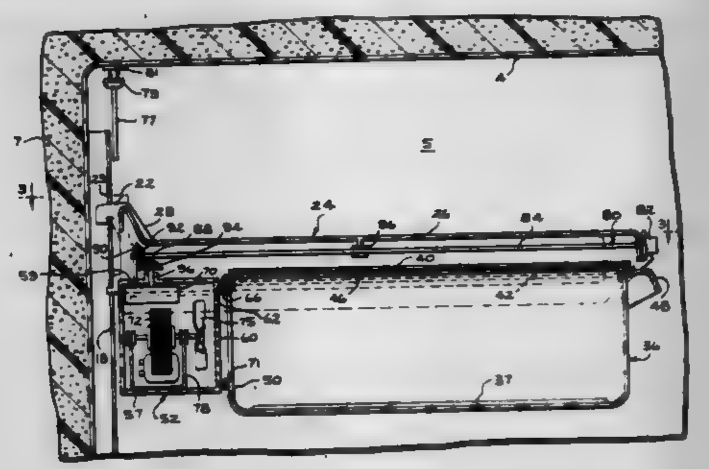
a positive displacement expander connected to and between an outlet of the other valve means of said heat exchanger and said cold air reservoir to expand and deliver a flow of expanded air from said other valve means to said cold air reservoir.

4,326,389
FROZEN DESSERT MAKER
Edmund C. Frost, 885 D Rever Village Ct., Centerville, Ohio 45459
Filed Apr. 22, 1980, Ser. No. 142,797
Int. Cl.³ A73G *9/00*
U.S. Cl. 62—342 13 Claims



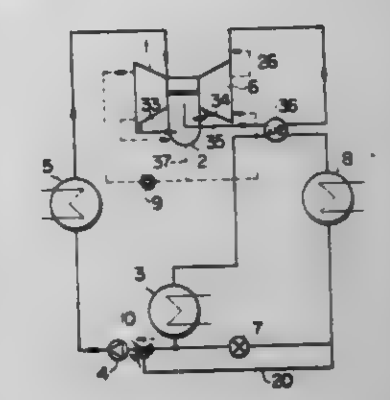
10. A frozen dessert maker comprising:
a motor having a rotatable output shaft;
a drive train attached to said output shaft and having a second shaft parallel to and off-set from said output shaft whereby rotation of said output shaft causes said second shaft to orbit about the output shaft;
a cylindrical can having a central axis coaxial with said second shaft and rotatably mounted thereon;
a dasher rigidly mounted on said second shaft within said can;
a plurality of coolant packs for containing a coolant slurry, each having an inner concave face and an outer convex face and being positioned concentrically about said can such that said inner concave face of each said pack matingly engages a portion of said can;
a plurality of vanes attached to said inner concave face and extending toward said outer convex face of each said pack;
means extending about said packs adjacent said outer convex faces thereof for clamping said packs to said can;
a platform rotatably mounted on said drive train in supporting relation with said can and said coolant packs;
a plurality of arms extending upwardly from the outer periphery of said platform for supporting said clamping means;
an upper stud extending downwardly from said platform in radially offset relation with said output shaft; and
a basin rigidly positioned between said motor and said platform and having a lower stud extending upwardly therefrom and positioned thereon to act as a bearing surface for said upper stud such that rotation of said second shaft about said output shaft imparts a circular movement to said can and coolant packs about said output shaft with a reciprocal rotational movement superimposed thereon.

4,326,390
APPARATUS AND METHOD FOR THAWING FROZEN FOOD
Robert B. Brooks, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.
Filed Sep. 18, 1980, Ser. No. 188,420
Int. Cl.³ F25D *25/02*
U.S. Cl. 62—382 8 Claims



1. For use in a refrigerator appliance having a storage compartment maintained at a temperature between 33°-55° F., apparatus for thawing a frozen food load comprising:
a separate container located within the storage compartment for receiving a frozen food load to be thawed, said container and storage compartment having cooperating means to removably secure the container within the storage compartment;
an electric fan in air flow communication with the interior of the container; and
manually settable timer means for initially energizing and then deenergizing the fan after a predetermined period of operating time;
whereby the frozen food load may be thawed and allowed to remain in said container subsequent to thawing, the temperature within said container being substantially at the temperature of the storage compartment thus preventing spoilage of the thawed food.

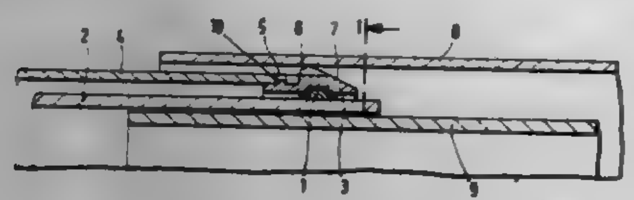
4,326,391
RANKINE-CYCLE-ENGINE-DRIVEN COOLING-AND-HEATING SYSTEM
Eiji Sato, Shimoinayoshi; Nobukatsu Arai, Ushikumachi; Hideki Tanaka, Shimoinayoshi; Toshihiko Fukushima, Shimoinayoshi, and Tadakatsu Nakajima, Shimoinayoshi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Aug. 25, 1980, Ser. No. 180,638
Claims priority, application Japan, Aug. 24, 1979, 54-107264
Int. Cl.³ F25D *9/00*
U.S. Cl. 62—402 6 Claims



1. A Rankine-cycle-engine-driven cooling-and-heating system comprising
a scroll type expander including a stationary scroll having an end plate, a spiral coiled lap extended in parallel
with the axis of said end plate, an inlet for a working fluid, and an outlet for said working fluid; a swirling or rotating scroll having an end plate, and a spiral coiled lap extended in parallel
with the axis of said end plate and in mating relationship with said spiral coiled lap of said stationary scroll;
a rotary shaft carrying said swirling or rotating scroll;
a self-rotation preventive means for preventing the self-rotation of said swirling or rotating scroll, and
a housing joined to said stationary scroll; a scroll type compressor including
a stationary scroll having
an end plate,
a spiral coiled lap extended in parallel with the axis of said end plate, and
an inlet and an outlet;
a swirling or rotating scroll having
an end plate, and
a spiral coiled lap extended in parallel with the axis of said end plate and in mating relationship with said spiral coiled lap of said stationary scroll,
a rotary shaft which carries said swirling or rotating scroll and is securely joined to said shaft of said swirling or rotating scroll or said scroll type expander,
a self-rotation preventive means for preventing the self-rotation of said swirling or rotating scroll, and
a housing joined to said stationary scroll and to said housing of said scroll type expander;
an oil separator having a hermetically sealed space defined by said housings of said expander and said compressor;
a first heat exchanger which operates as a condenser in the case of the refrigeration cycle but as an evaporator in the case of the heating cycle;
a second heat exchanger which operates as an evaporator in the case of the refrigeration cycle but
as a condenser in the case of the heating cycle;
a refrigerant pump;
an expansion means;
an oil supply system consisting of an oil pump and
an oil line;
a generator for heating the refrigerant discharged from said refrigerant pump, thereby evaporating
the same; and

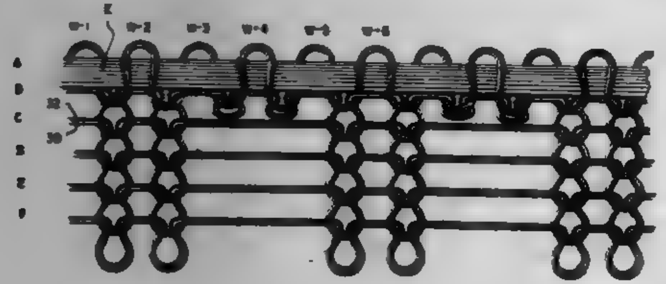
a seal means mounted on said rotary shafts between the housings of said expander and said compressor for gastightly isolating between said expander and said compressor.

4,326,392
MULTIPARTITE PROTECTIVE DEVICE FOR UNIVERSAL JOINT SHAFTS
Hubert Geisthoff, and Clemens Nienhaus, both of Lohmar, Fed. Rep. of Germany, assignors to Jean Walterscheid GmbH, Lohmar, Fed. Rep. of Germany
Filed Jun. 10, 1980, Ser. No. 158,254
Claims priority, application Fed. Rep. of Germany, Jun. 23, 1979, 2925398
Int. Cl.³ F16C *1/06*
U.S. Cl. 64—3 2 Claims



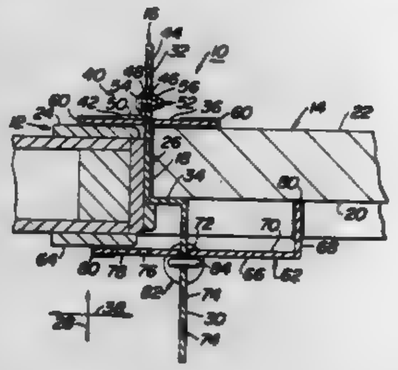
1. A multipartite protective device particularly for universal joint shafts on agricultural machinery comprising inner and outer telescoping cylindrical protective tubes concentrically arranged with an outer surface of the inner tube located within and surrounded by the inner surface of the outer protective tube and means frictionally interposed between said tubes to prevent relative rotative motion therebetween, said frictionally interposed means comprising elastic braking tongues rotatably fixed relative to one of said tubes and extending into frictional engagement with the other of said tubes, said universal joint shafts including an outer section tube arranged within said inner protective tube, with support bearing means comprising an inner and an outer bearing member being arranged between said outer section tube and said inner protective tube, said outer bearing member being attached to the insertion end of said inner protective tube, with said elastic braking tongues being arranged at the periphery of said outer bearing member.

4,326,393
DECORATIVE FOOTLET-TYPE SOCK
Albert R. Dunlap, Mount Airy, N.C., assignor to Brown Wooten Mills, Inc., Burlington, N.C.
Filed Oct. 10, 1979, Ser. No. 83,255
Int. Cl.³ D04B *9/46*
U.S. Cl. 66—172 E 2 Claims



1. A knit, low-cut, footlet-type sock adapted to be worn inside a low-cut shoe and substantially covered thereby with the exception of an exposed decorative welt, said welt comprising:
(a) a scalloped surface extending around at least a portion of said welt;
(b) said scalloped surface comprising:
(i) a plurality of courses formed of two yarns only, one being an elastic yarn and the other a body yarn, the two yarns being knit in plated relationship;
(ii) each of said courses including two knit stitches separated by a band of at least two adjacent float stitches;
(c) the combination of said elastic yarn and said knitting construction causing relatively wide bands or walewise ribs of raised fabric separated by a relatively narrow band of base fabric extending through the length of said welt;
(d) said scalloped surface being formed on the inside of said welt, and the welt being rolled over and tacked down to expose the scalloped surface on both the inside and outside of the exposed upper edge of the sock.

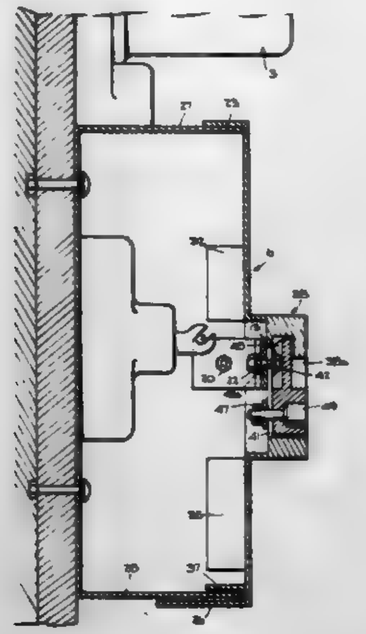
4,326,394
PORTABLE DOOR LOCK
Frederick Stein, Hollywood, Fla., assignor to Sandra Lichtman, Philadelphia, Pa.
Filed Aug. 22, 1980, Ser. No. 180,465
Int. Cl.³ E05B *73/00*
U.S. Cl. 70—14 17 Claims



1. A portable door lock releasably coupled to a door frame and a door member for positionally constraining said door member to said door frame, comprising:
(a) door engagement means insertable between said door member and said door frame at an interface thereof for matingly engaging said door member on a front and rear surface thereof and for contacting said door frame on a rear surface thereof;
(b) locking bar means displaceable on said door engagement means, said locking bar means extending across said interface of said door member and said door frame for contacting frontal surfaces of said door frame and said door member; and,
(c) a lock releasably securable to said door engagement means to prevent displacement of said locking bar means from said door engagement means.

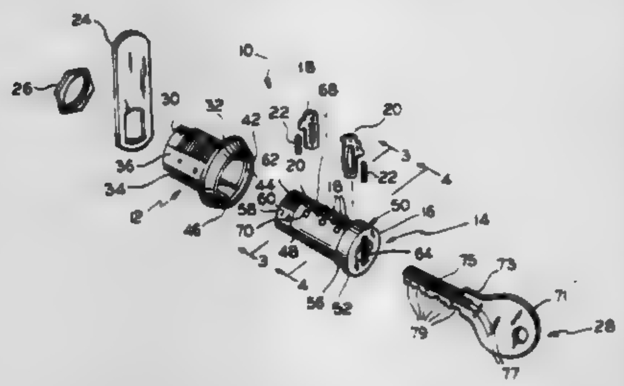
4,326,395
ELECTRIC ENCLOSURE LOCKING ASSEMBLY
Pasquale A. DeRosa, 290 Winchester Ave., Staten Island, N.Y. 10312
Filed Sep. 4, 1979, Ser. No. 72,220
Int. Cl.³ B65D *55/14;* H02G *13/14;* H05K *5/03, 5/04*
U.S. Cl. 70—168 11 Claims

1. In combination with a utility meter pan which comprises a back wall and outwardly projecting side wall means connected to the back wall to form a receptacle with an open side, a locking assembly for closing said receptacle open side, comprising bracket means extending across the interior of said meter pan, and attached to said side wall means at respective locations on opposite sides of said receptacle open side, a cover covering said receptacle open side and thereby preventing access to the interior of said receptacle, said cover having skirt portions which extend along and closely adjacent to the exterior of said side wall means and covering said locations of attachment of said bracket means, releasable retaining means extending through said cover and securing said cover to said bracket, a shield on said cover in a position covering said retaining means and thereby preventing access thereto, said cover having thereon projecting means defining a well therein, said shield being received in said well of the cover with said projecting means being closely adjacent to the shield, lock receiving means on said shield and said cover, and removable



lock means engaging said lock receiving means on said shield and said cover for locking said shield on said cover in its said position covering said retaining means.

4,326,396
PLATE TUMBLER FOR A CYLINDER LOCK MECHANISM
Robert L. Steinbach, Glendale Heights, Ill., assignor to Chicago Lock Co., Chicago, Ill.
Filed Jan. 14, 1980, Ser. No. 111,536
Int. Cl.³ E05B *15/14, 29/02*
U.S. Cl. 70—364 R 9 Claims

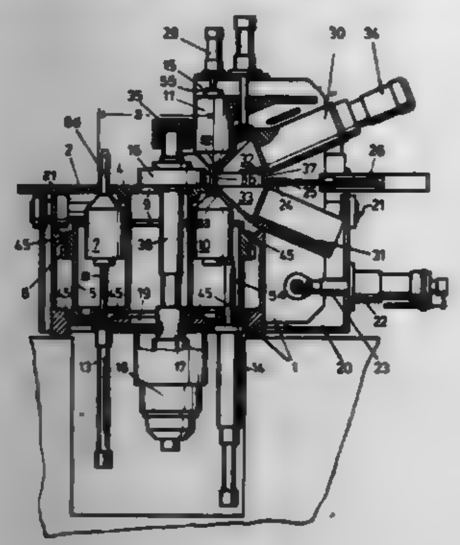


1. An improved plate tumbler for a cylinder lock mechanism, said lock mechanism including: a tubular barrel provided with an internal longitudinal tumbler-receiving groove bounded by a tumbler-engaging longitudinal side wall, and a key plug assembly mounted in said barrel for rotation relative thereto from a locking position to an unlocking position, said plug assembly including a key plug, a plurality of plate tumblers disposed in said plug in a longitudinal series, and spring means resiliently mounting said tumblers in said plug, said plug being provided with a longitudinal keyway and with a plurality of transverse tumbler-receiving slots intersecting said keyway and arranged for registry with said groove in said locking position of the plug assembly, each of said slots being bounded by a pair of opposed tumbler-engaging transverse side walls, each of said tumblers being received in a tumbler-receiving slot substantially completely within said plug in a plug-release position of the tumbler and being reciprocally movable in the slot between such release position and a plug-locking position of the tumbler wherein a barrel-engaging end thereof projects from the plug for reception in said groove when in registry with the slot, said tumblers being biased by said spring means towards their locking positions, and said tumblers engaging a bitted key inserted in said keyway thereby to move the tumblers out of their locking positions and into their release positions and enable the plug assembly to be rotated to its unlocking position; said improved tumbler being receivable in a tumbler-receiving slot for movement between such release and locking positions while biased towards its locking position by said spring means, and for such engagement with a key, and comprising:
a plate-like body portion having a leading edge and a trailing edge on opposite sides of a longitudinal axis of the body portion, said body portion being received in one of said slots with said axis extending transversely of the plug and said edges disposed adjacent to respective ones of the transverse side walls bounding the slot for engagement therewith when the tumbler is disposed in the slot,
one end portion of said leading edge at a barrel-engaging end of the tumbler projecting from said plug into said groove in the barrel for engagement with said longitudinal side wall to prevent relative rotation of said plug assembly towards its unlocking position when the plug assembly is in its locking position with the tumbler disposed in its locking position in said one slot,
the opposite end portion of said leading edge at the opposite end of the tumbler extending obliquely inwardly in a direction towards said axis and towards said opposite end of the tumbler,
one end portion of said trailing edge at said barrel-engaging end of the tumbler projecting from said plug into said groove when the plug assembly is in its locking position with the tumbler disposed in its locking position in said one slot,
said one end portion of the trailing edge extending arcuately outwardly away from said axis and towards said barrel-engaging end of the tumbler,
and a portion of said trailing edge adjacent to said one end portion thereof extending from the latter portion obliquely outwardly in a direction away from said axis and towards said opposite end of the tumbler,
whereby, when the plug assembly is in its locking position with the tumbler in its locking position in said one slot, and torque is applied to the plug assembly tending to rotate it to its unlocking position while a force is applied to the tumbler tending to move the tumbler to its release position in a picking operation, said one end portion of the leading edge engages said longitudinal side wall, and said opposite end portion of the leading edge engages the adjacent transverse side wall, while said one end portion of the trailing edge projects laterally outwardly over the plug from the transverse side wall which is adjacent to such end portion, in engagement with the plug to prevent the tumbler from being moved into its release position, thereby to prevent rotation of the plug assembly to its unlocking position.

4,326,397
MULTIPLE MANDREL-RING ROLLING MACHINE
Alfred Strugala; Robert Schilling, both of Dortmund, and Dieter Adamaszek, Kamen, all of Fed. Rep. of Germany, assignors to Thyssen Industrie AG, Fed. Rep. of Germany
Filed Apr. 21, 1980, Ser. No. 141,767
Claims priority, application Fed. Rep. of Germany, Apr. 28, 1979, 2917369
Int. Cl.³ B21H *1/06*
U.S. Cl. 72—110 13 Claims

1. A multiple-mandrel ring rolling machine for producing a ring from a ring blank comprising a frame, a rolling platform, means for mounting said rolling platform to said frame for rotary movement relative thereto, a main roll movably mounted on said frame above said platform, a plurality of elongated mandrel rolls mounted below said rolling platform, each of said mandrel rolls including a longitudinal axle having oppositely disposed ends, each of said mandrel rolls being

mounted on said rolling platform for rotation about its own axle, and said mandrel rolls being axially displaceable relative



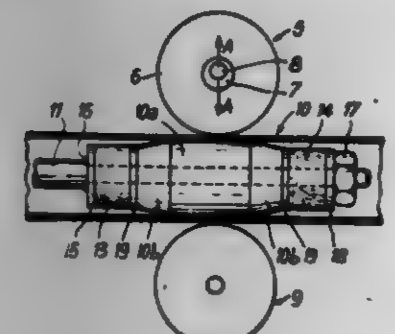
to said rolling platform between a first position above said rolling platform for rolling the ring blank and a second position below said rolling platform.

4,326,398

APPARATUS TO EQUALIZE IN HEIGHT, BY HAMMERING, THE LINE OF WELDING OF LONGITUDINALLY WELDED TUBES

Bernard Begue, Pavillon sous Bois, France, assignor to Vallourec, Paris, France

Filed Dec. 12, 1979, Ser. No. 102,758
Int. Cl.³ B21J *7/04*
U.S. Cl. 72—193 7 Claims



1. A device to equalize in height, by hammering, the bead of welding of tubes welded longitudinally having inside the tube an anvil mounted on the end of a rod passing through the tube, adjustable in longitudinal position, whose exterior surface comes in contact with the internal wall of the tube, an external hammering mass operated with a successive vertical movement, and a support member mounted opposite the hammering mass, the improvement comprising, means for moving the hammering mass at an impact frequency greater than 2,500 impacts/minute, an elastomer bushing axially at each end of and engaging said anvil, for restraining said anvil against axial movement in either direction, and means for preventing axial displacement of said bushings along the rod.

4,326,399

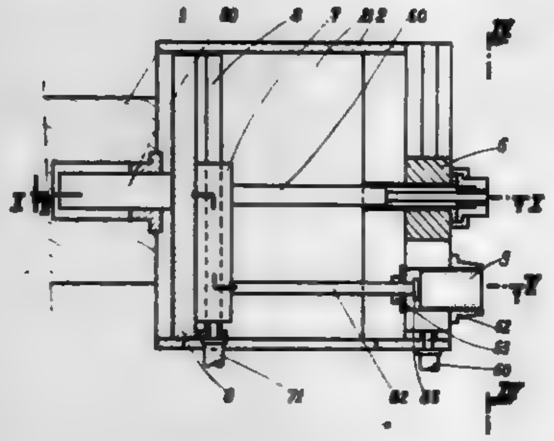
EXTRUSION PRESS OPERATING BY THE INDIRECT METHOD

Michel Doudet, Epone, France, assignor to SECIM, Courbevoie, France

Filed Mar. 14, 1978, Ser. No. 886,771
Int. Cl.³ B21C *33/00, 35/00, 35/04*
U.S. Cl. 72—263 3 Claims

1. A press for extruding tubes by the indirect method comprising:

a fixed tubular die casing having a die and defining a pressing axis,
a main cross beam supported for movement parallel to the pressing axis,
a main jack coupled to the cross beam for displacement thereof,
a container for a billet to be extruded supported for movement parallel to the pressing axis, said container having open extremities one of which is capable of fitting on the die casing upon movement of the container parallel to the pressing axis,
a base for closing the other extremity of the container,
a slide carrying said base and displaceable on the cross beam transversely with respect to the pressing axis,
a housing mounted on said slide in a laterally offset position for loading a billet to be extruded,
means for displacing the slide to selectively position said base or said housing on said pressing axis,
an axially displaceable push rod for displacing said billet from said housing,



an auxiliary jack mounted within the main jack and acting along the pressing axis,
an auxiliary cross beam slidably mounted on said main cross beam for movement parallel to the pressing axis; said auxiliary cross beam being coupled to and actuated by said auxiliary jack,
a support extending parallel to said slide and mounted for slidable transverse movement in said auxiliary cross beam,
means for controllably displacing said support transversely and simultaneously with the slide, and
a holder extending parallel to the pressing axis having a rear extremity secured to said support for movement therewith and a plunger secured to said holder and slidably mounted in said base,
said push rod for displacing the billet from said housing having a rear extremity also secured to said support for movement therewith and a front extremity slidably mounted on said slide axially within said housing.

4,326,400

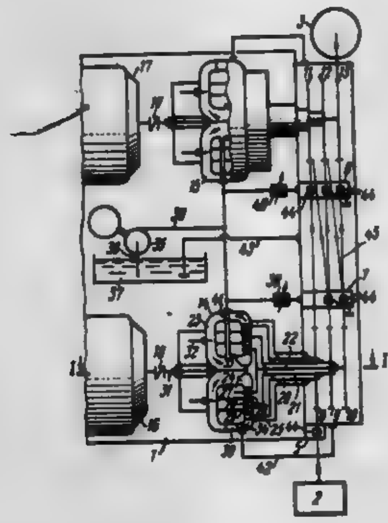
NON-SLIP MULTI-PASS WIRE MILL

Vadim A. Davydov, ulitsa Mikhailova, 29, korpus 3, kv. 57; Vladimir I. Khromov, Leninsky prospekt, 26, kv. 34; Igor M. Makeev, Frunzenskaya naberezhnaya, 36, kv. 227; Aizik M. Kogos, ulitsa Fedora Poletaeva, 24, korpus 2, kv. 50, all of Moscow, and Leonid I. Rymarenko, prospekt Lenina, 10 "A", kv. 28, Balashikha Moskovskoi oblasti, all of U.S.S.R.

Filed Mar. 7, 1980, Ser. No. 127,946
Claims priority, application U.S.S.R., Mar. 7, 1979, 2734370
Int. Cl.³ B21C *1/10, 1/27*
U.S. Cl. 72—280 3 Claims

1. A nonslip multi-pass wire mill comprising:
a bed;
a coiler;
an uncoiler;
a bath mounted on said bed;
a plurality of dies for wire drawing;

die holders for said dies, arranged inside said bath in an order ensuring the manufacture of a wire of specified dimensions;
a plurality of blocks sequentially located relative to said dies to effect drawing;
at least one adjustable torque converter actuated by an electric motor; said torque converter rotating at least one of said individual blocks; said torque converter comprising:
a housing having a working chamber containing a working fluid necessary for the operation of said torque converter;
a pump rotor mounted in said working chamber for producing during pumping a low-pressure zone and a high-pressure zone upstream and downstream, respectively, of said rotor;
turbines, the number of which corresponds to that of said blocks; said turbines being actuated by said torque converter, said turbines being mounted in said working chamber of said housing of said torque converter and cooperating with the pump rotor; said mill further including:
a system for supplying a coolant-lubricant serving also as said working fluid of said torque converters comprising:



a coolant-lubricant tank;
a pumping station communicating with said tank and having a pressure line;
adjustable throttles, the number of which corresponds to that of said die holders;
said pressure line connected through said adjustable throttles to said die holders for supplying thereto said coolant-lubricant during the drawing of wire;
ducts in said housing of each said torque converter connecting said pressure line with said low-pressure zone of each said torque converter;
pipes connecting said high-pressure zone of each said torque converter and said bath;
a draining pipe connecting said bath in a lower level thereof to said tank;
the connection between said ducts, said pipes and said working chambers of each said torque converter providing communication between said pressure line and said bath causing circulation of said coolant-lubricant through said torque converter thereby conditioning said coolant-lubricant for drawing wire by said torque converter.

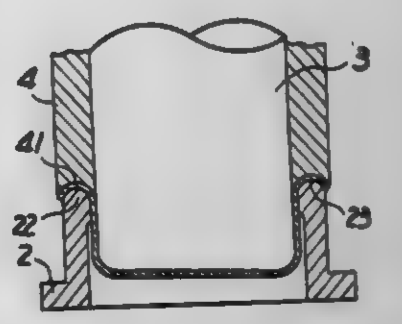
4,326,401

APPARATUS FOR REVERSE REDRAWING

Kenichi Inoue, Ibaragi, Japan, assignor to Daiwa Can Company, Ltd., Japan

Filed Mar. 28, 1980, Ser. No. 134,972
Int. Cl.³ B21D *22/00*
U.S. Cl. 72—350 1 Claim

1. In apparatus for reverse redrawing of a cup having a bottom wall and a body portion, said apparatus including a die ring of hollow cylindrical body portion on which the cup can be crowned, and a punch for pushing the bottom wall of the cup into the die ring thereby effecting drawing while reversing the face side and the back side of the cup, the improvement of a fixed annular ring provided encirclingly around the upper



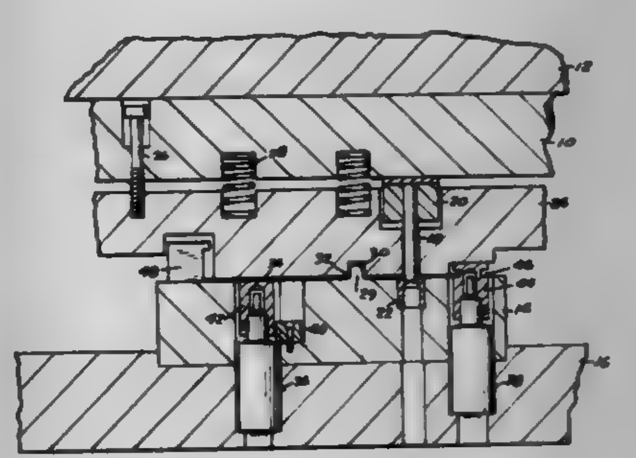
end portion of the body portion of the die ring at the outside of the die ring and concentrically with the die ring, there being a clearance provided between the inside surface of the fixed annular ring and the outside surface of the die ring, said clearance being only slightly larger than the thickness of the cup body portion.

4,326,402

STOCK LIFTER FOR PROGRESSIVE DIES

Bernard J. Wallis, 25200 Trowbridge Ave., Dearborn, Mich. 48124

Filed Apr. 18, 1980, Ser. No. 141,686
Int. Cl.³ B21J *13/08*
U.S. Cl. 72—420 13 Claims



1. A stock lifter for a progressive die having upper and lower die members for forming workpieces therebetween, said stock lifter comprising a vertically disposed fluid cylinder fixedly mounted on the lower die member, a piston slideably arranged within said cylinder and having a piston rod extending upwardly through the upper end of the cylinder in sealed relation therewith, means sealing the lower end of the cylinder from the surrounding atmosphere, said piston rod having a smaller outer diameter than said piston so that the bottom face of the piston has a larger area than the top face thereof, said piston

rod having an axial passageway extending downwardly from the upper end thereof and communicating freely with the portions of the cylinder above and below the piston, means adjacent the upper end of the piston rod communicating with said passageway for charging the cylinder to a selected predetermined gas pressure so that the piston is biased upwardly in the cylinder with a predetermined desired force and means at the upper end of the piston rod for engaging strip stock disposed between the die members and adapted to lift it from the lower die member when the upper die member is raised.

4,326,403

Patent Not Issued For This Number

4,326,404

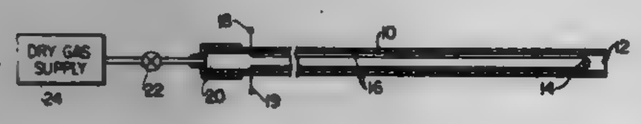
RESPIRATORY MONITOR

Jasu G. Mehta, 15 Stonewall La., Mamaroneck, N.Y. 10543

Filed Mar. 3, 1980, Ser. No. 126,667

Int. Cl.³ A61B *5/08*

U.S. Cl. 73—29 11 Claims



1. Apparatus for detecting the quantity of moisture in a gas in a given region comprising:
a crystal of sodium chloride;
a support for said crystal in said region;
means operatively connected to said crystal for detecting a change in the electrical resistance of said crystal caused by exposure of said crystal to moisture; and
means for intermittently supplying a flow of dry gas over said crystal sufficient to remove accumulated moisture therefrom.

4,326,405

APPARATUS FOR DETECTING BONDING DEFECTS IN LAMINATES

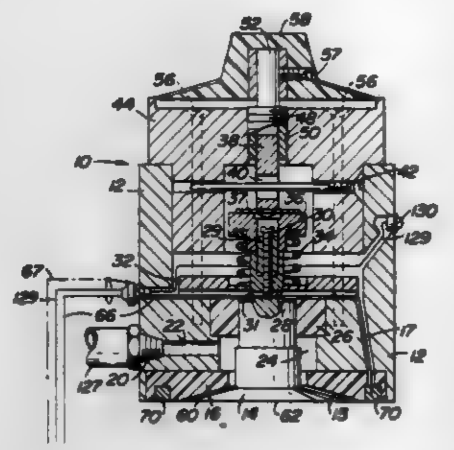
Harold R. Ingle, Jr., 2665 Jamerson Rd., NE., Marietta, Ga. 30066

Filed Aug. 11, 1980, Ser. No. 176,935

Int. Cl.³ G01N *29/00*

U.S. Cl. 73—37 17 Claims

1. Apparatus for testing bonded laminates which include a substrate and a face sheet bonded thereto, comprising:
(a) means for producing an air cushion between an examining surface of the apparatus and the face sheet of the laminate by applying high velocity air flow from at least one air nozzle in the examining surface;
(b) the examining surface including a detection plate having



means for detecting deflection of the face sheet of the laminate toward the detection plate; and
(c) means for producing a vacuum in the area between the detection plate and the face sheet, whereby the face sheet will be deflected toward the detection plate in any area where the face sheet is not bonded to the substrate.

4,326,406

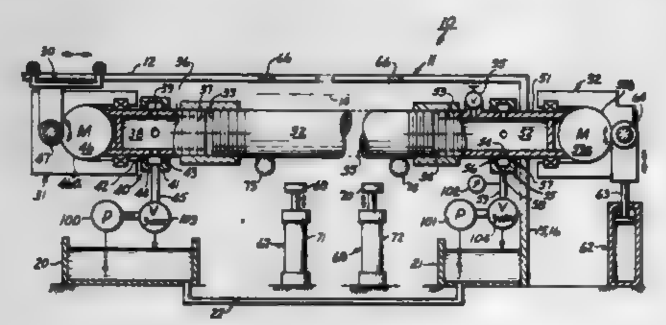
PRESSURE TESTER FOR PIPES

Eugene D. Smith, 3100 Hollins, Bakersfield, Calif. 93305

Filed Mar. 21, 1980, Ser. No. 131,943

Int. Cl.³ G01M *3/28*

U.S. Cl. 73—49.1 18 Claims



1. Apparatus for testing the ability of a length of pipe to withstand internal pressure, said pipe having a pipe axis, a first end, a second end, a thread at each end, and a pipe passage extending from end to end, said apparatus comprising:
a frame having a longitudinal frame axis, and including a rail member extending axially along at least a portion of the axial length of the frame;
a carriage axially slidable on said rail member;
first pipe engagement means mounted to said carriage, said first pipe engagement means comprising a first threaded plug having a plug axis and threadable to said first end of said pipe, first bearing means supporting said plug for threading and unthreading rotations around its said plug axis, means for rotating said first plug bi-directionally,

trunnion means mounting said first bearing means to said carriage for rotation in a vertical plane, whereby said first plug is axially movable along said frame axis, and rotatable in said vertical plane, and rotatable around its own axis, said first plug having a first plug passage which communicates with said pipe passage when they are threaded together;
first liquid supply means connected to said first plug passage for supplying liquid thereto;
a tilt elevator mounted to said frame and having an elevator portion movable up and down in a vertical plane;
second pipe engagement means mounted to said elevator portion, said second pipe engagement means comprising a second threaded plug having a plug axis and threadable to said first end of said pipe, second bearing means supporting said plug for threading and unthreading rotation around its said plug axis, means for rotating said second plug bi-directionally, trunnion means mounting said second bearing means to said elevator portion for rotation in said vertical plane, whereby said second plug is movable up and down and rotatable in said vertical plane, and rotatable around its own axis, said second plug having a second plug passage which communicates with said pipe passage when they are threaded together;
second liquid supply means connected to said second plug passage for supplying liquid thereto;
an on-off vent valve communicating with said passage in said second plug;
gauge means communicating with one of said passages to measure the pressure therein; and
control means for controlling operation of said first and second liquid supply means.

4,326,407

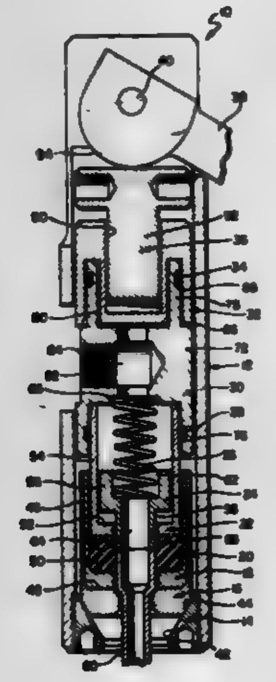
LEAK TEST TOOLS

Homer Van Meter, deceased, late of Sun City Center, Fla., and by Geraldine S. Van Meter, executrix, 1628 Vincennes Dr., Sun City Center, Fla. 33570

Filed Aug. 29, 1980, Ser. No. 182,434

Int. Cl.³ G01M *3/08*; F16L *37/18*

U.S. Cl. 73—49.1 8 Claims



1. A fitting for mounting to the ends of smooth wall tubes for leak testing expanded end tubes, beaded end tubes and barbed end tubes, said fitting comprising a generally cylindrical-shaped hollow body having retained therein a split collet having a bottom wall and a cam surface on the outer peripheral edge of said bottom wall, a retainer having a bottom wall disposed within said split collet, an adapter having a bottom wall disposed within said retainer, a seal disposed between the bottom walls of said retainer and said adapter, said seal and the bottom walls of said split collet, said retainer and said adapter each having therein an aperture for receiving therethrough the end of a tube to be tested, a tube stop disposed within said adapter engageable by the terminal end of the tube to be tested, a piston assembly engageable with said adapter to longitudinally reciprocate said adapter to compress said seal in sealing engagement with a tube to be tested and to operate said split collet to grip the outside diameter of said tube, and a head threadedly retained in a tube receiving end of said hollow body having a cam surface thereon complimentary with and engageable with said cam surface of said split collet to operate said split collet; and a handle at the other end of said hollow body having a cam surface thereon operable to longitudinally reciprocate said piston assembly when said handle is operated.

4,326,408

AIRTIGHTNESS TESTING APPARATUS FOR WATCHES

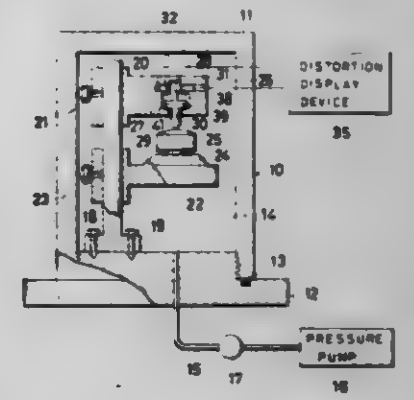
Chiyuki Kanoh, 7-8-2-1006, Funabashi, Setagaya-ku, Tokyo, Japan

Filed Feb. 7, 1980, Ser. No. 119,373

Claims priority, application Japan, Feb. 9, 1979, 54-15765[U]

Int. Cl.³ G01M *3/36*

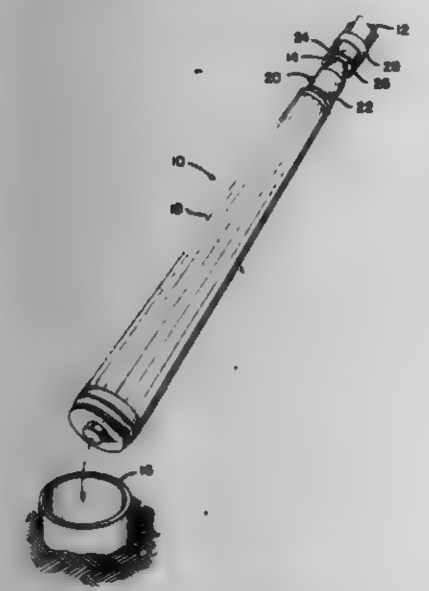
U.S. Cl. 73—49.3 11 Claims



1. An airtightness testing apparatus for watches, comprising:
an airtight container;
pressure control means capable of being so operated as to pressurize or decompress the interior of said container;
a testing stand having a seat to carry a watch to be examined inside said airtight container;
adjusting means to move said testing stand in the vertical direction for the adjustment of the position of said stand;
means for detecting a distortion of the to-be-examined watch which is caused by a change of the pressure inside said airtight container due to the operation of said pressure control means;
a support assembly supporting at least part of said detecting means; and
a distortion display device providing an operator with a change of distortion detected by said detecting means, characterized in that said detecting means includes;
a light emitting element supported by said support assembly and emitting light as a luminous flux of a regular size,
a light receiving element supported by said support assembly so as to face said light emitting element with a fixed gap inbetween and supplying a first signal corresponding to the size of the luminous flux produced from said light emitting element, and
a movable member composed of a contact portion touching said watch and capable of vertical movement in accordance with the change of distortion of said watch and a screening plate portion accompanying said contact member to move vertically in said gap and restricting the

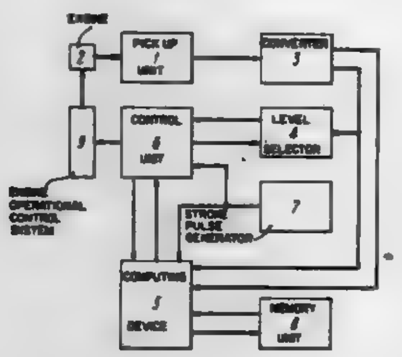
luminous flux from said light emitting element to said light receiving element, thereby changing the size of the luminous flux received by said light receiving element, and that said distortion display device includes;
a display circuit to indicate the change of said first signal.

4,326,409
SITU BORE HOLE TEST PROBE
John M. O. Hughes, 533 East 5th, North Vancouver, British Columbia, Canada
Filed May 19, 1980, Ser. No. 151,139
Int. Cl.³ G01N *3/00*
U.S. Cl. 73—84 11 Claims



1. A bore hole test probe, comprising:
a cylindrical body having a hollow core and end portions tapering inwardly to form respective reduced diameter sleeves;
a resilient, cylindrical expansion membrane having opposite ends extending along the tapered portions of said body, said body having a fluid passage extending between said core and said expansion membrane such that pressure applied to said core outwardly expands said expansion membrane;
respective annular clamping members surrounding said sleeves and having inner surfaces tapered to match the taper of said cylindrical body, said clamping members being forced toward each other to compress the ends of said expansion membrane between said clamp members and the tapered portions of said body;
a plurality of axially spaced, circumferential grooves surrounding the tapered portions of said body to maximize the bond between said expansion membrane and said body;
feeler means resiliently biased against the inside surface of said expansion membrane for providing an indication of expansion thereof; and
a plurality of circumferentially spaced reinforcing fingers extending longitudinally along the outer surface of said expansion membrane at the junctions between said expansion member and said body to reinforce said expansion membrane against relatively strong shear stresses produced near said junction.

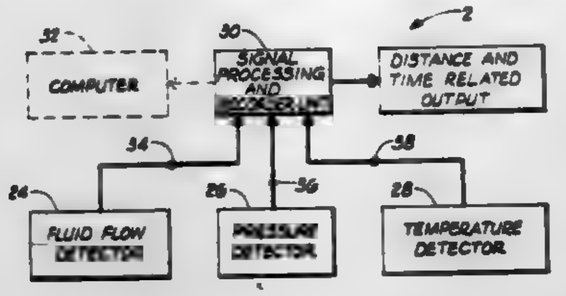
4,326,410
ENGINE TEST METHOD
Ivan D. Bukhtiyarov, Novosibirsky raion, rabochy poselok Krasnoobsk, 3, kv. 137; Viktor B. An, Novosibirsky raion, rabochy poselok Krasnoobsk, 3, kv. 5, both of Novosibirskaya oblast; Marat N. Farshatov, ulitsa S. Razina, 46, kv. 20, Kuibyshevskaya oblast, Tolyatti; Fedor F. Sapozhnikov, ulitsa Sverdlova, 187, kv. 211, Kuibyshevskaya oblast, Tolyatti; Anatoly G. Sidorov, ulitsa Revoljutsionnaya, 125, kv. 16, Kuibyshevskaya oblast, Tolyatti; Natalya A. Proskurina, bulvar Kulibina, 9, kv. 12, Kuibyshevskaya oblast, Tolyatti, and Vladimir I. Marakin, Novosibirsky raion, rabochy poselok Krasnoobsk, 7, kv. 165, Novosibirskaya oblast, all of U.S.S.R.
Filed Jun. 3, 1980, Ser. No. 156,203
Int. Cl.³ G01M *15/00*
U.S. Cl. 73—117.3 5 Claims



1. A method for testing an engine comprising the steps of:
starting said engine;
controlling a fuel feed of said engine to obtain steady running at a first speed;
performing a first runup-rundown cycle consisting of accelerating said engine from said first speed to a second speed, and permitting said engine to decelerate to a third speed;
monitoring at least one parameter of said engine during said first runup-rundown cycle;
selecting parameters for a second runup-rundown cycle based on the monitored parameter during said first runup-rundown cycle;
performing said second runup-rundown cycle consisting of accelerating said engine from said third speed to a fourth speed and permitting said engine to decelerate to a fifth speed;
continuing the steps of monitoring, selecting and performing to produce subsequent runup-rundown cycles;
comparing a result of said monitoring with at least one standard parameter; and
ending said testing when the result of said monitoring reaches a predetermined relationship with said standard parameter.

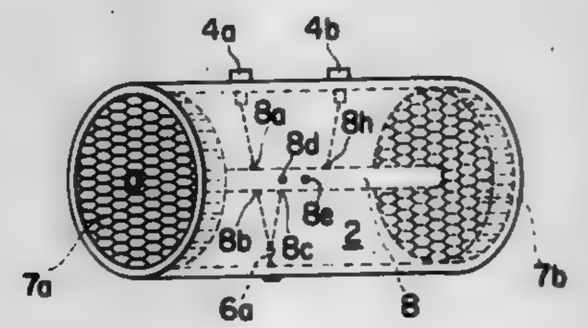
4,326,411
METHOD AND APPARATUS FOR MONITORING FLUID FLOW
Robert C. Gant, and John E. Reeves, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.
Filed Jul. 14, 1980, Ser. No. 167,920
Int. Cl.³ E21B *47/06*
U.S. Cl. 73—155 41 Claims

1. A system for monitoring conditions in a fluid flow path along which a fluid flows, the fluid flow path being defined by a conduit having a plurality of identifiable structural elements, said system comprising:
velocity detecting means for detecting the velocity of the fluid at a plurality of positions along the fluid flow path as the fluid flows therealong; and
recording means for recording the velocity detected at each of said plurality of positions so that substantial variations in the recorded velocities are perceivable for correlation



to the identifiable structural elements of the conduit defining the fluid flow path.

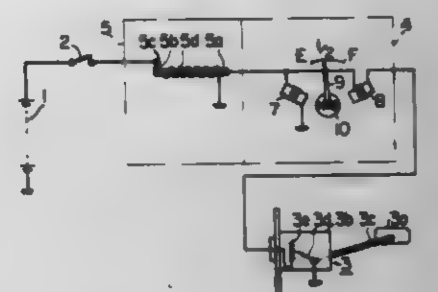
4,326,412
FLOWMETER OF HOT WIRE TYPE
Hiroshi Kobayashi, Yokosuka; Toru Kita, Yokohama, and Takeshi Fujishiro, Yokosuka, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan
Filed Jul. 31, 1979, Ser. No. 62,528
Claims priority, application Japan, Aug. 5, 1978, 53-95020; Nov. 14, 1978, 53-155741[U]
Int. Cl.³ G01F *1/68*
U.S. Cl. 73—204 9 Claims



1. A flowmeter of a hot wire type for a measurement of flow rate of fluid flowing through a fluid passage, the flowmeter comprising:
an electrically heatable wire stretched within a section of the fluid passage bounded by two spaced planes normal to the direction of the fluid flow;
means for electrically measuring the temperature drop of the wire caused by the fluid flow in the fluid passage;
said wire being wound around the central axis of said fluid passage like a helix traced on a side surface of a barrel shape in such a manner that the heat release from said wire in its entirety approximates the mean fluid velocity averaged within said section of said fluid passage.

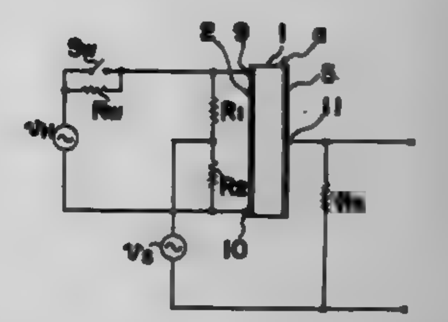
4,326,413
LIQUID-LEVEL GAUGE FOR VEHICLES
Mikio Takeshita, Toyota, and Hiroyuki Tashiro, Kariya, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan
Filed Jan. 28, 1980, Ser. No. 115,665
Claims priority, application Japan, Mar. 13, 1979, 54/31948[U]
Int. Cl.³ G01F *23/10*
U.S. Cl. 73—313 4 Claims

1. A liquid-level gauge for vehicles comprising:
a container for containing liquid provided within a vehicle;
a detector mounted to said container for producing a detected signal corresponding to a liquid level of the liquid;
an indicator connected to said detector for indicating a liquid level value by a pointer in response to the detected signal derived from said detector, said indicator including a reference magnetic field generating coil, a variable magnetic field generating coil and a moving magnet, and said indicator being of leaving pointer type in which, when said coils are deenergized, an indication of said pointer rotated by said moving magnet is held at a value just before the deenergization; and



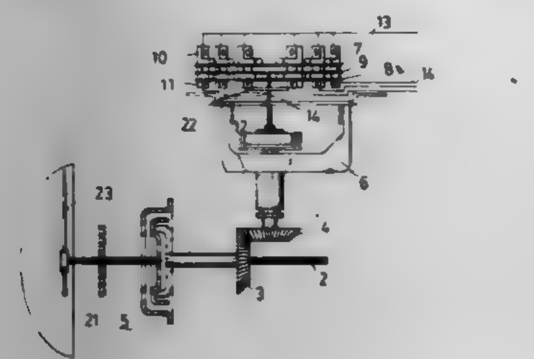
a timer circuit connected to said indicator and a power source through a power source switch, which permits electric power to intermittently pass through said switch to said coils of said liquid level indicator with given intervals, after the power source switch is turned on.

4,326,414
HUMIDITY DETECTING APPARATUS
Jiro Terada, and Tsuneharu Nitta, both of Katano, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan
Filed Dec. 26, 1979, Ser. No. 107,182
Claims priority, application Japan, Dec. 26, 1978, 53/165743; Jul. 31, 1979, 54/99177
Int. Cl.³ G01W *1/00*
U.S. Cl. 73—336.5 12 Claims



1. A humidity detecting apparatus for measuring ambient humidity and having a humidity detecting resistor element comprising:
a humidity detecting portion of a metallic oxide material whose resistance is related to said ambient humidity and having first and second electrodes on opposite sides thereof;
said first electrode having first and second terminals and of a resistive material, wherein when an electrical current is passed between said first and second terminals, said first electrode operates as a resistance heating unit to thereby heat said humidity detecting resistor element; and
said second electrode having a third terminal arranged such that said resistance of said humidity detecting portion is measured between said first and third terminals to thereby determine said ambient humidity.

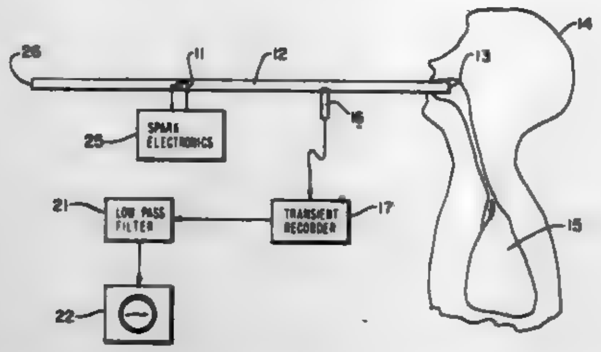
4,326,415
SPEED INDICATING APPARATUS FOR VEHICLES
Jiunn-Feng Lee, 4th Fl., 103, Sec. 2, Wu-Chang St., Taipei, Taiwan
Continuation-in-part of Ser. No. 42,120, May 24, 1979, Pat. No. 4,227,416. This application Mar. 27, 1980, Ser. No. 134,662
Claims priority, application Taiwan, Jan. 5, 1979, 6720026; Aug. 20, 1979, 6823004
Int. Cl.[3] G01P *3/36, 3/50*
U.S. Cl. 73—499 4 Claims



1. A speed indicating apparatus for a vehicle, comprising:
a speed counter coupled to the speedometer cable of the vehicle; and
a plurality of indicator lights mounted externally on the rear frame of the vehicle and controlled by said speed counter, said speed counter including;
a frame including two spaced discs, one of said discs having a plurality of holes therethrough spaced along one-half of the periphery thereof;
a corresponding plurality of light sources arranged to project light through respective ones of said holes;
a corresponding plurality of photoelectric sensors on the opposite side of said one disc from said light sources and arranged to receive light from respective ones of said light sources through said holes;
a semicircular plate of equal size to said discs, said plate being concentrically rotatably mounted between said discs such that said plate selectively blocks the paths of light between respective ones of said light sources and said photoelectric sensors as said plate is rotated with respect to said discs; and
magnetic coupling means connected to said plate and the speedometer cable for rotating said plate an amount corresponding to the speed of the vehicle.
whereby, as the speed of the vehicle increases, said plate is rotated to block an increasing number of light paths to said sensors and to thereby light up an increasing number of said indicator lights.

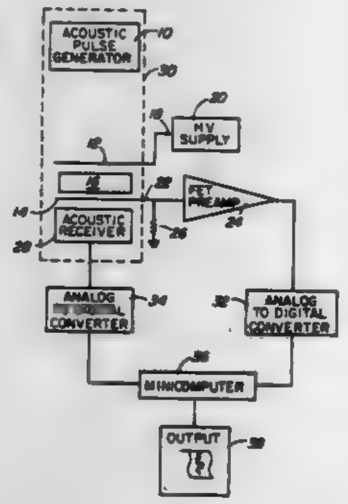
4,326,416
ACOUSTIC PULSE RESPONSE MEASURING
Jeffrey J. Fredberg, Sharon, Mass., assignor to Cambridge Collaborative, Inc., Cambridge, Mass.
Continuation-in-part of Ser. No. 932,033, Aug. 8, 1978, abandoned. This application Feb. 11, 1980, Ser. No. 120,618
Int. Cl.[3] G01N *24/00*
U.S. Cl. 73—597 14 Claims

1. Apparatus for measuring physical properties of a confined volume comprising,
conduit means for exchanging acoustical energy with said confined volume,
means for propagating a pressure pulse within said conduit through an opening thereof for entry into the confined volume,
electroacoustical transducing means in said conduit responsive to acoustical energy therein for providing an electrical signal representative of wave energy having spectral components in a substantial portion of the audio frequency range above 100 Hz reflected through said opening in response to said pressure pulse propagated through said opening provided by said means for propagating,
and utilization means responsive to said detected signal for providing a representation thereof characteristic of physical properties of said confined volume,



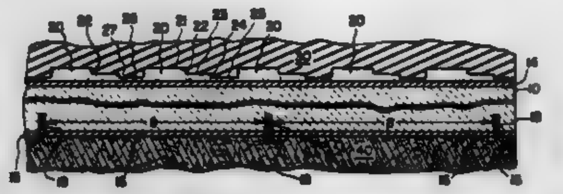
said physical properties including the cross sectional area of said confined volume as a function of its distance from said opening.

4,326,417
NONDESTRUCTIVE ACOUSTIC ELECTRIC FIELD PROBE APPARATUS AND METHOD
Albert Migliori, Santa Fe, N. Mex., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.
Filed Aug. 8, 1980, Ser. No. 176,441
Int. Cl.[3] G01N *29/04*
U.S. Cl. 73—601 10 Claims



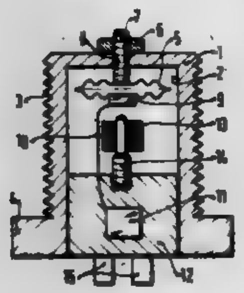
1. A nondestructive acoustic electric field probe comprising:
means for producing an electric field having a direction across material to be tested;
means for generating an acoustic pulse having a known shape and amplitude and for directing it through said material substantially in accordance with the direction of the electric field;
means for receiving said pulse after it has passed through and been modulated by said material;
means for determining the voltage across the material while the acoustic pulse passes through it; and
means for analyzing said acoustic pulse after it has passed through and been modulated by said material and the voltage change on the material during the passage of said acoustic pulse to determine preselected characteristics of said material.

4,326,418
ACOUSTIC IMPEDANCE MATCHING DEVICE
James W. Pell, Jr., El Toro, Calif., assignor to North American Philips Corporation, New York, N.Y.
Filed Apr. 7, 1980, Ser. No. 137,675
Int. Cl.[3] G01N *29/00*
U.S. Cl. 73—644 44 Claims



1. An impedance matching device for coupling wideband sonic energy between one or more acoustic transducers and an object, comprising:
a periodic array of stepped matching structures disposed side-by-side over an active surface of the transducers,
each of the matching structures comprising two or more flat parallel strips of sound-conductive material which are disposed, side-by-side, over the active surface in a stepped configuration wherein the thickness of successive strips increases monotonically across the structure.

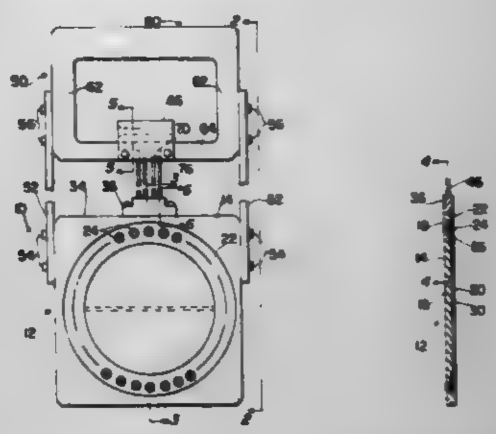
4,326,419
ELECTROMECHANICAL PRESSURE TRANSDUCER
Werner Herden, Stuttgart, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany
Filed Feb. 19, 1980, Ser. No. 122,042
Claims priority, application Fed. Rep. of Germany, Apr. 6, 1979, 2913935
Int. Cl.[3] G01L *19/04*
U.S. Cl. 73—708 10 Claims



10. System according to claim 1, wherein said energization means (60) provides unidirectional sequential pulses to the at least one electromagnet.

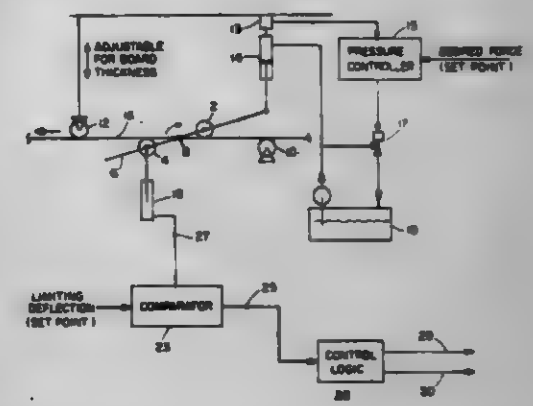
4,326,420
KERF PRESSURE PLATE MATERIAL TESTER
Roscoe E. Perham, Ledge La., Lebanon, N.H. 03766
Filed Oct. 10, 1980, Ser. No. 195,821
Int. Cl.[3] G01L *1/02*
U.S. Cl. 73—768 11 Claims

1. A kerf pressure plate materials tester comprising:
a generally planar, thin metal plate,
an annular groove in one face of said plate spaced inwardly from the edge of said plate,
a deformable diaphragm extending over the central portion of said one face and defining a chamber therebetween and extending at least partially over said annular groove,
means overlying said groove for clamping the peripheral portion of said diaphragm to said plate, said clamping



means lying substantially within the plane defining the said one face, and
passage means extending through said plate to said chamber.

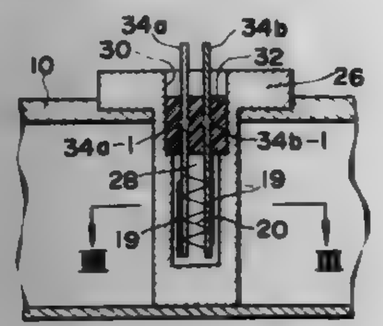
4,326,421
CONTINUOUS PROOFLOADER
William D. Pilesi, Monroeville, and Harry J. Trautmann, Pittsburgh, both of Pa., assignors to Koppers Company, Inc., Pittsburgh, Pa.
Filed Jan. 24, 1980, Ser. No. 115,094
Int. Cl.[3] G01N *3/20*
U.S. Cl. 73—852 7 Claims



1. A proofloader for continuously determining the presence or absence of a predetermined minimum flexural strength and stiffness in a relatively rigid material such as wood along its path of travel through the loader comprising
a frame through which said material travels;
fulcrum means affixed to said frame and having a pivot point at the mid-point of the thickness of the material in its path of travel;
support means rotatable about said pivot point as a fulcrum for said support;
a pair of flexure means, each flexure means being affixed to opposite ends and on opposite sides of said support for applying a flexure force on opposite faces of said material as the material travels between the flexure means;
a pair of guide means, each guide means being affixed to said frame equidistant from said fulcrum means and positioned apart from said flexure means and on opposite sides of the path of the material whereby the guide means restrains the material to travel between the flexure means and guide means in a substantially horizontal path and to resist the force applied to the material by the adjacent flexure means;
load means affixed to said frame for applying a predetermined force to said support means whereby each flexure means deflects the material in an equal but different vertical direction from the horizontal path and the force is opposed by a respective guide means; and

sensor means affixed to said frame for detecting the amount of deflection of said material as the material travels from one guide means to the other.

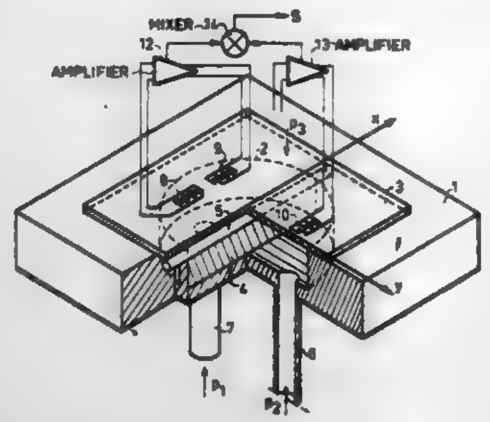
4,326,422
PROBE UNIT OF A FLUID FLOW RATE MEASURING APPARATUS
Hiroshi Kobayashi, Yokohama, and Toru Kita, Yokosuka, both of Japan, assignors to Nissan Motor Co., Yokohama, Japan
Filed Oct. 16, 1980, Ser. No. 197,699
Claims priority, application Japan, Oct. 17, 1979, 54-132909
Int. Cl.³ G01F *1/32*
U.S. Cl. 73—861.22 5 Claims



1. A probe unit of a fluid flow rate measuring apparatus, comprising:
a vortex generating body arranged to lie across the fluid stream substantially at right angles to the flow direction of said fluid, said body being formed with a first slot which extends therethrough substantially perpendicular with respect to the flow direction of said fluid, said body being further formed with a second slot which extends from the top of said body and opens to the middle portion of said first slot to be merged therewith;
an electrically insulating plug member tightly disposed in said second slot, said plug member being formed with two through openings;
two metal rods which are put through said two through openings of said plug member in such a manner that upper portions of said metal rods are projected sufficiently from said plug member and lower sections of said metal rods are projected into the middle portion of said first slot;
a hot wire wound around said lower sections of said metal rods, one end of said hot wire being connected to one of said metal rods and the other end of same being connected to the other of said metal rods; and
means for electrically insulating said hot wire from said metal rods except the portions of said metal rods to which the ends of said hot wire are connected.

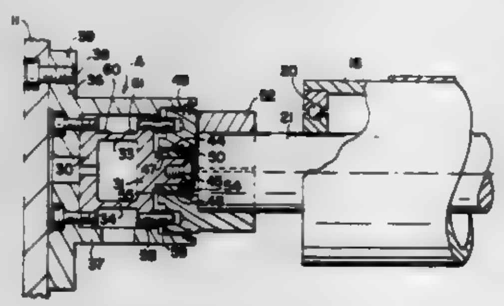
4,326,423
PRESSURE TRANSDUCER WITH ELASTIC SURFACE WAVES AND IGNITION SYSTEM FOR INTERNAL COMBUSTION ENGINE UTILIZING THIS TRANSDUCER
Pierre Hartemann, Paris, France, assignor to Thomson-CSF, Paris, France
Filed Apr. 14, 1980, Ser. No. 139,661
Claims priority, application France, Apr. 18, 1979, 79 09726
Int. Cl.³ G01L *9/06*
U.S. Cl. 73—861.63 14 Claims

1. A pressure transducer with elastic surface waves incorporating a deformable plate (3) resting by its periphery on a support (1), first and second oscillator means (12, 13), whose oscillation frequencies are determined by the first and second elastic surface wave exchange means located on one of the faces of said plate and mixer means (14) supplying a signal, whose frequency is equal to the difference of the oscillation frequencies of the first and second oscillator means, wherein the deformable plate rests on at least one intermediate support (5) permitting its pivoting, said support being fixed to the plate support, while the first and second exchange means are arranged in such a way that there are frequency shifts which are



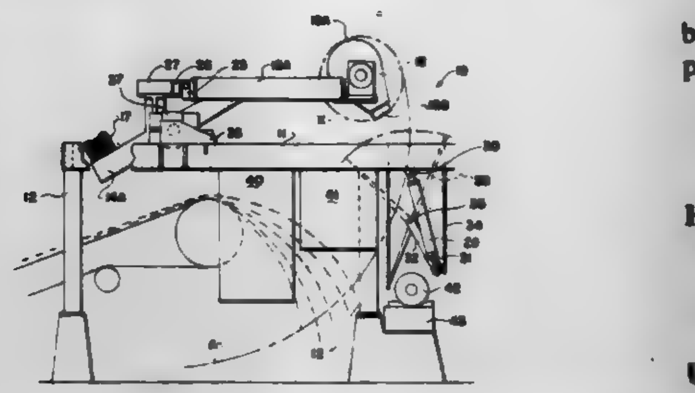
equal and of the same sign in the presence of a uniform mechanical stressing of the plate.

4,326,424
WEB TENSION TRANSDUCER ARRANGEMENT
Robert G. Koenig, Hudson, Ohio, assignor to Cleveland Machine Controls, Inc., Cleveland, Ohio
Filed Feb. 25, 1980, Ser. No. 118,807
Int. Cl.³ G01L *5/10*
U.S. Cl. 73—862.48 14 Claims



1. In a web tension measuring device for apparatus having a frame and adapted to handle a continuously moving web which passes partly around a transversely extending roller supported at least on one of its ends by said device, said device including a pair of spaced plates, one being fixed and adapted to be supported by the frame of said apparatus, and the other being movable and having roller support means adapted to support an end of said roller, a pair of spaced arms rigidly fastened at their ends to said plates with the plane defined by said arms being generally parallel to the plane of the transverse web forces on said roller, the improvement which comprises a pair of strain gages mounted on said arms in positions where one will be compressed and the other tensioned by forces parallel to said plane, said roller support means including a self-aligning spherical bearing and said strain gages being so electrically connected that resistance changes therein caused by longitudinal tension (or compression) forces in said arms caused by friction in said bearing cancel each other out, said roller support means comprising a boss on said movable plate and said self-aligning bearing including a member mounted on said boss and a second member operatively associated with the end of said roller.

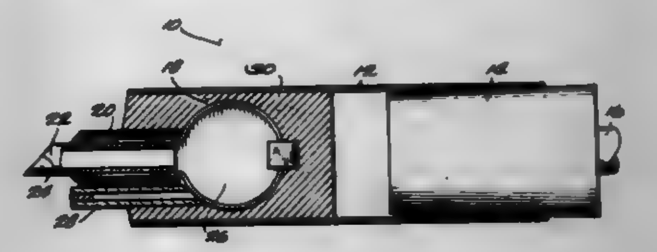
4,326,425
DRIVE CONTROL ARRANGEMENT FOR SWING ARM MATERIAL SAMPLER
Ray S. Gundersen, Salt Lake County; Ronald J. Colledge; Roy H. Jenkins, both of Davis County, and Michael Crook, Salt Lake County, all of Utah, assignors to Sverdrup & Parcel and Associates, Inc., St. Louis, Mo.
Filed Oct. 8, 1980, Ser. No. 195,140
Int. Cl.³ G01N *1/20*
U.S. Cl. 73—863.53 8 Claims



1. A drive control arrangement for swing arm sampling apparatus having a pivotal sampling bucket moved by the swing arm in opposite directions through a free falling stream of material to be sampled from a home position at one side of the falling stream, said drive control arrangement comprising:
electrical motor driven hydraulic fluid pump means;
first reversible hydraulic fluid motor means connected to said swing arm;
second reversible hydraulic fluid motor means connected to said sampling bucket;
hydraulic fluid circuit means containing said hydraulic fluid pump and said first and second reversible hydraulic fluid motor means, including electrically controlled hydraulic fluid flow reversing valve means in said fluid circuit means for said first and second hydraulic fluid motor means;
first electrical switch means connected to said swing arm for actuation by said swing arm in predetermined positions of movement thereof;
second electrical switch means connected to said pivotal sampling bucket for actuation by said bucket in predetermined positions of pivotal movement thereof;
and electrical control circuit means containing said first and second electrical switch means, said electrically controlled fluid flow reversing valve means, and said electrical motor drive;
said electrical control circuit means including a controller for initiating operation of said hydraulic fluid pump means and for responding to first and second electrical switch means;
said controller being programmed for effecting the movement of said swing arm and the pivoting of said sampling bucket relative to said swing arm in obtaining a sample from the free falling stream.

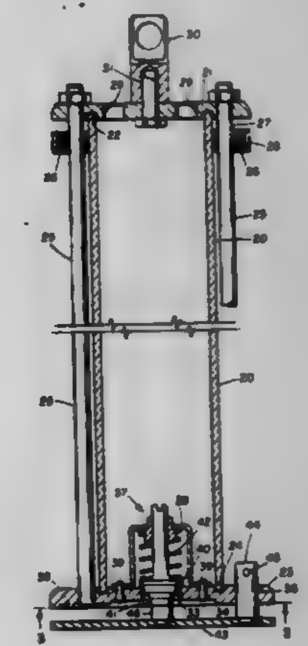
4,326,426
MOLDED SAND INSULATED SAMPLER
Richard A. Falk, 519 Westminster Dr., Waukesha, Wis. 53186
Filed May 13, 1980, Ser. No. 149,378
Int. Cl.³ G01N *1/12*
U.S. Cl. 73—864.99 2 Claims

1. A molten metal sampler comprising a mold body defining a sample cavity, a sleeve around said sample cavity, including loose sand fill within said sleeve and surrounding said mold



body, and a zone of sand-cement sealing said loose sand in place.

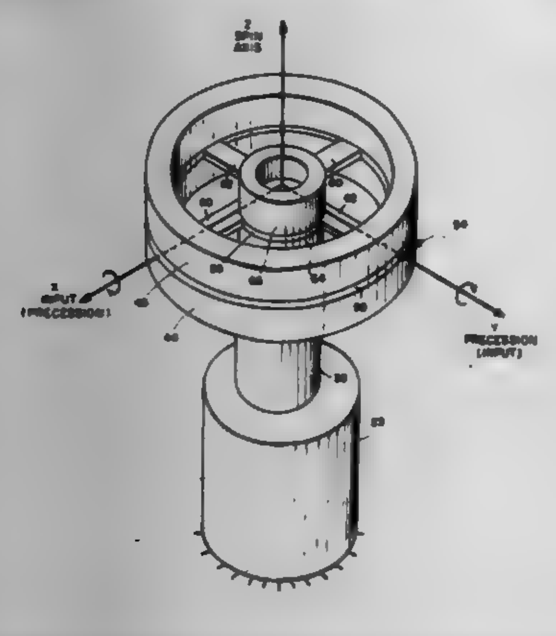
4,326,427
LIQUID SAMPLING GAUGE APPARATUS
Hubert J. Ueberschaer, Hartsdale, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.
Continuation-in-part of Ser. No. 124,015, Feb. 25, 1980, abandoned. This application Dec. 30, 1980, Ser. No. 221,239
Int. Cl.³ G01N *1/12*
U.S. Cl. 73—864.65 10 Claims



1. A liquid sampling apparatus for obtaining a liquid sample from near the bottom of a liquid-filled container comprising:
a sample chamber normally open at its upper end;
means for raising and lowering said sample chamber into and out of said liquid-filled container;
a bottom closure member affixed to the lower end of said sample chamber to prevent liquid flow into said sample chamber; said bottom member having an inlet opening therethrough;
valve support means mounted on said bottom closure member;
a valve slidably mounted in said valve support means and positioned to engage said inlet opening in said bottom closure member when said valve is in a closed position;
spring means for normally biasing said valve to said closed position;
actuating means for opening said valve means to permit liquid flow through said inlet opening into said sample chamber when said liquid sampling apparatus engages the bottom of said liquid-filled container and to close said valve means when said liquid sampling apparatus is lifted from engagement with said bottom of said liquid container; and
said actuating means comprising an actuator plate, means for slidably mounting said actuator plate on said bottom closure member, and a valve lifter mounted on the upper surface of said actuator plate and adapted to engage and

lift said valve to an open position when said actuator plate is moved upward relative to said bottom closure member.

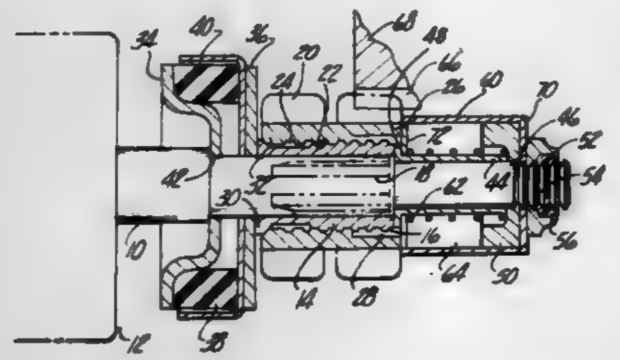
4,326,428
TWO DEGREE OF FREEDOM RATE GYROSCOPE
Lewis S. Bostwick, Andover; Albert V. Filosa, Burlington, and Richard R. LaTorre, Bedford, all of Mass., assignors to Raytheon Company, Lexington, Mass.
Filed Oct. 3, 1979, Ser. No. 81,504
Int. Cl.³ G01C *19/22*
U.S. Cl. 74—5 F **4 Claims**



1. A two degree of freedom rate gyroscope comprising:
(a) a housing;
(b) a rotatable mass disposed within said housing; said mass having a longitudinal spin axis and two input angular rate axes mutually orthogonal to said spin axis;
(c) said rotatable mass comprising a rotor and a rotating drum;
(d) said rotating drum being flexibly coupled to said rotor by suspension means;
(e) said suspension means comprising diametrically extending sets of elastic arms; one set of said arms being disposed orthogonally to a second set of such arms; said elastic arms having a predetermined elasticity sufficient to restrain the precession of the mass in response to angular rates about the two input angular rate axes such that the mass achieves an angular orientation about a pair of output axes proportional to the magnitude of such angular rates.

4,326,429
ENGINE STARTER DRIVE ASSEMBLY WITH SHIELDING MEANS
Harold R. Mortensen, Horseheads, N.Y., assignor to Facet Enterprises, Inc., Tulsa, Okla.
Division of Ser. No. 932,965, Aug. 11, 1978, Pat. No. 4,208,922, which is a continuation of Ser. No. 741,812, Nov. 15, 1976, abandoned. This application Jan. 22, 1980, Ser. No. 114,185
Int. Cl.³ F02N *15/06*
U.S. Cl. 74—7 R **6 Claims**

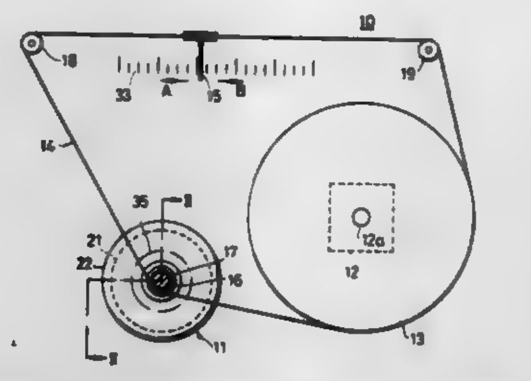
1. An improved engine starter assembly for engaging an engine flywheel comprising:
a driving shaft having an end and an opposite section disposed away from said end;
a pinion gear mounted on said opposite section for relative axial and rotatable movement with respect thereto, said pinion gear having a flange disposed radially from said shaft and extending along said opposite section of said shaft toward said end;
means for moving said pinion gear to and from a retracted position opposite said end and for moving said pinion gear into and out of driving engagement with an engine flywheel;
a stop axially fixed on said shaft toward said end in a position spaced away from said opposite section and said pinion gear when said pinion gear is in the retracted position, said stop locating said pinion gear when said pinion gear is in engagement with said engine flywheel to start the engine;
a bearing sleeve mounted about said shaft between said stop and said opposite section, said bearing sleeve having a radially extending shoulder opposite said axial stop, adjacent said opposite section, and touching said end of the driving shaft;
biasing means disposed about said shaft between said stop and said radially extending shoulder on said bearing sleeve;
a shielding cup radially disposed about said shaft toward said end in a position spaced away from said opposite section, said shielding cup having a closed end and an open end opposite said closed end, said open end further being



located adjacent said flange of said pinion gear, said closed end being axially fixed to said shaft adjacent to said stop, said shielding cup further being dependently mounted on said axial stop;
movable means interposed between said bearing sleeve shoulder and said biasing means for radially supporting said open end of said shielding cup independently of said pinion gear said movable means being entirely within said shielding cup, and said flange of said pinion gear being in continuous abutting engagement with said movable means;
whereby said flange of said pinion gear and said shielding cup cooperate to prevent foreign matter from entering between said flange of said pinion gear and said driving shaft when said pinion gear is moved out of engagement with said engine flywheel and to prevent foreign matter from entering between said shielding cup and said driving shaft when said pinion gear is moved into and out of driving engagement with said engine flywheel.

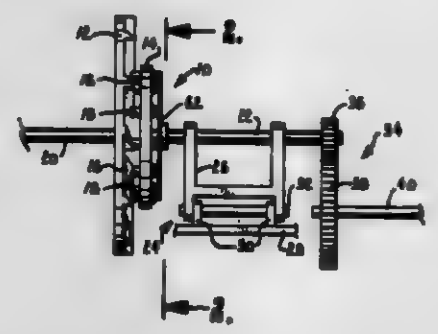
4,326,430
INDICATION ELEMENT DRIVING DEVICE
Morio Hamada, Hino, Japan, assignor to Shinwa Audio Company, Ltd., Tokyo, Japan
Division of Ser. No. 913,609, Jun. 7, 1978, abandoned. This application Sep. 6, 1979, Ser. No. 73,245
Claims priority, application Japan, Jun. 10, 1977, 52/69264; Jun. 21, 1977, 52/72881
Int. Cl.³ F16H *35/18;* H03J *1/00*
U.S. Cl. 74—10.52 **5 Claims**

1. An indication element driving device for use in a tuning apparatus having a variable capacitor for tuning, a wheel fixed to a rotary shaft of said variable capacitor, a fine cord wound around said wheel to rotate said wheel as it runs, and an indication element fixed to a part of said fine cord thereby to move together with said fine cord thus carrying out tuning indication action, said driving device comprising: a casing of a substantially cylindrical shape of which both end faces are covered; a driving shaft rotatably supported with passing through said covered end faces of said casing and adapted to be shifted in its axial direction to a first and second position selectively, and briefly rotated upon a tuning operation; a flywheel disposed coaxially with said driving shaft inside said casing and supported rotatably with respect to said driving shaft; a pulley disposed coaxially with driving shaft at an extended part thereof extending and projecting outside said casing and having said fine cord wound therearound; a first clutch which is rendered into its operating state when said driving shaft is set to the first position; a second clutch which is rendered into its



operating state when said driving shaft is set to the second position; and a rotation transmission mechanism which is adapted, when said first clutch is being in its operating state, to speed up the rotation of said driving shaft and to transmit the rotation thus speeded up to said flywheel, and after the rotating manipulation to said driving shaft is released, to transmit the high-speed inertial rotation of said flywheel to said pulley, and when said second clutch is in its operating state, to subject the rotation of said driving shaft to speed reduction and then to transmit the rotation to said pulley.

4,326,431
VARIABLE-SPEED TRANSMISSION DEVICE WITH POSITIVE ACTION
Roger Stephenson, Box 364, Rte. 10, Columbia, Mo. 65201
Filed Mar. 17, 1980, Ser. No. 130,987
Int. Cl.³ F16H *21/14*
U.S. Cl. 74—63 **8 Claims**



1. A variable speed transmission device comprising:
a first wheel having a front surface carrying a plurality of bars thereon;
a second wheel having a front surface spaced from and facing the front surface of said first wheel, said second wheel having a plurality of openings therein arranged in a circular configuration about the center of the second wheel;
a plurality of pegs in the respective openings projecting beyond said front surface of the second wheel to interact with said bars in a manner to transfer rotation of one wheel into rotation of the other wheel; and
a generally flat spring member on said second wheel having a hub portion and a plurality of extending spring arms contacting the respective pegs in a manner to yieldably urge the pegs generally toward the first wheel to bias the pegs toward the bars.

4,326,432
FLOOR MOUNTED TRANSMISSION SHIFT CONSOLE
Douglas A. Miller, Grand Ledge, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Apr. 17, 1980, Ser. No. 141,190
Int. Cl.³ G05G *7/00, 5/18;* E05B *65/12*
U.S. Cl. 74—475 **3 Claims**

1. A floor mounted transmission shift console for permitting selection of automatic drive ranges including Park (P), Reverse (R), Drive (D), Intermediate (I) and Low (L) in a straight-line movement and for permitting manual shifting to drive ratios including Low, 2nd and 3rd in a modified "H" pattern, said console comprising a stationary base member; a manual lever pivotally mounted on said stationary base member; primary carrier means pivotally mounted on said base member and including a yoke portion which is selectively engageable with said manual lever; transmission control cable means secured to said primary carrier for transmitting control movements to a transmission; secondary carrier means slidably mounted on the base member and including a yoke portion selectively engageable by said manual lever member; link means operatively connected between said secondary carrier and said primary carrier for transmitting and translating linear movement of said secondary carrier to pivotal movement in said primary carrier, cam means formed on said secondary carrier and operating on said link means for moving said primary carrier to the Intermediate (I) range position when the 2nd ratio is selected by positioning the manual lever in one upstanding leg of the "H" pattern and for further moving the primary carrier to the Drive (D) range position when 3rd ratio is selected; said lever undergoes pivotal movement only from the 2nd ratio position to the 3rd ratio position which is a depending leg of the "H" pattern, said lever being movable from any manual position to the corresponding automatic drive position without passing through the Neutral (N) position; and blocker means for preventing movement of the manual lever from the yoke of the primary carrier to the yoke of the secondary carrier except from the low ratio position.

4,326,433

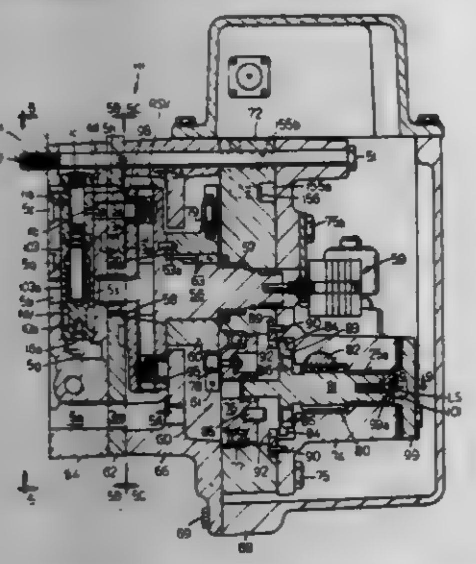
HYDRAULICALLY CONTROLLED POWER TRANSMISSION HAVING FRICTION PLATE CLUTCHES FOR SELECTIVELY ENGAGING A PLURALITY OF CHANGE SPEED GEARS

James B. Black, Roscoe, Ill.; Darwin D. Behlke, Kenosha, and Horst G. Steinhagen, Racine, both of Wis., assignors to Twin Disc, Incorporated, Racine, Wis.

Filed Sep. 7, 1979, Ser. No. 73,508

Int. Cl.³ F16H *35/00, 5/28*

U.S. Cl. 74—740 8 Claims



1. A hydraulically controlled transmission having a plurality of selectively engagable change speed gears and also having hydraulically actuated friction type clutches for selectively engaging said gears to thereby provide various speed ratios for said transmission, a hydraulic control circuit in fluid communication with said clutches, a rotary range selector valve in said circuit for distributing pressure fluid to said clutches for actuation thereof, drive means for rotatably driving said rotary selector valve in step-by-step increments whereby said transmission can only be shifted one speed range at a time and an engaged speed range will be released before another speed range is selected, and means for preventing actuation of said selector valve for a range change when said drive means is not in a predetermined position.

4,326,434

PROCESS FOR UNDERLAYING A FLAT-BED STEEL RULE DIE

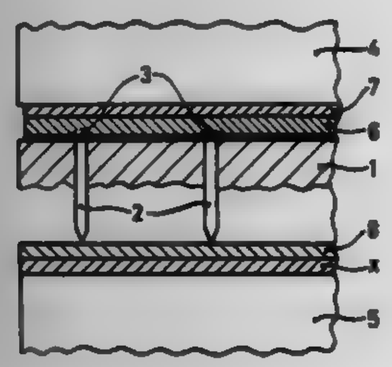
Heinz Mohr, Speyer; Walter Hoffmann, Frankenthal, and Rudolf Vyvial, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Mar. 24, 1980, Ser. No. 132,984

Claims priority, application Fed. Rep. of Germany, Apr. 2, 1979, [illegible]

Int. Cl.³ B21K *5/20*

U.S. Cl. 76—107 C 7 Claims



1. A process for underlaying flat-bed steel rule dies of a punch or press having upper and lower platens prior to the production of sheet-like geometrical cut blanks, for example, for folding boxes and similar cuboid containers consisting of paper, cardboard or soft metals, preferably where multi-blank sheets are concerned, so as to compensate for the varying tolerances of the steel-rule cutters in the punching and cutting direction and the different force fluxes of the punching pressure in the cutters plate fitted with the steel rule cutters, said process comprising:

applying to the back of the steel-rule cutter plate, a sheet bonded to a dimensionally stable base, of a flowable plastic, which can be hardened at below 100° C. to give a hard crosslinked plastic, the sheet having a preselected thickness and corresponding in size to the total area of the sheet from which the blanks are to be cut;

then moving the upper and lower platens of the punch or press together, with the steel-rule cutter plate between them so as to emboss a relief on said sheet of flowable plastic;

opening the platens again;

then solidifying the sheet bearing the relief formed therein, by an after treatment outside of the press; and

replacing the sheet between the back of the steel-rule cutter plate and the corresponding platen of the press.

4,326,435

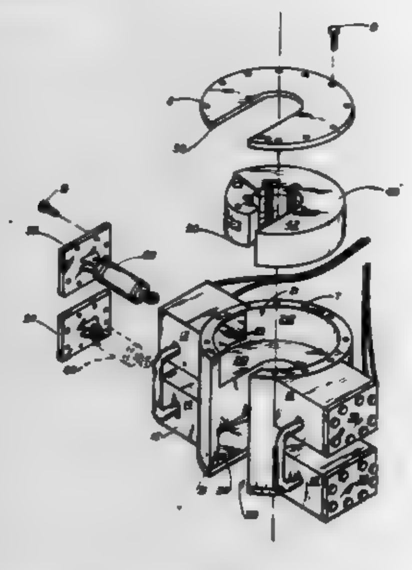
HYDRAULIC POWER TONG

Preston F. Guillot, 132 St. Judge St., Marrero, La. 70072, and Sheldon W. Guthrie, Jr., 428 Willowbrook, Gretna, La. 70053

Filed Jan. 24, 1980, Ser. No. 162,521

Int. Cl.³ B25B *13/50*

U.S. Cl. 81—57.34 13 Claims



1. A power tong apparatus comprising:

a. a housing having a vertically arranged U-shaped bore allowing for the insertion of a section of vertically supported drill pipe there into, said bore having a vertical axis;

b. upper and lower cylindrical jaw assemblies carried respectively in the upper and lower portion of said housing, and mounted within cylindrical recesses provided respectively in the upper and lower portions of said housing, each of said jaw assemblies comprising:

i. a jaw body having a U-shaped slot and being rotatably supported by said housing;

ii. a movable jaw portion movably mounted on said jaw body;

iii. toothed elements mounted on said jaw body and on said movable jaw, said toothed elements facing inwardly towards said vertical axis;

c. hydraulic cylinder means for powering said jaw assemblies in opposite rotational directions; and

d. clamp means associated with each of said upper and lower jaw assemblies for clamping a length of pipe inserted into said slots for rotation with said respective upper and lower jaw assemblies.

4,326,436

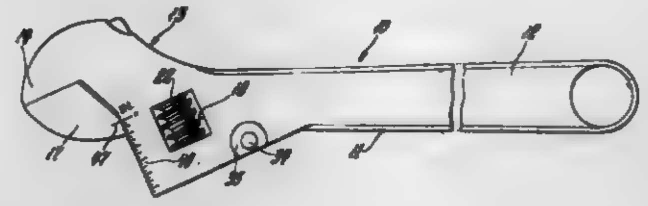
COMBINATION ADJUSTABLE/LOCKABLE/MEASURING WRENCH, AND METHODS OF CONSTRUCTING AND UTILIZING SAME

Val R. McGraw, 19130 Beaverland, Detroit, Mich. 48219

Filed Sep. 14, 1979, Ser. No. 75,696

Int. Cl.³ B25B *13/16*

U.S. Cl. 81—165 8 Claims



1. A wrench comprising:

a head having a fixed first jaw;

a second jaw movable in said head and having a rack;

a shaft rotatably mounted in said head;

a worm mounted on said shaft for rotation therewith and for meshing with said rack;

means having a preset unlocked position and a preset locked position for selectively unlocking and locking said jaws in any desired position within the range of movement of said second movable jaw;

said shaft and said worm being connected together as an integral unit so as to rotate together as an integral unit and to be locked together as an integral unit and to prevent any slidable movement between said shaft and said worm under all conditions and at all times;

said shaft and worm being completely free to rotate as an integral unit when said means is in its preset unlocked position;

said shaft and worm being locked together as an integral unit to prevent rotation thereof when said means is in its preset locked position;

said means including a brake member operatively cooperating with said rotatable shaft, and a lever connected between said brake member and a translatable push button rod;

said means being configured and arranged to permit operation of said means to its preset locked position and to its preset unlocked position by translation of said push button rod by the same hand of the user which is holding said wrench; and

said brake member being actuatable, by operation of said lever caused by selective translation of said push button rod, to tightly frictionally engage said rotatable shaft to place said wrench in said locked position.

4,326,437

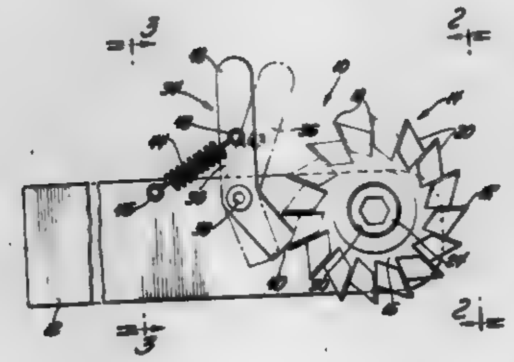
INDEXABLE CUTTING TOOL

Fred W. Fischer, 1450 Silver Bell Rd., Rochester, Mich. 48063

Filed Jul. 28, 1980, Ser. No. 173,026

Int. Cl.³ B23B *29/00;* B26D *1/12*

U.S. Cl. 82—36 A 5 Claims



1. A cutting tool assembly comprising tool holder means, a cutting tool including a tool body having a plurality of substantially identical cutting edges extending radially from said tool body and being substantially equally circumferentially spaced thereabout, each of said cutting edges having a back face portion, mounting means pivotally mounting said tool body on said tool holder means about a first pivot axis for pivotal indexing movement of said tool body relative to said tool holder means to successively dispose a selected one of said cutting edges in a predetermined cutting position relative to said tool holder means, latch means pivotally mounted on said tool holder means about a second pivot axis spaced from said first pivot axis and having a latched position operatively engageable with said back face portion of a cutting edge remote from said selected one of said cutting edges to hold said selected one of said cutting edges in said predetermined cutting position and an unlatched position permitting pivotal indexable movement of said tool body to dispose another of said cutting edges in said predetermined cutting position, and yieldable means operatively interconnecting said tool holder means with said latch means to continuously urge the latter toward said latched position thereof while permitting movement of said latch means to said unlatched position thereof while indexing said tool body.

4,326,438

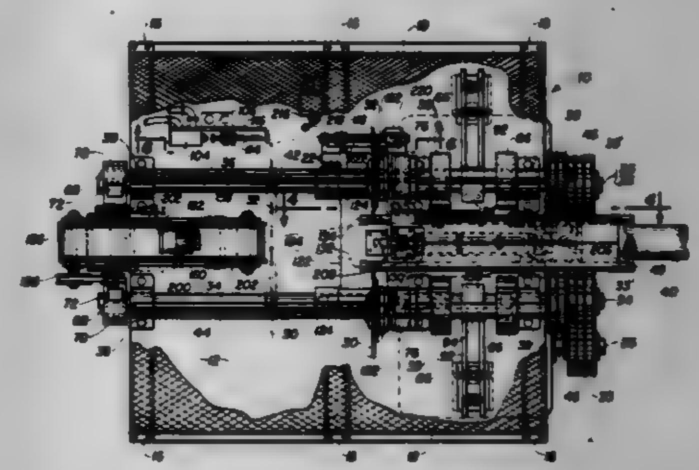
CUTOFF MACHINE FOR NON-METALLIC TUBE STOCK

George B. Ballerstein, York, and Spurgeon E. Kimmel, Wellsville, both of Pa., assignors to Yorktowne Paper Mills, Inc., York, Pa.

Filed Dec. 15, 1980, Ser. No. 216,624

Int. Cl.³ B23B *37/00*

U.S. Cl. 82—53.1 20 Claims



1. A cutoff machine for cutting uniform lengths of non-metallic tube stock into desired lengths immediately upon formation thereof by rotation on a winding machine and comprising in combination,

a. a frame having inlet and discharge ends and means to support said tube stock at said inlet end,

b. a pair of parallel drive shafts mounted for rotation in opposite directions on said frame at opposite sides of said tube stock,

c. a pair of disc saws respectively mounted upon said shafts in a common vertical plane transverse to said tube stock and driven thereby for rotation downward into opposite sides of said rotating tube stock,

d. motor means connected to said drive shafts to drive the same in opposite direction toward each other,

e. means supporting said drive shafts and saws for transverse movement toward and from each other for insertion and withdrawal of said saws relative to said tube stock,

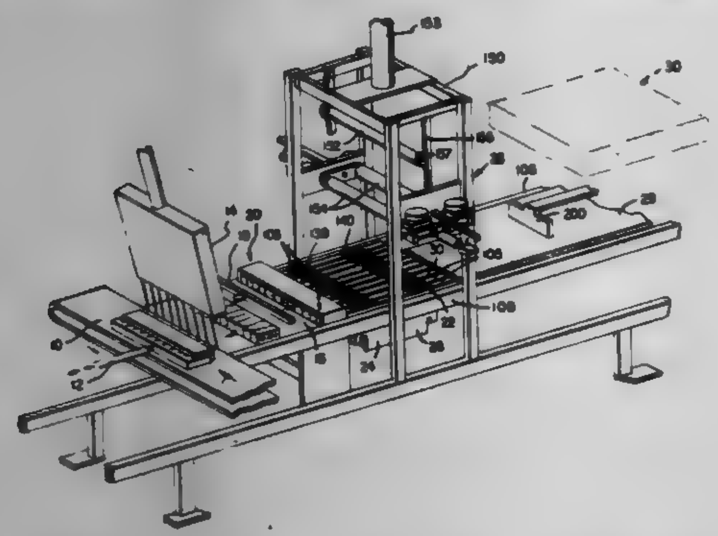
f. first power means to move said saws longitudinally along said drive shafts from a starting position at the same speed as said tube stock and return said saws to said starting position,

g. second power means connected to said means supporting

said drive shafts and saws for said transverse movement toward and from each other, and

h. control means for said second power means operable to effect said transverse movement of said shafts and saws from each other prior to operation of said first power means to return said saws to said starting position.

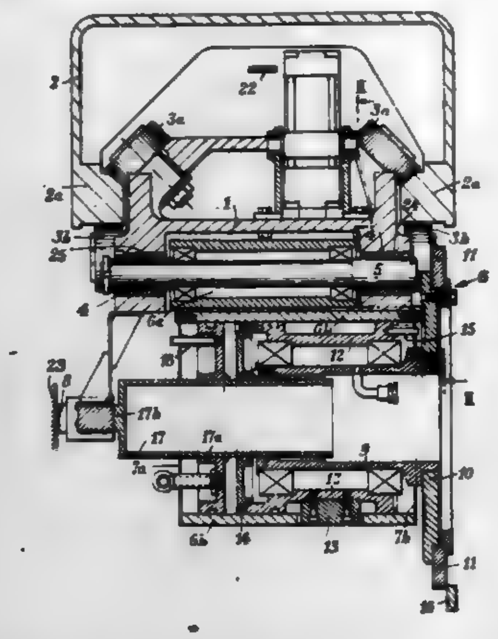
4,326,439
APPARATUS AND METHOD FOR STACKING AND FACING UNCURED BRICK
Bob L. Frost; Harry D. Leeds, and Joseph E. Eckart, all of Clarksville, Ark., assignors to Clarksville Machine Works, Inc., Clarksville, Ark.
Filed Mar. 26, 1980, Ser. No. 134,025
Int. Cl.³ B28B *13/00*
U.S. Cl. 83—27 10 Claims



8. Method of cutting and arranging unfired bricks in preparation for setting onto a kiln car comprising the steps of:
(a) passing slugs of unfired clay sidewise through a wire cutter one layer at a time to form successive, adjacent, abutting single layer rows of cut brick;
(b) forming a spaced double layer stack by lowering one row then moving a succeeding row into superposed relation in spaced relation above said first row;
(c) transferring both layers in said sidewise direction from said superposed spaced relation into superposed engaging relation by pushing both layers simultaneously in said sidewise direction;
(d) lifting and inverting the upper layer of said double layer stack to effect a facing operation.

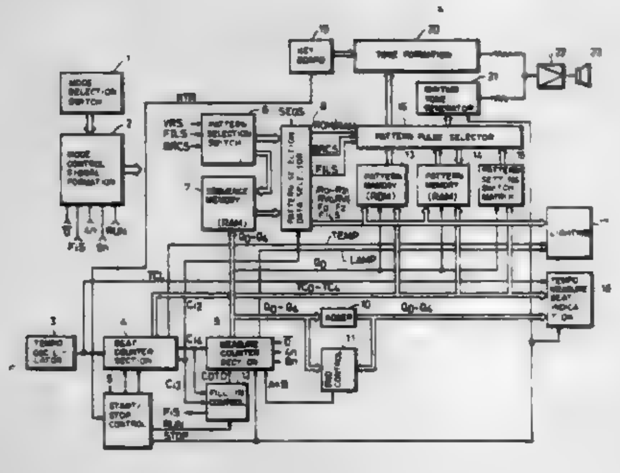
4,326,440
METAL CUTTING MACHINES
Michel Harmant, Neris-les-Bains, France, assignor to Ems Industrie, Montlucon, France
Filed Nov. 20, 1979, Ser. No. 96,144
Claims priority, application France, Nov. 22, 1978, 78 32928
Int. Cl.³ B26D *1/00, 7/00;* B29H *17/00*
U.S. Cl. 83—482 4 Claims

1. In a cutting machine having a cutter bar supporting a strip to be cut, a cutting carriage comprising:
a mobile cutting assembly freely rotatable in a cylinder;
contact rollers at said carriage for travelling over two prismatic rails for prismatic guiding of said carriage;
two coaxial bores provided in part of said carriage;
a shaft for pivotally supporting said mobile assembly in said bores;
pressure members for resiliently urging said assembly, during cutting travel, towards the cutter bar;
said pressure members constituting a pneumatic jack embodying said cylinder, a sleeve shaped piston, a hollow shaft rotatable in said piston and a circular flange carried by said shaft and arranged to hold a cutting knife;
a second piston slidable in said cylinder in coaxial relationship with and operatively opposed to said sleeve shaped piston;
a pressure plate fixed to said second piston;



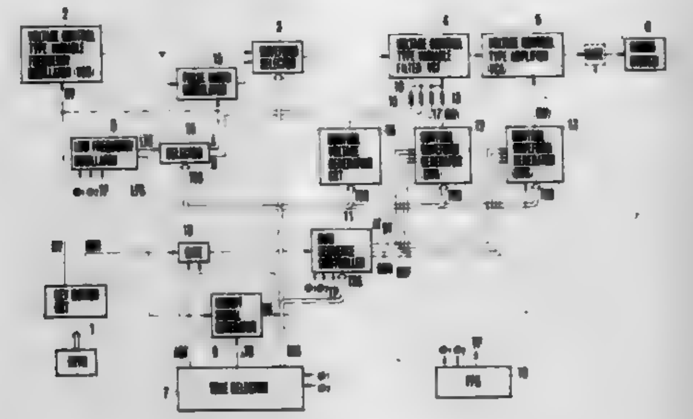
return springs for spacing said piston and thereby spacing said knife from the cutter bar during return travel of the cutting carriage; and
means for transmitting cutting reaction to rollers travelling over a rail parallel to the cutter bar.

4,326,441
AUTOMATIC PERFORMANCE DEVICE
Akio Imamura, and Akiyoshi Oya, both of Hamamatsu, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan
Filed Apr. 15, 1980, Ser. No. 140,484
Claims priority, application Japan, Apr. 19, 1979, 54-48277
Int. Cl.³ G10H *1/42, 7/00*
U.S. Cl. 84—1.03 28 Claims



1. An automatic performance device comprising:
a pattern memory for storing a plurality of performance patterns;
a sequence memory for storing a pattern progression sequence which defines a sequential order of the patterns to be performed;
performance pattern reading means for successively reading respective ones of said performance patterns stored in said pattern memory in accordance with the pattern progression sequence stored in said sequence memory; and
musical tone forming means for forming musical tones for automatic performance in accordance with the performance patterns read out of said pattern memory.

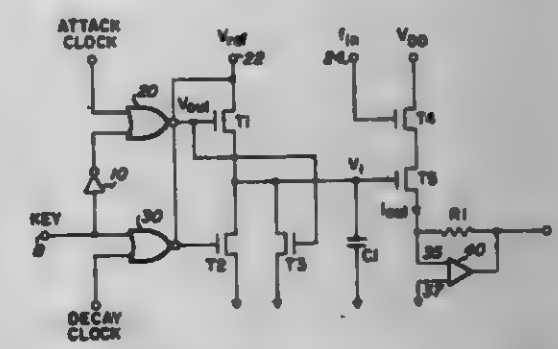
4,326,442
ELECTRONIC MUSICAL INSTRUMENTS WITH TONE COLOR SELECTION
Hideo Suzuki, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Tokyo, Japan
Filed Feb. 27, 1980, Ser. No. 125,171
Claims priority, application Japan, Feb. 28, 1979, 54-22858
Int. Cl.³ G10H *1/06, 1/22*
U.S. Cl. 84—1.19 5 Claims



1. An electronic musical instrument comprising:
(a) a plurality of depressible keys;
(b) key switch means responsive to the depression and release of a key among said keys for generating a keying signal;
(c) first means operatively connected to said key switch means for generating a musical tone signal for said keying signal;
(d) second means operatively connected to said first means for generating a musical tone corresponding to said musical tone signal;
(e) a plurality of tone color selection switches having on and off states, said tone color selection switches generating tone color signals, each said tone color signal specifying a tone color for a musical tone signal;
(f) tone color means responsive to a selected one of said tone color signals for imparting tone color to said musical tone generated by said second means, said tone color specified by said selected tone color signal;
(g) first detection means operatively connected to said tone color selection switches for detecting a variation in said states of said tone color selection switches, said detection means generating a detection signal when a state of any one of said tone color selection switches varies, said detection signal being common to all said tone color selection switches and separate from said tone color signals;
(h) means responsive to said detection signal for generating a tone inhibit signal of selected duration; and
(i) means responsive to said inhibit signal for preventing generation of said musical tone for a time period determined by said duration of said inhibit signal.

4,326,443
INTEGRATED ORGAN CIRCUIT
Richard W. Bryant, San Jose, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.
Filed May 1, 1980, Ser. No. 145,415
Int. Cl.³ G10H *1/02*
U.S. Cl. 84—1.26 8 Claims

1. An MOS integrated organ circuit having a digital interface for communicating with other integrated circuits, the digital interface characterized by logic signals having voltages substantially equal to either a supply voltage or a ground voltage, and having a keyer circuit for providing an output signal characterized by a maximum amplitude, an attack time and a decay time in response to a key signal and a tone signal, the integrated organ circuit comprising:
variable reference means for providing a variable reference voltage;
first gate means coupled to receive the key signal and the variable reference voltage for providing an attack signal in response to the key signal having a first amplitude, the amplitude of the attack signal being responsive to the amplitude of the variable reference voltage;
second gate means coupled to receive the key signal and the variable reference voltage for providing a decay signal in response to the key signal having a second amplitude, the amplitude of the decay signal being responsive to the amplitude of the variable reference voltage:



a first transistor having a drain coupled to a source of voltage, a gate coupled to the first gate means to receive the attack signal and a source;
a second transistor having a drain coupled to the source of the first transistor, a gate coupled to the second gate means to receive the decay signal, and a source coupled to the ground voltage;
capacitance means for providing a capacitance between the source of the first transistor and the fixed ground voltage; and
a third transistor, having a gate coupled to the source of the first transistor, a drain coupled to receive the tone signal and a source for providing the output signal.

4,326,444
MUSICAL INSTRUMENT STRING
Donald D. Markley, 2610 Northwood Dr., San Jose, Calif. 95132
Filed May 19, 1980, Ser. No. 151,147
Int. Cl.³ G10D *3/10*
U.S. Cl. 84—297 S 11 Claims

1. A musical instrument string comprising:
means forming a central core for a wound guitar string, the core having a length extending between spaced ends and one or more lengths of wire forming helically wound layers along the length of said central core thereby forming a round wound base string, the outer surface of said base string being unaltered along a first portion of its length extending from one of said ends to a mid area of said length, and a substantial remaining portion of said length extending from said first portion to the other of said ends being modified so as to have a relatively smooth outer surface.

4,326,445

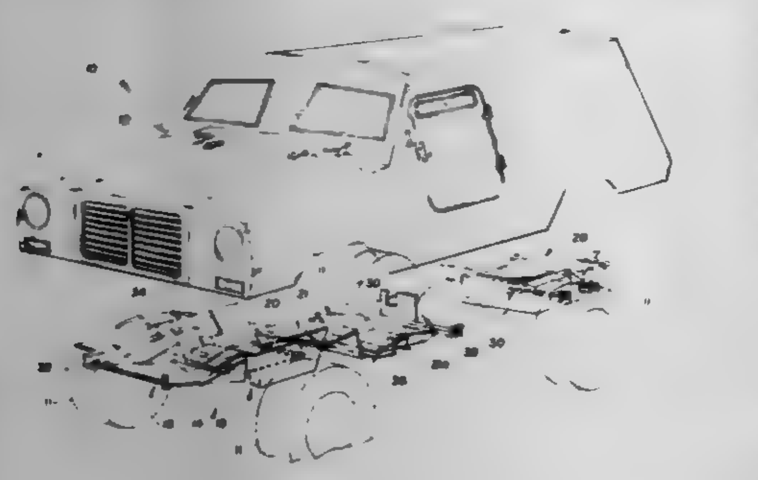
ARMORED UNDERBODY FOR ROAD VEHICLE

James M. Bemiss, St. Clair Shores, Mich., assignor to Cadillac Gage Company, Warren, Mich.

Filed Mar. 19, 1980, Ser. No. 131,584

Int. Cl.³ F41H *5/00*

U.S. Cl. 89—36 F **20 Claims**



1. An armored underbody for a road vehicle, the underbody comprising: a pair of longitudinal frame members spaced laterally from each other; a plurality of armor protection plates mounted below vehicle underbody components to provide radiator, engine, transmission, and transfer case protection from upwardly directed projectiles; each armor protection plate having front and rear ends for mounting thereof; a vehicle floor including separate front and rear floor sections of armor plate for protecting the vehicle occupant compartment from intrusion by upwardly directed projectiles; a floor support member extending laterally between the longitudinal frame members so as to be supported thereby; said front and rear floor sections being secured to said floor support member; and a fuel tank fabricated from armor plate to prevent puncturing therof by projectiles, said fuel tank including a pair of vertical side walls respectively mounted on the longitudinal frame members, and the fuel tank also including front, bottom, rear, and top walls extending between the side walls to enclose the tank.

4,326,446

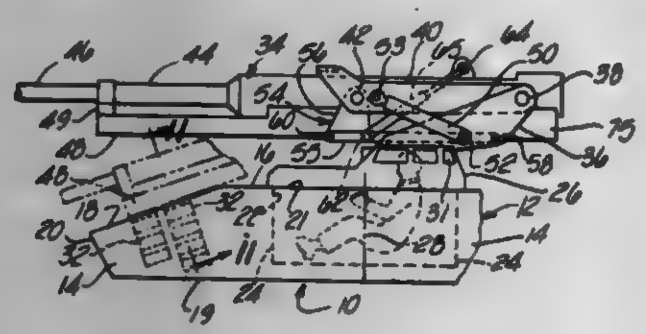
LINKAGE OF ACTUATING SYSTEM FOR ELEVATING GUN MOUNT

Roland A. Magnuson, Seattle, Wash., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 19, 1979, Ser. No. 95,746

Int. Cl.³ F41H *7/06*

U.S. Cl. 89—38 **3 Claims**



1. A military vehicle comprising a hull, a man-accommodating turret mounted on the hull for rotatable movement in the azimuth plane; a gun located about the turret to normally assume a level attitude; a gun elevating lever having a first pivot connection with the turret and a second pivot connection with the gun; first fluid power cylinder means trained between the turret and the gun elevating lever for swinging said lever around the first pivot connection, thereby, changing the elevation point of the second pivot connection, a toggle linkage pivotably trained between the turret and the second pivot connection; a second fluid power cylinder means pivotably trained between the toggle linkage and the gun for swinging said gun around the second pivot connection; said hull having at its frontal end an upper wall that slopes downwardly and forwardly; ammunition storage means within the hull beneath the sloping wall; an ammunition delivery opening in the sloping wall; said gun having at least one ammunition supply tube extending along the undersurface of the gun barrel for delivering ammunition to the aft end of the gun; said supply tube being dimensional so that its forward end registers with the ammunition delivery opening in the sloping wall of the hull when the second power cylinder means is activated to move the gun to an angularly depressed position.

4,326,447

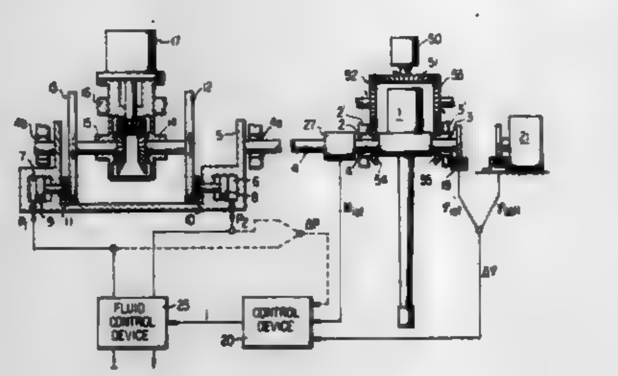
DEVICE FOR THE POSITIONING AND POSITION STABILIZATION OF AN INERT MASS, POSITIONED WITH MOBILITY ON A BASE

Harald Kaser, Ettlingen; Knud Overlach, and Joachim Wilken, both of Karlsruhe, all of Fed. Rep. of Germany, assignors to Dr.-Ing. Ludwig Pietzsch, Karlsruhe, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 349,660, Apr. 3, 1973, abandoned. This application Aug. 8, 1975, Ser. No. 603,594

Int. Cl.³ F41G *5/24*

U.S. Cl. 89—41 H **7 Claims**



1. A system for positioning and stabilizing the aim of a barrelled weapon on a carrier subject to movement over an uneven supporting surface comprising:

base means supported on said carrier for movement therewith;

bearing means supporting said weapon on said carrier for pivot movement about the axis of said bearing means in such manner that inertia of said barrelled weapon normally maintains said weapon in a preselected aiming position in one degree of freedom despite movement of the carrier in that degree of freedom;

positioning means for controlling the aim of said weapon in said degree of freedom comprising:

a first means including driven means and a second means normally uncoupled to said first means but selectively couplable thereto to be driven in either of opposite directions thereby,

said first means including a pair of axially aligned disks mounted for rotation in opposite directions and said second means including a pair of friction pads mounted for individual actuation depending upon the direction of corrective movement desired,

said first means being supported on one of either said barrelled weapon or said base means, and said second means being supported on the other of said barrelled weapon or said base means so that said first and second means are normally supported solely by said bearing means to allow free pivotal movement between said weapon and said base means in said one degree of freedom;

means to represent the desired aim of said weapon on said base means in said degree of freedom; and,

means responsive to a difference between the desired aim and the actual position of the weapon on said base means in said degree of freedom for coupling said first means and said second means of said positioning means during only such periods as are necessary to bring said weapon to the desired position in said degree of freedom.

4,326,448

ELECTRONIC REGULATION PROCEDURES USING A SERVOMOTOR

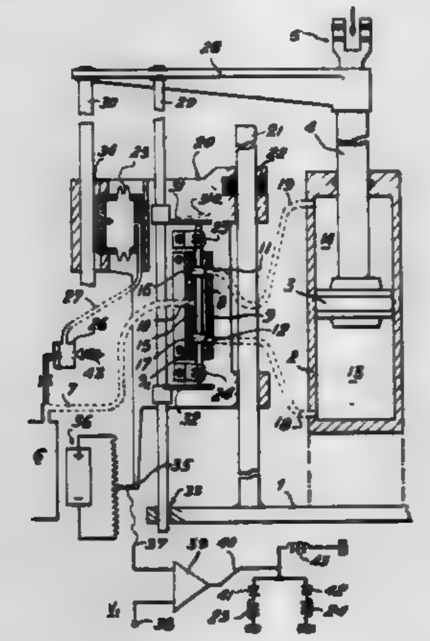
Jean Lejon, Choisel, France, assignor to Controle Bailey, Clamart, France

Continuation of Ser. No. 907,497, May 19, 1978, abandoned. This application Apr. 29, 1980, Ser. No. 144,907

Claims priority, application France, Aug. 10, 1977, 77 24600

Int. Cl.³ F15B *9/03, 9/09*

U.S. Cl. 91—363 R **7 Claims**



1. An electropneumatic apparatus comprising:

a jack assembly having a movable piston and rod;

a movable memory plate with position maintaining friction means;

potentiometer means for indicating the position of said plate at all times;

a pneumatic valve mounted on the memory plate, the pneumatic valve controlling the jack assembly to maintain it at a reference position established by the memory plate as indicated by the potentiometer means;

means for mechanically connecting the rod of the movable piston to the pneumatic valve, said means for connecting having a mechanical flexibility permitting slight temporary displacements of the movable piston relative to the plate which carries the pneumatic valve;

pneumatic clutch means for displacing the memory plate to change from said reference position to another reference position, said pneumatic clutch means being interconnected between the rod of the motor piston and said memory plate wherein actuation of the pneumatic clutch means mechanically connects, for concurrent movement, the rod to the memory plate; and

valve actuating means for eliminating the controlling effects of the pneumatic valve, said valve actuating means acting simultaneously with the actuation of said pneumatic clutch means.

4,326,449

DOUBLE ACTING HYDRAULIC JACK WITH AN END OF STROKE DEVICE

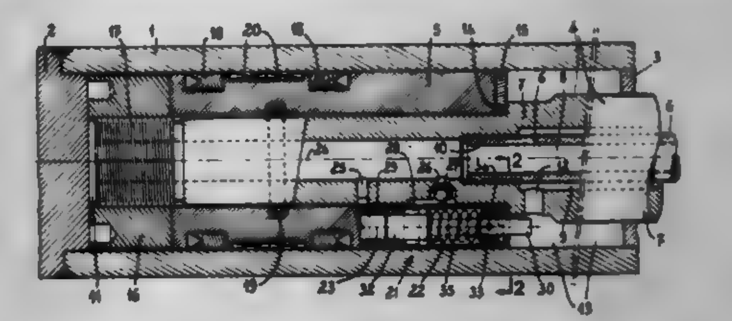
Raymond Perraud, Villeurbanne, France, assignor to Societe d'Etude et de Construction de Machines pour Toutes Industries S.E.C.O.M.A., Societe Anonyme, Meyzieu, France

Filed Mar. 25, 1980, Ser. No. 133,831

Claims priority, application France, Apr. 6, 1979, 79 09554

Int. Cl.³ F15B *15/22*

U.S. Cl. 91—401 **7 Claims**



1. In a double-acting hydraulic in combination with an end-of-stroke device, said jack having a cylinder, a piston slidable in the cylinder to vary the volume of first and second chambers at opposite sides of said piston in the cylinder, said jack being supplied with hydraulic fluid through a piston rod connected to said piston, the improvement wherein said piston is provided with a bore, the axis of said bore being parallel to the axis of the jack, a permanently open first conduit arrangement between an end of the bore and a passage in the rod through which passage hydraulic fluid is supplied to the first chamber, a second conduit arrangement between a central region of the bore and the passage, the second conduit arrangement being provided with a non-return valve to prevent the flow of hydraulic fluid from the bore to the passage, a permanently open third conduit arrangement between the second chamber and a region of the bore opposite said end of the bore, a sleeve mounted to slide in the bore to close and open an outlet which opens into the bore from the second conduit arrangement, a second rod mounted to slide along the axis of the bore, the second rod passing through an opening connecting the bore to the second chamber, said second rod comprising a head mounted to slide inside the sleeve, a helical spring disposed around the second rod and interposed between the sleeve and an abutment fixed to the second rod, and an end of said second rod passing through the said opening and being able to come into abutment with an end of the cylinder located adjacent the second chamber when the jack is in an end-of-stroke position.

4,326,450

FLUID MECHANISM WITH AXIALLY MOVABLE VALVE-SEAT

Serge B. Bacquie, La Croix Saint Ouen, France, assignor to Poclain Hydraulics, Verberie, France

Filed Feb. 28, 1980, Ser. No. 125,534

Claims priority, application France, Mar. 1, 1979, 79 05409; Jan. 10, 1980, 80 00532

Int. Cl.³ F01B *13/06*

U.S. Cl. 91—487 **10 Claims**

1. A fluid mechanism including,

a cam,

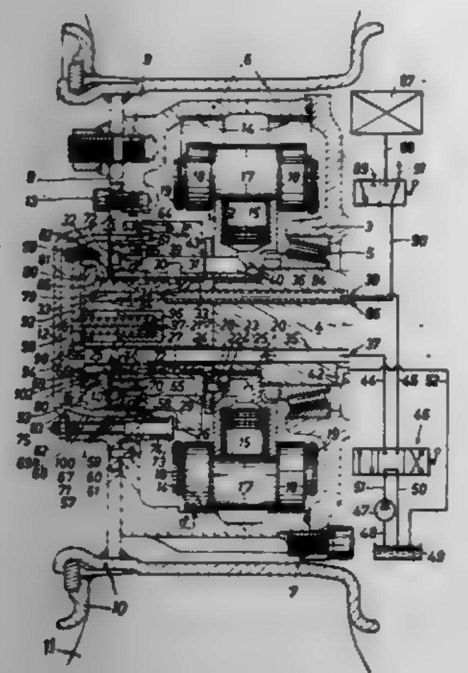
a cylinder block mounted for rotation about an axis with respect to the said cam, and including a plurality of cylinders,

a plurality of pistons, each one being mounted for sliding in one of the said cylinders and being operatively associated with said cam,

said cylinder block including a cylinder pipe, each cylinder pipe, connecting one of said cylinders to a transverse face of said cylinder block,

a valve-seat,

said valve seat is axially movable with respect to said cam and immovable with respect to rotation of said cam,
said valve seat operatively connected to a supply pipe supplying the mechanism with pressurized fluid and an exhaust pipe for removing said fluid,

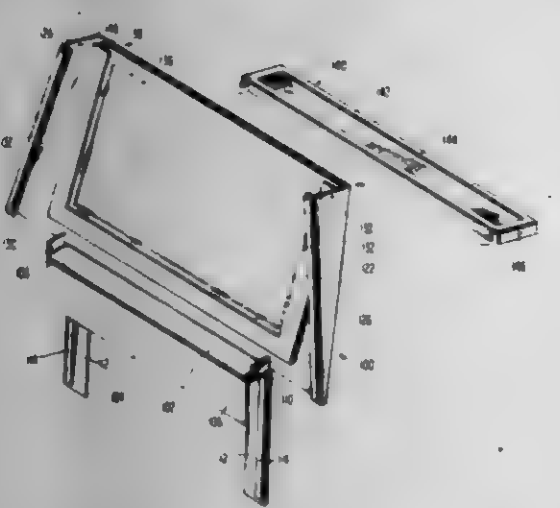


said valve seat including a means and capable of moving said valve seat to position said transverse face of said valve seat in said abutting position with said transverse face of said cylinder block,
activation means for activating said control means to move said valve seat.

4,326,451
ATTACHMENT FOR MOTOR VEHICLES WITH REAR WINDOWS

Richard Chatlos, Johnstown, Pa., assignor to Air O Scoop Corporation, Johnstown, Pa.

Filed Feb. 4, 1980, Ser. No. 118,444
Int. Cl.^{3} B60J *1/20*
U.S. Cl. 98—2.12 16 Claims

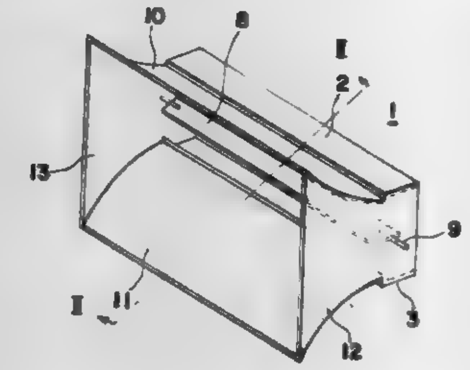


1. An air flow device for a closed motor vehicle or boat for positioning in the rear aperture thereof which comprises (i) means for attaching said air flow device to said rear aperture, said attachment means including (a) a top elongated flat base member, (b) a first downwardly-positioned flat member attached to one elongated side of said base member and (c) a second downwardly-positioned flat member attached to the other elongated side of said base member, said attachment means tightly fitting over the lower rim of said rear aperture, (ii) a plate, which is attached at its bottom to the inner elongated edge of the top elongated flat member and extends upwardly and inwardly therefrom, thereby forming a gap between the top of said plate and the vertical plane of said rear aperture, and said plate having a central aperture, (iii) a transparent plate which is mounted on said plate and covers said central aperture, and (iv) two side members, each of which is attached to an end of said plate, thereby preventing lateral air flow.

4,326,452
FLUID DIVERTING ASSEMBLY

Motoyuki Nawa; Norio Sugawara, and Yutaka Takahashi, all of Nara, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Oct. 19, 1978, Ser. No. 953,968
Claims priority, application Japan, Oct. 24, 1977, 52-128035; Oct. 24, 1977, 52-128036; Oct. 24, 1977, 52-128038; Nov. 8, 1977, 52-134216; Aug. 31, 1978, 53-107129; Aug. 31, 1978, 53-107131; Aug. 31, 1978, 53-107138
Int. Cl.^{3} F24F *7/00;* B05B *1/14*
U.S. Cl. 98—40 VT 23 Claims



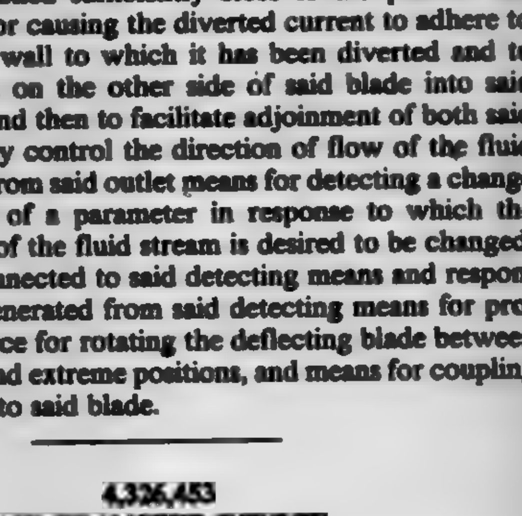
1. A fluid deflecting assembly of the type for confining the flow of fluid therethrough to flow in only two dimensions, said assembly comprising: a nozzle means for issuing a main stream of fluid as the fluid passes therethrough, said nozzle means having a nozzle defining structure with a relatively small thickness in the direction of flow of fluid therethrough as compared with the width thereof in the direction at right angles to the direction of flow of the fluid therethrough; an outlet means through which the fluid emerges from said nozzle, said outlet means connected to said nozzle and being constituted by a pair of spaced opposed guide walls having a shape diverging from each in a direction downstream with respect to the direction of flow of a stream of fluid issuing from said nozzle and opening outwardly in a direction away from said nozzle and at least the upstream portions thereof being curved; there being a substantially abrupt dicontinuity between the curvature of said nozzle defining structure at the exit end thereof and the upstream ends of said guide walls which constitutes a detachment region; and a deflecting blade mounted in said assembly with the upstream and downstream edges respectively upstream and downstream of said nozzle and for rotation between a position perpendicular to the plane of the nozzle opening and first and second extreme positions on opposite sides of and at an angle to said perpendicular position and at which said blade is spaced from the nozzle defining structure for dividing the fluid medium flowing through said assembly into two fluid currents at all positions of said blade and, when the blade is in a position other than said perpendicular position, said blade diverts the current on the side of the blade toward which the downstream end of the blade has been deflected, said guide walls being positioned sufficiently close to the path of the diverted current for causing the diverted current to adhere to the curved guide wall to which it has been diverted said discontinuity and said blade cooperating to direct the current on the other side of said blade into said diverted current and then to facilitate adjoinment of both said currents to thereby control the direction of flow of the fluid stream emerging from said outlet means.

17. A fluid deflecting assembly comprising: a nozzle means for issuing a main stream of fluid as the fluid passes therethrough, said nozzle means having a nozzle defining structure with a relatively small thickness in the direction of flow of fluid therethrough as compared with the width thereof in the direction at right angles to the direction of flow of the fluid therethrough; an outlet means through which the fluid emerges from said nozzle, said outlet means connected to said nozzle and being constituted by a pair of spaced opposed guide walls having a shape diverging from each other in a direction downstream with respect to the direction of flow of a stream of fluid issuing from said nozzle and opening outwardly in a direction away from said nozzle and at least the upstream portions thereof being curved; and a deflecting blade mounted in said assemble with the upstream and downstream edges respectively upstream and downstream of said nozzle and for rotation between a position perpendicular to the plane of the nozzle opening and first and second extreme positions on opposite sides of and at an angle to said perpendicular position and at which said blade is spaced from the nozzle defining structure for dividing the fluid medium flowing through said assembly into two fluid currents at all positions of said blade and, when the blade is in a position other than said perpendicular position, diverting the current on the side of the blade toward which the downstream end of the blade has been deflected, said guide walls being positioned sufficiently close to the path of the diverted current for causing the diverted current to adhere to the curved guide wall to which it has been diverted and to direct the current on the other side of said blade into said diverted current and then to facilitate adjoinment of both said currents to thereby control the direction of flow of the fluid stream emerging from said outlet means for detecting a change in the magnitude of a parameter in response to which the direction of flow of the fluid stream is desired to be changed, a drive source connected to said detecting means and responsive to a signal generated from said detecting means for producing a drive force for rotating the deflecting blade between said first and second extreme positions, and means for coupling said drive source to said blade.

4,326,453
AIR TRANSFER DEVICE

John A. LaBoda, Fairview Park, and Paul R. Fortlage, Sharon Center, both of Ohio, assignors to MTD Products Inc., Cleveland, Ohio

Filed Oct. 24, 1980, Ser. No. 200,420
Int. Cl.^{3} F24F *13/08*
U.S. Cl. 98—37 1 Claim

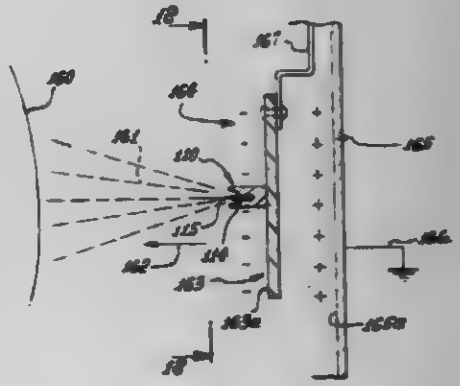


1. A device for transferring air from the upper portion of a room to an exterior space through an open doorway leading from the said room to said exterior space, the room having a wall portion above the said open doorway, comprising in combination a conduit adapted to be mounted in said room to the said wall portion above the said open doorway, said conduit having an upwardly directed open upper end through which air may flow downwardly and enter the conduit from the upper portion of the room and an open bottom end through which air in the conduit may escape, said open upper end and said open bottom end being in axial vertical alignment, an electric fan mounted in said conduit in position to draw air from siad upper portion of the room into the conduit through said open upper end thereof, the fan rotating on an axis parallel to said vertical alignment of said upper and lower open ends, said fan being adapted to be connected by an electrical circuit to a source of electrical energy, and a chute disposed at the open bottom end of the conduit and hingedly connected thereto along a pivot line on a side of the conduit farthest from said wall portion above said doorway, said chute upon being hingedly swung upwardly toward said conduit being disposed laterally across said open bottom end and clearing the doorway to permit the movement of a door to and from the doorway, said chute upon being hingedly swung downwardly away from said conduit at an acute angle to said conduit to be inclined downwardly and toward said open doorway being disposed to divert air moving downwardly through the conduit and out of the open bottom end thereof to flow through the open doorway into said exterior space.

4,326,454
ION TREATMENT ENHANCEMENT

Donald G. Saurenman, Cerritos, Calif., assignor to Consum Pacific Incorporated, Whittier, Calif.

Continuation of Ser. No. 81,774, Oct. 4, 1979, abandoned, which is a continuation-in-part of Ser. No. 13,786, Feb. 21, 1979, Pat. No. 4,250,804, which is a continuation-in-part of Ser. No. 893,003, Apr. 3, 1978, abandoned. This application Apr. 6, 1981, Ser. No. 251,275
Int. Cl.^{3} A23L *3/32;* A23B *4/04*
U.S. Cl. 99—451 [illegible] Claims



1. In apparatus for enhancing ion treatment of objects, the combination including
(a) means for
  (i) dispersing smoke particles in a zone wherein the objects are located,
  (ii) and for inducing smoke particle flow to contact exposed undersides of the objects, and to flow around and above the objects,
(b) means including a source of high voltage and multiple pointed tips to which said voltage is applied for forwardly dispersing charged ions into the smoke flowing upwardly above the objects with the ions carrying an electrical charge or charges causing smoke particles to be attracted back downwardly onto upper sides of the objects,
(c) and metallic structure having local contact with exposed underside portions of the objects, said structure imparting a potential to the objects to cause said smoke particles into which ions have been dispersed to be attracted to the upper sides of the objects,
(d) said tips arranged in spaced apart groups and pointed generally toward the objects so that the ions being dispersed enhance smoke particle flow onto the objects,
(e) said metallic structure including metallic surface structure supporting the objects, said surface structure being electrically conductive, and
(f) the smoke being dispersed by said first means into a lower region of said zone lower than the objects, and the ions are dispersed by said tips into an upper region of said zone higher than the objects, said smoke particle flow inducing means located in and openly exposed in said zone to displace the smoke and ions above the levels of the objects,

and in directions and at rates sufficient to enhance smoke particle flow onto the objects,

(g) and means forming a surface located in rearward proximity to said tips to provide distributed electrostatic charge at said surface and of the same polarity as said ions, thereby to enhance the forward dispersing of said ions.

4,326,455

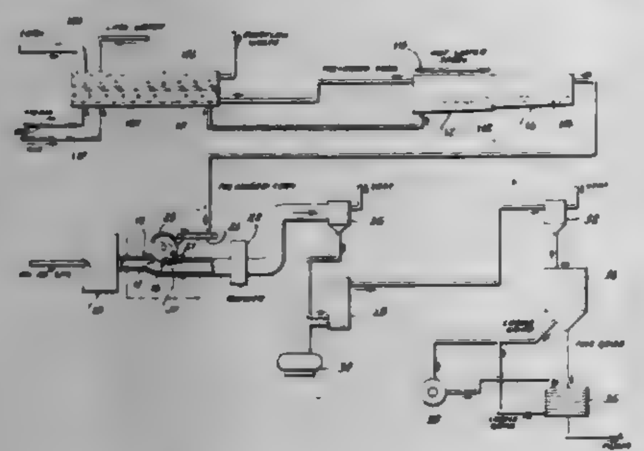
CONTINUOUS PRODUCTION OF GRAIN PRODUCTS

Manuel J. Rubio, 192 Benham Ave., Bridgeport, Conn. 06605

Filed Mar. 22, 1979, Ser. No. 22,788

Int. Cl.[3] B02B *1/04, 7/02*

U.S. Cl. 99—483 5 Claims



1. Apparatus for making flour from grain, comprising

a pre-cooker for continuously partially cooking grain in water under controlled conditions of heat, time and pH,

a washer for washing the grain which has been cooked in said pre-cooker,

a pre-conditioner to stabilize the moisture content of grain, which has been washed in said washer,

means for producing a super-heated stream of air and causing said stream of air to pass through a conduit,

a mill for reducing said grain which has been processed in said preconditioner to particles and for introducing said particles into the central region of said stream of superheated air as it travels through

a conduit of desired configuration, wherein said mill comprises a roll, an unobstructed portion of the face of which is so positioned as to be impinged-upon by said stream of air and normally turns so that said portion of said face of said roll moves in the direction of travel of said stream of air, said conduit being adjacent said mill, and

means for discriminating particles larger in size than a predetermined dimension from those which are smaller and for accumulating said smaller particles.

4,326,456

METHOD AND APPARATUS FOR CALENDERING PAPER WEBS OR THE LIKE

Matti Kankaanpaa, Espoo, Finland, assignor to Valmet Oy, Finland

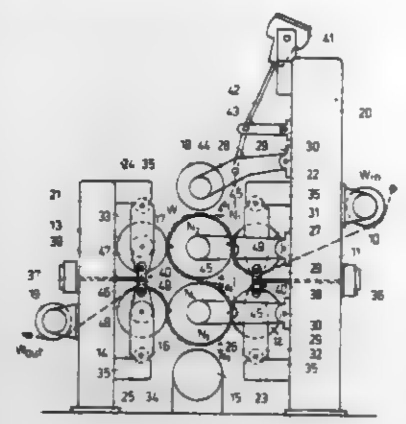
Filed Sep. 29, 1980, Ser. No. 192,026

Claims priority, application Finland, Oct. 15, 1979, 793201

Int. Cl.[3] B30B *3/04*

U.S. Cl. 100—41 17 Claims

1. A method for calendering a paper web or the like in calendering apparatus including a plurality of hard calendering rolls and a plurality of soft calendering rolls, which hard and soft rolls are situated with respect to each other to define a plurality of hard nips and a plurality of soft or supercalendering nips, comprising the steps of: initially situating said hard and soft rolls with respect to each other prior to the start-up phase of the operation of the calendering apparatus so that the hard nips defined by the hard rolls are closed and so that the supercalendering nips defined by soft roll pairs with respective hard rolls are open, threading the paper web during the start-up phase of operation through the closed hard nips and open supercalendering nips; situating said hard and soft rolls with respect to each other at the end of the start-up phase of the operation so that substantially all of the hard nips are open and



so that the supercalendering nips are closed; and operating the calendering apparatus in a continuous phase operation to perform continuous supercalendering of the paper web.

4,326,457

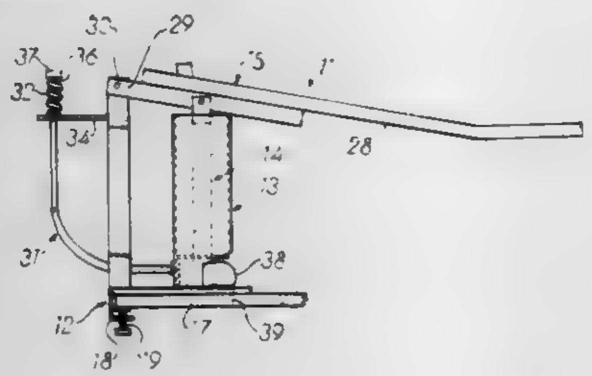
CAN CRUSHING APPARATUS

George A. Sather, Box 217, Soquel, Calif. 95073

Filed May 27, 1980, Ser. No. 153,835

Int. Cl.[3] B30B *9/32, 15/32*

U.S. Cl. 100—218 8 Claims



1. Can crushing apparatus including a base portion, a can holding portion, a crusher portion, and a crusher actuating portion; said can holding portion extending upwardly from said base portion, said can holding portion including a can retaining section, said can retaining section including a can receiving opening adjacent the upper end of said can retaining section, a crushed can outlet opening adjacent the lower end of said can retaining section; said crusher portion including a piston, a piston rod having one end connected to said piston and the opposite end thereof connected to said crusher actuating portion, said piston rod being of a length greater than the length of said can retaining section; said crusher actuating portion including a support section extending upwardly from said base portion adjacent to said can retaining section, a handle member having one end thereof pivotally connected to the upper end of said support section and extending from said support section over the upper end of said can retaining section and substantially beyond said can retaining section, the upper end of said piston rod being pivotally connected to said handle member along the length thereof, said handle member being pivotable about its pivot point with said support section from a position adjacent said can retaining section in which said piston is disposed adjacent said outlet opening of said can retaining section to a position remote from said can retaining section in which said piston is spaced from said can receiving opening of said can retaining section, and means for ejecting a crushed can from said outlet opening including a movable member having one end thereof adjacent to said outlet opening of said can retaining section and the opposite end thereof adjacent to the upper end of said support section.

4,326,458

PRINTING APPARATUS

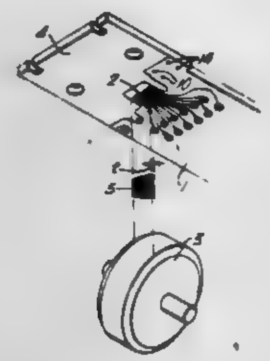
William L. Ross, Nr. Uckfield, England, assignor to Sign Electronics Limited, Middlesex, England

Filed Jul. 11, 1980, Ser. No. 168,761

Claims priority, application United Kingdom, Jul. 19, 1979, 25252/79

Int. Cl.[3] G01D *15/06*

U.S. Cl. 101—1 18 Claims



1. In a printer of the type in which print is formed on a drum by an electrostatic process and is transferred therefrom onto a print receiving surface of a print medium by means solely of pressure acting between the print medium and the drum an improved print head comprising in combination:

(a) housing means;

(b) a print drum supported for rotation about an axis in said housing means, said print drum having a cylindrical surface formed by a uniform dielectric layer on a conductive cylindrical former, and said housing means incorporating a printing station at which the print is transferred to said print medium;

(c) means for connecting said conductive former to a first potential source;

(d) an image forming means positioned in said housing means adjacent said drum and at a position spaced circumferentially with respect to the printing station, said image forming means comprising an array of conductors extending normally to a first plane containing the axis of rotation of the drum and in a second parallel to a tangent of said drum, each conductor of said array being for connection to a respective pulse source means, and further comprising an elongate electrode means having a first end in contact with each of the conductors of said conductor array and a second end extending along a line parallel to the drum axis in direct physical contact with the dielectric layer on the periphery of the drum, said electrode means comprising a strip of an elastomeric material in the form of a laminate having alternating electrically conductive and non-conductive layers, each layer mounted to respectively extend between said array of conductors and said drum in a plane normal to the axis of the latter, and having a structure which is finely divided in relation to the structure of said array of conductors;

(e) means for detecting the angular displacement of the drum due to rotation thereof in the housing;

(f) means connected to said respective pulse source means and to said means for detecting the angular displacement of the drum for selectively enabling the pulse source means whereby the conductors are pulsed in a prescribed sequence with a voltage signal derived from a second potential source in response to the angular displacement of the drum so as to form a charge image of one or more preselected characters on said dielectric surface; and

(g) inking means positioned in said housing means adjacent the said drum and between the image forming means and the printing station, said inking means including means for supplying ink and means for applying said ink to the drum after said charge image has been formed and before the charge image has reached the printing station as a result of rotation of the drum whereby print corresponding to one or more characters is formed by ink adhering to the charged areas on the dielectric surface of the drum, said ink applying means comprising at least one electrode means for connection to a third potential source which is spaced from said drum and is arranged so that the electrostatic field which is formed as each charge image passes the electrode means causes transfer of ink from the ink applying means to the areas on the drum on which the charge defining the charge image is confined.

4,326,459

HAMMER LOCK RELEASING MECHANISM FOR A PRINTING DEVICE

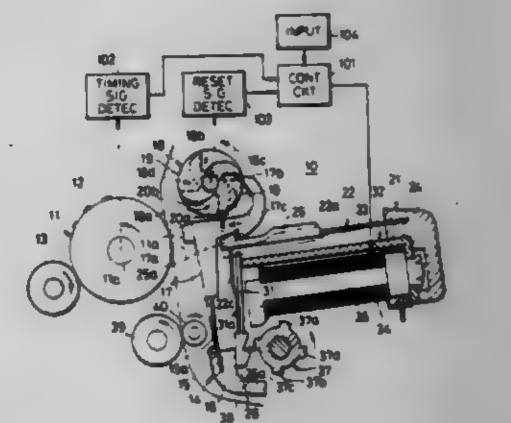
Takayuki Iwao, Chofu; Takemitsu Ono, Machida, and Yukio Ishikawa, Yamato, all of Japan, assignors to Mitsumi Electric Co., Ltd., Chofu, Japan

Filed Oct. 24, 1979, Ser. No. 87,956

Claims priority, application Japan, Jan. 25, 1979, 54/8067[U]

Int. Cl.[3] B41J *9/32*

U.S. Cl. 101—93.30 7 Claims



1. A hammer lock releasing mechanism for a printing device comprising:

a rotary type wheel provided on its outer surface with a plurality of types disposed at equal angular intervals and in at least one column, and driven in rotation at a specific speed;

a printing hammer head disposed confronting said type wheel and undergoing displacement, in printing operation, to strike a desired type selectively onto a sheet of paper thereby to carry out printing, said sheet of paper being fed between said hammer head and said types;

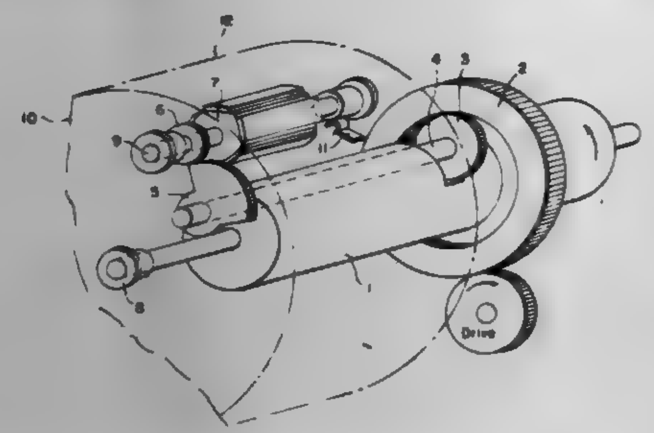
means for urging said hammer head to move in the direction of carrying out printing action;

a mechanism for locking said hammer head in a non-printing position, said mechanism comprising a locking member for locking said hammer head and a first spring means for urging said locking member so as to make locking operation; and

a mechanism for releasing said hammer head from its locked state by means of said locking mechanism, said releasing mechanism comprising an electromagnet means, a second spring means operatively connected to said locking member and facing said electromagnet means in spaced-apart relation, said second spring means being displaced exclusively laterally relative to said electromagnet means upon energization of said electromagnet means, a catch member carried by said second spring means and which is displaced in unison therewith, and means rotating correspondingly with the rotation of said type wheel having members engageable with said catch member upon said displacement of said catch members and which move the assembly of said catch member, said second spring means and said locking member longitudinally in a direction to

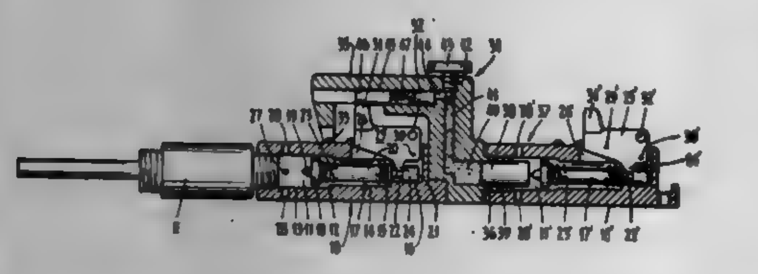
release said hammer head upon energization of said electromagnet means.

4,326,460
INDICATING DEVICE FOR AN OPTION PRINTING CYLINDER
Klaus Nückel, Mülheim am Main, Fed. Rep. of Germany, assignor to Postalia GmbH, Offenbach am Main, Fed. Rep. of Germany
Filed Aug. 5, 1980, Ser. No. 175,447
Claims priority, application Fed. Rep. of Germany, Aug. 7, 1979, 2932426
Int. Cl.³ B41J *1/60*
U.S. Cl. 101—110 6 Claims



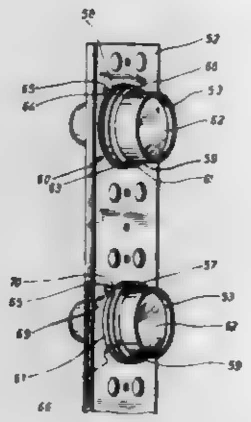
1. Device for indicating types of mail for an option printing cylinder in franking machines, comprising side plates disposed on the option printing cylinder, another printing cylinder supported between said side plates in the option printing cylinder, a toothed cylinder gear connected to said other printing cylinder, means for setting different types of printing upon rotation of said other printing cylinder, a first shaft at least partially disposed in the option printing cylinder, a setting gear rotatably supported on said first shaft, internal and external gearing formed on said setting gear, a second shaft at least partially supported in a hole formed in said first shaft, a gear being fastened on said second shaft and having teeth meshing with said internal gearing formed on said setting gear, and a gear segment having teeth meshing with the teeth of said cylinder gear to rotate and set said other printing cylinder upon rotation of said setting gear.

4,326,461
TIME DELAY DEVICE
Maxwell H. Toms, Essendon, Australia, assignor to Commonwealth of Australia, Canberra, Australia
Filed Jan. 25, 1980, Ser. No. 115,281
Claims priority, application Australia, Feb. 14, 1979, PD7673
Int. Cl.³ F42C *9/06*
U.S. Cl. 102—277 8 Claims



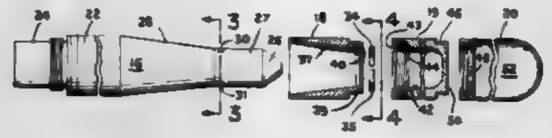
1. A time delay device for, in use, combination with a firing device demolition of the type having a movable member which is movable from a deactivated condition, in which it engages and holds a firing pin in a retracted position, to an activated condition disengaged from said firing pin so as to release said firing pin to detonate an associated explosive element, said time delay device comprising a movable member which is movable from a first condition, in which it engages and holds a piston arrangement in a retracted position, to a second condition disengaged from said piston arrangement to release said piston arrangement, said piston arrangement having an end exposed to, and acting upon, fluid within a chamber, a control piston having one end exposed to fluid pressure in said chamber through a supply port, and a valve means to set the rate of transfer of fluid through said supply port under the influence of the pressure exerted by the release of said piston arrangement, said control piston, in use, cooperating with the movable member of the firing device demolition to hold said movable member in said deactivated condition movable to a position, under the influence of said fluid pressure, at a rate depending on the setting of said valve means, whereby said movable member of said firing device demolition will be free to move to said activated condition to release said firing pin.

4,326,462
SHAPED CHARGE RETENTION AND BARRIER CLIP
Jose B. Garcia, Houston, Tex., and Michel J. Bosse-Platiere, Versailles, France, assignors to Schlumberger Technology Corporation, Houston, Tex.
Filed Sep. 21, 1979, Ser. No. 77,575
Int. Cl.³ E21B *43/117;* F42B *1/02*
U.S. Cl. 102—310 8 Claims



1. In a perforating gun containing a shaped charge disposed in a carrier strip, the shaped charge having a generally cylindrical cross-sectional configuration and a circumferential raised portion, the carrier strip having a first opening therein which receives the shaped charge and substantially conforms to the cross-sectional configuration of the shaped charge and at least one second opening adjacent said first opening, and the circumferential raised portion of the shaped charge abuts and overlies the carrier strip, the improvement which comprises:
a shaped charge retention and barrier clip which includes:
a barrier ring means for preventing damage to the interior of the perforating gun, caused by the shaped charge upon detonation thereof, and adapted for resting upon the circumferential raised portion of the shaped charge; and
retention means for securing said barrier ring means and said shaped charge to said carrier strip, said retention means being integral with said barrier ring means and depends and extends outwardly therefrom, and adapted for overlying the circumferential raised portion of the shaped charge and for passing through the second opening in the carrier strip and engaging the carrier strip to secure the shaped charge and the barrier ring means to the carrier strip.

4,326,463
DYE MARKER ASSEMBLY FOR ROCKET PRACTICE ROUND
Leonard F. Burke, Fallston, and Arthur P. Dean, Glen Arm, both of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed May 27, 1980, Ser. No. 153,469
Int. Cl.³ F42B *11/16*
U.S. Cl. 102—513 1 Claim

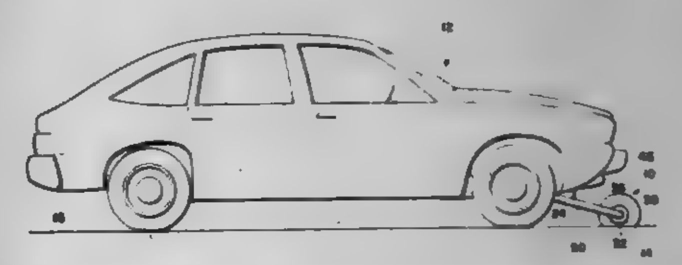


1. A training warhead for a training rocket assembly comprising:
a warhead fuselage including at least one slot formed in a surface of said warhead fuselage, a conical section rearward of said at least one slot, and a cylindrical section forward of said slot;
a nose cone section made of a frangible material and defining a cavity for receiving therein dye marker means, and
means for securing said nose cone section to said fuselage comprising a first retainer unit and a second retainer unit, said first retainer unit having a tapered bore conforming to the taper of the conical section of said fuselage and said second retainer unit containing a bore conforming to said cylindrical fuselage section forward of said slot, said first and second retainer units being threadedly engaged and cooperating to define an interior annular channel, said annular channel and said at least one slot cooperating to define a cavity within which to receive a split ring, said split ring for precluding relative longitudinal movement between said means for securing said nose cone section to said fuselage,
wherein said fuselage, said nose cone section and said means for securing said nose cone section to said fuselage are all generally cylindrical in configuration and have substantially identical outside diameters.

4,326,464
GUSSET DISCARDING SABOT MUNITION
Renata F. Price, Morris City, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Dec. 10, 1979, Ser. No. 102,084
Int. Cl.³ F42B *13/16*
U.S. Cl. 102—523 4 Claims

1. A discarding sabot munition which comprises:
a subcaliber fin-stabilized projectile having a pointed front end, a fin-stabilized rear end and a cylindrically shaped central body section, said central body section having a plurality of external circular body threads disposed on a section thereof;
sabot means, operatively disposed circumambient said subcaliber projectile and intermediate said projectile front and rear ends, and interlocked with said body threads of said central body section, for acting as a reduced mass full-caliber carrier for said subcaliber fin-stabilized projectile, for propelling said subcaliber projectile with increased velocity and imparting increased kinetic energy thereto, for preventing inbore balloting of said subcaliber projectile during launch with minimum sabot means mass, and for discarding from said subcaliber projectile after launch, which includes;
a plurality of arcuately shaped sabot segments operatively positioned on said subcaliber projectile; said sabot segments further include;
a sabot segment member arcuately shaped bore rider front end;
a cylindrically shaped sabot body mid-section member integrally coupled to said bore rider front end;
a sabot segment member arcuately shaped rear end coupled to said sabot body mid-section member having an annular obturating ring groove peripherally located therein for fixedly holding said obturating ring;
an obturating ring operatively disposed in said sabot means for preventing propellant gas blow-by around said sabot means during launch and for releasing said sabot means to discard from said subcaliber projectile after lanuch;
gusset plate means for spacially positioning and structurally supporting said sabot bore rider front end with said sabot segment member rear end, for reducing the overall connecting mass requirements of said sabot body midsection member to enable said sabot munition to acquire increased velocity after launch, which includes;
a plurality of radially disposed gusset plates having longitudinal upper concave surfaces and bottom substantially flat surfaces which are parallel to said central body section thereon which includes;
a central beam member having a modified "I" beam cross-sectional configuration, said central beam member operatively disposed intermediate said sabot bore rider end and said sabot rear end; and
a pair of half beam members equally disposed on both sides of said central beam member, each separated therefrom by longitudinally positioned slots which have essentially parallel sides.

4,326,465
AUTOMOBILE TOW WHEEL ATTACHMENT
Sid Forrest, Rte. 2, Box 144, Bartlesville, Okla. 74003
Filed May 27, 1980, Ser. No. 153,329
Int. Cl.³ B61B *9/00, 13/12;* B61C *11/02*
U.S. Cl. 104—165 4 Claims



1. In combination with a conventional automobile movable along a highway as a passive vehicle; an externally powered conveyor system having a continuously moving channel disposed beneath the surface of said highway and movable longitudinally beneath said surface; a tow wheel attachment mounted on said automobile and comprising a tubular metal frame having a lower horizontal axle, a pair of legs extending divergently outwardly away from said axle and a horizontally disposed crossbeam interconnecting said legs intermediate their ends, a single wheel freely rotatably mounted on said axle; locking means for preventing rotation of said wheel on said axle; means for pivotally attaching said legs to a lower surface of said automobile; and means pivotally interposed

between said crossbeam and said lower surface of said automobile for lowering and raising said frame whereby, when said automobile is positioned over said conveyor system to straddle said channel, the lowering of said frame brings said wheel into engagement with said channel, and upon locking said wheel causes said automobile to be pulled along said highway as a passive vehicle by the channel.

4,326,466

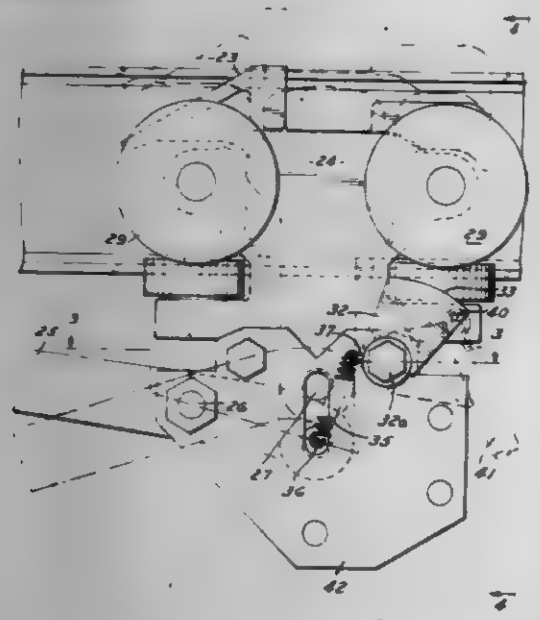
ANTI-BACK UP DEVICE FOR CONVEYOR TROLLEY

James L. Parry, Detroit; Martin J. Redden, Emmett, and Albert Goldstein, Southfield, all of Mich., assignors to ACCO Industries Inc., Bridgeport, Conn.

Filed Mar. 13, 1980, Ser. No. 130,204

Int. Cl.³ B61B *10/02;* B61C *13/06*

U.S. Cl. 104—172 S **14 Claims**



1. A power and free conveyor system comprising
a track,
at least one carrier movable along said track,
a conveyor for driving said carrier along said track,
pusher means on said carrier movable into and out of driving engagement with said conveyor,
operating means comprising a lever pivoted intermediate its ends on said carrier and having one end extending forwardly and the other end extending rearwardly, said lever being operable to move said last mentioned pusher means out of driving engagement with said conveyor upon contact with a preceding carrier or an obstacle,
an anti-back up cam member movably mounted on said carrier and adapted to be moved into and out of engagement with said track,
tension spring means providing a yielding connection between said cam member and said lever such that when said lever operates to move said pusher means out of engagement with said conveyor, said cam member is yieldingly urged into engagement with said track.

4,326,467

PALLET FORMED OF FOLDED PROFILED METAL SHEET

Hermann Schleicher, Erlangen-Rathsberg, and Norbert Vogel, Erlangen, both of Fed. Rep. of Germany, assignors to Hermann Schleicher GmbH & Co., Erlangen, Fed. Rep. of Germany

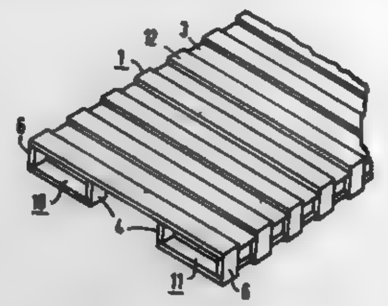
Filed Mar. 10, 1980, Ser. No. 128,589

Claims priority, application Fed. Rep. of Germany, Mar. 9, 1979, 2909206

Int. Cl.³ B65D *19/22*

U.S. Cl. 108—51.1 **5 Claims**

1. A pallet providing a loading area carried by box-type girders extending along beneath the opposite borders of the loading area comprising:
a single profiled metal sheet formed to have a transverse cross section defining parallel grooves spaced by surface areas which form the loading area for the pallet,
each of the opposite borders of said profiled sheet having a folded hollow girder formed by said sheet being folded inwardly several times transversely of said grooves, each said girder having an inner supporting wall and an outer supporting wall with three transverse bend lines lying in



the opposite border zones of said sheet disposed at three corners of the girder,
recesses formed in said sheet for each said groove, each said recess being shaped in the general configuration of the groove with one such recess being disposed along each said bend line to accommodate the groove configuration in said folded hollow girder, and
slots cut in said sheet associated with the ends of each said recess to accommodate folding said profiled sheet into said girders.

4,326,468

BLAST SUPPRESSIVE SHIELDING

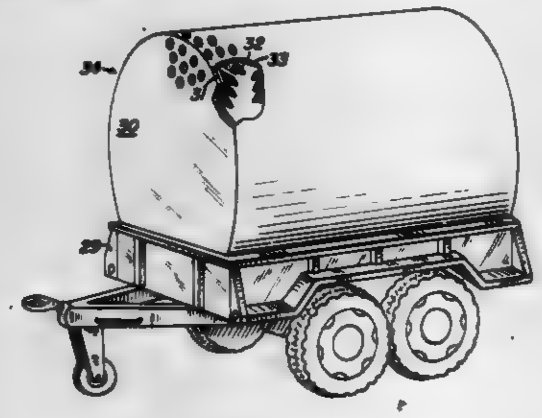
Paul V. King, Joppatowne; Albert F. Becher, Fallston, and Wilmer P. Henderson, Bel Air, all of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Division of Ser. No. 699,738, Jun. 24, 1976, abandoned, which is a continuation of Ser. No. 495,177, Aug. 6, 1974, abandoned.

This application Sep. 24, 1979, Ser. No. 78,349

Int. Cl.³ F41H *5/04, 5/16, 7/04*

U.S. Cl. 109—49.5 **11 Claims**



1. A vehicle for transporting hazardous materials such as munitions, explosives, propellants and pyrotechnics, which includes a compartment for containing said hazardous materials and wherein at least a portion of the compartment includes a multilayer metal or metal-like composite comprising, in combination:
a first apertured plate in the form of a louvered plate suitable for slowing or confining blast debris and fragments;
a second apertured plate in the form of a perforated plate defining a plurality of gas flow apertures suitable for attenuating blast overpressure; and
means for mounting said first and second apertured plates in

spaced apart and substantially fixed position relative to each other.

4,326,469

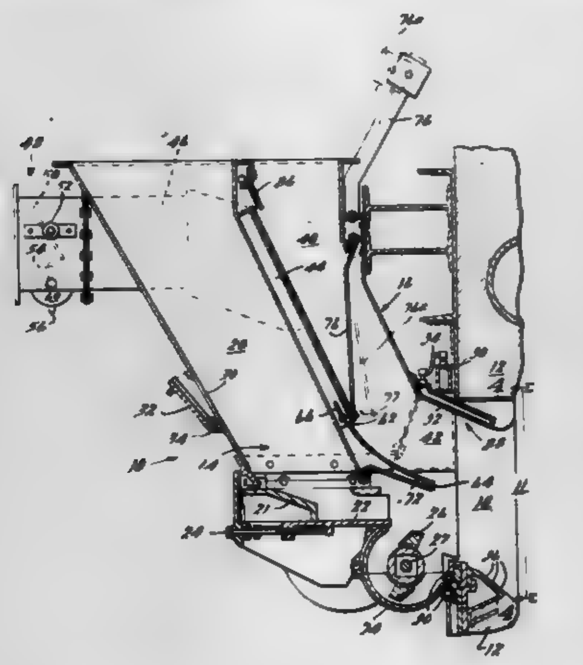
MULTI-FUEL FEEDER DISTRIBUTOR

David C. Reschly, Monroe, Mich., assignor to Detroit Stoker Company, Monroe, Mich.

Filed Nov. 2, 1979, Ser. No. 90,560

Int. Cl.³ F23K *3/18*

U.S. Cl. 110—115 **30 Claims**



1. A multi-fuel feeder for a stoker including a furnace, comprising:
a throat through which waste fuel and coal are fed into the furnace of the stoker;
coal feed means including a rotor for throwing coal through said throat into said furnace; and
waste feed means for feeding waste fuel through said throat into said furnace along a path in said throat spaced from the path of coal from said rotor, whereby all mixing of said coal and said waste fuel occurs in said furnace.

4,326,470

INDIVIDUAL BAGASSE DRIER

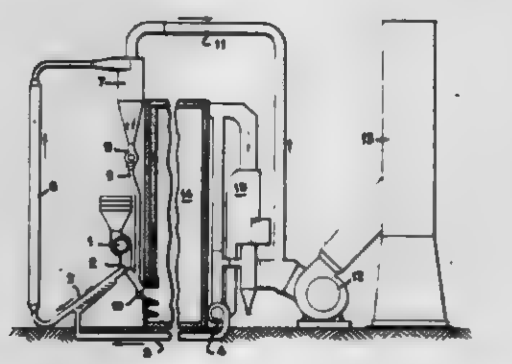
Luiz E. C. Maranhao, Rua Belo Horizonte, 275, Macelo, Al, Brazil

Filed Jul. 18, 1980, Ser. No. 170,981

Claims priority, application Brazil, Jul. 18, 1979, 7904599

Int. Cl.³ F23G *5/02*

U.S. Cl. 110—220 **6 Claims**



1. In combination with a furnace for burning bagasse, wherein the furnace includes a fuel entrance and an exhaust for gases,
a bagasse heating chamber,
means for feeding bagasse to said chamber,
means for supplying heated gas to said chamber,
a gas-solid separator including an inlet for solid material and gas, an outlet for gas, and an outlet for solid material,
means for conveying heated bagasse and moisture-laden gas from said chamber to the inlet of said gas-solid separator,
means for connecting the solid material outlet of the separator to the fuel entrance of said furnace,
gas impelling means having an inlet,
means for connecting the inlet of the impelling means to the furnace exhaust for gases,
means for connecting the inlet of the gas impelling means to the outlet for gas of said separator, and said bagasse feeding means comprising a feeder located above the fuel entrance of said furnace, a conduit extending from the feeder and having branches to the fuel entrance and to the chamber, and a baffle plate blocking the branch to the fuel entrance.

4,326,471

PROCESS FOR THE CARBONIZATION OF OIL SHALE AND OTHER CARBONIZABLE MATERIALS

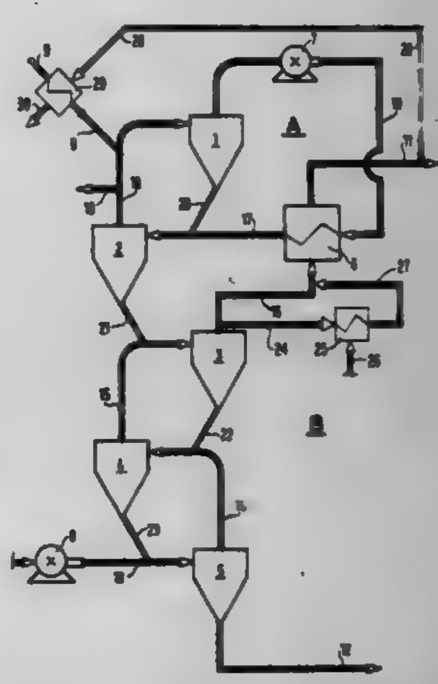
Gerhard Rohrbach, and Bernd Hollman, both of Dotternhausen, Fed. Rep. of Germany, assignors to Portlandzementwerk Dotternhausen Rudolf Rohrbach Kommanditgesellschaft, Dotterhausen, Fed. Rep. of Germany

Filed Jul. 11, 1980, Ser. No. 168,058

Claims priority, application Fed. Rep. of Germany, Jul. 23, 1979, 2929786

Int. Cl.³ F22B *7/00*

U.S. Cl. 110—341 **7 Claims**



1. In a process for the carbonization of oil shale or other carbonizable materials including a process line with a closed cycle and without condensate recovery wherein materials flowing through said process line are heated to carbonization temperature through heat exchange, the improvement comprising: said closed cycle being a gas cycle; combusting fuel remaining in the carbonized residue, particularly carbon, in an open-cycle second process line; conveying the heat recovered in the exhaust gas of said combustion through heat exchange to said first process line whereby the combustion air is subjected to a heat exchange with the ash of the combustion step in said second process line.

4,326,472
NEEDLE OSCILLATING MECHANISM FOR A SEWING MACHINE

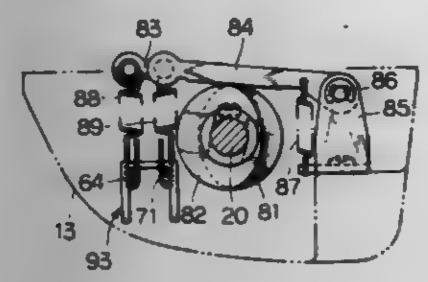
Chikao Yamashita; Takao Sugaya, and Noriyuki Yoshida, all of Nagoya, Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

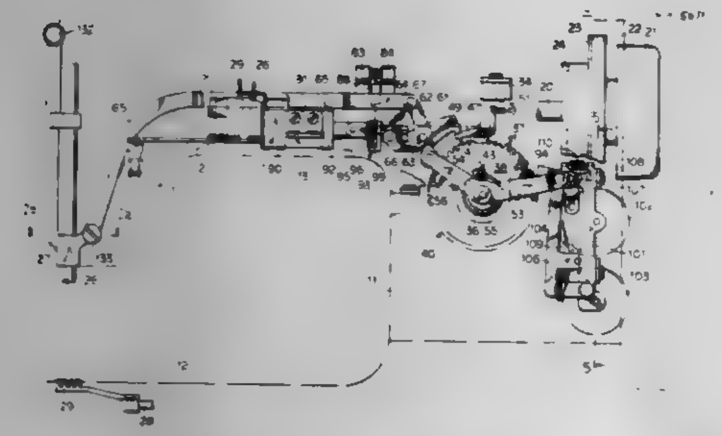
Filed Jan. 23, 1979, Ser. No. 5,828

Claims priority, application Japan, Feb. 10, 1978, 53-14441; Apr. 25, 1978, 53-49132

Int. Cl.³ D05B *3/02*

U.S. Cl. 112—158 D **8 Claims**





1. In a sewing machine having a machine frame, a main shaft journaled on said frame, and a needle driven by said main shaft for endwise reciprocation and for lateral oscillation,

mechanism in said sewing machine responsive to pattern information for oscillating said needle including

a single pattern cam member carrying a plurality of pieces of pattern information for controlling the lateral oscillation and for determining the lateral position of said needle,

a step motor for rotating said cam member in either of forward and reverse directions,

drive control means responsive to control signals applied thereto for sequentially driving said step motor in timed relation with the rotation of said main shaft,

a contact finger engageable with said cam member for selectively sensing the pattern information from said cam member,

a connection arm operatively connected with said needle,

coupling means for disconnectably coupling said connection arm and said contact finger to each other,

actuating means operative in timed relation with the rotation of said main shaft for alternately engaging and disengaging said contact finger with and from said cam member through said coupling means,

brake means for applying a motional resistance to said connection arm and for preventing the same from being displaced upon disengaging of said contact finger from said cam member through the disconnecting operation of said coupling means, whereby said needle is relieved of lateral oscillation regardless of disengaging motion of said contact finger from said cam member, and thereafter only upon engaging of said contact finger with said cam member the needle is oscillated to the lateral position in response to said pattern information.

4,326,473
SEWING CONTROL SYSTEM FOR MULTIPLE-PATTERN SEWING MACHINE

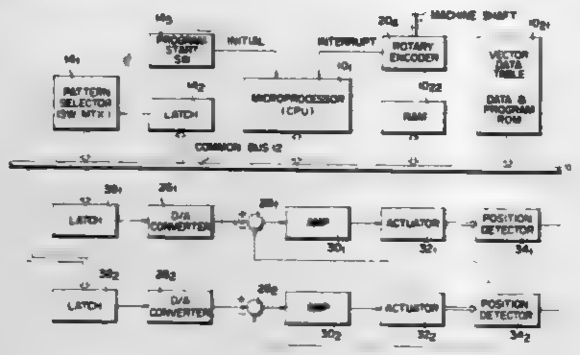
Teruo Kigawa, Tokyo, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Japan

Continuation of Ser. No. 908,649, May 23, 1978, abandoned. This application Nov. 14, 1979, Ser. No. 94,342

Claims priority, application Japan, May 23, 1977, 52-59688

Int. Cl.³ D05B *3/02*

U.S. Cl. 112—158 E **62 Claims**



1. A sewing control system for a multiple pattern sewing machine for sewing stitch patterns on workpieces, said system comprising:

memory means for storing a plurality of sets of pattern data, each said set of pattern data including a sequence of stitch data indicating a series of stitches to be sewn by said sewing machine on a said workpiece, each said stitch data including a symbol code for indicating one of a plurality of basic vectors to specify the length and direction of said stitch in polar coordinates;

means for designating a desired set among said plurality of sets of pattern data;

data processor means coupled with said memory means and said designating means for generating sewing control signals corresponding to said set of pattern data designated by said designating means;

actuator means coupled with said data processor means for performing sewing operations in response to said sewing control signals in order to form on a said workpiece a stitch pattern corresponding to said designated set of pattern data; and

timing signal generator means coupled with said data processor means and said actuator means for supplying timing signals to synchronize said sewing control signals generated by said data processor means with said sewing operations performed by said actuator means.

4,326,474
IN-PLACE BOBBIN WINDING MECHANISM FOR A SEWING MACHINE

Thaddeus J. Zylbert, Morris Plains, N.J., assignor to The Singer Company, Stamford, Conn.

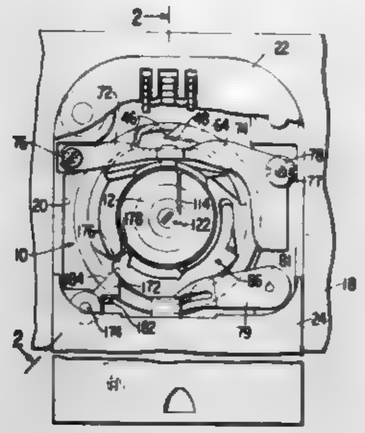
Filed May 1, 1981, Ser. No. 259,718

Int. Cl.³ D05B *57/14, 59/00*

U.S. Cl. 112—184 **10 Claims**

1. In a sewing machine, the combination comprising a reciprocable needle, a rotatable vertical axis needle looptaker, a bobbin case nested in the looptaker, means preventing the bobbin case from rotating, a bobbin disposed within and resting on the bobbin case, a plunger which is mounted in the bobbin for endwise sliding movement along the axis of the bobbin and upon which the bobbin is rotationally restrained, means biasing the plunger into a raised position in the bobbin, a slidable plate with a cam thereon for engaging and moving the plunger from said raised position to a depressed position in the plunger, means for operably connecting the plunger to the looptaker in the depressed position in the plunger to provide for rotation of

the bobbin with the looptaker, and for disconnecting the plunger from the looptaker upon movement of the plunger to



the raised position to thereby enable the bobbin to rotate free of the looptaker.

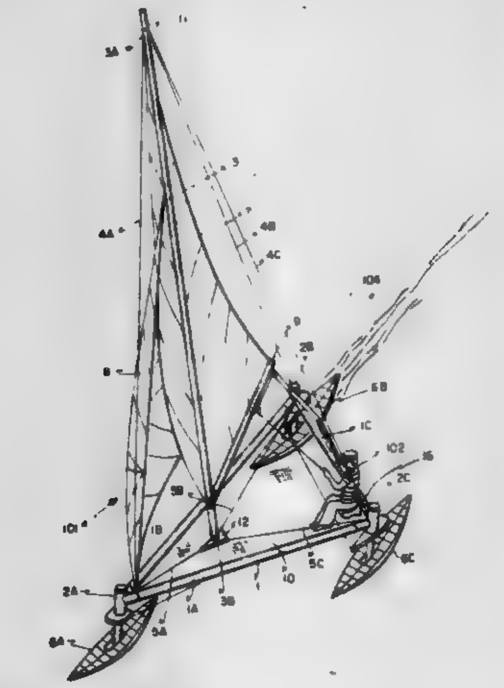
4,326,475
SAILBOAT

Frank J. Berte, Suffield, Conn., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Mar. 16, 1979, Ser. No. 20,905

Int. Cl.³ B63B *35/00*

U.S. Cl. 114—39 **20 Claims**



1. A sailboat adapted to sail on water in a sailing direction that comprises, in combination:

three rigid beams that form the sides of a triangle having a generally horizontal orientation,

an integral, rigid mast that extends between top and foot ends and disposed substantially orthogonal to the plane of the triangle, the foot end of the mast being disposed within the perimeter of the triangle and piercing the plane of the triangle,

a plurality of cables extending from each vertex of said triangle to said top and foot ends of said mast, the ones of said cables extending to the foot of said mast lying below the plane of said triangle, said cables being stretched to support the mast in said orthogonal orientation as well as to render a space frame defined by said beams, mast and cables rigid;

three hulls positioned respectively at the three vertices of the triangle, and

means for mounting said hulls to said vertices so that they each are rotatable about both a first axis generally parallel to the plane of said triangle and generally perpendicular to the sailing direction and a second axis raked backwardly from the sailing direction and from a normal to said triangle by an angle α.

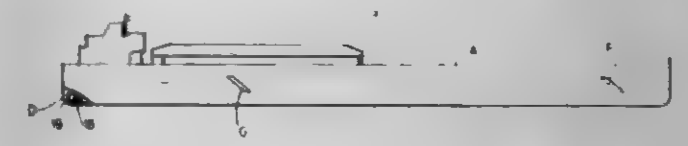
4,326,476
NAVIGATION IN ICE COVERED WATERWAYS

Charles D. Pole, Willowdale, Canada, assignor to Upper Lakes Shipping Ltd., Toronto, Canada

Filed Dec. 17, 1979, Ser. No. 104,699

Int. Cl.³ B63B *35/08*

U.S. Cl. 114—40 **17 Claims**



1. A ship having a hull of length from about 600 to about 1000 feet provided with straight substantially vertical elongated sides tapering inwards, at one end, into a pointed bow normally adapted, with the forward motion of the ship against an ice covering of a waterway, to break a channel in said covering equivalent to the normal width of the ship to allow the ship to move forward,

a bulky icebreaking fin mounted to project outwards from each straight side just behind the bow with a fixed continuous deflecting surface extending from below to above the waterline at a sternward angle of from 10° to 60° from a line perpendicular thereto and along its length a sternward incline thereby, with the advance of the ship to apply forward, upward and outward pressure on the ice beside the main channel to break an auxiliary channel thereby to provide leeway for the ship to move forward through the ice and to execute turns,

the fin having a fore to aft width from about 2 feet to about 3 feet and an effective thickness measured out from the ship's side of from about 1 foot to about 4 feet.

4,326,477
GAS-CUSHION VEHICLES

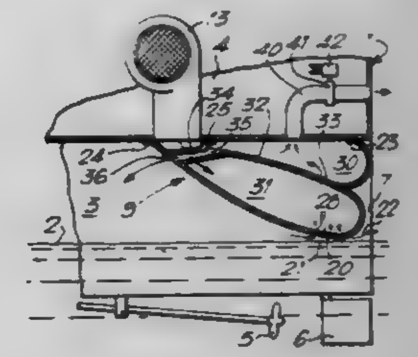
Rory A. C. Carter, Cowes, England, assignor to Vosper Hovermarine Limited, England

Filed Jun. 10, 1980, Ser. No. 158,100

Claims priority, application United Kingdom, Jun. 18, 1979, [illegible]/79

Int. Cl.³ B60V *1/16*

U.S. Cl. 114—67 A **14 Claims**



1. A gas-cushion vehicle provided with a flexible skirt of hollow inflatable form, which, in operation of the vehicle, depends from the vehicle body so that the bottom of the skirt defines a convex face in close proximity to the surface over which the vehicle is to travel so as to form a plenum gap through which an atmosphere-seeking flow of cushion gas escapes, the vehicle comprising:

a flexible two-stage skirt, having an upper compartment and a lower compartment;

means for inflating the upper and lower compartments, the

lower compartment being inflated to a higher operating pressure than that existing in the upper compartment and the upper compartment being inflated to a higher operating pressure than that existing in the gas cushion, whereby the lower compartment remains relatively stiff, reducing distortion of the skirt due to contact with the travel surface and the upper compartment remains relatively soft ensuring a substantial measure of overall skirt flexibility.

4,326,478

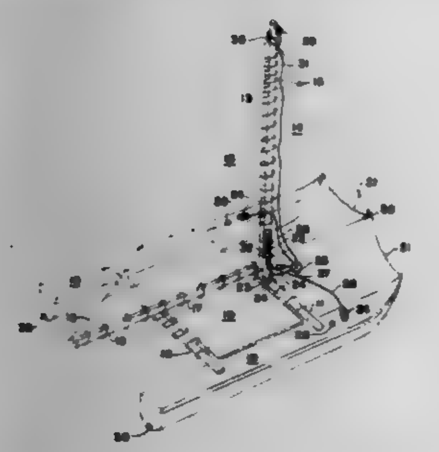
WATER-REMOVING SYSTEM FOR A CATAMARAN BOAT

David A. Holmes, 811 Wright Ave., Chesapeake, Va. 23324

Filed Jun. 27, 1980, Ser. No. 163,670

Int. Cl.[3] B63B *13/00*

U.S. Cl. 114—183 R 6 Claims



1. An improved system for removing water from the hollow interiors of the hulls and mast of a catamaran boat comprising:

a. a manually operable pneumatic pump releasibly attached to said boat,

b. three flexible conduits, the proximal ends of which receive air from said pump, the distal ends of which are provided with disconnectable couplings, two of said distal ends communicating with the interiors of said hulls, and one of said distal ends communicating with the interior of said mast, and

c. ejector means equipped with check valve means positioned in each of said hulls and said mast, whereby activation of said pump generates a pneumatic pressure which may be directed to the interiors of said hulls and mast to cause water therein to be driven out through said ejector means.

4,326,479

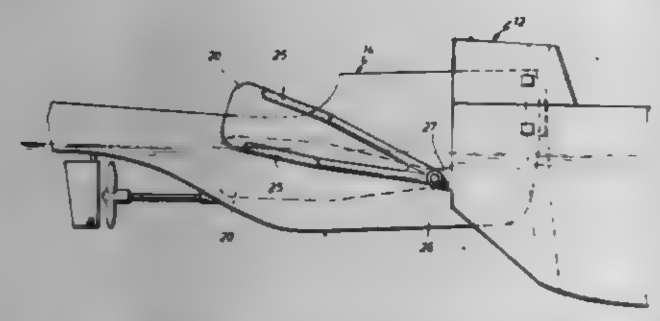
MOVABLE SKEG FOR NON-PROPELLED BARGES

Masasuke Kawasaki, 1002 Michigan Ave., Slidell, La. 70458

Filed Apr. 17, 1980, Ser. No. 140,963

Int. Cl.[3] B63B *21/00*

U.S. Cl. 114—248 23 Claims



11. An apparatus for coupling first and second vessels, comprising:

(a) a first skeg of predetermined configuration adapted to be movably secured to the stern of the first vessel, extending rearwardly from the first vessel, such that the first skeg may be moved from a first position, wherein the first skeg is in the water sufficiently to substantially reduce yawing, to a second position wherein the first skeg member is out of the water ; and

(b) a second, opposing skeg of predetermined configuration adapted to be movably secured to the stern of the first vessel, extending rearwardly from the first vessel, such that it is positioned in use on the opposing side of the second vessel from the first skeg and such that the second skeg member may be moved from a third position, wherein the second skeg member is in the water sufficiently to substantially reduce yawing, to a fourth position wherein the second skeg member is out of the water when the second arm is secured to the second vessel;

(c) first means for selectively connecting the first skeg to the second vessel when it is in the second position; and

(d) second means for selectively connecting the first skeg to the second vessel when it is in the fourth position.

4,326,480

ROTATABLE COATING VESSEL

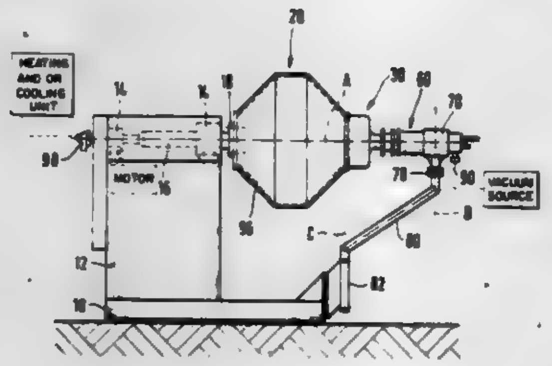
Werner Glatt, Kreis Lörrach, Fed. Rep. of Germany, assignor to Werner Glatt GmbH, Binzen, Fed. Rep. of Germany

Filed Sep. 19, 1980, Ser. No. 188,700

Claims priority, application Fed. Rep. of Germany, Sep. 25, 1979, 2938795

Int. Cl.[3] B05B *1/02*

U.S. Cl. 118—50 8 Claims



7. A coating apparatus, comprising a coating vessel supported at one end, said coating vessel being adapted to be driven in rotation and being connected to a vacuum source by a coaxially arranged and co-rotatable tube at an unsupported end of the coating vessel, said coating vessel having a spray nozzle for spraying liquid into said coating vessel, said coating vessel including a discharge opening which is closable by a cover at the unsupported end of the coating vessel.

4,326,481

URINE COLLECTION PROCEDURE FOR CATS AND APPARATUS THEREFOR

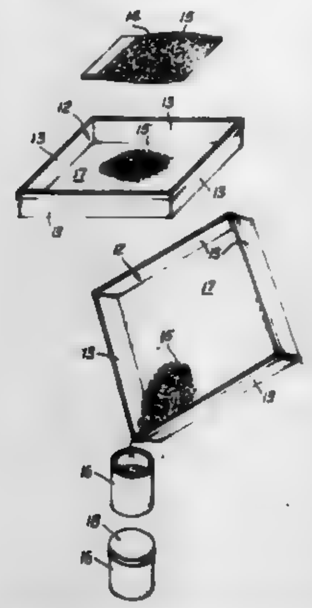
John E. Gruss, Burke, Va.

Filed Nov. 3, 1980, Ser. No. 203,482

Int. Cl.[3] A01K *29/00*

U.S. Cl. 119—1 16 Claims

1. A urine collection system for cats and members of the cat family comprising a granular, non-absorbent, non-porous, hydrophobic litter which is capable of being spread in a pan, said litter having substantially cylindrical particles with a diameter between about 1 millimeter up to about 5 millimeters and a height between about 1 millimeter up to about 5 millimeters and being substantially smooth whereby the cat can urinate in the pan to permit easy removal of a urine sample at a minimum loss without the need to manually express the urine or catheterize the cat.



4,326,482

FEEDING APPARATUS FOR SMALL ANIMALS

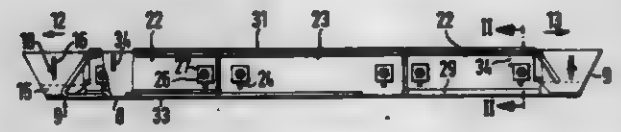
Walter Sauer, Am Dreispitz 33, D-8750 Aschaffenburg, Fed. Rep. of Germany

Filed Jun. 12, 1980, Ser. No. 158,841

Claims priority, application Fed. Rep. of Germany, Jun. 13, 1979, 2923921

Int. Cl.[3] A01K *39/01*

U.S. Cl. 119—52 B 8 Claims



1. In a feeding apparatus used in conjunction with at least one cage, the apparatus having a feed channel with upstanding walls extending adjacent the cage, a fill nozzle protruding into the channel and movable along the length of the channel, the improvement comprising:

a metering sled positioned in the channel and slidably movable along the length thereof and drivingly contactable by the fill nozzle, the metering sled having plowing means moving in advance of the fill nozzle and wherein the plowing means is adjustable in height and is angled to direct plowed feed toward a preselected upstanding wall; and

guide means mounted to the plowing means and extending generally longitudinally along the channel for retaining new feed along a longitudinal zone in the channel, remote from the upstanding wall of the channel.

4,326,483

INTERNAL COMBUSTION ENGINE WITH OXIDANT MANUFACTURE

Frank E. Lowther, Buffalo, N.Y., assignor to Purification Sciences, Inc., Geneva, N.Y.

Filed Apr. 16, 1980, Ser. No. 140,765

Int. Cl.[3] F02B *43/08*

U.S. Cl. 123—3 3 Claims

1. An internal combustion engine system including:

(a) an internal combustion engine in which fuel is combusted with concentrated oxidant to generate power and a mixture of combustion products including nitrogen, carbon dioxide, and water vapor,

(b) means to remove water from said combustion products,

(c) means to remove carbon dioxide from said combustion products,

(d) electrolysis means to decompose said water to produce hydrogen and oxygen,

(e) synthesis means to combine nitrogen from said combustion products with said hydrogen to produce ammonia,

(f) oxidation means to combine said ammonia with said oxygen to produce nitric acid, and

(g) means to return said nitric acid to said engine for repeated use as oxidant to support combustion.

4,326,484

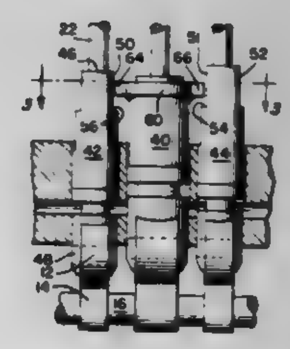
FLOATING TAPPET GUIDE PLATE

Earl F. Amrhein, Greensburg, Ind., assignor to Cummins Engine Company, Inc., Columbus, Ind.

Filed Oct. 26, 1979, Ser. No. 88,561

Int. Cl.[3] F01L *1/14*

U.S. Cl. 123—90.5 15 Claims



8. An internal combustion engine comprising:

(a) a rotatable camshaft;

(b) first and second tappets mounted for engagement with said camshaft to convert rotational movement of the camshaft into reciprocating linear movement of said tappets along a pair of parallel paths aligned with the central longitudinal axes of the tappets, respectively, the body of said first tappet including a guide surface defined by a set of lines parallel to the longitudinal axis of said first tappet; and

(c) guide means for preventing rotation of each said tappet about its longitudinal axis, said guide means including:

(1) an extension leg having a length substantially corresponding to the distance between said tappets,

(2) attachment means for securing fixedly and integrally one end of said extension leg to said second tappet for causing said extension leg to move with said second tappet in a fixed position relative to said second tappet and extending toward said guide surface of said first tappet,

and

(3) bearing surface means on the other end of said extension leg for forming a sliding engagement with said guide surface of said first tappet, said bearing surface means including a bearing surface located on said other end of said extension leg in a position to provide a nominal working clearance between said guide surface and said bearing surface when said guide means is secured on said second tappet to cause direct engagement of said bearing surface with said guide surface should either tappet rotate slightly about its longitudinal axis.

4,326,485

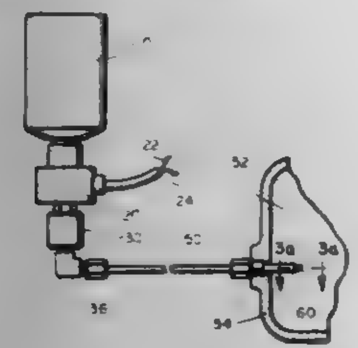
STARTING FLUID INJECTION APPARATUS

James W. Burke, Rte. 2, Box 476, Long Grove, Ill. 60047

Filed Feb. 21, 1980, Ser. No. 123,462

Int. Cl.³ F02M *1/16*

U.S. Cl. 123—180 AC 21 Claims



1. In a starting fluid injection apparatus for an internal combustion engine, said apparatus including an actuator for selectively releasing a starting fluid from a container, injector means for injecting starting fluid into an air intake passage of the engine, and a conduit for interconnecting the actuator and the injector means, the improvement comprising:

flow metering orifice means, included in the injection apparatus, for metering the flow rate of starting fluid from the actuator to the injector means; and

an injection orifice included in the injector means in series with the flow metering orifice means such that starting fluid passes through the orifice means and then through the injection orifice as it passes from the container, through the conduit, and out the injector means, wherein the flow metering orifice means is sized such that the pressure drop across the injection orifice is substantially no greater than the pressure drop across the flow metering orifice means during injection of starting fluid into the engine.

4,326,486

APPARATUS FOR GENERATING AN IGNITION CONTROL SIGNAL FOR AN INTERNAL COMBUSTION ENGINE

Manfred Mezger, Markgröningen; Reinhard Leussink, Vaihingen, and Adolf Fritz, Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Oct. 4, 1979, Ser. No. 81,622

Claims priority, application Fed. Rep. of Germany, Oct. 18, 1978, 2845264

Int. Cl.³ F02P *5/08*

U.S. Cl. 123—418 5 Claims

1. Apparatus for generating an ignition control signal having a rotating engine speed transducer assembly (10) for supplying a pulse-type engine speed signal of substantially constant angular duration, and having two edges;

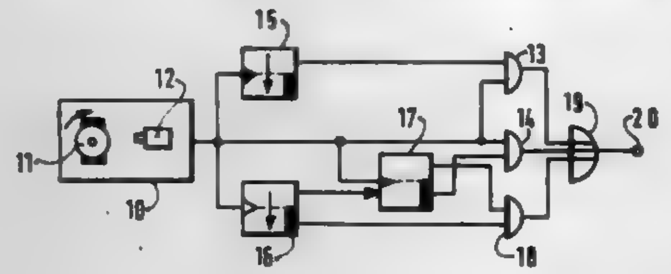
and circuit means for shifting the time of occurrence of one of the pulse edges of said engine speed signal, which controls ignition, in the direction of spark advance with decreasing engine speed, within two discrete engine speed limits (n_1, n_2) both of which lie substantially within the range of engine idling, and which define therebetween a lower speed (n_1) and an upper speed (n_2) of said range

and wherein, according to the invention, said circuit means for shifting the engine speed signal comprises

first and second timing means (15, 16; 30, 31) each having a triggering input connected to said engine speed transducer assembly (10);

a flip-flop (17, 36) connected to and receiving an output signal from said second timing means (16, 31) as an input signal;

and gate means (13, 14, 18, 19, 33, 34, 37) connected to and receiving output signals from at least one of said first and second timing means, said engine speed transducer assembly and from said flip-flop, said first and second timing means, being connected, respectively, to be triggered by respectively different succeeding pulse edges of the engine speed signal (U10) to provide timing output signals of respective time duration, said timing output signals being



connected to said gate means to compare the duration of said timing output signals of the second timing means with the time duration between two sequential unlike first pulse edges of said engine speed signal, the equality of said comparison indicating the lower of said discrete engine speed limits, and to compare the duration of the output signal of said first timing means with the time duration between two predetermined pulse edges of said engine speed signal,

the equality of said comparison indicating the upper of said discrete engine speed limits;

said gate means combining the respective timing output signals of said first and second timing means, and said engine speed signal to that the pulse edges of the output signals produced by one of the timing means at the termination of its timing output signals form a time shifted pulse edges of the engine speed signal upon occurrence of non-equality of said comparison between said discrete engine speed limits for controlling ignition.

4,326,487

FUEL INJECTION SYSTEM

Wolfgang Maisch, Schwieberdingen; Klaus-Jürgen Peters, Affalterbach; Michael Wissmann, Gerlingen, and Peter Schelhas, Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Mar. 20, 1980, Ser. No. 132,056

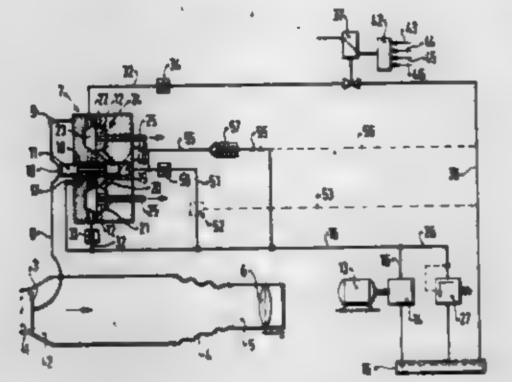
Claims priority, application Fed. Rep. of Germany, May 8, 1979, 2918401

Int. Cl.³ F02M *39/00*

U.S. Cl. 123—453 1 Claim

1. In a fuel injection system for mixture compressing externally ignited internal combustion engines comprising an air suction tube, a measuring member and an arbitrarily actuatable butterfly valve movably disposed in said suction tube with said measuring member upstream from said butterfly valve, a fuel metering and distribution valve, a fuel supply line connected to said fuel metering and distribution valve, a movable fuel metering control slide in said metering and distribution valve, a control lever secured to said measuring member and operative relative to said control slide which is subjected to a restoring pressure force for exerting a resetting force on said measuring member, said measuring member being mounted for movement

by flowing air depending on an air flow rate through said suction tube and in opposition to a resetting force of said control slide wherein the flowing air displaces said measuring member which displaces said control slide for the purpose of metering out a fuel quantity in proportion to the air quantity, the control slide metering taking place normally while substantially a constant pressure difference prevails, said pressure being variable in accordance with operational characteristics of said engine, said metering and distribution valve including a



pressure chamber therein relating to said control slide, said control slide including an end face that protrudes into said pressure chamber, a fuel feed line connected to said pressure chamber for applying a resetting force on said control slide, a damping throttle in said fuel feed line, a fuel discharge line connected to said fuel feed line between said damping throttle and said pressure chamber, and a check valve disposed in said discharge line between said pressure chamber and the delivery side of a fuel pump opens above a predetermined pressure in the pressure chamber.

4,326,488

SYSTEM FOR INCREASING THE FUEL FEED IN INTERNAL COMBUSTION ENGINES DURING ACCELERATION

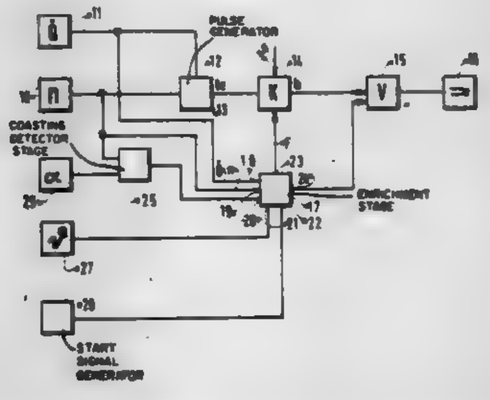
Harro Herth, Schwieberdingen, Fed. Rep. of Germany; Cornelius Peter, Paris, France, and Hans Schnürle, Walheim, Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Aug. 9, 1979, Ser. No. 65,232

Claims priority, application Fed. Rep. of Germany, Sep. 22, 1978, 2841268

Int. Cl.³ F02D *5/00*

U.S. Cl. 123—492 21 Claims



1. A system for increasing the fuel feed during acceleration, in an internal combustion engine having a throttle valve and an injection valve, pulse signal generating means connected to generate a pulse signal to the injection valve, the system including:

a coasting detector stage connected to the throttle valve and the engine which generates a signal indicating vehicle coasting, as a function of throttle valve angle and engine rpm;

a means which generates a time constant according to engine rpm;

means for detecting acceleration including an enrichment stage having a differential member and proportional member, wherein the differential member is connected to the means which generates a time constant to receive a time constant and to generate a differential output depending on the time constant, and

wherein the proportional member is connected to the differential member to receive the differential output and to generate a signal proportional thereto, and

wherein the enrichment stage is connected to the pulse signal generating means and to the coasting detector stage to receive the signal indicating vehicle coasting,

such that the pulse signal generating means generates a lengthened pulse signal which is received by the injection valve to provide prolonged fuel injection by the injection valve in response to the coasting signal.

4,326,489

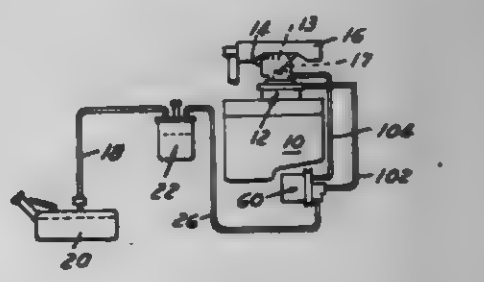
PROPORTIONAL FLOW FUEL VAPOR PURGE CONTROL DEVICE

John S. Heitert, Ringwood, N.J., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 27, 1979, Ser. No. 107,991

Int. Cl.³ F02M *33/02*

U.S. Cl. 123—520 2 Claims



1. A fuel vapor purge control device for use with an automotive type internal combustion engine having a carburetor with an induction passage controlled by a movable throttle valve and a fuel float bowl, a fuel tank, a fuel vapor storage canister having a purge air inlet and a vapor inlet and a purge outlet, and passage means connecting the vapors from the fuel tank to the canister for flow into the storage therein during engine shutdown, and vapor purge passage means connecting the outlet to the induction passage for purging the vapors from the canister into the carburetor during engine operation in response to opening of the throttle valve, the carburetor having

a manifold vacuum port in the induction passage at a location below the throttle valve to be subject to changing manifold vacuum levels as the throttle valve moves open, the purge device comprising

a variable area flow control means in the purge passage means variably movable in response to the changing port vacuum levels upon opening of the throttle valve to provide a purge flow of vapors that varies in proportion to the flow of air through the induction passage,

the control means including a conically shaped metering slot in the purge passage means, a valve member movable across the slot to selectively and progressively block and unblock the slot opening to control the mass flow of vapors through the slot, and

vacuum responsive servo means connected to the pressure port and to the valve member to vary the position of the valve member and the opening area of the slot in inverse proportion to the manifold vacuum level,

the servo means including piston means operable in response to the level of manifold vacuum during a closed throttle condition to close the valve member, the manifold vacuum progressively decaying upon opening of the throttle

valve to progressively move the piston means and valve member towards a further open position.

4,326,490

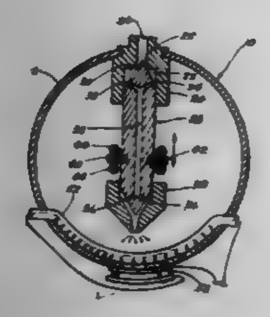
FUEL PREHEATER FOR INTERNAL COMBUSTION ENGINES

Ewald Ehresmann, Manly, Iowa, assignor to Combustion Research, Inc., Bloomfield, N. Mex.

Filed Nov. 30, 1979, Ser. No. 98,997

Int. Cl.³ F02M *31/00*

U.S. Cl. 123—557 — 10 Claims



1. In the fuel system of an internal combustion engine including a fuel pump for supplying fuel to a carburetor and a fuel heater imposed in the fuel line, said fuel heater comprising:

(a) a hollow housing having a fuel inlet in communication with said fuel pump, said housing having upper and lower ends,

(b) a fuel atomizer means in operative communication with said fuel inlet for atomizing fuel supplied thereto by said fuel pump,

(c) a valve means between said fuel inlet and said atomizer means for interrupting the supply of fuel to said atomizer means upon a predetermined level of fuel in said housing being present at the lower end of said housing,

(d) a fuel heating means in said housing below said atomizer means for heating the atomized fuel,

(e) said housing having an air inlet for permitting ambient air to enter said housing for mixture with said heated and atomized fuel,

(f) said housing having a fuel discharge in operative communication with said carburetor for supplying the heated and atomized fuel to said carburetor,

(g) float means mounted in the lower end of said housing and connected to said valve means for closing said valve means when said predetermined level of fuel in said housing is present,

said fuel inlet being mounted in the upper end of said housing and having an open lower end, said fuel inlet having a valve seat formed therein above its open lower end, said valve means comprising a valve member vertically movably mounted in said open lower end of said fuel inlet and having an upper end capable of seating upon said valve seat to close said fuel inlet, said valve member having a fuel passageway formed therein extending from a location below said upper end to its lower end; said atomizer means being mounted on the lower end of said valve member; said float means being operatively connected to said valve member for moving said valve member to its seating position on said valve seat.

4,326,491

FUEL HEATER

Lawrence R. Burchett, 10330 Manor Rd., Leawood, Kans. 66206

Filed Jan. 25, 1980, Ser. No. 115,198

Int. Cl.³ F02M *31/00*

U.S. Cl. 123—557 — 7 Claims

1. A fuel heating system in combination with an internal combustion engine utilizing the fuel for powering a motorized vehicle; said vehicle including a cooling mechanism wherein cooling fluid is recirculated through the engine and a fuel pump means for pumping the fuel from storage to the engine; said fuel heating system comprising:

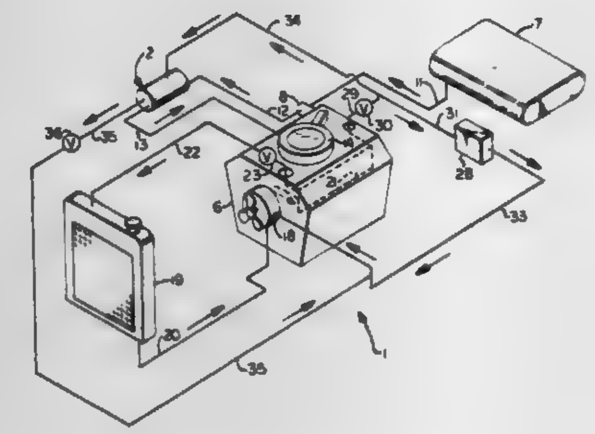
(a) a heat exchanger having said fuel flowing therethrough and said fuel receiving heat therein;

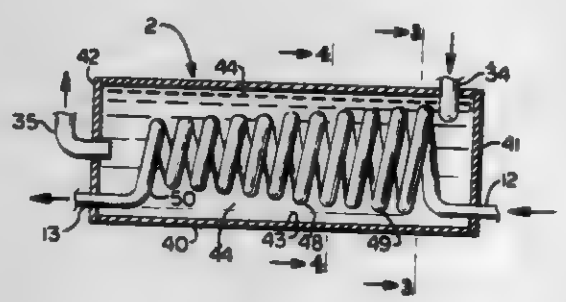
(b) said heat exchanger being flow connected with a flow path of said fuel between said pump means and said engine;

(c) said heat exchanger also having said fluid flowing therethrough after being heated by said engine; said fluid and said fuel being separated so as not to mix;

(d) engine thermostat means for controlling the temperature of said fluid after flowing through and being heated by said engine operating under normal conditions;

(e) cooling fluid pump means controlling flow of fluid through said engine in association with said thermostat; said cooling fluid pump means under normal operating conditions varying flow of said fluid through said engine in approximate proportion to use of said fuel which is in approximate proportion to speed of the engine;





(f) regulating means controlling flow of said fluid through said heat exchanger in cooperation with said cooling fluid pump means and being responsive to ambient air temperature;

(g) whereby under constant ambient air temperature said heated fluid at a substantially constant temperature flows into said heat exchanger in approximate proportion to said fuel and thereby heats said fuel to a relatively constant temperature and flow of said heated fluid increases as ambient air temperature decreases and decreases as ambient air temperature increases thereby maintaining a relatively constant temperature in said fuel prior to entry thereof into said engine, wherein:

(h) said heat exchanger is a concurrent shell and tube type with said fuel flowing through said tube and said fluid flowing through said shell about said tube; and

(i) said tube comprises a frusto-conical shaped helix.

4,326,492

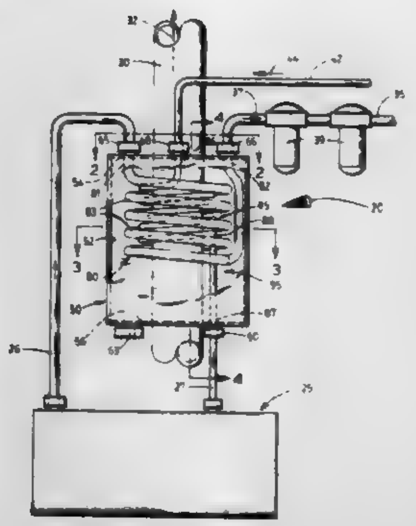
METHOD AND APPARATUS FOR PREHEATING FUEL

John G. Leibrand, Sr., and Marlin L. Bessey, both of Idaho Falls, Id., assignors to Runfree Enterprise, Inc., Ucon, Id.

Filed Apr. 7, 1980, Ser. No. 137,723

Int. Cl.³ F02M *31/00*

U.S. Cl. 123—557 — 3 Claims



1. In combination with an internal combustion engine having a substantially cylindrical exhaust pipe of heat-conductive material through which heated exhaust is discharged and a fuel supply, said engine being characterized by return to the fuel supply of excess fuel supplied thereto:

A. a canister having a substantially cylindrical wall mounted substantially concentrically on the exhaust pipe;

B. a fuel line of heat-conductive material having one end connected to the fuel supply, an opposite end connected to the internal combustion engine, and an intermediate portion within the canister helically wound about the exhaust pipe in radially spaced relation thereto;

C. a fuel return line having one end connected to the engine adapted to receive fuel returned thereby, an opposite end connected to the tank and an intermediate portion within the canister helically wound about the exhaust pipe, the intermediate portions of the fuel line and the return line being in outwardly spaced relation to the exhaust pipe and in radially inwardly spaced relation to the wall of the canister; and

D. a heat transfer fluid in the canister having the intermediate portion of the fuel line and of the return line immersed therein and constituting substantially the sole conductor of heat from the exhaust pipe to the fuel line and the return line in the canister.

4,326,493

MULTIPLE SPARK DISCHARGE IGNITION SYSTEM

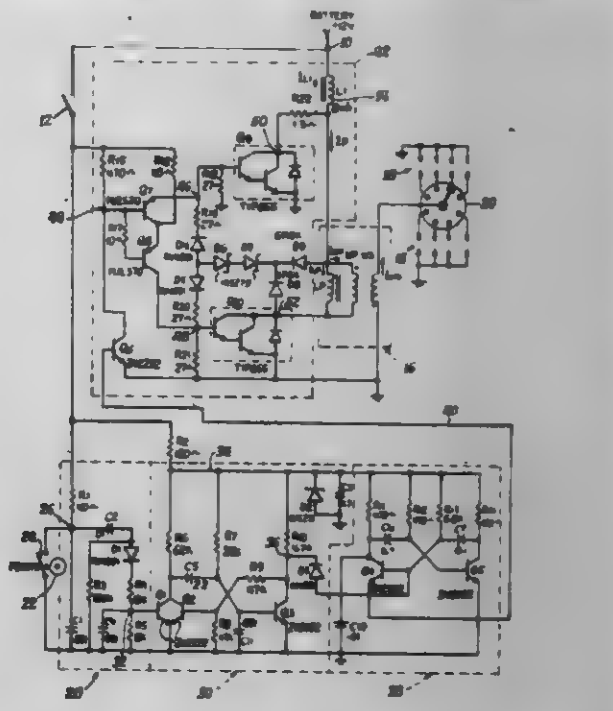
James W. Merrick, El Paso, Tex., assignor to Autotronic Controls, Corp., El Paso, Tex.

Filed Jul. 26, 1979, Ser. No. 60,902

Int. Cl.³ F02P *3/04*

U.S. Cl. 123—606 — 10 Claims

1. In apparatus for an ignition system for a cyclic internal combustion engine, which system has a d.c. power supply and an ignition coil for developing high voltage for distribution to spark plugs to produce sparks across spark gaps in respective combustion chambers at appropriate times in their respective cycles to ignite the fuel contained therein, said appropriate times being separated by quiescent periods, said ignition coil having a primary winding for receiving current from said d.c. power supply and a secondary winding for connection to said spark plugs, the improvement comprising inductor means for receiving current from said d.c. power supply, switching means for directing current passing through said inductor means from said d.c. power supply alternately into two paths, one path through said primary winding of said ignition coil and the other path in shunt of said primary winding, means for maintaining the current through said inductor means of predetermined magnitude at least during the time intervals said switching means directs the current through said other path just prior to the operation of said switching means to direct said current through said one path, cyclic means for cyclically operating said switching means when enabled, enabling means for enabling said cyclic means for substantially a predetermined fraction of each engine cycle, and timing means for timing the onset of each said predetermined fraction relative to



the engine cycle, said switching means directing said current through said other path during the quiescent periods between respective predetermined fractions, with the first spark following a quiescent period being effected upon the subsequent operation of said switching means to direct said current through said one path, and with the first half cycle of said cyclic means in said predetermined fraction being longer than succeeding half cycles and operating to produce a spark discharge in a respective spark gap during said first half cycle.

4,326,494

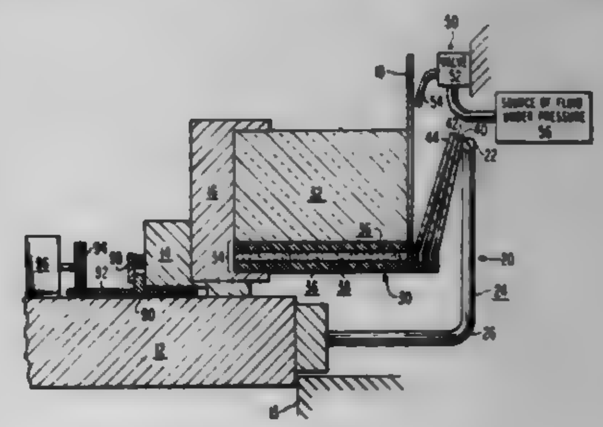
WAFER AND BOULE PROTECTION DURING THE BLADE RETURN STROKE OF A WAFER SAW

Robert R. Demers, Lawrenceville, N.J., assignor to RCA Corporation, New York, N.Y.

Division of Ser. No. 973,458, Dec. 26, 1978, Pat. No. 4,227,348. This application May 27, 1980, Ser. No. 153,632

Int. Cl.³ B28D *1/02*

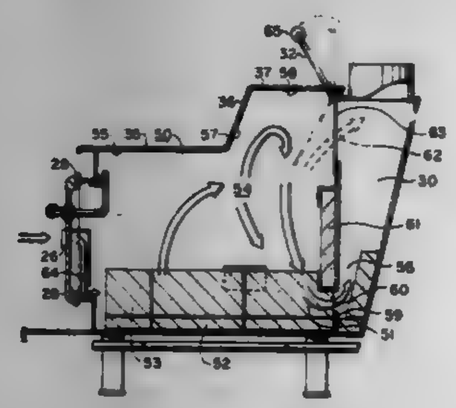
U.S. Cl. 125—12 — 6 Claims



1. An apparatus for slicing wafers from an ingot comprising a boule of material to be sliced and binding material, said apparatus comprising a saw blade and an ingot chuck in which said ingot is carried, said saw blade having a rest position clear

of said ingot, and meins for moving said ingot chuck toward said at rest position of said saw blade to slice a wafer from said ingot without completely slicing through said binding material; the improvement comprising: means for directing a flow of fluid toward the interface between said saw blade and a wafer just sliced from said ingot to cause said just sliced wafer to lean away from said saw blade.

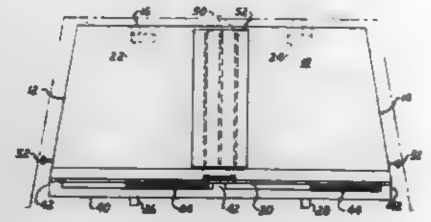
4,326,495
STOVE FOR SOLID FUEL
John D. Miller, R.R. #1, Carleton Pl., Ontario, Canada (K7G 3P1)
Filed Apr. 30, 1980, Ser. No. 145,224
Int. Cl.³ F24C *1/00*
U.S. Cl. 126—77 4 Claims



1. An air-tight stove for the combustion of solid fuels comprising a chamber defined by a metal casing, said chamber including a floor, a pair of end walls, a back wall, a front wall, means for feeding of solid fuel thereinto, a ceiling and means to permit controlled admission of oxygen-containing gas, said stove further containing a compound combustion chamber comprising:

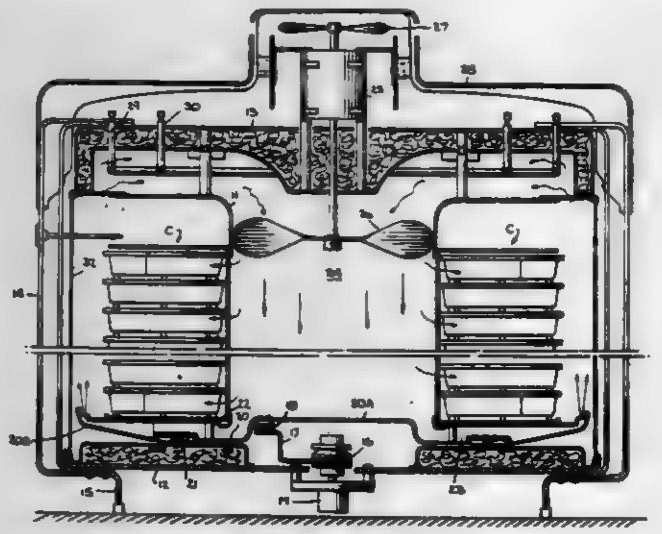
(a) a primary lower firebox zone on said floor thereof, for the burning of the solid fuel therein;
(b) a secondary upper combustion zone disposed between said primary lower firebox zone and said ceiling, and communicating in an unhindered fashion with said primary lower firebox zone and being fed with a gaseous mixture of partial and complete products of combustion from said primary lower firebox zone, for the secondary combustion of any combustible gases released by the combustion of said solid fuel in said primary lower firebox zone;
(c) an upstanding dorsal flue gas exit chamber contiguous with said back wall;
(d) a tertiary lower rear combustion zone only at the lower proof the base of said flue gas exit chamber, said tertiary combustion zone being encased by firebrick lining and being fed exclusively by a gaseous mixture of partial and complete products of combustion from said primary lower firebox zone, for the tertiary combustion of any combustible gases released by the combustion of said solid fuel in said primary lower firebox zone, the outlet from said tertiary combustion zone leading directly and in an unhindered fashion to said flue gas exit chamber;
(e) a primary outlet flue from the rear lower portion of said tertiary combustion zone for unhindered access of said gaseous mixture of partial and complete products of combustion from said primary lower firebox zone to said tertiary combustion zone; and
(f) a secondary outlet flue from the rear upper portion of said secondary combustion zone to said flue gas exit chamber, said secondary outlet including a damper therein, operable selectively to discharge gases from said primary combustion zone to said flue gas exit chamber.

4,326,496
FIREPLACE GRATE
George A. Bentrem, R.D. #2 - Box 154, McDonald, Pa. 15057
Filed Jun. 9, 1980, Ser. No. 158,041
Int. Cl.³ F23H *13/00*
U.S. Cl. 126—164 5 Claims



1. A fireplace grate comprising a generally air-impervious fuel-support plate extending to side walls of a fireplace, an upstanding front rim joined in an essentially airtight manner with a front edge of said fuel-support plate for retaining fuel on the top surface of the fuel-support plate, said upstanding front rim being air-impervious to normally block a flow of air from the fuel combustion site while permitting a supply of air to pass into the fireplace over the top of the front rim to aid combustion over the top surface of the fire for burning smoke, said upstanding front rim having at least one air passageway at a lateral side thereof to supply air from the front toward the fuel-burning site on said fuel-support plate, draft control means supported by said upstanding front rim to control the flow of air in said passageway below the top of the front rim to the burning site of fuel on said fuel-support plate, and leg means extending to the hearth of a fireplace for maintaining said fuel-support plate at a spaced location above the hearth.

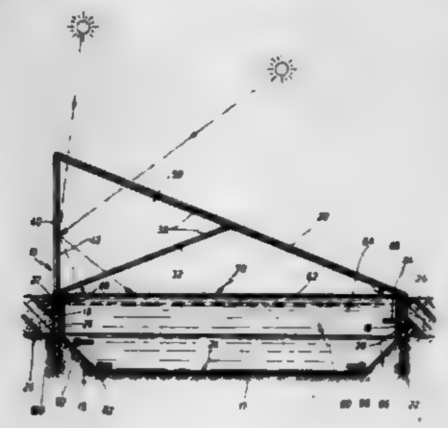
4,326,497
TWO-ZONE HOT AIR OVEN FOR FOOD-LOADED CARTRIDGES
Raul Guibert, 9635 Oakmore Rd., Los Angeles, Calif. 90035
Division of Ser. No. 809,775, Jun. 24, 1977, which is a continuation-in-part of Ser. No. 776,772, Mar. 11, 1977, Pat. No. 4,112,916. This application Dec. 20, 1978, Ser. No. 971,381
Int. Cl.³ A47G *23/04*; F24C *15/32*
U.S. Cl. 126—261 2 Claims



1. The method of heating pre-cooked food contained in a tray which is initially at a predetermined cold temperature to bring the temperature of the food to an elevated service temperature which is below the temperature at which the food will be subject to re-cooking, and to maintain the food at this service temperature, said method comprising the steps of:

A. subjecting the tray during a heat-up phase to periodic pulses of air at a constant predetermined frequency flowing past the tray at a relatively high velocity, said pulses of air being separated by no-flow intervals during which heat transfers occurs within the food, said pulses of air being at a re-cooking temperature above said service temperature to rapidly raise the temperature of the food from said cold temperature to said service temperature without raising the internal temperature of the food substantially above said service temperature; and B. thereafter during a service phase subjecting the tray to a flow of air which is heated to a temperature below said re-cooking temperature maintaining the food at the service temperature.

4,326,498
SOLAR CANAL
John E. Eckland, 600 Walker Hill La., Great Falls, Va. 22066
Filed Nov. 5, 1980, Ser. No. 204,186
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—415 3 Claims

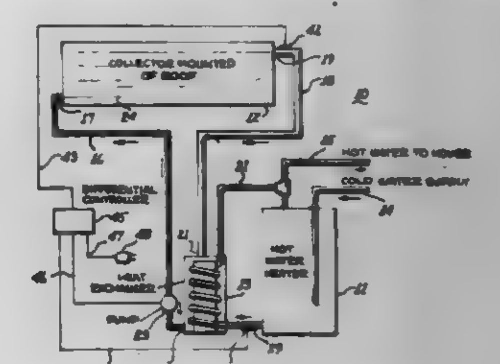


1. A solar canal for the collection and storage of solar energy comprising:

(a) a fluid filled collection and storage pond wherein the bottom and sides of said pond are constructed of a dark, absorbing material and are optionally comprised of an insulating material and wherein the fluid contains at least one salt whose concentration is graduated so that the highest concentration is near the bottom and the lowest concentration is near the surface to produce convecting layers at the top and bottom of said pond and a non-convecting layer between said convecting layers;
(b) a thin film attached to the walls of said pond and in contact with the surface of said fluid, and a rigid cover plate over said pond wherein said film and said rigid cover plate are in communication with the sides of said solar pond so as to retain the fluid in an essentially airtight environment and are transparent or translucent to solar radiation and optionally opaque to thermal infrared radiation; and
(c) a rigid support wall located on the side of said pond farthest from the equator, said rigid support wall supporting said rigid cover plate at an angle to the surface of said pond and being reflective on its side adjacent said pond and rigid cover plate.

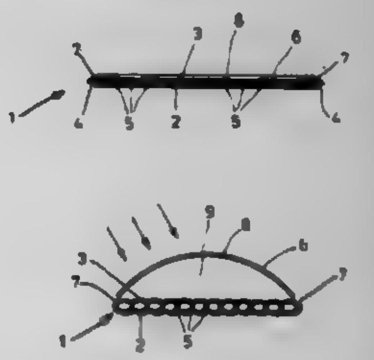
4,326,499
SOLAR WATER HEATING SYSTEM AND HEAT EXCHANGER THEREFOR
Marvin O. Koskela, 4222 E. Calle Redondo, Phoenix, Ariz. 85018
Filed Dec. 26, 1979, Ser. No. 106,539
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—420 10 Claims

1. A solar water heating system comprising a water storage tank including cold water inlet means and heated water outlet means and comprising a water utilization system, a solar collecting unit having cold liquid inlet means and heated liquid outlet means and comprising a heating liquid system, an independent heat exchanger disposed between said water utilization system and said heating liquid system, and means associated with said collector unit and said heat exchanger for draining the liquid from said solar collector and into said heat exchanger under certain predetermined temperature conditions, said independent heat exchanger comprises an outer tank having first inlet means of a predetermined size to accommodate a vent pipe and liquid flow for receiving heated liquid from said solar collecting unit and first outlet means for transferring cooled liquid to said solar collecting unit, a series of heat exchanger coils inside of said outer tank and having second inlet and second outlet means connected, respectively, to the cold water portion and the hot water portion of said water storage tank, said second outlet means of said heat exchanger being



adjacent the first inlet means of said outer tank, and a closed tank disposed interiorly of said series of heat exchanger coils and having a third outlet connected to said first outlet means, said inner tank having a volume sufficient to provide an air space in addition to the volume of liquid from the solar collection unit and having at least one opening therethrough communicating with the space between the inner and outer tanks adjacent said third outlet, and a gas vent pipe extending from the interior of said second tank through said first inlet means.

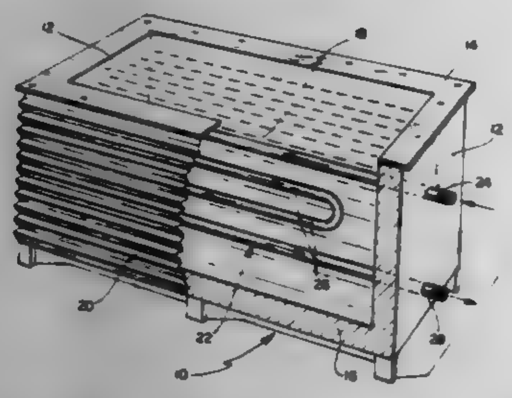
4,326,500
SOLAR RADIATION COLLECTOR
Winfried Bernhardt; Edgard Grundmann, and Rudolf Kroll, all of Wolfsburg, Fed. Rep. of Germany, assignors to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Fed. Rep. of Germany
Filed Jan. 30, 1980, Ser. No. 116,814
Claims priority, application Fed. Rep. of Germany, Feb. 1, 1979, 2903828
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—426 8 Claims



1. In a solar radiation collector composed of a mat formed of a black foil member and a further foil member being preferably pervious to radiation, the two members being connected together along the outer edges of the mat and at interior locations of the mat to form an inlet and outlet and an extended flow path for a fluid heat carrier medium between the inlet and outlet, the collector further including a cover connected to the mat along opposed edges thereof and arranged to be disposed in the path of solar radiation toward the mat with an air space being defined between the mat and the cover, with the connections at interior locations of the mat serving to form parallel flow channels defining portions of the flow path and extending parallel to the opposed edges of the mat along which the cover is connected such that the dimension of the mat between the

opposed edges at which the cover is connected has a first value when the mat does not contain heat carrier medium and is in a flattened state and a second value less than the first value when the mat is filled with heat carrier medium and is thus in an inflated state, the improvement wherein said cover is constructed such that when flat its dimension between said opposed edges has said first value, and said collector further comprises at least one elastically resilient body attached to said cover for causing said cover to assume an arched configuration which is concave toward said mat and defines a chamber with said mat when said dimension between said opposed edges attains said second value.

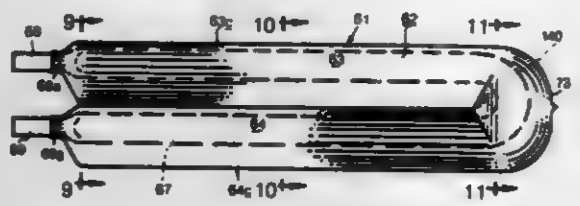
4,326,501
SOLAR FURNACE
Albert C. Jardin, 170 Old Mill Blvd., Warwick, R.I. 02889
Filed Apr. 3, 1980, Ser. No. 136,896
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—430 **2 Claims**

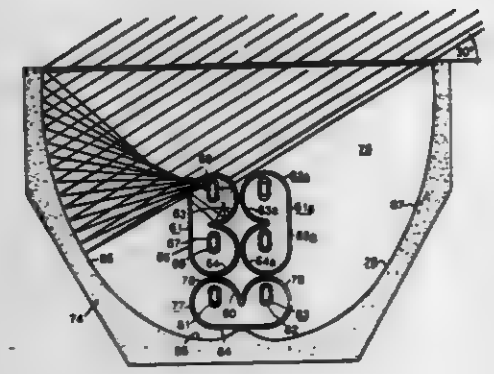


1. A solar furnace comprising a watertight tank, said tank being capable of storing phase change material that changes from solid to semi-solid to liquid form, said tank being constructed of steel, reinforced glass fiber or similar material or combinations thereof, said tank being of a design to absorb solar radiation through its outer front wall and into a phase change material which is in direct and total contact with said front outer wall, said tank being also of a design to store and hold heat within itself through the use of said phase change material, said tank also containing a conduit through its side outer wall and into and through said phase change material for passing water into and out of said tank, whereby solar heat will be transmitted into and stored by said phase change material and transferred by said material to said conduit to heat the water, wherein said heat storage and exchange materials comprise eutectic salt solutions such as calcium chloride hexahydrate or other similar phase change material, wherein said tank is provided with thickly insulated walls, the front wall being cut away, said cut away portion being covered by a corrugated plate adapted to receive the sun's rays, the corrugations on said plate being at an angle of the sum of the latitude of installation plus 10 degrees, wherein said tank is a rectangular tank, said tank being a self supporting structure and mounted outside the building on the ground surface and facing the sun, wherein said conduit comprises tubing extending into said tank, said tubing being bent to form a plurality of lengths of tubing in said tank.

4,326,502
SOLAR ENERGY COLLECTING SYSTEM
Ljubomir Radenkovic, Trg Oktob. Revol. 31, 37000 Krusevac, Yugoslavia
Continuation-in-part of Ser. No. 565,863, Apr. 7, 1975, Pat. No. 4,121,566. This application Oct. 20, 1978, Ser. No. 953,040
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—439 **3 Claims**

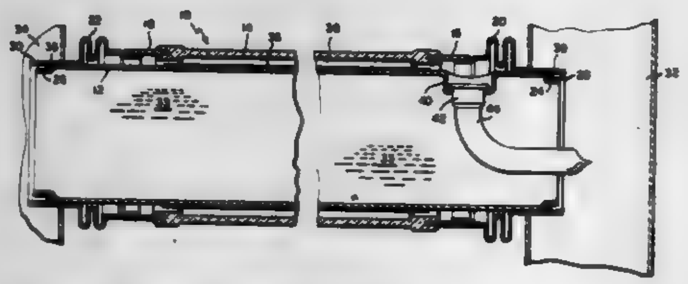
1. A solar energy collecting unit including:
(A) solar energy collectors comprising:
(i) a first and a second elongated concavely shaped wall, both walls extending in generally parallel relation to each other, each wall having an innerside portion and an outerside portion, at least part of said first wall and at least part of said second wall being reflective of solar radiation;
(ii) a wall transmissive to solar radiation extending from said outerside portion of said first wall to said outerside portion of said second wall;
(iii) a first means for transferring energy away from said collector and positioned between said transmissive wall and said first wall and second means for transferring





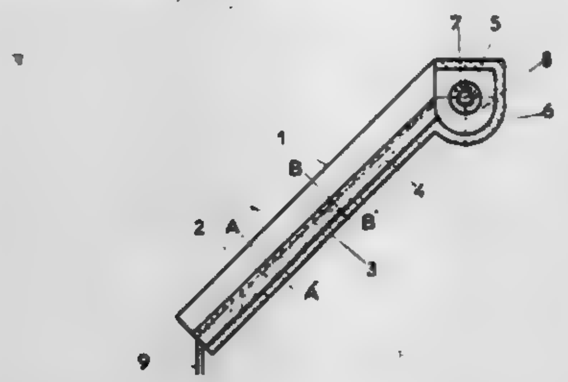
energy away from said collector and positioned between said transmissive wall and said second wall; and
(iv) said first and said second means positioned with respect to said reflective walls and with respect to said transmissive wall to provide space capable of insulating said first and second means; and
(B) a generally concave reflective trough including a bottommost portion and two outerside portions;
wherein a plurality of said collectors is positioned within said trough.

4,326,503
TURBULENT SOLAR COLLECTOR
Leonard W. Geier, Natick, and Kenneth F. Dunn, Arlington, both of Mass., assignors to Raytheon Company, Lexington, Mass.
Filed Mar. 3, 1980, Ser. No. 126,222
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—443 **10 Claims**



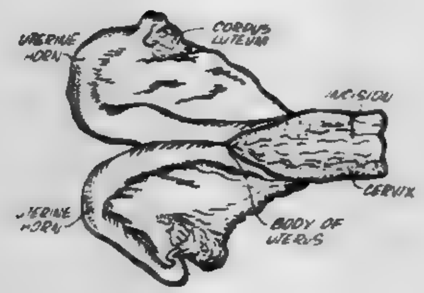
1. A solar collector comprising:
a first member having a solar energy transmissive wall portion;
fluid conduit means including a second member having a solar energy absorbent wall portion, the second member being sealed to said first member to form an evacuable chamber between said first member and said second member, the fluid conduit means directing a flow of heat conductive fluid along said wall portion of the second member; and
means extended in a fluid-tight manner through the second member into the fluid conduit means and disposed in communication with the chamber for evacuating the chamber.

4,326,504
TEXTILE SOLAR COLLECTOR
Yves Guadard, and Henri Guillemaud, both of Lyons, France, assignors to Rhone-Poulenc-Textile, Paris, France
Filed Jun. 26, 1979, Ser. No. 52,443
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—449 **2 Claims**



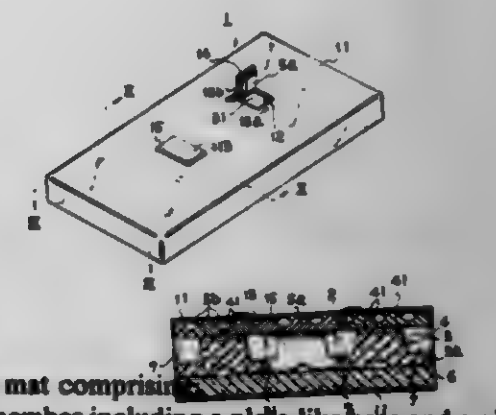
1. In a solar collector employing a running liquid to transmit heat collected from the sun comprising:
(a) a frame having an inlet and an outlet; and
(b) a textile layer supported within the frame, the textile layer being exposed to the sun and the collecting liquid entering the inlet being dispersed over the textile layer and withdrawn through the outlet, the improvement wherein said textile layer comprises two nonwoven textile layers of continuous superimposed filaments, each layer having a density different from that of the other layer, the nonwoven layer of lower density being the surface exposed to the sun and being impregnated with a synthetic resin.

4,326,505
SURGICAL PROCEDURE FOR EMBRYO TRANSPLANTS ON ANIMALS
Leo M. Cropsey, Golden, Colo., assignor to Occidental Petroleum Corporation, Los Angeles, Calif.
Filed Jan. 7, 1980, Ser. No. 109,802
Int. Cl.³ A61B *19/00*
U.S. Cl. 128—1 R **19 Claims**



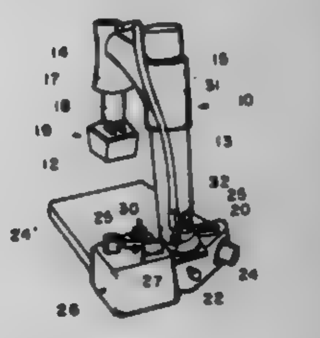
1. A method for implanting an embryo transplant from a donor mammal into the uterus of a recipient mammal, the method comprising the steps of:
(a) positioning the uterine horn in the peritoneal cavity proximate to the vaginal wall;
(b) inserting a cannula through the vaginal wall, through the wall of the uterine horn and into the lumen of the uterine horn of the recipient mammal;
(c) introducing an embryo transplant into the lumen of the uterine horn through the cannula; and
(d) withdrawing the cannula.

4,326,506
VIBRATILE MAT
Ichiro Kawabata, 282 Oaza Yono, Yono-shi, Saitama-ken, Japan
Filed Jul. 15, 1980, Ser. No. 169,101
Claims priority, application Japan, Jul. 16, 1979, 54-97730[U]; Dec. 3, 1979, 54-167401[U]
Int. Cl.³ A61H *1/00*
U.S. Cl. 128—33 **9 Claims**



1. A vibratile mat comprising:
a resonating member including a plate-like base and a plurality of convex walls arranged and fixed onto the top face of said plate-like base at a predetermined intervals, each convex wall having a number of wart-like small projections formed on the top face thereof, said plate-like base and convex wall being composed of a hard plastic material;
vibrating means placed in a cavity formed by hollowing said resonating member; and
a pad disposed on the top face of said resonating member to cover said resonating member, said pad being composed of a material softer than the material of said resonating member.

4,326,507
CPR PROTOCOL AND CARDIOPULMONARY RESUSCITATOR FOR EFFECTING THE SAME
Clare E. Barkalow, Comstock Park, Mich., assignor to Michigan Instruments, Inc., Grand Rapids, Mich.
Filed Nov. 20, 1979, Ser. No. 96,064
Int. Cl.³ A61H *23/00*
U.S. Cl. 128—54 **25 Claims**

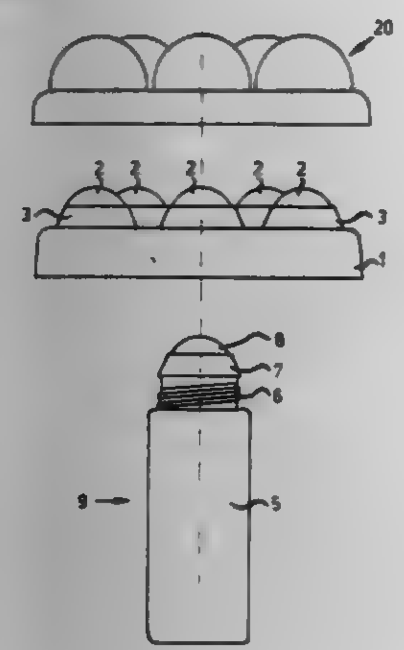


1. A cardiopulmonary resuscitator comprising in combination:
a reciprocatable cardiac compressor means for cyclically compressing a patient's chest;
a ventilating means for simultaneously inflating the patient's lungs to a benign limiting pressure over a period encompassing at least one cycle of said compressor means; and
a ventilator output control means for:
(i) preventing retrograde and exhale flow from the patient's lungs during the systolic portion of the cycle of said compressor means thus providing for a pressure increase in the patient's lungs due to compression of the patient's chest, and

(ii) periodically venting the patient's lungs.

4,326,508
MASSAGING DEVICE

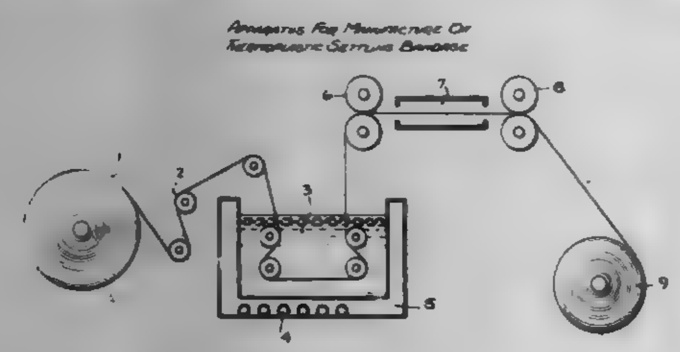
Robert Stauffer, Glattalstrasse 150, Rumlang, Switzerland (CH-8153)
Filed May 23, 1980, Ser. No. 152,660
Claims priority, application Switzerland, Jun. 7, 1979, 5306/79
Int. Cl.[3] C13D *1/06*
U.S. Cl. 128—57 5 Claims



1. A manual massaging device comprising a base plate (1) having an upper surface and a central, threaded hole (4), a plurality of massaging balls (2) rollably mounted in said base plate in concentric, evenly spaced relation to said hole, and applicator container (5) for massaging oil equipped with an applicator ball (8) at its upper end threadably mounted in said hole and projecting downwardly away from said plate to provide a manipulating handle therefor.

4,326,509
THERMOPLASTIC COMPOSITION FOR SETTING BANDAGES AND A SOLVENTLESS PROCESS FOR THE MANUFACTURE THEREOF

Koji Usukura, Saitama, Japan, assignor to Tokyo Eizai Laboratory Co. Ltd., Tokyo, Japan
Filed Dec. 19, 1979, Ser. No. 105,200
Claims priority, application Japan, Dec. 27, 1978, 53/161383
Int. Cl.[3] A61F *5/04;* B05D *3/02;* B32B *7/01*
U.S. Cl. 128—90 12 Claims



1. An orthopedic setting bandage which comprises
a thick, soft, woven or knit base fabric of natural or synthetic fibers impregnated with a thermoplastic composition comprising 60% to 80% by weight of a saturated linear polyester and 20% and 40% by weight of a resin having a low crystallinity and a low softening temperature which is selected from the group consisting of polyvinyl either, a copolymer of ethylene and vinylacetate, polyisoprene, polyisobutylmethacrylate, polyethylene, poly (4-hydroxyhexanoic acid) and poly (ethylene terephthalate-ethylene heptadiate) wherein,
said composition impregnated base fabric will harden to a waterproof, strong, rigid, nonporous, nontacky structure upon being warmed to about 45° C. and subsequently cooled.

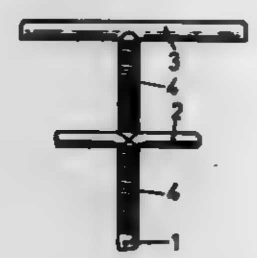
4,326,510
BARRIER CONTRACEPTIVE TORUS

Richard G. Buckles, Basel, Switzerland, assignor to World Health Organization, Geneva, Switzerland
Filed Nov. 20, 1979, Ser. No. 96,156
Int. Cl.[3] A61F *5/46*
U.S. Cl. 128—127 10 Claims

1. A contraceptive device comprising:
a torus of biocompatible materials sized to fit in a vagina;
means formed with the torus for providing a primary barrier preventing direct ejaculation into the cervix while allowing fluid drainage from the cervix;
said means comprising a pair of overlapping flaps, each extending into, and together completely covering, the interior opening of the torus; and
one of said flaps being arcuate in shape and extending approximately 180° around the opening in the torus, defining a circular segment central opening; and the other of said flaps being of flexible material and being generally circular in shape extending approximately 360° around the opening in the torus and overlapping portions of the said one flap over the entire arcuate extent thereof.

4,326,511
INTRAUTERINE CONTRACEPTIVE DEVICE

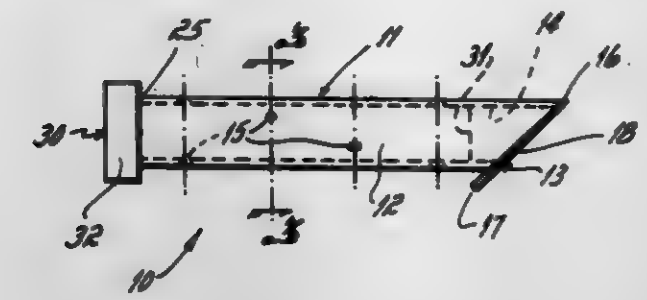
Clota E. Zimerman, 9 de Julio 532-A, Cordoba, Argentina
Filed Oct. 5, 1979, Ser. No. 82,283
Int. Cl.[3] A61F *5/46*
U.S. Cl. 128—130 4 Claims



1. An intrauterine contraceptive device comprising a vector and contraceptor, said vector consisting of a vertical stem having two horizontal arms, the arm at the end of said stem being longer than the second arm, said vertical stem being twisted by a copper wire having a surface area of about 200–500 square mm wherein the second arm is located about the middle of the vertical stem and wherein said vertical stem is made from a plastic material.

4,326,512
COMPOSITE VENTILATION TUBE FOR THE MIDDLE EAR

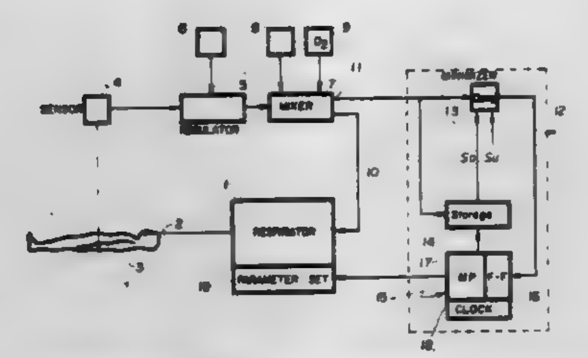
Sidney A. Peerless, 2650 Kipling Ave., Cincinnati, Ohio 45239
Filed Feb. 14, 1980, Ser. No. 121,417
Int. Cl.[3] A61F *11/00*
U.S. Cl. 128—151 6 Claims



1. A composite ventilation tube assembly for the middle ear, said composite ventilation tube comprising:
an outer tube formed from a slightly flexible inert material, said outer tube including:
a thin-walled tubular section having a central bore extending completely therethrough;
an outwardly extending flange formed at one end of the tubular section; and
a plurality of transverse openings formed in the walls of said tubular section in fluid communication with said central bore;
a piston member formed of microporous plastic material, said piston member including:
a stem portion disposed within said tubular section and in frictional engagement therewith; and
a head disposed outwardly of said bore and adapted for engagement with the end of said tubular section;
said piston member being displaceable axially outwardly away from said flange in response to buildup in pressure within the middle ear.

4,326,513
PATIENT DATA CONTROLLED RESPIRATION SYSTEM

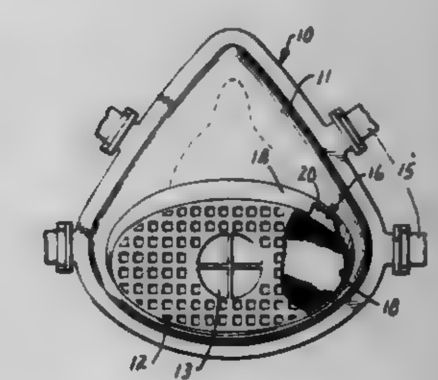
Volker Schulz, Mainz; Stefan Kunke, Wiesbaden, and Ulrich Heim, Reinfeld, all of Fed. Rep. of Germany, assignors to Drägerwerk AG, Fed. Rep. of Germany
Filed Jun. 30, 1980, Ser. No. 164,573
Claims priority, application Fed. Rep. of Germany, Jul. 2, 1979, 2926747
Int. Cl.[3] A61M *16/00*
U.S. Cl. 128—203.14 7 Claims



1. A respiration system for minimizing inspiration breathing gas oxygen partial pressure FiO_2 while maintaining a desired arterial oxygen partial pressure PaO_2 for a patient, including a respirator which supplies breathing gas to the patient at a plurality of respirator parameters, comprising:
PaO_2 sensor means for sensing actual arterial oxygen partial pressure of a patient and supplying a signal corresponding thereto;
mixing means for mixing oxygen plus at least one other gas to supply a breathing gas mixture having an actual oxygen partial pressure FiO_2, value to the respirator,
regulator means connected to said mixer for regulating the relative amounts of oxygen and the other gas in the breathing gas, said regulator means having a nominal PaO_2 value and receiving the PaO_2 sensor means signal for regulating the mixing means so that the actual PaO_2 value approaches the PaO_2 value;
comparator means connected to the mixing means and having a lower threshold value Su;
storage means connected to said mixing means and said comparator means for storing said actual FiO_2 value and supplying that value as the So value to said comparator means for a subsequent comparison step of said comparator means, said comparator means comparing said actual FiO_2 value from said mixing means with said Su and So values;
clocking means associated with said comparator means for establishing a time period as the duration of each comparison step;
parameter adjustment means connected to the respirator and the comparator means for selectively adjusting said plurality of respirator parameters, one at a time, in a selected direction and by a selected increment; and
control means operatively connected to said comparator means and said storage means for controlling the parameter adjustment means to select one of said plurality of respiratory parameters and adjust said one selected respiratory parameter in accordance with one of the following conditions:
(i) with the actual FiO_2 value being between the Su and So values during a comparison step duration, the control means being operable to cause the parameter adjustment means to make an adjustment of said one parameter in a positive or negative direction, store the direction of said adjustment, and select another of said plurality of respiratory parameters for adjustment;
(ii) with the actual FiO_2 value being outside the range between the Su and So values, said control means being operable to maintain the So value of the previous comparison step in said storage means, reverse the direction of adjustment of the previous selected parameter and adjust the previous selected parameter by a selected increment in the reverse direction, and adjust the one selected parameter in a position or negative direction.

4,326,514
CARTRIDGE RESPIRATOR WITH SERVICE LIFE INDICATOR

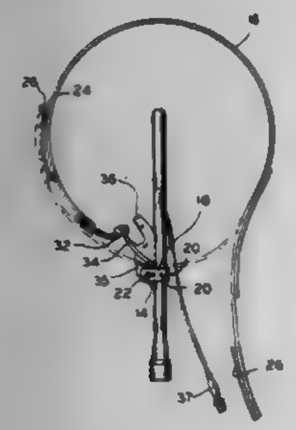
Gilbert L. Eian, White Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Jun. 20, 1980, Ser. No. 161,441
Int. Cl.[3] A62B *7/10*
U.S. Cl. 128—202.22 5 Claims



1. A respirator for protection against toxic airborne material in the atmosphere comprising a shell, a canister or cartridge having a transparent sidewall within which is supported a gas/vapor sorbent bed, and a colorimetric indicator comprising a flat, sheet-like self-supporting structure of said chlorimet-

ric indicator coated onto a transparent substrate in a dry coating weight in the range of 13 to 62 g/m^2 positioned along and parallel to a substantial portion of the inner transparent sidewall of said respirator canister or cartridge such that the colorimetric indicator substance is oriented towards the sorbent bed, said colorimetric indicator capable of undergoing an irreversible change in color concomitant with exposure to concentrations of toxic vapors and gases which appears as an irregular linear boundary between reacted and unreacted areas of said indicator substance which is viewable through the sidewall of said respirator canister or cartridge to visually indicate remaining capacity of the sorbent bed for said toxic airborne material.

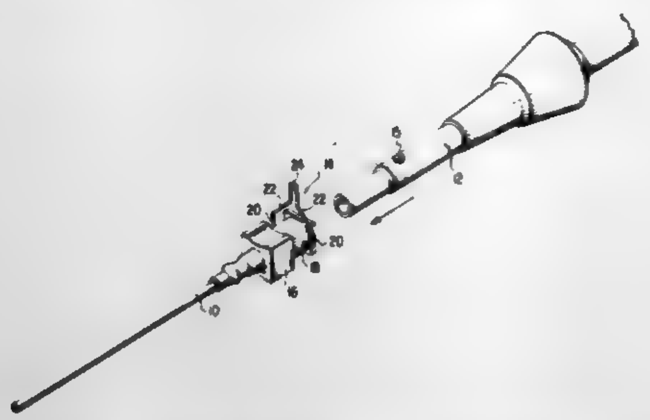
4,326,515
ENDOTRACHEAL TUBE RETAINER
Mark A. Shaffer, 5455 N. Sheridan Rd., Chicago, Ill. 60640, and Frank J. Baker, II, 456 Poplar, Elmhurst, Ill. 60126
Filed Apr. 14, 1980, Ser. No. 140,175
Int. Cl.^{3} A61M *25/02*
U.S. Cl. 128—207.17 21 Claims



1. A device for holding an endotracheal tube comprising:
a tie plate curved to rest along the outside of a patient's cheek, said tie plate having a first tie-plate end;
a bite plate curved to extend along the inside of a patient's cheek and between a patient's upper and lower gums, said bite plate having a first bite-plate end;
a member connecting said first tie-plate end with said first bite-plate end so as to form a channel between them, said tie plate and bite plate adapted to grip a patient's cheek in the channel between them so as to maintain said tie plate, said bite plate and said member in a fixed position in a patient's mouth, said tie plate, said bite plate and said member sized and shaped to extend only about half-way across a patient's mouth so as to permit access to a patient's mouth cavity while said device is in the patient's mouth;
means for securing an endotracheal tube to said member, said bite plate having a width sufficiently greater than said tube to prevent a patient from biting said tube; and
means for securely fixing and holding said member tie plate, bite plate and securely in patient's mouth.

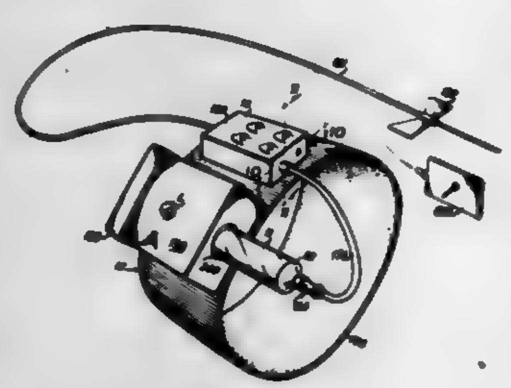
4,326,516
INTRACATHETER-INTRAVENOUS TUBING LOCK
Kenneth E. Schultz, 402 NW. 94th La., Coral Springs, Fla. 33060, and Mary Craycraft, 6820 SW. 43rd Ct., Davie, Fla. 33314
Filed Jan. 2, 1980, Ser. No. 109,132
Int. Cl.^{3} A61M *5/00*
U.S. Cl. 128—214 R 11 Claims

1. In an intravenous supply tubing having a connector and an intracatheter insert portion, a locking device for releasably securing said intravenous supply tubing to said intracatheter insert connector, comprising:
a knob projecting from said intravenous supply tubing proximate said connector of said intracatheter insert when said intravenous supply tubing and said intracatheter insert are in an operating position; and
locking means pivotably attached at one end to said connector of said intracatheter insert to pivot about an axis which



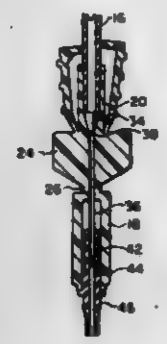
intersects the longitudinal axis of at least one of said intravenous supply tubing and said intracatheter insert substantially at a right angle for placement over said knob to thereby secure said intravenous supply tubing to said intracatheter insert.

4,326,517
SELF CONTAINED INJECTION SYSTEM
Douglass G. Whitney, 2518 W. Wesley Rd., and John K. Martin, III, 2837 Ridge Wood Cir., both of Atlanta, Ga. 30327
Division of Ser. No. 1,091, Jan. 8, 1979, Pat. No. 4,273,122, which is a continuation-in-part of Ser. No. 741,528, Nov. 12, 1976, Pat. No. 4,150,672, and Ser. No. 964,953, Nov. 30, 1978, Pat. No. 4,235,235. This application Mar. 27, 1981, Ser. No. 248,246
Int. Cl.^{3} A61M *5/20*
U.S. Cl. 128—214 F 3 Claims



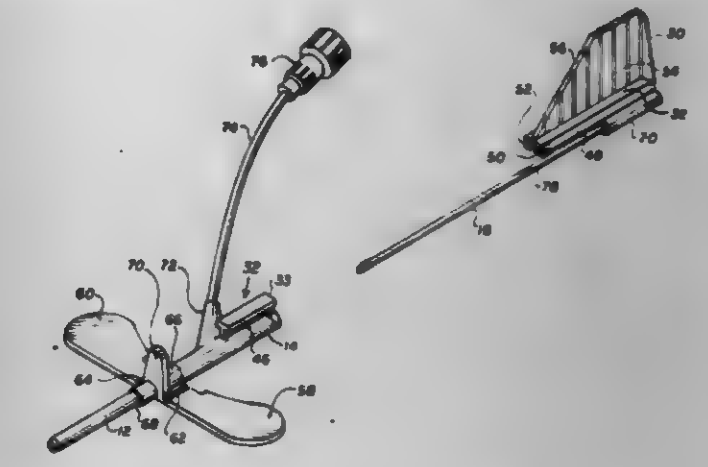
1. A self-contained, portable fluid dispensing device adapted to be mounted on a patient for injecting fluid into a patient at an average prescribed rate over a prolonged period of time including:
a housing adapted to be mounted on the patient;
a container carrying a supply of the fluid removably attached to said housing at a prescribed position on said housing about an injection axis, said fluid container defining a fluid outlet therefrom connected to the patient and including a piston movably mounted in said container for movement axially along said injection axis, said piston operatively associated with the fluid in said container so as to force fluid from the fluid outlet into the patient as said piston is moved in a first direction along said injection axis toward the fluid outlet,
expelling means carried by said housing for selectively moving said piston in said first direction toward the fluid outlet to force the fluid into the patient, said expelling means including a first threaded member carried by said housing in registration with said injection axis and axially fixed with respect to said injection axis; a second threaded member threadedly engaging said first threaded member so that relative rotation between said threaded members causes said second threaded member to be axially moved along said injection axis to selectively engage and move said piston in said first direction toward the fluid outlet to force the fluid out of the fluid outlet in said container into the patient; a drive member mounted in said housing coaxially with said second threaded member about said injection axis, said drive member axially fixed with respect to said injection axis and rotatable about said injection axis; and a slip joint interconnecting that end of said second threaded member opposite said piston with said drive member so that said second threaded member is axially movable with respect to said drive member while remaining rotationally fixed with respect to said drive member whereby rotation of said drive member rotates said second threaded member; and
drive means for selectively rotating said drive member to rotate said second threaded member and cause said second threaded member to force said piston in said first direction toward said outlet.

4,326,518
SEPARABLE INTEGRAL DONOR CONNECTOR WITH MANUAL CLAMPING MEANS
Ronald A. Williams, Mundelein, Ill., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.
Filed Apr. 7, 1980, Ser. No. 138,031
Int. Cl.^{3} A61M *5/00*
U.S. Cl. 128—214.2 8 Claims



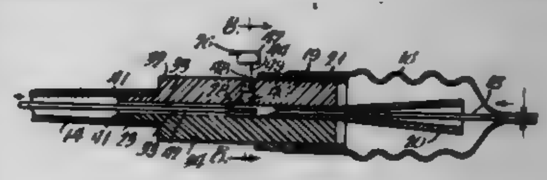
2. A device for supporting a needle and for attaching the needle in flow communication with flexible conduit, said device comprising
a main body including means defining a fluid passage which extends axially therethrough and which includes, at a first end thereof, means for attaching the needle in flow communication with said fluid passage and, at a second end thereof, means for attaching the flexible conduit in flow communication with said fluid passage and, thus, the needle,
first and second jaw members projecting outwardly beyond said main body adjacent to said second fluid passage end on opposite sides of and generally facing the axis of said fluid passage, each of said jaw members including, at its terminus, an arm portion extending radially inwardly toward the axis of said fluid passage, one of said arm portions being spaced a greater distance from said main body than the other one of said arm portions, and
means operatively connecting said first and second jaw members to said main body for cooperative movement between a generally open position, in which said arm portions are disposed in a spaced apart relationship on opposite facing sides of the axis of said fluid passage to afford fluid flow through the flexible conduit attached thereto, and a generally closed position, in which said arm portions are disposed in a mutually overlapping portion along the axis of said fluid passage to pinch between said overlapping arm portions a section of the flexible conduit and obstruct fluid flow therethrough.

4,326,519
VENIPUNCTURE DEVICE
Herbert F. D'Alo, Crystal Lake, and Andrew J. Muetterties, Gages Lake, both of Ill., assignors to Abbott Laboratories, North Chicago, Ill.
Filed Feb. 21, 1980, Ser. No. 123,522
Int. Cl.^{3} A61M *5/00, 25/00*
U.S. Cl. 128—214.4 13 Claims



1. An improved venipuncture device comprising:
catheter means having catheter hub means attached thereto at a first end;
needle means having needle hub means attached thereto at a first end and a sharpened tip at a second end, said needle means extending coaxially through said catheter means with said sharpened tip extending from said catheter means at a second end and being adapted for insertion and removal from said catheter means; and
a fin member extending substantially vertically from said needle hub means and longitudinally along a substantial portion of the length of said catheter hub means whereby said device may be easily grasped, balanced and manipulated during venipuncture;
guide track means longitudinally disposed along the exterior of said catheter hub, along the base portion of said fin member and along said needle hub, said guide track means being constructed and arranged for the slidable attachment or detachment of said needle hub means to said catheter hub means, said guide track means further being effective to prevent rotation of said needle means within said catheter means;
said base portion of said fin member being disposed coaxially with and extending vertically from said guide track means so as to facilitate kinesthesis, ease of venipuncture, and joinder or separation of said catheter hub means from said needle hub means by means of said fin member.

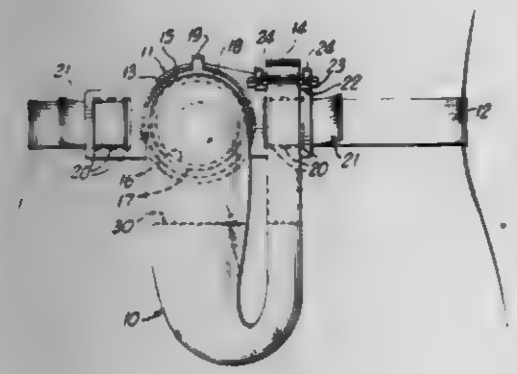
4,326,520
BRAKE-ACTUATED CATHETER FEEDER
Ralph D. Alley, 13 Spring Street Rd., Loudonville, N.Y. 12211
Continuation of Ser. No. 17,540, Mar. 5, 1979, abandoned. This application Dec. 22, 1980, Ser. No. 218,497
Int. Cl.^{3} A61M *5/00*
U.S. Cl. 128—214.4 14 Claims



1. A device for aiding in threading a catheter for human or animal use, comprising:
an element formed from first and second similarly shaped parts and having a bore therethrough for receiving a catheter;

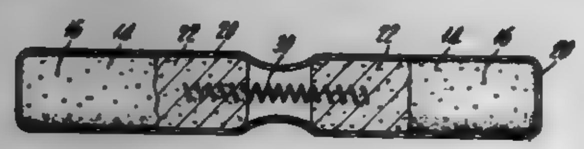
means for aligning said first and second parts;
independent means in said bore overlapping a portion of said catheter, said independent overlapping means is a ferrule concentrically disposed about the catheter;
brake means in said element for selectively urging said independent ferrule received within said bore between said brake means and said catheter into engaging and disengaging contact with said catheter so that when said brake means is engaged, said catheter remains in a fixed position with respect to said element, and when said brake means is disengaged, said catheter is able to pass freely in either direction through said bore; and
means for retaining the first and second parts together.

4,326,521
APPLIANCE FOR THE TREATMENT OF COLOSTOMY AND THE LIKE
Arthur E. Marsan, 240 Ferrari Ct., El Paso, Tex. 79912
Continuation-in-part of Ser. No. 728,517, Nov. 11, 1976, abandoned. This application Feb. 28, 1980, Ser. No. 125,344
Int. Cl.³ A61F *5/44*
U.S. Cl. 128—283 **1 Claim**



1. An improved appliance for the treatment of colostomy and the like, comprising a pouch having a receiving end and a drain end, a gasket having plural portions formed into a unitary structure having an opening for reception of the stoma, one such portion forming an annular peripheral lip around the stoma opening at its outlet end, another such portion forming a ring member hinged to the gasket, the receiving end of the pouch adapted to be inserted by hand into the center of the ring member, the ring member adapted to be moved by hand on its hinge to a position in which it coacts with said lip and presses an annular portion of the receiving end of the pouch into annular engagement with said lip to secure the pouch to the gasket, another such portion forming spaced jaws, and still another such portion forming a clamping bar hinged to the gasket and adapted to be moved by hand on its hinge after the drain end of the pouch has been placed by hand between said jaws to clamp said drain end to the gasket with said drain end closed.

4,326,522
MESH-COVERED BOLUS
Jorge Guerrero, Pennington; Alice D. Mellon, Bridgewater; Charles G. Fritz, Basking Ridge, and Namasivaya Doddi, Manville, all of N.J., assignors to Pitman-Moore, Inc., Washington Crossing, N.J.
Filed Jun. 9, 1980, Ser. No. 157,591
Int. Cl.³ A61M *7/00*
U.S. Cl. 128—/260 **2 Claims**

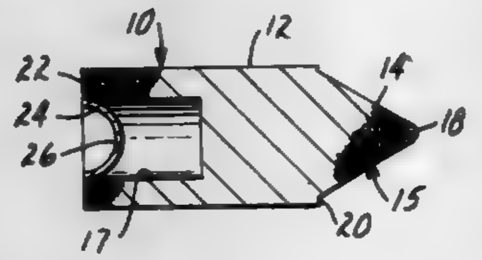


1. A rumen-retentive bolus comprising a medicament admixed in a bioerodible sustained-release matrix; a mesh made of a nonabsorbable material completely encasing said medicament-containing matrix; retention means to prevent the bolus from being regurgitated by the ruminant in less than two weeks which retention means is to have the medicament-containing matrix contain at least two matrix segments capable of changing their positions relative to each other after administration into the rumen, and wherein at least two of said matrix segments are joined together by flexible resilient means in the form of a coiled spring, so that the bolus segments can be formed into a shape suitable for administration from a bolling gun, and wherein dissolvable shape holding means are used to keep it in said shape until after it has been administered into the rumen and the shape holding means dissolved by the ruminal fluids, whereupon the bolus changes its shape to become sufficiently large that it cannot be regurgitated.

4,326,523
METHOD OF SUPPLYING MICRONUTRIENTS TO ANIMALS
Glen W. Wolfrom; Robert D. Williams, both of Terre Haute, Ind.; Herbert T. Peeler, Northbrook, Ill., and Richard E. Ivy, Terre Haute, Ind., assignors to International Minerals & Chemical Corp., Terre Haute, Ind.
Filed Aug. 25, 1980, Ser. No. 180,798
Int. Cl.³ A61M *7/00*
U.S. Cl. 128—260 **16 Claims**

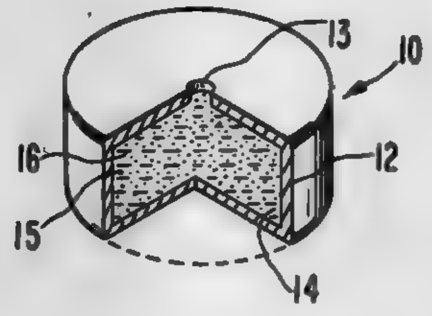
1. A method of supplying a micronutrient to meat-producing animals comprising formulating the micronutrient in a slow release, absorbable pellet in combination with a biocompatible, absorbable carrier, and subcutaneously implanting said pellet in a meat-producing animal to thereby slowly release said micronutrient directly into the animal's circulatory system as said pellet is absorbed, said micronutrient being selected from the group consisting of suitable compositions containing iron, copper, selenium, zinc, manganese, iodine, cobalt, molybdenum, chromium, silicon, biotin, vitamin E and vitamin B_{12}, and said absorbable carrier being selected from the group consisting of lactose, fibrin, methylcellulose, collagen, cholesterol, carbowax, beeswax, dibutylphthalate (DBP), polyvinylpyrolidone (PVP), zinc stearate, polyactides including α-hydroxypropionic acid, polyethylene glycol (PEG), sugar-starch combinations and suitable combinations of the above.

4,326,524
SOLID DOSE BALLISTIC PROJECTILE
James F. Drake, Jr., Minneapolis, and G. Phillip Rambosek, Shafer Township, Chisago County, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Sep. 30, 1980, Ser. No. 192,297
Int. Cl.³ A61M *7/00*
U.S. Cl. 128—260 **10 Claims**



1. A solid dose ballistic projectile shaped for penetrating the epidermal layer of a living animal and lodging totally within the tissues of the animal and capable of releasing biologically active ingredient into said tissue of said animal when lodged therein, the projectile comprising in a major portion a body consisting essentially of a uniform cohesive mixture of from about 70 to 95 weight percent of grindable solid particles, at least about 90 weight percent of said particles having an average diameter between about 7 and 25 micrometers, and at least a biologically effective amount of said particles comprising biologically active material, and from about 5 to 30 weight percent of a biologically inert, cohesive binder adhered to said particles, said binder being more compressible than said grindable solid particles, and said body being capable of providing structural integrity to said projectile when ballistically propelled at a muzzle velocity of up to about 475 m/sec and implanted within said tissues of said animal.

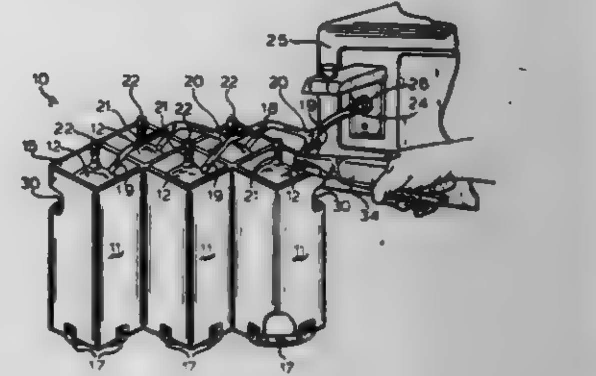
4,326,525
OSMOTIC DEVICE THAT IMPROVES DELIVERY PROPERTIES OF AGENT IN SITU
David Swanson, Palo Alto, and David Edgren, El Granada, both of Calif., assignors to ALZA Corporation, Palo Alto, Calif.
Filed Oct. 14, 1980, Ser. No. 196,219
Int. Cl.³ A61M *7/00*
U.S. Cl. 128—260 **13 Claims**



1. A process for modifying the solubility of a beneficial agent in an osmotic device, which process comprises:
A. imbibing an exterior fluid into the osmotic device, the device comprising:
1. a semipermeable wall surrounding and forming;
2. a compartment containing a beneficial agent, and a buffer that is soluble in the fluid and exhibits an osmotic pressure gradient across the wall against the fluid;
3. a passageway in the wall connecting the exterior of the device with the compartment; and,
B. reacting the agent and the buffer in the presence of fluid imbibed into the compartment, thereby modifying the agent to produce a different agent that is soluble in the fluid and exhibits an osmotic pressure gradient across the wall against the fluid, and which agent can be delivered through the passageway from the device.

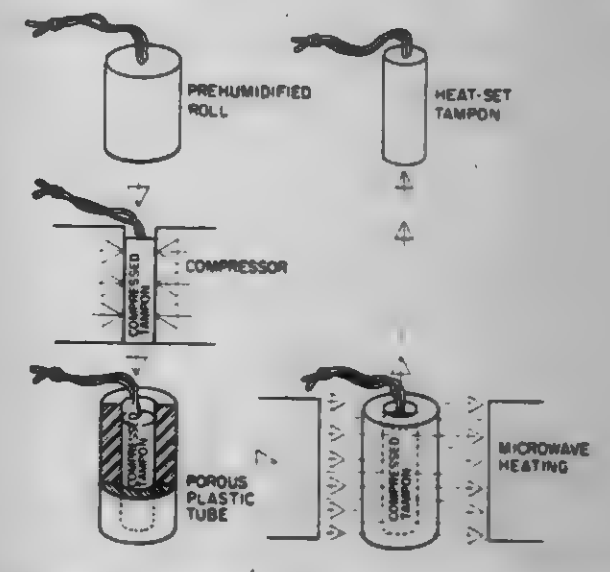
4,326,526
DIALYSATE BAG ASSEMBLY FOR CONTINUOUS AMBULATORY PERITONEAL DIALYSIS
Robert T. Buck, Raleigh, and Charles R. Horres, Chapel Hill, both of N.C., assignors to Becton, Dickinson and Company, Paramus, N.J.
Filed Sep. 18, 1980, Ser. No. 188,394
Int. Cl.³ A61J *1/00*
U.S. Cl. 128—272 **15 Claims**

1. A dialysate bag assembly for continuous ambulatory peritoneal dialysis comprising:
a substantially flattened, expansible container having a plurality of compartments;
a plurality of substantially flattened, expansible dialysate bags, each bag being removably positioned in one of said compartments, each bag having a dialysate inlet opening and a dialysate outlet opening with removable closure means to close said outlet openings;
a main feedline adapted to be connected at one end to a primary source for delivering dialysate to said bags, said feedline being detachably connected to said inlet opening on each of said bags for filling same with dialysate, said bags and said container adapted to expand as said bags are being filled; and



means associated with each of said inlet openings to close same in liquid-tight fashion after the delivery of dialysate is completed.

4,326,527
MICROWAVE HEAT SETTING OF TAMPON
Edward G. Wollangk, Oshkosh, and Amnuey Lilaonitkul, Appleton, both of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.
Filed May 27, 1980, Ser. No. 153,010
Int. Cl.³ A61F *13/20*
U.S. Cl. 128—285 **7 Claims**

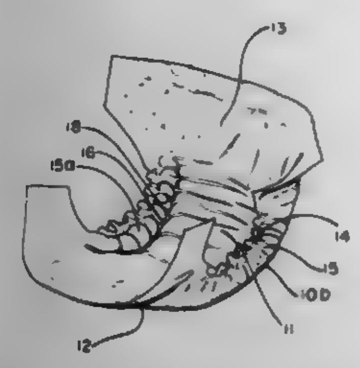


1. A process for heat-setting a radially compressed tampon comprising:
(a) compressing a prehumidified tampon; said compressed tampon having a diameter less than its height;
(b) inserting said compressed tampon in an open ended microwave transparent tube having openings along the longitudinal axis of said tube;
(c) subjecting said tampon to microwave heating; and
(d) drying said tampon.

4,326,528
ELASTIC LEGGED DIAPERS
Lenore S. Ryan; Frank C. Murray, both of Appleton; Ann M. Sprangers, Neenah; William J. Santoski, Appleton; Michael A. Sciaraffa, Greenville; Kent W. Abel, Black Creek, and Harold F. Donnelly, Menasha, all of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.
Filed Apr. 7, 1980, Ser. No. 138,255
Int. Cl.³ A61F *13/16*
U.S. Cl. 128—287 **25 Claims**

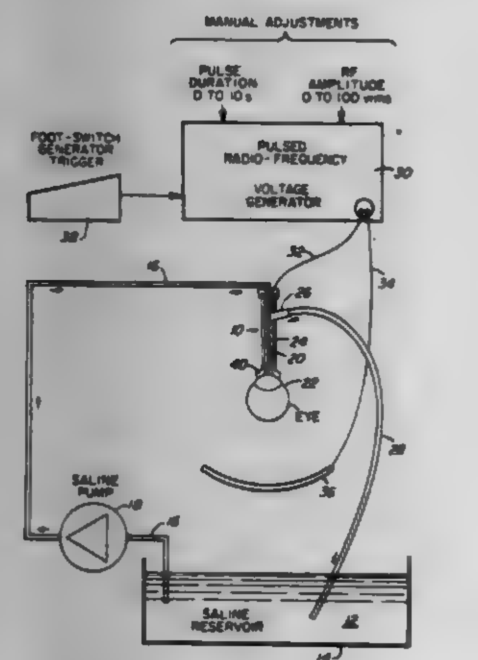
1. In a unitary elasticized disposable diaper having a fluid pervious facing, a fluid impervious backing essentially coterminous therewith and an absorbent material positioned between said facing and said backing, a waist portion at each end of said

diaper for securement about the waist of the baby when the diaper is worn, and an elasticized crotch portion the end waist portions having elastic attached near the periphery of each diaper side in the crotch portion and a flex region positioned inward from said elastic, absorbent being present between said elastic and said region, the improvement comprising providing



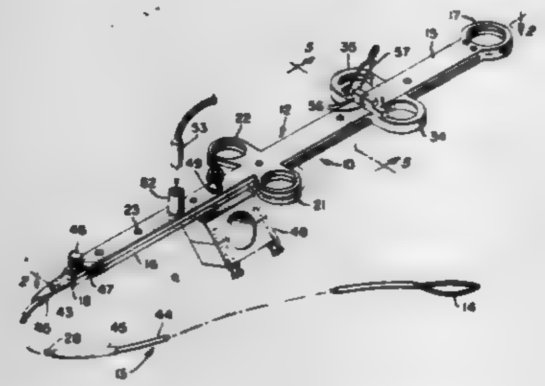
the diaper with sufficient rigidity so that the lowest profile at the crotch area of the baby when the baby is standing is planar or upwardly arcuate in the area in the crotch between the predetermined directional change formed by the flex regions and the area between the flex regions and the elastic is planar and tends to remain planar even when the baby is sitting thereby forming a containment pocket.

4,326,529
CORNEAL-SHAPING ELECTRODE
James D. Doss, and Richard L. Hutson, both of Los Alamos, N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.
Continuation-in-part of Ser. No. 909,865, May 26, 1978, abandoned. This application Dec. 5, 1979, Ser. No. 100,664
Int. Cl.³ A61B *17/36*
U.S. Cl. 128—303.1 15 Claims



1. A circulating saline electrode for changing corneal shape comprising:
a tubular nonconductive electrode housing having a longitudinal axis and at one end an annular expanded base, said base having a surface substantially matched to the subject corneal suface of an eye;
a tubular conductive electrode having a longitudinal axis positioned within and longitudinally aligned with said tubular housing, said electrode having agenerally hemispherical head disposed in the vicinity of said annular base of said housing, adapted to be positioned near to but not physically touching a cornea against which said housing may be placed, said electrode head having at least one orifice therein:
means for circulating an electrically conductive coolant through said tubular electrode and said orifice therein and thence through said tubular housing; and
means for applying electromagnetic energy at a radiofrequency wavelength through said tubular electrode to selectively heat the subject cornea and thereby change its shape.

4,326,530
SURGICAL SNARE
George J. Fleury, Jr., 1005 Abbey Way, McLean, Va. 22101
Filed Mar. 5, 1980, Ser. No. 127,321
Int. Cl.³ A61B *17/39*
U.S. Cl. 128—303.14 8 Claims



1. A surgical instrument having a snare in the form of a loop useful in performing colonoscopic polypectomy comprising:
(a) an elongated flexibly bendable open ended sheath having proximal and distal ends;
(b) a folded on itself flexible cable positioned in said sheath and capable of being reciprocatingly moved therein whereby a portion of the folded cable describes a loop and is capable of being selectively advanced to extend beyond the distal end of the sheath;
(c) an elongated housing means having cable receiving means;
(d) said sheath having its proximal end secured to said elongated housing and in alignment with said cable receiving means;
(e) said double cable being of sufficient length whereby end portions of said cable extend beyond the proximal end of said sheath and into said cable receiving means in said housing means;
(f) two linear drive means for said folded on itself cable, each including an elongated rigid longitudinally movable means each having handle means;
(g) guide means on said housing adapted and constructed to permit independent reciprocating motion of each of said elongated rigid longitudinally movable means;
(h) one end portion of said cable being attached to one of said elongated rigid longitudinally movable means of said linear drive means and the other end portion of said cable being attached to the other of said elongated longitudinally movable means of said linear drive means whereby movement of said elongated rigid longitudinally movable means will selectively advance or withdraw said cable through the distal end of said sheath thereby controlling the size of the loop and relative movement of one of said elongated rigid longitudinally movable means relative to the other will control the configuration of the loop and selective means is provided whereby said two linear drive means may be locked together so that said linear drive means may be moved in unison.

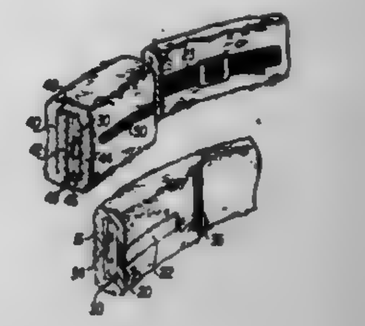
4,326,531
DEVICE FOR OPERATING A COELIAC TUBULAR MEMBER-CLOSING IMPLEMENT
Hideki Shimonaka, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan
Filed Sep. 17, 1979, Ser. No. 76,321
Claims priority, application Japan, Sep. 20, 1978, 53-115693
Int. Cl.³ A61B *17/12*
U.S. Cl. 128—326 4 Claims

1. A device for operating a coeliac tubular member-closing implement comprising:
an elongated outer tube having two ends;
a hollow cylindrical needle reciprocably inserted into said outer tube and having two ends, one end thereof being obliquely cut off to provide a sharp tip and containing a coeliac tubular member-closing implement comprising a penetrating member having two ends and a plurality of linearly connected frustoconical engagement members formed between said two ends of said penetrating member with a diameter progressively increasing toward said one end of said needle, a first stop fixed to one end of said penetrating member which is nearer to said one end of said needle and a second stop having a frustoconical bore complementary to said engagement members and allowing for passage of the other end of said penetrating member and the other end of said needle being adapted to project from one end of said outer tube;
a coeliac tubular member-holding forceps extending lengthwise of said outer tube between said outer tube and said needle and having two ends, one end thereof being operated to reciprocate said forceps for allowing the other end thereof to project from, and recede into said one end of said needle;
a push tube reciprocably inserted into said needle for pushing said first stop of said coeliac tubular member-closing implement out of said one end of said needle;
a drive tube reciprocably inserted into said push tube for moving said second stop of said coeliac tubular member-closing implement toward said first stop thereof; and
an elongated holding member for holding said coeliac tubular member-closing implement, said holding member extending through said drive tube and having two ends, one end thereof being detachably connected to the other end of said penetrating member of said coeliac tubular member-closing implement and the other end thereof being adapted to project from said one end of said outer tube.

4,326,532
ANTITHROMBOGENIC ARTICLES
Walton J. Hammar, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Oct. 6, 1980, Ser. No. 194,576
Int. Cl.³ A61M *25/00*; B01D *13/00*; A01N *43/16*
U.S. Cl. 128—349 R 18 Claims

1. A medical article of manufacture having a layered nonthrombogenic surface comprising:
a natural or synthetic polymeric substrate,
a chitosan coating bonded to said polymeric substrate, and
an antithrombotic agent bonded to said chitosan coating.

4,326,533
COOLANT BAND
Mary M. Henderson, 4401 Tyne Blvd., Nashville, Tenn. 37215
Division of Ser. No. 867,582, Jan. 6, 1978, Pat. No. 4,204,543. This application Oct. 29, 1979, Ser. No. 88,848
Int. Cl.³ A61F *7/00*
U.S. Cl. 128—402 3 Claims



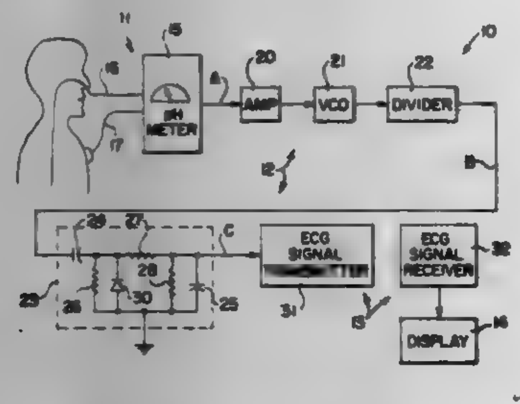
1. A coolant band comprising:
(a) an annular strip of textile material consisting of a first layer having an outwardly presented surface thereon and a second layer having an inwardly presented surface thereon, said first and second layers of material forming a pocket means therebetween,
(b) coolant means containing a freezable liquid or semi-liquid material in said pocket means;
(c) slit means in said inwardly presented surface of said second layer of textile material to form an opening for insertion and removal of said coolant means into said pocket means; and
(d) means associated with said strip to maintain said inwardly presented surface and said pocket in direct contractive engagement with a part of the anatomy to be cooled.

4,326,534
TRANSCUTANEOUS ELECTRICAL MUSCLE STIMULATION FOR TREATMENT OF SCOLIOSIS AND OTHER SPINAL DEFORMITIES
Jens Axelgaard, 10440 Paramount Blvd., J-180, Downey, Calif. 90241; David C. Howson, 4505 Oakland Ave. South, Minneapolis, Minn. 55407, and John A. Perhay, W. Hidden Valley Rd., Savage, Minn. 55378
Filed Jun. 21, 1979, Ser. No. 50,760
Int. Cl.³ A61N *1/36*
U.S. Cl. 128—421 15 Claims

1. A method of treating spinal curvature in the thoracic or thoracolumbar region of human patients comprising the steps of:
(a) locating the apical vertebra on the major curve of the patient's spine;
(b) positioning a pair of electrodes (1) on the outer skin surface of said patient, (2) lying within a band of muscles at a lateral trunk location and (3) generally symmetrically above and below the rib connected to said apical vertebra on the convex side of said major curve; and
(c) repetitively applying a predetermined pattern of electrical pulses to said electrodes for evoking contraction and relaxation of preselected muscle groups in a zone defined by the location of said pair of electrodes.

4,326,535
CIRCUIT AND METHOD FOR THE RADIOTELEMETRY OF ESOPHAGEAL PH IN AN ECG RADIOTELEMETRY SYSTEM

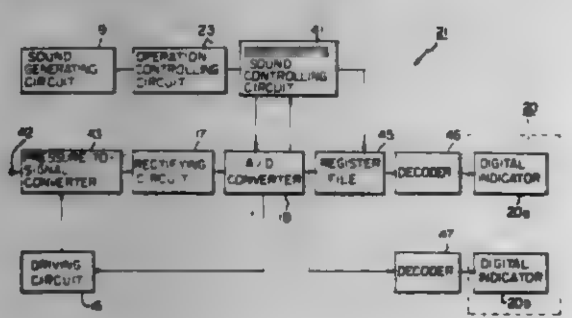
Charles R. Steffel, Munroe Falls, and Bruce C. Taylor, Kent, both of Ohio, assignors to Akron City Hospital, Akron, Ohio
Filed May 13, 1980, Ser. No. 149,427
Int. Cl.³ A61B *5/00*
U.S. Cl. 128—631 **12 Claims**



1. A circuit for radiotelemetry of an esophageal pH signal in an electrocardiogram (ECG) signal radiotelemetry system, comprising:
means for monitoring esophageal pH and generating a signal proportional thereto;
waveform converter means for receiving said signal from said means for monitoring esophageal pH and converting the same to a signal whose waveform is similar to an ECG waveform and one of whose electrical parameters is proportional to esophageal pH;
transmitter means for receiving said converted signal from said waveform converter means and broadcasting the same upon a radio frequency carrier;
receiver and demodulator means for receiving said broadcast signal and demodulating the same to obtain said converted signal similar to an ECG waveform; and,
display means receiving said demodulated, converted signal whose waveform is similar to an ECG waveform and displaying indicia of esophageal pH.

4,326,536
SPHYGMOMANOMETER

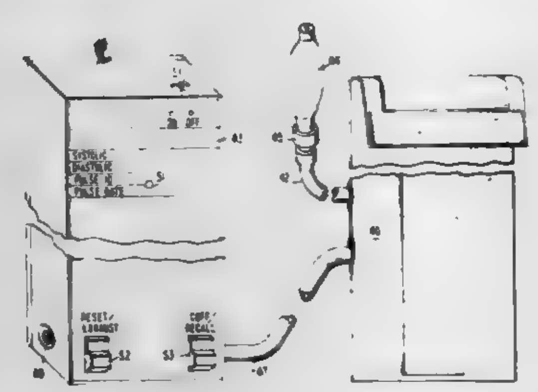
Fumio Kitagawa, and Tsutomu Ichinomiya, both of Kadoma, Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan
PCT No. PCT/JP78/00024, § 371 Date Jul. 16, 1979, § 102(e) Date Jul. 11, 1979, PCT Pub. No. WO79/00294, PCT Pub. Date May 31, 1979
PCT Filed Nov. 13, 1978, Ser. No. 128,355
Claims priority, application Japan, Nov. 15, 1977, 52-138149
Int. Cl.³ A61B *5/02*
U.S. Cl. 128—682 **1 Claim**



1. A sphygmomanometer comprising:
first means for selectively feeding pressurized air into a cuff wound on an upper arm or the like and exhausting air from said cuff,
second means connected to the cuff for detecting Korotkoff's sound,
automatic control means operably connected to said first and second means for:
actuating said first means in a manner pressurizing said cuff to a given pressure,
sensing the output of said second means to detect the presence of Korotkoff's sound signals at said given pressure,
reactuating said first means in response to said sensing of Korotkoff's sound signals, from said second means to repressurize said cuff at least once to an increased pressure level,
sensing the output of said second means to detect the disappearance or presence of Korotkoff's sound signals at said increased pressure level,
switching said first means to an exhaust mode to depressurize said cuff in response to the sensed disappearance of Korotkoff's sound signals, and
means for detecting and digitally indicating the systolic and diastolic blood pressure values during said exhaust mode, said indicator means including sound generating means for generating continuous sounds during said exhaust mode until the reappearance of Korotkoff's sounds and thereafter generating sounds synchronized with Korotkoff's sounds.

4,326,537
METHOD AND APPARATUS FOR PERFORMING NON-INVASIVE BLOOD PRESSURE AND PULSE RATE MEASUREMENTS

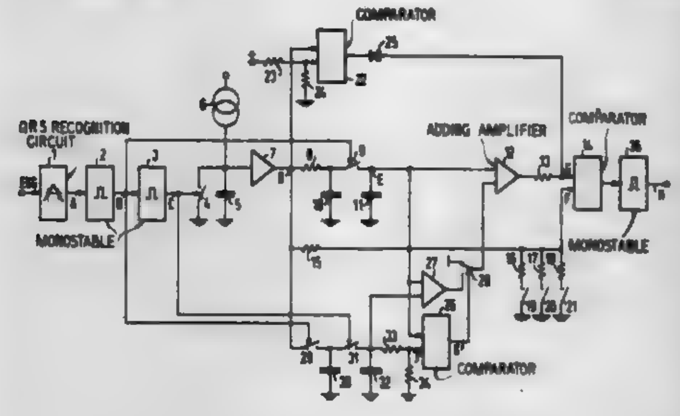
Michael E. Croslin, 37 Bow St., Forest Hills Gardens, N.Y. 11375
Division of Ser. No. 64,194, , Pat. No. 4,271,844, which is a continuation-in-part of Ser. No. 499, Jan. 2, 1979, abandoned, and a continuation-in-part of Ser. No. 774,970, Mar. 7, 1977, abandoned, said Ser. No. 499, is a continuation-in-part of said Ser. No. 774,970. This application Nov. 19, 1980, Ser. No. 208,260
Int. Cl.³ A61B *5/02*
U.S. Cl. 128—687 **10 Claims**



1. A method for determining heart rate for use in an instrument which includes a pressurized cuff for occluding an artery and means for periodically sampling the instantaneous cuff pressure, comprising the steps of:
(a) utilizing successive samples taken for detecting and validating the presence of sequential blood pressure pulses, a plurality of samples being used for the detection of each pulse and an individual analysis being performed on each such plurality of samples to validate the presence of the pulse represented thereby,
(b) counting the number of pulses detected in step (a) during a fixed time interval to determine the pulse rate, and
(c) validating the count formed in step (b) only if at least one additional pulse is detected following said fixed time interval.

4,326,538
METHOD AND APPARATUS FOR ANALYSIS OF ESSENTIALLY PERIODIC SIGNAL SEQUENCES

Kurt Weigert, Nuremberg, and Claudius Molz, Erlangen, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany
Filed Apr. 9, 1980, Ser. No. 138,709
Claims priority, application Fed. Rep. of Germany, Apr. 20, 1979, 2916067
Int. Cl.³ A61B *5/04*
U.S. Cl. 128—702 **18 Claims**

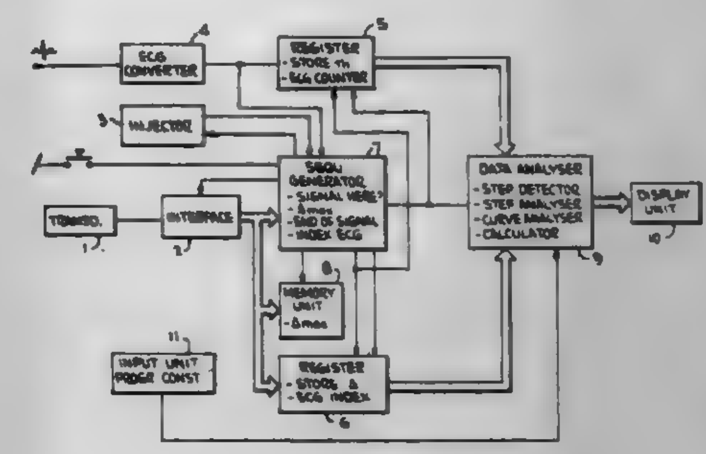


1. A method for the analysis of essentially periodic signal sequences, in particular physiological signals such as EKG signals or the like, said method comprising
(a) generating a measuring voltage which changes in value in proportion to the duration of a currently occurring signal period between individual signal events,
(b) generating a mean value signal which is a function of a mean value of the measuring voltage in the preceding signal period,
(c) generating a further signal which is a function of the signal period duration so as to represent the degree of prematureness of a signal event which has taken place,
(d) adjusting the mean value signal relative to the measuring voltage according to said further signal,
(e) comparing the mean value signal with the measuring voltage after the relative adjustment thereof according to the preceding step (d), and generating a comparison signal when the measuring voltage and the mean value signal, with the relative adjustment thereof, reach a predetermined comparison relationship, the adjustment of the mean value signal relative to the measuring voltage in step (d) being such that signal pauses which are brought about solely due to a prematurely occurring signal event do not result in the generation of a comparison signal, and
(f) transmitting a missing-individual-event-recognition signal in response to the comparison signal so as to indicate missing individual signal events in the essentially periodic signal sequence while signal pauses which are brought about solely due to prematurely occurring signal events do not lead to the transmission of a missing-individual-event-recognition signal.

4,326,539
PROCESS FOR MEASURING THE CARDIAC VOLUME

Wladimir Obermajer, 1 villa Leandre, 75018 Paris, France
Continuation-in-part of Ser. No. 964,166, Nov. 28, 1978, abandoned. This application Mar. 27, 1980, Ser. No. 134,290
Int. Cl.³ A61D *5/02*
U.S. Cl. 128—713 **7 Claims**

1. A process for the measurement of cardiac volumes of the beating heart, in pulsed flow conditions by dilution of a quantity Q_i of tracer injected upstream of a ventricle, at controlled injection flow D_i and during a controlled time t_i comprising the steps of: recording the stepwise tracer concentration Δ_n during a number N of complete cardiac periods n, by means of a transducer downstream of the injection site; and determining the cycle M at which maximum step concentration value Δ_M occurs, as well as the mean cardiac cycling intervals, i.e. the cardiac period τ_n, whereby forming the following summation products:



$$S = \bar{\tau}(1;N) \cdot \sum_{n=1}^{N} \Delta_n$$

$$S' = \bar{\tau}(m;N) \cdot \sum_{n=1}^{N} \Delta_n$$

where m is any cycle corresponding to or occurring after the M^{th} cardiac cycle but before the N^{th} cycle ($M \leqq m < N$), where M is the cycle at which the maximum step concentration value Δ_M of tracer occurs, where N is a conveniently great number of cycles encompassing the measurement process and where 1 is the cardiac cycle corresponding to the first step of the tracer curve, where $\tau(1;N)$ is the mean cardiac period over N cardiac cycles

$$\left(\bar{\tau}(1;N) = \frac{1}{N} \cdot \sum_{n=1}^{N} \tau_n\right)$$

and $\tau(m;N)$ is the mean cardiac period over the $(N-(m-1))$ cardiac cycles

$$\left(\bar{\tau}(m;N) = \left(\frac{1}{N-(m-1)} \cdot \sum_{n=m}^{N} \tau_n\right)\right.$$

thereby determining the cardiac volumes are determined from the measured values (Δ_n, τ_n) and from the aforementioned relationships (S,S').

4,326,540
SYRINGE DEVICE WITH MEANS FOR SELECTIVELY ISOLATING A BLOOD SAMPLE AFTER REMOVAL OF CONTAMINATES

Donald L. Bailey, Thornton, Colo., and Charles Williams, Rolling Hills Estate, Calif., assignors to Marquest Medical Products, Inc., Englewood, Colo.
Filed Nov. 6, 1979, Ser. No. 91,393
Int. Cl.³ A61B *5/14*
U.S. Cl. 128—763 **8 Claims**

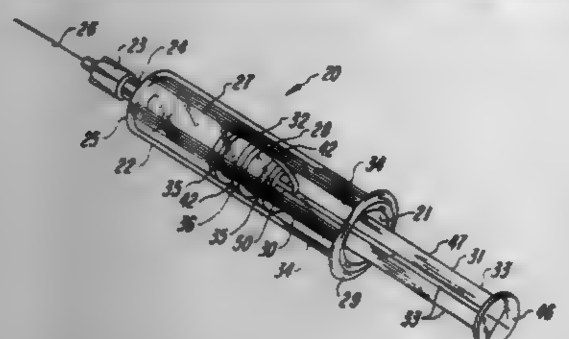
1. A syringe device for drawing blood samples comprising:
a tubular body having an interior surface defining an elongated interior chamber, said tubular body having one open end and an end member at the opposite end, said end member having a bore therethrough defining means for connection to a hypodermic needle;
a plunger slideably positioned within said tubular body, said plunger including an intermediate body portion extending out the open end of said tubular body and a resilient sealing member operatively connected to said intermediate

body capable of establishing an hermetic seal with said interior surface of said tubular body;

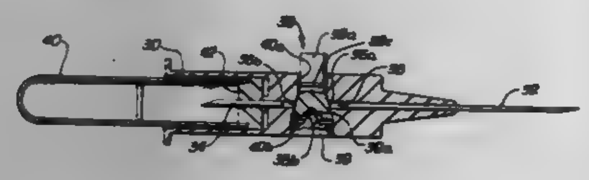
at least one flexible seal interrupter, said seal interrupter being generally linear and attached to said intermediate body adapted to interrupt said hermetic seal by being placed between said sealing member and the interior of said tubular body;

at least one longitudinal groove extending along the interior surface of the tubular body having a chamfer at the forwardmost end thereof and said groove being positioned along the slideable path of said seal interrupter so that said seal interrupter can be positioned in the groove without interrupting the seal between the sealing member and the interior surface of the tubular body; and

means for moving said seal interrupter into a position where it lies across and breaks the seal between the sealing member and said interior surface, and into a position wherein said seal is restored to prevent fluid flow past said sealing member.



4,326,541
BLOOD SAMPLE TAKING DEVICE
John F. Eckels, Simi, Calif., assignor to Arnold M. Heyman, Burbank, Calif.
Filed Mar. 24, 1980, Ser. No. 132,830
Int. Cl.³ A61B *5/14*
U.S. Cl. 128—766 4 Claims



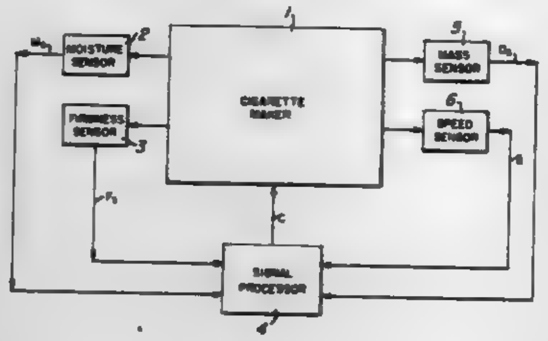
1. A blood sampling device for obtaining arterial and venous blood samples, said sampling device being configured for use with an evacuated tube of the type having a stopper at one end which is designed to be pierced by a needle, said device comprising:

a hub member having a longitudinal conduit, a normally closed valve located in the middle of the conduit for preventing blood flow therethrough, wherein the valve is made of a one piece resilient material, said alve being generally perpendicular to and passing through the conduit, said valve including a lower frusto-conical portion which is normally biased against the conduit to prevent blood flow therethrough and an upper cylindrical portion extending to the outer surface of the hub member, whereby when pressure is applied to the upper portion, it will cause the lower portion to compress and move away from the contact with the conduit, thereby permitting blood to flow around the valve and through the conduit, said hub member further including a cylindrical tube receiving portion at one end;

a front needle extending from one end of the conduit, said front needle being configured for insertion into a blood vessel of a patient; and

a rear needle extending from the other end of the conduit and into the tube receiving portion, whereby an evacuated tube can be inserted into the tube receiving portion and the stopper punctured by the rear needle prior to insertion of the front needle into a blood vessel without destroying the vacuum conditions of the tube.

4,326,542
FIRMNESS CONTROL IN A CIGARETTE MAKER
Tibor S. Laszlo, Arlington; John F. Nienow, Midlothian; John F. Sherwood, and Christopher L. Irving, both of Richmond, all of Va., assignors to Philip Morris Incorporated, New York, N.Y.
Filed Jan. 14, 1980, Ser. No. 111,607
Int. Cl.³ A24C *5/00, 5/34*
U.S. Cl. 131—280 28 Claims



1. Apparatus for use with a cigarette rod, said apparatus including:

first sensor means for providing a firmness sensor signal corresponding to the firmness of said rod;

second sensor means for providing a moisture sensor signal related to the moisture in said rod;

signal processing means responsive to said firmness and moisture sensor signals comprising:

means for providing a corrected firmness signal deviating from said firmness signal by an amount related to said moisture in said rod; and

means for comparing said corrected firmness signal with a preselected firmness value to generate a comparison signal.

4,326,543
SMOKING PRODUCT AND PROCESS FOR MANUFACTURING SAME
Julian R. Martin, Winston-Salem, and Larry W. Sides, Welcome, both of N.C., assignors to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.
Filed Jun. 2, 1980, Ser. No. 155,876
Int. Cl.³ A24C *5/00, 5/56*
U.S. Cl. 131—362 10 Claims

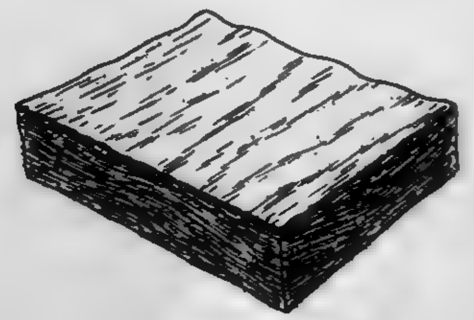
1. A smoking product comprising

(a) a generally cylindrical wrapped tobacco rod,

(b) a generally cylindrical non-wrapped fibrous filter having a cross-sectional dimension similar to said tobacco rod and in abutting, axial alignment with said tobacco rod, and

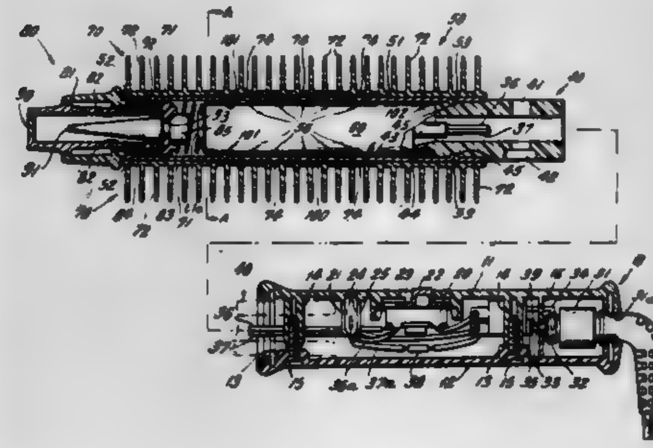
(c) tipping paper provided with a coating of hot-melt adhesive and surrounding substantially the entire length of the filter and one end of the abutting tobacco rod in contacting, sealing engagement wherein the coating of hot-melt adhesive covers at least 30 percent of the surface area on one side of the tipping paper as a result of the application of 10 to 60 grams of hot-melt adhesive per square meter of tipping paper in such a way that it gives a coating thickness of at least 8 microns and a combined tipping paper/-coating thickness of no more than 125 microns.

4,326,544
SMOKING PRODUCT
Michael J. Hardwick, Geneva, Switzerland, and Kenneth R. McMeekan, Whitehead, Northern Ireland, assignors to Gallaher Limited, Belfast, Northern Ireland
PCT No. PCT/GB79/00210, § 371 Date May 8, 1980, § 102(e) Date May 8, 1980, PCT Pub. No. WO80/01132, PCT Pub. Date Jun. 12, 1980
PCT Filed Dec. 11, 1979, Ser. No. 199,721
Claims priority, application United Kingdom, Dec. 11, 1978, 47896/78
Int. Cl.³ A24D *1/18*
U.S. Cl. 131—369 11 Claims



1. A method of making a tobacco substitute fuel smoking rod, said method comprising preparing viscose fibers in the form of a felt web in which the fibers have a three dimensional lay, a bulk density of between 5 and 80 kg/cu. m., and an areal density of between 0.15 and 1.0 kg/sq. m., subjecting said felt web to controlled pyrolysis until the organic residue contains at least 90% carbon by weight, loading the felt web with combustion modifying agents and volatile ingredients for smoking, dividing the felt web into strip pieces for smoking, and wrapping individual strip pieces in a tubular wrapper to form said smoking rods.

4,326,545
CURLING IRON
Akio Motegi, Kitamoto, and Takao Saitoh, Fukiage, both of Japan, assignors to Sanyei Corporation, Japan
Filed Jul. 23, 1979, Ser. No. 59,528
Claims priority, application Japan, Feb. 22, 1979, 54-022161
Int. Cl.³ A45D *1/02*
U.S. Cl. 132—33 R 11 Claims



1. A hair curling iron, comprising

a heat conducting and transmitting cylinder; heating means in said heat cylinder for heating said heat cylinder; said heat cylinder being defined by an annular wall having a plurality of holes through it through which steam may pass;

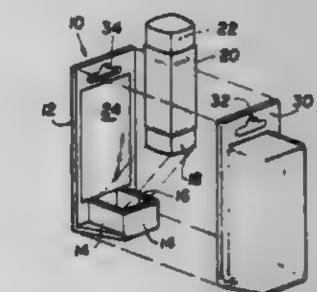
steam producing means communicating into said heat cylinder for producing steam and for delivering steam into said heat cylinder for the steam to be emitted through said holes in said heat cylinder;

a plurality of heat non-conductive protrusions arrayed in a plurality of rows thereof said rows each extending longitudinally along said heat cylinder, and said rows being spaced apart annularly around said heat cylinder; said protrusions extending radially outwardly of said heat cylinder for enabling hair wound around said heat cylinder to be held against said heat cylinder and being so placed as to assist in preventing any undesired contact by the user of the curling iron with said heat cylinder;

each said row of protrusions comprises a supporting band and comprises a plurality of said protrusions spaced apart along and attached to said supporting band; means normally removably holding said supporting bands to said heat cylinder;

said holes in said heat cylinder are placed so as to be beneath said supporting bands; said supporting bands having holes therein for communicating with said holes in said heat cylinder to thereby provide exit pathways for steam from inside said heat cylinder through said holes in said heat cylinder and through said holes in said supporting bands.

4,326,546
COMBINATION LIPSTICK DISPLAY AND STORAGE CONTAINER
Stanley Acker, c/o 14 Cairngorm Rd., New City, N.Y. 10956
Filed Nov. 28, 1980, Ser. No. 211,193
Int. Cl.³ A45D *40/00;* B65D *85/72*
U.S. Cl. 132—79 C 3 Claims



1. A combination lipstick display and storage container comprising a panel that is vertically oriented during display service of said container, a cooperating arrangement of walls extending laterally from the base of said panel bounding a sized compartment providing a friction fit with a lipstick projected therein, and a rectangular mirror mounted lengthwise on said panel behind said lipstick to contribute to providing an enhanced appearance thereto during display service of said container, and whereby said mirror following removal subsequently of said lipstick and upon being oriented horizontally also contributes to facilitating the application of said lipstick on the lips of the user by the image reflected thereon.

4,326,547
TOOTH PROBE DEVICE
C. Michael Verplank, P.O. Box 564, Crested Butte, Colo. 81224
Filed Nov. 3, 1980, Ser. No. 203,250
Int. Cl.³ A61C *15/00*
U.S. Cl. 132—89 8 Claims

1. A dental probe comprising:

an unsupported thin core strand having a generally uniform

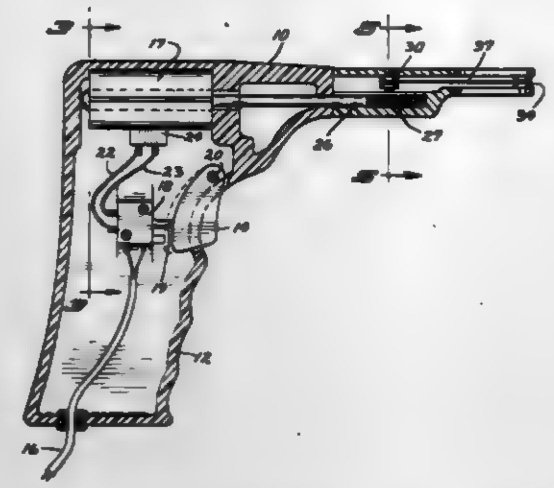
cross-section of a material which is stiff and flexible but returns to substantially its original shape when not stressed; and an outer sheath surrounding said core strand made of a material suitable for engaging teeth and gums.

4,326,548
PERSONAL ORAL HYGIENE TOOL
Eugene C. Wagner, 3424 Kingsbridge Ave., Bronx, N.Y. 10463
Filed Jan. 9, 1980, Ser. No. 157,442
Int. Cl.³ A61C *15/00*
U.S. Cl. 132—90 **5 Claims**

1. A dental tool for personal oral hygiene comprising a pick, the pick having a stem and an arcuate zone projecting from the stem and terminating at a tip, the tip extending along a plane substantially perpendicular to the axis of the stem and projecting beyond the stem axis a distance up to but not significantly greater than three millimeters, the pick being formed of a resilient material, the material having a diameter in the order of one millimeter at the arcuate zone and tapering to a smaller diameter at the tip, the stem diameter being larger than the material diameter at the arcuate zone, the arcuate zone being anatomically configured to be accommodatingly received around curved tooth surfaces and including a longitudinal span of between substantially ten to fifteen millimeters, the tip passing between interproximal spaces formed between adjacent teeth in the user's mouth with the pick contoured to avoid interference with adjacent teeth to thereby efficaciously remove materials lodged in such interproximal spaces, the tool further including an elongate cylindrical holder, means securing the pick at one end of the holder and a cap, the cap selectively covering the pick when not in use, the holder and the cap being configured in simulation of a writing implement whereby the tool may be inconspicuously carried about.

4,326,549
DENTAL HYGIENE APPLIANCE
John H. Hinding, 1140 S. Robert St., West St. Paul, Minn. 55118
Filed Aug. 18, 1980, Ser. No. 178,947
Int. Cl.³ A61C *15/00*
U.S. Cl. 132—92 R **9 Claims**

1. A device for applying and moving a closed loop of dental floss between the teeth, comprising:
A. a closed loop of dental floss;
B. a frame having a first portion including handle grip and a trigger, and a second portion extending outwardly from the first portion at approximately right angles thereto;
C. motor and drive train means mounted in said first portion of said frame, including motor control means operably connected to said trigger and power source means for supplying power to said motor to rotate the drive train means, said drive train means including a drive shaft extending outwardly from said first portion and into said second portion of said frame, said drive shaft including a worm gear at its outer end; and
D. guide means including a drive wheel and a plurality of guide pulleys positioned in said second portion of said frame to define a path for said closed loop of dental floss

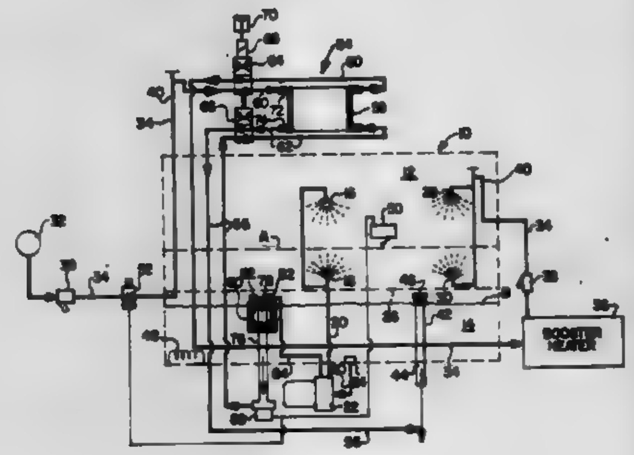


under tension, said path including an open span sized to permit passage of said floss between a person's teeth, said drive wheel including a spur gear positioned to engage said drive shaft worm gear to cause rotation of said drive wheel by said motor.

4,326,550
CONSTRUCTION OF CHANGE HOLDER FOR USE IN ELECTRONIC CALCULATING MACHINE
Daisuke Mochizuki, Nara, and Toshio Sugitani, Yamatokoriyama, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Nov. 21, 1979, Ser. No. 96,401
Claims priority, application Japan, Nov. 21, 1978, 53-161279[U]; Nov. 27, 1978, 53-163511[U]; Dec. 6, 1978, 53-151237; Dec. 6, 1978, 53-151238; Dec. 8, 1978, 53-152340; Dec. 11, 1978, 53-170485[U]; May 28, 1979, 54-72011; Jul. 4, 1979, 54-93621
Int. Cl.³ G07D *1/08*
U.S. Cl. 133—2 **6 Claims**

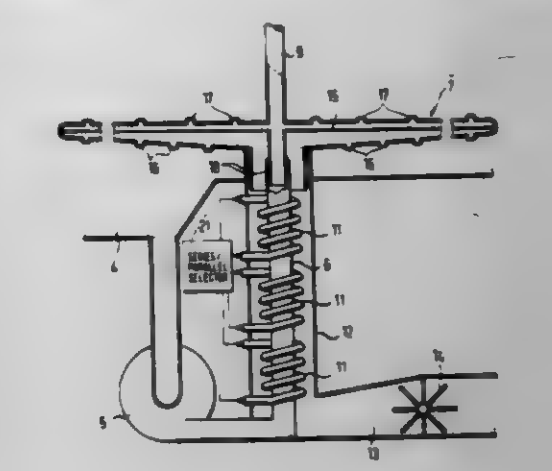
1. An electronic calculating machine which comprises in combination:
an electronic calculating machine housing having a keyboard panel and a saucer formed in the front surface of said housing with a window portion located above said keyboard panel,
a coin holder adapted with a plurality of coin shelves and corresponding reflection plates with associated railway plate and multiple pathways for directing coins ejected from said coin shelves by forwarding members positioned behind said coin shelves into said saucer, said forwarding members being activated by a control unit contained in the body of said coin holder, said coin holder further including a transparent window, said coin holder being retrofitted into the housing of said electronic calculating machine such that said transparent window of said coin holder is positioned above said keyboard panel immediately behind the window portion of said electronic calculating machine housing such that a certain number of coins stored in the coin shelves of said change holder are visible from the outside of said electronic calculating machine, and
a kit for retaining operating key units secured on the face of the housing between the saucer and the plurality of coin-shelves.

4,326,551
HEAT RECOVERY SYSTEM FOR A DISHWASHER
John E. Voorhees, Sidney, Ohio, assignor to Hobart Corporation, Troy, Ohio
Filed Oct. 27, 1980, Ser. No. 200,857
Int. Cl.³ B08B *3/02*
U.S. Cl. 134—58 D **12 Claims**



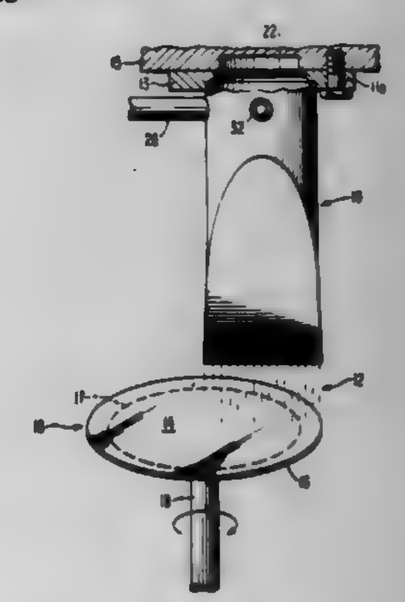
1. A dishwasher of the type having a wash chamber with a sump at its bottom for containing a quantity of washing solution, means for maintaining the washing solution in the sump at a relatively high washing temperature, means for spraying the washing solution over soiled articles supported in the wash chamber, means for circulating the solution from the sump to the washing solution spraying means, a drain line for the washing solution, a pressurized source of fresh rinsing water at an initial temperature substantially below said washing temperature, means for heating the fresh rinsing water to a predetermined rinsing temperature substantially higher than said initial temperature, and means for receiving fresh rinsing water from the rinsing water heating means and spraying the fresh rinsing water at said rinsing temperature over the articles after they have been sprayed with the washing solution, wherein the improvement comprises:
preheating means for flowing the washing solution from the sump in heat exchange relation with, but separated from, the fresh rinsing water before the rinsing water reaches the rinsing water heating means such that the rinsing water is preheated by the washing solution;
rinse valve means for controlling the flow of fresh rinsing water from said source thereof, through said preheating means and to the rinsing water spraying means;
pump means for pumping washing solution from the wash chamber, through said preheating means and then finally to said drain line after heat exchange with the fresh rinsing water; and
control means for energizing said pump means and energizing said rinse valve means such that rinsing water and washing solution flow through said preheating means during spraying of articles with the rinsing water.

4,326,552
HEATER FOR HEATING FLOWS OF FLUID AND DISHWASHING MACHINE PROVIDED THEREWITH
Ingo Bleckmann, Ignaz-Rieder-Kai 11, A-5020 Salzburg, Austria
Filed Jan. 22, 1980, Ser. No. 114,395
Claims priority, application Fed. Rep. of Germany, Jan. 23, 1979, 7901761[U]; European Pat. Off., Jul. 18, 1979, 79102505.9
Int. Cl.³ B08B *3/02*
U.S. Cl. 134—99 **14 Claims**



1. A dishwashing machine comprising:
a vessel adapted to receive items to be washed and dried;
a first flow conduit for carrying a flow of dish-washing liquid to said vessel;
a second flow conduit for carrying a flow of drying air for drying items in said vessel; and
a heating means operatively associated with said first and second flow conduits, for heating the washing liquid flowing through the first flow conduit during a washing operation and for heating the flow of drying air through the second conduit during a drying operation.

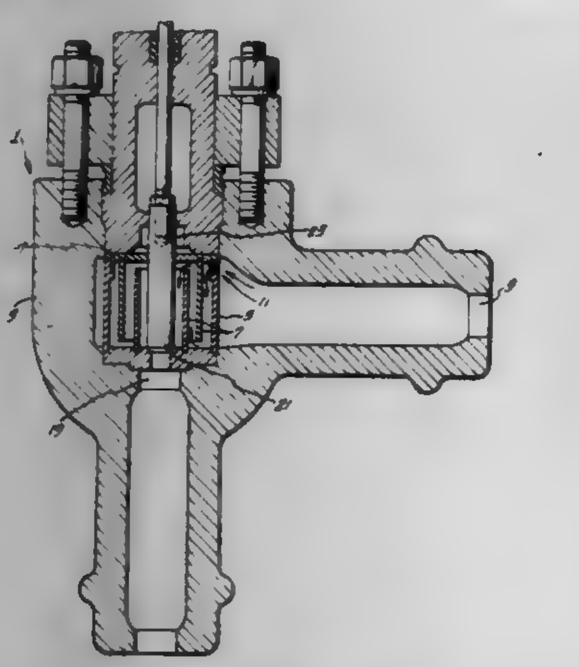
4,326,553
MEGASONIC JET CLEANER APPARATUS
William B. Hall, Dallas, Pa., assignor to RCA Corporation, New York, N.Y.
Filed Aug. 28, 1980, Ser. No. 181,985
Int. Cl.³ B08B *3/00*
U.S. Cl. 134—153 **4 Claims**



1. An apparatus for cleaning a surface of an article with cleaning fluid comprising:
nozzle means including a nozzle and a chamber for developing a jet of cleaning fluid; said chamber formed of a generally hollow cylinder having two open ends; means for coupling pressurized fluid at a pressure of about 20 psi to the chamber; and an electrically energized megasonic

transducer coupled to one end of the chamber to impart megasonic energy to the fluid, said nozzle coupled to the other end of said chamber and formed of a tapered section to an opening to develop a ribbon-like jet of cleaning fluid vibrating at ultrasonic frequencies the taper of said nozzle being at an angle of about 30° to reduce out-of-phase and back reflections of energy waves in the nozzle.

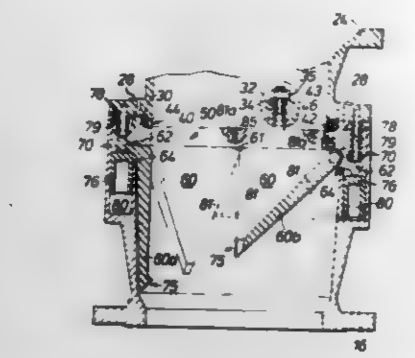
4,326,554
FLUID CONTROL VALVE
Calvin A. Gongwer, Glendora, Calif., assignor to Innerspace Corporation, Glendora, Calif.
Filed Dec. 26, 1979, Ser. No. 107,026
Int. Cl.³ F16K ***47/08***
U.S. Cl. 137—14 **14 Claims**



7. A method of fluid control comprising:
regulating the amount of said fluid entering a housing means providing an axially extending outer wall and inner walls in inwardly spaced concentric annular relation, said annular walls having gradually decreasing diameters;
dissipating a significant portion of fluid flow energy of said fluid by overcoming a preload of a preload member of a valve nozzle means;
closing said valve nozzle means below a preselected incoming fluid pressure;
accelerating a fluid tangentially about an annular whirl chamber defined by said outer wall and the inner wall next adjacent said outer wall, and thereby decreasing the fluid pressure and dissipating the fluid flow energy;
accelerating and gradually decreasing the annular flow path diameter and further tangentially spinning said fluid through a series of inwardly spaced concentric annuli, thereby further decreasing the fluid pressure and dissipating the fluid flow energy; and
discharging said fluid from the inwardmost annulus.

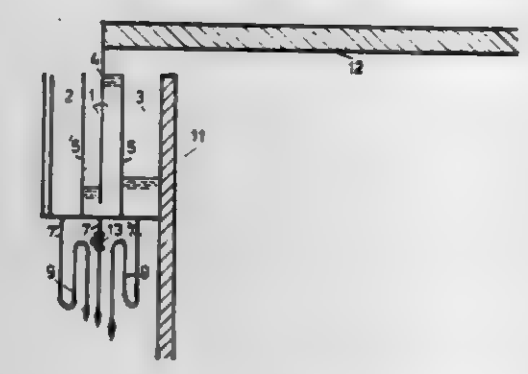
4,326,555
BREAKAWAY COUPLING
John G. Thomson, Sherwood, England, assignor to Gall Thomson Maritime Limited, Nottingham, England
Filed Feb. 5, 1979, Ser. No. 9,447
Claims priority, application United Kingdom, Feb. 4, 1978, 4545/78
Int. Cl.³ F16K ***13/04***
U.S. Cl. 137—68 R **4 Claims**

1. In a breakaway pipe coupling having a body through which extends a conduit, said body having a breakaway portion and a main body portion, said main body portion including first valve means for closing the conduit, actuating means for closing said first valve means to close the conduit upon separation of said breakaway portion from said main body portion and damping means for controlling rate at which said first valve means closes, the improvement wherein:
said first valve means includes petals circumferentially spaced about the conduit, said petals defining a conical shape when in a closed position, the apex of said conical shape facing in the direction opposite the fluid flow direction through the conduit; wherein said damping means includes hydraulic pistons and chambers hydraulically asssociated with said plurality of petals and second valve means associated with said hydraulic pistons for control-



ling rate at which hydraulic fluid vents from said chambers upon separation of said breakaway and main body portions, thereby controlling rate at which petals hydraulically connected with said chambers move towards the closed position; wherein respective second valve means associed with respective petals are of differing rate, to thereby effect differing closure rates of said respective associated petals, wherein at least two petals are permitted to reach the closed position prior to the remaining petals to thereby form a bridge against which said remaining petals can abut for support on closing the conduit.

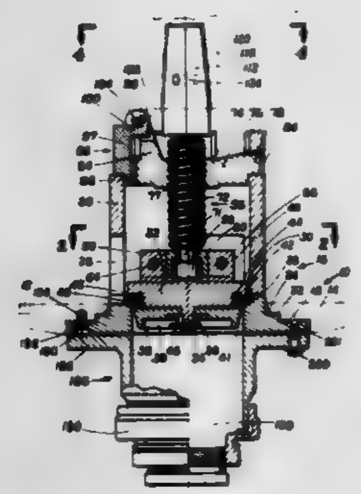
4,326,556
APPARATUS FOR SEALING THE PERIPHERY OF AN OPENING
Hans Deutsch, and Norbert Heger, both of Vienna, Austria, assignors to Waagner-Biro Aktiengesellschaft, Vienna, Austria
Filed Mar. 7, 1980, Ser. No. 129,014
Claims priority, application Austria, Mar. 8, 1979, 1731/79
Int. Cl.³ F16K ***9/00;*** **B08B** ***3/02***
U.S. Cl. 137—240 **10 Claims**



1. In apparatus for peripherally sealing openings such, for example, as openings for feeding coke material into a bin, in a shaft for cooling hot bulk material, or a shaft in a blast furnace, wherein a channel having inner and outer sides is provided extending around the periphery of said opening into which a dividing wall extends whose lower end is spaced from the channel bottom so as to define a pair of adjacent channel portions which intercommunicate through the space between the lower end of the dividing wall and the channel bottom, said channel adapted to contain a liquid at least to an extent whereby said space is filled with the liquid, the improvement comprising:

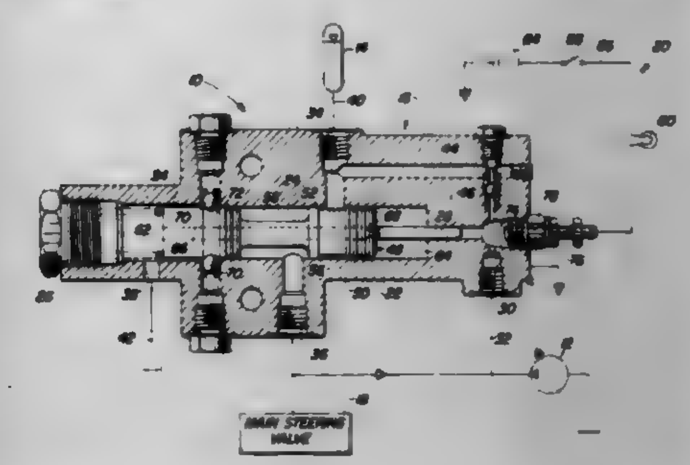
a pair of external channels, each of said external channels extending around a respective one of the inner and outer sides of said peripherally extending channel directly adjacent thereto, so that the latter comprises an inner channel;
first and second intermediate walls being defined by the inner and outer sides of said inner channel and separating said pair of external channels from said inner channel, respectively;
a liquid inlet communicating with said inner channel; and
liquid outlets communicating with said external channels;
whereby a liquid can be continuously supplied into said inner channel in a manner such that the liquid can continuously overflow over at least one of said intermediate walls into a respective one of said external channels from which liquid can then be removed in order to facilitate cleaning of said inner channel as well as effecting a liquid seal for said opening.

4,326,557
TOP OPERATED TANK CAR BOTTOM OUTLET VALVE ASSEMBLY INSTALLED FROM THE BOTTOM OF THE CAR
Gunter R. Behle, St. Peters, Mo., assignor to ACF Industries, Incorporated, New York, N.Y.
Filed Apr. 21, 1980, Ser. No. 142,309
Int. Cl.³ F16K ***31/50***
U.S. Cl. 137—316 **25 Claims**



1. A top operated tank bottom outlet valve assembly which can be installed from the bottom of the tank comprising: a tank having a bottom opening; a tank mounting flange located within said bottom opening and having a mounting flange opening; a generally vertical extending valve cage extending into said tank through said mounting flange opening and having a horizontal cross section throughout its extent into the tank of smaller dimensions than said mounting flange opening; said cage having spaced openings for lading flow into the cage; a cage mounting flange extending outwardly from said cage; a valve seat located within said cage; a vertically extending threaded valve stem located within said cage; closure fastening means attaching a valve closure to a lower portion of the stem; said valve closure and said valve stem located within said cage with said closure resting on said valve seat; threaded sleeve means connected to said stem and extending outwardly toward and engaging said cage; removable keeper means retaining said sleeve means in engagement with said cage and preventing said sleeve from rotating during rotation of said stem; said stem connected to top operating rod means extending upwardly to the top of the tank whereby said valve assembly may be raised from below said tank until said cage mounting flange engages said tank mounting flange; removable valve assembly fastening means attachable from the bottom maintaining said cage mounting flange in engagement with said tank mounting flange and holding said cage in place within the tank; said cage, said closure, said valve stem, said sleeve means and said keeper being removable from the bottom by removal of said valve assembly fastening means.

4,326,558
STEERING SYSTEM INCLUDING ACCUMULATOR FOR SUPPLYING EMERGENCY RESERVE OF FLUID
Douglas M. Gage, Dubuque, Iowa, assignor to Deere & Company, Moline, Ill.
Filed Nov. 24, 1980, Ser. No. 209,763
Int. Cl.³ B62D ***5/08***
U.S. Cl. 137—554 **5 Claims**



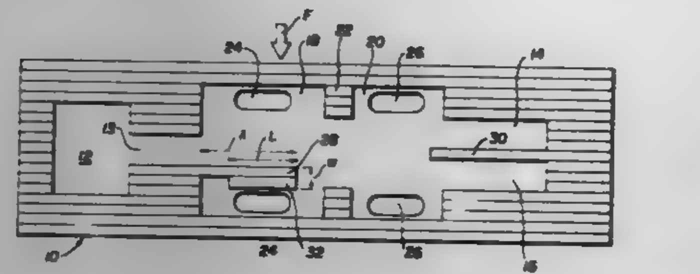
1. In an emergency steering valve including a valve bore intersected by first and second ports respectively adapted for connection to an accumulator and to a main power steering valve, a pressure-responsive valve spool reciprocably mounted in the bore for movement between a closed position wherein it blocks fluid communication between the first and second ports and an open position wherein it establishes fluid communication between the first and second ports, pilot pressure means adapted for connection to a primary source of fluid pressure and arranged for shifting the valve spool to its closed position when the fluid pressure emanating from the primary source is adequate for normal steering operation, a biasing means arranged for shifting the valve spool to its open position when the primary source of fluid pressure fails and an electrical steering condition indicator circuit including an energizable indicator element and a pressure switch means operable for completing a circuit through the indicator element only when the valve spool is shifted away from its closed position, the improvement comprising: said pressure switch means including means operated by the valve spool for completing the circuit through the indicator element only when the valve spool reaches its open position and delay means for regulating the speed of travel of the valve spool from its closed to its open position for preventing premature actuation of the indicator element in response to primary fluid pressure decreases of short duration.

4,326,559
FLUIDIC FORCE TRANSDUCER
Tadeusz M. Drzewiecki, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Apr. 25, 1980, Ser. No. 143,696
Int. Cl.³ F15C ***3/08***
U.S. Cl. 137—804 **10 Claims**

1. A fluidic force transducer comprising:
a plurality of parallel stacked layers joined to form a transducer;
a nozzle for issuing a fluid stream;
a first and second outlet means symmetrical about the centerline of said nozzle for receiving fluid from said nozzle;
a chamber symmetrical about said centerline of said nozzle interconnecting said nozzle and said first and second outlet means;
a flexible member extending from said nozzle into said cham-

ber parallel to the axis of said nozzle defining a barrier in said chamber which is responsive to forces transverse said nozzle axis to vary the portions of fluid received by said first and second outlet means;

one of said stacked layers which forms one wall of said nozzle includes said flexible member as an extension of said wall.



and wherein the edges of said flexible member are separated from at least one wall of said chamber by a distance small enough to create a viscous shear force of the fluid between said chamber wall and said flexible member sufficient to effectuate critical damping of said flexible member.

4,326,560

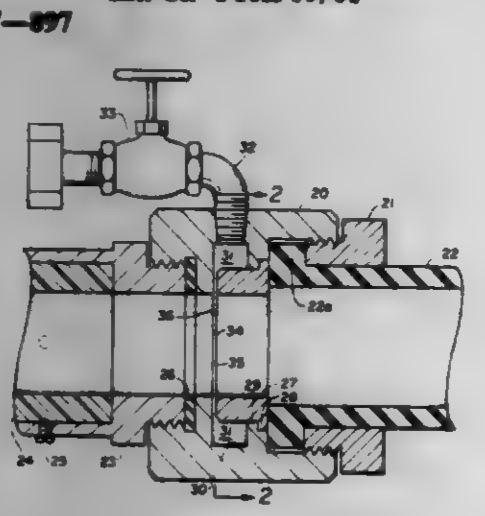
APPARATUS FOR INJECTING FLUIDS INTO AGGREGATES

William A. Drudy, Macungie, Pa., assignor to R.F.I. Inc., Farmingdale, N.Y.

Filed Oct. 6, 1980, Ser. No. 194,057

Int. Cl.³ F16K *19/00*

U.S. Cl. 137—897 **1 Claim**



1. Apparatus for mixing a flowing aggregate with a fluid and discharging the mixture to a target for curing and hardening, the apparatus comprising a fluid body adapted to be connected at one end to an aggregate conveying hose and connected at its other end to a discharge nozzle and including

wall means defining an internal annular fluid manifold adapted to be connected to a source of fluid under pressure;

wall means defining an axial bore of substantially the same size as the inside diameter of the hose and coaxial therewith and an annular wall perpendicular to the axis of the bore and extending from the manifold to the edge of the axial bore;

a fluid metering ring seated in the fluid body having an axial bore of the same size and aligned with the axial bore of the fluid body and having an annular surface perpendicular to the axis of flow spaced from and parallel to the perpendicular annular wall of the fluid body to define a fluid metering slot surrounding the flow of aggregate and connected to the fluid manifold;

an annular spacing rib on the outer surface of the fluid ring and extending radially outward therefrom;

a radially inwardly projecting rib carried by the fluid body having a surface perpendicular to the flow of aggregate and adapted to be engaged by an opposed surface on the rib of the fluid ring, the positions of the two opposing rib surfaces with respect to the annular wall being precisely determined to determine the width of the annular slot conveying fluid from the manifold into the aggregate; and

means to attach the nozzle to the fluid body to bring the inner end of the nozzle into engagement with the forward edge of the fluid ring to bring the opposing surfaces of the ribs into tight engagement.

4,326,561

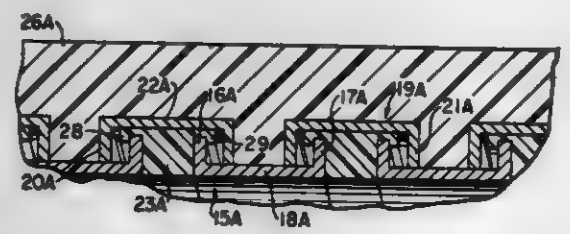
DOUBLE-CHANNEL ELECTRICAL CONDUIT

Thomas A. Kutnyak, Greenwood, S.C., assignor to Automation Industries, Inc., Greenwich, Conn.

Filed Jun. 4, 1980, Ser. No. 156,456

Int. Cl.³ F16L *11/16*

U.S. Cl. 138—136 **3 Claims**



1. An electrical conduit comprising

(a) an inner channel and an outer channel each having forward and rearward side flanges joined by a connecting base and wherein the flanges of the outer channel are longer than the flanges of the inner channel,

(b) the inner channel being formed into helical configuration of spaced convolutions with its flanges extending outwardly,

(c) the outer channel being formed into a similar helical configuration with its flanges extending inwardly,

(d) the helical inner and outer channels being movably interlocked with the flanges of the outer channel disposed between the flanges of the inner channel,

(e) elastic spacer means between the forward and rearward flanges of the inner channel for holding the turns of the inner channel apart,

(f) the elastic spacer means having opposed edge portions extending inside the base of the outer channel and around and over each of the forward and rearward flanges of the inner channel for holding the forward flange of the outer channel a minimum distance from the rearward flange of the inner channel and for holding the forward flange of the inner channel a minimum distance from the rearward flange of the outer channel, and

(g) an outer circumferentially complete jacket,

(h) whereby when the conduit is bent the channel convolutions separate on the outside of the bend and come together on the inside of the bend.

4,326,562

DOBBIES FOR FORMING THE SHED ON WEAVING LOOMS

Joseph Palau, Duingt, France, assignor to S.A. des Etablissements Staubli (France), Faverges, France

Filed Dec. 27, 1979, Ser. No. 108,244

Claims priority, application France, Feb. 13, 1979, 79 04463

Int. Cl.³ D03C *1/26, 1/06*

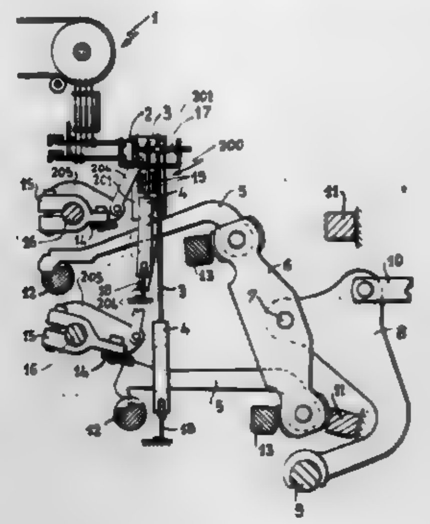
U.S. Cl. 139—68 **1 Claim**

1. In a dobby for controlling the shed of a weaving loom, the dobby being of the type having multiple double swinging levers coupled respectively to loom heddle frames, the levers being displaceable by associated pulling hooks respectively located adjacent to pulling knives, each pulling hook being displaceable downwardly for coupling with a pulling knife by a lowering knife and being displaceable upwardly away from the pulling knife by a stirrup whose upward displacement is

under the control of a reading mechanism, the improvement comprising:

(a) a pair of vertical slide means;

(b) a connecting rod coupling each slide means with a lowering knife to raise and lower the slide means synchronously therewith;



(c) raising knife means carried by, and operative to be raised and lowered by each slide means;

(d) a gripper coupled with each stirrup and located adjacent to a raising knife; and

(e) means under the control of the reading mechanism for selectively moving the gripper into or out of contact with a raising knife.

4,326,563

CONTROL FOR A DOBBY MECHANISM

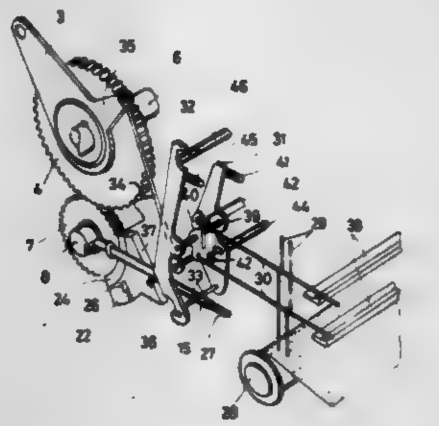
Josef Brock, Viersen, and Paul Surkamp, Krefeld, both of Fed. Rep. of Germany, assignors to Maschinenfabrik Carl Zangs Aktiengesellschaft, Krefeld, Fed. Rep. of Germany

Filed Sep. 21, 1979, Ser. No. 77,866

Claims priority, application Fed. Rep. of Germany, Sep. 22, 1978, 2841281

Int. Cl.³ D03C *1/12*

U.S. Cl. 139—76 **10 Claims**



1. In a control for a wedge coupling in a dobby mechanism with a reduction gearing between a drive shaft and an eccentric device for the dobby movement, a coupling place, and a spring-tensioned switching member, controlled according to a pattern, for the movement of the wedge, the improvement comprising

two spring-tensioned control levers for the upper and lower shed movement, said control levers operatively engage the switching member,

needle means for controlling said control levers,

control axle means for being synchronously movable with the dobby mechanism,

one of said control levers additionally cooperates with said control axle means,

a pulse means is synchronously controlled by the eccentric device, said pulse means for blocking a control end of a not to be moved of said control levers in a starting position thereof.

4,326,564

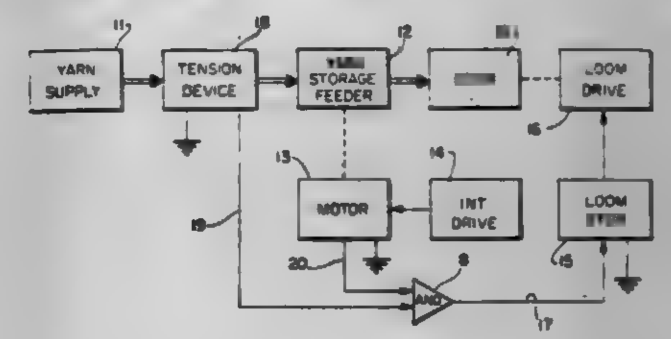
LOOM STOP MOTION SYSTEM AND METHOD

Manuel G. Teixeira, Cumberland, and Rene J. Valois, Woonsocket, both of R.I., assignors to Leesona Corporation, Warwick, R.I.

Filed Jan. 31, 1980, Ser. No. 117,380

Int. Cl.³ D03D *51/34*

U.S. Cl. 139—370.2 **4 Claims**



1. A loom control system operable to stop the loom in the presence of slack or breakage of a supply yarn comprising in combination; a yarn supply system feeding yarn in a supply path to a loom through intermediate yarn feeder means driven intermittently by a motor in response to the need to feed the yarn intermittently to the loom, a control circuit for stopping the loom, means sensing a slack or broken condition of said yarn in the supply path, means sensing the intermittent drive to said motor including an electronic circuit coupled across the motor, a control relay driven by an amplifier device, and means actuating said amplifier device to operate said control relay in the concurrent presence of slack or breakage of the yarn in the supply path and drive to said motor to stop the loom.

4,326,565

APPARATUS FOR INSERTING SUCCESSIVE WEFT YARN LENGTHS IN A SHUTTLELESS WEAVING MACHINE

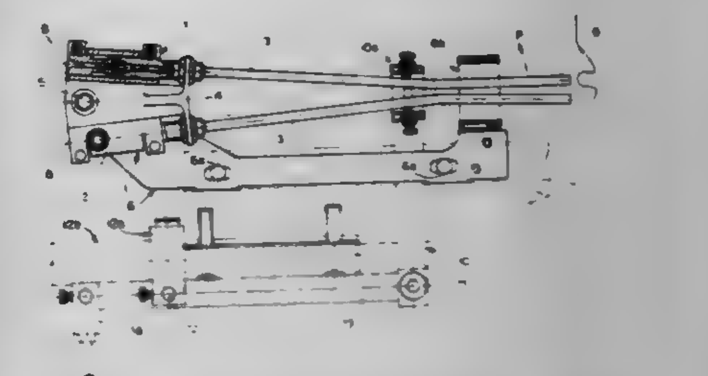
Hubert P. Van Mullekom, Voortseweg 11, Deurne, Netherlands

Filed Mar. 27, 1980, Ser. No. 134,649

Claims priority, application Netherlands, Apr. 25, 1979, 7903273

Int. Cl.³ D03D *47/30*

U.S. Cl. 139—435 **5 Claims**



1. Apparatus for inserting successive weft yarn lengths in a shuttleless weaving machine, which comprises at least two blowing nozzles each comprising a body having inlet apertures for the yarn and for a transport fluid, and each having a mixing tube joined therewith for guiding the yarn and transport fluid enclosing the yarn, arranged at one side of said weaving machine opposite to one end of a weaving shed, characterized in

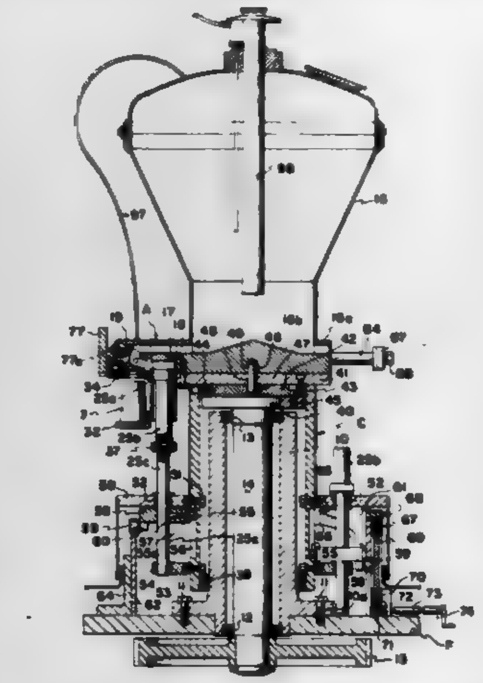
that the blowing nozzles are jointly mounted to pivot around a fixed point located between the bodies of the blowing nozzles, the outlet ends of the mixing tubes being closely adjacent and being arranged to be brought alternatively into operative inserting position relative to said shed by such pivoting of the blowing nozzles, and an element for controlling such pivoting, which engages the mixing tubes at a point between the nozzle bodies and the outlet ends of the mixing tubes.

4,326,566
COLOR SELECTOR
Roger R. Lampaert, Ypres, Belgium, assignor to N. V. Weefautomaten Picanol, Ypres, Belgium
Filed Sep. 11, 1979, Ser. No. 74,337
Int. Cl.³ D03D *47/38*
U.S. Cl. 139—453 10 Claims

1. A weft thread colour selector for a loom including a weaving pattern control (M), a weft thread giver (B) for multiple weft thread colour and a shaft (16) rotatable in synchronism with the loom drive shaft, comprising:
- a colour selector (A) including means (2) for receiving mechanical input movement under control of said weaving pattern control, said input movement corresponding to a weft thread colour selection;
- said colour selector including electrical colour selection signal generating switches (3) arranged to be selectively activated by said input movement receiving means;
- a synchronizing device (c) electrically connected to said colour selector and arranged to receiving electrical colour selection signals from said colour selector and to temporarily store said signals;
- a synchronizing signal generator (D,S) including an element (D) moveable in synchronization with the loom drive shaft for generating an electrical synchronizing signal;
- said synchronizing device electrically connected to said synchronizing signal generator and arranged to receive synchronizing signals generated by same, and to transmit a stored colour selection signal only when it receives a synchronizing signal;
- said weft thread giver being electrically connected to said synchronizing device and including an electrically operated control means (24) arranged to receive said colour selection signal and to cause the weft giver to present a selected coloured thread in response to said colour selection signal.

4,326,567
VARIABLE VOLUME, POSITIVE DISPLACEMENT SANITARY LIQUID DISPENSING MACHINE
Robert J. Mistarz, Northbrook, Ill., assignor to Vercon Inc., Coloma, Mich.
Filed Dec. 26, 1979, Ser. No. 107,324
Int. Cl.³ B65B *3/04, 3/32*
U.S. Cl. 141—90 15 Claims

1. In a machine for dispensing liquid and semi-liquid material and the like in measured amounts to containers and having a supply tank with a plurality of circumferentially spaced radial tank outlet openings; a carrier for supporting a multiplicity of containers with open upper ends mounted for lateral orbiting movement with said tank; a filler pump and valve assembly, mounted to orbit with the carrier, and connected with said tank, the assembly having a plurality of passages communicating with the tank outlet openings, the assembly also having a plurality of separate pump communicating passages, and a plurality of separate dispensing openings disposed above the path of movement of the carrier and the containers thereon; the said passages being arranged in radially aligned sets, each having a tank outlet passage, a pump communicating passage, and a dispensing opening; said assembly also including a valve for each set with passage means in the valve in one position feeding material to the pump communicating opening from the tank outlet passage and in another position feeding material from the pump communicating opening to the dispensing opening; and a pump cylinder portion on said assembly for each passage set in communication with the pump communication opening of the set; each pump cylinder portion having a piston mounted for reciprocating movement in a suction and ejection stroke; arcuate cam track means about which the pump pistons orbit, the pistons being connected with followers

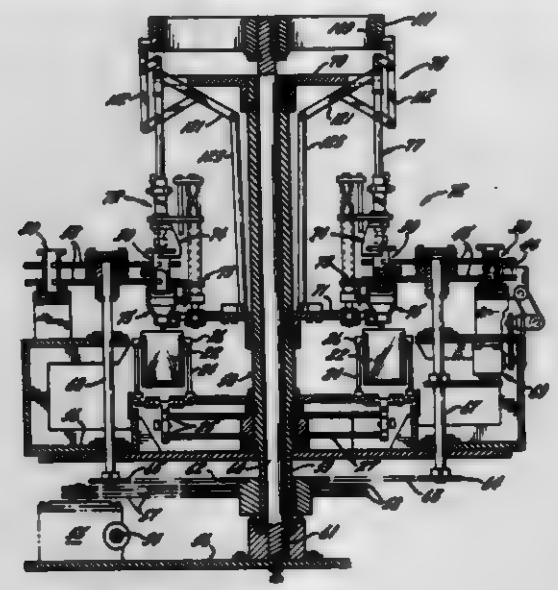


moved by the cam track means to provide the stroke of the pistons and determine the amount of material moved by a pump piston out the dispensing opening of each set; the improvement wherein said frame has a sleeve, internally journaling a central shaft and externally journaling a cage hung from the upper part of said central shaft, the cage externally mounting the pistons for reciprocatory movement vertically and having a guide slot opposite each piston; guide means projects laterally from each piston and is receivable in one of said guide slots to prevent piston rotation; brace supports project radially from the tank assembly; said filler pump and valve assemblies have converging recesses at their sides permitting their suspension from a pair of said supports in a manner to be liftable vertically off the supports for individual cleaning; and means on said supports to individually releasably clamp said assemblies in place.

4,326,568
PACKAGING MACHINE WITH CONTINUOUS MOTION FILLER
Charles A. Burton, and Robert C. Russell, both of Columbus, Ohio, assignors to Rexham Corporation, New York, N.Y.
Filed Feb. 7, 1980, Ser. No. 119,309
Int. Cl.³ B65B *3/12*
U.S. Cl. 141—114 12 Claims

11. A machine for depositing product into upright flexible pouches adapted to be advanced continuously and in equally spaced relation around an arcuate path, said machine comprising a turret having a series of holders located above said path and spaced arcuately from one another in accordance with the spacing of the pouches, mechanism for rotating said turret continuously about an upright axis which coincides with the center of said path, a series of angularly spaced funnels carried by said turret and positioned to register with said pouches as

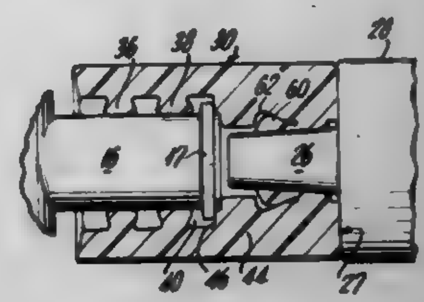
the pouches are advanced around said path, each of said funnels being mounted on said turret to move between raised and lowered positions, the lower end of each funnel being disposed above the underlying pouch when the funnel is in its raised position and being disposed within the pouch when the funnel is in its lowered position, a series of angularly spaced plungers carried by said turret and alined vertically with said funnels, each of said plungers being mounted to move vertically between inactive and active positions, the lower end of each plunger being located above the upper end of the underlying funnel when the plunger is in its inactive position and being located adjacent the lower end of the funnel when the plunger is in its active position, a series of containers adapted to hold said product, each of said containers comprising upper and lower sleeves telescoped slidably together, a gate pivotally mounted on the lower end of said lower sleeve and normally closing the lower end of said upper sleeve to retain the product



in the container, the lower end of said upper sleeve engaging and opening said gate when said upper sleeve is slid downwardly within said lower sleeve, means for delivering filled containers to said holders, each container being delivered to its respective holder when the associated plunger is in its inactive position and when the associated funnel is in its raised position and being delivered to the holder in a position located between the lower end of the plunger and the upper end of the funnel, means on said turret for moving each funnel to its lowered position, for sliding the upper sleeve of the overlying container downwardly relative to the lower sleeve thereof and into the funnel, and for moving the associated plunger to its active position, said last-mentioned means thereafter raising said plunger to said inactive position, sliding the upper sleeve of the container upwardly relative to the lower sleeve thereof and out of said funnel, and moving said funnel to said raised position, and means for thereafter removing each container from its holder.

4,326,569
STOPCOCK SEAL
Vincent L. Vaillancourt, Livingston, N.J., assignor to Critikon, Inc., Tampa, Fla.
Filed Feb. 15, 1980, Ser. No. 121,848
Int. Cl.³ B65B *3/04*
U.S. Cl. 141—383 12 Claims

7. A unitary seal for a side arm lumen of a stopcock comprising:
- a generally cylindrical body having a first end and having an opening extending from said first end into said body, said opening adapted for receiving a stopcock said arm, and said body having a second end adapted to receive the nose of a syringe;
- a plurality of spaced-apart sealing rings extending substantially radially from said body into said opening and adapted to provide sealing engagement with said stopcock side arm by deforming against said stopcock side arm when it is inserted into said opening;
- a substantially annular recess in said body disposed adjacent said innermost sealing ring to accommodate a Luer lock fitting that may exist on the end of a stopcock side arm;
- a spacer disposed between said annular recess and said second end and extending radially from said body into said opening and having a first surface against which said stopcock side arm bottoms, said spacer extending a predetermined axial distance from said first surface toward said second end, said spacer adapted to prevent said syringe nose from bottoming on said stopcock side arm;
- a penetrable cap integrally disposed on said second end and closing said opening, said cap including a slit therethrough



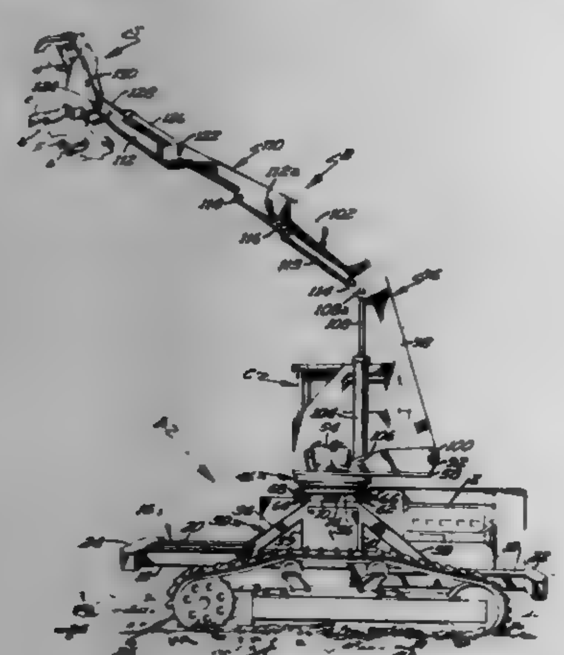
for facilitating penetration by the nose of the syringe through said cap into fluid communication with said opening, said resilient material adapted to provide sealing engagement between said cap and said syringe nose;
- a recess in the outer surface of said cap about said slit for guiding said syringe into said slit;
- an additional quantity of material on the inside surface of said cap disposed as a convex dome projecting into said opening to provide additional sealing contact between said cap and said syringe nose; and,
- a second recess in said body adjacent said penetrable cap for receiving the cap material displaced when said syringe nose penetrates said cap thereby facilitating easy insertion of said nose into said opening.

4,326,570
TREE PLANTATION SELECTIVE FALLING AND STOCKING CONTROL DEVICE
Robert B. Fridley, Federal Way, Wash., and Raymond L. Moser, Hot Springs, Ark., assignors to Weyerhaeuser Company, Tacoma, Wash.
Filed Sep. 10, 1979, Ser. No. 73,975
Int. Cl.³ A01G *23/08*
U.S. Cl. 144—34 R 59 Claims

1. Apparatus for selectively cutting trees on tree plantations, said apparatus being propelled by a prime mover and comprising:
- a. a rigid frame supporting an operating assembly which further comprises;
- b. a moveable arm pivotally mounted to the frame, said arm including;

(1) positioning means to permit relative movement of the arm from an idling position relatively nearer the longitudinal axis of the prime mover to an operating position relatively outboard of the longitudinal axis,
(2) biasing means exerting a forward force on the arm while in the operating position, and
(3) guide means at the distal end of the arm to direct the arm past trees selected to remain standing by causing the arm to move back toward the idling position against the biasing means when such trees are contacted during forward movement of the prime mover;
c. deployable tree-severing means mounted at the distal end of the arm; and
d. deploying means operating between the arm and severing means, said deploying means serving to advance the severing means from a neutral position where said severing means is guarded by the guide means to a cutting position where the severing means is forward of the guide means and is exposed to sever trees selected for removal.

4,326,571
MOBILE DEVICE FOR HANDLING MATERIAL
Patrick J. Crawford, 1013 S. Lincoln St., Shawano, Wis. 54166
Filed Feb. 21, 1980, Ser. No. 123,270
Int. Cl.³ A01G *23/08*
U.S. Cl. 144—34 E 4 Claims

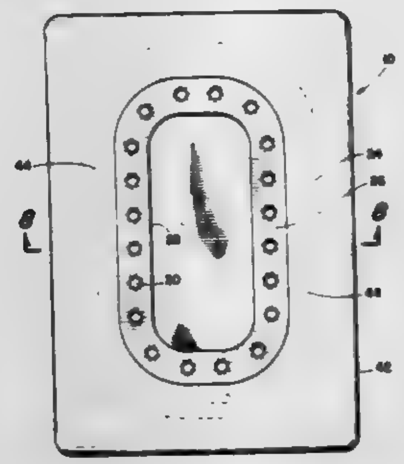


1. A mobile device for handling material comprising:
(a) a frame including elongated first and second spaced side members,
(b) ground engaging means mounted on each side of said side members for providing mobility to said frame,
(c) first and second side mounts secured substantially centrally of and extending upwardly of said first and second frame side members, respectively,
(d) a turntable pivotally connected to and centrally of the upper extend of said side mounts for pivotal movement transversely of and above said frame,
(e) means connected to said frame and said turntable for pivoting said turntable,
(f) a source of power mounted on said frame centrally transversely thereof and in a plane below that of said turntable,
(g) means carried by said turntable for rotation of said turntable throughout 360°,
(h) a boom having an inner portion pivotally connected to an outer portion,
(i) material handling means mounted on the outer end of said boom,
(j) a support secured at its inner end to the top of said turntable substantially on a diameter of said turntable, and parallely disposed relative to said frame with the outer end of the support extending to a point outwardly of and offset from said turntable but within the extent of the width of the ground engaging means when the turntable is rotated,
(k) the inner end of said inner boom portion pivotally connected to the outer end of said support with said boom overlying said turntable on substantially a diameter of said turntable with said material handling means oppositely disposed to said support,
(l) a ram having its lower end pivotally connected to said turntable at a point offset from the axis of the turntable and intermediate the axis of the turntable and the pivotal connection of the inner end of the boom to the support and in alignment with the inner end of said boom with the upper end of the ram connected to said boom, whereby the boom may be pivotally raised and lowered over the turntable and when fully lowered, the inner and outer portions of the boom and the material handling means extend within the horizontal transverse extend of the ground engaging means,
(m) means secured to the top of said turntable and alongside said boom and ram for supporting an operator rotatable and pivotal with said turntable and boom, and
(n) means associated with said source of power for actuating said turntable, said boom, said ground engaging means and said material handling means.

4,326,572
WOOD MOLDING ROUTING APPARATUS
Harry T. Ingram, Raleigh, and Larry R. Ingram, Princeton, both of N.C., assignors to Woodtech, Inc., Princeton, N.C.
Filed Jun. 16, 1980, Ser. No. 160,092
Int. Cl.³ B27C *5/02*
U.S. Cl. 144—133 R 7 Claims

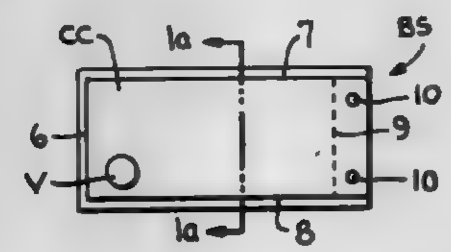
1. Apparatus for notching a preformed wood molding piece at uniformly-spaced intervals to provide a dental molding effect, comprising:
(a) a worktable providing horizontal work support and vertical backstop surfaces for the length thereof;
(b) a plurality of powered wood routers spaced lengthwise of the table at uniform intervals and mounted for pivoting back and forth across and above the table such that the blades thereof may engage and notch any wood material in the path thereof during said pivoting;
(c) first controllable operator means for engaging and clamping an elongated wood workpiece against said horizontal and vertical surfaces at points not interfering with the path of pivoting of said router blades;
(d) second controllable operator means for pivoting said routers on the mountings thereof;
(e) third controllable operator means operative for indexing said workpiece by some predetermined distance; and
(f) control means for operating said first, second and third operator means in timed sequence whereby said workpiece may be engaged and clamped at a first position on said worktable, notched by each of said routers at such position, then unclamped sufficiently to permit advancement to a second position, followed by again being clamped to permit routing thereof, repeating said notching at said second position and repeating this sequence until the workpiece has been notched throughout its length to produce a dental-type molding therefrom.

4,326,573
DEFORMABLE FUEL CELL
Mike Brown, 4991 Canyon Rd., Claremore, and Jon Brook, 849 Millwood Rd., Broken Arrow, both of Okla.
Filed May 30, 1980, Ser. No. 154,950
Int. Cl.³ B65D *33/16*
U.S. Cl. 150—0.5 10 Claims



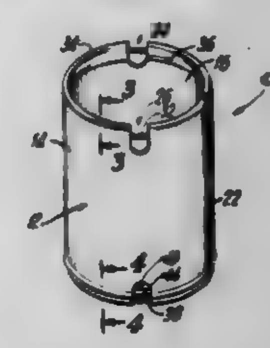
1. A fluid storage device comprising a unitary end seamless deformable body having an opening therethrough, and ring means bonded to the periphery of said opening.

4,326,574
FLEXIBLE CONTAINER WITH VALVE
Francesco Pallaroni, Piacenza; Luciano Baldini, Grosio, and Alberto Siccardi, Tirano, all of Italy, assignors to Safta S.p.A., Milan and Bieffe S.P.A., Grosotto, both of, Italy
Filed Dec. 6, 1979, Ser. No. 100,978
Claims priority, application Italy, Dec. 18, 1978, 30940 A/78
Int. Cl.³ B65D *30/24*
U.S. Cl. 150—8 18 Claims



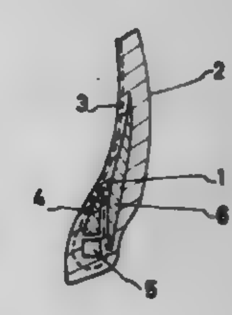
1. A flat, flexible, sterilizable container capable of sterilely containing a liquid to be removed under absolutely sterile conditions, said container comprising a body portion having walls sealed on at least two sides and defining therebetween a liquid receiving and maintaining compartment, and a valve carried by said body portion and being penetratable by pointed instruments to provide access to liquid within the compartment:
said body portion walls comprising a first section of a three-layer laminate including:
(1) an outermost layer comprising a major proportion of a propylene polymer;
(2) an innermost layer comprising a copolymer of ethylene with a minor proportion of butylene; and
(3) an intermediate layer of an amide plymer; said valve comprising an elastomeric core having spaced major faces, said major faces being joined by sides, said core being covered on one of said faces by a second section of said three-layer laminate and the other of said faces being covered by a two-layer laminate including:
(a) a first layer comprising a copolymer of ethylene with a minor proportion of butylene; and
(b) a second layer comprising an amide polymer;
said two-layer laminate and said second section of said three-layer laminate covering said core of said valve being sealed to each other and said valve being sealed to a wall of said body portion.

4,326,575
DISPOSABLE WASTE RECEPTACLE
Sam Larkin, 245 Beach 104th St., Belle Harbor, N.Y. 11694
Filed Jun. 23, 1980, Ser. No. 161,856
Int. Cl.³ A45C *7/00*
U.S. Cl. 150—50 12 Claims



1. A waste receptacle comprising:
a disposable container including a collapsible bag having rigid ring means secured around its upper end portion for providing said upper end portion with a cylindrical configuration, said bag including rigid base means secured at its lower end portion for providing a bottom wall having a cylindrical configuration;
engageable means associated with said ring means and said base means for permitting said disposable container to be retained in an upstanding condition;
said base means including a rigid ring positioned about a bottom plate and secured by said lower end portion of the cylindrical bag; and
said bottom plate including a downwardly depending lip, said rigid ring being positioned about said lip.

4,326,576
RUBBER COMPOSITION EMPLOYING SOFT BLACK AND A THERMOSETTING RESIN AND TIRES EMPLOYING SAID COMPOSITION
Yasuhiro Mizumoto, Hadano; Yukio Tozawa; Masatoshi Kozima, both of Hiratsuka, and Masaru Hirai, Yokohama, all of Japan, assignors to The Yokohama Rubber Co., Ltd., Tokyo, Japan
Continuation of Ser. No. 66,543, Aug. 15, 1979, abandoned. This application Mar. 18, 1981, Ser. No. 245,184
Claims priority, application Japan, Aug. 25, 1978, 53-103567
Int. Cl.³ B60C *1/00, 15/06;* C08K *9/00*
U.S. Cl. 152—356 R 17 Claims



1. A high hardness rubber composition having a hardness after curing of at least 92 comprising at least one rubber selected from the group consisting of natural rubber, diene type rubber and diene type copolymer rubber, a single vulcanizing agent for said at least one rubber, soft black, a novolak type

phenol or alkylphenol thermosetting resin wherein said single vulcanizing agent is sulfur and and a curing agent for said thermosetting resin, wherein the soft black has an average particle size of 40 to 80 millimicrons, the amount of the soft black is 55 to 95 parts by weight per 100 parts by weight of the rubber, the amount of the thermosetting resin is 5 to 30 parts by weight per 100 parts by weight of the rubber and the sum of the amounts of the soft black and thermosetting resin is 60 to 100 parts by weight per 100 parts by weight of the rubber.

4,326,577

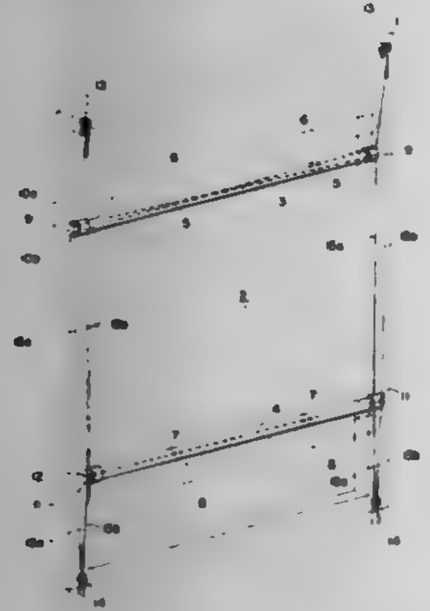
VERTICALLY POSITIONING WINDOW SHADING SYSTEM

Brian H. Tse, 1486 17th Ave., San Francisco, Calif. 94122

Filed Apr. 16, 1980, Ser. No. 140,694

Int. Cl.^{3} A47H *1/00*

U.S. Cl. 160—299 **3 Claims**



1. A vertically positioning window shading system comprising:

a first upper hollow non-rotating horizontal roller;

a second lower hollow rotating roller parallel to said first roller;

a vertical screen having one of its parallel horizontal edges fixedly positioned upon said first roller and its opposite edge fixedly positioned on said second roller;

a first pair of cord means having one of their ends fixedly positioned on opposite sides of the upper edge of a window frame;

said first pair of cord means being disposed to suspend said first roller through its hollow center while permitting a vertical movement of translation of said first roller along said cords;

a second pair of cord members having one of their ends fixedly positioned on the opposite sides of the upper edge of said window frame;

said second cord means being disposed to suspend said second roller through its hollow center while permitting a combined movement of rotation and translation of said second roller;

said first roller being equipped with caps at each end, each of said caps having a pair of holes positioned one above the other drilled through them;

said second roller being equipped with caps at each end, each of said caps having a hole drilled through it concentric to said roller;

each of the cords of said first pair of cord means passing in turn through the upper of said holes in one end of said first roller, thence through the interior of said first roller thence through the lower of said holes in the opposite end of said roller thence vertically to a fixed position at the bottom of said window;

each of the cords of said second pair of cord means passing in turn through said concentric hole in one end of said second roller thence through the interior of said second roller, thence through the hole in the opposite end of said roller, thence vertically to a fixed position at the bottom of said window;

said cord means being maintained under tension at all times.

4,326,578

METHOD FOR MAKING FOUNDRY MOULDS AND CORES

Andrzej Pajak; Tadeusz Olszowski, both of Crakow, Poland; Antoni Mazur, deceased, late of Niepolomice, Poland (by Irena Mazur, legal representative); Mariusz Holtzer, Crakow, Poland; Andrzej Marzencki, Crakow, Poland, and Adam Jachowicz, Crakow, Poland, assignors to Instytut Odlewnictwa, Poland

Filed Feb. 19, 1980, Ser. No. 122,262

Claims priority, application Poland, Feb. 16, 1979, 213514

Int. Cl.^{3} B22C *9/12*

U.S. Cl. 164—15 **1 Claim**

1. A method of making a foundry mould comprising the steps of: forming a plurality of mould components from a moulding sand composition of a low binder content having a certain content of a liquid component; assembling said mould components to form a mould having a mould cavity therein; pouring liquid gas into the mould cavity in an amount to produce hardening of a layer of said sand to a predetermined thickness only, said layer of the sand being that which will be in contact with molten metal; and leaving said liquid gas in said mould cavity until it completely evaporates.

4,326,579

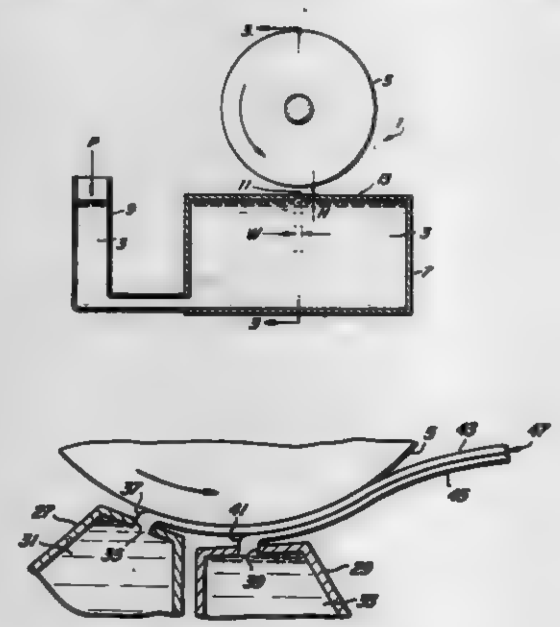
METHOD OF FORMING A FILAMENT THROUGH MELT EXTRACTION

Robert B. Pond, Sr., Westminster, and John M. Winter, Jr., New Windsor, both of Md., assignors to National-Standard Company, Niles, Mich.

Filed Jan. 23, 1980, Ser. No. 114,398

Int. Cl.^{3} B22D *11/06*

U.S. Cl. 164—461 **19 Claims**



1. A method of forming a filament through melt extraction comprising:

(a) providing at least one source of molten material;

(b) feeding the molten material substantially upwardly through at least one orifice having an elongate configuration, wherein the orifice is defined by a slot formed in a plate, with the slot having a width to height ratio of less than or equal to approximately 1 for providing a uniform distribution of fluid feed pressure across the entire length of the slot;

(c) maintaining a stable meniscus of the molten material about the periphery of the orifice; and

(d) rotating a chill wheel against the meniscus of molten material to extract a solidifying filament of the material therefrom.

4,326,580

METHOD OF FABRICATING A STRUCTURAL MEMBER BY ELECTRO SLAG FORMING

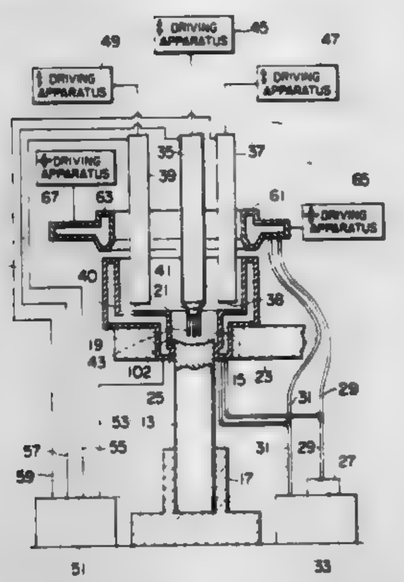
Takeshi Wada, and Tetsuo Okuni, both of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 16, 1979, Ser. No. 85,301

Claims priority, application Japan, Oct. 16, 1978, 53/126229; Feb. 2, 1979, 54/10444

Int. Cl.^{3} B22D *27/02*

U.S. Cl. 164—497 **6 Claims**



1. A method for fabricating a structural member by electro slag forming, which method comprises the steps of:

preparing a previously formed structural part for forming a first part of the structural member to be fabricated;

disposing vertically the previously formed structural first part;

mounting fluid-cooled metal mold means on the previously formed structural first part so that the upper end of the previously formed structural first part and the fluid-cooled metal mold means will define a cavity for forming a second part of the structural member to be fabricated;

supplying flux into the cavity;

arranging at least an electrode provided with a plurality of fine wires in the cavity so that the ends of the plurality of fine wires will face the upper end of the previously formed structural first piece;

applying electric voltage between the electrode and the fluid-cooled metal mold means so that initially arcs occur between the plurality of fine wires and the previously formed structural first piece to melt the fine wires, and then the flux and the electrode are melted in turn;

removing the electrode from the cavity filled with a sufficient amount of molten metal to form said part of the structural member to be fabricated; and

removing the fluid-cooled metal mold means from the structural member fabricated after solidification of the molten metal.

4,326,581

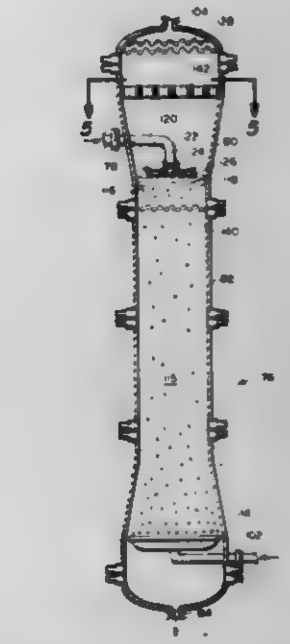
DIRECT CONTACT, BINARY FLUID GEOTHERMAL BOILER

Pascal M. Rapier, Richmond, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Dec. 27, 1979, Ser. No. 107,791

Int. Cl.^{3} F28D *21/00*

U.S. Cl. 165—45 **31 Claims**



1. A heat exchanger for the transfer of energy from an elevated temperature fluid including geothermal brines to a working fluid flowing in a specified direction comprising:

means for directly contacting the elevated temperature fluid with the working fluid in a transitional zone to cause said working fluid to vaporize; and

which means located closely adjacent to the transitional zone include means for directing the elevated temperature fluid across the surface of the transitional zone in a direction substantially transverse to said specified direction to prevent the entrainment of the elevated temperature fluid in the vapor of the working fluid.

4,326,582

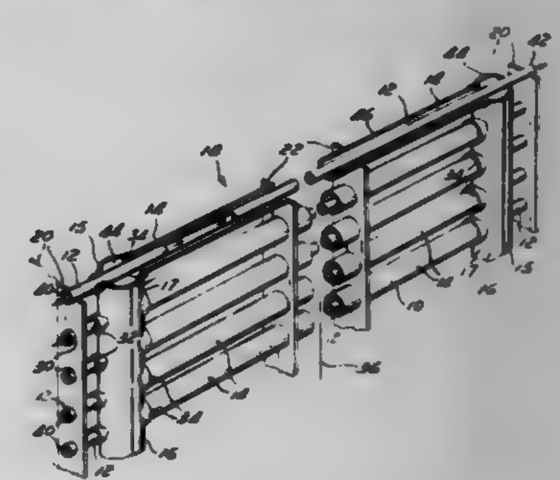
SINGLE ELEMENT TUBE ROW HEAT EXCHANGER

Irwin E. Rosman, Woodland Hills, and William R. Wagner, Los Angeles, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Sep. 24, 1979, Ser. No. 78,125

Int. Cl.^{3} F28D *7/10*; F28F *9/26*

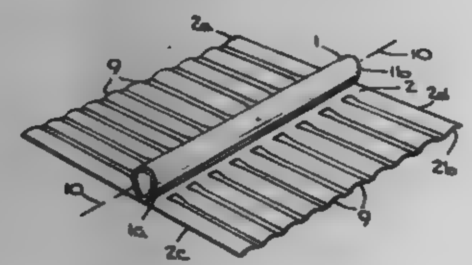
U.S. Cl. 165—83 **10 Claims**



1. A tube-in-tube heat exchanger having the capability of being modularized, which comprises:

at least one inner tube having forward and aft ends for carrying a first heat exchanger fluid;
an outer tube having forward and aft ends, concentric with each inner tube, for carrying a second heat exchanger fluid;
means for manifolding said inner tubes; and
a flexible arcuate thin wall manifold for said outer tubes, wherein said manifold further compresses an integral flange for each inner and outer tube and wherein said flange defines ports for said inner and said outer tubes wherein said integral flanges extend beyond the circumference of said manifold so as to provide means for joining said tubes to said manifold, and wherein said joint is capable of withstanding the thermal stresses experienced by said heat exchanger.

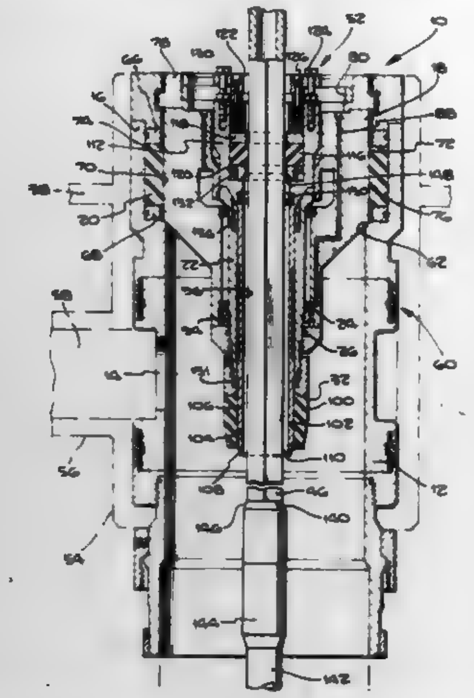
4,326,583
HEAT EXCHANGER PANELS
Wallace C. Rudd, New Canaan, Conn., assignor to Thermatool Corporation, Stamford, Conn.
Filed Jan. 21, 1980, Ser. No. 113,790
Int. Cl.³ F28F *1/20*
U.S. Cl. 165—183 **8 Claims**



1. A heat exchanger element comprising a metal tube substantially continuously secured to a relatively wide and thin metal sheet intermediate its side edges by heated and cooled metal whereby the metal sheet tends to form ripples upon cooling, the width of said sheet being substantially greater than the cross-sectional dimension of the tube and the width dimension of said sheet extending transversely to the axis of said tube substantially within the plane of said sheet, said sheet having a plurality of corrugations therein at each side of said tube extending in a direction transverse to the axis of said tube, the corrugations stretching the metal sheet and extending from adjacent the tube to the side edges of said sheet, the corrugations extending from adjacent the tube to one of the side edges being spaced from the corrugations extending from adjacent the tube to the other of the side edges so as to leave uncorrugated metal of the sheet therebetween, the tube being continuously welded longitudinally thereof to said uncorrugated metal of the sheet and, the number, depth and spacing of such corrugations being selected to foreshorten said sheet at each side of said tube so that the length of the sheet between its ends is substantially equal to the length of said tube between its ends and so that the ripples in said sheet produced by the joining of said tube to said sheet are substantially eliminated and the developed length of the corrugated sheet due to such stretching being not more than 2.5% larger than said length of said tube.

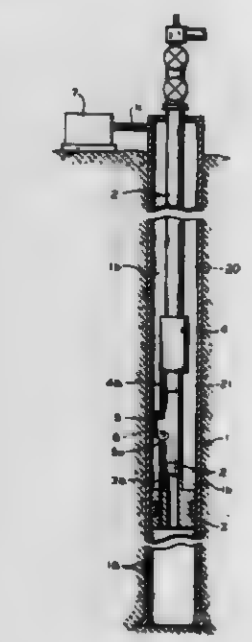
4,326,584
KELLY PACKING AND STRIPPER SEAL PROTECTION ELEMENT
Bruce J. Watkins, Palos Verdes Estates, Calif., assignor to Regan Offshore International, Inc., Torrance, Calif.
Filed Aug. 4, 1980, Ser. No. 174,946
Int. Cl.³ E21B *17/10*
U.S. Cl. 166—82 **20 Claims**

1. A stripper seal protection and operating tool sealing element adapted to protect a resilient annular stripper seal from contacting polygonally cross sectioned operating tools passing axially therethrough while maintaining a seal between the polygonal operating tool and the rotating insert of a diverter riser coupling, said element comprising:
stripper protection means for expanding radially outward said stripper seal to prevent said stripper seal from contacting said polygonal operating tool; and



packing means for providing said seal between the polygonal operating tool and the rotating insert when said stripper seal is prevented from contacting said polygonal operating tool.

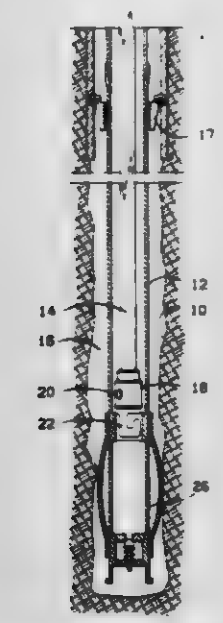
4,326,585
METHOD AND APPARATUS FOR TREATING WELL COMPONENTS WITH A CORROSION INHIBITING FLUID
David M. McStravick, Houston, Tex., assignor to Baker International Corporation, Orange, Calif.
Filed Feb. 19, 1980, Ser. No. 122,224
Int. Cl.³ E21B *34/08, 37/06*
U.S. Cl. 166—244 C **14 Claims**



1. Apparatus for injecting a quantity of corrosion inhibitor fluid through a subterranean well, said well having an outer casing, a production string disposed in the casing and defining an annular space within the outer casing, said annular space being filled with a corrosion inhibiting fluid, the apparatus comprising: means for cyclically varying the pressure of said fluid; a fluid pressure accumulator mounted on said production string, said accumulator having a fluid inlet passage communicating with the casing annulus and a fluid outlet passage communicating with the interior of the production string; a first valve preventing fluid passage from said accumulator into said fluid inlet; and a second valve opposing fluid passage from said pressure accumulator into the outlet passage, whereby a quantity of said corrosion inhibiting fluid is only periodically discharged into said outlet passage from said fluid pressure accumulator.

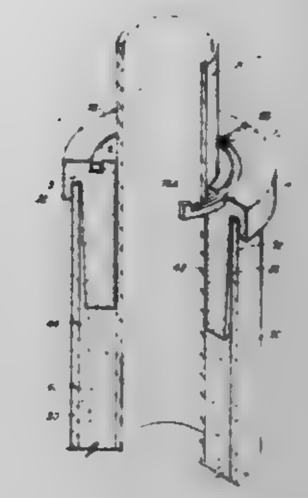
12. The method of injecting a quantity of corrosion inhibiting fluid through apparatuses in a subterranean well having a production string disposed in a casing and surrounded by an annular space filled with fluid comprising the steps of:
1. inserting a corrosion inhibiting material in the annulus fluid;
2. disposing a valving apparatus between the annular space and the interior of the production string; and
3. applying a cyclically varying pressure to said inhibitor containing fluid; and
4. periodically opening the valving apparatus only in response to the low pressure portions of said cyclic fluid pressure variations to discharge a limited quantity of said inhibitor containing fluid into the production string.

4,326,586
METHOD FOR STRESSING THERMAL WELL CASINGS
Lawrence B. Wilder, Tulsa, Okla., assignor to Standard Oil Company (Indiana), Chicago, Ill.
Filed Jul. 3, 1980, Ser. No. 165,522
Int. Cl.³ E21B *33/14, 33/16*
U.S. Cl. 166—285 **3 Claims**



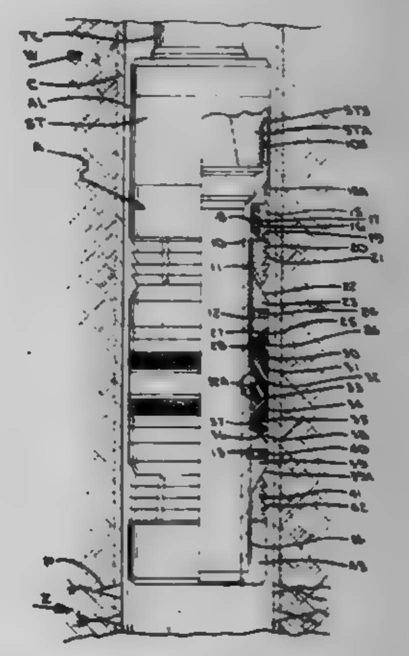
1. A method for stressing a string of casing suspended in a borehole drilled in the earth wherein fluids will flow at a temperature greater than the initial temperature at which said casing is cemented comprising:
a. suspending said casing in said wellbore,
b. suspending a string of tubing in said casing,
c. attaching the lower end of said tubing to the lower portion of said casing,
d. circulating cement into at least a portion of the annulus between said casing and the wall of said wellbore,
e. stressing said tubing thereafter but before said cement has set,
f. maintaining said stress on said tubing until said cement has set, thereby setting said casing in a stressed condition.

4,326,587
CASING HANGER AND STABILIZER APPARATUS AND METHOD
Charles F. Gauthier, P.O. Box 775, and Michael L. Martin, P.O. Box 792, both of Lake Arthur, La. 70549
Filed Jun. 27, 1980, Ser. No. 163,928
Int. Cl.³ E21B *19/10, 33/04*
U.S. Cl. 166—379 **12 Claims**



1. An apparatus for stabilizing casing pipe, comprising:
(a.) a cylindrical body portion with an inner bore throughout;
(b.) a means for engaging pipe casing within said inner bore;
(c.) a portion of said cylindrical body adapted for hanging said body onto the uppermost end of exterior pipe casing comprising a downward depending lip portion defining a space being substantially equal in width to the thickness of the pipe wall for engaging the uppermost end of the exterior casing pipe;
(d.) a locking means for securing said apparatus around the pipe casing prior to lowering the apparatus in place.

4,326,588
WELL TOOL HAVING KNITTED WIRE MESH SEAL MEANS AND METHOD OF USE THEREOF
David M. McStravick, Houston, Tex., assignor to Baker International Corporation, Orange, Calif.
Filed Feb. 19, 1980, Ser. No. 122,225
Int. Cl.³ E21B *33/128, 33/129*
U.S. Cl. 166—387 **30 Claims**

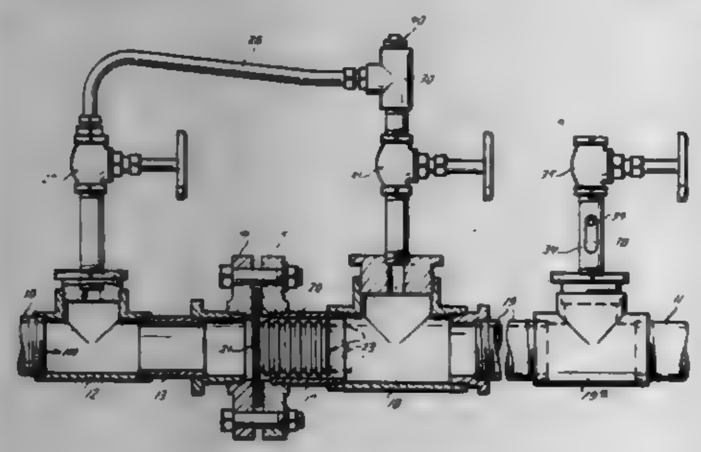


22. An apparatus adaptable for insertion on a first conduit within a subterranean well having a second conduit extending therein, and responsive to means for anchoring said apparatus

at a predetermined location in a subterranean well, said apparatus comprising seal means for preventing fluid transmission thereacross, said seal means comprising at least one section of transversely compressible, seamless, knitted elements generally defined by a continuous series of interlocking ductile metal-containing loop members and further comprising fibrous means, introduced among said loop members, for preventing fluid transmission through said knitted elements.

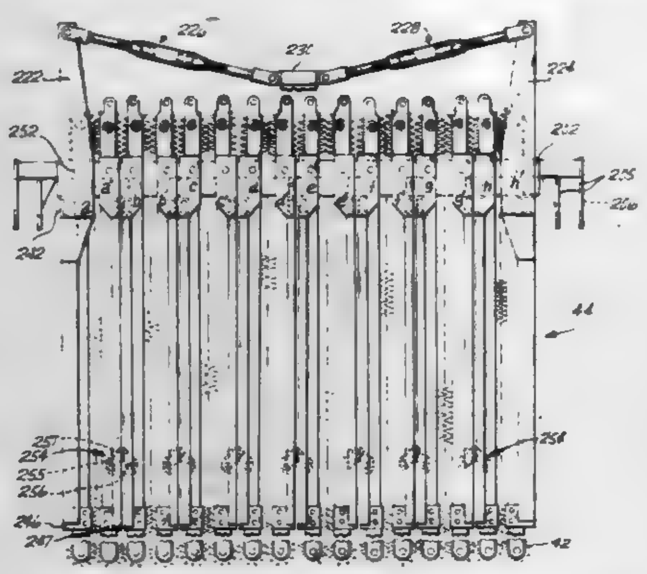
29. A method of establishing a seal in a subterranean well between a first conduit and an inner wall of a second conduit in said well to prevent fluid communication thereacross; comprising the steps of positioning said second conduit with respect to said first conduit; compressing a knitted wire mesh comprising seamless, knitted elements generally defined by a continuous series of interlocking ductile, metal-containing loop members with a fibrous material introduced among said metal-containing loop members to urge said knitted wire mesh into contact with both said first and second conduits to form a seal therebetween.

4,326,589
ANTI-FREEZE ARRANGEMENT FOR SPRINKLER SYSTEMS
Frederick C. Bailman, Fort Smith, Ark., assignor to Baldor Electric Company, Fort Smith, Ark.
Filed May 14, 1979, Ser. No. 38,481
Int. Cl.³ A62C *35/00*
U.S. Cl. 169—5 5 Claims



1. In a system for separating fluids in a fluid system such as an automatic sprinkler, comprising: a fluid pipe for connection to a second fluid pipe subjected to a fluid under pressure, and for conducting fluid to an area subject to adverse physical conditions; a flexible, frangible membrane across the pipe sealing the entrance thereof; means to admit fluid to the pipe to fill it downstream of the membrane with a first fluid not affected adversely by the adverse physical condition; means for connecting the pipe to the second fluid pipe for introduction of a second pressure fluid on the upstream side of the membrane; the membrane being frangible upon application of the upstream fluid pressure thereto and release of the fluid pressure downstream thereof, the membrane being a flexible bellows, the end of the bellows having a weakened tab that can be broken out upon release of the downstream pressure, but the tab having an unweakened portion that holds it onto the bellows; a bypass pipe from the second pipe to the first one around the bellows; a valve controlling the bypass; a fluid inlet into the first pipe and a valve controlling it; an exhaust opening into the pipe downstream of the bellows, and a valve controlling the exhaust; and an indicator for the fluid in the pipe downstream of the bellows.

4,326,590
PLANT-HARVESTING DEVICE FOR USE WITH VARIABLE CROP ROW SPACING
Michael J. Yancey, Puyallup, Wash., assignor to Weyerhaeuser Company, Tacoma, Wash.
Filed Oct. 27, 1980, Ser. No. 200,863
Int. Cl.³ A01D *25/00*
U.S. Cl. 171—61 10 Claims



1. In a plant lifting apparatus of the type utilizing opposed belts for grasping and transporting a plurality of rows of plants, the improvements which comprise:

a. individual supporting means for each pickup belt;
b. sub-frame means for mounting the supporting means on the lifting apparatus;
c. pivot means which attach the individual supporting means to the suframe in a swingable side-by-side relationship;
d. adjusting means for moving the lateral supporting means between relatively inward and relatively outward positions, said adjusting means adapted to move the lateral supporting means independently of any medial supporting means;
e. spreading means bridging the medial supporting means so that when n supporting means are present, where n is an even number and numbering begins with one of the lateral supporting means, each even-numbered medial supporting means is connected by a spreading means to its adjacent higher odd-numbered supporting means, but lateral supporting means 1 and n are not connected to a spreading means, said spreading means serving to shift the connected pairs between relatively inward and relatively outward positions while still maintaining opposing pickup belts in a plant grasping relationship.

4,326,591
SOIL CORING IMPLEMENT
Jerry A. Dedoes, Wixom, Mich., assignor to Dedoes Industries, Inc., Walled Lake, Mich.
Filed Feb. 14, 1980, Ser. No. 121,432
Int. Cl.³ A01B *45/02*
U.S. Cl. 172—22 3 Claims

1. A soil penetrating and coring implement adapted to be connected to and pulled over a ground surface by a vehicle, said implement comprising:

a tubular cylindrical rim of a predetermined axial length, said rim having a plurality of circumferentially extending slots formed about its outer periphery, said slots being circumferentially and axially spaced from each other;

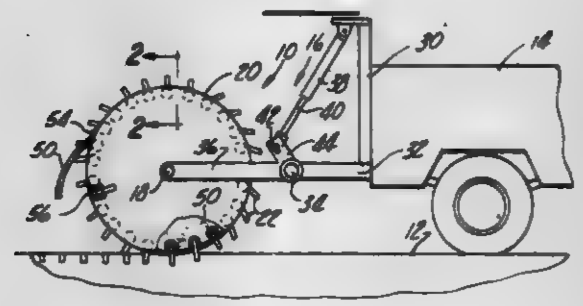
axle means for rotatably mounted said rim so that said rim rotates about its axis as the implement is pulled by the vehicle;

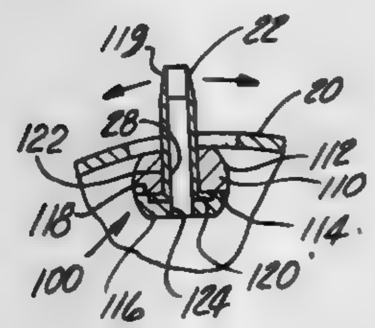
a plurality of elongated mounting assemblies, said mounting assemblies being substantially cylindrical in shape along their entire length, and means for individually detachably

and freely pivotally securing said assemblies to the interior of said rim so that said assemblies are circumferentially spaced about said rim and pivotal about an axis parallel to but radially spaced from the axis of said rim; and

a plurality of tubular coring elements and means for detachably securing a plurality of said coring elements to each mounted assembly, each coring element registering with a diametric throughbore in its mounting assembly and having a portion extending radially outwardly from one side of its mounting assembly, said outwardly extending portion of each coring element extending through a registering slot in said rim and protruding radially outwardly from said rim;

whereby said mounting assemblies are individually removable from said rim whereupon said coring elements are individually replaceable in said removed mounting assembly wherein each mounting assembly further comprises a first elongated part and a second elongated part, each part having a longitudinally extending and substantially planar surface which flatly abuts against a like surface on the other part,

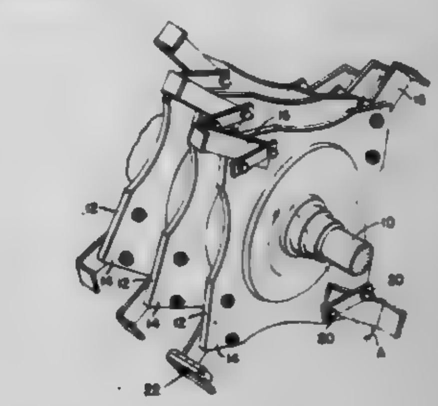




wherein each diametric throughbore is formed by registering bores formed through the mounting assembly parts, said registering bores extending substantially perpendicularly with respect to said surfaces,

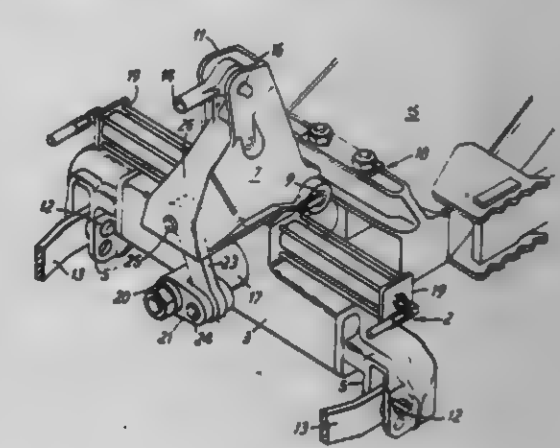
wherein each coring element includes a flared out portion at one end having a cross sectional area greater than the diameter of said registering bores, said coring elements being insertable through bores in one mounting assembly part so that the flared out portion abuts against said surface of said one mounting assembly part, and fastening means for detachably securing said parts together so that said flared out portion of said coring elements are sandwiched in between said surfaces on said mounting assemblies wherein the other mounting assembly includes a recess in its planar surface around each bore and in which the flared out portion of the coring element is positioned and wherein said means for pivotally securing each mounting assembly comprises a socket detachably secured to each rim, each socket having a cylindrical recess into which one end of the mounting assembly is positioned.

4,326,592
TOOL FOR EARTHWORKING MACHINE
Earle W. Stephenson, Latrobe, Pa., assignor to Kennametal Inc., Latrobe, Pa.
Continuation-in-part of Ser. No. 13,720, Feb. 21, 1979, abandoned, which is a continuation-in-part of Ser. No. 785,453, Apr. 7, 1977, abandoned. This application Jun. 8, 1979, Ser. No. 46,944
Int. Cl.³ A01B *33/10*
U.S. Cl. 172—123 17 Claims



1. An earthworking tool comprising; an arm, said arm having a shank portion, said shank portion adapted to be supported on a rotary member having an axis of rotation, one end of said shank portion of the arm extending generally radially outwardly from the member, said one end of said shank portion joining a working end portion of said arm extending laterally to one side of said shank portion in a direction substantially parallel to said axis of rotation so as to provide said arm with an L-shaped configuration when viewed along a line perpendicular to said axis of rotation, said shank portion and said working end portion having a forwardly facing side and a trailing side with respect to a given direction of rotation of said arm, abrasion protective means mounted on said working end of said arm and disposed in linerly extending relation to said forwardly facing side thereof and to a portion of said forward face of the radial portion of said shank portion.

4,326,593
REVERSIBLE PLOUGHS
Richard J. Hawes, Ipswich, England, assignor to Ransomes Sims & Jefferies Limited, Ipswich, England
Filed Aug. 4, 1980, Ser. No. 175,031
Claims priority, application United Kingdom, Aug. 6, 1979, 27378/79
Int. Cl.³ A01B *3/28, 3/426*
U.S. Cl. 172—226 6 Claims



1. A reversible plough comprising a headstock for connection to a tractor; a reversing spindle mounted in the headstock for rotation about a generally longitudinal axis; a plough frame carrying left handed and right handed plough bodies and being secured to the reversing spindle for rotation therewith between

left and right handed ploughing positions, the plough frame having a centre of gravity which is offset laterally of said axis; means in the headstock for rotating the reversing spindle relative thereto to reverse the plough frame from one ploughing position to the other and a mechanism arranged upon rotation of the reversing spindle so to displace the plough frame vertically that the centre of gravity of the plough frame is maintained substantially in a horizontal plane, characterised in that said mechanism comprises means eccentrically connected with the reversing spindle and serving to tilt the reversing spindle in a vertical plane concomitantly with the rotation thereof, said eccentrically connected means applying to the reversing spindle an amount of torque about said axis which is opposed to the torque associated with the offset plough frame centre of gravity and which is substantial when said latter is at a maximum.

4,326,594

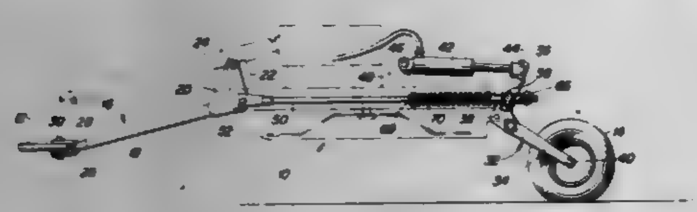
RAISING AND LOWERING MECHANISM FOR FARM IMPLEMENT

Ken K. Oka, St. Catherines, and Peter C. Haag, Port Colborne, both of Canada, assignors to Deere & Company, Moline, Ill.

Filed Jun. 27, 1980, Ser. No. 163,758

Int. Cl.³ A01B *63/22*

U.S. Cl. 172—328 1 Claim



1. Raising and lowering means for a tractor-drawn implement having a fore-and-aft body including front and rear support members pivoted to the body respectively on transverse axes, wherein the front member has a fore-and-aft tow bar is adapted to be pivoted to the tractor on a transverse axis and also has a generally vertical arm rigid with the tow bar, said transverse axis on the front support being located at an upper portion of said arm and the rear support member has a fore-and-aft wheel arm journalling a ground-engaging wheel means and also has a generally vertical arm rigid with the wheel arm, a fore-and-aft leveling rod connected between the rear vertical arm and a lower portion of the forward vertical arm to provide, in conjunction with the implement body, a four-bar linkage for selectively moving the body vertically in up or down phases, and force-exerting means connected between the body and one of the member arms for actuating the linkage in such manner that the rod is stressed in compression during lowering of the body, characterized in that a stop is fixed to the rod intermediate the arms and in fore-and-aft spaced relation to one of the arms, lug means is carried by said one arm and has an opening therethrough in which the rod is slidable fore and aft, and spring means is carried by the rod between the lug means and the stop and is compressible against the lug means by the stop to resiliently absorb at least some of the compressive forces on the rod when the wheel arm is subjected to stresses during operation.

4,326,595

METHOD FOR DRILLING DEVIATED WELLS INTO AN OFFSHORE SUBSTRATE

Robert B. Burns, Huntington, N.Y., assignor to Texaco Development Corporation, White Plains, N.Y.

Filed Apr. 25, 1980, Ser. No. 143,703

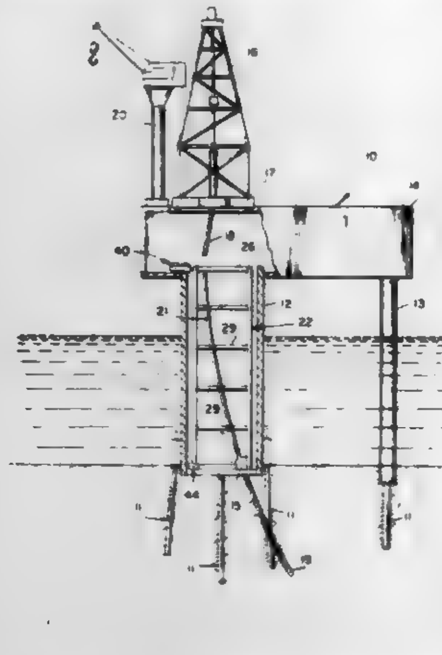
Int. Cl.³ E21B *7/12, 7/04*

U.S. Cl. 175—9 7 Claims

1. Method for drilling well bores into the ocean floor at an offshore site from a marine platform having a working deck, at least one platform leg supporting said deck above the water's surface, means for lowering a rotating drill string having a drill bit at the end thereof into the ocean floor, and a conductor cage adapted to hold at least one conductor, said cage being removably engaged with said leg and being positioned to receive said rotating drill string within said at least one conductor, and to deflect the drill string into a desired direction prior to the drill bit reaching the ocean floor, which method includes the steps of;

periodically elevating said cage from its drilling position within said at least one leg to a raised position,

pivotally engaging the cage lower end with said leg upper end,



pivotally lowering the cage upper end about said point of pivotal engagement to dispose the cage in a substantially horizontal position,

adjusting the disposition of said at least one conductor within said cage to guide the drill string into a predetermined direction,

thereafter repositioning the cage within said leg for a drilling operation.

4,326,596

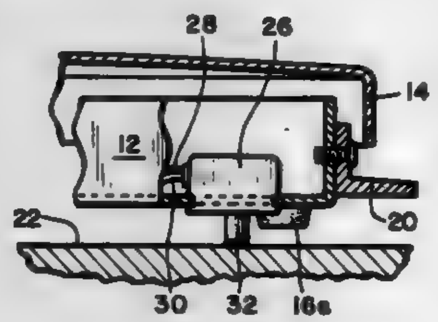
ELECTRONIC WEIGHING APPARATUS

William P. Beck, Westchester, Ill., assignor to Borg-Erickson Corporation, Chicago, Ill.

Filed Jul. 10, 1980, Ser. No. 167,770

Int. Cl.³ G01G *23/32, 3/14*

U.S. Cl. 177—178 6 Claims



1. In an electronic weighing apparatus including electrically powered scale means and a source of electrical power, the improvement comprising:

a base including a plurality of base supports positioned on a lower portion of the base to support the base on a support surface;

a platform mounted to the base to bear downward forces and to transmit downward forces to the scale means;

switch means for selectively connecting the scale means to the source to energize the scale means and disconnecting the scale means from the source to de-energize the scale means;

means for actuating the switch means, aid actuating means including an actuating member biased to an extended position, in which the actuating member supports a portion of the base above the support surface, and movable to a depressed position, said switch means responsive to the actuating member such that the scale means is de-energized when the actuating member is in the extended position and the scale means is energized when the actuating member is in the depressed position; and

tab means for conducting externally applied vertical forces to the base to remove the actuating member to the depressed position to energize the scale means in the absence of applied vertical forces on the platform;

said actuating means biasing the actuating member to the extended position with a force adequate to prevent the weight of the weighing apparatus from moving the actuating member to the depressed position, thereby ensuring that the scale means is normally de-energized.

4,326,597

AGRICULTURAL TRACTOR

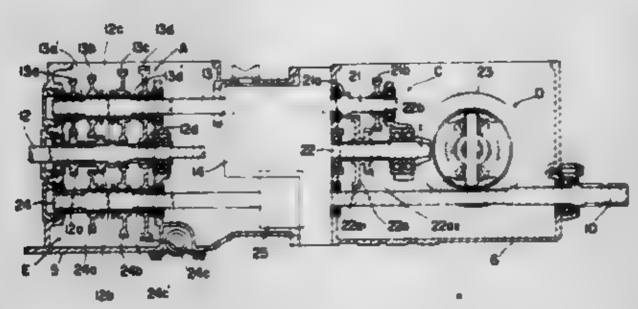
Yoshinobu Murayama, and Takashi Yoshii, both of Sakai, Japan, assignors to Kubota, Ltd., Osaka, Japan

Continuation of Ser. No. 29,429, Apr. 12, 1979, abandoned. This application Apr. 21, 1981, Ser. No. 256,174

Claims priority, application Japan, Aug. 31, 1978, 53/107849

Int. Cl.³ B60K *17/08;* F16H *3/20*

U.S. Cl. 180—70 MS 5 Claims



1. An agricultural tractor including an engine and comprising a transmission casing, said transmission casing including a forward portion and a rearward portion; a main speed change mechanism disposed in said forward portion of said transmission casing; said main speed change mechanism including an input shaft adapted to receive power from said engine; a plurality of gears mounted on said input shaft; a first output travel shaft parallel with said input shaft; a plurality of axially movable gears mounted on said first output travel shaft movable relative to said input shaft to provide plural speeds; a differential casing coupled to the rearward portion of said transmission casing; a speed change casing secured in the rearward portion of said transmission casing between said forward portion of said transmission casing and said differential casing; a low range speed mechanism in said speed change casing adapted to receive power from said first output travel shaft, said low range speed change mechanism including a plurality of gears related to each other which provide a greater reduction ratio than a maximum reduction ratio provided by said main speed change mechanism; said differential casing including therein an auxiliary speed change mechanism and a differential mechanism; said auxiliary speed change mechanism including a second travel shaft; said second travel shaft protruding into said speed change casing and connecting with said low range speed mechanism to transmit power from said low range speed mechanism through a third travel shaft to said differential mechanism.

4,326,598

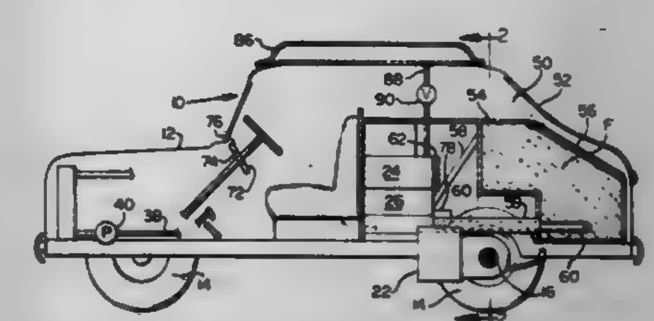
STEAM DRIVEN ROAD VEHICLE

Otto H. Acker, P.O. Box 2, Washougal, Wash. 98671

Filed Jun. 2, 1980, Ser. No. 155,523

Int. Cl.³ B60K *3/00*

U.S. Cl. 180—304 1 Claim



1. A steam driven road vehicle comprising

(a) a frame,

(b) wheel means supporting said frame on the ground,

(c) said wheel means including a drive axle,

(d) a firebox, steam boiler and condenser supported on said frame,

(e) steam powered drive means on said vehicle operated by steam from said boiler,

(f) a water supply system on said vehicle supplying water to said boiler,

(g) drive connection means connected between said powered drive means and said drive axle,

(h) a fuel bin on said frame arranged to hold a supply of powdered fuel for feeding to the firebox,

(i) first and second means connected between said fuel bin and said firebox for selectively conveying fuel from said fuel bin to said firebox, said first means comprising a power driven conveyor and said second means comprising a gravity feed chute,

(j) an electrical system in said vehicle, including plug-in means arranged for detachable connection to a conventional 110 volt circuit,

(k) an electrical pre-heating element on said boiler connected in said electrical system for producing pre-heat in said boiler,

(l) heat control means in said electrical system controlling the temperature of output of said pre-heating element,

(m) and time control means in said electrical system arranged to energize said pre-heating element at a preset time prior to driving the vehicle.

4,326,599

SPEAKER BEZEL/RETAINER

Phillip B. Thompson, Westminster, and Hill W. Roberts, Anaheim, both of Calif., assignors to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Jun. 1, 1981, Ser. No. 268,897

Int. Cl.³ H05K *3/00*

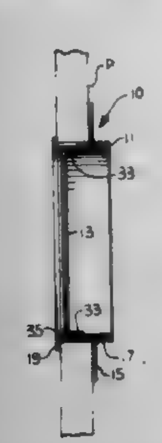
U.S. Cl. 181—175 6 Claims

1. A speaker grille bezel-retainer comprising:

a bezel terminating in a tubular portion having at least three groups of planar but radially intermittent, circumferentially oriented and axially displaced serrations arranged on the outside of said tubular portion with said radial intermissions at least equal to the length of said serrations;

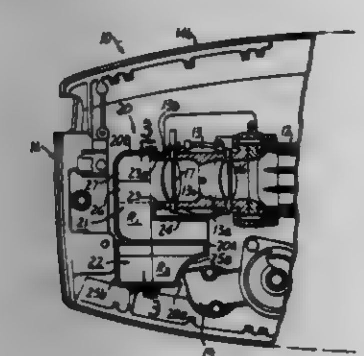
a bezel ring having an inside diameter sized to slideably engage the outside diameter of said tubular portion of said bezel and having intermittent cut-outs stepped to a larger diameter so as to leave alternate tabs and cut-outs, said cut-outs oriented and sized to clear said at least three groups of planar but radially intermittent, circumferentially oriented and axially displaced serrations on said tubular portion of said bezel and said tabs shaped and sized

to form a ramp which axially advances said bezel ring when said bezel ring is rotated relative to said bezel with



said ramp engaging between aligned parts of said serrations; and
means for closing said inside diameter of said bezel.

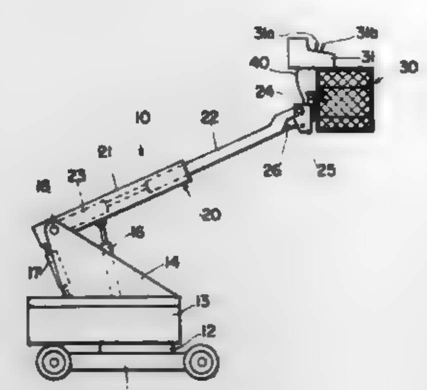
4,326,600
INTAKE SILENCER FOR OUTBOARD MOTOR
Masaki Okazaki, Iwata, and Ryozo Ohkita, Hamamatsu, both of Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan
Filed May 30, 1980, Ser. No. 154,773
Claims priority, application Japan, Jun. 8, 1979, 54-72771
Int. Cl.^{3} F02M *35/12;* F01N *1/02*
U.S. Cl. 181—229 16 Claims



1. An intake silencer for an outboard engine and a carburetor attached to said engine, said carburetor having an air intake port, said silencer comprising: an air intake passage having an open end and an end connected to said air intake port, said air intake passage bending partway around said carburetor, and a resonance chamber in fluid communication with said air intake passage between its ends, and also bending partway around said carburetor, in near adjacency to said air intake passage.

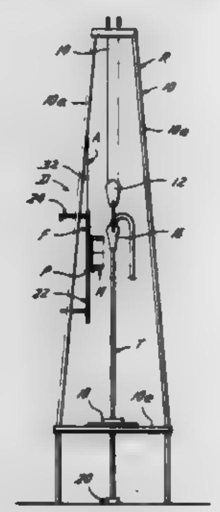
4,326,601
AERIAL LIFT PLATFORM APPARATUS WITH CAPACITY INDICATOR
John L. Grove, Greencastle, and Frederick W. Kuhne, Willow Hill, both of Pa., assignors to JLG Industries, Inc., McConnellsburg, Pa.
Filed May 30, 1980, Ser. No. 154,758
Int. Cl.^{3} G01D *21/00;* B66C *13/14;* B66F *11/04*
U.S. Cl. 182—2 17 Claims

1. In a workman's lift platform apparatus comprising a telescopic boom pivotally mounted for luffing movement about a horizontal axis and having base and fly sections, means for extending and retracting the telescopic boom, means for luffing the boom, a workman's platform adjacent the outer end of the boom, a horizontal pivotal connection between the platform and the boom, means for maintaining the platform level during luffing movement of the boom, and control means on the workman's platform for controlling boom luffing and boom extension, the improvement comprising:
means on the fly section of the boom visible to a workman at said control means for visually indicating the amount of extension of the boom,



an indicator plate on said platform adjacent said control means having thereon visual indicating means corresponding to the indicating means on said boom fly section,
a cursor adjacent said indicator plate, and
means for moving said indicator plate proportionately to the angle of the boom to the horizontal.

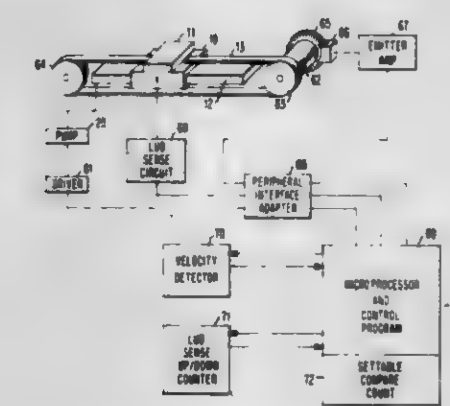
4,326,602
PORTABLE STABBING BOARD
Bill R. Bryant, Houston, Tex., assignor to Houston Tong Services, Inc., Houston, Tex.
Filed Jan. 5, 1979, Ser. No. 1,295
Int. Cl.^{3} E04G *3/10;* E21B *19/00*
U.S. Cl. 182—82 10 Claims



1. A portable stabbing board adapted to be attached to a rig having rig sides formed of a plurality of braces, the portable stabbing board for supporting a worker while stabbing joints of tubular members together during running operations, comprising:
a frame member adapted to be affixed with the rig in a vertical plane substantially parallel with the tubular members, said frame member having an upper end and a lower end;
attachment means with said frame member for removably securing said frame member with the rig, said attachment means including bottom locating means affixed with said lower end of said frame member for universally locating said lower end of said frame member an appropriate distance from the rig to insure substantial vertical disposition of said frame member within the rig, said bottom locating means including at least one arm vertically adjustable and universally mounted with said frame member and extending from said frame member through the rig side of the rig for engaging a brace thereof;

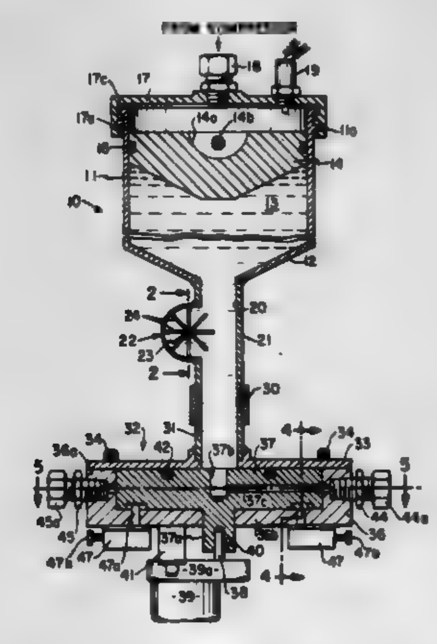
a platform mounted for vertical movement along said frame member for supporting the worker during running operations;
power means mounted with said platform for providing motive force for moving said platform vertically with respect to said frame member; and,
safety means with said platform and said frame member for preventing unwanted vertical movement of said platform during running operations.

4,326,603
LUBRICATION CONTROL APPARATUS
Berwin W. Darrow, Endwell, and David J. Wilkinson, Vestal, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 17, 1979, Ser. No. 104,607
Int. Cl.^{3} F01M *1/18*
U.S. Cl. 184—6.1 7 Claims



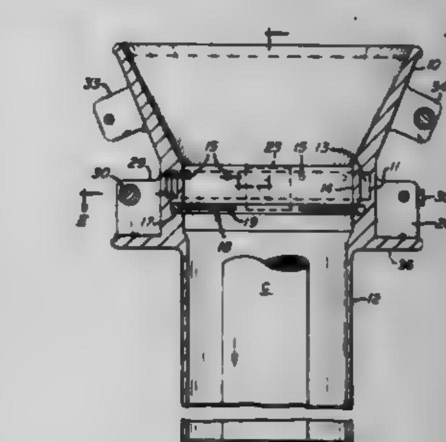
1. Lubrication control apparatus comprising:
first and second relatively movable, electrically conductive members separated by an intermittently broken film of lubricant having high resistivity compared to the direct contact of said members;
means for applying electric potential across said members and integrating current flow thereacross with respect to time during movement of said members; and 'means responsive to a predetermined integrated current level for applying additional lubricant between said members.

4,326,604
VEHICLE LUBRICATION SYSTEM
Peter Sotiropoulos, 42-11 78th St., Elmhurst, N.Y. 11373
Filed Oct. 15, 1979, Ser. No. 85,045
Int. Cl.^{3} F16N *13/22, 25/00*
U.S. Cl. 184—7 C 2 Claims



1. An apparatus for vehicle lubrication comprising a reservoir adapted to contain a quantity of lubricant, means for pressurizing said reservoir and said lubricant therein, a rotor and a rotor housing, duct means defined within said rotor, means connecting said duct means and said reservoir, a plurality of transmitting stations defined by said rotor housing, means for rotating said rotor successively into a plurality of positions to align said duct means with said transmitting stations, means for measuring the flow of lubricant from said reservoir into and through said rotor, means in conjunction with said measuring means for energizing said means for rotating said rotor, and means in conjunction with said rotor to deenergize said motor upon alignment of said duct means with one of said receiving stations.

4,326,605
LUBRICATING COLLAR FOR CABLE
Armand R. Conti, 3464 N. Wendover Cir., Youngstown, Ohio 44511
Filed Nov. 19, 1979, Ser. No. 95,890
Int. Cl.^{3} 118 *405*
U.S. Cl. 184—15 R 7 Claims

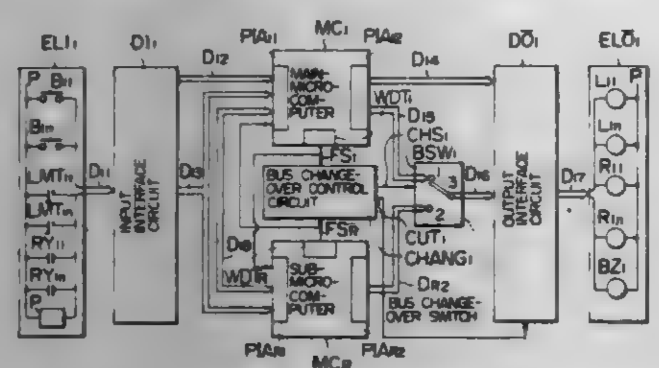


1. Apparatus for applying lubricant to the outer surface of a cable for passage into a duct, said apparatus comprising an open-ended collar including a truncated, conically-shaped funnel section forming a cable entry guide joined integrally with an elongated and tubularly-shaped side wall forming an internal passageway with said funnel section to surround a length of a cable when positioned within the collar, said side wall having orifices to discharge lubricant into the internal passageway at a lubricant discharge station openly exposed by said cable entry guide and spaced from a cable discharge end of the collar, said cable entry guide being openly exposed to the lubricant discharge station to visually observe and monitor the discharge of lubricant onto a cable and to provide containment of the lubricant, said side wall further having a recess transverse to the internal passageway in the collar adjacent said lubricant discharge station and essentially between said lubricant discharge station and the cable discharge end of the collar, a spreader positioned in said recess for support by the side wall of the collar, said spreader including a holder supporting spreader means to project radially from the side wall of the collar into the internal passageway to contact and spread lubricant on the outer surface of the cable, and means for supplying lubricant to said orifices.

4,326,606
APPARATUS FOR CONTROLLING RESCUE OPERATION OF AN ELEVATOR
Soshiro Kuzunuki; Kotaro Hirasawa, both of Hitachi; Kazuhiro Sakata, and Kenji Yoneda, both of Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Oct. 17, 1979, Ser. No. 85,543
Claims priority, application Japan, Oct. 19, 1978, 53/129289
Int. Cl.^{3} B66B *5/02*
U.S. Cl. 187—29 R 11 Claims

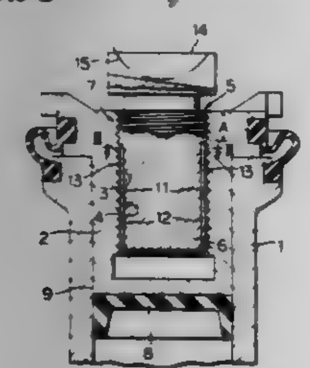
1. A rescue operation control apparatus for an elevator

system, comprising an elevator cage available at plural floors; a first and a second computer for receiving at least the information about said cage and for sharing the processing of controlling the operation of said cage; a drive apparatus for driving said cage according to the control signals from said first and second computers; first detecting means for detecting an abnormality occurring in said first computer; second detecting means for detecting an abnormality occurring in said second



computer; means provided in said first computer for controlling the rescue operation of said cage by receiving the information at least about the position of said cage when said detecting means detects the abnormality of said second computer; and means provided in said second computer for controlling the rescue operation of said cage by receiving the information at least about the position of said cage when said first detecting means detects the abnormality of said first computer.

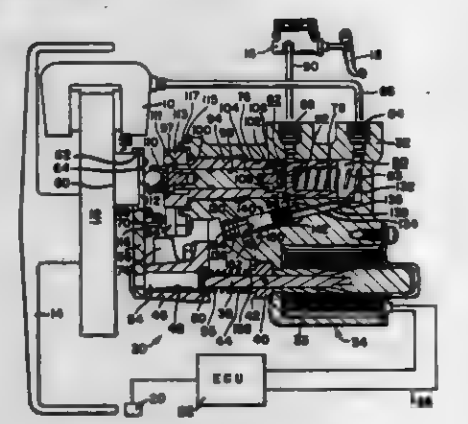
4,326,607
ANTI-RUST STRUCTURE OF AN ADJUST MECHANISM IN A DRUM BRAKE
Tsutomu Chawman, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan
Filed Nov. 26, 1979, Ser. No. 97,426
Claims priority, application Japan, Mar. 17, 1979, 54-34159[U]
Int. Cl.³ F16D *65/46*
U.S. Cl. 188—79.5 S 5 Claims



1. In an adjusting mechanism, for use in a drum brake, including an externally threaded adjusting bolt and a mating internally threaded adjusting nut having only one open end, said adjusting bolt and said adjusting nut being mutually engageable with and rotatable relative to each other for compensating for an increase in amount of operating stroke of said brake due to wearing of brake shoes thereof, an anti-rust structure comprising:

at least one groove axially extending along a length of said adjusting bolt in at least a part of an externally threaded portion of said adjusting bolt and having one end thereof starting from the tip of the adjusting bolt, the length of said axial groove being such that said adjusting bolt may not be pushed outwardly of said adjusting nut toward said open end thereof by compressed air confined and produced between said adjusting bolt and said adjusting nut even when said adjusting bolt has been threaded into said adjusting nut to such a maximum extent as to establish a relative position of said adjusting bolt and nut where said brake shoes are not worn at all, irrespective of distributing conditions of a grease being applied between said adjusting bolt and nut, and said length of said axial groove also being such that the other end of said axial groove is not positioned outside a brim of said adjusting nut when said adjusting bolt has been threaded into said adjusting nut to said maximum extent.

4,326,608
TRACTION CONTROL BRAKE ENERGIZER
Edward M. Pauwels, South Bend, Ind., assignor to The Bendix Corporation, Southfield, Mich.
Filed Apr. 14, 1980, Ser. No. 140,284
Int. Cl.³ B60T *8/10*
U.S. Cl. 188—181 T 9 Claims



1. In a wheeled vehicle having a rotatable member connected to a vehicle wheel, a brake engageable with the rotatable member for retarding the rotation of the rotatable member in response to fluid pressure braking signals, and control means for generating spin signals in response to a spin condition of the wheel, an anti-spin mechanism comprising:

a friction member engageable with the rotatable member independent of the brake;

actuating means for urging the friction member into engagement with the rotatable member in response to the spin signal, the engagement of the friction and rotatable members causing a motion of the friction member in response to rotation of the rotatable member;

generating means connected to the friction member for generating an anti-spin fluid pressure braking signal in response to the motion of the friction member;

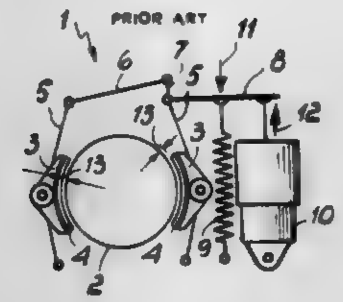
the brake retarding the rotation of the rotatable member to eliminate the wheel spin condition in response to the anti-spin fluid pressure braking signal; and

a housing fixed adjacent the rotatable member, the friction member comprising an arm with one end portion engageable with the actuating means and slidably and rotatably mounted on the housing, and with an other end portion supporting the friction member, the one arm portion sliding so that the friction member translates into engagement with the rotatable member upon actuation of the actuating means, friction between the friction member and the rotatable member causing the engaged friction member to pivot about the housing in response to rotation of the rotatable member.

4,326,609
DEVICE FOR AUTOMATICALLY REDUCING EXCESS PLAY IN MOVABLE PARTS OF BRAKES
Franco Sala, Lugano, Switzerland, assignor to Steelyamamoto International Company Ltd., Schaan, Liechtenstein
Filed Feb. 29, 1980, Ser. No. 125,998
Claims priority, application Italy, Jun. 21, 1979, 23785 A/79
Int. Cl.³ F16D *65/58*
U.S. Cl. 188—196 BA 3 Claims

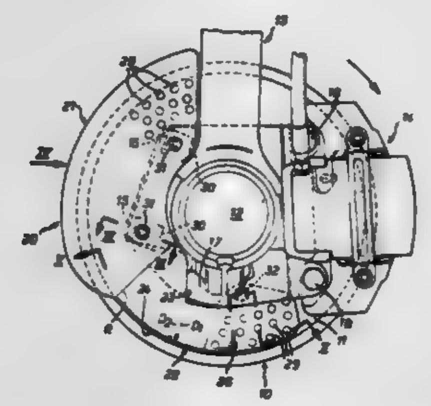
1. A compensator device for automatically reducing excess

stroke or play in moving parts of a mechanism, such as a brake mechanism or brake actuating mechanism and the like, wherein a transmission mechanism transmitting motion from an actuator to said moving parts includes at least one axially movable motion transmitting rod-like member and at least one coupling member of the transmission mechanism connected with said rod-like member, wherein, according to the improvement, said rod-like member and said coupling member have coaxial screw-thread means providing screw-thread connection therebetween selectively allowing relative coaxial compensation movement there-between upon relative coaxial rotation thereof and wherein said rod-like member has crank means and said transmission mechanism has cam means, said crank



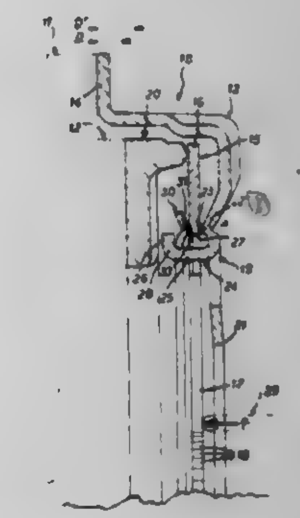
means being in cam follower engagement with said cam means, said cam means having a first cam surface portion parallel with the axis of said rod-like member and a second cam surface portion inclined with respect to the axis of said rod-like member thereby to prevent relative rotation between said rod-like member and said coupling member as long as the stroke of said rod-like member is within a normal range within which the engagement between said crank means and said cam means is maintained within the area of said first cam surface portion and to cause relative angular displacement between said rod-like member and said coupling member when the stroke of said rod-like member exceeds said normal range and the camming engagement between said crank means and said cam means occurs at said second cam surface portion.

4,326,610
PROTECTIVE SHIELD DEVICE FOR BRAKE
Jean-Claude Mouza, Courbevoie, France, assignor to Societe Anonyme Francaise du Ferodo, Paris, France
Filed Mar. 18, 1980, Ser. No. 131,104
Claims priority, application France, Mar. 23, 1979, 79 07395
Int. Cl.³ F16D *65/847*
U.S. Cl. 188—218 A 16 Claims



1. A protective shield device for a brake of the type including a hollow cylindrical rotating braking element fixed for rotation with a transverse end member, said shield device being a part annular configuration, said shield device comprising a plate part extending along a first limited circumferential region opposite the transverse end member, and a general helical sheet part extending from the first limited circumferential region of said plate part to a second limited circumferential region which penetrates deeply into an internal space of the rotating element toward the transverse end member, said helical sheet portion having a radial outer edge which is part circular and lies immediately adjacent an inner cylindrical wall of the rotating element, and said helical sheet part having means for ejecting foreign matter which may enter the internal space of the rotating element.

4,326,611
DIAPHRAGM CLUTCH COVER ASSEMBLY
Rene Billet, Lamorlaye, France, assignor to Societe Anonyme Francaise du Ferodo, Paris, France
Filed May 15, 1980, Ser. No. 149,981
Claims priority, application France, May 18, 1979, 79 12666
Int. Cl.³ F16D *13/44*
U.S. Cl. 192—89 B 2 Claims



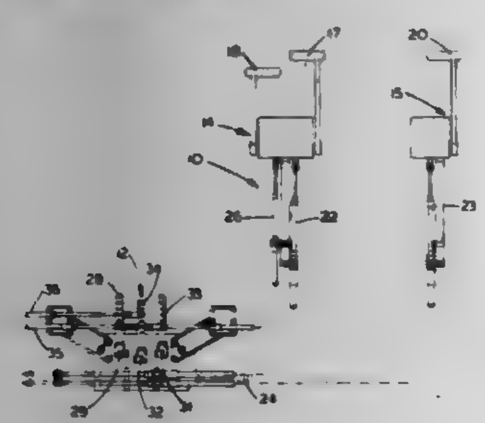
1. A diaphragm clutch cover assembly for a motor vehicle, including a generally annular cover having a flange radially extending from its outer periphery for securing said cover to a reaction plate or flywheel, a generally annular diaphragm spring having a Belleville washer peripheral portion and a central portion divided into radial fingers, assembly means for rockably mounting said diaphragm spring on said cover and axially applying a predetermined resilient clamping load, and a generally annular pressure plate against which said diaphragm spring peripheral portion bears, said pressure plate being fixed for rotation with and axial displacement relative to said cover, said diaphragm spring having a release load characteristic measured in line with the ends of said radial diaphragm fingers which for a given axial release travel from an initial position of the ends of said radial fingers passes through a peak value before reaching its final value at the end of the release travel when the ends of the radial fingers are in their final position, the peak values and the final values of the release load together depending on the axial distance which in the initial position of the ends of said radial fingers separates the face of the radial flange of said cover axially remote from the face of said pressure plate axially remote from said diaphragm spring and ranges between minimum and maximum reference distances, characterized in that the resilient clamping load on said diaphragm spring is between the peak value of the release load on said diaphragm spring at the minimum reference distance and the greater of the final value of the release load at the minimum reference distance and the maximum reference distance.

4,326,612
CONTROL DEVICE FOR MARINE GEARBOX AND ENGINE
Jacob Kobelt, 6110 Oak St., Vancouver, British Columbia, Canada V6M 2W2
Filed Jan. 23, 1980, Ser. No. 114,606
Int. Cl.³ B60K *41/02*; G05G *9/14*
U.S. Cl. 192—0.096 12 Claims

1. A control function splitter apparatus for controlling

through at least one single lever control unit, a clutch and gearbox assembly, and a throttle associated with an engine; the control unit having a casing, a main throttle shaft adapted to cooperate with a speed control of the engine, an override throttle shaft, and a clutch operating shaft adapted to cooperate with a clutch of a reversible gearbox having an intermediate neutral position; the three shafts being journalled for rotation in the casing; the main throttle shaft and override throttle shafts being rotatable between idle and full speed positions; and the clutch operating shaft being rotatable between engaged forward and reverse positions with an intermediate position being neutral, the control function splitter apparatus being further characterized by:

(a) a cam mounted for rectilinear axial movement relative to the casing and being adapted to cooperate with the single lever control unit to reflect actuation thereof, the cam having an inner portion corresponding to intermediate cam travel and two outer portions corresponding to outer cam travel, the outer portions being positioned on each side of the inner portion,



(b) a cam follower cooperating with the cam and the main throttle shaft so that axial movement of the cam during intermediate cam travel produces no throttle shaft movement, and axial movement of the cam during subsequent outer cam travel produces corresponding rotation of the main throttle shaft,

(c) a motion converting means cooperating with the cam and the clutch operating shaft to convert axial movement of the cam during intermediate cam travel to rotation of the clutch operation shaft, and to prevent essentially further rotation of the clutch operating shaft during the subsequent outer cam travel,

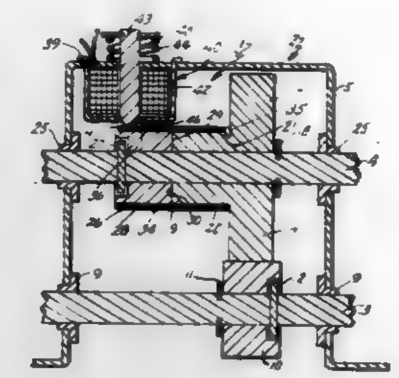
(d) interlock means cooperating with the clutch operating shaft and the override throttle shaft so that rotation of the clutch operating shaft is essentially prevented unless both throttle shafts are in their respective idle positions, and rotation of the override throttle shaft is prevented unless the clutch shaft is in neutral.

4,326,613
SOLENOID ACTIVATED SPRING CLUTCH
Don M. Houlberg, Port Washington, Wis., assignor to Joerns Furniture Company, Stevens Point, Wis.
Filed May 6, 1980, Ser. No. 147,139
Int. Cl.³ F16D *13/08, 27/12*
U.S. Cl. 192—21 **13 Claims**

1. In a wrap-down spring clutch having a clutch drum selectively and constrictingly engaged by an associated clutch spring, the improvement comprising:

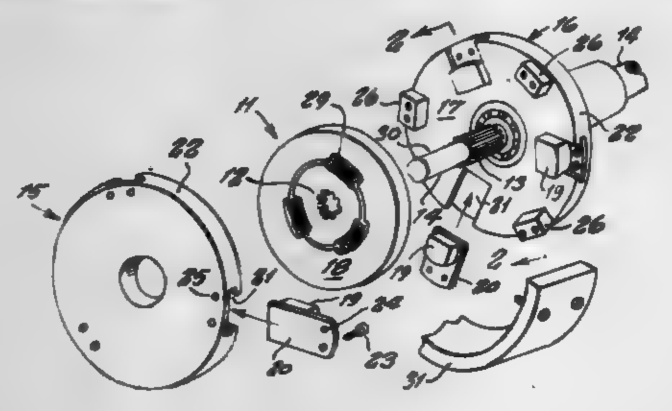
a solenoid connected with said clutch and having a coil, and a plunger with a free end which extends and retracts in response to energizing the coil; and wherein

said drum and said plunger are ferromagnetic, whereby energizing said coil extends the plunger free end abuttingly against said spring and urges said spring into frictional engagement with said drum, and simultaneously magnetizes said plunger, thereby creating a magnetic attraction between said plunger and said drum which further urges said plunger against said spring and said



drum to provide dual wrap-down pressure for effective clutch engagement.

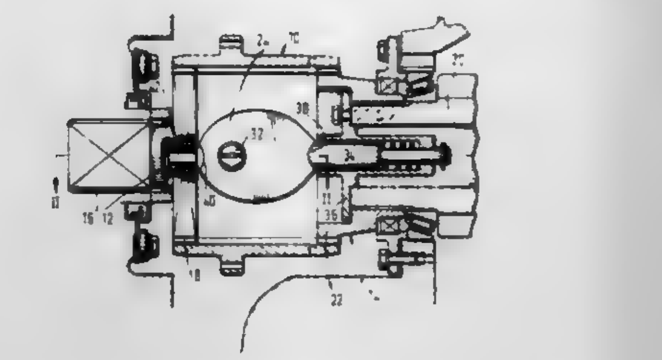
4,326,614
DISC CALIPER CLUTCH WITH EASY ACCESS AND BURNOUT PROOF ROTOR
Theodore T. Matagrano, 59-29 Palmetto St., Ridgewood, N.Y. 11385
Filed May 19, 1980, Ser. No. 151,252
Int. Cl.³ F16D *13/50, 69/04*
U.S. Cl. 192—70.13 **2 Claims**



1. A disc caliper clutch, comprising in combination, a rotor slidable on a spline of a shaft, said rotor being sandwiched between a front and rear circular plate so as to be engaged by both said plates, and each said plate having friction pads on a side thereof for frictionally engaging said rotor, means for easy removal of said pads for replacement thereof, wherein each said pad is mounted on a backing plate removably bolted to said circular plates, and one said circular plate carries a plurality of stop blocks that abut with a surface of the other said circular plate when said pads become excessively worn down so as to prevent damage form occurring to said rotor.

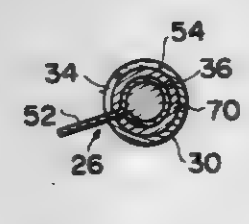
4,326,615
MECHANICAL COUPLING ASSEMBLY
Robin F. Powell, Stafford, England, assignor to GKN Sankey Limited, Bilston, England
Filed Nov. 13, 1979, Ser. No. 93,382
Claims priority, application United Kingdom, Nov. 22, 1978, 45603/78
Int. Cl.³ F16D *11/00*
U.S. Cl. 192—93 R **7 Claims**

1. A mechanical drive assembly comprising a driving gear member, a driven gear member axially spaced therefrom and a mechanical coupling therebetween wherein the coupling is provided with gearing to cooperate with said driving and driven gear members whereby rotational drive may be transmitted through the coupling from said driving gear member to said driven gear member; said coupling being axially moveable relative to said gear members so as to be selectively disengageable from at least one of said members; a cam member carried by said coupling and having opposed cam faces engageable with axially opposed faces of the driving and driven gear members, the cam member being rotatable between a first position in which one of said cam faces is engaged with one of said gear members and said coupling is maintained by said cam



member in engagement with both of said gear members and a second position in which the other of said cam faces is engaged with said one gear member and said coupling is disengaged from said one gear member and wherein rotation of the cam member between said first and second positions procures movement of the coupling between its engaged and disengaged positions.

4,326,616
CLUTCH SYSTEM FOR A VEHICLE
Haruo Mochida, Yokohama, and Hatsuo Kawashima, Shizuoka, both of Japan, assignors to Nissan Motor Company Limited, Yokohama and Fuji Kiko Kabushiki Kaisha, Tokyo, both of, Japan
Filed Nov. 6, 1979, Ser. No. 91,723
Claims priority, application Japan, Nov. 10, 1978, 53-138469
Int. Cl.³ F16D *13/75*
U.S. Cl. 192—111 A **12 Claims**



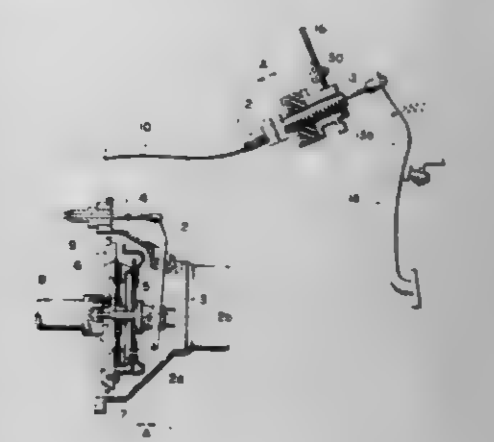
1. For a clutch actuation system for a vehicle which comprises a first assembly adapted to be driven from a stop position by an actuating force, and a second assembly, which is driven by the first assembly, and drives in a certain direction a driven member which moves in such a way that a first part of its travel is accomplished against a relatively weak resisting force, and a following part of its travel is accomplished against a relatively strong restoring force,

a clearance adjuster, comprising:

means for biasing the first and second assemblies with respect to one another in such a direction as, if the first assembly remains in its stop position, to drive the driven member in said certain direction with biasing force strong enough to overcome said relatively weak resisting force but not strong enough to overcome said relatively strong restoring force; and

means for locking the position of said first assembly with respect to said second assembly when said first assembly is moved off its stop position.

4,326,617
CLEARANCE ADJUSTING DEVICE
Haruo Mochida, Yokohama, and Tetsuo Kobayashi, Ikeda, both of Japan, assignors to Nissan Motor Company, Limited, Tokyo, Japan
Filed May 16, 1980, Ser. No. 150,622
Claims priority, application Japan, Jul. 16, 1979, 54-90069
Int. Cl.³ F16D *13/75*
U.S. Cl. 192—111 B **11 Claims**



1. A device for adjusting a clearance between a certain member and another member, comprising:

a first elongate member having a male screw portion thereon;

a second elongate member having a female screw portion screwed with the male screw portion of the first member, an elongate notch formed in its axial direction, and a stopping portion provided in cooperation with the notch;

a locking coil member wound around the male screw portion of the first member, said locking coil member having a pair of outwardly bent portions set in the notch of the second member; and

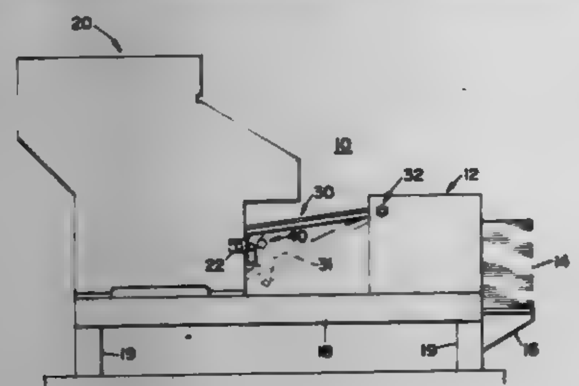
control means fitted onto the second member so as to be movable relative to the second member within a limited range between positions in which the control means does not engage the stopping portion of the second member and a position in which the control means engages the stopping portion of the second member, for controlling the rotation of the second member in relation to the first member in such a manner that, when the control means does not engage the stopping portion of the second member, the control means is rotated to engage either of the pair of bent portions of the locking coil member so that the locking coil member is loosened thereby to move along the male screw portion of the first member, whereby the second member and the control means move together in a given direction, and that, when the control means moves toward and engages the stopping portion of the second member, the second member engages either of the pair of bent portions of the locking coil member so that the locking coil member is tightly locked on the male screw portion of the first member, whereby the second member is prevented from further rotating, and thereafter the control means is moved in the direction opposite to the said given direction by a predetermined distance whereby a desired clearance is set between the members.

4,326,618
SAFETY FEED TABLE RELEASE MECHANISM
Richard L. Volpe, Hopedale, Mass., assignor to White Consolidated Industries, Inc., Cleveland, Ohio
Filed Jan. 17, 1980, Ser. No. 160,297
Int. Cl.³ B65G *11/00*
U.S. Cl. 193—17 **4 Claims**

1. A mechanism for releasably supporting the end of a table having its other end pivotally mounted, comprising:

a pair of table support brackets fixed in location relative to the pivotally mounted end of the table, the brackets being spaced from each other and lying generally along a common axis; and

a longitudinally extending rod mounted to the table at a location spaced from its pivotally mounted end, the rod being axially movable back and forth between two end positions, the rod lying generally along said common axis and being spring-biased toward one of said end positions, the ends of the rod at said one of said end positions lockably engaging the brackets when the table is in a raised position, the ends of the rod at the other of said end positions being free to disengage from the brackets to permit pivotal movement of the table to a lower position, wherein one of said brackets includes a horizontally extending support ledge portion and a ramp portion extending downwardly from a ledge portion end, the ramp portion sloping in a downward direction away from the end of the rod engageable with said one of said brackets, the rod being spring-biased toward the ramp portion, upward movement of the table from its lower position causing the end face of the rod end engageable with said one of said brackets to contact the ramp portion, continued upward movement of the table causing the ramp portion to apply a horizontal force component to the end face to axially move the rod away from said one of said brackets, the rod end engageable with said one of said brackets being supported from below by the ledge portion when, upon continued upward movement of the table, the end face reaches the top of and disengages from the ramp portion, the rod snapping back to its biased end position, the said rod end overlying the supporting ledge portion.



4,326,619

RELATING TO BEARING ASSEMBLIES FOR USE IN CONVEYOR ROLLERS

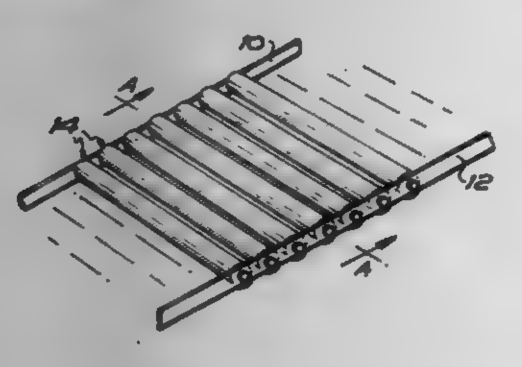
David M. Garnett, Thorpe Arch Trading Estate, Wetherby, Yorkshire, England (LS23 7BL)

Filed Dec. 26, 1979, Ser. No. 107,199

Claims priority, application United Kingdom, Sep. 7, 1979, 31142/79

Int. Cl.³ B65G *37/00*

U.S. Cl. 193—37 **5 Claims**



1. A bearing assembly for a roller comprising an inner race, an outer race and a plurality of rolling elements between the inner and outer races, one of said inner and outer races being adapted to be in operative connection with a sleeve body, whilst the other is for operative connection with a spindle means, and wherein there is an annular groove in one of the inner and outer races and an annular rim on the other of said inner and outer races which locates in said groove but does not contact the surfaces defining said groove so as to define a labyrinth seal having a U-shaped labyrinth passage dimensioned to resist the inflow of water, said labyrinth seal being located at a greater diameter than the pitch circle diameter of the rolling elements of the bearing, wherein said annular groove in one of said races is defined by two annular surfaces generally parallel to the axis of rotation of the bearing and a base surface which lies at right angles to said axis, and the said annular rim extends axially into said groove.

4,326,620

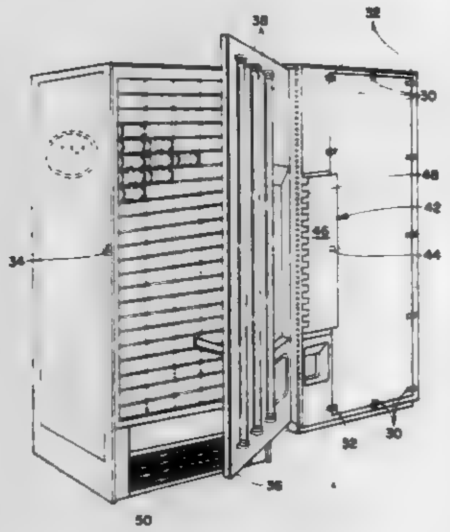
SECURITY PYLON FOR A VENDING MACHINE

Cristian J. Felix, Flushing, N.Y., and Donald M. Genaro, Haworth, N.J., assignors to PepsiCo Inc., Purchase, N.Y.

Filed Jan. 15, 1980, Ser. No. 112,170

Int. Cl.³ G07F *9/02*

U.S. Cl. 194—1 A **7 Claims**



1. A vending machine providing for the storage of cash receipts of the machine in a security pylon therein, comprising:

a. a vending machine having a front outer door formed as part of the front exterior panel of the vending machine to allow access to the interior of the machine for service operations, and a first lock for said outer door to prevent unauthorized access to the interior of the machine; and

b. a security pylon mounted behind and on the interior of the front outer door of the vending machine for storage of the cash receipts of the vending machine, and the rear panel of the security pylon having a second lock for said security pylon, whereby the cash receipts of the vending machine may be removed only after successively opening said first and second locks, said rear panel of the security pylon being pivotably mounted on one side relative to the security pylon, a coin handling unit mounted on the inside surface of said rear panel and being pivotably movable therewith, a coin chute and coin return toggle mechanism mounted in the security pylon on the interior of the front outer door and above the coin handling unit when said rear panel is closed and cooperating therewith respectively to deposit coins therein and actuate the coin return function of the coin handling unit, and a coin return chute and coin collection depository mounted in the security pylon on the interior of the front outer door and below the coin handling unit when said rear panel is closed and cooperating therewith respectively to return coins to a change hopper on the front panel of the vending machine and to accumulate the cash receipts thereof.

4,326,621

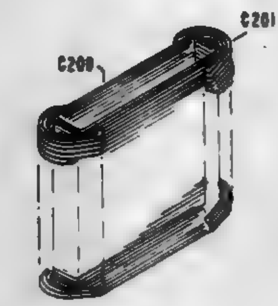
COIN DETECTING APPARATUS FOR DISTINGUISHING GENUINE COINS FROM SLUGS, SPURIOUS COINS AND THE LIKE

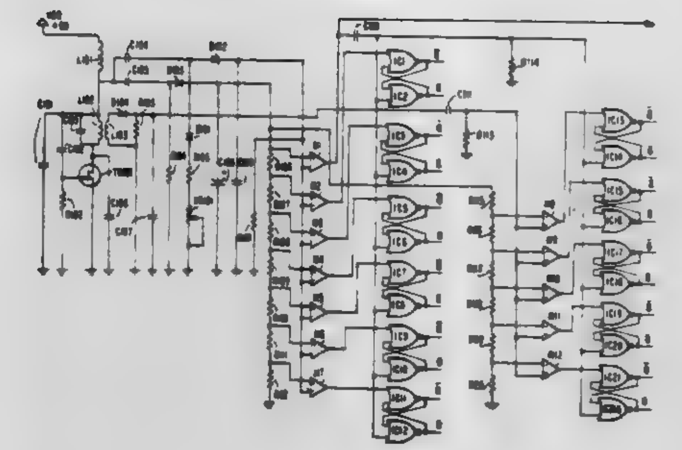
Ronald C. Davies, Las Vegas, Nev., assignor to Gaea Trade and Development Company Limited, Hong Kong, Hong Kong

Continuation-in-part of Ser. No. 21,305, Mar. 15, 1979. This application Jan. 18, 1980, Ser. No. 113,189

Int. Cl.³ G07F *3/02*

U.S. Cl. 194—100 A **12 Claims**





1. A multiple coin detecting apparatus for discriminating between denominations of coins and genuineness of coins so as to exclude from acceptance any coins which have not been specifically selected for acceptance, comprising:

(a) an oscillator circuit having a resonant tank circuit which provides amplitude modulation of the signal produced by the oscillator circuit in accordance with the losses of the tank circuit,

(b) coin directing means of insulating material having a vertical upper section and a vertical accept channel forming a completely free-fall chute for acceptable, coins, and a second channel for directing slugs and other unacceptable coins to a predetermined locality,

(c) said resonant tank circuit having an inductance means positioned completely around the coin directing means such that said inductance means forms an air-cored coil, with the coins passing therethrough forming the core of said coil, and the losses of the tank circuit being determined by the metal content of the coin,

(d) direction switching means for selectively accepting and rejecting coins and the like in accordance with the respective amplitude of a control signal, said direction switching means comprising a movably mounted member, and an accept solenoid for moving said member to an accept position dependent on its condition of energization, further characterized in that:

(e) said coil comprises a primary on said hollow core which with said resonant tank circuit performs a second function of inducing eddy currents in the coin, and

(f) a secondary coil surrounding said primary coil and having windings protruding a specified distance over the edges of said primary coil at a predetermined angle in relation to the windings of said primary coil and providing a secondary fluctuation in conjunction with the primary coil voltage fluctuation, such voltage fluctuations being of opposing polarities.

4,326,622

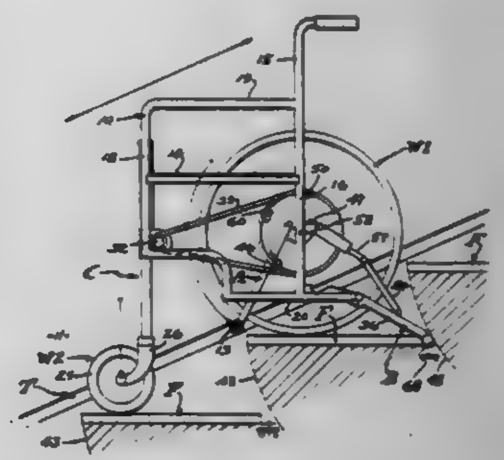
COOPERATIVE ESCALATOR AND WHEEL CHAIR

Floyd P. Ellzey, 2301 Marshallfield La., Redondo Beach, Calif. 90278

Filed Dec. 11, 1980, Ser. No. 215,417

Int. Cl.³ B66B *9/12;* **B62B** *9/10*

U.S. Cl. 198—322 **93 Claims**



1. The combination of an escalator and a wheel chair, and including;

the escalator having side walls spaced to closely pass spaced side frames of the wheel chair, an endless belt of flights extending between vertically spaced floor levels to move within the confines of the spaced side walls, and having lower and upper platforms at said spaced floor levels and means to maintain a horizontal disposition of the flights as they are vertically offset by means to form steps as the belt thereof is propelled by motor means,

the wheel chair having a main wheel support rotatable outside of each side frame and on a common axis aft of the center of gravity when a person is seated in the wheel chair, and a downwardly extensible wheel support at the front of each side frame and on independent lift axes well forward of said center of gravity,

a track extending between the lower and upper platforms, said track having variable displacement with respect to the vertical disposition of the flights,

and the wheel chair having control means engageable with the track to extend the wheel supports at the front of each side frame in response to the variable displacement of the track from the flights to depress said front wheel supports and controllably maintain the horizontal disposition of the wheel chair.

4,326,623

METHOD AND APPARATUS FOR FEEDING, CLAMPING, AND REMOVAL OF BAR OF TUBE GOODS

Theodor Zacharias, Meerbusch, and Hartmut Diel, Mönchen-Gladbach, both of Fed. Rep. of Germany, assignors to Friedrich Kocks GmbH & Company, Hilden, Fed. Rep. of Germany

Filed Mar. 5, 1980, Ser. No. 127,476

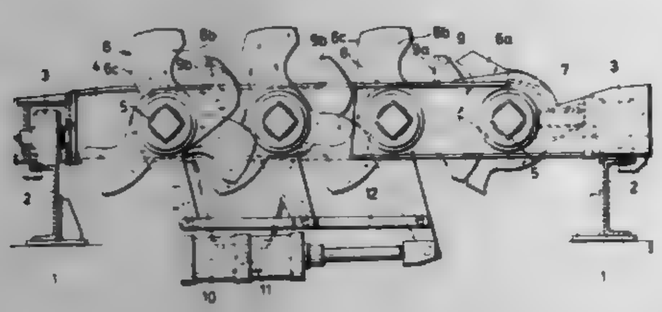
Claims priority, application Fed. Rep. of Germany, Mar. 13, 1979, 2909769

Int. Cl.³ B65G *29/00*

U.S. Cl. 198—345 **9 Claims**

1. In apparatus for feeding, clamping, and removing of bar or tube goods, especially tubes, in tube test presses, which apparatus have a bearing surface consisting of several supporting crossbeams spaced parallel to each other, and at least two disk-like driven rotors having at least one hook-like peripheral projection spaced on at least one axis of rotation, where each axis of rotation runs crosswise to the crossbeams under their

bearing surfaces, such that only hook-like peripheral extensions of the rotors project above the bearing surfaces for transporting and clamping the goods, the improvement comprising at least one tenterhook pivotable adjacent the bearing surface between a first position below the bearing surface and a second position above the bearing surface of the crossbeam and paral-



lel to the rotor adjacent each rotor, and which tenterhook when pivoted to the said second position above the bearing surface during clamping, grips the goods on side opposite the adjacent hook-like projection of the rotor involved, between said hook-like projection and the tenterhook and means reversing said rotor to clamp the goods against the tenterhook.

4,326,624

PALLET FEEDER

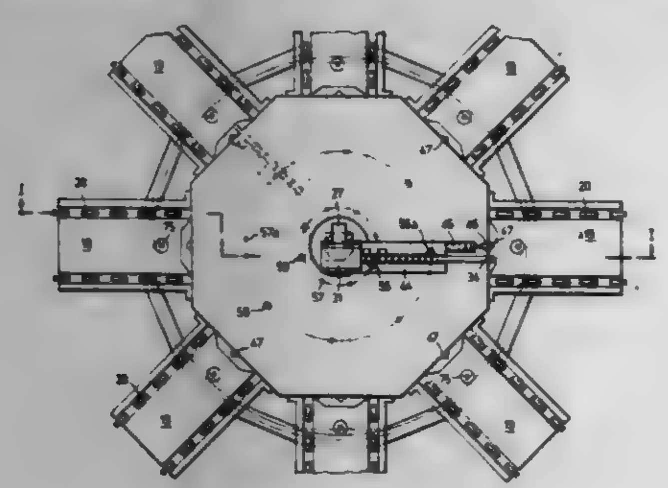
Norbert Ewertowski, Dietzenbach-Steinberg, Fed. Rep. of Germany, and Herbert Janser, Zürich, Switzerland, assignors to Werkzeugmaschinenfabrik Oerlikon-Bührle AG, Zürich, Switzerland

Filed Sep. 8, 1978, Ser. No. 940,775

Claims priority, application Switzerland, Sep. 14, 1977, 11212/77

Int. Cl.³ B65G *47/46*

U.S. Cl. 198—370 8 Claims



1. A pallet feeder for a fabrication system having a pallet feed along a substantially circular-shaped path of travel, comprising:

support means defining a substantially circular-shaped track;

rotatable platform means mounted on said circular-shaped track for feeding said pallets along a substantially circular-shaped path of travel;

pallet receivers fixed on said rotatable platform means;

pallet guide means arranged on said pallet receivers and directed essentially perpendicular to the feed direction of said pallets;

means for rotating said rotatable platform means with said pallet receivers into a number of transfer positions and onto which pallet receivers said pallets can be automatically shifted in the direction of said pallet guide means;

a pallet thrust drive arranged substantially at the center of said pallet feeder;

means rotatably mounting said pallet thrust drive for movement into a number of angular positions about an essentially vertical axis and independent of the movement of said rotatable platform means; and

said pallet thrust drive being effective to engage a pallet arranged on said pallet guide means of said pallet receiver located in a transfer position for displacing said pallet in the feed direction.

4,326,625

TRANSVERSE CONVEYOR FOR CONVEYING PIN-SHAPED WORK PIECES IN A MULTI-STATION

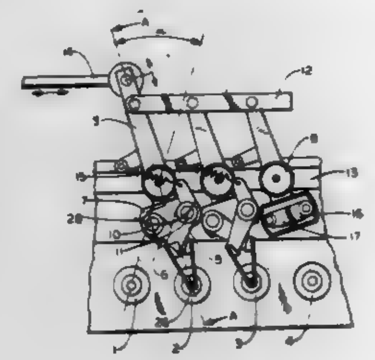
Horst Murzin; Rainer Wöss; Hans Burghoff; Frank Schmieder; Alfred Herzig; Johannes Junge, all of Karl-Marx-Stadt, and Gunter Deckarm, Limbach-Oberfrohna, all of German Democratic Rep., assignors to VEB Kombinat Walzlager und Normteile, Karl-Marx-Stadt, German Democratic Rep.

Filed Jun. 12, 1980, Ser. No. 158,853

Claims priority, application German Democratic Rep., Jun. 13, 1979, 213584

Int. Cl.³ B65G *25/00, 37/00, 47/84*

U.S. Cl. 198—653 6 Claims



1. A transverse conveyor device for conveying pin-shaped workpieces from one processing-station to the next processing-station, with gripper-arm pairs allocated to the processing stations, the individual gripper-arms having joints, the opening of said gripper-arm pairs being actuated by a control-mechanism, the gripper arms of each pair being intercoupled for opening and closing motions; the improvement wherein two gripper-arm pivot axes are located on a swivel-lever in the region of the processing-stations the swivel lever is pivoted at a swivel-bearing, said gripper arm pivot axes receive tong-shaped gripper-arm pairs and are movable along a circular path around the axis of the swivel-bearing, a curved-guide is provided having a geometrical shape the same as said circular path and wherein a roller connected to one of said gripper-arms of each pair is positioned to roll on said curved guide, said roller engaging said curved guide only when the respective gripper-arms are open.

4,326,626

SLAT CONVEYORS

Ian P. Brockwell, Wyckoff, N.J., assignor to Alfa Laval Pty Ltd., Victoria, Australia

Filed Mar. 21, 1980, Ser. No. 131,929

Claims priority, application United Kingdom, Mar. 23, 1979, 10317/79

Int. Cl.³ B65G *39/20*

U.S. Cl. 198—845 6 Claims

1. A conveyor comprising guide rail means at each side of the conveyor, a pair of endless chains arranged one at each side of the conveyor and supported on said guide rail means for movement therealong, and a plurality of transverse slats mounted at their ends respectively on said chains, said slats being contiguous and cooperating with one another to provide a supporting surface for a product to be transported by the conveyor, wherein each slat comprises an elongated main plate having the longitudinal margins thereof bent downwardly through an angle in excess of 90°, the centre portion of the main plate between said longitudinal margins being substantially flat and adapted to provide said supporting surface, rod means extending along the main plate on the underside thereof, said rod means being in the shape of a shallow V, rod anchor means firmly securing the ends of the rod means to the longitudinal margins of the main plate at the associated ends thereof, and a central support firmly secured to the longitudinal margins of the main plate at the centre thereof and abutting the rod means at the centre thereof, said V-shaped rod means being arranged with each half section between the centre and an end thereof inclined relative to said centre portion of the main plate, and said central support being arranged to transmit to the centre of said rod means any deflection of the centre portion of the main plate due to load on said supporting surface when the conveyor is in use, whereby said deflection is resisted by longitudinal tension in said rod means.

4,326,627

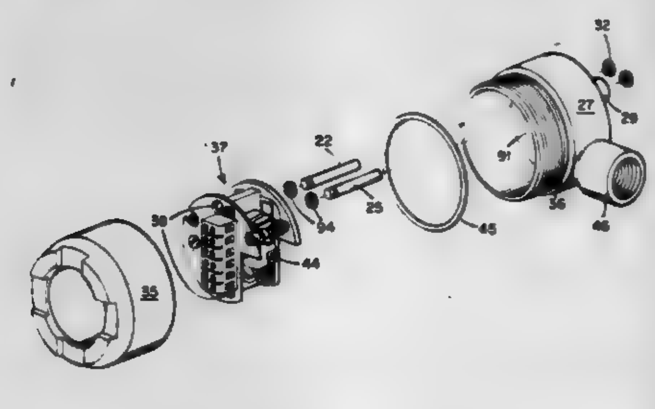
LIMIT SWITCH FOR ROTARY CONTROL DEVICE

Roger G. Massey, Exeter, and David G. Holloway, Concord, both of N.H., assignors to Parker & Harper Mfg. Co., Worcester, Mass.

Filed Nov. 29, 1979, Ser. No. 98,625

Int. Cl.³ H01H *3/16*

U.S. Cl. 200—47 3 Claims



1. In combination, a rotary control device and a limit switch assembly for said rotary control device comprising:

a. A cam mountable on a rotary shaft of said control device for rotation therewith;

b. a mounting bracket securable to said rotary control device for enclosing said cam;

c. a limit switch housing comprising a body and a cover;

d. means to mount said body to said bracket;

e. at least one switch probe mounted to pass through said body and contact said cam;

f. at least one sensitive switch pivotally mounted in said body and having an actuator facing said probe; and,

g. an adjustable spring loaded mounting pivotally positioning said switch for actuator adjustment, said sensitive switch having a first mounting point distant from said actuator, a second mounting point near said actuator, a fixed mounting support at said first mounting point about which said sensitive switch may pivot, and said spring loaded mounting support at said second mounting point held between two springs and adjustable by changing the tensions on said two springs whereby, when said cam bracket and body are mounted on said rotary control device, rotation of said cam with movement of said rotary control device moves said probe so as to operate said actuator opening and closing said switch at a point adjustable by said spring loaded mounting.

4,326,628

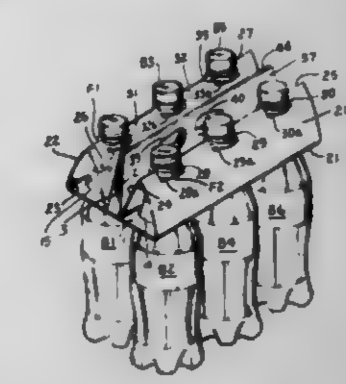
BOTTLE CARRIER

Prentice J. Wood, Hapeville, Ga., assignor to The Mead Corporation, Dayton, Ohio

Filed Nov. 7, 1980, Ser. No. 205,583

Int. Cl.³ B65D *85/62, 71/00, 75/00*

U.S. Cl. 206—158 19 Claims



1. A carrier of the top gripping type for engaging outwardly projecting elements on and near the tops of a plurality of bottles arranged in at least one row, said carrier comprising a bottom panel, a plurality of bottle neck receiving apertures formed in said bottom panel and arranged in at least one row, a locking notch formed along a side portion of each of said neck receiving apertures, a first inwardly inclined side wall foldably joined to a side edge of said bottom panel opposite from said notches, an inwardly inclined support wall foldably joined at its upper edge to the upper edge of said inwardly inclined side wall, a plurality of support apertures formed in the upper portions of said side and said support walls and arranged to receive the upper portions of the necks of said bottles and to engage said outwardly projecting elements of said bottles, and a plurality of locking tabs formed along the bottom edge of said support wall and arranged to engage said notches respectively so as to interconnect said inwardly inclined support wall with said bottom panel.

4,326,629

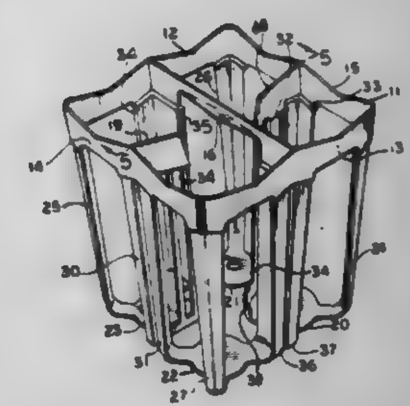
BOTTLE CARRIER

Benjamin Tate, 1422 Irwin Dr., Erie, Pa. 16505

Filed Apr. 21, 1980, Ser. No. 142,383

Int. Cl.³ B65D *81/26, 1/24, 25/04*

U.S. Cl. 206—203 1 Claim



1. A carrier comprising a frame (10) a first side, a second side, a third side and a fourth side (12, 13, 14, 15) arranged in rectangular pattern integrally connected together at their corners.

a first partition attached to said second side and said fourth side, and extending inwardly therebetween,

a second partition and a third partition, said second partition being attached to said first side and extending inwardly towards said first partition in cantilever fashion and terminating short of said first partition,

a third partition integrally attached to said third side and

extending inwardly toward said first partition and terminating short thereof,

four spaced bottom members below said frame and arranged in a rectangular pattern with one said bottom member below each said corner, or said corner members integrally attached to said sides and extending downward therefrom, one said corner member being attached to each said bottom member,

four pairs of spaced intermediate members, one pair of said intermediate member being attached to each said side and extending downwardly therefrom,

each said intermediate member being attached to a said bottom member,

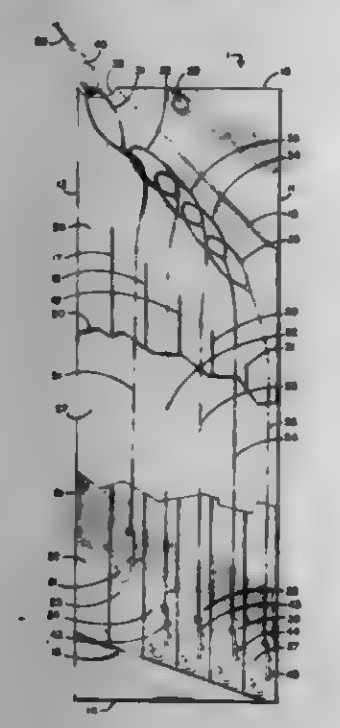
each pair of said intermediate members being attached to two adjacent said bottom members,

each pair of said intermediate members defining a space therebetween for receiving a partition of a crate,

two said bottom members that are diametrically opposite each other having an extending flange on the side thereof, opposite said corner member attached thereto,

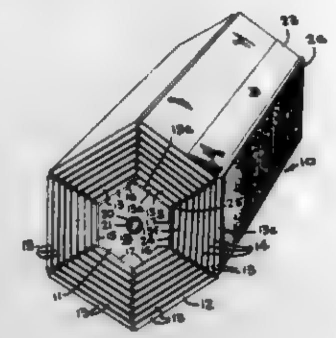
and a downward extending member attached to each said second partition and said third partition and attached to said flange on the said diagonally opposite bottoms.

4,326,630
SNELLED HOOK PACKAGE AND PACKAGING METHOD
Carl J. Bacino, 4482 Fernbrook Rd., and Martin Lustig, 6768 Greengrove St., both of Las Vegas, Nev. 89103
Filed May 19, 1980, Ser. No. 150,886
Int. Cl.³ A61L *17/02*
U.S. Cl. 206—315 R **7 Claims**



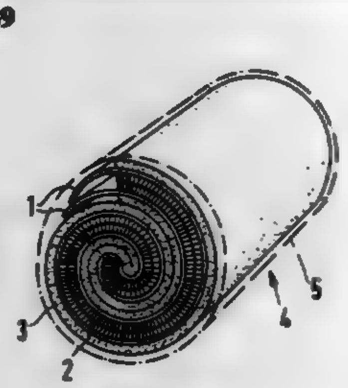
1. A package containing a plurality of snelled fish hooks comprises a completely sealed container having a transparent flexible front panel, a rear panel substantially coextensive with the front panel, a plurality of discrete elongate parallel pockets within the container, access means to remove the snelled fishhooks from the container, each pocket having a snelled fishhook consisting of a leader with a fishhook on one end and a loop on the other end extended therein, and wherein each leader is threaded through the loop of the snelled fishhook in the immediately adjacent pocket.

4,326,631
RIGID INSULATION ASSEMBLY
Charles A. Annand, P.O. Box 366, Truro, Nova Scotia, Canada (B2N 5C5)
Filed Sep. 21, 1979, Ser. No. 77,764
Int. Cl.³ B65D *85/66*
U.S. Cl. 206—389 **11 Claims**



1. A rigid insulation assembly comprising an elongated core member having a central axis and a continuous length of insulation material wound on said core member, said core member having a periphery thereof formed by a plurality of flat faces, adjacent faces about the periphery being joined at corners extending parallel to the axis of the core member so that the core through the length thereof has a constant polygonal shape in cross-section, the continuous length of insulation material including a flexible base sheet and a plurality of rigid insulating panels adhered to said base sheet, having top and bottom surfaces, said flexible base sheet being adhered to the top surface of said panels, each panel having side edges and being disposed in an edge to edge relationship with adjacent panels to form joint lines extending transverse to the said length of material, said base sheet being in contact with said core and the innermost layer wound on said core member, the panels in the innermost layer being substantially equal in width to the faces of the core against which said panels lie, the panels in each successive layer outwardly from the innermost layer having progressively greater widths whereby the joint lines are located substantially on radial lines projecting through said corner edges of said core, and a vapour barrier sheet having an inside surface fixed to the bottom surfaces of said panel and extending the length of said insulation material.

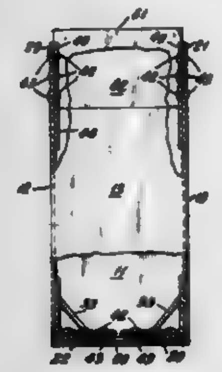
4,326,632
TWO-COMPONENT ADHESIVE BODY
Friedrich Koob, Munich, Fed. Rep. of Germany, assignor to Hilti Aktiengesellschaft, Fürstentum, Liechtenstein
Filed Dec. 11, 1979, Ser. No. 102,458
Claims priority, application Fed. Rep. of Germany, Dec. 14, 1978, 2054094
Int. Cl.³ B65D *25/08;* **B32B** *7/10*
U.S. Cl. 206—389 **14 Claims**



1. An adhesive body for securing an anchor bolt within a borehole comprises at least one web material section wound around itself about a central axis so that from the central axis radially outwardly said web material section is in overlapping relationship to itself, wherein the improvement comprises an adhesive material including a resin component and a hardener component, said resin component and hardener component each coated directly on said at least one said web forming a layer of each said component on said at least one web with said at least one web forming the sole separating layer between said component layers so that said resin and hardener components are maintained in separated relation for preventing intermixing of said components prior to use of the adhesive body for securing an anchor bolt within a borehole, and said web material being folded over upon itself so that a double layer of said component of adhesive material is located between the double over section of said web material.

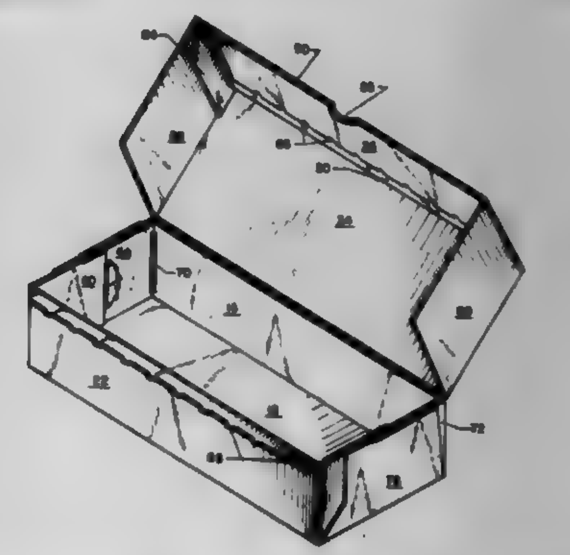
12. A method of forming an adhesive body for use in securing an anchor bolt in a borehole comprising directly coating separate face surfaces of a web material each with a different component of a two-component adhesive material, winding the web material around a central axis with the web material being wound around itself in an outwardly spirally arrangement and with the web material separating adjacent layers of different adhesive material components, folding the web material over upon itself so that the same component of adhesive material is located between the folded over face surfaces of the web material section and winding the web to a selected outside diameter.

4,326,633
SEALED BEAM HEADLIGHT CARTON
Joseph F. Schillinger, Morrison, Ill.; William B. Bicksler, Dubuque, Iowa, and Herbert L. Lambert, Manchester, Mo., assignors to Champion International Corporation, Stamford, Conn.
Filed Oct. 16, 1980, Ser. No. 197,578
Int. Cl.³ B65D *85/42*
U.S. Cl. 206—418 **6 Claims**



1. A shock absorbing carton for receiving and supporting a fragile structure; said shock absorbing carton being of tubular construction have a pair of opposite side walls and a pair of additional walls interconnecting the side walls; each of the pair of opposite side walls having a first flap extending from each end thereof; each flap having an additional panel foldably connected thereto and being folded into surface-to-surface relation with said first mentioned flap and secured thereto; said additional flap being narrower than said first-mentioned flap; a third flap secured to said additional flap along a fold line and foldable with respect thereto; said third flap and said additional flap together having a length greater than the length of said first-mentioned flap; said third flap, when said first-mentioned flap is folded into closing position with respect to the container, sliding down the associated side wall to a position in which it extends diagonally from said first-mentioned flap to said side wall; and a fourth flap foldably connected to said third mentioned flap; said fourth flap extending in surface-to-surface relation with the inside of the associated side wall when said first flap is closed to cover said end of said container; said first flaps on each of said first-mentioned walls being closed to form a cushion structure for receiving a fragile object with the third mentioned flaps extending diagonally between the first-mentioned flap and the inside of the associated side wall to provide a cushion for said object at each end; and additional flaps on the other walls for completing the closure of said container.

4,326,634
SIDE LOADING, TOP OPENING, RECLOSABLE CARTON
George L. Meyers, Ashland, Ohio, assignor to American Can Company, Greenwich, Conn.
Filed Sep. 26, 1980, Ser. No. 190,931
Int. Cl.³ B65D *5/26, 5/54*
U.S. Cl. 206—626 **9 Claims**



1. A carton comprising: a bottom wall; an upstanding front wall connected to the front edge of said bottom wall; an upstanding rear wall connected to the rear edge of said bottom wall; a top wall connected to one of said front and rear walls; and right and left side walls; each said side wall having a front side flap connected to, and projecting rearwardly from, said front wall, and having a male locking tab projecting rearwardly from its rear edge; each said side wall also having a pair of inner and outer rear side flaps connected to, and projecting frontwardly from, said rear wall; said rear side flaps being secured to each other in face to face relationship; said inner rear side flap having a first front edge substantially coincident with said rear edge of said front side flap, said outer rear side flap having a second front edge located frontwardly of said first front edge; each said side wall also having a bottom securing flap hingedly attached to each side edge of said bottom wall, said bottom securing flaps overlying, and being secured to, corresponding ones of both said outer rear side flaps and said front side flaps.

4,326,635
APPARATUS FOR REFINING ORE
Wayne H. Collins, 337 Essex St., Kearny, Ariz. 85237
Filed Nov. 3, 1980, Ser. No. 203,261
Int. Cl.³ B03B *4/00*
U.S. Cl. 209—474 **10 Claims**

1. A refining apparatus for separating the heavier constituents from a mixture of materials, comprising:

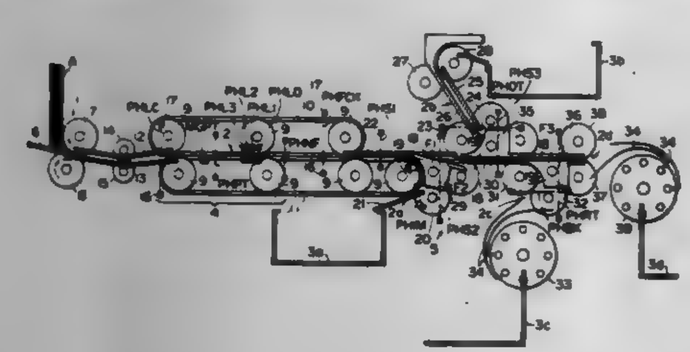
aerating means having a mixture support surface provided with at least alternating permeable and impermeable regions on said surface for fluidly suspending at least portions of said mixture above said surface;

vibrating means coupled to said aerating means for shaking said mixture of materials so that said heavier portions tend to migrate to said surface and further so that said heavier

portions tend to come to rest on said impermeable regions; and

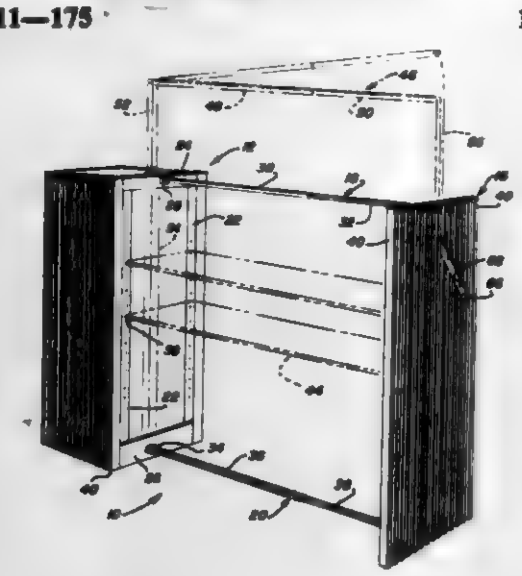
said support surface having a honeycomb-patterned plurality of pockets on at least the upper surface of the permeable region thereof.

4,326,636
APPARATUS FOR PROCESSING SHEETS
Moriatsu Kawakami, Tokyo, Japan, assignor to Laurel Bank Machine Co., Ltd., Tokyo, Japan
Filed Mar. 19, 1980, Ser. No. 131,822
Claims priority, application Japan, Mar. 20, 1979, 54-32809
Int. Cl.³ B07C *5/08*
U.S. Cl. 209—534 **7 Claims**



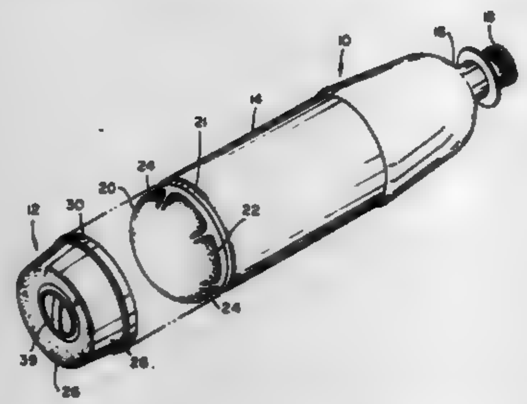
1. An apparatus for processing sheets which comprises:
means for feeding sheets one at a time from a stack of sheets;
conveyor means for receiving the sheets from said feeding means and for moving the sheets along a conveyor path;
detecting means comprising a plurality of sensors disposed in said conveyor path for detecting widths of the sheets and for generating signals representative of the sensed widths, for detecting whether the obverse side of the sheet is up and for generating a signal indicative of the sensed sheet side, and for detecting a sheet that cannot be discriminated and for generating a signal indicative of the sheet indiscrimination;
discriminating means electrically associated with said detecting means for discriminating the sheets into a plurality of groups, one group having sheets of a set kind with the obverse side up, another group having sheets of the set kind with the reverse side up, a third group having sheets of different kinds, and a fourth group having sheets that cannot be discriminated, and for generating signals indicative of said groups in response to a combination of signals from said detecting means;
sorting means disposed downstream of said detecting means in said conveyor path for sorting the sheets into said groups of sheets in response to said signals from said discriminating means; and
stacking means for stacking the sheets sorted by said sorting [illegible]

4,326,637
HANG-RACK ASSEMBLY
Roger T. James, 1060 S. Charlotte, Lombard, Ill. 60148
Filed Apr. 28, 1980, Ser. No. 143,621
Int. Cl.³ A47F *7/24, 5/10*
U.S. Cl. 211—175 **15 Claims**



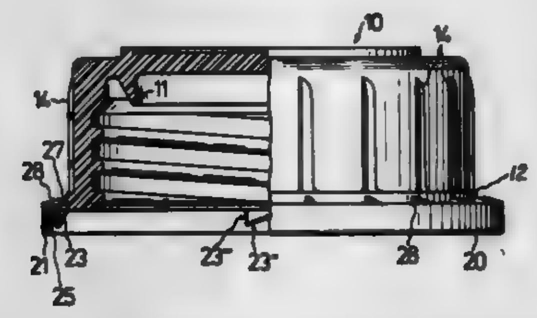
1. A hang-rack assembly for supporting and displaying articles of merchandise, comprising a base structure, wall means, and means for extendibly interconnecting said wall means to said base structure, said interconnecting means comprising at least one hang-rod and one tie rod, one end of the hang-rod being pivotally connected to the base structure and the other end of the hang-rod being pivotally connected to the wall means, one end of said tie rod being pivotally connected to said base structure and the other end being demountably connectible to said wall means.

4;326,638
COMBINATION BASE CUP AND BOTTLE
Gerhard E. B. Nickel, Farmington Hills, Mich., and Richard C. Darr, Medina, Ohio, assignors to Plastipak Packaging Division, Beatrice Food Co., Chicago, Ill.
Filed May 16, 1980, Ser. No. 150,247
Int. Cl.³ B65D *23/08*
U.S. Cl. 215—12 R **5 Claims**



1. In combination, a bottle having a generally convex, rounded bottom incapable of supporting the bottle in a stable, upright position, and a supporting cup applied to the bottom of said bottle, said bottom having angularly spaced, laterally outwardly bulged portions, said cup having a base extending across the bottom of said bottle and an annular side wall projecting upwardly from said base and surrounding said outwardly bulged portions, said side wall having detent means engaging over said outwardly bulged portions to retain said cup on the bottom of said bottle, the portions of said bottom between said bulged portions providing straps to resist the tendency of said bulged portions to become flattened due to pressure in said bottle, the base of said cup providing a support surface for supporting said bottle in a stable, upright position.

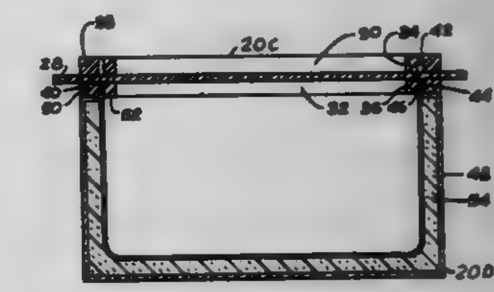
4,326,639
SCREW CAP FOR BOTTLE-TYPE CONTAINERS
Otto Stahl, Finnentrop, and Horst Schulz, Hanover, both of Fed. Rep. of Germany, assignors to Georg Menshen & Co. KG, Finnentrop and Riedel-de Haen Aktiengesellschaft, Hanover, both of, Fed. Rep. of Germany
Filed Mar. 13, 1980, Ser. No. 130,071
Claims priority, application Fed. Rep. of Germany, Mar. 15, 1979, 2910178
Int. Cl.³ B65D *55/12*
U.S. Cl. 215—252 **18 Claims**



1. A screw cap comprising a cap, the inside of which is threaded and adapted to be screwed on a threaded neck of a container;
a collar extending along the outer circumference of the cap and outwardly projecting therefrom;
a plurality of shearable links which join the collar to the cap along the circumference of the cap, said links being distributed along the circumference of the cap and extending radially therefrom to the collar; and a plurality of blocking teeth which are resiliently molded to the collar and which are adapted to engage stop teeth on the neck of said container in such a manner as to shear off said links when said cap is unscrewed from the threaded neck of the container;
said shearable links including first and second groups of shearable links, each of the links of the second group having a free length between the collar and cap which is several times greater than the free length of each of the links of the first group, having a flexibility which differs from the flexibility of each of the links of the first group and requiring, in order to be sheared off between the cap and collar, an angular torsion of the cap relative to the collar which is several times greater than the angular torsion required for the links of the first group to be sheared off between the cap and collar, each shearable link of the second group is associated with an oblique surface which is formed in the collar and which limits the deformation of the shearable link during the angular torsion of the cap, relative to the collar, in the direction of unscrewing.

4,326,640
CONTAINER SYSTEM FOR CARRYING AND SUPPLYING FOOD AND WATER FOR PETS
Nadine R. Nitzberg, 9610 Orpin Rd., Randallstown, Md. 21133; Michelle L. Baldwin, and Steven M. Baldwin, both of The Village Square North Apts., 9029 Contee Rd., Laurel, Md. 20811
Filed Jul. 10, 1980, Ser. No. 167,233
Int. Cl.³ B65D *21/02;* **A45C** *11/20;* **A47G** *23/04*
U.S. Cl. 220—4 E **1 Claim**

1. In a system of container elements vertically nestable in interconnection for providing covered storage and transport of animal food and drink the system including an upper element, a lower element, an intermediate element between the upper and lower elements, first and second means on the intermediate element for sealing together the upper and lower elements, and the upper and lower elements having means for engaging the sealing means, the improvement comprising: said sealing means comprising respectively relatively shallow identical feeding pans back-to-back in the intermediate element structure, the upper and lower elements comprising respectively relatively deeper containers open at the top, the open top of the upper element also having means for engaging the sealing means, a top element, third means for sealing on the top element, the third means for sealing comprising the top element having a horizontal portion with a relatively shallow feeding pan which is downwardly oriented therein and proportioned for engagement with all said means for engaging the sealing means, all said elements being generally co-extensive laterally, the top element and the intermediate element having respective planar flanges protruding all around beyond the perimeter thereof for protection and for gripping, all said elements hav-



ing in plan view a rectangular shape with rounded corners, the means for sealing and the means for engaging having respective rim structures forming continuous double seal, said rim structures including double rim structure on said means for sealing and single rim structure on said means for engaging, proportioned for tightly fitting between said double rim structure, all said elements having foam insulation completely therearound, the upper and lower elements having foam insulation in the lower most portions thereof and material encasing substantially all said foam structure except at the means for sealing, and a bail type handle for supporting all said elements when carried in assembly.

4,326,641
LIQUID TANK ANTI-THEFT DEVICE
Robert J. Wilken, 3128 Leslie La., Eau Claire, Wis. 54701
Filed Aug. 28, 1980, Ser. No. 182,012
Int. Cl.³ B65D *25/02;* **B67C** *3/00*
U.S. Cl. 220—86 AT **7 Claims**

6. In combination with a fuel-containing tank of a motor vehicle, a fuel tank anti-theft device for use in a tank filler tube for said tank and having a plate extending across an upper portion of said tube, said plate having an aperture of a size to limit the size of a filling nozzle to be inserted therein, said device comprising an elongated tubular member with an upper and lower end, an outwardly extending projection at said upper end of said tubular member, thread-like means on said tubular member to provide threaded engagement with said plate and entry of said tubular member into said tank filler tube, said thread-like means being inserted within said tube so that an upper part of said thread-like means abuts against the under side of said plate and said projection rests against the opposite side of said plate to prevent removal of said tubular member from said tube, and means at the lower end of said tubular

member to prevent insertion of a fuel removal means into said fuel tank.

4,326,642
TUBULAR CASE SEALING MEANS AND METHOD OF MANUFACTURING SAME

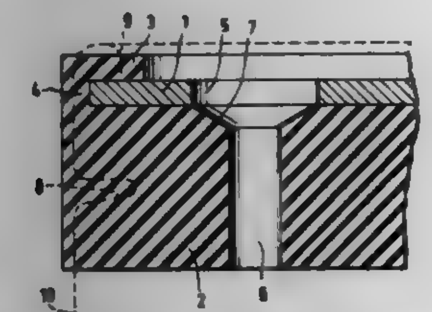
Franz-Josef Wolf, Bad Soden-Salmunster, Fed. Rep. of Germany, assignor to WOCO Franz-Josef Wolf & Co., Bad Soden-Salmunster, Fed. Rep. of Germany

Filed Nov. 18, 1980, Ser. No. 207,936

Claims priority, application Fed. Rep. of Germany, Nov. 19, 1979, 2946578

Int. Cl.[3] B65D *35/44, 43/00, 51/00*

U.S. Cl. 220—200 5 Claims



1. In a sealing means for a case of an electrical component, including a metal disk comprising at least one aperture for an electric feedthrough and one elastomer part acting as the sealing element, essentially covering completely at least the metal-disk inside facing the case inside, the improvement comprising:
the elastomer part as measured from the inside of the metal disk is at least twice as thick in the axial direction as the metal disk and furthermore prior to the intended use of the sealing means for sealing the case, the elastomer part covers and surrounds in sealing manner the radial outer rim and at least the peripheral rim region of the outside of the metal disk axially opposite the inside of the case.

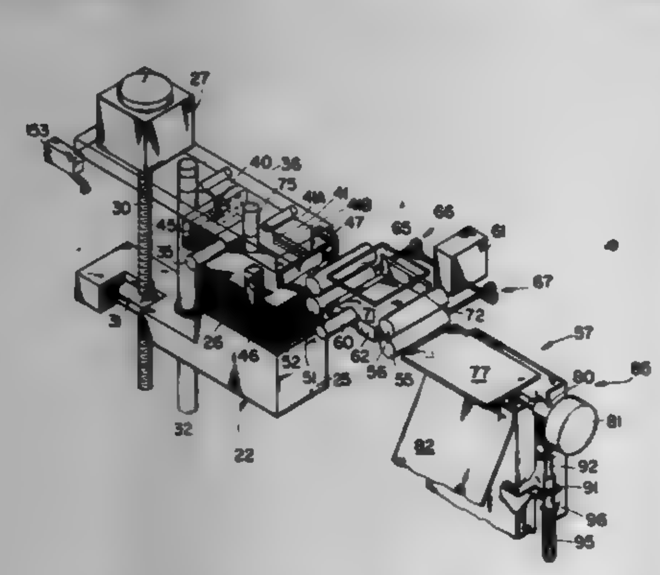
4,326,643
MAGNETIC TICKET DISPENSER

Robert T. Bayne, Carmel, and Phillip E. Shireman, Martinsville, both of Ind., assignors to Standard Change-Makers, Inc., Indianapolis, Ind.

Filed Sep. 4, 1979, Ser. No. 71,921

Int. Cl.[3] B65H *3/14*

U.S. Cl. 221—13 8 Claims



1. Apparatus for dispensing rectangular tickets or the like comprising:
a container having a vertically extending opening therein with a rectangular horizontal cross section adapted to loosely receive a stack of tickets, said container having a top and a ticket passage slot adjacent thereto and leading from said opening to the outside of said container;
an elevator mounted for vertical movement in said container and adapted to support the stack of said tickets;
means for operating said elevator to position the uppermost ticket thereon slightly below said top;
said container having air jet orifices therein, a first of which is located in the container side wall on the opposite side of said container from said slot, a second of which is located in said container top on the opposite side of said container from said slot, and a third of which is located in said container top above said slot;
means for providing a blast of air under pressure through each of said orifices to move a ticket from the top of the stack of tickets out of said container through said slot;
two sets of two rollers, a first set of said rollers being mounted adjacent said slot to receive the tickets moving out of said slot;
a ticket guide plate fixedly mounted between the two sets of rollers;
means for rotating one roller of each set to move the tickets across and past said ticket guide plate through and from the first set of rollers to and through the second set of rollers;
a dump plate mounted adjacent said second set of roller; and
means for sensing the thickness of the tickets moving across said ticket guide plate and for controlling said dump plate to dump one direction or the other depending on the thickness of said tickets.

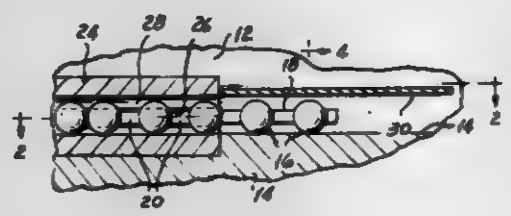
4,326,644
SAWTOOTH FEEDER WITH JAM PREVENTER

Benzion Landa, Edmonton, Canada, assignor to Savin Corporation, Valhalla, N.Y.

Filed Dec. 28, 1979, Ser. No. 107,885

Int. Cl.[3] B65H *3/32*

U.S. Cl. 221—263 16 Claims



1. Apparatus for feeding balls one by one from a bulk supply of balls including in combination, a container for holding said supply, said container having an inner wall and a base, means forming a passage of generally circular cross section leading outwardly through said wall, said passage having a diameter slightly greater than that of one of said balls, means forming a slot leading into said passage, the height of said slot being less than the diameter of one of said balls, a generally circular disk having peripheral teeth and intertooth spacings adapted to receive balls, said disk having a diameter at the locus of the ends of said teeth which is slightly less than the diameter of said inner wall, and being mounted in said container over said base with a peripheral portion thereof disposed in said slot, means for driving said disk to cause balls moved into said passage by said disk to be stripped from said disk by the portion of said slot forming means at the entry to said passage, and a blade carried by the wall of said reservoir and extending from a point adjacent to the top of said passage over a peripheral portion of said disk and radially inwardly for a distance greater than the diameter of a ball to ensure that a ball either fully enters or does not enter each of said intertooth spaces as it approaches said entry thus to prevent hang up of a ball between said disk and said passage forming means.

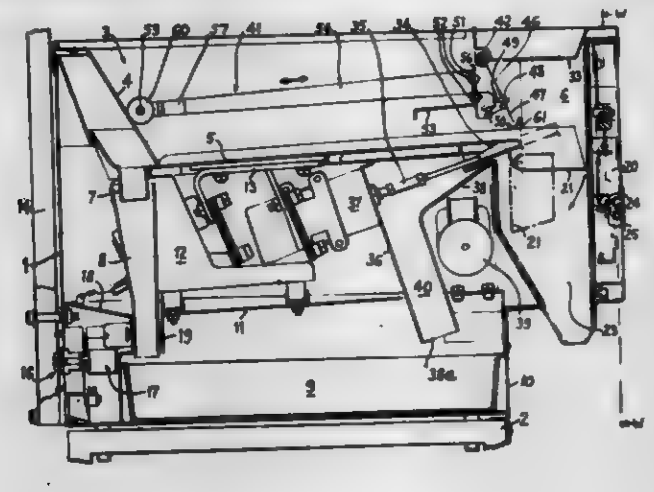
4,326,645
WEIGHING AND DISPENSING UNIT

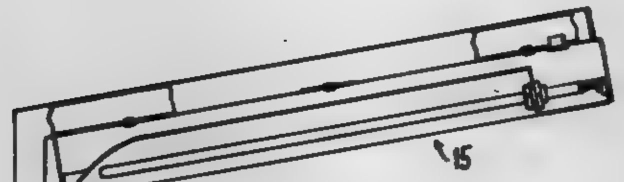
Keith Faulkner, 24, Parkhill Rd., Bexley, Kent, England, and David E. Appleford, 7 Ayr Green, Rise Park, Romford, Essex, England

Filed Feb. 7, 1980, Ser. No. 119,301

Int. Cl.[3] G01G *13/00*

U.S. Cl. 222—1 17 Claims





1. A unit for weighing and dispensing portions of fried potato products, from a supply of such products, said unit comprising a receptacle for receiving said supply, said receptacle having a bottom wall and a sloping rear wall which is inclined upwardly and outwardly away from the bottom wall of the receptacle, a dispensing chamber opening into said receptacle, weighing means including a releasable weighing platform hinged to a movable weighing support, vibrator means coupled to a bottom wall of said receptacle for feeding potato products from the receptacle, into the dispensing chamber and onto the weighing platform, an agitator for use in agitating the potato products whilst in the receptacle, means supporting the agitator in the receptacle in a position which is spaced from the bottom wall thereof, drive means for moving the agitator, including a drive spindle, means mounting said spindle for angular movement about a substantially horizontal axis and means connecting said spindle to said agitator, said agitator being provided with a member which engages with and moves up and down the said rear wall during movement of said agitator, the slope of said rear wall being matched to the angular movement of the spindle, said connecting means and said rear wall slope translating the angular movement of the spindle into reciprocating movement of the agitator in directions upwards and downwards and towards and away from the chamber opening.

10. A method of weighing and dispensing portions of solid food products, which method comprises, supplying a load of solid food products to a receptacle having a bottom wall, oppositely facing side walls and a rear wall, vibrating said receptacle bottom wall to feed food products onto a hinged weighing platform disposed in a dispensing chamber opening into said receptacle, mechanically moving an agitator member disposed above said bottom wall and spaced from said side walls and having elongate spaced apart parallel sides extending generally in the direction of said bottom wall and towards said rear wall and being joined by an end element adjacent said rear wall and remote from the chamber opening, within the load of food products in said receptacle in the directions of upwards and downwards, and towards and away from said chamber opening to exert a supporting and lifting action on the load of food products above said agitator member, whereby to feed food products on said bottom wall below said agitator member to said dispensing chamber and to facilitate flow of food products from the load of chips towards the bottom wall, levelling the food products being fed as they pass from the receptacle into said dispensing chamber, and weighing the food products on the weighing platform such that the weighing platform hinges downwardly when a predetermined weight is reached to dispense a weighed portion of food products from the dispensing chamber.

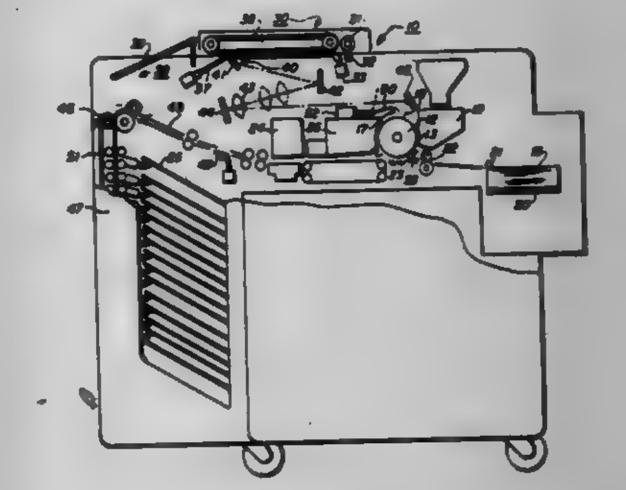
4,326,646
AUTOMATIC DEVELOPMENT DISPENSER CONTROL

Lawrence P. Lavery, Fairport; David G. Wilcox, Macedon, and Dale C. Thomas, Ontario, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed May 11, 1979, Ser. No. 38,371

Int. Cl.[3] B67D *5/08*

U.S. Cl. 222—56 14 Claims



1. A reproduction machine including
a photoreceptor,
means to form a latent image on the photoreceptor,
a developer for applying toner to the latent image,
a toner dispenser for providing toner to the developer,
a sensor producing a signal representative of developed toner mass,
and a means to activate the toner dispenser for predetermined time periods in response to the sensor signal, the means including a comparator and a digital to analog network, the sensor providing one input to the comparator representing a measurement of the developed toner mass on the photoreceptor and the digital to analog network providing a reference signal representing an undeveloped portion of the photoreceptor.

4,326,647
DEVICE FOR DISPENSING FLUENT MATERIAL FROM A COLLAPSIBLE CONTAINER

Daniel L. Pool, 5524 N. 39th Ave., Phoenix, Ariz. 85019

Filed May 22, 1980, Ser. No. 152,426

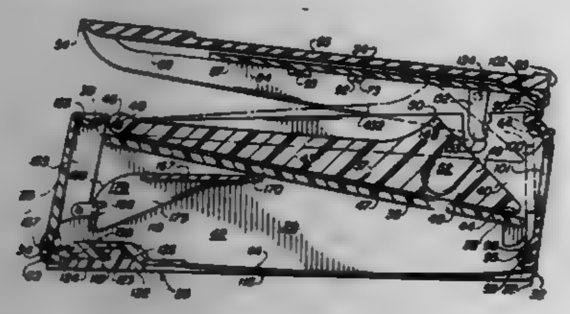
Int. Cl.[3] B65D *35/28*

U.S. Cl. 222—103 12 Claims

1. A dispenser for holding a collapsible tube which tube includes a deformable body having a continuous side wall, a closed end, and an open end, a header wall closing the open end of the body and a discharge spout projecting from said header wall; said dispenser squeezing a fluent material from the tube, said dispenser comprising:
a housing having a forward end and a rearward end;
an anvil extending longitudinally within the housing for supporting said tube, said anvil having an inclined surface

for supporting the deformable body of the collapsible tube and having a rearward end and a forward end, said rearward end being elevated above said forward end;

lever means carried by said housing and opposing said anvil for progressively collapsing the deformable body of the collapsible tube from the closed end thereof and urging said fluent material from the discharge spout; said lever means including an elongate presser element angularly movable relative to the anvil, and an actuating element carried by the housing for urging the presser element toward the anvil; said presser element having a forward end and a rearward end, the rearward end being pivotally connected proximate the rearward end of the housing; said presser element having a surface opposing inclined surface of the anvil for bearing upon said deformable body and having a forward end approximately coincident with the forward end of the inclined surface and having a rearward end; said actuating element having a forward end and a rearward end, the forward end being pivotally connected proximate the forward of the housing; a contact element upstanding from the presser element for receiving the actuating element thereagainst, the contact



element including a ridge extending transversely of said presser element; said ridge being positioned closer to the forward end of the presser element than the rearward and contacting said actuating element at a position closer to the forward end of the presser element than the rearward end thereof;

an upright forward end wall mounted on the housing and spaced from the forward ends of the respective surfaces of the anvil and the presser element for receiving the header wall of the collapsible tube thereagainst, said forward end wall including an upper edge, a lower edge and an opening for receiving said discharge spout therethrough, said opening through the forward wall being elongated in the upright direction; pivot means proximate the lower edge of said forward end wall pivotally connecting said wall to said housing; and adjustment means for selectively varying the angular position of said forward end wall about said pivot means between a first position and a second position, said forward end wall residing farther from the ends of the respective surfaces of said anvil and said presser element in said first position than in said second position.

4,326,648

HOLDING DEVICE FOR HOLDING A DISPENSER CONTAINER

Lothar Kieber, Müllheim, Fed. Rep. of Germany, assignor to Deutsche Calypsolgesellschaft mbH & Co., Düsseldorf, Fed. Rep. of Germany

Filed Feb. 14, 1980, Ser. No. 121,610

Claims priority, application Fed. Rep. of Germany, Feb. 21, 1979, 7904778[U]

Int. Cl.³ B67D *5/64*

U.S. Cl. 222—162 5 Claims

1. A device and container combination for removably holding a two-chamber dispensing container, having a dispensing valve with an outlet and a cap constituting a container cover having a peripheral flange adjacent an entrance of an opening in the cover, the latter being removably disposed selectively covering the valve and pluggable on a bottom of the container, respectively, in an operative position with the valve directed downwardly, comprising

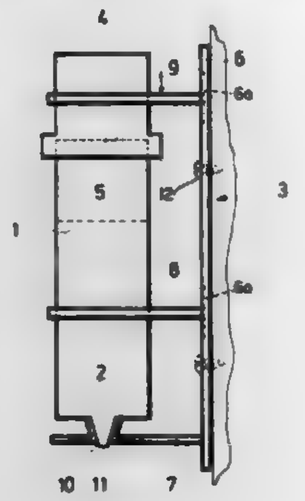
support means comprising a flat supporting arm formed with an opening means for securely holding the valve therein directed downwardly with the dispensing valve projecting through the opening such that the outlet of the valve is disposed under the support means,

first ring means for holding the container in a vertical position on said support means while permitting axial movement of the container,

said ring means for surrounding the container and being disposed at a distance above the support means,

a sheet metal support extending parallel to the container and rigidly connected to said support means, the latter extending perpendicularly from said sheet metal support,

a second ring means disposed above, spaced from and parallel to said first ring means and said bottom of said container when the latter is held inverted in said first ring means and in said opening means and then for holding said



container cover projecting upwardly through said second ring means in a lower position of said cover relative to said second ring means plugged on the container bottom and selectively for holding said cover in an upper position thereof relative to said second ring means spaced from said bottom of said container, said second ring means and said cover being spaced above the bottom of said container and above said first ring means in said upper position of said cover by a distance, such that the container only then can be removed from said first ring means and said opening means and such that said cover can only be inserted into said second ring means from below with said flange facing down prior to insertion of said container in said first ring means and in said opening means and such that said cover can be held in said upper position in said second ring means until said container has been inserted through said first ring means and into said opening means, said first and said second ring means being connected to said sheet metal support extending perpendicularly therefrom.

4,326,649

DUST COVER WITH ASSURANCE LUG

Samuel F. Marino, Oak Park, and Daniel P. Hidding, Barrington, both of Ill., assignors to Hunt-Wesson Foods, Inc., Fullerton, Calif.

Filed Dec. 19, 1980, Ser. No. 218,432

Int. Cl.³ B67D *5/06;* B65D *43/04*

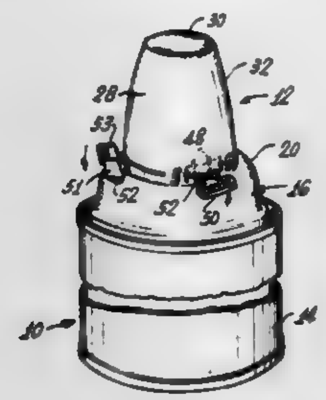
U.S. Cl. 222—182 19 Claims

1. For a container having a top with a rim thereon, a dust cover that provides a positive indication that it has not been removed and that no portion of the contents of said container has been dispensed, said cover comprising:

a cup-shaped body to be placed on said top in an inverted position, said body having a circular bottom edge for engagement with said top;

a plurality of lugs to engage said rim on said top thereby retaining said cover on said container, there being an assurance lug, a release lug and at least one fixed lug;

actuator means integrally formed with said cover for disengaging said release lug from said rim without permanently deforming said cover; and



tab means for connecting said assurance lug to said body and for disengaging said assurance lug from said rim upon permanent deformation thereof, said tab means being integrally formed with said body.

4,326,650

DISPENSING SYSTEM USING CARTRIDGE WITH INTERLOCKING PLUNGER

Dick T. Van Manen, Canandaigua, N.Y., assignor to Voplex Corporation, Pittsford, N.Y.

Continuation-in-part of Ser. No. 92,440, Nov. 7, 1979. This application Mar. 24, 1980, Ser. No. 132,800

Int. Cl.³ B67D *5/42*

U.S. Cl. 222—386 8 Claims

1. A dispensing system using a molded resin cartridge with a generally cylindrical wall having an open rear end and a molded resin plunger with a skirt that fits the inside of said cylindrical wall so said plunger can be seated in a rear region of said cartridge to seal said open rear end after said cartridge is filled, said plunger being shaped to receive a pusher that engages and advances said plunger into said cartridge while a holder holds said cartridge during said plunger advance to dispense the contents of said cartridge, said dispensing system comprising:

a. said cartridge having an interlock surface spaced a short distance forward from said open rear end;

b. said interlock surface extending outward from the outer surface of said cylindrical wall;

c. said interlock surface extending around said cartridge wall along the intersection of said wall and a plane perpendicular to the axis of said cartridge forward from said open rear end;

d. said interlock surface facing forward away from said open rear end;

e. a cylindrical region of said plunger skirt supportively fitting against the inside of said cylindrical wall substantially forward of said interlock surface when said plunger is seated in said cartridge so said plane perpendicular to said cartridge axis intersects a rear region of said plunger;

f. a central region of said plunger extending across said cartridge when said plunger is seated in said cartridge being joined to a forward region of said skirt fitting against said cylindrical wall and located substantially forward of said plane perpendicular to said cartridge axis;

g. a molded resin locking ring formed as a generally cylindrical sleeve extending around said cartridge wall;

h. said sleeve having an inner surface extending rearward of said interlock surface;

i. said sleeve having a hook surface extending inward from said inner surface of said sleeve;

j. said hook surface facing rearward toward said open rear end of said cartridge;

k. said hook surface extending around said sleeve and along said intersection to hook over said interlock surface and hold said sleeve against movement toward said rear end of said cartridge;

l. said locking ring having a radial wall extending inward from said sleeve over said rear end of said cartridge wall; and

m. said radial wall being arranged to prevent rearward movement of said plunger out of said rear end of said cartridge so said plunger and said locking ring cooperate to improve the seal and security of said cartridge.

4,326,651

APERTURED PLATE WITH ADJUSTABLE-CONSTRICTION MEMBER FOR PROVIDING SHIFTABLE BOTTOM WALL OF HOPPER FOR GRANULAR MATERIAL THAT IS JUXTAPOSED UPON A PLURALITY OF METERING COMPARTMENTS

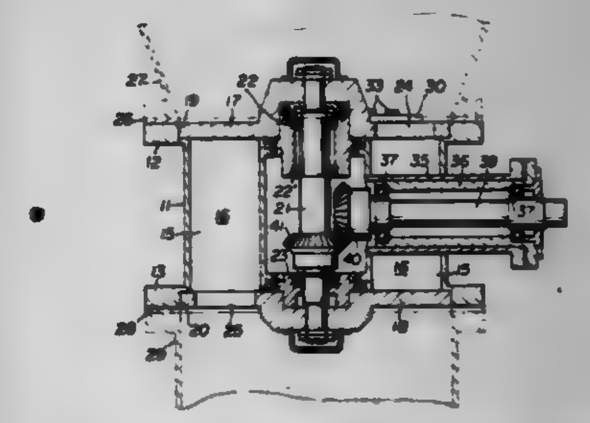
Makoto Sabase, Higashimurayama, and Mario Sakaitani, Chiba, both of Japan, assignors to Matsushita Industry Co., Ltd., Tokyo, Japan

Filed Jun. 30, 1980, Ser. No. 164,767

Claims priority, application Japan, Jul. 2, 1979, 54-89684[U]

Int. Cl.³ G01F *11/28*

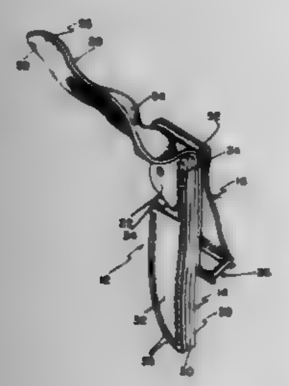
U.S. Cl. 222—439 2 Claims



1. In an apparatus for quantitatively metering granular material such as powders and particles of synthetic resin for use as starting material, pigments, cement, fertilizers and foodstuffs, comprising a main body having a plurality of independent stationary metering compartments having upper and lower open ends and disposed radially around an axis, and top and bottom end plates adapted for covering the upper and lower open ends of the compartments and being rotatable about said axis, the top plate having a hole adapted for being brought into alignment with the upper open end of each compartment as this end plate is rotated, the bottom end plate having a hole so positioned as is not aligned with the hole of the top end plate and being adapted for being brought into alignment with the lower open end of each compartment as this end plate is rotated, so that, with the rotation of these end plates, a material requiring metering is fed into the compartments, one compartment after another, through the hole of the top end plate, and the metered material contained in these compartments is allowed to flow out through the hole of the bottom end plate from one compartment after another, the improvement comprising a projectable lug provided on the top end plate so as to slidably project beyond the trailing edge of the hole thereof

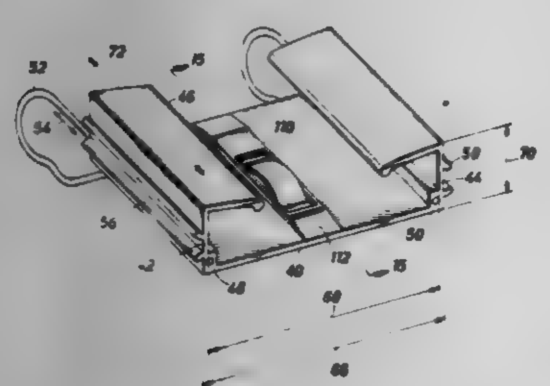
toward the leading edge of this hole to limit the degree of area of this hole and being adapted to be maintained at any desired degree of projection.

4,326,652
KNIFE SHEATH STRUCTURE
Charles K. Fortenberry, 3112 Vandenberg, Wichita, Kans. 67210
Filed Jan. 26, 1981, Ser. No. 228,140
Int. Cl.³ B26B *29/02*
U.S. Cl. 224—232 6 Claims



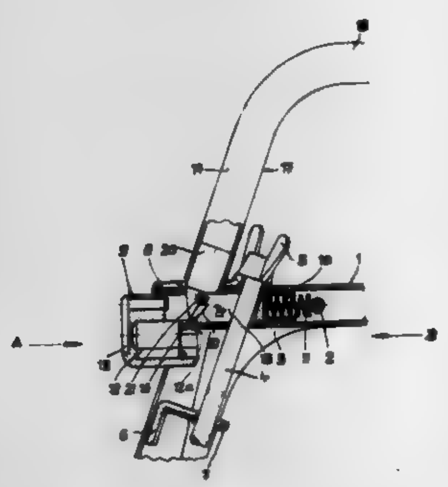
1. A Knife Sheath Structure adapted to be connected to a person's belt member or the like, comprising:
(a) a main knife support assembly adapted to receive and support a knife member therein;
(b) a vertical support assembly secured to said main knife support assembly and connectable to the belt member;
(c) a cover assembly secured to said main knife support assembly and operable to enclose and cover a handle portion of the knife member; and
(d) a connector assembly connected to said vertical support assembly to receive a portion of said main knife support assembly and said cover assembly therein to prevent vertical and lateral movement of the knife member therefrom.

4,326,653
VISOR-CONNECTED TAPE CARTRIDGE HOLDER
H. Spencer Stone, 11327 Piney Point Cir., Houston, Tex. 77024
Continuation-in-part of Ser. No. 913,806, Jun. 8, 1978, abandoned. This application Oct. 1, 1979, Ser. No. 80,935
Int. Cl.³ B60R *7/08*; B65D *85/67*
U.S. Cl. 224—312 5 Claims



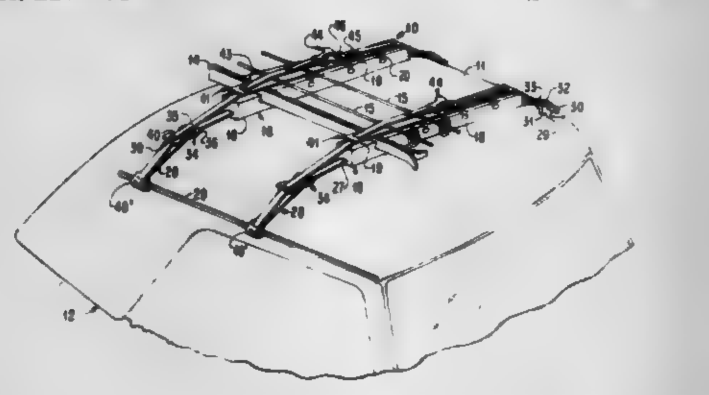
1. A holder for attaching to a vehicle sun visor and holding at least one tape cartridge therein, comprising;
a plastic clamp segment for lying adjacent the top of the visor, said segment including;
a base portion for lying along the visor,
oppositely aligned, upwardly and inwardly turned wedging end pieces attached to said base portion, the dimension between said inwardly turned end pieces and said base portion accepting the tape cartridge, wherein said base portion includes at least two raised channels attached to said base portion within the dimension between said end pieces for supporting the tape cartridge within the holder and providing a reduced friction surface, wherein at least one of said raised channels includes an elongate opening therethrough, and including a wire press fitted into said opening for elongate adjustable positioning, said wire being curved to overlappingly and resiliently clamp onto one of the edges of the visor, and
universally accommodating clamping means connected to said base portion to permit attaching of the holder to sun visors of varying thicknesses.
5. A holder for attaching to a vehicle sun visor and holding at least one tape cartridge therein, comprising;
a plastic clamp segment for lying adjacent the top of the visor, said segment including a base portion for lying along the visor,
oppositely aligned, upwardly and inwardly turned wedging end pieces attached to said base portion, the dimension between said inwardly turned end pieces and said base portion accepting the tape cartridge, said base portion includes a slotted segment having securing means therein,
resilient means secured by said securing means and depressingly operating within said slotted segment and having a raised portion that projects above said slotted segment for urging the cartridge against the end pieces, said slotted segment including a ramp on the entry of said base portion as a convenience guide to assist the entry of the cartridge into the holder, and
universally accommodating clamping means connected to said base portion to permit attaching of the holder to sun visors of varying thicknesses.

4,326,654
MOTOR VEHICLE ROOF CARRIER FOR THE AFFIXATION OF SKIS AND OTHER OBJECTS TO BE TRANSPORTED
Dieter Frey, Angerstrasse 9, D-8100 Garmisch-Partenkirchen, Fed. Rep. of Germany
Filed May 30, 1979, Ser. No. 43,910
Claims priority, application Fed. Rep. of Germany, May 30, 1978, 7816134[u]
Int. Cl.³ B60R *9/04, 9/12*
U.S. Cl. 224—315 5 Claims



1. A device for supporting skis or other objects on the roof of a motor vehicle, comprising a tubular carrier having an end portion; means for clamping said carrier to the roof of the vehicle; latching means including a portion extending into the end portion of said carrier and having an elongated slot, said latching means further including a pin in said slot and said clamping means including a member traversing said end portion of said carrier and extending with clearance through said slot so that said latching means is movable lengthwise of said carrier; abutment means provided in said carrier; resilient means interposed between said abutment means and said portion of said latching mans to yieldably oppose the movement of said latching means in one direction; a securing lever having a first portion remote from said end portion of said carrier and a second portion insertable into said slot and engageable with said pin against the opposition of said resilient means; means for movably connecting said first portion of said lever to said carrier; and locking means provided on said latching means and operable to hold said second portion of said lever against disengagement from said pin.

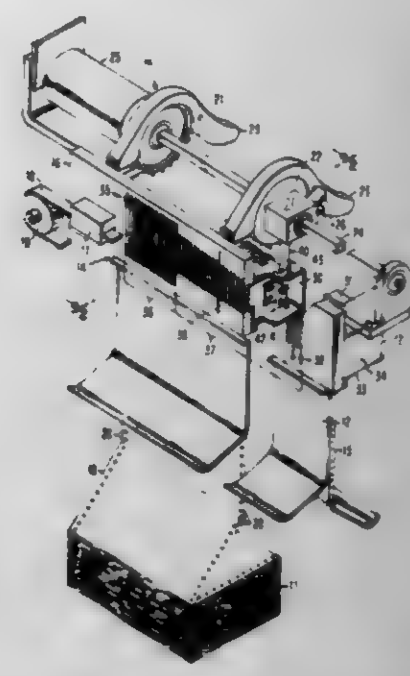
4,326,655
VEHICLE ROOF CARRIER FOR SKIS AND SKI POLES
Walter A. Gradek, and John W. Boggs, both of Lexington, Ky., assignors to Foam Design, Incorporated, Lexington, Ky.
Filed Jan. 30, 1981, Ser. No. 229,959
Int. Cl.³ B60R *9/12*
U.S. Cl. 224—324 31 Claims



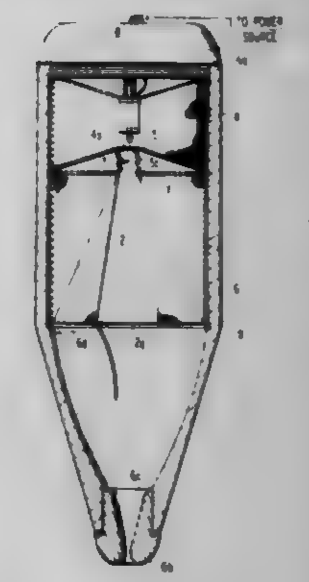
1. A carrier for supporting skis on a vehicle roof including:
a body of resilient material;
said body having a bottom wall for engaging the vehicle roof on which said body is to be mounted transversely;
said body having an upper wall substantially parallel to said bottom wall;
said upper wall having a plurality of substantially parallel longitudinal passages therein to receive skis therein for support by said body;
each of said longitudinal passages having a first cross sectional portion communicating with said upper wall and a second cross sectional portion communicating with said first cross sectional portion, said first cross sectional portion of said longitudinal passage being smaller than said second cross sectional portion of said longitudinal passage to grip skis disposed in said longitudinal passage;
and said body having a transverse passage extending transversely to said longitudinal passages to receive means to releasably secure said body to the vehicle on which said body is to be mounted, said transverse passage being disposed beneath the bottom of each of said longitudinal passages.

4,326,656
EVACUATED PRINTING PLATEN
Floyd A. Gregory, Binghamton; Donald F. Manning, Endicott; William Oranchak, Johnson City, all of N.Y., and Joseph J. Student, deceased, late of Apalachin, N.Y. (by Sophie A. Student, administratrix), assignors to International Business Machines, Armonk, N.Y.
Filed Jun. 25, 1980, Ser. No. 162,996
Int. Cl.³ B65H *17/38, 17/44*
U.S. Cl. 226—59 4 Claims

1. Apparatus for positioning a web of recording medium comprising:
tractor means engaging opposite edges of said web for moving said web;
a chamber extending across the width of said web;
a face plate serving as one wall of said chamber adjacent said web, said face plate having a plurality of parallel slots extending longitudinally in the direction of motion of said web; and
means for evacuating air from said chamber to thereby attract said web against said face plate to provide frictional restraint during the motion of said web, with said slots being formed to provide decreasing frictional restraints from one edge of said web to the other.



4,326,657
OPTICAL FIBER DISPENSER
John B. Arpin, Ocean, and Sam Di Vita, West Long Branch, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed May 19, 1980, Ser. No. 150,765
Int. Cl.³ B65H *17/32*; F42B *13/56*
U.S. Cl. 226—97 8 Claims



1. An optical fiber dispenser adapted for mounting on a missile to be directed to a remote location from a first location for establishing a communication link between said locations comprising a housing, an orifice provided at one end of said housing, a supply of optical communication fiber mounted in said housing and wound about a central open area, the free end of a strand from the supply of optical fiber extending through said orifice and adapted to be secured externally at said first location while the supply of fiber in said housing is unwound and payed out through said orifice by movement of said missile toward said remote location, a source of pressurized gas mounted in said housing adjacent said supply of optical fiber at an end of said central area spaced from said orifice, and valve means operatively connected to said pressurized gas source for releasing the gas from said source upon lift-off of said missile allowing the gas to flow through said central area and supply

of optical fiber and through said orifice around the strand of optical fiber as the fiber is unwound and payed out through said orifice, the gas escaping through said orifice forming an air bearing for the optical fiber to minimize contact with the sides of said orifice and reduce stress and strain on the optical fiber as it is dispensed from the housing.

4,326,658

BAND-FEEDING DEVICE

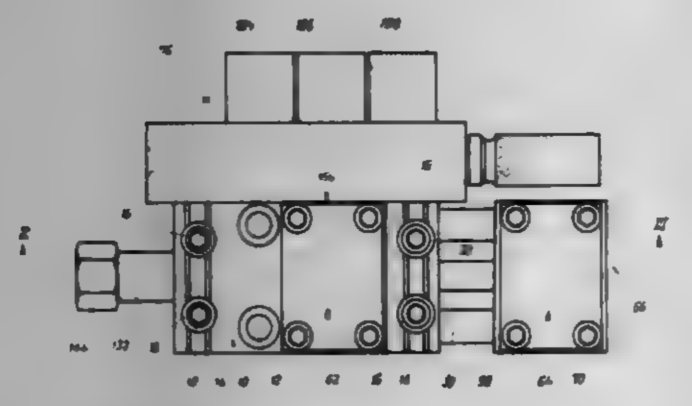
Kurt Stoll, Lenzhalde 72, 7300 Esslingen a.N., Fed. Rep. of Germany

Filed Nov. 21, 1979, Ser. No. 96,277

Claims priority, application Fed. Rep. of Germany, Nov. 30, 1978, 2851746

Int. Cl.³ B65H *17/26*

U.S. Cl. 226—141 17 Claims



1. In a band-feeding device comprising:

a stationary first pressure medium operated clamping claw for selectively securing a band of material which is to be moved step by step;

two guide members secured on the first clamping claw;

a second pressure medium operated clamping claw movable on the guide members for selectively securing a different section of the band of material, said first and second clamping claws each having a servomotor and a pressure medium connection for operating same;

a working cylinder having relatively movable parts each connected to a respective one of the clamping claws; and

a longitudinally changeable pressure medium connection through which said servomotor of the second clamping claw is connected with said pressure medium connection of the first clamping claw, said longitudinally changeable pressure connection having a plunge piston provided with a through-going pressure medium channel, said plunge piston being carried by one said clamping claw and running in a blind hole of the other said clamping claw and being sealed against leakage of pressure medium, the improvement comprised in that said guide members are guide rods and the servomotor of the second clamping claw is a conventional single-acting servomotor, both said guide rods being carried by the stationary first clamping claw, one said guide rod forming said plunge piston provided with the through-going pressure medium channel, said one guide rod running with its free end section sealed against leakage of pressure medium in a blind hole in the second clamping claw, the other guide rod being longer in axial dimension than said one guide rod, and such that said other guide rod always extends entirely through a through hole in the second clamping claw.

4,326,659

MAGNETIC RECORDING-REPRODUCING APPARATUS

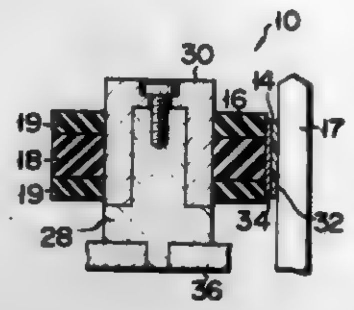
Masaaki Sato, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Mar. 25, 1980, Ser. No. 133,814

Claims priority, application Japan, Apr. 4, 1979, 54-40492

Int. Cl.³ B65H *17/20*

U.S. Cl. 226—190 4 Claims



1. A magnetic tape recording-reproducing apparatus comprising:

a housing at least a portion of which is electrically conducting;

a capstan mounted to said housing and which is rotatably driven to drive the magnetic tape;

a rotatable pinch roller shaft made of an electrically conductive metal;

a pinch roller bearing made of an electrically conductive metal for rotatably mounting said pinch roller shaft to said electrically conducting housing portion and for electrically connecting said pinch roller shaft to said electrically conducting housing portion; and

a pinch roller of resilient material mounted on said pinch roller shaft and adapted to tightly contact a magnetic coating surface of a magnetic tape when the magnetic tape is pinched between the pinch roller and the capstan, at least a portion of the pinch roller which contacts the magnetic coating surface of the magnetic tape being made of a resilient electrically conductive rubber which has a substantial thickness in the radial direction of the pinch roller shaft and resiliently yielding when the pinch roller is pressed against the capstan with the magnetic tape therebetween, the electrically conductive rubber portion extending to and contacting the pinch roller shaft;

whereby electrostatic charge is conducted from the magnetic coating of the magnetic tape to the housing of the apparatus through the electrically conductive rubber portion of the pinch roller, the pinch roller shaft and the pinch roller bearing.

4,326,660

COMBINED CASSETTE TAPE GUIDE AND TAPE STRIPPER

Anthony Scianna, Sr., Morton Grove, and Frank J. Gordon, Chicago, both of Ill., assignors to Motorola Inc., Schaumburg, Ill.

Filed May 8, 1980, Ser. No. 147,792

Int. Cl.³ B65H *17/20*

U.S. Cl. 226—190 12 Claims

1. An improved cassette tape player comprising:

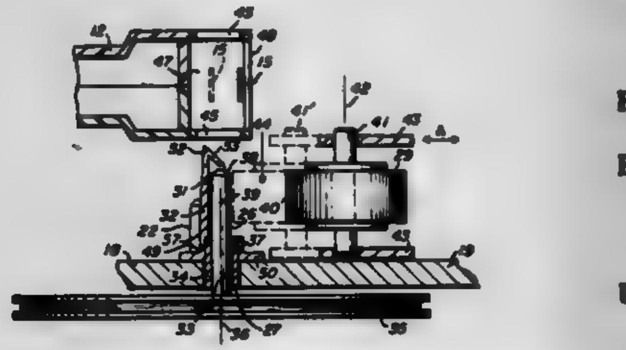
a tape player frame;

at least one capstan shaft means rotatable with respect to said frame about an axis for providing tape driving movement to a tape to be inserted into said tape player, said capstan shaft means having a free upstanding end portion, an opposite end portion mounted to said frame, and an engaging portion between said end portions for drivingly engaging the inserted tape;

at least one pressure roller means mounted to said frame and freely rotatable about an axis parallel to said capstan shaft axis, said pressure roller means disposed on one side of

said capstan shaft axis and movable with respect to said capstan shaft means between a first position wherein said capstan shaft means and said pressure roller means are spaced apart and a second position wherein said pressure roller effectively contacts said tape-engag-portion of said capstan shaft means, said pressure roller means selectively frictionally captivating an inserted tape between said pressure roller means and said capstan shaft means to provide driving movement to said inserted tape;

tape guide means mounted to said frame adjacent to said capstan shaft means, said tape guide means generally extending from said mounted end portion of said capstan shaft means to said free upstanding end portion of said capstan shaft means with said tape guide means including a first end portion extending beyond said free upstanding capstan shaft end portion, said guide first end portion



effectively forming a tape guide plane beyond said capstan shaft free end portion which is inclined with respect to said capstan axis, and wherein during insertion of tape over said free upstanding end portion of said capstan shaft means said first end portion of said tape guide means positively positions inserted tape on said one side of said capstan shaft between said capstan shaft axis and said pressure roller axis with said capstan shaft means and said pressure roller means in said first position; and

movable positioning means coupled to said tape player frame for receiving a cassette housing having tape within and inserting both a portion of the cassette carrier and the tape within the cassette carrier over both said free upstanding end portion of said capstan shaft means and said tape guide means first end portion with said tape within said cassette carrier being positioned between said capstan shaft means and said pressure roller means.

4,326,661

MAGAZINE FOR FEEDING HEADED FASTENERS INTO A DRIVING APPARATUS

Werner Maurer, Nuertingen, and Gerhard Farian, Grossbettlingen, both of Fed. Rep. of Germany, assignors to Karl M. Reich, Maschinenfabrik GmbH, Nuertingen, Fed. Rep. of Germany

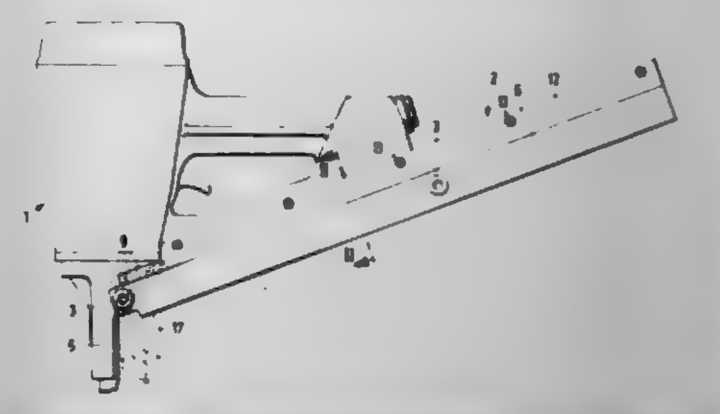
Filed Apr. 14, 1980, Ser. No. 140,571

Claims priority, application Fed. Rep. of Germany, Apr. 20, 1979, 2915994

Int. Cl.³ B25C *5/16*

U.S. Cl. 227—120 6 Claims

1. A magazine for feeding fasteners having heads into a driving apparatus for the fasteners, comprising two separate, profiled, channel members with inwardly facing sides defining a travel path for the fasteners, means releasably connecting said channel members to each other to form the magazine, spacer means of given width exchangeably interposed between said two channel members for defining a width for said travel path, and longitudinal support means made of steel wire secured to said inwardly facing sides of said channel members for supporting the heads of said fasteners by tangential contact



with the steel wire minimizing the friction of the fasteners sliding along said longitudinal steel wire support means.

4,326,662

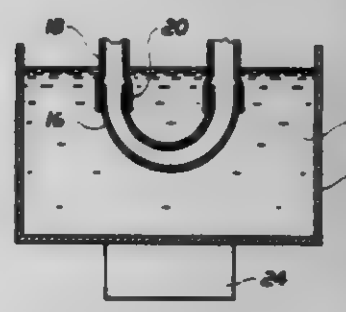
PROCESS OF ULTRASONICALLY SOLDERING DRAWN ALUMINUM TUBING PRODUCTS

Bruce E. Anderson, Massena, N.Y., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Sep. 2, 1980, Ser. No. 183,355

Int. Cl.³ B23K *1/06, 31/06*

U.S. Cl. 228—111 17 Claims



1. In a process wherein a socket-type tube joint comprising an aluminum tubular member is joined by fluxless ultrasonic soldering and wherein said aluminum tubular member is provided from a coilable tube produced by drawing elongate hollow aluminum stock through a sequence of drawing die stages of progressively diminishing size with floating mandrels therein to progressively reduce the diameter and wall thickness of the aluminum stock by cold working such stock between said dies and floating mandrels to provide said aluminum coilable tube in work hardened temper, wherein the improvement comprises pulling said coilable aluminum tube in work hardened temper through a burnishing die which concentrates its work effects substantially in the outside surface region of said tube thereby to precondition said outside the surface for said ultrasonic fluxless soldering.

4,326,663

PYROELECTRIC DETECTOR

Friedrich H. Oettel, Daytona Beach, Fla., assignor to Eltec Instruments, Inc., Daytona Beach, Fla.

Continuation of Ser. No. 925,991, Jul. 10, 1978, Pat. No. 4,218,620. This application Feb. 4, 1980, Ser. No. 118,796

The portion of the term of this patent subsequent to Aug. 19, 1997, has been disclaimed.

Int. Cl.³ H01L *21/58*

U.S. Cl. 228—123 6 Claims

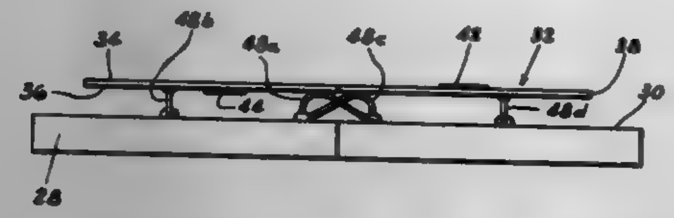
1. A method of making a pyroelectric detector comprising the steps of:

(a) providing a supporting means having a supporting surface;

(b) providing at least one elongated link element having a

shape like an arch on said supporting means by securing the two ends of the arch-like link to spaced locations on said supporting surface in a manner providing an area of contact between each end of said link element and said supporting surface at least several times smaller than said supporting surface and disposing the link so as to extend outwardly from said supporting means;

(c) providing a sensing element of pyroelectric material in the form of a wafer having a first surface portion adapted



to be disposed toward incident radiant energy, another surface portion and means on said sensing element for collecting electric charge indicative of energy absorbed by said sensing element; and

(d) placing said sensing element on said link and securing said other surface portion of said sensing element to the outer portion of said link whereby said sensing element is held by said link in spaced relation to said supporting means.

4,326,664

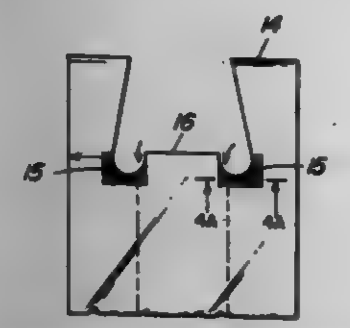
THERMOPLASTIC BAGS HAVING STRESS RELIEF FEATURE AT HANDLE CONNECTION

Gordon L. Benoit, Macedon; Franz Bustin, Rochester, and Jack J. Donaldson, Fairport, all of N.Y., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 20,899, Mar. 15, 1979, abandoned. This application Jun. 13, 1980, Ser. No. 159,971

Int. Cl.³ B65D *33/06, 33/02*

U.S. Cl. 229—54 R **11 Claims**



1. A thermoplastic bag structure having front and rear walls, a pair of spaced upwardly extending handle members formed integrally with said front and rear walls, an open mouth portion between said handles, and a plurality of upwardly extending pleats formed in said front and rear walls, said pleats being located at least transverse the lower inner portion of each of said handle members and said mouth portions immediately adjacent said lower inner portions of said handle members.

4,326,665

GIFT PACKAGE SLEEVE

Raymond G. Scott, Oak Brook, Ill., assignor to Champion International Corporation, Stamford, Conn.

Filed May 19, 1980, Ser. No. 151,356

Int. Cl.³ B65D *75/02, 75/54*

U.S. Cl. 229—87 R **4 Claims**

1. A container having an integral greeting card thereon, said container comprising:

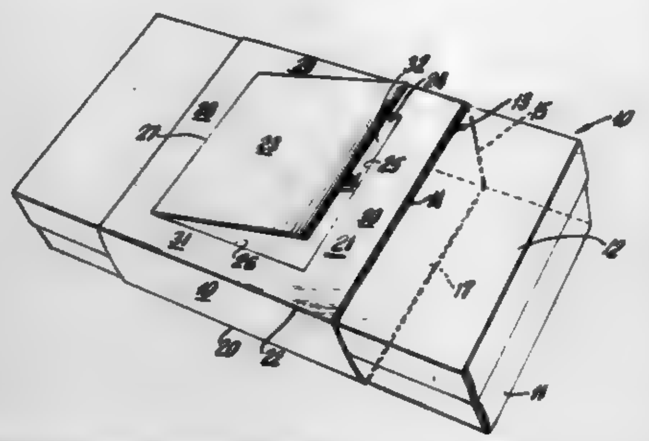
(a) a bottom panel;

(b) a pair of side panels connected to said bottom panel along opposed parallel fold lines;

(c) an underlying panel connected to one of said side panels along a fold line parallel to said opposed parallel fold lines;

(d) a top panel connected to the other of said side panels along a fold line parallel to said opposed parallel fold lines, said top panel overlying said underlying panel;

(e) means forming a hinged flap integrally in an internal portion of said top panel, said flap overlying a mid portion of said underlying panel; and



(f) adhesive means securing said top panel to said underlying panel, said adhesive means being restricted to peripheral portions of said top and underlying panels, and said mid portion of said underlying panel and said flap being free of said adhesive means, and said mid portion of said underlying panel and said flap combining to form said integral greeting card on said container in which said flap can be folded back from said mid portion of said underlying panel to expose said mid portion of said underlying panel to view a message written thereon.

4,326,666

CENTRIFUGAL TYPE COUNTERFLOW CONTACT APPARATUS

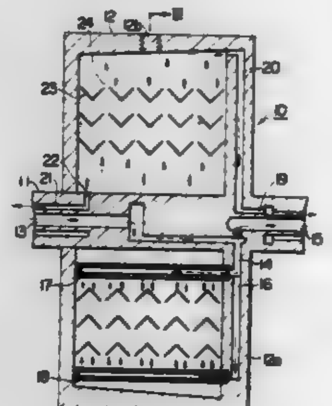
Kiyoshi Fujiwara; Katsuaki Nagatomo; Shoji Yoshinaga; Zensake Tamura; Fumio Shibata, and Hiroshi Kanekiyo, all of Kudamatsu, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 9, 1979, Ser. No. 37,996

Claims priority, application Japan, Jul. 5, 1978, 53-80902

Int. Cl.³ B04B *15/02, 5/06*

U.S. Cl. 233—15 **12 Claims**



1. A centrifugal type counterflow contact apparatus comprising a rotary body integrally mounted on a rotary shaft, means for introducing a light liquid into said rotary body about the periphery thereof, means for introducing a heavy liquid about the center portion of the rotary body, means for discharging said heavy liquid from the periphery of said rotary body, means for discharging said light liquid from a center portion of said rotary body, and means for causing a counterflow contacting of the light and heavy liquids comprising:

a plurality of V-shaped ring members disposed within said rotary body and being spaced from one another axially of the rotary body so as to define slits between respective adjacent ring members, each of said ring members having a V-shaped cross sectional configuration which opens radially outwardly with respect to said rotary shaft.

4,326,667

AUTOMATIC TEMPERATURE ADJUSTING TYPE AIR CONDITIONER

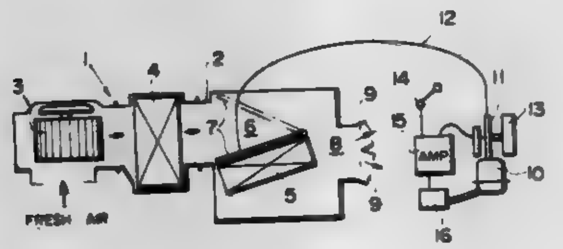
Yukiko Murata, Yokohama, and Yasushi Inoshita, Tokyo, both of Japan, assignors to Nissan Motor Company, Limited, Tokyo, Japan

Filed Dec. 18, 1980, Ser. No. 217,750

Claims priority, application Japan, Dec. 25, 1979, 54-180105[U]

Int. Cl.³ B60H *1/12*

U.S. Cl. 237—12.3 A **5 Claims**



1. An air conditioner of automatic temperature adjusting type for an automotive vehicle having a mechanism for adjusting an angularly moved air mixing door and air flow rate of a fan independently of each other, which comprises:

(a) linearly actuating means;

(b) means for adjusting air flow rate of the fan coupled to said linearly actuating means;

(c) a pinion pivotally mounted on said linearly actuating means so as to be rotatable about an axis substantially orthogonal to the direction in which said linearly actuating means moves;

(d) a fixed rack meshed with said pinion throughout substantially whole range of the movement of said linearly actuating means; and

(e) a movable rack meshed with said pinion and connected to the air mixing door; and

(f) means for substantially disabling the movement of said movable rack near the both end positions of said fixed rack,

whereby said movable rack does not move when said pinion is rotatingly moved over each of end portions of said fixed rack, whereas over an intermediate portion of the movement and said linearly actuating means said movable rack moves through a distance corresponding substantially to the whole adjusting range of the air mixing door.

4,326,668

LOW COST VEHICLE TRACTION DEVICE EMPLOYING PIVOTALLY MOUNTED ANCHORING MEANS

Thorvald G. Granryd, 825 N. Sheridan, Lake Forest, Ill. 60045

Continuation-in-part of Ser. No. 253, Feb. 5, 1979, Pat. No. 4,225,082. This application Apr. 14, 1980, Ser. No. 140,176

Claims priority, application Australia, Jun. 19, 1979, PD9241

Int. Cl.³ B60C *27/00*

U.S. Cl. 238—14 **12 Claims**

1. An assembly for providing a traction surface under the drive wheel of a vehicle comprising

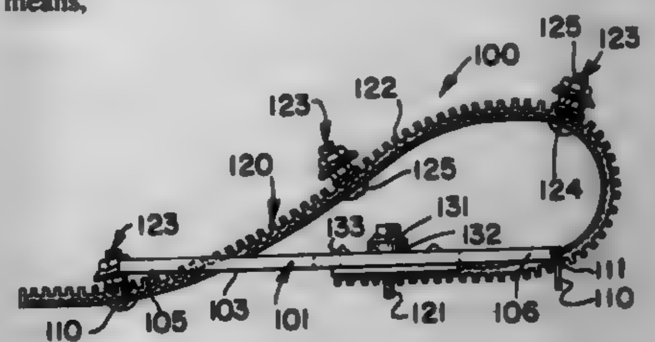
base means adapted to be positioned adjacent to a drive wheel of a vehicle,

said base means including cleat means adapted to engage the surface supporting the drive wheel of the vehicle and anchor said base means,

elongated flexible traction means having a first end affixed to said base means,

said elongated traction means including a first surface having a friction enhancing surface for contacting with the driving wheel and a second surface having a substantially smooth surface for contacting with the surface supporting the drive wheel,

said elongated flexible traction means having a free end portion adapted to be positioned adjacent the drive wheel of the vehicle between the drive wheel and said base means,



said elongated flexible traction means being looped upon itself between the first end affixed to said base means and the drive wheel of the vehicle through at least a portion of said base means during positioning of said free end portion adjacent the drive wheel, and

said elongated flexible traction means forming a traction surface to extricate the vehicle as said free end portion is drawn beneath the drive wheel of the vehicle with said first friction enhancing surface in engagement therewith and said second substantially smooth surface passing over the vehicle supporting surface during rotation of the drive wheel while said first end portion is anchored against movement by said base means.

4,326,669

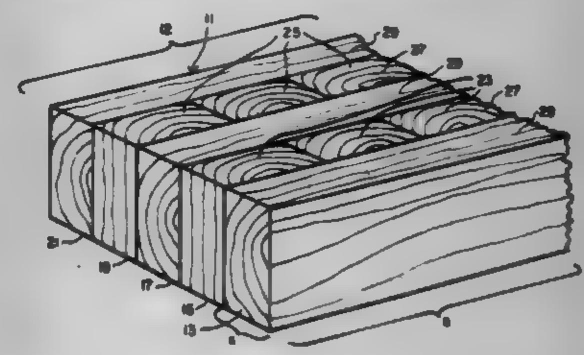
LAMINATED WOODEN RAILROAD CROSSTIE HAVING EXPOSED END-GRAIN FORMING PART OF THE LOAD BEARING SURFACE

Roy H. Moult, Murrysville, and Craig R. McIntyre, Export, both of Pa., assignors to Koppers Company, Inc., Pittsburgh, Pa.

Filed Jun. 9, 1978, Ser. No. 914,180

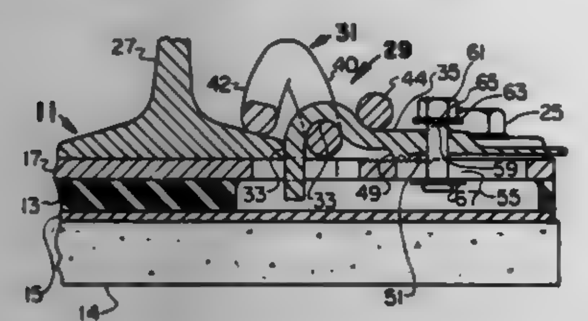
Int. Cl.³ E01B *3/02*

U.S. Cl. 238—36 **7 Claims**



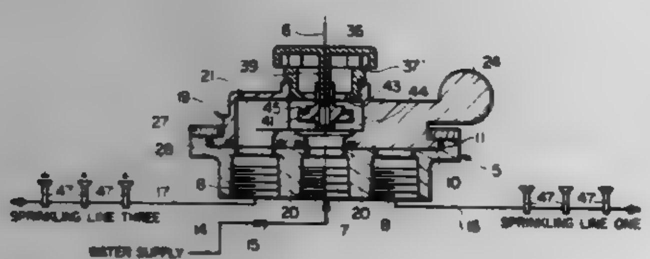
1. A laminated railroad crosstie comprised of at least one lamina including a plurality of wooden stubs oriented such that at least one of said stubs extends the full height of the crosstie, and will receive each imparted load, said load being imparted to said stubs end surface housing said stubs end grain.

4,326,670
ADJUSTABLE SPRING CLIP
James W. Sherrick, Edinboro, and Chris E. Casbohm, Conneautville, both of Pa., assignors to Lord Corporation, Erie, Pa.
Filed Jun. 23, 1980, Ser. No. 162,238
Int. Cl.³ E01B *9/46, 9/30*
U.S. Cl. 238—341 **9 Claims**



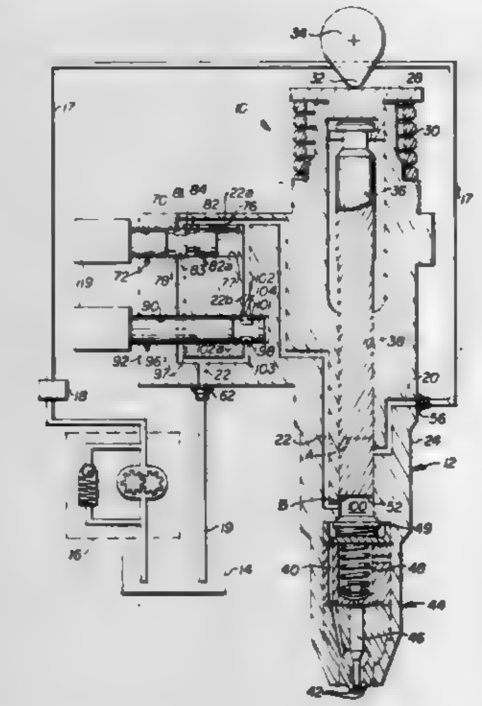
1. In a base assembly for removeably mounting a rail on a support structure, said base assembly including a layer of resilient elastomeric material disposed between and attaching to a base plate and a top plate, said base assembly having anchoring means adjacent each end for attaching said base assembly in a fixed position to said support structure, said rail being positioned on said top plate and being secured thereto by a pair of resilient rail clips disposed on opposite sides of said rail, said rail clips having an anchoring section and first and second bearing sections, said top plate having an elongated cut-out on opposite sides of said rail, the improvement comprising laterally adjustable rail clip fastening means, said fastening means including a pair of sections of rigid material having a bearing surface at one end and a straight portion at the opposite end with a curved portion therebetween, said bearing surface and straight portion being generally perpendicular to one another, said bearing surface being formed with a pair of slots corresponding to the thickness of said top plate, one of said sections of rigid material being inserted within each of said elongated cut-outs in said top plate on opposite sides of said rail such that said slots in said bearing surface engage said top plate, said sections of rigid material being laterally moveable along said elongated cut-outs to position said bearing surface in abutment with said rail whereby said anchoring section of each of said rail clips is inserted within said curved portion of said sections of rigid material on each side of said rail to securely hold said rail clips in a position wherein said first bearing section contacts said rail and prevents movement of said rail relative to said base assembly.

4,326,671
ANTI-SIPHON SELECTOR VALVE
Robert P. Goguen, 350 Laurelwood Rd., Santa Clara, Calif. 95050
Filed Feb. 5, 1980, Ser. No. 118,733
Int. Cl.³ F16K *24/02*
U.S. Cl. 239—66 **8 Claims**



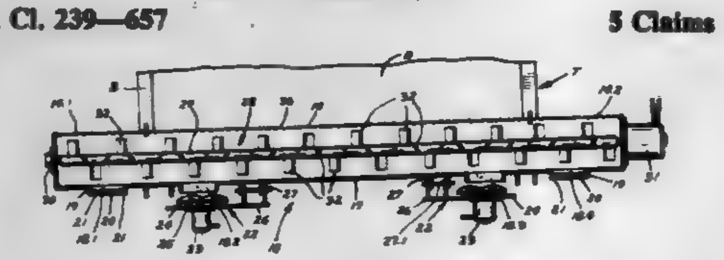
1. An anti-siphon, selector valve for directing incoming fluid through one of a plurality of output ports, comprising:
(a) a valve body having therein an input port and a plurality of output ports disposed about the input port;
(b) a conduit member rotatably mounted on the valve body and selectively connectable between the input port and one of the output ports so that incoming fluid entering the input port is directed out one of the output ports; and
(c) anti-siphon valve means mounted in the conduit member for venting the output ports to the atmosphere through the conduit when the pressure of fluid in the valve is substantially atmospheric.

4,326,672
ROTARY FUEL INJECTION APPARATUS
Alexander Goloff, East Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.
Continuation of Ser. No. 88,723, which matured from PCT/US79/00587, filed Aug. 8, 1979, 102(e) date Aug. 8, 1979, § 371 date Aug. 8, 1979, abandoned. This application Feb. 13, 1981, Ser. No. 234,085
Int. Cl.³ F02M *47/02, 55/02, 61/04, 63/04*
U.S. Cl. 239—91 **24 Claims**



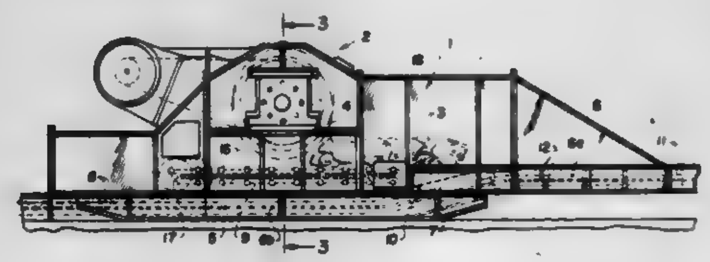
1. A fuel injection apparatus (10) comprising:
a housing (24), said housing (24) having a plunger bore (38);
a plunger (36) reciprocally mounted in said plunger bore (38) to define a pumping cavity (100) therein;
means (20,22) for conducting fuel to and from said plunger bore (38) and to the pumping cavity (100) defined therein;
means (72,92) for starting and stopping injection of said fuel, said means being first and second valves (72,92), said first and second valves (72,92) being fluidly interconnected and said first and second valves (72,92) being fluidly connected to said plunger bore (38); and
means (119) for continuously rotating said first and second valves (72,92) during sequential and repeated starting and stopping of said injection of said fuel.

4,326,673
AGGREGATE DISTRIBUTOR
Anthony A. Thene, 517 Wilson Ave. SE., St. Cloud, Minn. 56301
Filed Jul. 9, 1979, Ser. No. 56,048
Int. Cl.³ E01C *19/20*
U.S. Cl. 239—657 **5 Claims**



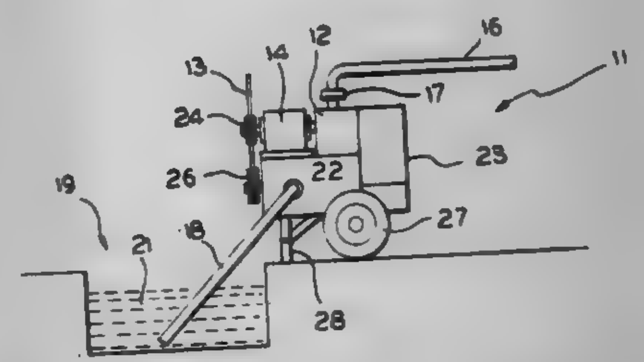
1. A truck dump box-mounted distributor supplying loose aggregate to spreading spinners, comprising
an elongate open-topped housing for attachment across the end of such a dump box to extend transversely of the direction of travel of the truck for receiving such aggregate in both chunks and loose particles, the housing having elongate bottom and upright sidewalls in stationary relation to each other to receive and confine such aggregate, the bottom wall with a multiplicity of discharge ports therein through which the aggregate may be dropped onto such a spreading spinner, the housing having gate means at said discharge ports for selectively opening and closing the ports and thereby changing the location at which spreading of the aggregate occurs,
an elongate aggregate conveying, mixing and agitating rotor in the housing and extending along the discharge ports and substantially to the ends of the housing, the rotor including a shaft rotatably mounted on the housing, and means revolving the shaft, and a multiplicity of aggregate propelling and chunk breaking vanes protruding outwardly from the shaft and being oriented obliquely of the shaft axis to propel aggregate along the housing and toward open discharge ports, and the vanes having means variably securing the vanes to the shaft at any of a multiplicity of pitches and at either direction of slope facilitating changing the speed and direction of aggregate movement along portions of the housing as different combinations of discharge ports are opened and also changing the thoroughness of breaking aggregate chunks into loose particles,
and aggregate spreading means demountably suspended on the housing beneath one of the discharge ports and movable to a location beneath another of the ports.

4,326,674
DEVICE FOR THE HOMOGENIZATION OF MATERIAL TO BE CRUSHED
Ernst Braun, and Gert Braun, both of Essen-Heisingen, Fed. Rep. of Germany, assignors to Halbach & Braun, Fed. Rep. of Germany
Filed Jan. 31, 1980, Ser. No. 117,120
Claims priority, application Fed. Rep. of Germany, Feb. 8, 1979, 2904694
Int. Cl.³ B02C *13/286*
U.S. Cl. 241—35 **12 Claims**



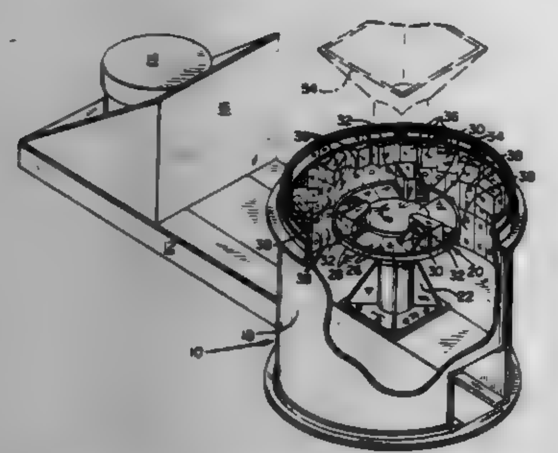
1. In a device for sizing breakable material, the materials being composed of a coarse material and a fine material, particularly coal, to a substantially uniform size, of the type having a crushing plate, a rollcrusher for roll crushing the coarse material on the crusher plate, the crusher plate being mounted below the roll crusher at a level leaving a predetermined clearance for the material to be crushed and a conveyor for feeding the material to be crushed through the crushing plate, in combination therewith, the improvement wherein the conveyor is mounted to initially run at the level of the crusher plate, is then deflected downwardly in a deflection area short of the crusher plate to run below the level of the crusher plate, and further comprising grading means in the deflection area between the conveyor and the crusher plate for separating the coarse material to be crushed from the fine material, and conveying means mounted above the crusher plate for receiving the separated coarse material from the grading means and conveying the separated coarse material beneath the roll crusher from an upstream side to a downstream side for fragmentation, thereby causing the coarse material to be fragmented to the size of the fine material, said conveying means including means for discharging the crushed coarse material downstream of the roll crusher onto the conveyor thereby again adding the crushed coarse material to the fine material on the conveyor.

4,326,675
HONEY PIT FERTILIZATION SYSTEM
Carl E. Engle, Fremont, and Donald Moldenhauer, Clintonville, both of Wis., assignors to Hydro AG-Tech, Inc., St. Paul, Minn., a part interest
Continuation-in-part of Ser. No. 000,003, Jan. 2, 1979, Pat. No. 4,284,246. This application Jan. 7, 1980, Ser. No. 110,137
Int. Cl.³ B02C *18/40*
U.S. Cl. 241—236 **4 Claims**



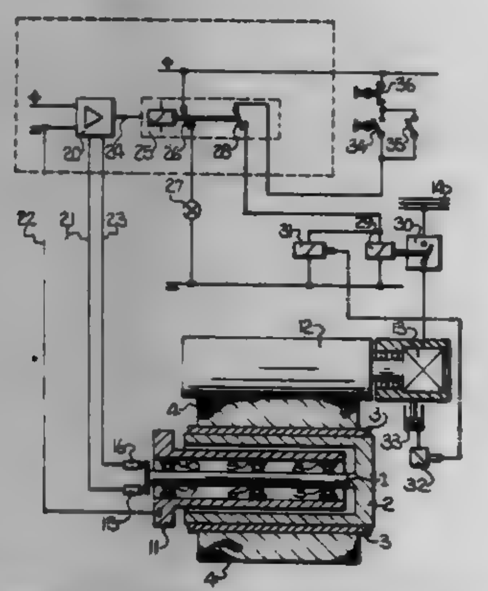
1. In a system for pumping a mixture including solid animal wastes and resilient herbaceous material from a honey pit, said mixture to be used for fertilizer, said mixture including a liquid portion, said system for the type having a pump with an inlet and an outlet, a conduit insertable into said pit to direct said mixture towards said pump inlet, the improvement comprising:
a pulverizer assembly,
said assembly having an inlet and an outlet,
said assembly positioned outside said pit; in the path of flow of said mixture, with said conduit communicating with said assembly inlet and said assembly outlet communicating with said pump inlet,
said assembly including a pair of parallel, spaced-apart shafts,
each said shaft having a plurality of circular comminuting elements mounted coencentrically thereon,
said elements parallel to and spaced apart from each other and from said housing to enable the liquid portion of said contents to flow between said elements to said pump inlet,
said shafts being dimensioned and positioned to interdigitate said elements on one said shaft with said elements of the remaining said shaft;
bar means positioned within said housing proximate said inlet and said outlet to impact said solids as said solids are moved by said elements,
said bar means positioned parallel to said shafts and spaced apart from the outer periphery of said elements by a distance less than that of the size of solids pumpable by said pump,
said assembly inlet and said assembly outlet positioned to direct the flow of said mixture transversely to said shafts and said bar means,
said elements contacting said animal waste and herbaceous solids to strike said bar means to reduce said solids to a size selected to allow for passage thereof through said pump; and
means communicating with said pump outlet to distribute said contents onto fields for fertilization purposes.

4,326,676
RECIPROCATING INFEED TUBE FOR CENTRIFUGAL IMPACT ROCK CRUSHER
Neil M. Rose, Vancouver, Wash., assignor to Canica Crushers, Ltd., Vancouver, Wash.
Filed May 12, 1980, Ser. No. 148,824
Int. Cl.³ B02C *19/00*
U.S. Cl. 241—275 3 Claims



1. In a centrifugal impact rock crusher of the type having an impeller table mounted for rotating about a generally vertical axis of rotation, a plurality of impellers located at angularly spaced intervals on the table and having faces extending above the table generally perpendicular thereto, a material distributing feed cone mounted centrally on the table, a feed chute located above the feed cone for distributing material to be crushed centrally onto the feed cone, and motor means for rotating the table and feed cone at a predetermined speed so that material deposited onto the feed cone is thrown radially outwardly from the feed cone intermediate the vertical extent of the impeller faces, the improvement comprising reciprocating means associated with said feed chute for cyclically raising and lowering the mouth thereof relative to said material feed cone.

4,326,677
MONITORING CIRCUIT FOR HIGH SPEED SPINDLE ASSEMBLY
Heinz Schippers, Remscheid; Bernd Schimmels, Radevormwald, and Dieter Saim, Dhünn, all of Fed. Rep. of Germany, assignors to Barmag Barmer Maschinenfabrik, Remscheid, Fed. Rep. of Germany
Filed Aug. 29, 1980, Ser. No. 182,622
Claims priority, application Fed. Rep. of Germany, Aug. 31, 1979, 2935218; Oct. 6, 1979, 2940612
Int. Cl.³ B65H *54/42, 63/00*
U.S. Cl. 242—18 DD 8 Claims



1. In a high speed spindle assembly adapted for operation at a supracritical speed and having a spindle adapted to support a yarn package, spindle support means, bearing means rotatably mounting the spindle on the spindle support means and including relatively low modulus elastic, electrically non-conductive insert means interposed between the spindle and spindle support means, and means for rotatably driving the spindle, the improvement therewith of electric circuit monitoring means operatively connected to each of said spindle and spindle support means for detecting contact between said spindle and spindle support means in the event of undue wear or failure of said insert means interposed therebetween and for generating an electric signal upon such contact being detected.

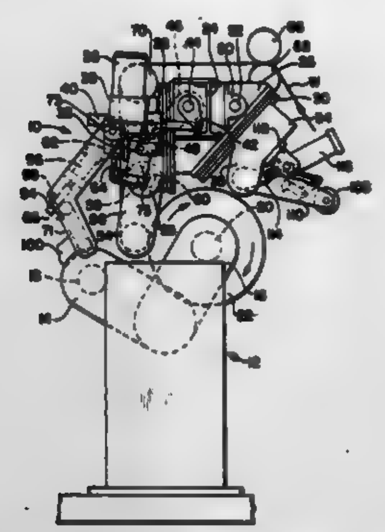
4,326,678
TOILET TISSUE HOLDER
Earl L. Hamm, 2570 Crestdale Cir., Atlanta, Ga. 30316
Filed Mar. 19, 1980, Ser. No. 131,864
Int. Cl.³ B65H *19/00*
U.S. Cl. 242—55.2 1 Claim

1. A roll paper holder comprising: a first L-shaped mounting bracket, one leg of said first bracket defining a screw opening to permit attachment to a vertical supporting surface, a second L-shaped mounting bracket horizontally spaced from said first bracket, one leg of said second bracket defining a screw opening to permit attachment to said supporting surface, a rigid arm fixedly attached to the other leg of said first bracket and extending in a horizontal direction towards, but spaced from, said second bracket, said rigid arm defining an aperture at the free end thereof, a flexible member attached to the other leg of said second bracket, a cylindrical member carried at the free end of said flexible member and co-axial therewith, and a hook portion at the opposite end of said cylindrical member for locking engagement with said aperture, said hook portion being disengaged from said aperture by movement of said cylindrical member and bending of said flexible member to place a roll of paper on said cylindrical member after which said cylindrical member is moved to lock said hook portion in said aperture, said hook and aperture being spaced from said roll of paper on said cylindrical member to permit access thereto.

4,326,679
METHOD AND APPARATUS FOR ROLL CHANGING ON A WINDER DEVICE
Richard W. Phelps, and Richard S. Tetro, both of Fulton, N.Y., assignors to The Black Clawson Company, Fulton, N.Y.
Filed Jul. 2, 1980, Ser. No. 165,301
Int. Cl.³ B65H *19/20*
U.S. Cl. 242—56 A 11 Claims

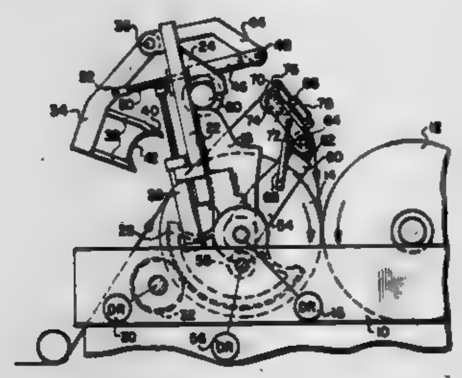
1. A roll changer for use on a winding machine, comprising:
an articulated cutting means movable to a web cutting position adjacent but out of engagement with one side of a web being wound on said machine and wherein it remains stationary during severing of the web;
an articulated web deflector means disposed on the opposite side of said web from said cutting means, for moving said web into engagement with said cutting means when the latter is in said web cutting position to sever said web;

means for placing a new rotating core adjacent said web when it is to be severed; and



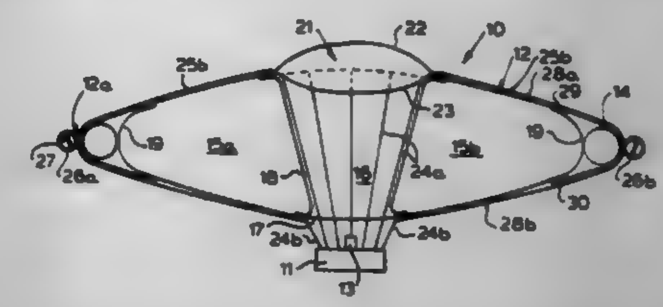
guide means adjacent said cutting means for directing the leading end of said severed web towards said new core so that it will be wound thereon.

4,326,680
WEB CUTTER FOR A SURFACE WINDER
Richard S. Tetro, and Paul E. Harmon, both of Fulton, N.Y., assignors to The Black Clawson Company, Fulton, N.Y.
Filed Jul. 2, 1980, Ser. No. 165,303
Int. Cl.³ B65H *19/20*
U.S. Cl. 242—56 A 6 Claims



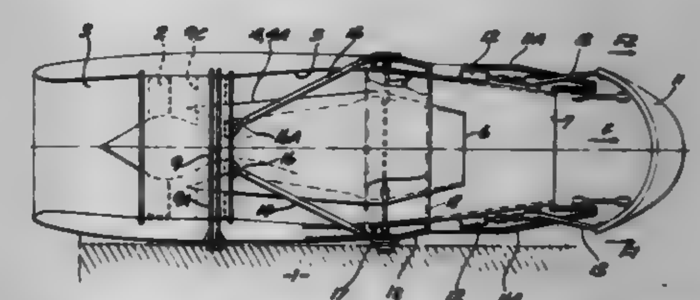
1. In a continuous winding machine of the surface winder type including a frame, a driven drum supported in said frame for engaging the surface of a roll of web material being wound, main support means on said frame for supporting said roll in driven position against said drum, and primary support means mounted on said frame for receiving and supporting a new core and moving said core into starting position in driven engagement against the surface of said drum, the improvement comprising:
an articulated cutting means mounted on said primary support means for movement therewith and movable to a web cutting position adjacent one side of but out of engagement with the web being wound on said roll and wherein it remains stationary during severing of the web;
an articulated web deflector means mounted on said frame for rotation about the axis of said drum and disposed on an opposite side of said web from said cutting means, for moving said web into engagment with said cutting means when in said web cutting position to sever said web; and
guide means adjacent said cutting means for directing said severed web towards said new core so that it will be wound thereon.

4,326,681
NON-RIGID AIRSHIP
Fredrick Eshoo, 66 Cleary Ct., Apt. 1304, San Francisco, Calif. 94109
Filed Sep. 20, 1979, Ser. No. 77,188
Int. Cl.³ B64B *1/58*
U.S. Cl. 244—30 8 Claims



1. A non-rigid lighter-than-air airship employing differential lift for stabilization, comprising:
a saucer-shaped envelope having a central chamber and a plurality of separate outer chambers symmetrically arranged around the central chamber;
means supported below the central chamber of the envelope for generating heated air;
a lighter-than-air medium other than heated air in the outer chambers and the central chamber having an opening in a bottom thereof dimensioned to permit heated air to enter from the means for generating heated air, the medium in the outer chambers providing a lifting force arranged symmetrically about the central chamber which is greater than that provided by the central chamber when filled with heated air;
the other chambers being separate from one another so as to prevent shifting of the lighter-than-air medium when the saucer-shaped envelope is tilted relative to level flight; and
the outer chambers being designed to provide the symmetrical lifting force so as to maintain the airship in a horizontal attitude as an equilibrium state to which the airship returns when deflected.

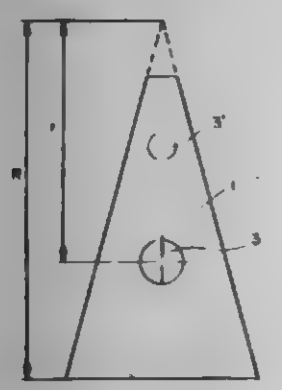
4,326,682
MOUNTING FOR GAS TURBINE POWERPLANT
Douglas J. Nightingale, Bellview, Wash., assignor to Rolls-Royce Limited, London, England
Filed Feb. 26, 1980, Ser. No. 124,735
Claims priority, application United Kingdom, Mar. 10, 1979, 08516/79
Int. Cl.³ F02C *7/20;* B64D *27/20*
U.S. Cl. 244—54 7 Claims



7. A mounting for a gas turbine powerplant which comprises an inner annular casing containing a gas turbine engine, an outer annular casing surrounding the inner casing, a compressor connected to be driven by the engine and adapted to drive air through an annular duct defined between the casings, and a thrust reverser means at the outer casing for reversing the flow therethrough; the mounting comprising front and rear structural means arranged respectively at a front and rear location of the powerplant for supporting the powerplant laterally on a

support situated at one side of the powerplant and radially outside the outer casing, tie means at said one side of the powerplant and connected obliquely to the axis of the powerplant between the inner casing at said front location and said support at said rear location, second tie means at a side of the powerplant opposite to said one side and connected obliquely to the axis of the powerplant between the inner casing at said front location and the outer casing at said rear location such that the axes of said first and second tie means at said front location intersect the axis of said gas turbine in substantially the plane of said front structural means, and means supporting said reverser means at the outer casing rearwardly of said rear location.

4,326,683
PARACHUTE WITH LOW OPENING SHOCK AND HIGH STABILITY
Jarmo I. Uotila, ISO Roobertinkatu 52 A6, Helsinki 12, Finland (00120)
Continuation-in-part of Ser. No. 898,802, Apr. 28, 1978, abandoned. This application Nov. 9, 1979, Ser. No. 92,650
Claims priority, application Finland, Apr. 22, 1977, 771282
Int. Cl.³ B64D *17/02, 17/18*
U.S. Cl. 244—145 **9 Claims**



1. A parachute which can withstand high pressure loading comprising, a non-porous canopy having an outer peripheral skirt and a substantially centrally located vent opening, said canopy including a plurality of circumferentially spaced holes each positioned at a selected radial distance from said vent opening, said plurality of holes all disposed in a zone of said canopy which is confined between 40 and 80% of the radial distance from the center of said vent opening to said skirt, the total area of said holes being from 10 to 25% of the total area of said canopy, said canopy comprising a plurality of circumferentially disposed substantially triangular gores connected to each other at seams extending radially from said vent opening to said skirt, each of said gores having a width in said vent opening which is substantially larger than $D_v \sin(180°/N)$, where D_v is the diameter of said vent opening and N is the number of gores comprising said canopy, each seam between adjacent gores being substantially a straight line.

4,326,684
SPACECRAFT WITH INTERNAL PROPULSION STAGES
Harold A. Rosen, Santa Monica, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.
Continuation of Ser. No. 910,415, May 30, 1978, abandoned. This application Mar. 31, 1980, Ser. No. 135,426
Int. Cl.³ B64G *1/14, 1/40*
U.S. Cl. 244—158 R **1 Claim**

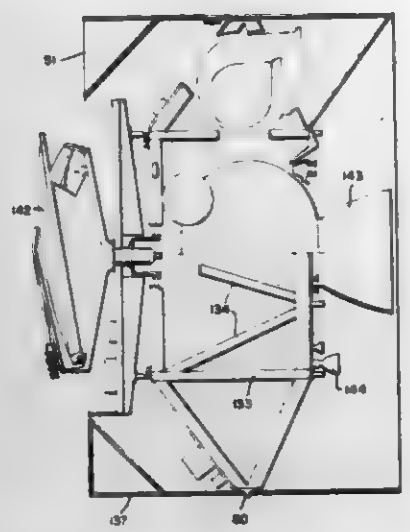
1. A spacecraft adapted for launch from the payload bay of the space shuttle comprising:

a generally cylindrical spacecraft having a diameter only slightly less than the diameter of said payload bay, and having a length as short as possible, said spacecraft having a ratio of roll-to-pitch inertia greater than one;

a solid perigee propulsion motor supported in the center of said spacecraft and completely contained therein with its thrust axis along the central axis of said spacecraft and with its center of gravity located substantially coincident with the center of gravity of said spacecraft to minimize the pitch moment of inertia;

a plurality of liquid propellant tanks disposed within said spacecraft and arranged symmetrically around said solid perigee propulsion motor;

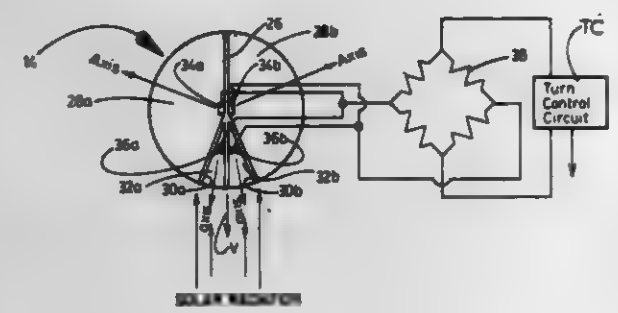
a plurality of liquid apogee motors disposed within said



spacecraft and connected to said propellant tanks, said liquid apogee motors being arranged symmetrically around said solid perigee propulsion motor, and being adapted for simultaneous operation to minimize coning of said spacecraft during thrusting; and

means for separating and jettisoning said solid perigee propulsion motor after said perigee motor has been used.

4,326,685
SUN-SENSING GUIDANCE SYSTEM FOR HIGH-ALTITUDE AIRCRAFT
Robert D. Reed, Lancaster, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.
Filed Mar. 12, 1980, Ser. No. 129,783
Int. Cl.³ G05D *1/00;* B64C *13/20*
U.S. Cl. 244—175 **4 Claims**



1. In a sun-sensing guidance system for high-altitude, unmanned aircraft, the improvement comprising:

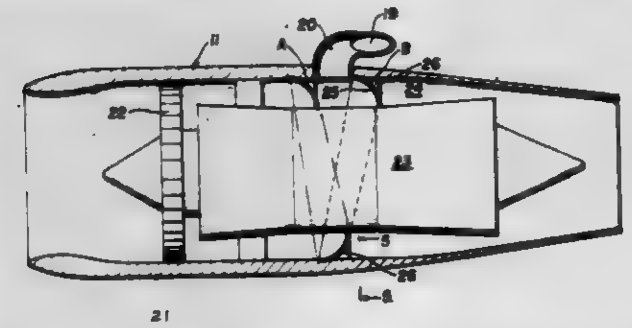
A. a disk-shaped body adapted to be mounted aboard an aircraft in exposed relation to solar radiation and having defined therein a plurality of mutually isolated chambers, each chamber of said plurality being characterized by an opening and having a photosensor disposed therein and arranged in facing relation with respect to the opening for receiving indicent solar radiation, each photosensor being adapted to provide a photovoltage output in response to incident solar radiation;

B. circuit means interconnecting the plurality of photosensors in paired relationship including a wheatstone bridge circuit connected between the photosensors of each pair for providing a voltage output indicative of heading error in response to detected imbalance in the photovoltage output derived from a pair of photosensors;

C. mounting means supporting said disk for rotation to a null position wherein the photovoltage output for the photosensors is balanced at said bridge circuit when the aircraft is on course; and

D. means for rotating said disk for selecting a course including drive means for imparting rotation to the disk, a ground-based radio signal transmitter circuit and a radio signal receiver circuit mounted on said aircraft and electrically connected with said drive means.

4,326,686
FAN JET ENGINE BYPASS AIR DELIVERY SYSTEM FOR BLOWN WING AIRCRAFT LIFT AUGMENTATION DEVICE
Thomas M. Runge, 2501 Galewood Pl., Austin, Tex. 78703
Filed Feb. 15, 1980, Ser. No. 118,999
Int. Cl.³ B64C *21/04*
U.S. Cl. 244—207 **3 Claims**



1. In a fixed wing aircraft, at least one fan jet engine having a housing and a fan bypass air passage within the housing in surrounding relationship to an engine compressor and turbine, a bypass air bleed-off conduit coupled in said housing and communicating with said passage and adapted to conduct fan bypass air to a wing lift augmentation system of the aircraft, and a fan bypass air shunting device on the engine housing and being movable to an active position within said passage near said bleed-off conduit and to an inactive position substantially outside of said passage, and an actuator means for said shunting device, said shunting device comprising a normally flat metallic strip coupled to said actuator means to be moved thereby, and coacting spaced relatively stationary guide devices for said strip within said passage and attached to said housing, said guide devices adapted to shape said strip into a helix of approximately one convolution within said passage and to impart to the strip an arcuate configuration at all points on the circumference of the strip, whereby the strip will act as an air scoop in said passage to shunt fan bypass air into said bleed-off conduit.

4,326,687
PLURAL LEG STAND
C. Wayne Clyburn, Cincinnati, Ohio, assignor to James David Mfg. Corp., Creve Coeur, Mo.
Filed Jul. 30, 1980, Ser. No. 173,464
Int. Cl.³ F16M *11/38*
U.S. Cl. 248—168 **8 Claims**

1. A stand comprising

at least three legs, said legs being movable between a collapsed storage position at which said legs are disposed generally parallel one to another and an erect use position at which said legs are located in a generally polyhedron shaped configuration, and

a one-piece connector head formed from an elastomer for connecting said legs together one to the other at the top end thereof, said connector head comprising

a center section of a generally regular geometry, said center section having a number of sides equal to the number of said legs,

an ear section extending outwardly from each side of said center section, each ear section being formed integral with said center section, and said center section and said ear sections defining a generally planar configuration when said legs are in said storage position,

a cup depending from each of said ear sections, said cup being formed integral with said ear, and said cup being adapted to receive one of said legs in assembly therewith,

hinge line structure defining a number of grooves on a face of said connector head between said center section and said ear sections, said grooves being equal in number to the number of said legs, said grooves defining a regular geometry that generally coincides with the

regular geometry of said center section, and said structure cooperating with said ear sections and said center section to permit said legs to move between storage and use position, and

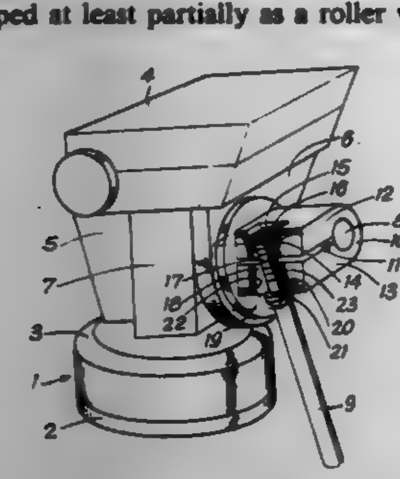
a pad formed integral with said center section, said pad extending upwardly above said center section, said pad having a geometry identical to and overlying the regular geometry defined by said center section, said pad's sides thereby cooperating with said grooves to aid in defining said hinge line structure, and said pad having a top face that is positioned above a phantom plane that incorporates the uppermost points on said ear sections when said stand is in said use position.

4,326,688
PLATFORM FOR PHOTOGRAPHIC OR CINEMATOGRAPHIC STAND
Patrick Posso, Lausanne, Switzerland, assignor to Gefitec S.A., Lausanne, Switzerland
Filed Oct. 15, 1979, Ser. No. 85,124
Claims priority, application Switzerland, Oct. 20, 1978, 10867/78
Int. Cl.³ F16M *11/04*
U.S. Cl. 248—178 **4 Claims**

1. In an improved platform for a photographic or cinematographic stand, comprising a turret mounted to rotate about a vertical axis with respect to foldable legs and supporting, for the fixation of a shot taking apparatus, a plate fast with a shaft mounted to rotate about a horizontal axis with respect to this turret, the shaft being provided with an outwardly inclined control hand lever for facilitating the bidirectional swivelling of the plate, foldable against the folded legs and connected to said shaft by means of a swivelling device with built-in locking system for at least two positions of this lever, which device comprises a split sleeve freely fitted over said control shaft and elastically deformable by bringing its two arms closer to each

other or separating them by means of the threaded end of the lever, wherein

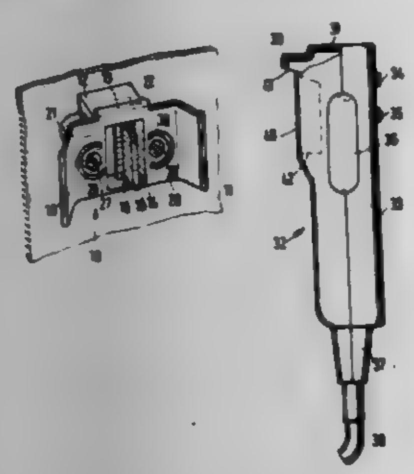
the first arm of the split sleeve defines a cylindrical bearing surface of which the geometrical axis is substantially at right angles to that of the shaft and in which is disposed a nut shaped at least partially as a roller which presents a



tapped hole perpendicular to its pivot axis for screwing the threaded end of the lever,

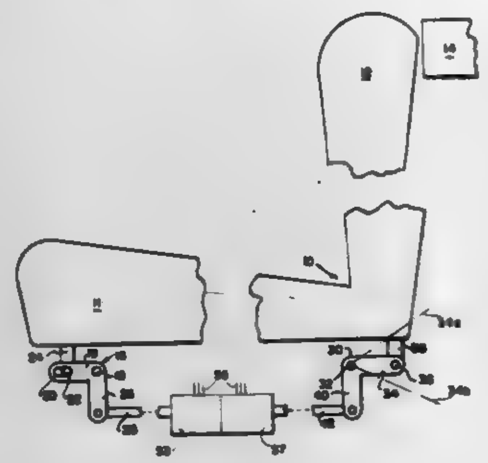
and said lever passes through the second arm of the split sleeve and is provided with a shoulder abutting on an outer shaped surface of said second arm, the lever thus being able to pivot in a plane substantially parallel to the shaft.

4,326,689
MOUNT FOR A HOUSING WHICH IS RELEASABLY FASTENED TO A WALL
Harry Edel, and Wolfgang Lange, both of Berlin, Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany
Filed Jan. 23, 1980, Ser. No. 114,672
Claims priority, application Fed. Rep. of Germany, Feb. 24, 1979, 2907322
Int. Cl.³ A47B *91/00*
U.S. Cl. 248—359 **5 Claims**



1. In a mount assembly for releasably fastening a housing to a wall, including a unitary wall mount member arranged to be fixed to the wall and a housing mount member fastened to a wall of the housing, the improvement wherein: said wall mount member comprises a base fixable to the wall and presenting a tongue, said base including a top and a front wall, said base presenting a first elongate detent element so arranged that when said base is fixed to the wall, said tongue is located along the top of said base and presents a horizontally oriented surface and said detent element presents horizontally spaced, vertically oriented surfaces and projects away from said front wall; and said housing mount member comprises means defining a slot in the housing wall and a second elongate detent element so arranged and constructed that when said housing mount member is fastened to said wall mount member said slot engages said horizontally oriented surface of said tongue and said second detent element engages said vertically oriented surfaces of said first detent element and comes into positive locking engagement with said first detent element.

4,326,690
SEAT ADJUSTING MECHANISM
Joseph Pickles, Birmingham, and Chester S. Fudala, Troy, both of Mich., assignors to Ferro Manufacturing Corporation, Southfield, Mich.
Filed May 3, 1979, Ser. No. 35,495
Int. Cl.³ B60N *1/02*
U.S. Cl. 248—396 **7 Claims**



1. A vehicle seat having means for supporting its front and rear edges for independent vertical movement, said means comprising independent front and rear edge lift mechanisms comprising front and rear lift devices for selectively raising and lowering said front and rear seat edges, control means comprising a first movable control member operable to actuate said front edge lift mechanism only in a direction to lower said front edge, a second movable control member operable to actuate said rear edge lift mechanism only in direction to raise said rear edge, and a third control member movable from an intermediate position in one direction to actuate both of said lift mechanisms simultaneously to raise both the front and rear edges of said seat and movable in the opposite direction to actuate both of said lift mechanisms simultaneously to lower both the front and rear edges of said seat in which said lift mechanisms comprise motor means connected to said lift devices and adapted to stall when the corresponding seat edge reaches a limiting raised or lowered position;

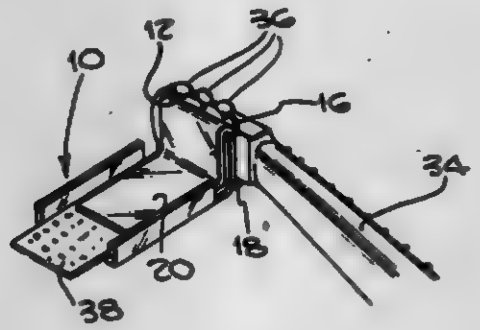
displacement of said third control member in either direction from its intermediate position while said seat is in an untilted intermediate position being effective to energize both of said motor means to activate both of said lift devices in the same direction to move said seat vertically without tilting until said seat reaches its limiting untilted raised or lowered position;

displacement of said third control member in either direction from its intermediate position while said seat is in a forwardly tilted intermediate position being effective first to energize both of said motor means to activate both of said lift devices in the same direction to move said seat vertically without changing the angle of tilt until one of said seat edges reaches its upper or lower limiting position and stalls the motor means connected to its lift device, at which time movement of said control member back to its intermediate position deenergizes both of said motor means to leave said seat in forwardly tilted, raised or lowered limiting position;

retention of said third control member in its last mentioned displaced position after stalling of said last mentioned motor means being effective to continue energization of both motor means, the motor means actuating the lift device connected to the seat edge which has reached its limiting position remaining stalled while the other motor means continues to actuate the other lift device until both seat edges are in the same raised or lowered position and said seat assumes a limiting raised or lowered untilted position;

and operation of the appropriate one of said first or second control members while said seat is in a limiting raised or lowered untilted position, or in any position of less than maximum forward tilt being effective to energize the corresponding lift device to lower the front edge or raise the rear edge of the seat, to tilt the seat forwardly.

4,326,691
MUSIC HOLDER
Bert A. Lloyd, 1756 Tamarind Ave., Los Angeles, Calif. 90028
Filed Nov. 9, 1979, Ser. No. 92,699
Int. Cl.³ G10G *5/00*
U.S. Cl. 248—443 **2 Claims**



1. A generally transparent generally L-shaped music holder for stringed instruments which have machine heads comprising:

a generally flat foot member extending in a first direction and being adapted to being releasably mounted to a stringed musical instrument in a location which is generally concealed from an audience while the instrument is being played;

elastic means for releasably mounting said foot member against the machine heads of a stringed instrument;

a leg member extending in a second direction approximately normal to said first direction, said leg member including a back plate and a face plate spaced apart in generally parallel relationship to receive a generally flat sheet of music therebetween, said back plate extending further in said second direction than said face plate and having a notch therein extending toward said foot member, whereby grasping a sheet of music received between said plate is facilitated, said face plate having an arcuate outer transverse edge remote from said foot member permitting easy insertion of said sheet of music between said plates, said leg member including flanges positioned to generally block the removal of said sheet of music in a transverse direction.

4,326,692
MIRROR BRACKET
Weston R. Loomer, Walton, Ky., assignor to Litton Systems, Inc., Florence, Ky.
Division of Ser. No. 890,219, Mar. 27, 1978, Pat. No. 4,218,616. This application Sep. 7, 1979, Ser. No. 73,194
Int. Cl.³ A47F *7/14*
U.S. Cl. 248—488 **4 Claims**

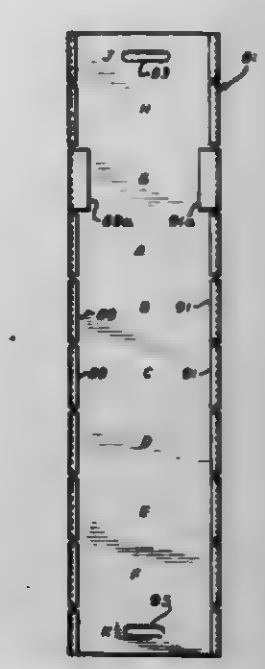
1. A reflector retaining bracket comprising:

a longitudinally extending rear wall;

first and second side walls, said side walls being spaced from one another and extending perpendicular from a surface of said rear wall; and

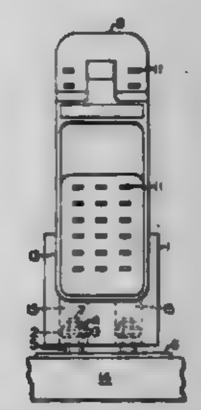
first and second pluralities of fingers, each of said first and second pluralities of fingers extending perpendicularly from a corresponding one of said first and second side walls and toward one another,

said rear and side walls and said pluralities of fingers forming a channel adapted to maintain a plurality of reflectors therein,



each of said fingers being adapted to be folded inwardly toward said rear wall for preventing the longitudinal movement, toward said folded finger, of a reflector positioned in that portion of said channel aligned with the fingers next adjacent to said folded finger.

4,326,693
SHELF MOUNT FOR VITAL PLUG-IN RELAY
Peter M. Noble, Valencia, Pa., assignor to American Standard Inc., Swissvale, Pa.
Filed Dec. 17, 1979, Ser. No. 103,899
Int. Cl.³ F16M *5/00*
U.S. Cl. 248—635 **4 Claims**



1. Apparatus for mounting a plug-in type relay on a shelf, comprising,

(a) a molded elastomeric holder formed to hold a plug-in relay in the required operating position,

(b) a plurality of mounting diaphragms molded into said holder at preselected locations,

(c) mounting means for said holder positioned on said shelf at matching locations for inserting through said diaphragms,

(d) a disk positioned above and below each diaphragm,

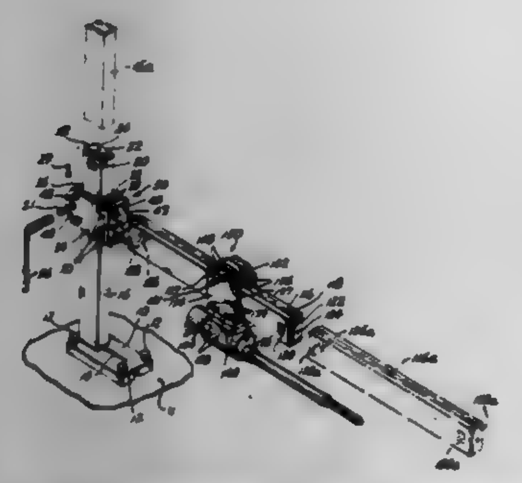
(e) a spacer positioned on said mounting means below each lower disk and having a length selected to space said holder a preselected distance above said shelf, and

(f) locking means securable to said mounting means for locking said holder and diaphragms against each associated pair of disks and spacer whereby vibration of a relay

mounted in said holder due to shelf movements is substantially dampened by said diaphragms and disks.

4,326,694
TOOL STAND

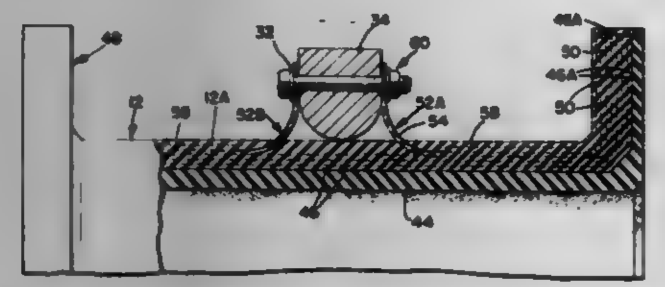
Allen Destree, 5218 92nd SW., Seattle, Wash. 98204
Division of Ser. No. 952,916, Oct. 19, 1978, Pat. No. 4,234,155. This application May 5, 1980, Ser. No. 133,613
The portion of the term of this patent subsequent to Nov. 18, 1997, has been disclaimed.
Int. Cl.³ F16M *1/00*
U.S. Cl. 248—676 9 Claims



1. Column construction for tool stands, comprising:
a plurality of rectangular conduit segments, each of said segments having a protruding block means in one end thereof axially disposed within said conduit segment and a recessed block means at the other end thereof axially disposed within said conduit segment, said protruding block means receivable within an end adjacent conduit segment, said protruding block means and said recessed block means being spaced apart and having axial passageways therein to receive a fastener said conduit segments including access apertures for insertion of a fastener means within the said axial passageways whereby perimeter contact of said conduit segments results without face-to-face contact of said protruding block means upon said recessed block means.

4,326,695
POSITIVE OPENING DEVICE FOR PINCH VALVE SLEEVES

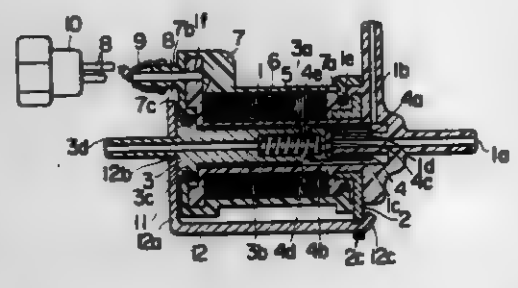
Edgar B. Lincoln, 626-B Country Club Pkwy., Mount Laurel, N.J. 08054
Filed Jan. 15, 1981, Ser. No. 225,413
Int. Cl.³ F16L *55/14*
U.S. Cl. 251—7 7 Claims



1. A positive opening device for a pinch valve sleeve, said sleeve including an elastomer inner layer, multiple plies of fabric reinforcement extending through said sleeve, end flanged portions on said sleeve, at least some of said fabric reinforcement plies extending through said sleeve and extending up into said end flanges and being added externally of said initial reinforcement plies, sleeve opening flaps constituting integral parts of said at least some fabric reinforcement plies and formed as extensions of the fabric thereof, additional plies of reinforcement fabric overlying said flap forming portions and securing said flaps in the fabric structure of the sleeve, said flaps including two individual flaps positioned proximate to and extending toward the center of said sleeve, and being integral parts of the fabric reinforcement structure of the sleeve.

4,326,696
SOLENOID VALVE

Eizi Ishikawa, Nagoya; Ryouichi Matsuura, Anjo, and Kiyotosi Yano, Chiryu, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan
Filed Jun. 8, 1979, Ser. No. 46,756
Claims priority, application Japan, Jun. 14, 1978, 53-81274[U]
Int. Cl.³ F16K *31/06*; H01F *7/08*
U.S. Cl. 251—129 14 Claims

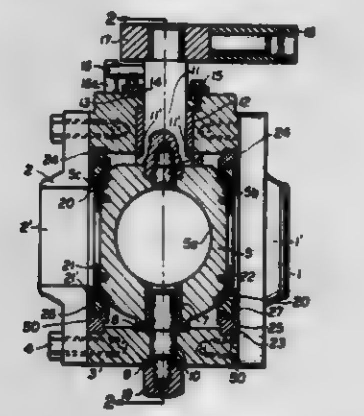


1. A solenoid valve for opening and closing a fluid passage formed therein comprising:
a nonmagnetic bobbin having a body with a center hole and having fluid passage means,
a coil wound around said bobbin,
a stator core located in said center hole of said bobbin,
a movable core movably positioned in said center hole of said bobbin for opening and closing said fluid passage means,
spring means positioned between said stator core and said movable core for urging said movable core in a direction to separate said movable core from said stator core,
magnetic path means having the greater part thereof insert-molded in the body of said bobbin and surrounding the outer surface of said movable core such that the inner surface of said magnetic path means and the outer surface of said movable core are in an opposed relationship with each other,
said magnetic path means comprising a ring shaped portion and a flanged portion, said flanged portion being projected outwardly from the outer surface of said ring-shaped portion and having a part thereof further projected to the outside of said bobbin body,
a cover formed to cover the periphery of said coil and fixed to said bobbin, and
a yoke magnetically coupling said stator core and said magnetic path means.

4,326,697
VALVES WITH NON-LUBRICATED PLUG

Roger Autage, 22 rue Jeanne d'Arc, Résidence Domrémy, Sévres, and Georges Dupont, 13 rue Questroy, Epinay S/Seine, both of France
Continuation of Ser. No. 812,136, Jul. 1, 1977, abandoned, which is a continuation of Ser. No. 417,709, Nov. 21, 1973, abandoned, which is a continuation of Ser. No. 875,827, Nov. 12, 1969, abandoned. This application Mar. 20, 1980, Ser. No. 132,096
Claims priority, application France, Nov. 15, 1968, 174018
Int. Cl.³ F16K *25/00*
U.S. Cl. 251—174 2 Claims

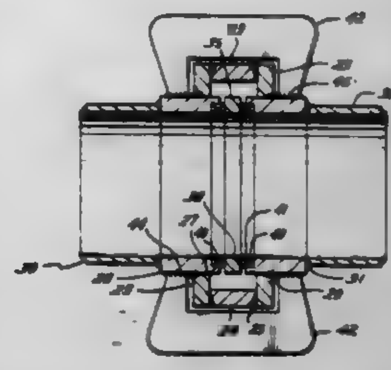
1. A valve comprising a valve body having an inlet and an outlet; a plug having a fluid passage therein; means for rotatably mounting said plug in said valve for movement between an open position in which said passage communicates with both said inlet and said outlet and a closed position in which said passage is out of such communication, said plug having a pair of opposed spherical surface portions defined by a sphere having a center located at the intersection of the axis of rotation of said plug and the axis of said passage; and
means for sealing said valve in said closed condition comprising a pair of annular sealing gaskets secured respectively to said spherical surface portions of said plug; a pair of sealing seats mounted on said valve body in surrounding relation with said inlet and outlet, each of said sealing seats including a fixed annular member secured to said valve body, an annular bearing member mounted for axial movement relative to said fixed annular member, means for biasing said annular bearing member toward said plug, the portion of each bearing member engageable by said annular gasket having a spherical surface portion, additional rotary movement of said plug toward said closed position being effective for moving said annular bearing member adjacent said biasing means, each movable bearing member having said spherical surface portion flanked by a marginal recessed toric surface symmetrically disposed with respect to the axis of rotation of said plug on said spherical surface portions so as to form a marginal groove adjacent said bearing member spherical surface portion, said gaskets having compressible portions protruding beyond said plug surface for progressive free engagement within said marginal groove and subsequent compressive engagement with said spherical surface portions to complete said valve seal when said plug is moved into said closed position, the portions of said sealing seats engageable by said gaskets being in the form of portions of a sphere having the same center as said spherical surface portions of said plug, said protruding portion being progressively deformable against said spherical surface portions as said protruding portion moves into engagement therewith from said marginal toric surface upon said plug being moved into said closed position, said protruding portion being in a non-deformed released configuration unless said plug is adjacent said closed position.



4,326,698
GATE VALVE

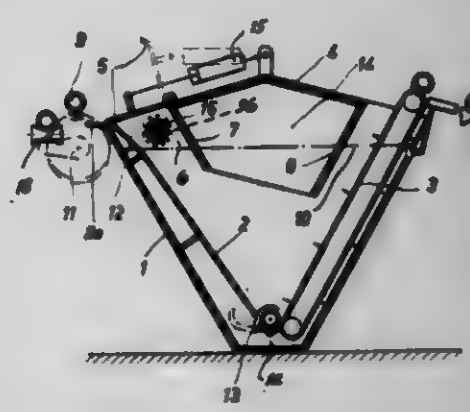
Daniel G. Constantino, Mexico City, Mexico, assignor to Fip, S.A. de C.V., Mexico City, Mexico
Filed Aug. 20, 1979, Ser. No. 67,817
Int. Cl.³ F16K *27/04, 27/10*
U.S. Cl. 251—327 6 Claims

1. A gate valve, comprising a fabricated, boxlike body having front and side walls and openings formed in the front walls, and hubs extending within the openings and welded to the front walls to provide a flowway through the body, the inner ends of the hubs having annular pockets in which seats are received to provide a continuation of the flowway, a gate longitudinally movable within the body between positions opening and closing the flowway through the seats, laterally disposed, generally "C"-shaped, rigid reinforcing flanges having inner side edges which are spaced from but extend closely about the opposite side walls and adjacent ends of the front walls of the body, one end edge of each flange being welded to one hub and the other end edge thereof being welded to the other hub, whereby each said flange functions as an eccentrically loaded tension member, and a conduit connected to and extending outwardly from the outer end of each hub to enable the valve to be connected in a line, each conduit being thinner than the hub to which it is connected.



4,326,699
OIL-TEMPERING APPARATUS FOR PIPES

Wilfried Carneim, Langenfeld; Herbert Hillemanns, Ratingen; Hermann Villmsche, Mülheim; Hans Rihlen, Erkrath; Heinz Schumacher, Ratingen, and Kurt Roether, Düsseldorf, all of Fed. Rep. of Germany, assignors to Mannesmann Aktiengesellschaft, Düsseldorf, Fed. Rep. of Germany
Filed Aug. 22, 1980, Ser. No. 180,419
Claims priority, application Fed. Rep. of Germany, Aug. 30, 1979, 2935262
Int. Cl.³ C21D *1/00*
U.S. Cl. 266—114 4 Claims



1. Apparatus for treating pipes in oil, comprising:
a pan for receiving oil, the pan having a bottom;
means for feeding pipes towards said pan so that the pipes can drop into the pan;
handling means for at least one pipe in the bottom of the pan;
means for taking pipes out of said pan;
a cover on top of said pan having at least a portion constructed as a closable and openable flap, there being means for opening and closing said flap;
said flap having its position in relation to said means for feeding, so that pipes can be fed into the pan when the flap is opened;
partition means extending from the cover in down direction for defining a limited and partially enclosed space above a surface level of an oil bath in the pan, under the flap; and
means for sucking vapors from said space under the flap.

4,326,700

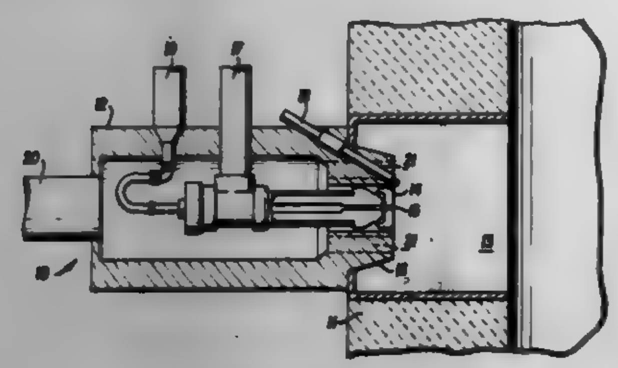
DUAL FUEL BURNER FOR METAL MELTING FURNACES

David F. Arp, Carroll County, Ga., and Ronald L. Pariani, Escambia County, Fla., assignors to Southware Company, Carrollton, Ga.

Filed Jul. 30, 1980, Ser. No. 173,790

Int. Cl.³ F27B *1/14*

U.S. Cl. 266—219 7 Claims



1. An improved dual fuel burner assembly for firing a vertical shaft metal melting furnace with a fuel selected from the group consisting of gaseous and liquid fuel and combinations thereof, of the type having a combustion chamber adapted to be mounted within the wall of said furnace; a burner housing sealingly mounted to said chamber and serving as means for introducing combustion air thereto; means for continuously introducing fuel to said chamber; and a means within said chamber for igniting the fuel and air,

wherein the improvement comprises two of said means for continuously introducing fuel which further comprises: a first means which is a liquid fuel supply pipe terminating in and communicating with a liquid fuel spraying nozzle, which is contained within and surrounded by a second means; said second means is a premixed gas-and-air supply pipe terminating in and communicating with a premixed gas-and-air nozzle, which is contained within and surrounded by the burner housing which serves as a combustion-air supply means, which means communicates with a combustion air nozzle; and wherein each of said means for introducing liquid fuel, combustion air, and premixed gas-and-air are co-axial with, and extend to the same point within, said combustion chamber so that all of said nozzles lie in a single plane perpendicular to the axis of the combustion chamber.

4,326,701

LANCE APPARATUS

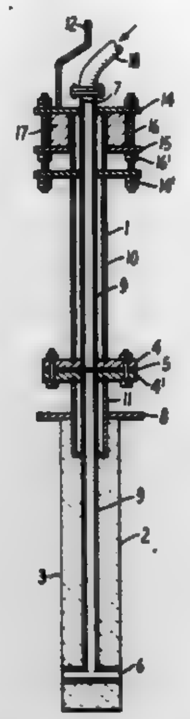
Ralph P. Hayden, Jr., Upland, and Joe M. Barksdale, Ontario, both of Calif., assignors to Kaiser Steel Corporation, Oakland, Calif.

Continuation of Ser. No. 78,771, Sep. 29, 1979, abandoned. This application Feb. 4, 1981, Ser. No. 231,297

Int. Cl.³ C21C *7/02*

U.S. Cl. 266—225 8 Claims

1. Apparatus for use in the treatment of molten baths comprising, a vessel in the nature of a ladle containing molten metal to be treated, a lance suspended from above the surface of the molten metal and not forming part of the walls of said vessel, said lance comprising a separate upper section and a separate lower section adapted to be immersed in said molten metal, each of said sections having internal pipes extending along substantially the length thereof, fastening means for connecting said upper and lower sections at their respective abutting ends so that said pipes form a continuous internal passage along substantially the length of the lance, said lower section having a protective refractory sheath surrounding said internal pipe along the entire length of said section forming the outer wall thereof and a horizontally disposed flat plate positioned above said refractory sheath and extending radially outward to thereby serve as a splash guard for said upper section of said lance located above said guard, clamp means at the top of said upper section, means for engaging said clamp means for moving said lance into and away from said molten bath, and means



for introducing materials through said internal pipe whereby materials for treating said bath may be introduced therein when said lower section is immersed in said bath.

4,326,702

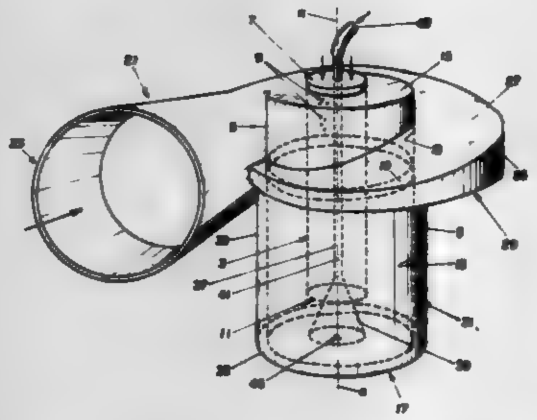
SPRINKLER BURNER FOR INTRODUCING PARTICULATE MATERIAL AND A GAS INTO A REACTOR

Paul E. Queneau, Cornish, N.H. 03746; Horst J. Richter, P.O. Box 59, Norwich, Vt. 05055, and Reinhardt Schuhmann, Jr., 1206 Hayes St., West LaFayette, Ind. 47906

Filed Oct. 22, 1979, Ser. No. 86,659

Int. Cl.³ F23D *1/02*

U.S. Cl. 266—267 31 Claims



1. An apparatus for introducing solid particulate material and a gas downward into a separate reactor as a paraboloidal suspension, so as to effect excellent gas-solid contact and rapid reaction in the separate reactor between the particulate material and the gas by mixing and the particulates are uniformly and widely distributed in the separate reactor, comprising:

(a) an inner tubular member having an upper solids inlet end and a lower outlet;

(b) means for feeding solid particulate material by gravity through the inlet end of the inner tubular member and axially therethrough for exiting from said outlet;

(c) an outer cylindroidal member having a circular wall, a closed upper end, and a lower exhaust end, and a gas inlet in said circular wall intermediate said ends, the outer cylindroidal member positioned concentrically about the inner tubular member such that the outlet of the inner tubular member is positioned intermediate the gas inlet and exhaust end of the outer cylindroidal member; and

(d) means for introducing the gas tangentially through the gas inlet in said circular wall comprising a conduit arranged to tangentially charge said gas into said cylindroidal member substantially about said circular wall, whereby said gas is directed about the inner periphery of said circular wall and towards said exhaust end such that the solid particulate material exiting the outlet of the inner tubular member is suspended therein, and the gas is discharged from the exhaust end of the cylindroidal member at a tangential spreading velocity greater than one-half the vertical downward velocity thereof.

4,326,703

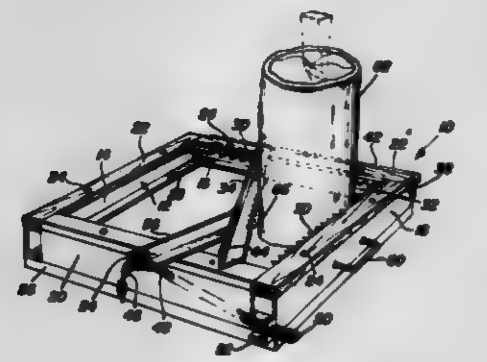
CUT LOG SECTION HOLDER FOR LOG SPLITTING OPERATION

William R. Marley, 147 Filmore St., Pocatello, Id. 83201

Filed Aug. 26, 1980, Ser. No. 182,396

Int. Cl.³ B25B *1/00*

U.S. Cl. 269—156 8 Claims



1. A cut log section holder for holding cut log sections during splitting operations, said holder defining a base for suitable support from a supportive surface, said base defining a pair of generally horizontal, relatively angulated, elongated and convergent first and second gripping jaws defining a horizontally opening crotch adjacent their convergent ends for frictionally gripping adjacent peripherally spaced surfaces of an upstanding log section, said first jaw including longitudinally spaced notches formed therein opening outwardly of the side thereof remote from the second jaw, an elongated third jaw having pivot pin means on one end thereof removably and pivotably receivable in a selected notch of said notches for swinging movement of the other end of said third jaw toward and away from the end portion of said second jaw remote from said first jaw, said other end of said third jaw and the end portion of said second jaw remote from said first jaw including means defining corresponding anchor points, an elongated tension member, first anchor means anchoring one end portion of said tension member to one of said anchor points, the other end portion of said tension member and the other anchor point including means for readily releasably anchoring selected longitudinally spaced portions of the second end portion of said tension member to said other anchor point, said first anchor means incorporating yieldable means for adjusting tension lengthwise of said tension member.

4,326,704

TIPPING MACHINE

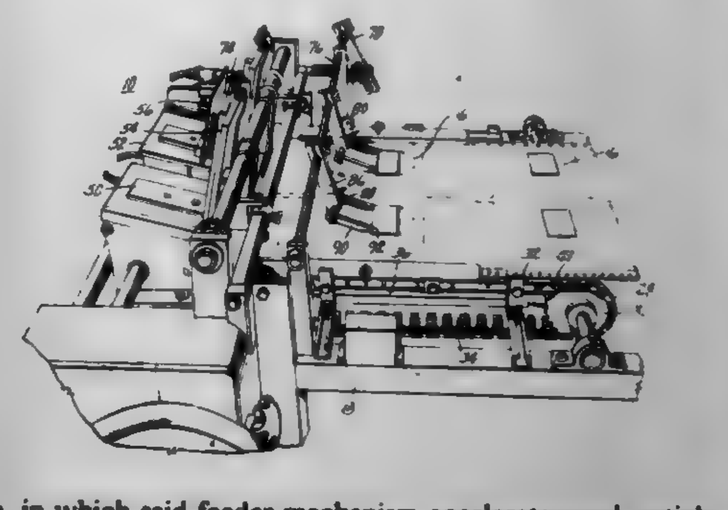
William H. Barr, Hingham, Mass., assignor to Universal Tipping Company Incorporated, Hanover, Mass.

Filed Jun. 13, 1979, Ser. No. 48,149

Int. Cl.³ B65H *39/02*

U.S. Cl. 270—58 7 Claims

1. A tipping machine for placing articles onto a series of predetermined positions on a moving support comprising a feeder mechanism for placing articles on said support slightly behind the predetermined positions, and position adjustment means for thereafter contacting each article and pushing it forwardly on the moving support to the predetermined position, in which said feeder mechanism accelerates each article to the approximate speed of the moving support before placing said article on the support.



4,326,705

ORIGINAL SHEET CIRCULATION APPARATUS OF COPYING MACHINE

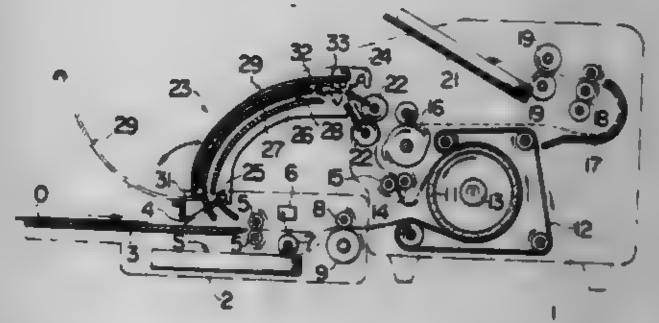
Yasuhiro Takahashi, Tokyo, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Feb. 20, 1980, Ser. No. 123,009

Claims priority, application Japan, Feb. 27, 1979, 54-22108

Int. Cl.³ B65H *3/44, 29/60*

U.S. Cl. 271—9 4 Claims



1. In an apparatus for selectively recirculating an original through a copying machine having an inlet for receiving the original to be copied, means for receiving said original and aligning it in superimposed relation with a copy sheet, means for transporting said superimposed original and copy sheet in unison past an exposure station, and means for separating said original from said copy sheet and directing said copy sheet to a receiving station and said original to an outlet, the original recirculating apparatus including means for removably attaching it as a unit to said copying machine, a chamber positionable adjacent said outlet for receiving originals exiting from said copying machine and selection means positioned adjacent said chamber for alternatively retaining an original in said chamber or directing it back to the inlet of the copy machine until the desired number of copies of the original are produced.

4,326,706

JOGGING GLOVE

Phillip K. Guthrie, Menard, and Richard W. Pillow, Decatur, both of Ill., assignors to Fitness Concepts, Inc., Decatur, Ill.

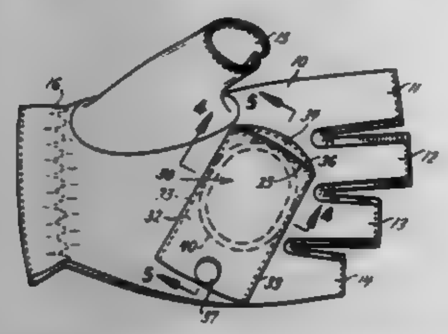
Filed Jul. 9, 1979, Ser. No. 55,530

Int. Cl.³ A63B *21/12*

U.S. Cl. 272—119 3 Claims

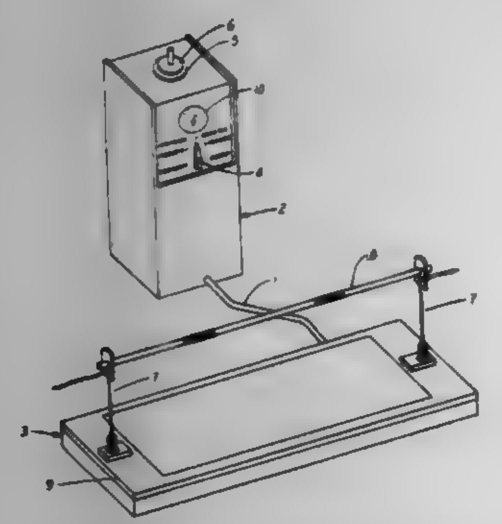
1. A pair of athletic gloves for jogging, one glove being shaped and constructed for wearing on the left hand and the

other glove being shaped and constructed for wearing on the right hand, each glove having a main glove portion. a portion engageable around the palm portion of the hand, and finger portions to hold the glove out from the wrist; and a first weight unit therefor having a somewhat flattened weight, and means attaching the weight to the back of the glove portion to hold the weight unit on the glove, a second weight for the front or palm portion of the glove, means to attach the second weight



transversely to the palm portion of the glove adjacent the outer metacarpal knuckle joints, extending at a slight angle to the metacarpal area of the second and third fingers, the second weight being disposed to extend essentially along the said knuckle area of the plam portion of the glove inwardly of the finger portions, and essentially outwardly displaced away from the thumb area, to permit flexing of the fingers when the weight is in place into the positions they normally assume in jogging.

4,326,707
HYDRAULIC EXERCISER
Dennis C. Strecker, 1079 Colonial Club Dr., Harahan, La. 70123
Continuation-in-part of Ser. No. 946,440, Sep. 27, 1978, abandoned. This application Sep. 4, 1979, Ser. No. 72,037
Int. Cl.³ A63B *21/00*
U.S. Cl. 272—130 **9 Claims**

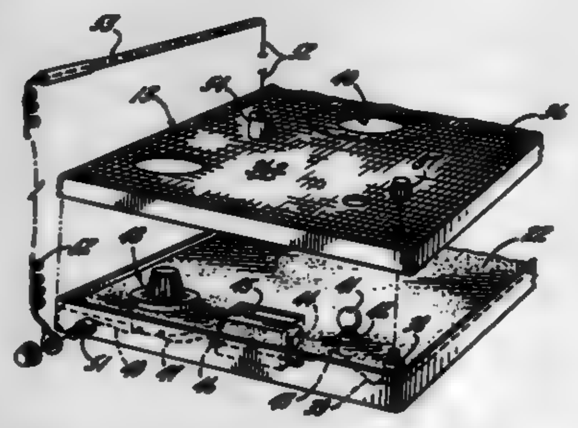


1. An exerciser for a human user to perform physical exercising, comprising:
human exercising force connection means for the human user to physically undergo exercising force in the performing of physical exercising for development of the human muscles,
a flexible, continuous, load bearing line attached to two spaced locations on said exercising force connection means and extending away from said exercising force connection means;
a hydraulic fluid cylinder with an incompressible hydraulic liquid fluid therein associated with said exercising force connection means having a moveable piston extending out of and moveable longitudinally in said cylinder in contact with said hydraulic fluid;
a first pair of sheaves located in association with a first end of said cylinder, and a second pair of sheaves located in association with the other, opposite end of said cylinder,
at least one of said second pair of sheaves being mounted on and carried by said piston, said flexible, load bearing line extending from a first location on said exercising force connection means toward said cylinder and down around one sheave of said first pair, then over to and around one of the sheaves of said second pair, then back over and around the other of the sheaves of said first pair, then back over and around the other of the sheaves of said second pair, and then extending back to the other of said two locations on said exercising force connections means, force applied to said exercising force connection means in a direction away from said cylinder causing said piston to move into said cylinder.

4,326,708
METHOD FOR USING ELASTIC CABLE EXERCIZER BAR
Robert S. Hinds, 1803 Regent St., Madison, Wis. 53705
Division of Ser. No. 755,552, Dec. 30, 1976, Pat. No. 4,195,835. This application Jul. 27, 1979, Ser. No. 61,181
Int. Cl.³ A63B *21/02*
U.S. Cl. 272—138 **1 Claim**

1. The method of tensioning a bight of elastomeric cable which depends in recessed disposition from between bifurcated projections configured as end extremities of a bar elevated above fixedly held ends of said tensioned cable comprising the step of rotating said bar until said cable is wrapped around at least one of said bifurcated end extremities and whereupon with continued rotation said cable is at least partially wound around said bar.

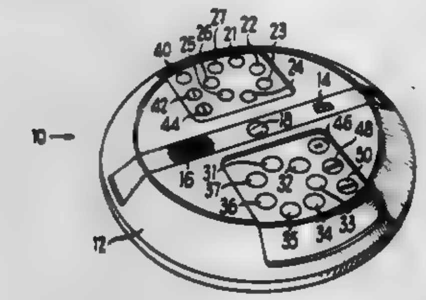
4,326,709
FISHING FOR CARDS GAME
Ronald A. Croyle, R.D. #1 Helm Rd., Adrian, Pa. 16210
Filed Dec. 10, 1979, Ser. No. 101,777
Int. Cl.³ A63F *9/00*
U.S. Cl. 273—1 GC **6 Claims**



1. A fishing for cards game of skill including in combination a game board housing having a planer field of play upper

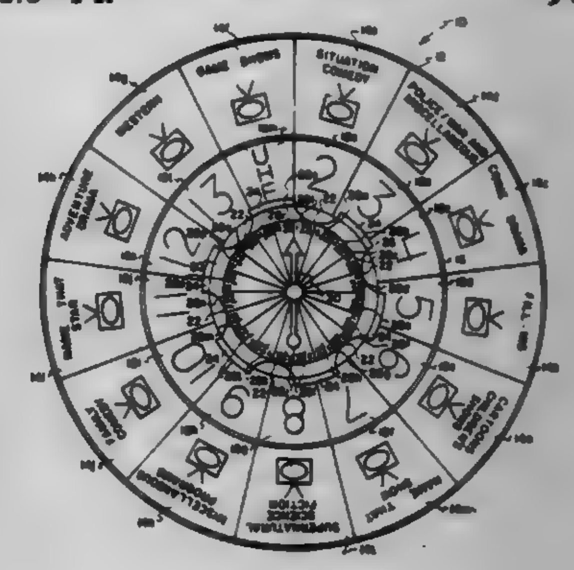
surface member and a lower planer support surface member parallel to said upper surface,
said field of play of said upper planer surface being formed of an electrically conductible material,
first side members integrally secured to said upper surface member and disposed in a direction toward said lower surface,
second side members integrally secured to said lower support surface and disposed in a direction toward said upper surface,
said upper surface with said first side members and said lower surface with said second side members cooperating to form a flat box shaped compartment,
spacer means having a roughened textured surface disposed between said upper surface and said lower surface and in contact with said lower surface,
said planer field of play upper surface having an opening centrally disposed in said field of play, said opening communicating with an open region between said upper surface member and said roughened textured surface of said spacer means,
playing cards disposed within said open region and on said roughened textured surface, each of said playing cards having a magnetizable element secured thereto,
permanent magnet fishing means cooperatively positioned on said planer field of play whereby movement of said permanent magnet fishing means along said planer field of play results in the attraction of said magnetizable elements of said playing cards whereupon said playing cards may be drawn to said centrally disposed opening and withdrawn,
a source of power is connected to said permanent magnet fishing means and to said electrically conductive material, as well as an indication means to thereby form a complete playing surface contact detection circuit which provides an indication via said indication means so long as said permanent magnet fishing means is in contact with said electrically conductive material of said field of play.

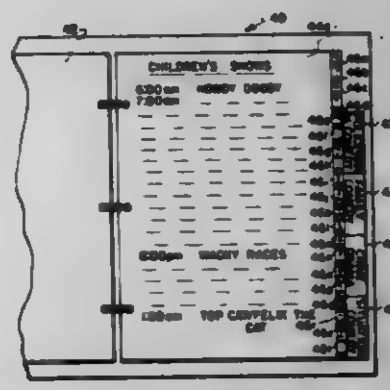
4,326,710
TALKING ELECTRONIC GAME
Jeffrey D. Breslow, Highland Park, and Erick E. Erickson, Chicago, both of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.
Filed Feb. 8, 1980, Ser. No. 119,618
Int. Cl.³ A63F *9/00*; G09B *7/02*
U.S. Cl. 273—1 E **29 Claims**



1. An electronic talking game apparatus, comprising:
means for generating a plurality of audibly perceptible beginning phrases and a plurality of audibly perceptible ending phrases, each of said ending phrases being associated with a single one of said beginning phrases;
a plurality of manually operable means, each of said manually operable means being associated with a single one of said ending phrases, said generating means being operative to generate the one of said ending phrases associated with each of said manually operable means upon the actuation thereof;
means for rendering said generating means operative to generate one of said beginning phrases; and
means responsive to the generation of one of said beginning phrases and the subsequent actuation of one of said manually operable means for providing a first indication if the actuated manually operable means is associated with the ending phrase that is associated with the generated beginning phrase and for providing a second indication if the actuated manually operable means is associated with an ending phrase that is not associated with the generated beginning phrase.

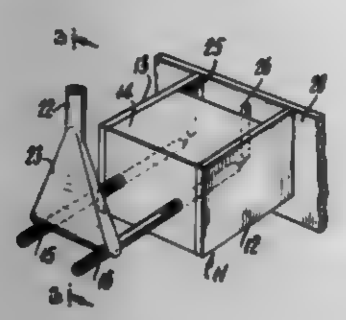
4,326,711
QUESTION AND ANSWER GAME EMPLOYING CHANCE-TAKING MEANS
Gary P. Giallombardo, 1378 Golden Gate Blvd., Mayfield Hts., Ohio 44124
Filed Jun. 13, 1980, Ser. No. 159,376
Int. Cl.³ A63F *5/04, 9/18*
U.S. Cl. 273—1 R **9 Claims**





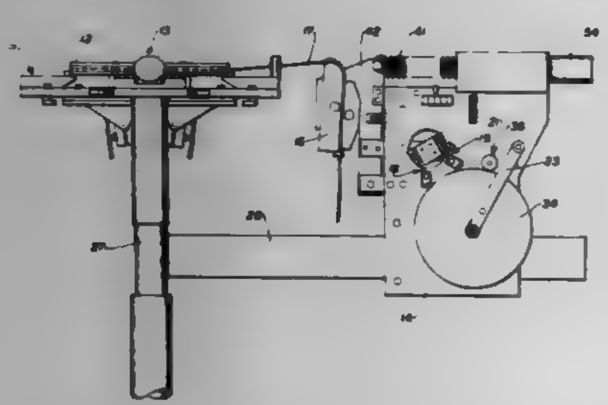
1. In a question and answer game, game apparatus comprising, in combination:
(a) chance-taking means for determining in random manner questions to be asked of participants; and
(b) a question and answer book containing questions to be asked of participants as directed by the chance-taking means, the question and answer book also including answers to each of the questions, the question and answer book including a plurality of index sheets for displaying categories of items, each index sheet being identified by a tab projecting outwardly of the sheets, each index sheet including a listing of particular items within a given category, the items being listed by uniquely identifiable indicia, and a plurality of item pages, each item page being identified by a tab projecting outwardly of the sheets, each item page including a plurality of questions and answers involving that item, each question and answer being uniquely identified by identifying indicia.

4,326,712
POSITIVE CYCLE MECHANISM FOR BOWLING PINSETTER
Thomas M. Camilleri, 277 Avenue W, Brooklyn, N.Y. 11223
Continuation of Ser. No. 898,654, Apr. 21, 1978, abandoned. This application Jun. 5, 1980, Ser. No. 156,737
Int. Cl.³ A63D *5/00*
U.S. Cl. 273—43 R 8 Claims



1. A positive cycle means for an automatic pinsetter bowling machine comprising first electrically conductive means attached to the pit cushion, the first means adapted to contact a second electrically conductive means in response to movement of the pit cushion thereby completing an electrical circuit adapted to activate the automatic pinsetter bowling machine cycling mechanism, one of the electrically conductive means comprising at least one flexible member, and the other of the electrically conductive means comprising a surface adapted to contact said at least one flexible member, the surface being joined to a member adapted to delect said at least one flexible member in response to movement of the pit cushion.

4,326,713
RACKET STRINGING APPARATUS AND METHOD
John A. Balaban, 4142 Graham St., Pleasanton, Calif. 94566
Continuation-in-part of Ser. No. 11,145, Feb. 12, 1979, Pat. No. 4,249,732. This application Dec. 3, 1979, Ser. No. 99,215
Int. Cl.³ A63B *51/16*
U.S. Cl. 273—73 A 16 Claims



1. In a racket stringing apparatus having a racket head holding fixture and a carriage mounted for reciprocation toward and away from said fixture and a string clamp mounted on said carriage for engaging a string drawn through a racket head mounted on said fixture for tensioning said string upon movement of said carriage away from said fixture;

means for establishing a maximum predetermined string tension; said maximum predetermined string tension being such as to effect a pre-stretching of the string;

means for establishing a final predetermined string tension; said final predetermined string tension being significantly less than said maximum predetermined string tension so as to cause contraction of the string to a length significantly less than the length affected by said pre-stretching.

means functioning automatically in response to string tension to limit carriage movement away from said fixture and lock said carriage at the position of said maximum predetermined string tension; and

means functioning automatically on return movement of said carriage from said position and in response to decreasing string tension to lock said carriage against further return movement and at a second position corresponding with said final predetermined string tension.

15. A method of stringing a racket to a final permanent predetermined string tension comprising:

establishing a maximum predetermined string tension; said maximum predetermined string tension being significantly greater than said final predetermined string tension to effect a pre-stretching of said string to a length significantly beyond its length at said final predetermined string tension;

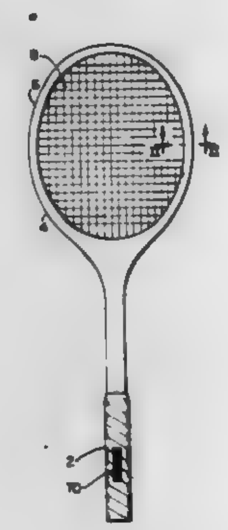
drawing said string across the racket head until said maximum predetermined string tension is reached;

automatically limiting said drawing at said maximum string tension and temporarily locking the string thereat;

decreasing the string tension to permit contraction of said string until said final determined string tension is reached; and

automatically locking said string at said final permanent predetermined string tension.

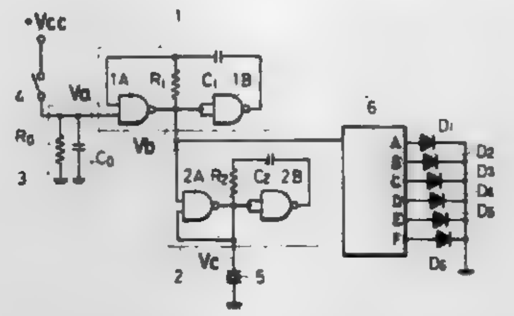
4,326,714
GAME IMPLEMENT
Robert L. Novack, 6 Oxbow Rd., Medfield, Mass. 02052
Filed Jun. 9, 1980, Ser. No. 157,857
Int. Cl.³ A63B *49/02*
U.S. Cl. 273—73 C 16 Claims



1. A game implement for hitting flying objects, said implement comprising a grip portion and a head portion extending from one end of said grip portion, said head portion comprising a frame portion adapted to have mounted thereon single string means, said frame portion having first and second wall portions forming opposite faces of said frame portion, a first of said faces being disposed outwardly from a plane of said string means in a first direction and a second of said faces being disposed outwardly from said plane in a second direction, said first and second wall portions having different impact characteristics, and indicia on said implement by which a user may perceive which of said wall portions is in a hitting attitude.

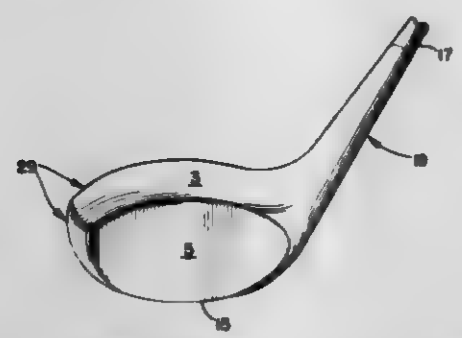
4,326,715
SIMULATED BASEBALL GAME DEVICE
Hiroshi Ito, and Haruyuki Tanaka, both of Mibu, Japan, assignors to Bandai Industry Co., Ltd., Tochigi, Japan
Filed May 7, 1980, Ser. No. 147,687
Claims priority, application Japan, Jun. 2, 1979, 54-74802[U]
Int. Cl.³ A63F *9/00*
U.S. Cl. 273—88 10 Claims

1. A game apparatus comprising a first oscillator, a counter connected to count the oscillations of said first oscillator, a plurality of light-emitting devices visably arranged on said apparatus and connected to be sequentially energized by said counter, switch means connected to enable said first oscillator



to oscillate a second oscillator, sound generating means connected to said second oscillator, and means applying the output of said first oscillator to control the oscillation of said second oscillator.

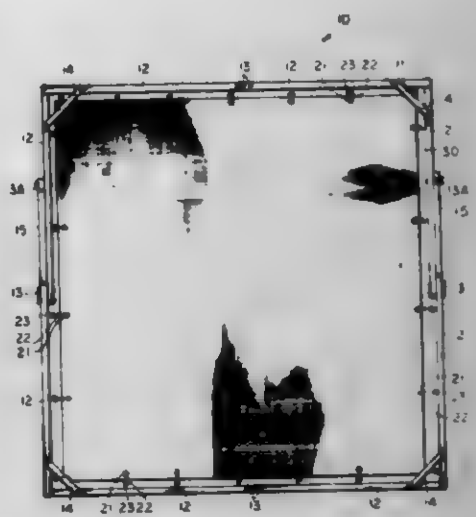
4,326,716
POLYURETHANE GOLF CLUB
Francois R. LaCoste, Neuilly, France, assignor to Patentex, S.A, Fribourg, Switzerland
Filed Nov. 15, 1979, Ser. No. 94,749
Int. Cl.³ A63B *53/04*
U.S. Cl. 273—167 R 10 Claims



1. A one-piece solid molded polyurethane vulcanizate golf club head having a unitary body including the entire front striking face and exhibiting the properties of a Shore D hardness in the range of about 50 to about 80, an elongation % at break of at least about 150 and not over about 350, a notched IZOD impact (ft. lb./in.) exceeding 4, a resiliency percentage exceeding 40, a recession characteristic exceeding about 0.55 mm, a recovery % between about 50–95, and an amortization % between about 4.5 and about 12; said polyurethane vulcanizate being a cured prepolymer, the prepolymer comprising the reaction product of (i) a diisocyanate selected from an aromatic diisocyanate, an isomer mixture of aromatic diisocyanates, a cycloaliphatic diisocyanate, and a mixture of an aromatic and cycloaliphatic diisocyanate, (ii) a polyalkylene ether glycol, and (iii) a low molecular weight (MW) glycol below about 350, the curing agent being an arylene primary diamine, the mole ratio of component (iii) to (ii) being in the range of about 0.25 to about 3.0, and the mole ratio of component (i) to (ii) plus (iii) being in the range of about 1.5 to 1.0::2.0 to 1.0, and the stoichiometric concentration of curing agent being sufficient to react with about 50 to 110% of the free isocyanato moieties in the prepolymer.

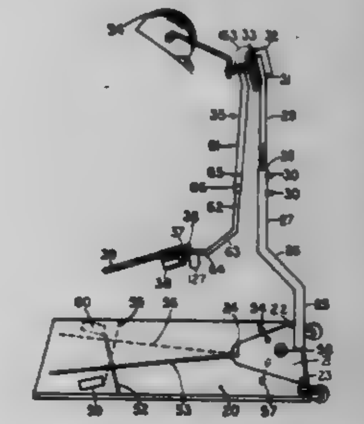
4,326,717
GOLF DRIVING TARGET APPARATUS
Robert A. McClimon, 1451 N. Chester, Indianapolis, Ind. 46201
Filed Feb. 13, 1980, Ser. No. 121,222
Int. Cl.³ A63B *69/36*
U.S. Cl. 273—181 F 2 Claims

1. Golf driving target apparatus for stopping a driven golf ball and imparting to the golf ball only a small amount of rebounding force, said apparatus comprising a fixedly positioned frame; a plurality of elastic bands; and a multilayered target, said target having a first, front layer of fine fiberglass mesh, and behind said layer of fine mesh, a second layer of polyethylene film, and behind said second layer, a third layer,



said third layer being of polyethylene film, said target being circumferentially attached to said frame by said elastic bands.

4,326,718
GOLF SWING TRAINING AND EXERCISING DEVICE
Arthur H. Kiehl, 534 Carson Dr., Hendersonville, N.C. 28739
Filed Aug. 18, 1980, Ser. No. 178,884
Int. Cl.³ A63B *69/36*
U.S. Cl. 273—183 B 25 Claims



1. A mechanism useful for improving a golf swing and for exercising muscles used in said swing comprising:

(a) a base member on which the mechanism is supported,

(b) an upright member attached at the base, said upright member having a rigidly mounted post attached at its top to which post a swing arm and a brake adjustable as to tension are attached,

(c) a signal pack on said swing arm having a rod carrying a cam said swing arm having a plurality of switches which are closeable by movement of said cam, each of said switches when closed activates a separate signal which individually can indicate (1) a movement of a simulated club toward and away from a golfer and (2) rotary movement of the wrists, said switches being connected to a source of electrical current said pack having at its distal end

(d) a grip which is movable forwardly and backwardly to move said cam for closing certain of said switches and thereby activate electrical signal means, said grip also being movable laterally to simulate wrist action and to activate signals different from the signals activated by forward and backward movement, thereby denoting the position of a club face during a swing.

4,326,719

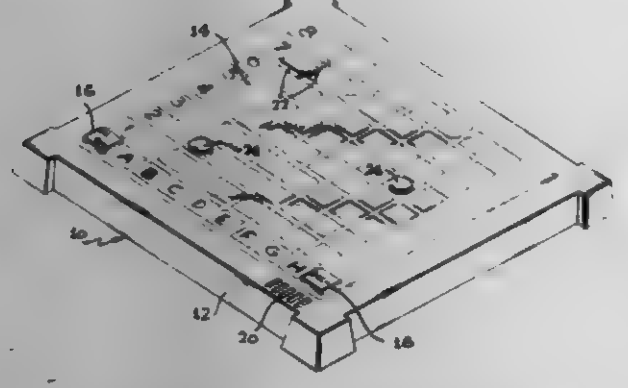
ELECTRONIC MAZE GAME

Luan G. Tran, Redondo Beach; Timothy A. Effler, Torrance, and Karen K. Wat, Hawthorne, all of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Jun. 26, 1980, Ser. No. 163,113

Int. Cl.³ A63F *3/00*

U.S. Cl. 273—238 **9 Claims**



1. An electronic maze game comprising a plurality of switches representing positions on a rectangular field; and circuit means responsive to the switches for controlling the operation of the game, the circuit means including means for establishing and storing the structure of an invisible maze on the field, means for responding to closure of the switches to establish initial and succeeding player positions on the field, means for indicating to a player when his path on the field is obstructed by the maze, and means for randomly designating a position on the rectangular field as containing an invisible treasure.

4,326,720

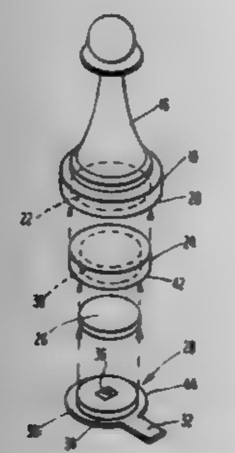
CHESS PIECES WITH DETACHABLE MARKERS

David Erlich, 406 Audubon Ter., Philadelphia, Pa. 19116

Filed Nov. 3, 1980, Ser. No. 203,420

Int. Cl.³ A63F *3/02*

U.S. Cl. 273—239 **10 Claims**



1. A chess piece including a base with a peripheral edge, a marker comprised of a plate, a tab extending laterally therefrom and visibly beyond said peripheral edge of said base and a member upstanding from said plate, a recess in said piece opening through said base and receiving said upstanding member and means removably retaining said uptanding member in said recess whereby when said piece is rocked so that said peripheral edge of said base engages said tab as a fulcrum, said piece is removed and can be moved to other squares of a playing board while the marker remains in the original square to indicate the position of origin of said chess piece which can be reunited with said marker.

4,326,721

TOY HAVING ATTACK OBJECT LOCATED ON ARCUATE MOVING FRAMEWORK

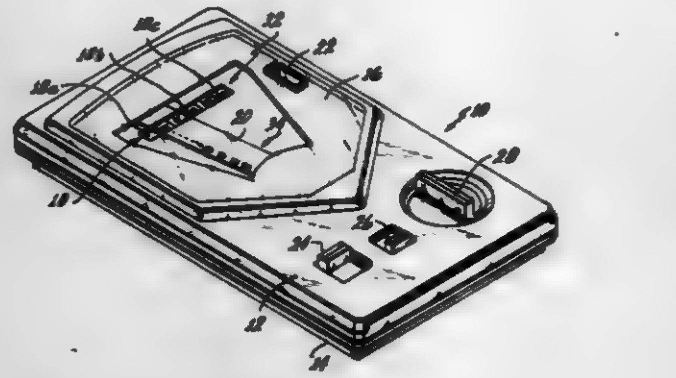
Koichi Minami, and Hiroyuki Watanabe, both of Tokyo, Japan, assignors to Tomy Kogyo Co., Inc., Tokyo, Japan

Filed Oct. 31, 1980, Ser. No. 202,743

Claims priority, application Japan, Oct. 13, 1980, 55-145411[U]

Int. Cl.³ A63F *9/00*

U.S. Cl. 273—315 **11 Claims**



1. A toy game which comprises:

a housing;

at least one target member positioned within a target field on said housing;

an attack means movably located on said housing and capable of moving at any particular instance of time in one or the other but not simultaneously in both of two modes of movement with respect to the target field, one of the modes of movement sweeping in a reciprocal manner across the width of the target field, the other mode of movement moving at least a portion of the attack means in a direction of movement essentially normal to the direction of the first mode of movement, together said two modes of movement capable of positioning at least a portion of the attack means in an interacting position with said target member allowing said portion of said attack means to interact with said target member;

a drive means located on said housing;

a drive diverter means operatively associated with both said drive means and said attack means and interposed between said drive means and said attack means, said drive diverter means capable of propagating motion from said drive means to said attack means to move said attack means in one or the other but not simultaneously in both modes of movement.

4,326,722

TARGET FOR TOSSED MARBLES

James Dickens, 28 Westland St., Hartford, Conn. 06120

Filed Feb. 19, 1981, Ser. No. 236,066

Int. Cl.³ A63B *63/02*

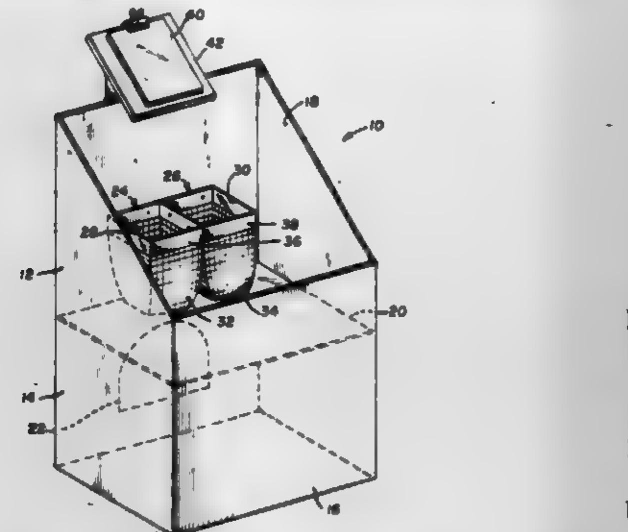
U.S. Cl. 273—400 **10 Claims**

1. A game of skill comprising:

receptacle means, said receptacle means being an elongated structure, said receptacle means having at least one wall means which encloses said structure on all sides, said receptacle means having first and second ends, said first end being closed and forming the base of said receptacle means, said second end being open and forming the top of said receptacle means, said receptacle means having first and second chambers being formed by a horizontal partition means being positioned between said receptacle means first and second ends, said first chamber being enclosed by said first end, said partition means and said wall means, said first chamber being provided with a means of access through said sidewall means, said second chamber being formed by said second end, said partition means, and said wall means;

first basket means, said basket means being cuboidal in shape, said basket means being enclosed on five sides with an open first end;

second basket means, said basket means being cuboidal in shape, said basket means being enclosed on five sides with an open first end; and



said first and second basket means being positioned in abutting side to side relationship with their first end being unobstructed and co-planar, said first and second basket means being further mounted within said second chamber upon said wall means with said first ends facing said receptacle means second end.

4,326,723

OIL SEAL

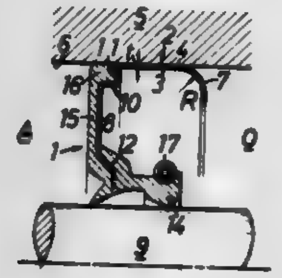
Yoshio Arai, 1-26-26, Koganehara, Matsudo-shi, Chiba-ken, Japan

Filed Sep. 22, 1980, Ser. No. 189,217

Claims priority, application Japan, Oct. 11, 1979, 54-131075

Int. Cl.³ F16J *15/32*

U.S. Cl. 277—153 **2 Claims**



1. In a metal periphery type oil seal provided at its outer peripheral portion with a metallic reinforcement member adapted to be fitted into a stationary member and provided at its inner peripheral portion with a rubber lip adapted to make a sliding contact with a rotary shaft, said reinforcement member being of a substantially L-shaped cross section having an outer peripheral portion and an annular side portion, said rubber lip being integrally formed with an annular rubber plate which is secured to the outer surface of said annular side portion of said reinforcement member;

the improvement wherein said outer peripheral portion has a free end inwardly curved at a radius of curvature considerably larger than the thickness of the metal comprising said metallic reinforcement member and which extends over an angle of not less than 90°, said annular side portion having a bent inner peripheral end, said rubber lip being secured to said reinforcement member in such a manner as to clamp said inner peripheral end of said annular side portion, said outer peripheral portion and said annular side portion being joined to each other through a two-stepped bent portion, said annular rubber plate being formed integrally with an enlarged rubber ring portion secured to the outer surface of said two-stepped bent portion, said enlarged rubber ring portion having an outside diameter larger than the outside diameter of said reinforcement member.

4,326,724

PISTON AND SEAL ASSEMBLY

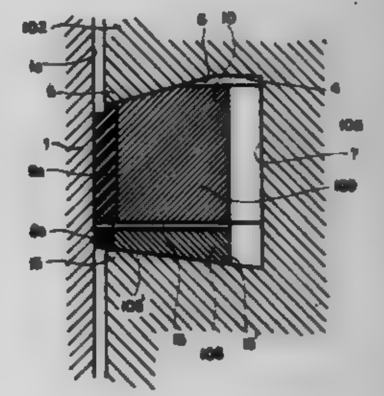
Helmut Gernandt, Cologne, Fed. Rep. of Germany, assignor to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany

Filed Dec. 20, 1979, Ser. No. 105,732

Claims priority, application Fed. Rep. of Germany, Dec. 21, 1978, 2855438

Int. Cl.³ F16J *9/20, 15/18*

U.S. Cl. 277—171 **2 Claims**



1. A piston-and-cylinder arrangement comprising:

a cylinder forming a cylindrical running surface;

a one-piece cylindrical piston axially reciprocatable in said cylinder and formed with an outwardly open circumferential groove, said groove having a cylindrical root surface spaced from the periphery of said piston by the depth of said groove and a pair of opposite axial flanks of frustoconical configuration defining a mouth of said groove at the periphery of said piston having an axial width less than the axial width of said root surface, the axial width of said groove being greatest at said root surface;

a piston ring disposed in said groove and having a frustoconical flank complementary to and in engagement with one of said axial flanks of said groove along one axial side of said piston ring; and

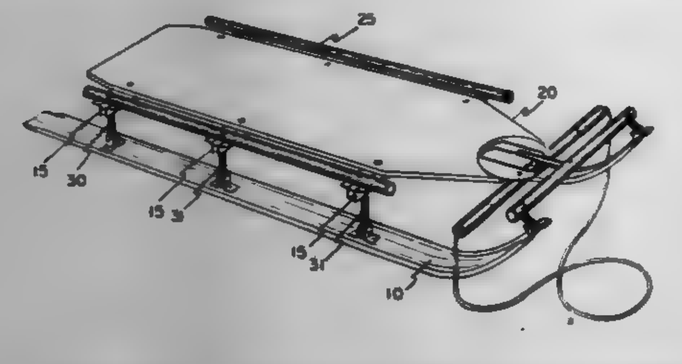
a support ring between the opposite axial side of said piston ring and the other axial flank of said groove, said rings being captive in said groove,

said support ring having a first flank bearing against the other axial side of said piston ring and a second flank of frustoconical configuration complementary to and resting against said other flank of said groove,

said other and second flanks being frustoconical over their entire widths,

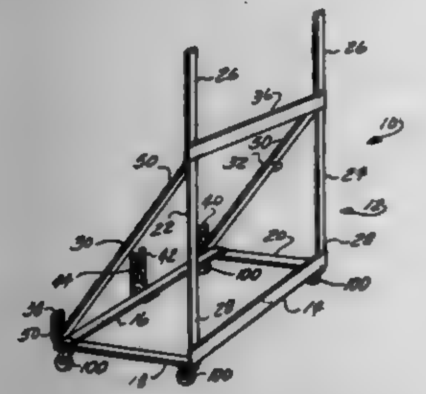
the depth of said groove being greater than the radial width of said piston ring and said groove having an axial width at said root surface at least equal to the maximum axial thickness of said piston ring plus the maximum thickness of said support ring and said other side of said piston ring forming juxtaposed mutually contacting surfaces, at least one of said juxtaposed surfaces being formed with at least one pressure equalizing groove extending generally radially and communicating between the region of said running surface and the region of said root surface of said circumferential groove.

4,326,725
SLEDS
Otto L. Lagervall, 724 N. 34th Ave., Yakima, Wash. 98902
Filed Apr. 10, 1980, Ser. No. 139,125
Int. Cl.³ B62B *13/12*
U.S. Cl. 280—22 **2 Claims**



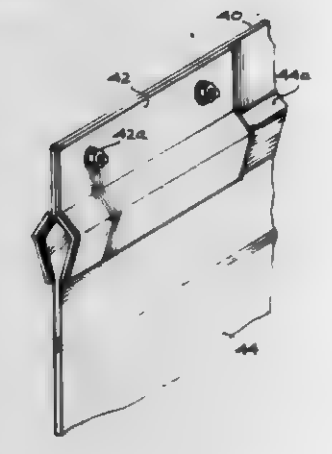
1. A lightweight, wide runner, steerable sled comprising:
a pair of aluminum extruded runners, each having an upwardly turned forward portion and a longitudinally extending guide groove in its bottom surface, said runners being at least 2½ inches wide and having short vertically upward side walls;
a planar support bed or platform;
a steering means at front of bed for tilting and flexing said runners;
at least two extruded support channels, transversely extending beneath and fixedly secured to said bed and side rails;
transversely spaced leg rods, interconnecting said support channels and said runners, the upper ends of said leg rods being rigidly anchored in said support channel;
a rearward pair of said leg rods having their lower ends rigidly secured to said runner by a short section of upwardly open channel member;
at least one medial pair of leg rods having their lower ends hingedly connected to said runners about a longitudinal axis through short sections of upwardly open channel members;
a pair of short leg rods having their lower ends rigidly secured at said upturned forward portion of said runners by upwardly extending channel members, the upper ends of said short legs being flattened;
said steering means including a tubular cross bar having transversely elongated oval holes for pivotally receiving said flattened upper ends of said short legs.

4,326,726
STORAGE RACK
Richard S. Dunchock, Farmington Hills, Mich., assignor to SL Container Corporation, Southfield, Mich.
Filed May 12, 1980, Ser. No. 148,742
Int. Cl.³ B62B *3/10;* **A47B** *81/00*
U.S. Cl. 280—79.1 A **4 Claims**



1. An automobile top storage rack comprising:
a frame including a first longitudinal member, a second longitudinal member spaced from the first longitudinal member, a pair of spaced apart transverse members integral with and extending between the longitudinal members, a pair of spaced apart vertical members having an upper end and a lower end integral with and extending vertically upward from the first longitudinal member, a pair of inclined side members, each side member affixed to the second longitudinal member at a lower end and affixed to a corresponding vertical member at an upper end, the side members inclined to abut and support a rear wall of the top, a longitudinal brace extending between the vertical members spaced down a distance from each vertical members upper end, a pair of cleats joined to the second longitudinal member extending vertically upward therefrom, a lock pin support extending upward from the second longitudinal member having a pin receiving recess formed in an upper end thereof, a lock pin affixed to the top being slidingly engageable with said pin receiving recess to prevent lateral movement of the top, and an elastic cord including a hook at each end thereof, the hooks engaging the top and the frame to bias the top into abutment with the frame.

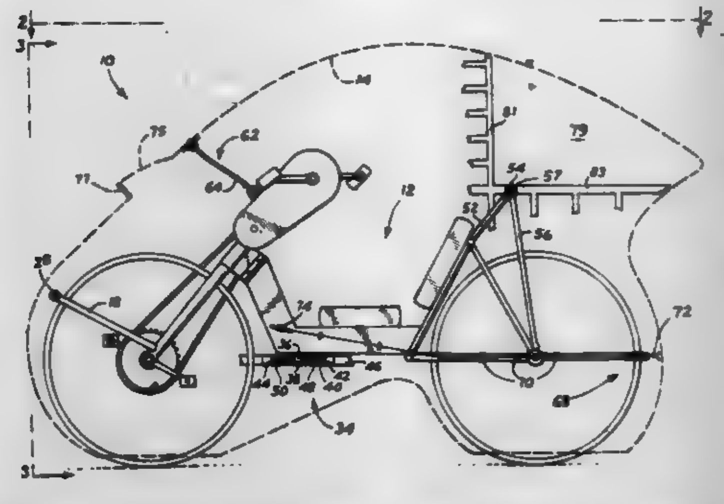
4,326,727
MUD GUARD
Gregory Rock, El Monte, Calif., assignor to Erik M. Arnhem, Los Angeles, Calif.
Continuation-in-part of Ser. No. 14,984, Feb. 26, 1979, abandoned. This application Jul. 6, 1979, Ser. No. 55,693
Int. Cl.³ B62D *25/18*
U.S. Cl. 280—154.5 R **5 Claims**



1. In a mud guard assembly for a vehicle, comprising
(a) a first elongated bracket section, including an apertured upper straight part and a lower part extending outwardly and then inwardly thereof;
(b) a plurality of second bracket sections each of which including an apertured upper straight part, and a lower part extending outwardly and then inwardly thereof, the combined lengths of the second bracket sections being less than that of the first bracket section and are joined thereto back-to-back and spatially apart, so that the first bracket section together with the second bracket sections form bifurcating converging sections;
(c) mounting means passing through the apertures of the first and second bracket sections for mounting of said assembly to the chassis of the vehicle behind a rear wheel thereof;
(d) mud guarding means removably mounted between said sections by lateral insertion within the converging sections of the joined first and second bracket sections which separate negligibly on such insertion thereof.

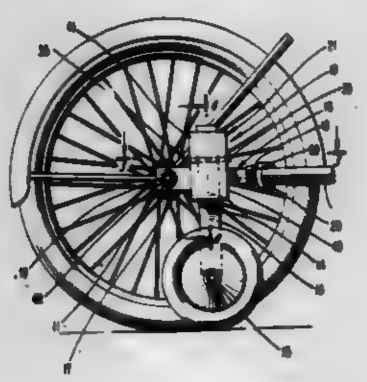
4,326,728
FAIRING FOR GROUND-TRAVELLING VEHICLE
Fred G. Tatch, 3145 Onyx St., Eugene, Oreg. 97405
Filed Apr. 30, 1980, Ser. No. 145,577
Int. Cl.³ B62J *17/00*
U.S. Cl. 280—289 S **5 Claims**

1. Aerodynamic fairing apparatus for use on a ground-travelling vehicle such as a bicycle and the like having an elongate frame, said apparatus comprising
an elongate fairing including a framework encompassing side and top portions of the vehicle, said fairing having an upright aerodynamic center of force axis between front and rear ends of the fairing,



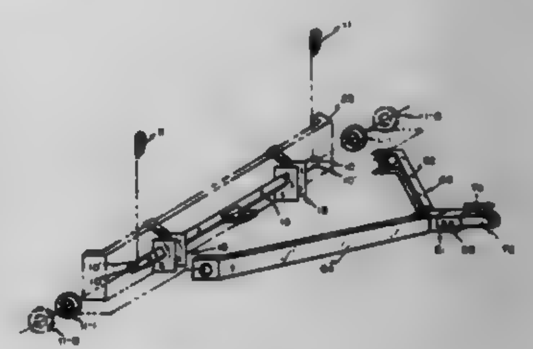
mounting means mounting said framework on the vehicle frame for pivoting thereon about a substantially upright axis positioned forwardly with respect to said center of force axis, and
biasing means interposed between said framework and the vehicle frame to urge the fairing yieldably toward a position of longitudinal alignment with the vehicle frame.

4,326,729
BICYCLE TRAINING WHEEL BRACKET SUPPORT
Edwin E. Luckowski, 119 Marion Ave., and Lester M. Bainbridge, 213 Charles St., both of Belle Vernon, Pa. 15012
Filed Jul. 16, 1980, Ser. No. 169,424
Int. Cl.³ B62H *1/12*
U.S. Cl. 280—304 **14 Claims**



1. Apparatus for attachment to a bicycle for supporting an apertured training wheel bracket at a desired height, comprising:
(a) a brace member having a first portion apertured to accommodate the threaded end portion of a bicycle rear wheel axle, and a second portion comprising a torque arm having a forked extremity for embracing a bicycle frame;
(b) a housing secured between the first and second portions of the brace member;
(c) a substantially vertically extending sheath secured within the housing for receiving the training wheel bracket, said sheath having a transversely disposed aperture extending therethrough and situated for alignment with a selected one of the bracket apertures;
(d) a movable locking pin supported within the housing for substantially horizontal movement into the sheath aperture and a selected one of the bracket apertures, said locking pin being spring-biased into said apertures for locking the bracket at the desired height; and
(e) means extending through an opening in the housing for manually moving the locking pin out of the bracket aperture against the spring bias for permitting movement of the training wheel bracket within the sheath for alignment of another selected one of the bracket apertures with the sheath aperture.

4,326,730
QUICK TRANSFER TOW BAR
Dan Tomen, 86 Paddock Green Cres., London, Ontario, Canada (N6J 3P7)
Continuation-in-part of Ser. No. 906,976, May 17, 1978, Pat. No. 4,196,919. This application Dec. 11, 1979, Ser. No. 102,406
The portion of the term of this patent subsequent to Apr. 8, 1997, has been disclaimed.
Int. Cl.³ B60D *1/00*
U.S. Cl. 280—502 **9 Claims**



1. A tow bar comprising a hitch and a tow bar assembly in combination:
(a) the hitch adapted for attachment to a bumper of a motor vehicle, the hitch including a draft bar wherein the improvement comprises an extended draft bar having fixtures at either end, and hitch assemblies for mounting the draft bar near each of its ends to the vehicle bumper wherein the hitch assembly comprises:
(i) a generally elongated U shaped member including an essentially flat spine adapted to rest in facing relationship against said bumper, and a pair of parallel arms extending from said spine in a direction away from said bumper, each of said arms having an aperture therethrough for receiving the ends of said draft bar;
(ii) two adjacent finger members mounted at the upper regions of the U shaped member to define between them and the spine an open slit that extends from the spine toward the distal ends, said slit adapted to accept a link of a chain;
(iii) a lever member having a first and a second end; means for pivotally attaching said first end to upper distal regions of said arms whereby said second end swings in a plane between said arms and parallel thereto from a lower position below and beyond the distal ends of said arms to an upper position above the upper edge of said spine; a depending member pivotally mounted on said lever member between said second end and said pivotally attaching means, said depending member having a slot therein;
(iv) upper and lower chains, each chain having attachment means at one end adapted for respective engagement with the automobile, the upper chain adapted to have one link mate into the upper slit, the lower chain having one of its links adapted to enter into said slot whereby on movement of the lever member from its lowest to its upper position the lower chain is caused to be pulled tight and to enwrap the draft bar and to urge the draft bar toward the spine, and into binding engagement with segments of each arm which define in part the aperture.
(b) the tow bar assembly including a first straight piece with distal and proximate ends, means on the distal ends for rigid attachment to one of said fixtures, a second straight piece with distal and proximate ends, and means for affix-

ing the proximate ends of both straight pieces together and means on the distal end of the second straight piece for rigid attachment to said other fixture, and trailer hitch attachment means near the proximate ends adapted for attachment to another trailer hitch.

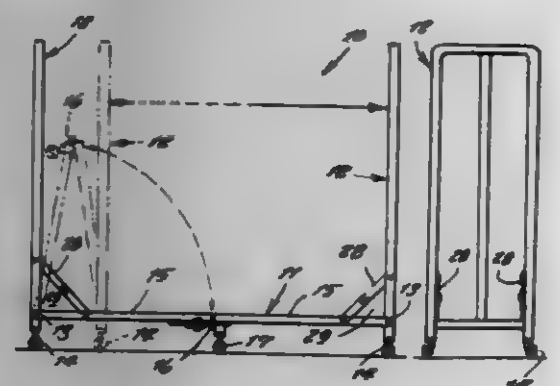
4,326,731
FOLDING CART

Stephen Woychio, c/o George Spector, 3615 Woolworth Bldg., 233 Broadway, and George Spector, 3615 Woolworth Bldg., 233 Broadway, both of New York, N.Y. 10007

Filed Oct. 1, 1979, Ser. No. 80,178

Int. Cl.³ B62B *3/02*

U.S. Cl. 280—641 2 Claims



1. A folding cart comprising an assembly having a horizontal platform pivotally connected at a first end to a vertical end frame in combination with a similar assembly having a platform and vertical end frame wherein said assemblies are attached at second ends by a connector including means pivotal about a horizontal axis whereby the second ends may be raised pivotally relative each other and said end frames further including end wheels at the first ends of said platforms and central wheels at the said second ends of said platforms, wherein said connector also includes swivel means providing pivotal motion of one of said assemblies about a vertical axis.

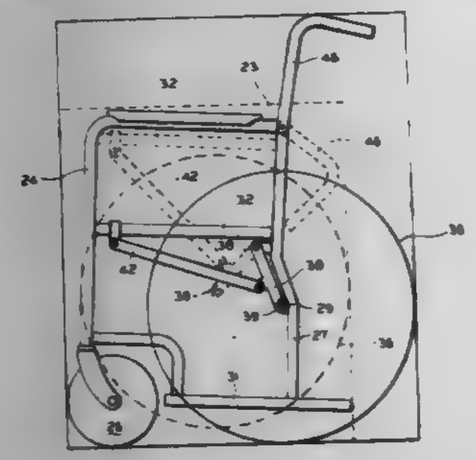
4,326,732
FOLDABLE WHEELCHAIR

John C. Gall, Chicago, and Richard D. Meharg, Wheaton, both of Ill., assignors to Sears, Roebuck and Co., Chicago, Ill.

Filed Sep. 8, 1980, Ser. No. 185,116

Int. Cl.³ B62B *11/00*

U.S. Cl. 280—642 13 Claims



1. A foldable wheelchair comprising a pair of independent side frame members each including front and rear legs and horizontal upper and lower members connecting said front and rear legs, a seat support bar extending between respective front and rear legs and arranged for vertical movement relative to said legs substantially in the plane of a side frame member, a flexible seat carried by said seat support bars and extending transversely of said bars, a pair of X-brace members extending diagonally and transversely of said side frame members, said brace members being pivotally connected at their upper ends to opposite seat support bars and at their lower ends to opposite lower members of said side frame members, an arm pivotally connected at one end to each rear leg and carrying at its distal end wheel mounting means, a wheel and axle assembly carried by said wheel mounting means, a control link pivotally connected to said seat support bar and to said arm, the upward movement of said seat support bar effecting concurrent movement of said side frame members towards each other and swinging movement of said wheels in arcuate paths in a forward direction to position the wheels substantially within the boundries of the side frame members whereby a substantial reduction in the width and length of the chair is accomplished.

4,326,733
HYDRO-PNEUMATIC SUSPENSIONS FOR AUTOMOTIVE VEHICLES

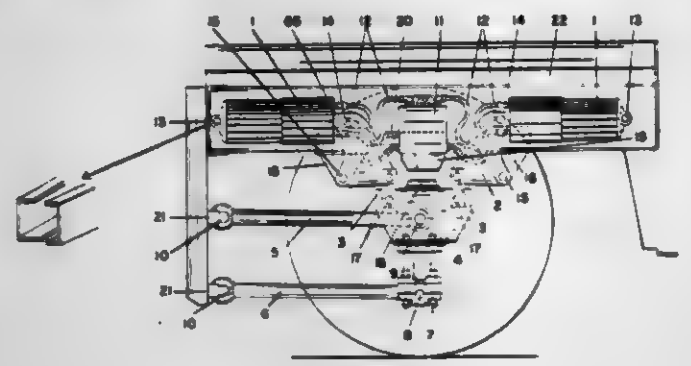
Carlos A. Rubalcava, Hornedo No. 116, Aguascalientes, Mexico

Filed Oct. 12, 1979, Ser. No. 84,311

Claims priority, application Mexico, Oct. 13, 1978, 175201

Int. Cl.³ B60G *11/26*

U.S. Cl. 280—708 20 Claims



1. A hydro-pneumatic suspension for an automotive vehicle having a plurality of wheels, comprising:
- a chassis having two C-shaped sections which face each other forming a housing and which have upper and lower flanges, said upper flanges being wider than said lower flanges;
- at least one carrier means fixed to an axle for a wheel and coupled to said chassis by support means; and
- first and second hydro-pneumatic, mechanical shock absorbers coupled to each said carrier by pivoting means and to said chassis and enclosed in said housing, each of said shock absorbers having a spring oriented such that said spring of said first shock absorber opposes said spring of said second shock absorber.

4,326,734
REAR AXLE FOR MOTOR VEHICLES

Wilhelm Kroniger, Friolzheim, Fed. Rep. of Germany, assignor to Dr. Ing. h.c.F. Porsche AG, Stuttgart, Fed. Rep. of Germany

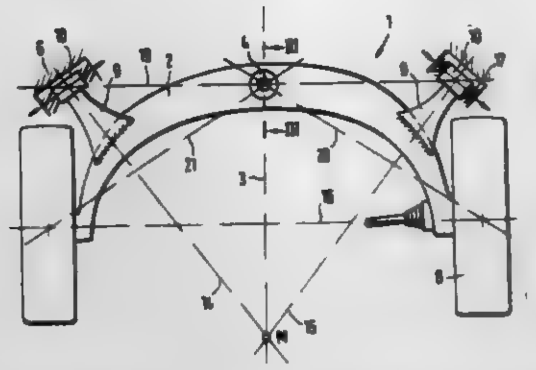
Filed May 2, 1980, Ser. No. 146,165

Claims priority, application Fed. Rep. of Germany, May 4, 1979, 2918009

Int. Cl.³ B60G *11/14*

U.S. Cl. 280—724 9 Claims

1. Rear axle assembly for a motor vehicle with a rigid axle beam running crosswise to the lengthwise axis of the vehicle, said axle beam being mounted pivotably to the vehicle body via one support bearing located on the central lengthwise axis of the vehicle for vertically supporting the axle beam relative to the vehicle body and by two trailing arms, connected to the axle beam, via guide bearings, characterized by the fact that said axle beam is rigidly connected with the two trailing arms so as to transmit forces occurring transversely and longitudinally of the vehicle to the guide bearings and to form a one-piece wheel guiding element for rear wheels of the vehicle, carried by said axle beam, said guiding element having an instantaneous rotational pole that is located rearward of the rotational axis of said wheels carried by said axle beam, with respect to a forward direction of travel, and in that said guide



bearings are constructed so as to be more rigid in a radial load direction of the bearing than in an axial load direction of the bearing, permit a roll steering effect of the rear wheels, and form a horizontal pivot axis relative to said forward direction of travel, during straight line travel of the vehicle.

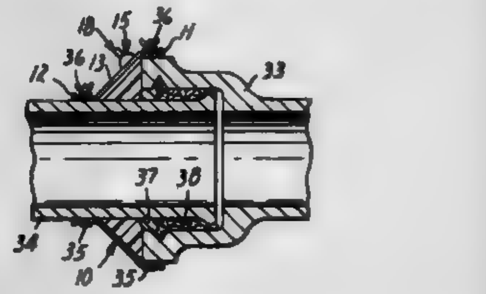
4,326,735
MOLD USEFUL IN SEALING LEAKS IN PIPES

David N. Hunder, Woodbury, and Harold C. Hervig, Jr., Maplewood, both of Minn., assignors to Minnesota Mining & Manufacturing Company, Saint Paul, Minn.

Filed Oct. 14, 1980, Ser. No. 196,390

Int. Cl.³ F16L *55/18*

U.S. Cl. 285—15 11 Claims



1. A mold useful in sealing fluid leaks in pipes, said mold comprising:
- a sleeve of an elastomeric material dimensioned to fit around a pipe, and extend longitudinally to both sides of a leak in a pipe, said sleeve having a resin injection port and a fluid venting port located such that, when said mold is extended around said pipe and longitudinally to both sides of said leak, said fluid venting port is at the top of said pipe,
- means for securing said mold to itself after being placed around said pipe,
- pressure-relief means on said fluid venting port to permit escape of fluid at a predetermined pressure above the pressure in said pipe,
- sealing means on said injection port to prevent escape of resin at a pressure above said predetermined pressure,
- said mold being at least in part expandable under a pressure less than said predetermined pressure.

4,326,736
SWIVEL JOINT FOR REVERSE CIRCULATION DRILL

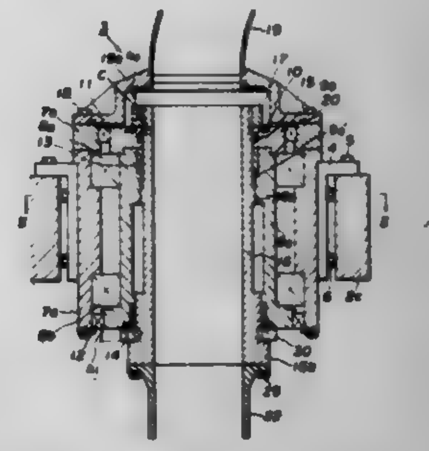
Hiroshi Kusumi, Honjo, and Masami Wada, Tsuchiura, both of Japan, assignors to Hitachi Construction Machinery Co. Ltd., Tokyo, Japan

Filed Apr. 14, 1980, Ser. No. 142,165

Claims priority, application Japan, Apr. 16, 1979, 54-45339; Apr. 16, 1979, 54-45341

Int. Cl.³ F16L *27/00*

U.S. Cl. 285—98 7 Claims



1. A swivel joint for a reverse circulation drill, comprising:
- a non-rotatable outer housing;
- a center housing rotatably mounted in said outer housing through thrust and radial bearings;
- an inner housing vertically slidably fitted in said center housing and interiorly defining a passage for muddy water; and
- an upper lid having a bent pipe for conducting muddy water from said inner housing to a suction hose;
- said inner housing having at the upper and lower ends thereof flanged projections extending toward said center housing for limiting the sliding movement of said inner housing;
- said inner and center housings having respectively on the outer and inner peripheries thereof engaging portions which are rotationally lockable with each other within the range of the vertical sliding movement of said inner housing for integrally rotating said inner and center housings:
- said inner housing, after imposition and release of a downward thrust, being slid upward within the range of a space between the lower end of said center housing and the flanged projection at the lower end of said inner housing subject to an upward thrust acting thereon, thereby preventing transmission of said upward thrust to said center and outer housings.

4,326,737
TUBE COUPLING ASSEMBLY

Ernesto Lehmann, Schaffhausen, Switzerland, assignor to Georg Fischer Aktiengesellschaft, Schaffhausen, Switzerland

Filed Feb. 21, 1980, Ser. No. 123,204

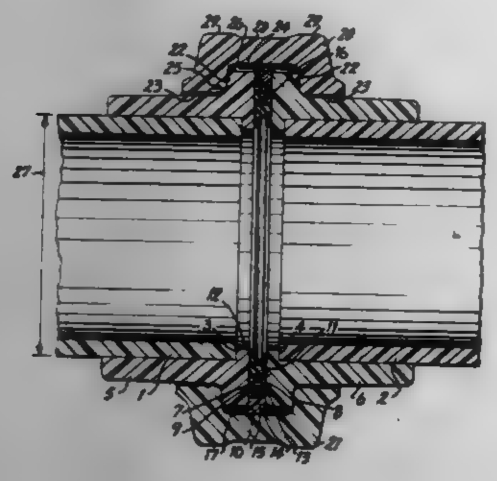
Claims priority, application Switzerland, Feb. 23, 1979, 1799/79

Int. Cl.³ F16L *17/06*

U.S. Cl. 285—112 12 Claims

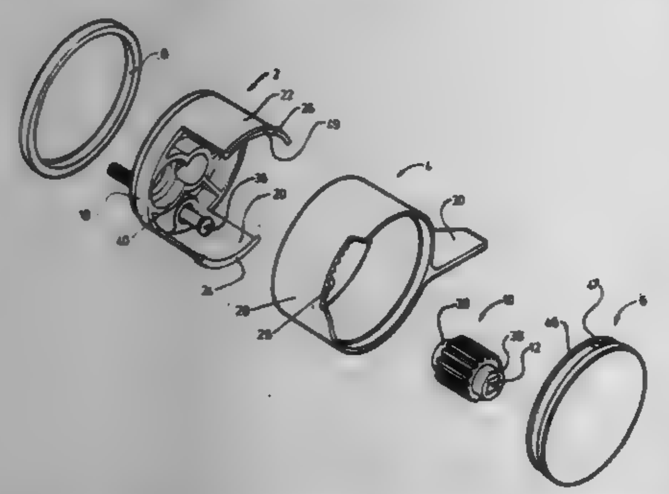
1. A coupling assembly for joining together the ends of a pair of tubes, particularly tubes made of plastic material, comprising: flange bushings defining a pair of planar radial flanks extending generally perpendicularly to the center lines of said pair of tubes and means attaching said bushings to said tubes; sealing means sealingly engaging said radial flanks, said sealing means having a generally annular configuration and an outer circumferential face; said radial flanks and said annular sealing means being structured so that said annular sealing means are held axially fixed between said radial flanks but radially adjustably movable relative thereto to allow for radial adjustment in the position of said sealing means; said outer circumferential

face of said sealing means having a diameter which is at least as large as the outermost diameter of said radial flanks; and annular clamping means extending circumferentially about said flange bushings and said sealing means to provide a radial clamping force and to circumferentially engage said sealing means to effect radial adjustment of the position thereof; said clamping means comprising a pair of generally semicircular shells, resilient pawl means for circumferentially joining said



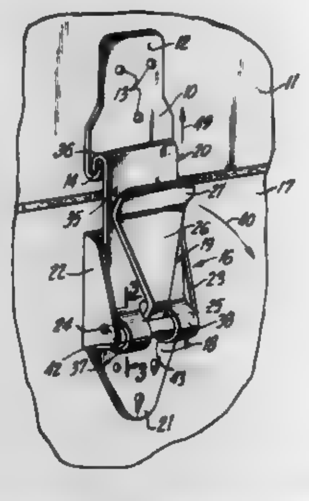
shells together and radially inner engaging means for engaging said outer circumferential face of said sealing means to effect radial positioning thereof; said sealing means including an outer centering ring having a T-shaped profile, and an inner sealing ring with a lip seal directed radially inwardly of said assembly and formed with a U-shaped profile, with a radial web being provided on said centering-ring, said radial web engaging in an outer circumferential groove of said sealing ring.

4,326,738
DOOR KNOBS AND LEVERS
Barry N. Loftus, 15 Willsmere Rd., North Kew, Victoria, and Hugh J. Young, 2 Ormond St., Kensington, Victoria, both of Australia
Filed May 3, 1979, Ser. No. 35,691
Int. Cl.³ E05C *1/16*
U.S. Cl. 292—172 34 Claims



1. Door furniture for actuating a spindle operated door lock in a door having a free, said furniture comprising:
a first component for fixedly mounting on the face of the door;
a second component which is rotatable relative to the first component; and
coupling means for coupling rotational movement of the second component to the spindle of the door lock;
the first component being located substantially entirely within the second component, wherein the first component includes first and second cylindrical bearing surfaces spaced from one another in the axial direction relative to the spindle of the lock, the second component includes complementary surfaces formed on the interior of the second component, the cylindrical bearing surfaces engaging with the complementary surfaces, and the second component is rotatable about the axes of said surfaces.

4,326,739
FASTENER WITH PIVOTABLE HANDLE MEMBER
Ernest Schlueter, Troy, N.Y., assignor to Simmons Fastener Corporation, Albany, N.Y.
Filed Jan. 24, 1980, Ser. No. 114,958
Int. Cl.³ E05C *5/00*
U.S. Cl. 292—247 2 Claims

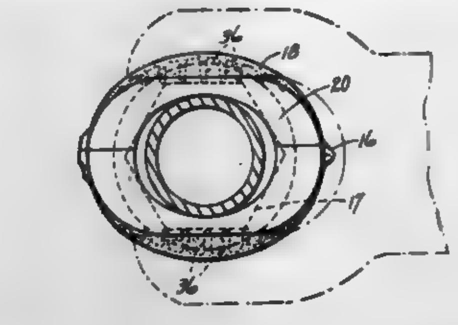


1. A fastener comprising a fixed hasp adapted to be fixed to one panel and a lever assembly adapted to be connected to a second panel, said lever assembly comprising:
a formed sheet metal bracket member having a base portion adapted to be connected to said second panel and opposite sides, each of said sides having an opening;
a formed sheet metal handle member having an elongated handle portion to be grasped and operated by the user, a paddle portion which extends at both sides from said handle member to form, in plan view, a "T" shape forming opposite wing portions with said lever portion with opposite shaft portions extending from said wing portions and rotatably positioned in said respective side openings;
a moving hasp member formed of wire and having an end portion to hook onto said fixed hasp, a body portion, and two curved portions each forming a bore and each bore containing a wing portion of said paddle portion;
wherein said shaft portions are along a line of turning of said handle member and said wing portions are eccentric to said center of turning and have edges which cam against the internal walls of said bores upon rotational movement of said handle member to open or close said fastener.

4,326,740
SECURITY SEAL
Richard S. Guiler, Stewartsville, N.J., assignor to E. J. Brooks Company, Newark, N.J.
Filed Jul. 3, 1980, Ser. No. 165,700
Int. Cl.³ B65D *55/02;* F16B *41/00*
U.S. Cl. 292—307 B 6 Claims

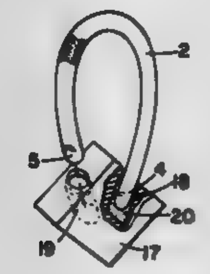
1. A seal for a pipe-coupling nut or the like, comprising a housing formed in two portions, said portions being shaped to closely enclose the nut when assembled with each other and having means enabling the portions to be non-removably fastened together, said housing portions being formed of a pigmented plastic of a type that forms a white blush on the surface

when permanently deformed, said housing portions having a plurality of inward protrusions on the innersurface positioned



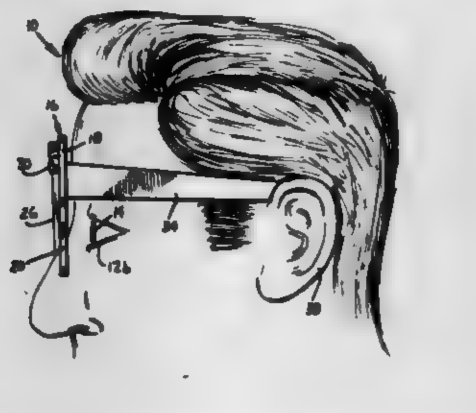
to be compressed against the nut when the seal is gripped by a tool that applies a compressive force thereto.

4,326,741
DYE FILLED SECURITY SEAL
Dennis C. W. Wilson, Tijeras, N. Mex., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.
Filed Jul. 18, 1980, Ser. No. 170,253
Int. Cl.³ B65D *33/34*
U.S. Cl. 292—307 R 8 Claims



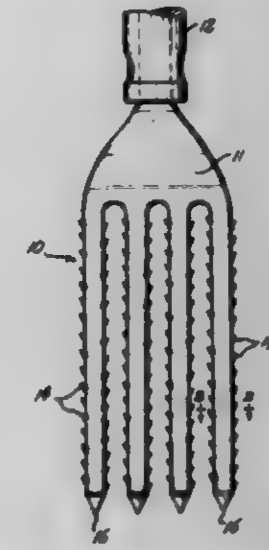
1. A security sealing device for providing visible indication of tampering or removal from an object to which it is secured comprising an elongate hollow thin-wall tubing for retention in a hole in the object and having two opposed ends for preventing removal from the hole or forceful deformation of said tubing without rupture of said wall, end portions of said tubing being closed to provide within the tubing a pressurizable chamber, and within the chamber a dye at greater than atmospheric pressure for permenently and visibly staining outer surfaces of said tubing upon rupture of said thin wall and exudation of dye from the chamber to said outer surfaces.

4,326,742
METHOD AND APPARATUS FOR INSERTING AND REMOVING SOFT CONTACT LENS
W. Frank Ingram, P.O. Box 23, Griffin, Ga. 30224
Filed Apr. 18, 1980, Ser. No. 141,602
Int. Cl.³ A61F *9/00*
U.S. Cl. 294—1 CA 18 Claims



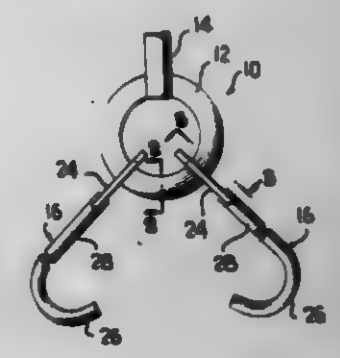
1. In an apparatus for inserting and removing soft contact lens:
a frame for head support on the head in front of the eyes and forehead of a person, support means mounted on the frame to move selectively from in front of one eye to the other, adjustable means for limiting the extent of moving of said support means for adjusting same to position the arm substantially in front of the center of the cornea of the eye, said support means removably retaining selectively a contact lens insertion means and a removal means thereon.

4,326,743
WEEDING TOOL
Kazutaka Tamura, 1801 17th Ave. South, Seattle, Wash. 98144
Filed Jun. 30, 1980, Ser. No. 164,352
Int. Cl.³ A01B *1/16;* A01D *9/02*
U.S. Cl. 294—55.5 4 Claims



1. A weeding fork comprising a plurality of substantially parallel, elongated tubular tines oriented in their flat dimension to extend in substantially coplanar alignment, a handle means to which said tines are attached, said tines each having a plurality of teeth projecting outwardly and rearwardly from each lateral side thereof for removing small rootlets from soil, the teeth along each side of each tine being alternately displaced on opposite sides of the plane of alignment of said tines in a cross-cut configuration.

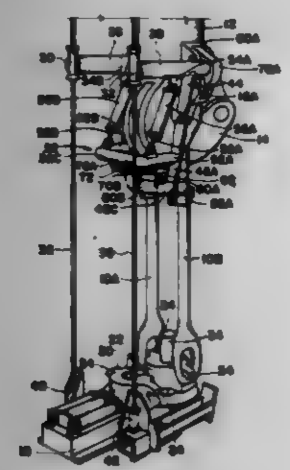
4,326,744
WORK HOOK DEVICE
William W. Long, III, Hagerstown, Md., assignor to Kennecott Corporation, Stamford, Conn.
Filed Mar. 7, 1979, Ser. No. 18,421
Int. Cl.³ B66C *1/00*
U.S. Cl. 294—81 R 4 Claims



1. A work hook device comprising a support and a hook unit adjustably carried by said support, said hook unit including a hanger portion and a hook portion, said hanger portion being engageable over said support, and said support and hanger portion having cooperating surfaces for locking said hanger portion in an adjusted position on said support, said support having a generally trapezoidal cross section and said hanger

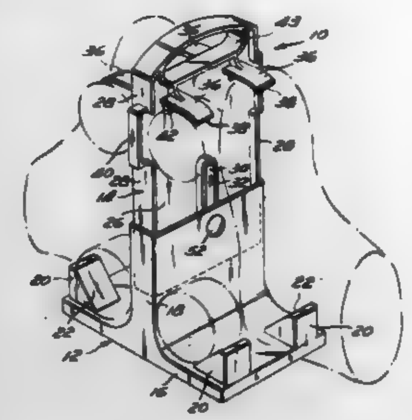
portion having a transverse opening receiving said support with said transverse opening wedgingly receiving said support, said transverse opening being elongated in a direction opposite from that effecting wedging for faciliating release of said cooperating surfaces and movement of said hanger portion along said support, said opening including an extension of a size in two directions greater than the maximum dimension of said trapezoidal cross section to permit rotation of said hanger portion about said support.

4,326,745
LINK CONTROL SYSTEM FOR USE WITH DUAL ELEVATORS
William C. Guier, Tulsa, Okla., assignor to Guier and Affiliates, Inc., Tulsa, Okla.
Filed Jun. 30, 1980, Ser. No. 164,002
Int. Cl.^{3} E21B *19/02*
U.S. Cl. 294—90 **7 Claims**



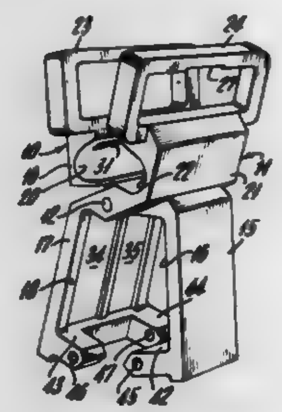
1. An improved apparatus for handling stands of pipe in a drilling rig when connecting and disconnecting the stands in making up or pulling a drilling string employed in drilling a borehole wherein the drill pipe stands have enlarged tool joints providing shoulders thereon, the drilling rig having a rig floor over the borehole, comprising:
- a lifting member elevationally positionable over a borehole;
- a pair of links pivotally supported at their upper ends to said lifting member, the links have open loops at their lower ends;
- means extending from said lifting member to selectively move said links so that their lower ends move towards or away from each other;
- means extending from said lifting member to selectively pivot said links in a common plane from the vertical to an inclined angle;
- means to guide said lifting means and thereby said links in vertical arrangement relative to a borehole;
- horizontal elevator guide means positioned adjacent the borehole;
- a pair of elevators slidably positionable on said elevator guide means, each elevator having opposed link attachment horns extending therefrom adaptable to receive the loops at the lower end of said links, each elevator having means to receive a length of drill pipe therein and to engage the drill pipe tool joint shoulders whereby each elevator may support a length of drill pipe;
- means to shift said elevator in position on said guide to engage and support a string of drill pipe;
- and means to laterally position the lower ends of said links to selectably engage or disengage the said elevator horns.

4,326,746
ROLLERSKATE CARRIER
Lawrence A. Gribalva, 10690 La Bahia, Fountain Valley, Calif. 92708
Filed Jan. 7, 1980, Ser. No. 110,001
Int. Cl.^{3} A47F *7/16*
U.S. Cl. 294—146 **14 Claims**



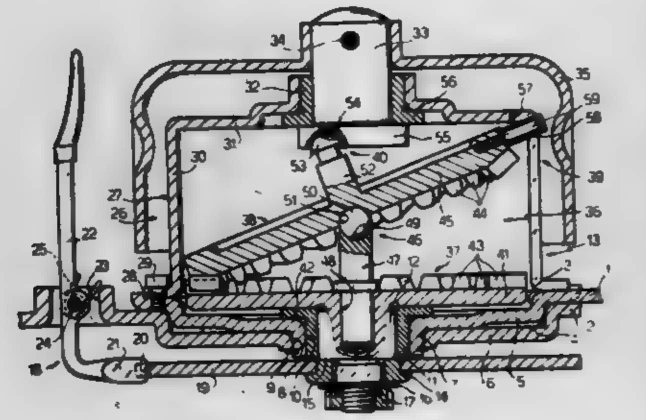
1. A rollerskate carrier comprising:
- a base adapted to be carried by a user;
- a member mounted on said base for positioning one end of said rollerskate at a fixed location relative said base; and
- arcuate resilient fastener means for snapping the other end of said rollerskate onto said base, said fastener means flexing in a direction generally parallel to the longitudinal dimension of said rollerskate in response to a force on said rollerskate in a direction generally perpendicular to said dimension to releasably mount aid other end on said base.

4,326,747
SKI CARRIER
Robert J. Finnegan, Williston, Vt., assignor to Barreca Products Co., Inc., Shelburne, Vt.
Continuation of Ser. No. 20,747, Mar. 15, 1979, abandoned. This application Nov. 25, 1980, Ser. No. 210,244
Int. Cl.^{3} B65D *71/00;* **A45F** *5/00*
U.S. Cl. 294—147 **28 Claims**



1. A ski carrier, comprising two similar unitary tong-like body members each having a handle at one end and a jaw at the opposite end, said members having an articulated connection on an axis located between the handle end and the jaw end, the handles being in abutting adjacency when in closed position and in angularly spaced relation when in open position, one of said body members having a continuously framed axially extensive opening at its region of said articulated connection, the region of said articulated connection of the other of said body members having between its articulation region and one of the ends of said other body member an axial extent which is of substantially the axial extent of the framed opening, the articulated connection of said body members being at both axial limits of the framed opening, each of the jaws having a ski-receiving cavity and the cavities of said jaws facing each other to define when in closed position a peripherally enclosed generally rectangular passage extending parallel to said axis and adapted to contain the combined central cross-section of a pair of skis in face-to-face relation when said body members are in closed position.

4,326,748
DEVICE FOR ADJUSTING THE RELATIVE ANGULAR POSITION OF TWO ELEMENTS
Enzo Brusasco, C.so Re Umberto 64, 10129 Torino, Italy
Filed Apr. 16, 1979, Ser. No. 30,173
Claims priority, application Italy, Apr. 28, 1978, 67969 A/78
Int. Cl.^{3} A47C *1/025*
U.S. Cl. 297—362 **14 Claims**



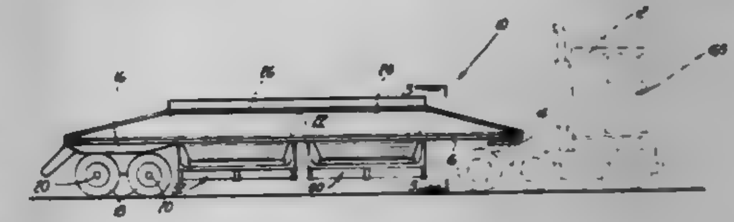
1. An adjustment device for adjusting the relative angular position of first and second elements, particularly first and second brackets articulated to one another by means of a pivot and, the first and second elements being rigidly connectable to the cushion and to the back of a seat, respectively common, preferably a seat of a motor vehicle, the said pivot being angularly coupled to said second element and forming the output shaft of a gearbox rigidly connected to the said first element and comprising an input shaft, coaxial to said output shaft and angularly controllable with respect to the said gearbox by means of a control member, and a kinematic chain transmitting the motion between the said input shaft and said output shaft, wherein said kinematic chain comprises a first and second gear facing one another, the said first gear being a face gear and angularly connected to the said output shaft and the said second gear having a number of teeth different from that of the said first gear and being slanting with respect to said first gear so as to engage a section of its periphery; support means for supporting the said second gear in a position of oscillation about a substantially central point of the said gear box, the said support means comprising a spherical support cooperating with a first hemispherical seating formed centrally on the said second gear, the said spherical support comprising a pin coaxial to the said two shafts and extending from the said first gear to the said second gear; connection means for angularly connecting the said second gear to the said gearbox; and crank means interposed between the said second gear and the said input shaft to convert and angular movement of the input shaft into an oscillation of the said second gear about the said central point and in contact with the said first gear.

4,326,749
COUPLING CONSTRUCTION
Fredrick L. Bender, Saginaw, Mich., assignor to Bender's Sales & Service, Inc., Saginaw, Mich.
Filed Dec. 3, 1979, Ser. No. 99,839
Int. Cl.^{3} B60P *1/28;* **F01B** *15/04*
U.S. Cl. 298—22 R **11 Claims**

8. In a vehicle having a frame member, a body member pivoted on said frame member for rocking movement about an axis between raised and lowered positions, and a ram pivotally connected to and reacting between said members and being extensible and retractable along its longitudinal axis to rock said body member about said axis, said body member in its lowered position being capable of vertical vibration, the improvement wherein the connection of said ram to one of said members comprises coupling means constituting at least one link having a pivotal connection at one end directly and only to

said ram and a pivotal connection at its other end directly and only to said one of said members, said link extending transversely of the longitudinal axis of said ram and enabling limited vibratory movement of said body member in its lowered position without extension or contraction of said ram.

4,326,750
GATE ASSEMBLY AND CONTROL ASSEMBLY THEREFOR
Glen F. Rosenbaum, Elk Point, S. Dak., assignor to CMI Corporation, Oklahoma City, Okla.
Filed Dec. 17, 1979, Ser. No. 104,316
Int. Cl.^{3} B60P *1/56*
U.S. Cl. 298—35 M **24 Claims**



1. In a material dispensing vehicle having a pressurized fluid source, a hopper with a bottom discharge opening for discharging the material therefrom, and a gate assembly operably connected to the vehicle such that the gate assembly is moveable between one of a closed position and an opening position, in the closed position the gate assembly preventing discharge of material from the hopper via the bottom discharge opening, in the open position the gate assembly allowing discharge of the material from the hopper via the bottom discharge opening, the improvement wherein the gate assembly comprises:
- a first gate member;
- a second gate member;
- connecting means for pivotably connecting the first gate member and the second gate member to the vehicle such that the first and second gate members are moveable between the closed position and the open position;
- a gate moving assembly operably connected to the first and second gate members for moving the first and second gate members between the closed position and the open position; and
- a control assembly operably connected to the gate moving assembly and the pressurized fluid source, the control assembly having a first operational mode and an alternative second operational mode, in the first operational mode of the control assembly the first and second gate members being positioned and maintained in the closed position via the pressurized fluid source and the gate moving assembly, in the second operational mode the control assembly being selectively activated to move the

first and second gate members between one of the closed position and the open position by the pressurized fluid source and the gate moving assembly, the control assembly comprising:

a pilot valve having a first state and a second state;

a control valve operably connected between the gate moving assembly and the pressurized fluid source, the pilot valve operably connected between the pressurized fluid source and the control valve so as to place the control valve in a condition wherein the control valve directs pressurized fluid to the gate moving assembly to maintain the first and second gate members in the closed position at such times that the pilot valve is in the first state thereof while leaving the control valve in a condition wherein the control valve can be selectively activated to selectively move the first and second gate members between one of the closed position and the open position via the pressurized fluid source and the gate moving assembly at such times that the pilot valve is in the second state thereof.

4,326,751

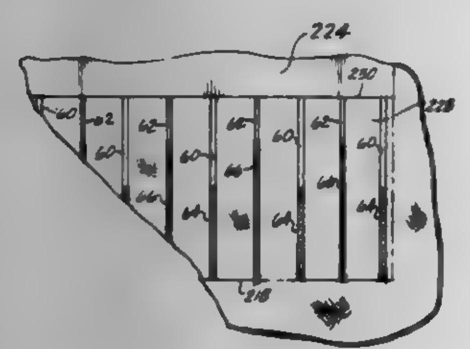
BLASTING TO A HORIZONTAL FREE FACE WITH MIXING OF FRAGMENTS

Thomas E. Ricketts, Grand Junction, Colo., assignor to Occidental Oil Shale Inc., Grand Junction, Colo.

Continuation of Ser. No. 76,287, Sep. 17, 1979, abandoned. This application Oct. 24, 1980, Ser. No. 200,136

Int. Cl.³ E21C *41/10*

U.S. Cl. 299—2 **123 Claims**



1. A method for forming an in situ oil shale retort in a retort site within a subterranean formation containing oil shale, such an in situ oil shale retort containing a fragmented permeable mass of formation particles containing oil shale comprising the steps of:

excavating formation to form at least one void in the subterranean formation leaving zones of unfragmented formation above and below such a void, such a zone of unfragmented formation having a substantially horizontal free face adjoining the void;

forming substantially vertical blastholes in at least one of such zones of unfragmented formation for forming at least one array of spaced apart blastholes;

placing explosive into such blastholes for forming a substantially horizontal array of main explosive charges and at least one substantially horizontal array of satellite explosive charges, wherein each of the satellite explosive charges has a scaled point charge depth of burial substantially equal to the scaled point charge depth of burial of each of the main explosive charges and the actual depth of burial of each of the satellite explosive charges is less than the actual depth of burial of each of the main explosive charges; and

detonating explosive in the blastholes in a single round of explosions for explosively expanding at least one of the zones of unfragmented formation toward such a void to form a fragmented permeable mass of formation particles containing oil shale in the in situ oil shale retort.

4,326,752

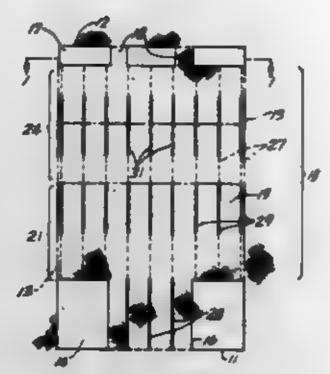
METHOD FOR FORMING AN IN SITU OIL SHALE RETORT

Thomas E. Ricketts, Grand Junction, Colo., assignor to Occidental Oil Shale, Inc., Grand Junction, Colo.

Filed Mar. 24, 1980, Ser. No. 133,409

Int. Cl.³ E21C *41/10*

U.S. Cl. 299—13 **53 Claims**



1. A method for forming an in situ oil shale retort in a subterranean formation containing oil shale, the retort having a top boundary, a bottom boundary, and vertically extending side boundaries of unfragmented formation, the retort containing a fragmented permeable mass of formation particles containing oil shale, comprising the steps of:

excavating a lower level void adjacent the bottom boundary of the in situ oil shale retort;

excavating an upper level void above the lower level void, leaving an intermediate zone of unfragmented formation between the lower level void and the upper level void;

explosively expanding a lower portion of the intermediate zone downwardly towards the lower level void for forming a first moiety of a fragmented mass of particles in the retort, the available volume of the lower level void being less than an unlimited void relative to the volume of formation explosively expanded toward the lower level void, leaving a void space between the top of the first moiety of the fragmented mass and the bottom of an upper portion of the intermediate zone, the volume of the void space being about the same as the void volume in the upper level void; and

explosively expanding the upper portion of the intermediate zone upwardly towards the upper level void and downwardly towards the void space for forming a second moiety of a fragmented mass of particles in the retort.

4,326,753

ADVANCE MECHANISM, PREFERABLY FOR MINING MACHINES

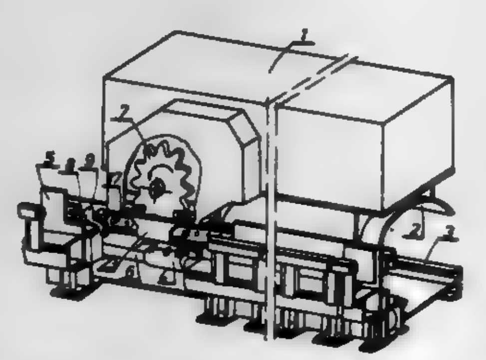
Jan Rynik, ul. Kalinowa 16, Gliwice, Poland

Filed Jun. 11, 1980, Ser. No. 158,586

Claims priority, application Poland, Jun. 12, 1979, 216335

Int. Cl.³ E21C *29/02*

U.S. Cl. 299—43 **8 Claims**



1. A rack for mounting on a segmented mine wall face conveyor or the like and for assisting the movement of a drum mining machine or the like along such segmented conveyor, the rack comprising:

a plurality of rack segments alinged substantially in an end-to-end relationship, each rack segment provided with a plurality of substantially equidistantly spaced pins oriented substantially perpendicularly to the longitudinal axis of the rack, the pins adapted for meshing with and driving engagement with a pinion or the like of the drum driving machine;

means for rotatably mounting each rack segment on the conveyor about a substantially horizontal axis, said mounting means connected to each rack segment at a point intermediate between the ends of the rack segment;

a connection link interposed between two adjacent rack segments and rotatably secured to each adjacent rack segment by means of an outermost pin of the rack segment about an axis substantially parallel to the axis of the spaced pins of each rock segment; and

means for permitting limited extension and limited contraction of said connection link relative to each adjacent rack segment in a direction substantially along the longitudinal axis of the rack.

4,326,754

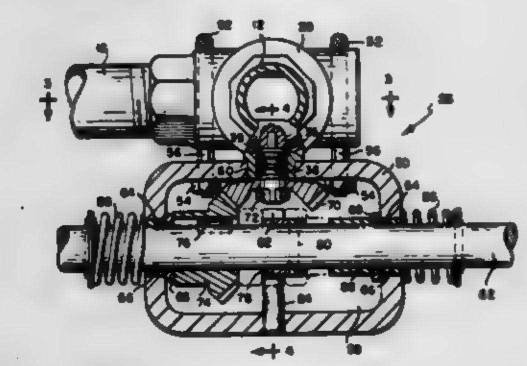
VALVE AND ACTUATOR ASSEMBLY FOR RAILROAD CAR AIR BRAKE SYSTEM

Bruce L. Harding, Holden, Mass., assignor to Smith Valve Corporation, Westboro, Mass.

Filed Sep. 29, 1980, Ser. No. 191,829

Int. Cl.³ B60T *17/04*

U.S. Cl. 303—81 **7 Claims**



1. For use in an air brake system for a railroad car having at least three pipe sections for carrying compressed air, a valve and actuator assembly manually operable from opposite sides of the car for selectively interconnecting said pipe sections, comprising:

a valve housing having three ports leading to an interior valve chamber containing a ball element, said ports being adapted for connection to said pipe sections, said ball element being rotatable within said valve chamber about the axis of an operating stem protruding therefrom through said valve housing to the exterior thereof, said ball element having communicating passages arranged to communicate with said ports in any one of four different combinations depending on the rotative displacement of said ball element;

an actuator housing attached to said valve housing and defining an actuator chamber separate from said valve chamber, said actuator housing having an aperture through which the protruding portion of said operating stem is received into said actuator chamber,

a rotatable actuator shaft extending through said actuator chamber in a direction perpendicular to said operating stem, with opposite ends of said actuator shaft protruding through opposite sides of said actuator housing;

gear means contained within said actuator chamber for drivingly connecting said operating stem;

operating means for rotatably setting said ball element by rotating said actuator shaft from either side of the railroad car; and

disengageable locking means for resisting inadvertent rotation of said actuator shaft from a selected setting.

4,326,755

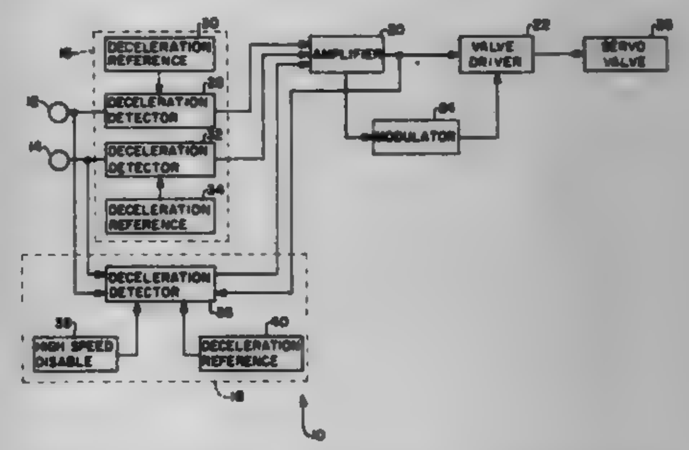
DECELERATION CONTROL CIRCUIT

George C. Fretz, III, Cuyahoga Falls, Ohio, assignor to Goodyear Aerospace Corporation, Akron, Ohio

Filed May 11, 1979, Ser. No. 38,046

Int. Cl.³ B60T *8/08*

U.S. Cl. 303—96 **14 Claims**



1. The improvement of a deceleration control circuit in a brake control system of a wheeled vehicle for limiting the pressure which may be applied to the brakes of the wheels, comprising:

deceleration detection means receiving an input signal corresponding to instantaneous wheel speed for producing an output signal corresponding to the rate of deceleration of the wheels;

disabling circuit means connected to said deceleration detection means for inhibiting operation of said deceleration detection means at vehicle speeds above a particular level; and

reference circuit means connected to said deceleration detection means for inhibiting said output signal at deceleration rates below a predetermined level.

4,326,756

REST FOR DRILLING RIG

Viktor M. Moroz, ulitsa Kommunarov, 6, kv. 6; Nikolai Y. Lezin, prospekt Kosmonavtov, 52, kv. 27; Tengiz A. Pavlov, ulitsa Budapeshtskaya 91, korpus 1, kv. 80, and Vladimir V. Ilmensky, Vitebsky prospekt, 41, korpus 2, kv. 117, all of Leningrad, U.S.S.R.

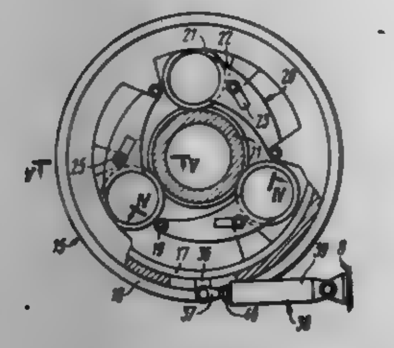
Filed Mar. 14, 1980, Ser. No. 130,268

Int. Cl.³ F16C *29/02*

U.S. Cl. 308—3.9 **1 Claim**

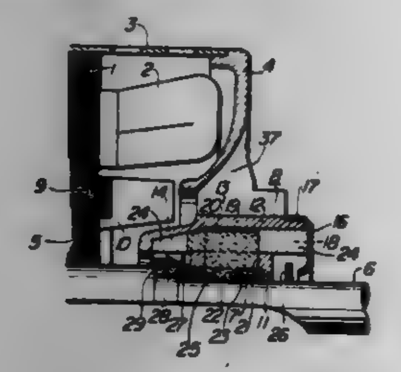
1. A rest structure for a drilling rig supported on the mast of the rig and comprising: a housing with a central bore provided in the bottom thereof for the passage of a drill rod therethrough, fixed to a lower portion of said mast; a device for centering the drill rod, accommodated in said housing; a rotating mechanism connected with said drill rod centering device; a hydraulic drive means operatively connected with said rotating mechanism; said device for centering the drill rod including: at least three link gears with bearing rollers uniformly circumferentially spaced within said housing, the rollers being mounted on vertical spindles for radial displacement by the action of said hydraulic drive by means of said rotating mechanism and the respective ones of said link gears, and engaging the drill rod by their respective peripheral side surfaces, thus defining the centering diameter, and hydraulic valves underlying said bearing rollers, the bearing rollers being spring-mounted along their respective axes and mounted for axial displacement so that, when the friction between the drill rod

and said bearing rollers attains a preselected value, said rollers follow the drill rod travel in the direction of drill and actuate



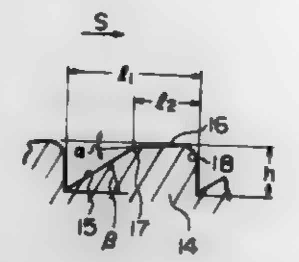
said hydraulic valves, whereby the hydraulic valves exert a force setting the centering diameter to correspond to the drill rod diameter.

4,326,757
BEARING DEVICE FOR ROTARY MACHINES
Sozaburo Ozaki, Ibaraki, Japan, assignor to Hitachi, Ltd., Tokyo, Japan
Filed May 28, 1980, Ser. No. 154,024
Claims priority, application Japan, May 29, 1979, 54-65618
Int. Cl.³ F16C *33/10*
U.S. Cl. 308—121 4 Claims



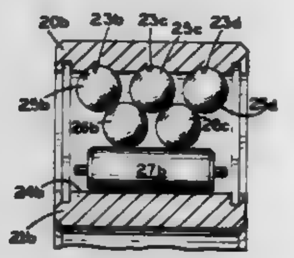
1. A bearing device for rotary machines, comprising a sleeve bearing, a bearing support member for supporting said sleeve bearing, oil reservoirs provided at least on an axially inner side of said bearing support member oil-containing materials provided in said oil reservoirs, oil returning bores communicated with said oil reservoirs formed in said bearing support member, oil guide members at least a part of which are provided in said oil returning bores so as to contact said oil-containing materials to thereby introduce lubricating oil stored in said oil-containing materials to a rotary shaft supporting surface of said sleeve bearing, and an oil slinger provided on the rotary shaft for returning to said oil-containing materials the lubricating oil flowing out in the direction of the axis of the rotary shaft, each of said oil reservoirs provided on the axially inner side of said bearing support being in the form of a groove, said oil reservoirs being provided in substantially the same circumferential positions as said oil returning bores, said oil reservoirs being formed integrally with said bearing support member by a die casting mold.

4,326,758
THRUST BEARING WITH TAPERED LANDS
Shigehiro Nozue, Toyota; Tatsuhiko Fukuoka, Aichi, and Hideaki Sugiura, Okazaki, all of Japan, assignors to Taiho Kogyo Co., Ltd., Aichi, Japan
Filed Nov. 6, 1980, Ser. No. 204,521
Claims priority, application Japan, Dec. 25, 1979, 54-167602
Int. Cl.³ F16C *17/04*
U.S. Cl. 308—170 5 Claims



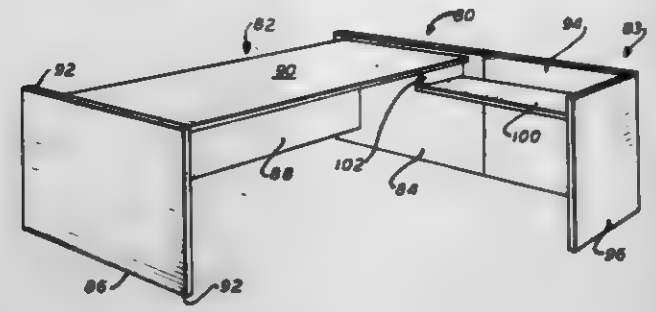
1. A thrust bearing having a central bore for receiving therein a rotating shaft, a bearing face extending around the central bore for making a slide engagement with a slide part of the shaft, and tapered lands circumferentially arranged in series in the bearing face for forming a thrust load-carrying oil film of a wedge shape between the tapered lands and the sliding part of the shaft, wherein each of said tapered lands is formed with a foot surface having a given sloping angle (β) and an upper surface having a gentle sloping angle (α) less than said given sloping angle of said foot surface, said foot surface and said upper surface having therebetween a rounded boundary.

4,326,759
ANTI-FRICTION BEARING
Adam M. Rasmus, 313 Banyan Dr., Lake Worth, Fla. 33461
Filed Mar. 30, 1981, Ser. No. 249,074
Int. Cl.³ F16C *19/49*
U.S. Cl. 308—183 15 Claims



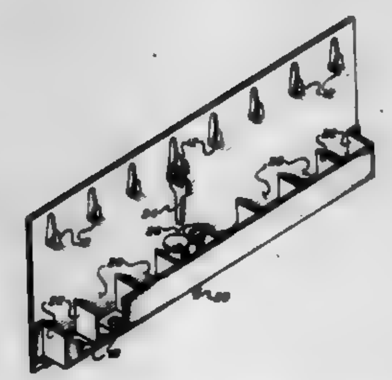
1. In an anti-friction bearing having concentric outer and inner races which define radially inwardly-facing and radially outwardly-facing circular raceways, respectively, the improvement which comprises:
three concentric sets of anti-friction bearing members engaged in succession radially between said races in rolling contact with said raceways and with each other, two of said sets of bearing members consisting of balls and the remaining set consisting of rollers, each of said rollers being unsupported except where it has said rolling contact with balls or a raceway;
each of said races being a one-piece annular body, and each of said raceways being a single continuous surface that is case hardened and finish ground and polished to at least a No. 12 microfinish, and the respective raceways of said outer and inner races being concentric with a tolerance not greater than substantially 0.001 inch.

4,326,760
WORK STATIONS OF KNOCK-DOWN MODULAR COMPONENTS
Irwin I. Ziegelheim, 127 Munsey Rd., Emerson, N.J. 07630, and Lawrence Lerner, 201 E. 62nd St., New York, N.Y. 10021
Continuation of Ser. No. 885,351, Mar. 13, 1978, abandoned. This application Jun. 22, 1979, Ser. No. 51,056
Int. Cl.³ A47B *43/00;* F16B *12/00*
U.S. Cl. 312—257 R 6 Claims



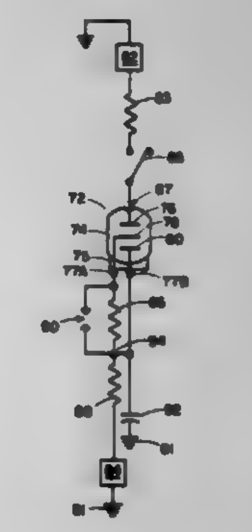
1. A work station comprising:
a work surface;
a pair of side panels;
a cross panel;
securing means for attaching said side panels in spaced relationship to each other and at the ends of said cross panel and directly to said cross panel, with said side panels and cross panel disposed in vertical disposition to form a vertical support for said work surface, and for attaching said work surface directly to said cross panel and between and directly to said side panels;
said securing means being received and located substantially within said panels and cross panel so as not to extend outwardly from said panels and not readily visible in viewing the assembled work station; and where
said side panels, cross panel and work surface being fabricated for shipment in knock-down condition and for on-site assembly by said securing means, the work station further including
an additional work surface;
a pair of additional side panels; and
additional securing means for attaching said additional side panels to each and one of said side panels to form a vertical support for said additional work surface, and for attaching said additional work surface thereto so as to form a run-off for said work surface.

4,326,761
KEY AND LOCK CORE COMBINATION
Samuel Schwartz, Box 96A, Bechtelsville, Pa. 19505
Filed Dec. 10, 1979, Ser. No. 101,824
Int. Cl.³ B65D *5/50;* A47F *5/08;* A47B *67/02*
U.S. Cl. 312—326 2 Claims



1. A compartmental key and lock core container comprising, as a rigid frame:
(a) a continuous sheet of rigid material containing a series of four right angle bends intermittent its length to form thereby an elongated pocket portion, said pocket containing a first upper lip portion and a second lower lip portion at its edges, said pocket portion being of a size and shape to accommodate a row of lock cores; and,
(b) a planar back board of a dimensional size so that it totally overlaps said pocket portion, said back board being hingedly attached at its lower edge to said pocket portion lower lip edge.

4,326,762
APPARATUS AND METHOD FOR SPOT-KNOCKING TELEVISION PICTURE TUBE ELECTRON GUNS
Richard L. Hockenbrock, Mundelein, and James W. Schwartz, Deerfield, both of Ill., assignors to Zenith Radio Corporation, Glenview, Ill.
Continuation of Ser. No. 34,787, Apr. 30, 1979, abandoned. This application Oct. 15, 1980, Ser. No. 197,031
Int. Cl.³ H01J *9/00*
U.S. Cl. 316—1 13 Claims



1. An apparatus for spot-knocking an electron gun enclosed in the evacuated envelope of a cathode ray picture tube by inducing beneficial arcing between two selected electrodes of said gun, each electrode being connected to an associated electrical conductor extending through said envelope, said picture tube having an inherent capacitance that can store energy in an amount capable of supporting a destructive arc during said spot-knocking said apparatus comprising:
a first high-voltage source connected to one of said electrodes through its associated electrical conductor for supplying a first potential to said electrode, said potential having a value at least long-term average which is many kilovolts positive relative to a predetermined ground;
a second high-voltage source connected to the other of said electrodes through its associated electrical conductor for supplying a second potential to said other electrode, said potential having a value at least long term average which is many kilovolts negative relative to said ground, the difference between said first potential and said second potential being effective to induce said beneficial arcing between said electrodes;
whereby, by the application of the bipolar potential across said electrodes, the amount of energy in the induced arcing, for a given applied potential, is very much less than would be the case if a unipolar potential were applied.

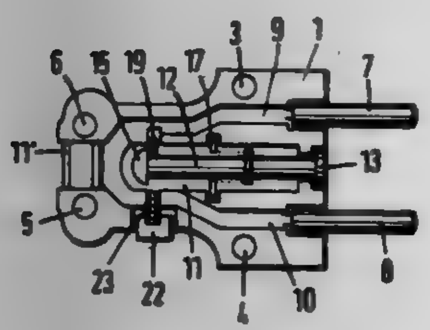
4,326,763
ELECTRICAL PLUG
Ilija Ristovski, Kuppenheim, Fed. Rep. of Germany, assignor to Djoko Ristovski, Kuppenheim, Fed. Rep. of Germany
Filed Jan. 8, 1980, Ser. No. 110,292
Claims priority, application Fed. Rep. of Germany, Jan. 8, 1979, 2900401
Int. Cl.³ H01R *13/62*
U.S. Cl. 339—14 P 3 Claims

1. In an electrical plug of the type including a housing made

of insulating material for receiving plug contacts and coupling means for a feeder cable, the improvement comprising:

said housing having a front end portion having a front face, a central bore formed therein disposed normally to and opening into said front face thereof, a rigid abutment extending radially into said central bore, a rear end portion having a cable bore for said feeder cable which is disposed in axial alignment with said central bore and a pair of feeder cable conduits formed therein disposed on opposite sides of said central bore, spaced therefrom, which merge with said cable bore in said rear end portion and open onto said front face of said front end portion;

a retractable spring-loaded release device received in said housing for movement between a retracted position, in which it is disposed substantially within said housing, and a withdrawn position, in which is projects outwardly fro said front face, said spring-loaded release device comprising a bolt disposed at least partially within said central bore having a flange which serves as an offset abutment and a rounded abutment disposed at one end thereof, said bolt being positioned in said bore such that said flange thereof is disposed in front of said rigid abutment, and a helical spring received on said bolt which is biased between said rigid abutment of said housing and said flange of said bolt so as to urge said bolt in a direction towards said withdrawn position thereof; and



an actuation device mounted on said housing for triggering movement of said spring-loaded release device to said withdrawn position thereof by spring force, so that when said plug is received within a wall socket or a coupling having a mounting face opposing said front face thereof, said release device upon actuation will engage and push off from said mounting face to automatically effect or at least facilitate plug release, said actuation device being releasably coupled to said rounded abutment of said bolt and including an actuation button which, when depressed, effects release of said rounded abutment of said bolt, so as to permit said bolt to move to said withdrawn position thereof under the force of said spring so as to facilitate plug release, said actuation device also comprising a plate having an opening formed therethough which is mounted for which is mounted for reciprocal movement in said bore for movement between a locking position in which said rounded abutment of said bolt is retained in engagement with said plate opening and a release position in which said rounded abutment is released from said opening, said plate being attached to a lug extending outwardly of said housing on which said button is secured, said button being spring-loaded so as to urge the same outwardly and so as to normally maintain said plate in a locking position, and so that, upon depression of said button, said plate is moved to said release position thereof under spring tension.

4,326,764

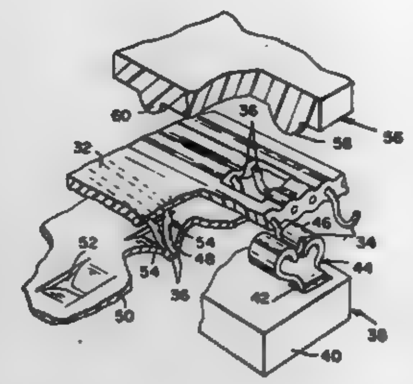
CONNECTOR FOR TERMINATING HIGH DENSITY CABLE

John C. Asick, Harrisburg, and Clifton W. Huffnagle, Camp Hill, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Continuation of Ser. No. 948,836, Oct. 5, 1978, abandoned. This application Feb. 21, 1980, Ser. No. 123,317

Int. Cl.³ H01R *11/20*

U.S. Cl. 339—14 R **6 Claims**



1. An improved means for terminating the conductors of multi-conductor flat flexible cable in which a plurality of conductors are held in spaced parallel relation by insulation with at least the insulation slit adjacent some of the conductors which are then exposed from a flat surface of said cable by pushing a loop of bare conductor out of the insulation, said means comprising:

terminal means having a pair of resilient tine members having opposing major planar surfaces extending in the direction of the conductors and defining smooth surfaces of transition leading to a slot therebetween, each said loop received in a respective slot in force fit to make good mechanical and electrical contact therebetween; and

housing means enclosing said terminal means.

4,326,765

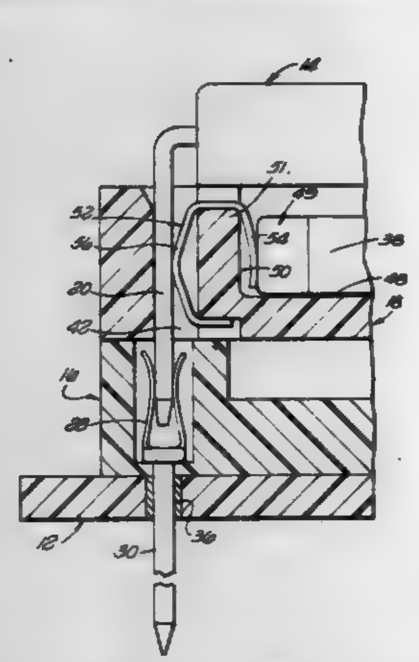
ELECTRONIC DEVICE CARRIER

Salvatore T. Brancaleone, Tempe, Ariz., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Apr. 15, 1980, Ser. No. 140,582

Int. Cl.³ H01R *13/66, 23/68*

U.S. Cl. 339—17 CF **11 Claims**



1. An electronic package assembly comprising:

a carrier mounted between a DIP and a DIP adapter, said DIP embodying a row of vertical conductive leads and said DIP adapter containing a row of terminals;

said carrier comprising:

an insulator having a top surface and a bottom surface;

a plurality of contact cavities in said insulator extending from said top surface to said bottom surface, said cavities being arranged in a row corresponding to said row of leads;

a recess in said insulator spaced from said row of cavities defining therebetween an insulation barrier;

contacts associated with selected ones of said cavities;

each said contact having a first spring portion extending into said cavity and a second spring portion extending into said recess, and a bridging portion extending around said barrier;

said vertical conductive leads of said DIP extending downwardly into said cavities engaging said first spring portions of said contacts and downwardly into said DIP adapter engaging said terminals therein; and

a microelectronic device mounted in said recess having conductors engaging said second spring portions of said contacts whereby said DIP leads, DIP adapter terminals and microelectronic device conductors are electrically interconnected.

4,326,766

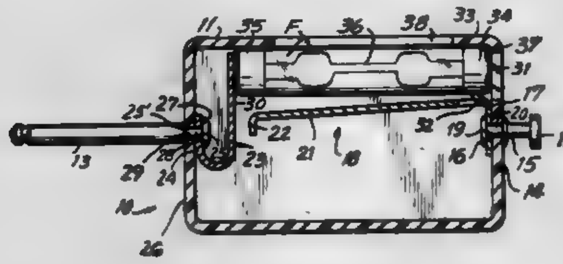
OPTIONALLY FUSED CONNECTOR DEVICE

Mark T. Basseches, 420 Lexington Ave., New York, N.Y. 10017

Filed Apr. 28, 1980, Ser. No. 144,263

Int. Cl.³ H01R *29/00, 3/00;* **H01H** *85/04, 85/28*

U.S. Cl. 339—31 R **10 Claims**



1. An optionally fused connector device comprising a body portion of insulating material, input terminal means on said body portion for reception of an input lead, output terminal means on said body portion for engagement with a device to be powered, a fuse receiver chamber formed in said body portion and sized to receive a fuse member having first and second contacts, first and second connector leads extending respectively from said input and output terminal means, each said lead including a portion within said chamber positioned to engage one of said contacts of a fuse disposed in said chamber, switch means in said body portion normally connecting said input and output terminal means, and switch control means positioned to engage a fuse inserted into said chamber for opening said switch means responsive to insertion of a fuse into said chamber, thereby to insert said fuse as the sole connective path between said input and output terminal means said switch control means positioned to close said switch means responsive to removal of said fuse from said chamber.

4,326,767

WIRE CUTTING ELECTRICAL CONNECTOR

Raymond A. Silbernagel, Ramsey, and Garry L. Sjolander, Maplewood, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 19,577, Mar. 12, 1979, abandoned. This application Jan. 14, 1980, Ser. No. 107,887

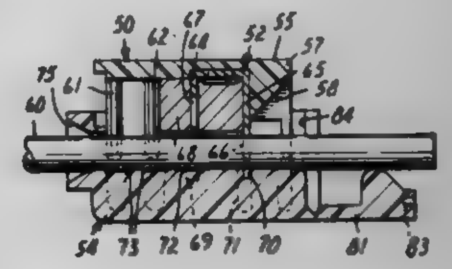
Int. Cl.³ H01R *4/24*

U.S. Cl. 339—98 **17 Claims**

1. A wire connector comprising:

a hollow, open-topped, insulating body having a base wall, a pair of generally parallel side walls extending generally perpendicularly from said base wall and an end wall extending from said base wall between said side walls at one end of said body, the upper edge of at least a portion of said end wall being inclined at an acute angle to said base wall, and the end of said body opposite said end wall being open for access by at least one wire,

a U-shaped, resilient, conductive wire connector element, the legs of the U being wide and thin, one of the legs being formed with at least one wire connecting slot extending from the top of said leg toward the base of said U, the second leg being sharpened along its top edge in alignment with at least one said wire connecting slot in said first leg, said connector element being positioned in said body with the base of the U on said base wall of said body and said second leg abutting and extending above said inclined portion of said body end wall, and



an insulating cover formed to telescope with said body, said cover having means to carry a wire into each said connector element slot and to cooperate with said sharpened second leg of said connector element to sever at least one wire extending through said connector upon telescoping of said cover and said body fully together,

said body and cover being formed with means to seal the end of said connector adjacent said sharpened second leg of said connector element when said body and cover are fully telescoped together, and complementary latch members to retain said body and cover in an open position to permit at least one wire to be inserted into said body end that is open for access by at least one wire and through said connector between said body and cover, and to retain said body and cover in a crimped position with said cover and body fully telescoped together.

4,326,768

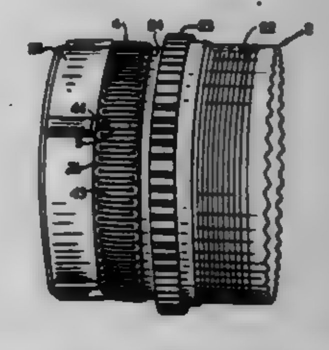
ELECTRICAL CONNECTOR GROUNDING STRAP CONNECTION

Stephen Punako, Bainbridge, N.Y., assignor to The Bendix Corporation, Southfield, Mich.

Filed Jun. 2, 1980, Ser. No. 155,717

Int. Cl.³ H01R *4/66*

U.S. Cl. 339—143 R **2 Claims**

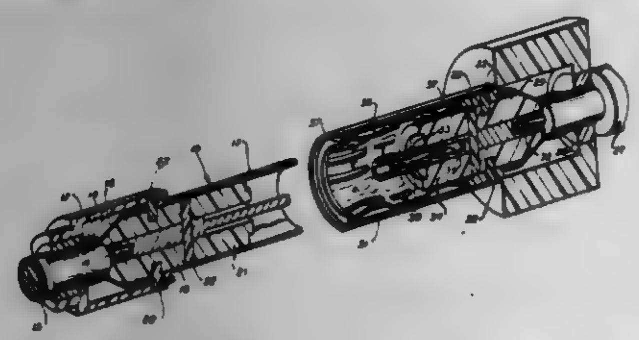


1. In combination with an electrical connector of the type having a first connector shell; a second connector shell; means for coupling said first shell to said second shell; a grounding strap wrapped around a portion of one of said shells to suppress electromagnetic radiation entering the connector, said grounding strap comprising: a flat elongated piece of electrically conducting material; a first plurality of holes arranged along a common axis along one of the elongated sides of the material; a second plurality of holes arranged along a common axis

along the other elongated side of the material; and a plurality of slits in said material, each of said slits extending from one of said holes to the edge of the elongated side furthest from said hole to define a plurality of interconnected legs; and means for securing said strap to one of said shells, the improvement wherein said securing means comprises;

a sleeve for securing opposite ends of said grounding strap together, said sleeve having the last leg at each end of the grounding strap extending into said sleeve, thereby securing the strap to said one shell.

4,326,769
ROTARY COAXIAL ASSEMBLY
Glenn F. Dorsey, and James C. Hassall, II, both of Blacksburg, Va., assignors to Litton Systems, Inc., Blacksburg, Va.
Filed Apr. 21, 1980, Ser. No. 142,246
Int. Cl.³ H01R *11/22, 17/06*
U.S. Cl. 339—177 E **1 Claim**



1. In a miniature rotary coaxial assembly for electrically coupling two coaxial leads one to the other, a combination comprising:

a stator cover and a rotary housing,

an external pin and a smaller diameter internal pin rigidly fixed to the stator cover,

stator insulation means for electrically insulating the external pin from the internal pin and for maintaining a coaxial relationship therebetween,

stator adaptor means for electrically coupling the external lead of a first coaxial cable to the external pin and means for electrically coupling the internal lead of said first coaxial cable of the internal pin,

an external socket and a smaller internal socket rigidly fixed to the rotary housing,

rotor insulation means for electrically insulating the external socket from the internal socket and for maintaining a coaxial relationship therebetween,

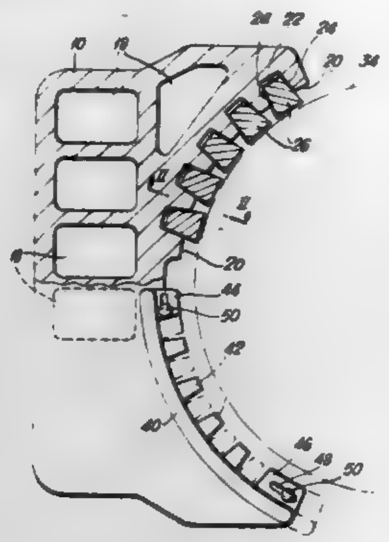
rotor adaptor means for electrically coupling the external lead of a second coaxial cable to the external socket and means for electrically coupling the internal lead of said second coaxial cable to the internal socket,

a first conductive band of elongated louvered contacts lining the external socket and electrically coupling said external socket to the external lead,

a second conductive band of elongated louvered contacts lining the internal socket and electrically coupling said internal socket to the internal pin,

wherein the fit between the first conductive band and the external pin and between the second conductive band and the internal pin allows relative rotational motion therebetween and provides a low noise sliding electrical contact, whereby the rotary housing in the second coaxial cable and the external and internal sockets rotate freely as a unit with respect to the stator cover, the first coaxial cable, and the external and internal pins.

4,326,770
ELECTRODE CLAMP
Colin F. Widmer, Middlesbrough, England, assignor to James Brown & Sons, Ltd., Great Britain
Continuation of Ser. No. 37,294, May 9, 1979, abandoned. This application Nov. 24, 1980, Ser. No. 210,139
Int. Cl.³ H01R *13/22*
U.S. Cl. 339—278 C **11 Claims**



1. A contact assembly capable of passing large electric currents comprising a pair of conducting elements disposed face to face, at least one of said conducting elements having a plurality of insert-receiving grooves in its face, each groove having opposed side walls which converge away from the face, a separate graphite insert located in each of the grooves, each insert being formed of an independent body shaped to normally fit between the convergent walls of the associated groove, with its inner end spaced from the bottom of the groove and its outer end protruding from the face of said conducting element, to make electrical contact with the face of the other one of the conducting elements, and means for pressing the two conducting elements towards each other sufficient to push the most protruding ones of said inserts into their associate grooves until substantially all of said inserts are in contact with the other one of said conducting elements, giving good electrical contact between the graphite inserts and the two conducting elements and thereby a path for the electrical current from one conducting element to the other through the graphite inserts.

4,326,771
METHOD OF COUPLING BETWEEN AN OPTICAL FIBER AND AN OPTOELECTRONIC DIODE, AND A TRANSMITTING OR RECEIVING HEAD FABRICATED BY MEANS OF SAID METHOD
Raymond Henry; Jean-Victor Bouvet; Alain Chapard, and Jacques Simon, all of Paris, France, assignors to Thomson-CSF, Paris, France
Filed Oct. 2, 1980, Ser. No. 193,294
Claims priority, application France, Oct. 5, 1979, 79 24891
Int. Cl.³ G02B *5/14;* **H01L** *31/18*
U.S. Cl. 350—96.17 **10 Claims**

1. A method of coupling between an optical fiber and an optoelectronic diode, wherein said method comprises the following steps:

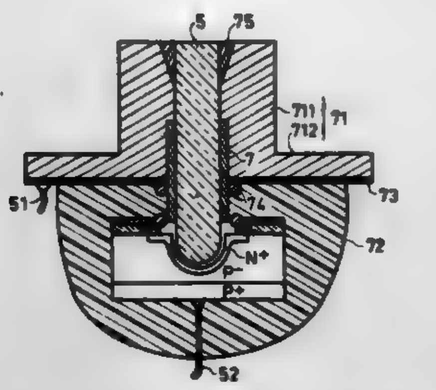
(a) fabrication of a semiconductor structure which is capable of constituting an optoelectronic diode by addition of a doped semiconducting layer so as to constitute with the rest of the structure a rectifying junction;

(b) formation of a cavity by chemical etching of the structure on a plane face which is intended to be coupled to the optical fiber and to provide a seating for the rectifying junction, the chemical etch being localized in a zone which is delimited by a layer of etch-resistant material;

(c) formation of the rectifying junction by doping of the

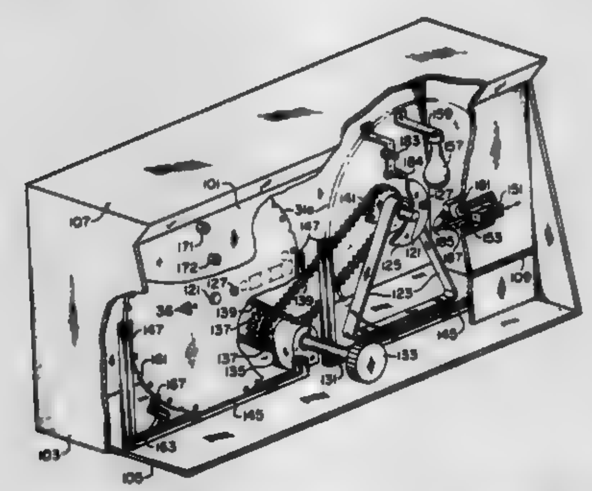
semiconductor material constituting the internal wall of the cavity;

(d) fabrication of an optoelectronic head by fitting the end of an optical fiber within the cavity of the structure.



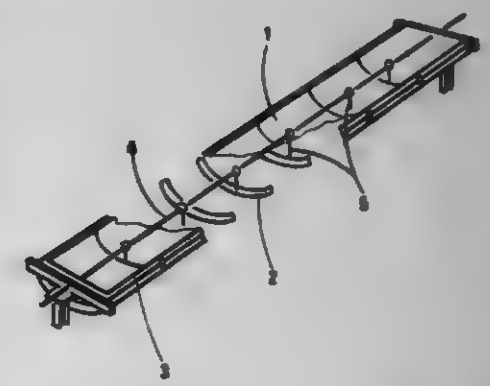
7. An optoelectronic head obtained by means of a method according to claim 1, wherein electrical connecting leads are connected to contacts formed on semiconducting zones of opposite conductivity types forming part of the diode.

4,326,772
STEREOSCOPIC PICTURE SYSTEM
George F. Hausherr, 16 Norwich Ave., Lynbrook, N.Y. 11563
Filed Jan. 30, 1980, Ser. No. 116,900
Int. Cl.³ G02B *27/22;* **G03B** *21/00, 35/18*
U.S. Cl. 350—134 **26 Claims**



1. A stereoscopic viewing system useful especially in sales promotion and in instruction, comprising two separate carrier means which are substantially duplicates of each other, each having thereon a multiplicity of pairs of stereoscopically related images, cabinet means enclosing said carrier means, two separate binocular viewing means mounted on said cabinet means and arranged so that one person placing his eyes at one of said viewing means may observe a pair of stereoscopically related images on one of said carrier means while another person placing his eyes at the other of said viewing means may simultaneously observe a duplicate pair of stereoscopically related images on the other of said carrier means, each of said separate carrier means comprising a relatively easily removable and replaceable image-bearing unit in the form of an approximately circular disk having substantially radial rows of images, each radial row containing, on a single radial line from the center of the disk to an outer edge thereof, not less than two pairs of stereoscopically related images with one image of each pair located between two images of another pair on the same radial row, the binocular viewing means being mounted on an upright wall of said cabinet means, and said cabinet means being shaped to provide knee space beneath said upright wall, so that two persons such as, for example, an instructor and a pupil, or a salesman and a customer, or two customers, may be seated side by side in front of and facing said cabinet means and while thus seated may observe the stereoscopic images on the respective image-bearing units through the respective binocular viewing means, manually controlled means for simultaneously turning both of said disks to bring a fresh radial line of images thereon into alignment with said binocular viewing means, and manually controlled means for causing a simultaneous relative shift of the relative positions of the binocular viewing means and their respective disks in a direction radially of the disks to cause different pairs of stereoscopic images on the same radial lines to be simultaneously brought into view of the two observers using the two binocular viewing means.

4,326,773
SOLAR ENERGY FOCUSING MEANS COMPRISING MODULAR ELEMENTS
Francois Colas, Bourg la Reine, France, assignor to Cegedur Societe de Transformation de l'Aluminium Pechiney, Paris, France
Filed Apr. 4, 1980, Ser. No. 137,364
Claims priority, application France, Apr. 11, 1979, 79 09961
Int. Cl.³ G02B *5/10, 7/18;* **B21D** *39/04*
U.S. Cl. 350—292 **3 Claims**

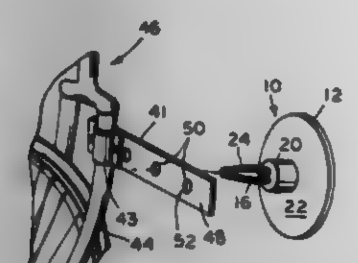


1. A solar energy focusing means comprising modular cylindro-parabolic reflector elements in the form of thick panels filled with plastics foam comprising means for assembly of one reflector element in alignment with adjacent reflector elements characterized in that said assembly means in each reflector element comprises at least two thin metal tubes (7 and 7') of the same diameter, which are disposed in the thickness of the plastics foam parallel to the generating lines of the cylinder, and end (8 and 8') of each tube projecting beyond the section plane of the reflecting surface and being constricted for receipt in telescoping relation within the unconstricted ends of the homologous tube of the adjacent element, each tube being disposed in a strictly defined position with respect to the reflecting surface (1) whereby the homologous tubes (7 and 7') of adjacent reflector elements are disposed strictly in endwise alignment with each other.

4,326,774
SNAP-ON CONVEX REAR VIEW MIRROR FOR BICYCLES
William Beigl, 2521 W. Montrose, Chicago, Ill. 60618
Filed Oct. 29, 1980, Ser. No. 202,365
Int. Cl.³ G02B *5/10*
U.S. Cl. 350—307 **2 Claims**

1. A convex rear view mirror for removable attachment to a support bracket therefor mounted on a bicycle which comprises a convex mirror portion, a mirror positioning portion for adjusting said mirror, and a tapered open shaft portion, said bracket further comprising an elongated bar having at least one opening therein, said tapered open shaft being insertable into said opening and said tapered open shaft having snap-on means for removably engaging said elongated bar of said support bracket, wherein said mirror positioning portion further comprises a post, a ball on one end of said post, and a universal joint

bearing, said ball being engaged in said universal joint bearing, said mirror positioning portion being joined to said mirror, said shaft fitting over said post and further comprising a pair of spaced opposing upper and lower walls and a pair of spaced opposing based ends, said shaft closed at one based end and



open at the other based end, said walls tapering outwardly towards said ball then curving inwardly towards said post mergingly forming upper and lower slots with terminal arc-shaped portions at the other based open end of said opposing walls, said slots forming the snap-on means for removably engaging said opening in said elongated bar.

4,326,775

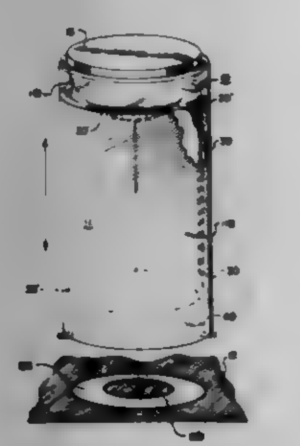
METHOD FOR OPERATING A PANORAMIC OPTICAL SYSTEM

Don G. King, 1031 Shadow Wood, Lewisville, Tex. 75067

Continuation-in-part of Ser. No. 10,076, Feb. 7, 1979, abandoned, which is a continuation of Ser. No. 822,402, Aug. 8, 1977, abandoned. This application Jan. 9, 1980, Ser. No. 157,865

Int. Cl.³ G02B *5/10, 27/18*

U.S. Cl. 350—320 **1 Claim**



1. A method for operating a panoramic optical system of the type for recording images disposed substantially 360° around the system onto a film plane, said method comprising the steps:

(a) spacing the top of a curved lens from said film plane at a distance i, said lens having a base portion and a curved outer surface of light reflective material of diameter b and radius of curvature r between its top and base, said curved surface being symmetrical about an axis which extends transversely to the film plane, and an origin of curvature p located at a distance x with respect to said axis and at a distance y with respect to the top of said lens, the axis of said curved surface being substantially perpendicular to said film plane;

(b) enclosing the space between the base of said curved lens and said film plane with a sleeve, said sleeve having a transparent zone for enabling light rays from the outside of said sleeve to impinge upon the outer surface of said curved lens and an opaque zone contiguous with the transparent zone for preventing said light rays from impinging upon a predetermined area at the base portion of said lens; and,

(c) positioning the border defined by the transparent/opaque zones of said sleeve at a distance h below the top of said lens wherein

$h=r\sin(\alpha)-y$

where

r=the radius of curvature of the curved surface 13 at the boundary of zone 20

$r_b=r\cos(\alpha)-x$

p=origin or curvature of the curved surface 13 at the boundary of zone 20

x, y=coordinates of p

$$x=\frac{r_b y}{h}$$

$$y=\left(x+\frac{b}{2}\right)\tan\beta$$

α=arc tan y/x

$$\beta=\text{tilt angle}=\arctan\left(\frac{y}{x+\frac{b}{2}}\right)$$

b=diameter of reflector lens top surface

i=vertical distance from top of reflector lens to film plane 12.

4,326,776

MATRIX ELECTRODE CONSTRUCTION

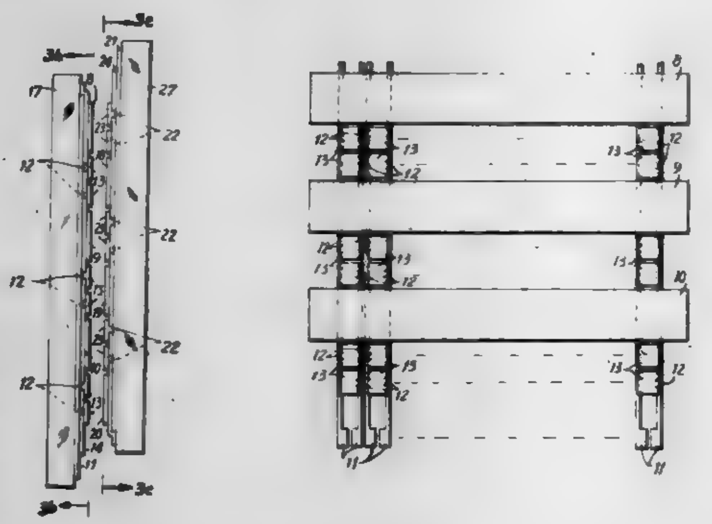
Shunji Banda, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed May 24, 1979, Ser. No. 42,278

Claims priority, application Japan, May 24, 1978, 53-61986

Int. Cl.³ G02F *1/133*

U.S. Cl. 350—336 **15 Claims**



1. A matrix display comprising:

a plurality of elemental cell electrodes defining an excitation region in a liquid crystal layer, said cell electrodes being arranged to form a matrix of rows and columns;

a plurality of narrow and elongated data electrodes for connecting together a given number of nonadjacent elemental cell electrodes in each row of cell electrodes;

an insulating layer between said cell electrodes and said data electrodes;

a plurality of openings through said insulating layer, each said opening exclusively associated with one cell electrode and exposing a portion of one data electrode to said one associated cell electrode, a connection being formed between said one data electrode said one associated cell electrode through said opening;

a plurality of scanning electrodes, each said scanning electrode opposing a portion of said elemental cell electrodes and spaced apart therefrom, each scanning electrode being located on the same surface of an insulating layer as approximately half of the cell electrodes and alternating with pairs of cell electrodes, the scanning electrodes forming column excitation electrodes;

a liquid crystal material, said liquid crystal material being positioned between said spaced apart cell electrodes and scanning electrodes, selective application of voltage of suitable level across said opposed scanning electrodes and elemental cell electrodes actuating the excitation region of said liquid crystal therebetween for display.

4,326,777

ELECTROCHROMIC DISPLAY DEVICE

Rikusei Kohara, Ibaraki; Susumu Kakumoto, Nagaokakyo; Takashi Aoyama, Ikeda; Masami Shoji, Takatsuki, and Mutsuaki Shinagawa, Kawanishi, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Nov. 21, 1979, Ser. No. 96,478

Claims priority, application Japan, Nov. 25, 1978, 53-145458

Int. Cl.³ G02F *1/17, 1/23*

U.S. Cl. 350—357 **9 Claims**

1. An electrochromic display device comprising:

a cell container having at least one transparent wall,

a display electrode and a counter electrode of a chemically stable electrical conductor, and disposed in said container,

an electrochromic aqueous solution comprising:

N,N'-di(p-cyanophenyl)-4,4'-bipyridinium dichloride,

phosphoric acid in an amount to provide a pH for said solution, and

ammonium ferrous sulfate as a source of ferrous ions present in said solution in an amount of from about 0.001 to about 0.5 mol per liter,

wherein the pH of said solution is in the range of about 0.8 to about 3.

4,326,778

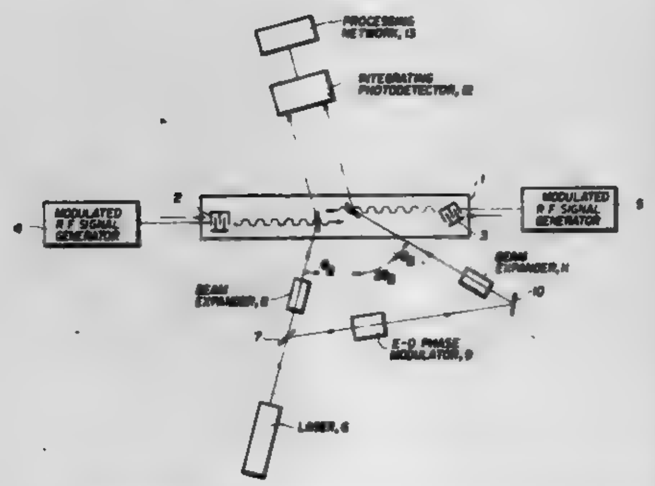
ACOUSTO-OPTIC TIME INTEGRATING CORRELATOR

Norman J. Berg, Baltimore; Michael W. Casseday, Greenbelt; John N. Lee, Silver Spring, and Irwin J. Abramovitz, Baltimore, all of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 12, 1980, Ser. No. 148,653

Int. Cl.³ H03H *9/25;* **G02F** *1/33*

U.S. Cl. 350—358 **8 Claims**



1. A surface wave acousto-optic time integrating correlator apparatus for correlating first and second electrical signals, comprising:

an acousto-optic interaction medium,

first and second acoustic transducer means disposed on the surface of said acousto-optic interaction medium,

means for applying a first high frequency A.C. signal to said first acoustic transducer means for causing a first acoustic wave to propagate along the surface of said medium, the envelope of said first A.C. signal corresponding to said first electrical signal,

means for applying a second high frequency A.C. signal to said second acoustic transducer means for causing a second acoustic wave to propagate along the surface of said medium, the envelope of said second A.C. signal corresponding to said second electrical signal.

means for directing a first laser light beam across said medium for interacting primarily with said first propagating acoustic wave,

means for directing a second laser light beam across said medium for interacting primarily with said second propagating acoustic wave,

a time integrating photodetector means, and

means for directing both said first and second beams at said photodetector means after they have traversed said acousto-optic interaction medium.

4,326,779

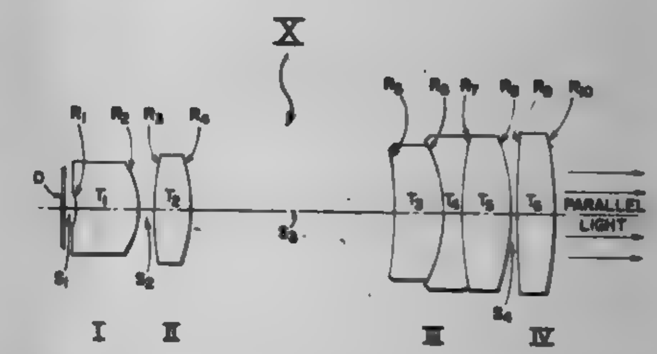
10× MICROSCOPE OBJECTIVE

Edward B. Rybicki, Depew, and Milton H. Sussman, Amherst, both of N.Y., assignors to American Optical Corporation, Southbridge, Mass.

Filed Apr. 28, 1980, Ser. No. 144,745

Int. Cl.³ G02B *21/02, 9/34*

U.S. Cl. 350—414 **3 Claims**



1. A four component, semi-apochromatic, low power microscope objective having an NA of about 0.3 which comprises, aligned on an optical axis, a concavo-convex negative singlet I, a biconvex positive singlet II, a concavo-convex negative triplet III consisting of a concavo convex first element having an Abbe number of at least 95, a biconcave second element and a biconvex third element having the same dispersion value as the first element of the triplet and a biconvex positive singlet IV.

4,326,780

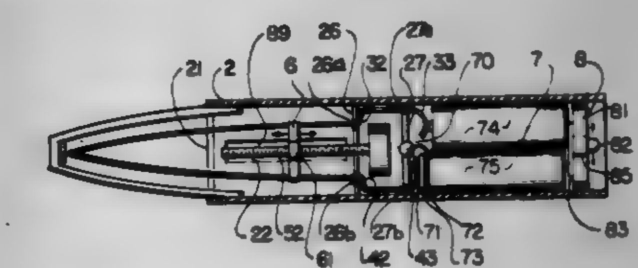
PORTABLE THERMO-ANEMOMETER WITH BIMETALLIC SENSOR

Dae Sik Kim, 1178 Walnut St., Newton, Mass. 02161

Filed Jan. 25, 1980, Ser. No. 115,545

Int. Cl.³ G01K *5/00;* **G08B** *17/06*

U.S. Cl. 340—594 **6 Claims**



1. A hand held probe for detecting ambient air temperature changes comprising:

a. plurality of cantilever bimetallic temperature sensing

strips having fixed ends spacedly mounted by means in one end of said probe, said sensing strips extending outwardly from said one end of said probe with free ends of said sensing strips arranged to contact at a substantially (fixed) remote location by thermally induced bending toward each other;

b. movable means operatively cooperating with said spacedly mounted means and said sensing strips for controllably separating said free ends from each other by partially nullifying said thermally induced bending by selective movement of movable means to separate said free ends;

c. means co-acting with said movable means to selectively move said free ends, wherein indicia on said support will indicate the extent of said separation required to balance against said bending;

d. means connected to said sensing strips to visually indicate when said free ends come into contact with each other.

4,326,781

FILM SAG DETECTING DEVICE FOR SOUND CINECAMERA

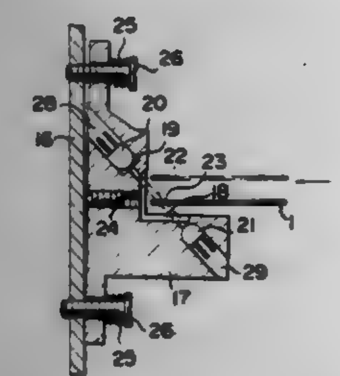
Wataru Ogura, Suwa, Japan, assignor to Chinon Industries Incorporation, Suwa, Japan

Filed Mar. 23, 1978, Ser. No. 889,264

Claims priority, application Japan, Apr. 8, 1977, 52/44516[U]

Int. Cl.³ G03B *31/00*

U.S. Cl. 352—14 2 Claims



1. In a sound cinecamera comprising a sound cinecamera body defining a compartment for holding a film cartridge containing a movable film, said sound cinecamera body having an openable front portion so that the film cartridge can be loaded therein, intermittent film-feeding means for intermittently advancing said film for effecting exposure thereof and continuous film-feeding means for continuously advancing said film past sound recording means to record sound thereon, the sound cinecamera body providing an open film path between said intermittent film-feeding means and said continuous film-feeding means including a portion of said open film path wherein the film sags to a variable extent depending on the speeds of movement imparted to said film by said intermittent film-feeding means and said continuous film-feeding means, the improvement which comprises: a film sag detecting device comprising an opto-electronic coupler located adjacent said open film path and adjacent the back portion of the sound cinecamera body so as not to interfere with loading and unloading of a film cartridge into said body, said opto-electronic coupler defining a light path which is inclined relative to the film surface as the film moves through said portion of said open film path, said light path being positioned so that it is interrupted or not interrupted depending on the vertical position of said film surface as it moves through said portion of said open film path and interruption of said light path caused by excessive sagging of the film is effective to adjust the speed of film movement to eliminate the excessive sagging, said film sag detecting device further comprising an upright supporting member mounted on the back of said sound cinecamera body and a substantially L-shaped frame, said frame comprising a substantially horizontal leg and a substantially vertical leg, said vertical leg extending upwardly alongside said supporting member and being mounted thereon, said horizontal leg projecting from the lower end of said vertical leg toward the front portion of said sound cinecamera body and being disposed below said open film path, said opto-electronic coupler comprising a light emitting element and a light receiving element mounted on said frame with their optical axes in longitudinal alignment with each other to define said light path, one of said light emitting element and said light receiving element being mounted in said vertical leg and the other of said light emitting element and said light receiving element being mounted in said horizontal leg, the light path defined by the aligned optical axes of said light emitting element and said light receiving element extending outside the frame diagonally between said vertical leg and said horizontal leg substantially in the form of a hypotenuse of the right angle defined by the intersection of said vertical leg and said horizontal leg, whereby when the film is in the normal state free of excessive sag it is disposed above said light path and when the film sags excessively its edge intersects said light path, said light emitting element and said light receiving element being mounted in openings in said vertical and horizontal legs of said frame, said legs having aligned passageways extending from the inner ends of said openings toward each other, and a transparent L-shaped plate covering the internal corner of said L-shaped frame and covering the inner opposing ends of said passageways, whereby loading and unloading of the film cartridge can be effected easily and film sag is accurately detected by said opto-electronic coupler.

4,326,782

SOUND MOTION PICTURE CAMERA CAPABLE OF OVERLAPPING EXPOSURES

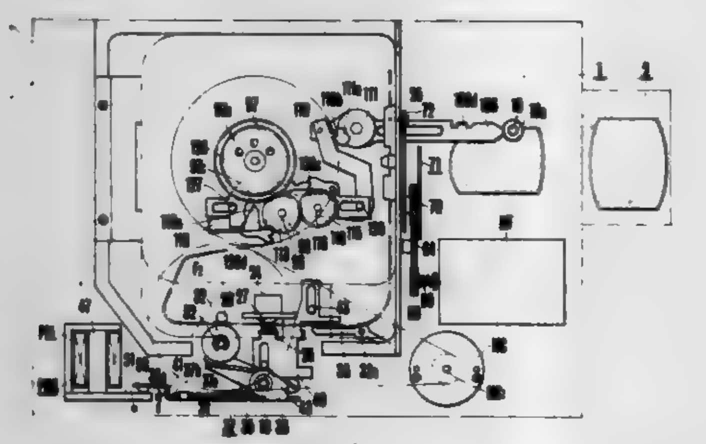
Hidekazu Okajima, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 4, 1979, Ser. No. 72,322

Claims priority, application Japan, Sep. 8, 1978, 53-111072

Int. Cl.³ G03B *21/36*

U.S. Cl. 352—91 C 1 Claim



1. A sound motion picture camera capable of overlapping film exposures including:

a camera housing;

a film chamber formed in said housing for receiving a sound film to be exposed;

a film chamber cover secured to said housing for opening and closing movement relative to said film chamber;

a motor rotatable in either of a forward film transport direction and a rewind direction;

a magnetic head for recording sound on said film;

a head pad and a movable member for supporting said head pad;

a spring for urging said head pad in a direction to abut against said magnetic head;

an operating member mounted on said camera housing to be manually operated;

a first displacement member for moving said movable member in response to operation of said operating member between a first position whereat said head pad is pressed against said magnetic head and a second position whereat said head pad is spaced apart from said magnetic head;

actuating means for controlling an overlap film exposure operation;

means responsive to said actuating means for rotating said motor in the film rewind direction;

a second displacement member mounted for movement in response to rotation of said motor in the film rewind direction; and

means for moving said head pad away from said magnetic head in response to movement of said second displacement member irrespective of the movement of said first displacement member.

4,326,783

INTERCHANGEABLE OBJECTIVE LENS SINGLE-LENS REFLEX CAMERA FOCUSING DEVICE

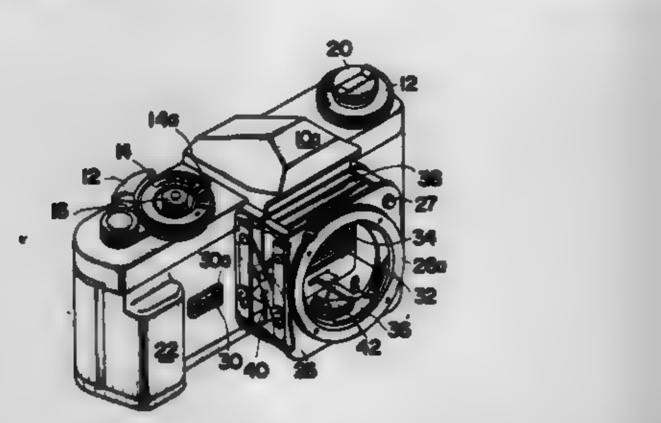
Kunio Kawamura, Sakai, and Hiroshi Ueda, Nara, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Mar. 24, 1981, Ser. No. 247,189

Claims priority, application Japan, Mar. 26, 1980, 55-39325

Int. Cl.³ G03B *3/10, 7/08*

U.S. Cl. 354—25 20 Claims



1. A single lens reflex camera including a body member and housed in the upper part of said body member, a pentaprism having a downwardly facing bottom face, comprising a lens mount disposed forwardly of said body member, an objective lens separably coupled to said lens mount coaxially with the optical axis of said body member, a pair of laterally spaced extendable contractable extension members extending between said lens mount and body member and supporting said lens mount for longitudinal linear advance and retraction along said optical axis at a fixed orientation of said lens mount, an extendable contractable light tight conduit extending between said body member and lens mount and means located in said body member and coupled to said lens mount for shifting said lens mount along said optical axis.

4,326,784

INFORMATION DISPLAY DEVICE FOR CAMERA

Toshikazu Ichiyanagi, Mitaka, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 12, 1980, Ser. No. 120,920

Claims priority, application Japan, Feb. 16, 1979, 54-16956

Int. Cl.³ G03B *17/20*

U.S. Cl. 354—53 20 Claims

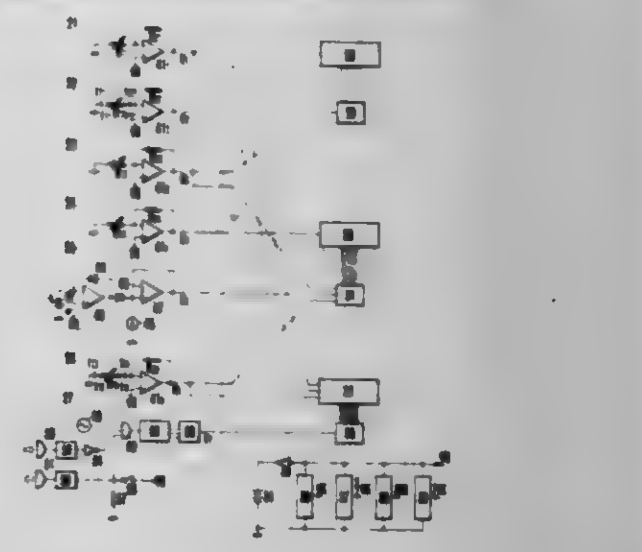
6. An information display device for a camera, comprising:

first signal producing means for producing information signals corresponding to a given one of a plurality of information values;

first display means having a plurality of display elements corresponding to one of the information values for given ones of the display elements corresponding to the given one of the information values which corresponds to the information signals from said first signal producing means;

second display means having a plurality of display elements corresponding to the plurality of display elements of the first display means for placing a given number of display elements of said plurality of display elements of the second display means consecutively in a display state corresponding to an allowance range signal;

second signal producing means for producing an allowance range signal corresponding to an allowance range of the certain information value and for applying the allowance range signal to said second display means; and



correspondence means to have the plurality of display elements of the first display means and the plurality of display elements of the second display means correspond to each other and for displaying whether the given display elements being displayed in the first display means is within the range of the given number of display elements being consecutively displayed in the second display means.

4,326,785

CAMERA HAVING A CONNECTOR COMMON TO A FLASH BULB UNIT AND AN ELECTRONIC FLASH UNIT

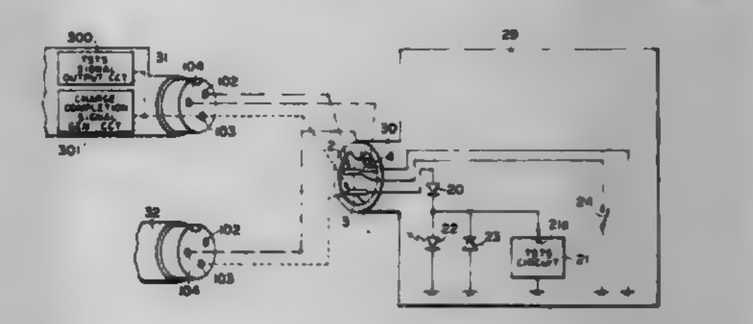
Masaaki Tsukamoto, Tokyo; Yuji Ohkubo, Ohmiya, and Naoki Tomino, Tokyo, all of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Feb. 18, 1981, Ser. No. 235,682

Claims priority, application Japan, Feb. 29, 1980, 55-24908[U]

Int. Cl.³ G03B *7/00, 15/05, 17/08*

U.S. Cl. 354—60 F 4 Claims



1. A camera provided with first connecting means capable of being selectively coupled to second connecting means of a flash bulb unit and third connecting means of an electronic flash unit, and having a first terminal connected in common to a synchronizing terminal in said second connecting means and a tuning shutter time setting signal terminal in said third connecting means, a second terminal connected to a synchronizing terminal in said third connecting means, and a third terminal connected in common to ground terminals in said second and third connecting means, said camera including:

a tuning shutter time setting circuit having its input terminals connected to said first terminal, said circuit being adapted automatically to set the shutter time to an electronic flash

unit tuning shutter time by receiving a tuning shutter time setting signal as input; and

a protective circuit for said tuning shutter time setting circuit, said protective circuit being adapted to detect, from a voltage applied between said first terminal and said third terminal, that said second connecting means has been connected and, as the result of said detection, to prevent the voltage of said first terminal from being applied as input to said setting circuit.

4,326,786

ELECTROMAGNETICALLY DRIVEN SHUTTER

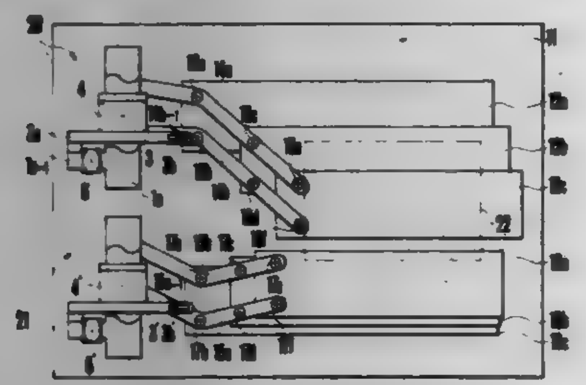
Takashi Uchiyama, Yokohama; Ryoichi Suzuki; Syuichiro Saito, both of Kawasaki, and Yoji Sugiura, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 14, 1980, Ser. No. 206,990

Claims priority, application Japan, Nov. 16, 1979, 54-148663

Int. Cl.³ G03B *9/08*

U.S. Cl. 354—234 **28 Claims**



1. An electromagnetically driven shutter comprising:

at least one shutter blade;

said blade being able to open and close an exposure light path;

a permanent magnet;

said magnet being fixedly mounted relative to the light path in the interior of a camera, and having a yoke of high magnetic permeability for forming a magnetic circuit;

a movable coil member;

said member being operatively connected to a portion of said shutter blade and displaceable in a magnetic field formed by said permanent magnet so that when current passes through said coil member in one direction, said member is displaced in a predetermined direction and the shutter blade passes across the exposure light path in response thereto;

a movable magnetic member

of a material of high magnetic permeability connected to said movable coil member, and movable in response to the displacement of the coil member, said movable magnetic member being holdable by attraction to a portion of the yoke of the permanent magnet at the terminal end of the displacement path of the movable coil member;

electromagnetic release means;

on at least one of the movable magnetic member and the yoke of the permanent magnet arranged upon current supply thereto to be magnetized in a direction to shut off the magnetic circuit formed between said permanent magnet and the movable magnetic member.

4,326,787

MAGNETIZED SHUTTER BLADES

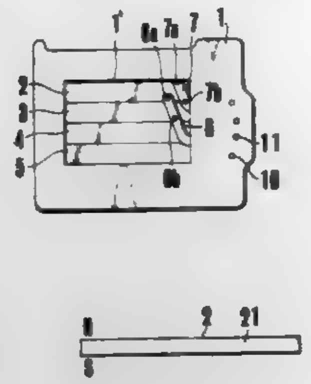
Michio Senuma, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 16, 1981, Ser. No. 254,767

Claims priority, application Japan, Apr. 18, 1980, 55-51416

Int. Cl.³ G03B *9/40*

U.S. Cl. 354—246 **2 Claims**



1. In a camera shutter having a plurality of shutter blades which partially overlap each other when an exposure opening in said camera is covered, the improvement comprising that said shutter blades consist of plastic sheets containing magnetic powder and are magnetized along the direction of the thickness thereof in such a manner that each shutter blade attracts the adjacent blade at the overlapped portion.

4,326,788

INFORMATION TRANSMISSION MEANS IN AN INTERMEDIATE LENS TUBE FOR CAMERA

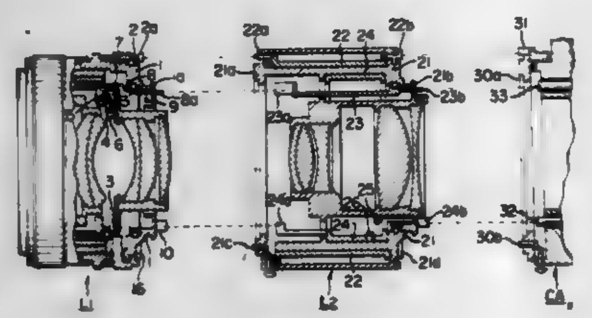
Sachio Ohmori, Yokohama; Kunihiro Fukino, Kawasaki, and Sunao Ishizaka, Tokyo, all of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Apr. 21, 1981, Ser. No. 256,135

Claims priority, application Japan, Apr. 23, 1980, 55/53951

Int. Cl.³ G03B *17/14*

U.S. Cl. 354—286 **6 Claims**



1. In an intermediate lens tube mountable between an interchangeable lens having on the mount thereof means for generating a signal of minimum F-number and a camera having means for detecting said signal on the mount thereof on which said interchangeable lens is mountable and including a circuit for receiving said detected signal and an output derived from the light passed through said interchangeable lens and effecting an exposure operation and which causes vignetting during connection with said interchangeable lens having a minimum F-number smaller than a certain critical minimum F-number, the improvement comprising:

transmission means capable of being couplied to each of said signal generating means and to said detection means during said mounting, said transmission means including correction means for transmitting to said detection means a signal corresponding to said critical minimum F-number only when said minimum F-number signal issued from said signal generating means is smaller than said critical minimum F-number.

4,326,789

INTERCHANGEABLE LENS ASSEMBLY FOR A CAMERA

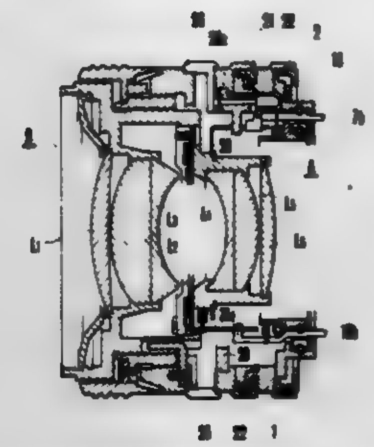
Masao Aoyagi, Yokohama, and Shigeru Kamata, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 19, 1981, Ser. No. 236,016

Claims priority, application Japan, Feb. 27, 1980, 55-23695

Int. Cl.³ G02B *7/02;* **G03B** *17/00, 9/02*

U.S. Cl. 354—286 **6 Claims**



1. An interchangeable lens assembly for a camera comprising:

(a) first lens barrel means including

(a-1) first component means and first coupling means adapted to engage complementary coupling means on said camera for mounting said first lens barrel means on said camera,

(a-2) second component means mounted with said first component means and arranged to be rotatable relative thereto, said first and second component means being held in predetermined position relative to each other when said first lens barrel means is detached from said camera,

(a-3) signal transmission means including a signal transmission member for transmission of exposure control signals between said interchangeable lens assembly and said camera, and

(a-4) retainer means adapted to cooperate with complementary retainer means on said camera to maintain said first component means rotatably fixed relative thereto during mounting of said lens barrel means on said camera;

(b) second lens barrel means including

(b-1) third component means and second coupling means adapted to engage complementary coupling means on said first lens barrel means for mounting said second lens barrel means on said first lens barrel means,

(b-2) means for controlling the quantity of light entering said camera through said lens assembly,

(b-3) exposure value setting means rotatably mounted on said second lens barrel means, and

(b-4) connecting means for connecting said signal transmission means and said exposure value setting means.

4,326,790

PHOTOGRAPHIC CAMERA

Noritsugu Hirata, Yokohama; Masamichi Toyama, Machida; Hidekazu Okajima, Naka, and Akimasa Nishimura, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 23, 1980, Ser. No. 152,543

Claims priority, application Japan, May 29, 1979, 54-67160

Int. Cl.³ G03B *17/02*

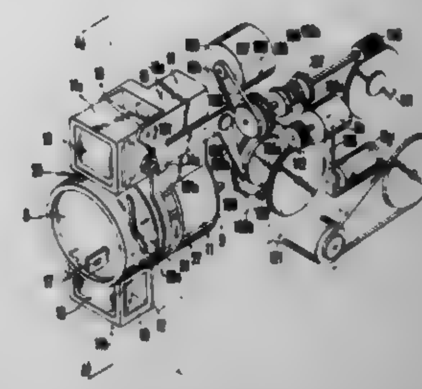
U.S. Cl. 354—288 **4 Claims**

1. A camera comprising:

(a) a photograph taking optical system for guiding light coming from an object to be photographed to a predetermined focal plane;

(b) a distance measuring optical system for optically measuring a distance to the object, said distance measuring system being arranged to perform measurements using an optical path which differs from that of said photograph taking optical system, said two optical systems being in a predetermined positional relation to each other;

(c) an optical member carrying body molded into a unitary



structure for carrying said distance measuring optical system, and

(d) a plate-shaped rigid construction molded inside of said optical member carrying body for guiding at least a part of said photograph taking optical system to keep said optical system in said predetermined positional relation to each other.

4,326,791

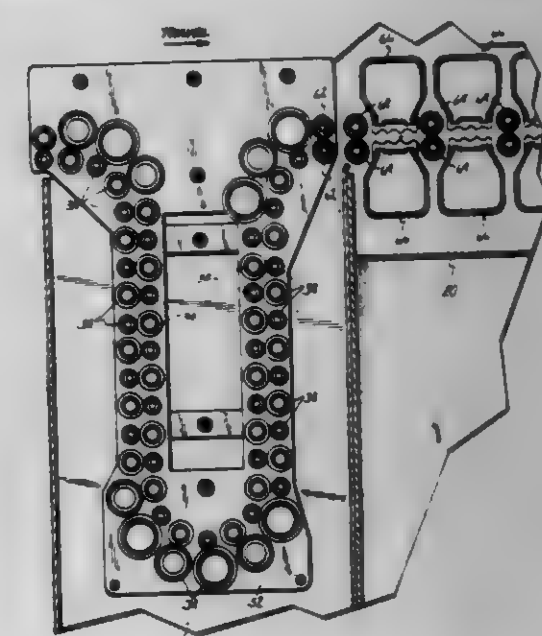
TRANSPORT SYSTEM FOR PROCESSOR OF PHOTOSENSITIVE WEB MATERIAL

Robert E. Beer, and Conrad V. Anderson, both of Minneapolis, Minn., assignors to Pako Corporation, Minneapolis, Minn.

Filed Dec. 12, 1980, Ser. No. 215,690

Int. Cl.³ G03D *3/13*

U.S. Cl. 354—321 **21 Claims**



1. A processor of webs of photosensitive materials comprising:

a plurality of tanks for containing photoprocessing solutions, each tank having an entrance and an exit;

a plurality of opposed pairs of oppositely oriented driven spaced tapered rollers for transporting the web, without engaging the web across its entire width, from the entrance of a first tank of the plurality of tanks through the tanks to the exit of a last tank of the plurality of tanks;

an opposed driven pacer roller pair of cylindrical rollers defining a nip for engaging the web across its entire width

and driving the web, the pacer roller pair being positioned at the exit from the last tank of the plurality of tanks, and being driven at a tangential velocity which is approximately equal to tangential velocity at centers of the tapered rollers, wherein from the entrance of the first tank to the exit of the last tank the web is engaged across its entire width only by the pacer roller pair.

4,326,792

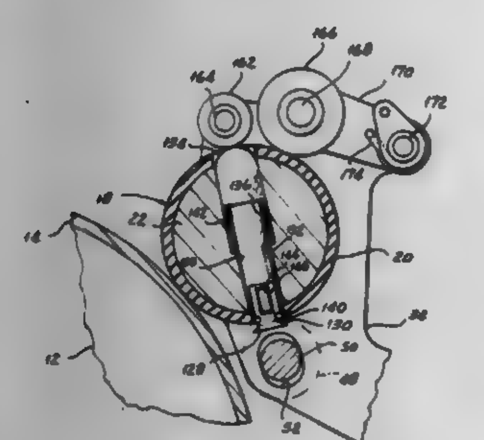
COMBINED REGISTRATION IMAGE TRANSFER AND PICKOFF ASSEMBLY FOR ELECTROPHOTOGRAPHIC COPIER

Benzion Landa, Edmonton, Canada, assignor to Savin Corporation, Valhalla, N.Y.

Filed Dec. 28, 1979, Ser. No. 107,822

Int. Cl.³ G03G *15/00*

U.S. Cl. 355—3 TR 12 Claims



3. In a copier having a moving imaging surface from which a developed image is transferred to a copy sheet fed to said surface at a transfer station and having means for producing a synchronizing signal, apparatus including a roller, means mounting said roller in cooperative relationship with said imaging surface at said transfer station, clamping means, means mounting said clamping means on said roller for movement therewith, said clamping means being actuatable between an open position at which it is adapted to receive a portion of a copy sheet and a closed position at which it clamps said copy sheet to said roller for movement therewith, means normally positioning said roller and actuating said clamping means to its open position to receive a portion of a copy sheet fed thereto, means responsive to said synchronizing signal for driving said roller and for actuating said clamping means to its closed position to clamp said sheet portion to said roller to carry said sheet through said transfer station, and means responsive to a predetermined rotary movement of said roller for restoring said clamping means to its open position, said clamping means comprising means forming a diametral bore in said roller, a member mounted in said bore for movement in the direction of the axis thereof, a clamping element carried by said member, means forming a clamping surface on said roller for cooperation with said element, and means for biasing said member to move said element toward said surface in the closed position of said clamping means.

4,326,793

FULL CANTILEVER STRUCTURAL SUPPORT APPARATUS FOR ROTATABLE ELECTROPHOTOGRAPHIC DRUM

William F. Buholtz, Longwood, Fla., assignor to Burroughs Corporation, Orlando, Fla.

Filed Mar. 24, 1980, Ser. No. 133,577

Int. Cl.³ G03G *15/00*

U.S. Cl. 355—3 DR 10 Claims

1. Mounting apparatus for rotatable drum-like structures permitting rapid, efficient dismounting thereof without detailed parts removal comprising,

a rigid, elongated, supporting shaft,

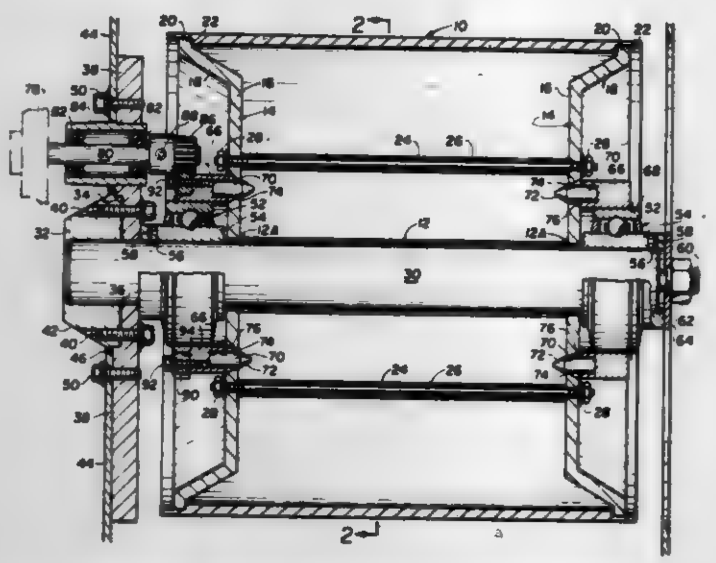
means mounting said shaft against rotation with one end thereof rigidly secured and the opposite end thereof projecting freely away therefrom,

a rotatable member,

means mounting said rotatable member for non-contacting movement about said shaft,

orienting means on said rotatable member,

orienting means on said mounting means matingly engage-



able with said orienting means on said rotatable member for positioning said rotatable member parallel to said shaft,

drive means engaging said rotatable member for effecting rotation thereof, and

means operably engaging said shaft and said mounting means permitting said rotatable member to be mounted on and dismounted from said shaft without requiring precise fit and adjustment of said rotatable member relative to said shaft while maintaining parallelism between said shaft and said rotatable member.

4,326,794

ELECTROSTATIC COPYING APPARATUS

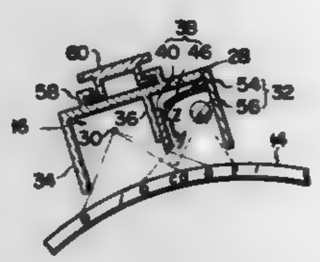
Fumihobu Nishimura, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Oct. 29, 1980, Ser. No. 202,172

Claims priority, application Japan, Oct. 31, 1979, 54/139765

Int. Cl.³ G03G *15/00*

U.S. Cl. 355—3 R 2 Claims



1. An electrostatic copying apparatus comprising:

a rotatable drum having an outer photosensitive layer made of a photoconductive material;

corona discharge means for generating a corona discharge to form an electrified corona discharge region on the photosensitive layer;

light-emitting means which is disposed adjacent to the corona discharge means and emits light beams over the electrified corona discharge region of the photosensitive layer, for producing a conductive light-irradiated region overlapping the corona discharge region on the photosensitive layer; and

adjustment means for controlling the dimensions of the light-irradiated region to control the overlapping portions of the light-irradiated region and corona discharge region, thereby selectively defining a substantially electrified portion of the corona discharge region, the adjustment means comprising a movable dimension-defining board arranged between the corona discharge means and light-emitting device, and a drive mechanism for moving the dimension-defining board radially with respect to the photosensitive drum to a prescribed position; the area of the overlapping portions of the corona discharge region and light-irradiated region varying with the position of the dimension-defining board.

4,326,795

IMAGE FORMING PROCESS AND APPARATUS THEREFOR

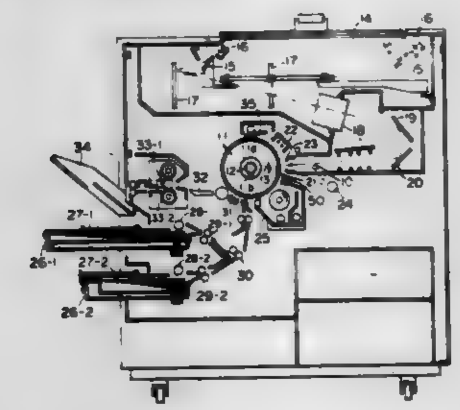
Hatsuo Tajima, Matsudo; Naoki Iwami, Tokyo; Shunichi Masuda, Tokyo; Katsuichi Shimizu, Hoya; Yoshihiro Kawatsura, Kawasaki; Koji Suzuki, Yokohama, and Yoshikazu Yokomizo, Kawagoe, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 11, 1979, Ser. No. 83,773

Claims priority, application Japan, Oct. 14, 1978, 53-126735; Oct. 14, 1978, 53-126737; Oct. 14, 1978, 53-126740

Int. Cl.³ G03G *15/00*

U.S. Cl. 355—14 E 19 Claims



1. Electrophotographic image forming apparatus, comprising:

charging means for electrostatically charging a photosensitive member;

light image projecting means for projecting a light image onto said photosensitive member charged by said charging means, thereby forming a latent image;

developing means for developing said latent images;

voltage applying means for applying a voltage to said developing means;

non-imaged area exposure means for projecting light onto a non-imaged area of said photosensitive member;

detecting means for detecting surface potential of a portion of said non-imaged area;

control means for controlling the light from said non-imaged area exposure means at a predetermined amount at said portions of said non-imaged area and for increasing said light to an amount in excess of said predetermined amount after completion of image formation to provide uniform conditions for subsequent image formation; adjusting means for adjusting the output voltage of said voltage applying means in response to a detection output of said detecting means.

4,326,796

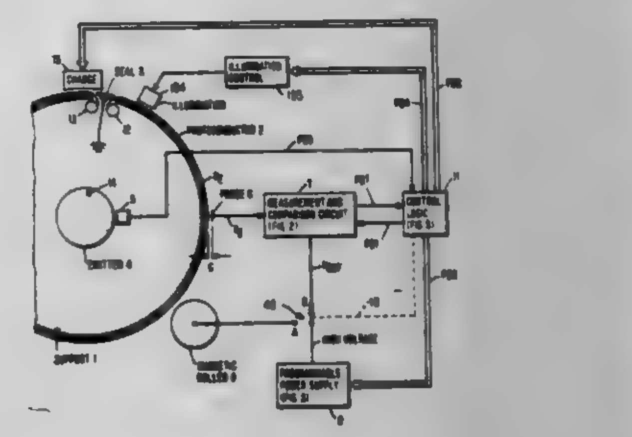
APPARATUS AND METHOD FOR MEASURING AND MAINTAINING COPY QUALITY IN AN ELECTROPHOTOGRAPHIC COPIER

James R. Champion, Longmont; Larry M. Ernst; Leland W. Ford, both of Boulder, and Ronald G. Velarde, Longmont, all of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 13, 1979, Ser. No. 103,143

Int. Cl.³ G03G *15/02*

U.S. Cl. 355—14 CH 5 Claims



1. Apparatus for measuring an unknown electrical charge on a photoconductor, including:

a moving surface carrying a conductor having a known reference charge and a photoconductor having an unknown charge, forming one plate of a capacitor;

a probe, spaced from said surface, forming a second plate of said capacitor, for sensing as a potential the charge on the photoconductor and conductor as a function of its distance therefrom;

a measurement circuit, having an input connected to the capacitor, an output for supplying sequences of pulses indicative of the potential of the conductor and the photoconductor relative to the conductor as the surface passes the probe, and a control input operable to identify the conductor passing the probe;

adjustable potential means, having an output associated with the probe operable in accordance with signals at an input to vary its output level; and

logic means, interconnecting the measurement circuit and potential means, for supplying adjustment signals to the potential means input as a function of sequences of pulses from the measurement circuit which vary the potential of the probe relative to the conductor until the voltage across the capacitor plates substantially equals a reference value.

4,326,797

COPYING APPARATUS CAPABLE OF CHANGING OVER THE COPYING MODE AND THE COPYING MAGNIFICATION

Koichi Miyamoto, Tokyo; Yasuhito Kan, Urawa; Hiroshi Nitanda, Tokyo, and Masao Ariga, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 21, 1980, Ser. No. 170,659

Claims priority, application Japan, Jul. 27, 1979, 54-95658

Int. Cl.³ G03B *27/34, 27/70*

U.S. Cl. 355—57 15 Claims

1. A copying apparatus having changeable copying modes and copying magnifications, comprising:

an original supporting table for supporting a three-dimensional original thereon;

a window located away from said original supporting table;

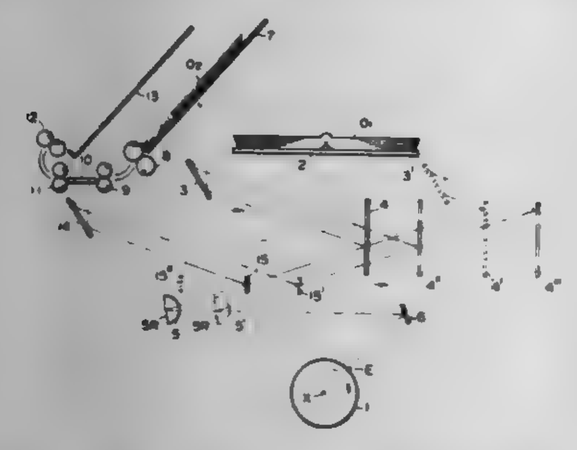
sheet original conveying means for conveying a sheet original past said window;

imaging means for forming an image of an original supported on said original supporting table or a sheet original

conveyed past said window on a photosensitive medium at a selected magnification;

a first optical system for scanning, in a first copy mode, an original supported on said original supporting table and directing a beam from the original to said imaging means; and

a second optical system for directing, in a second copy mode, the beam from the original conveyed by said conveying means, to the imaging means through said window, said second optical system including a mode-chang-



ing mirror which is movable to a retracted position, in the first copy mode, such that it is retracted out of the optical path for the sheet original conveyed by said sheet original conveying means, and which is movable, in the second mode, to one of a plurality of stationary operating positions, in accordance with the selected magnification, such that the beam from the sheet original conveyed by said sheet original conveying means is positioned in the optical path for the sheet orignal conveyed by said sheet original conveying means.

4,326,798

PYROMETER SYSTEM USING SEPARATED SPECTRAL COMPONENTS FROM A HEAT SOURCE

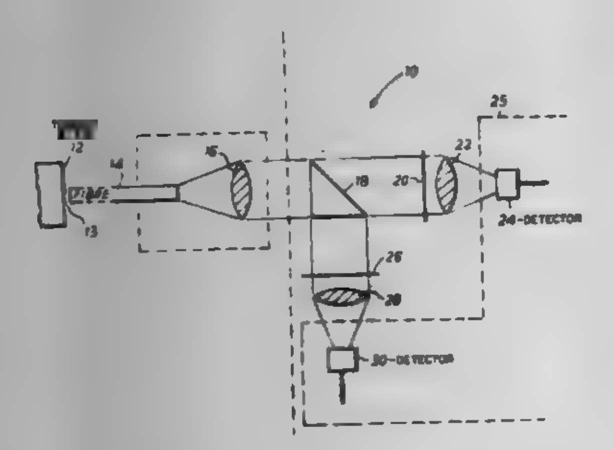
David A. Kaka, Southampton, England, assignor to Negretti & Zambra (Aviation) Limited, Hampshire, England

Filed Apr. 25, 1979, Ser. No. 33,252

Claims priority, application United Kingdom, Apr. 26, 1978, 16428/78

Int. Cl.³ G01J *5/18, 5/24*

U.S. Cl. 356—45 **6 Claims**



1. A pyrometer system for determining the temperature of a primary source of heat in an environment which is subject to the presence of a transient spurious source of heat at a substantially different temperature from that of said primary source, said system comprising:

means for receiving radiation from the primary and spurious sources of heat;

means for separating the received radiation into at least two radiation components including a first radiation component extending over a first preselected wavelength range and a second radiation component extending over a second preselected wavelength range whereby in the presence of radiation from said primary and spurious sources the relative proportions of the respective radiations in said first and second wavelength ranges are different from one another;

first detector means responsive to the radiation of said first radiation component for producing a first output signal;

first linearising means connected to receive said first output signal and to provide therefrom a first linear output signal that is representative of the temperature of said primary source in the absence of spurious radiation from said first radiation component;

second detector means responsive to the radiation of said second radiation component for producing a second output signal;

second linearising means connected to receive said second output signal and to provide therefrom a second linear output signal that is representative of the temperature of said primary source in the absence of spurious radiation from said second radiation component;

comparator means connected to receive said first and second linear output signals and to provide an error signal when a difference between said first and second linear output signals exceeds a predetermined magnitude;

a summing circuit for providing an average of said first and second linear output signals as a temperature output signal; and

a sample and hold circuit having an input, an output and a control input, said input being connected to receive said temperature output signal, said output being connected to an indication means and said control input being connected to receive said error signal whereby the operation of the sample and hold circuit is inhibited in the presence of said error signal.

4,326,799

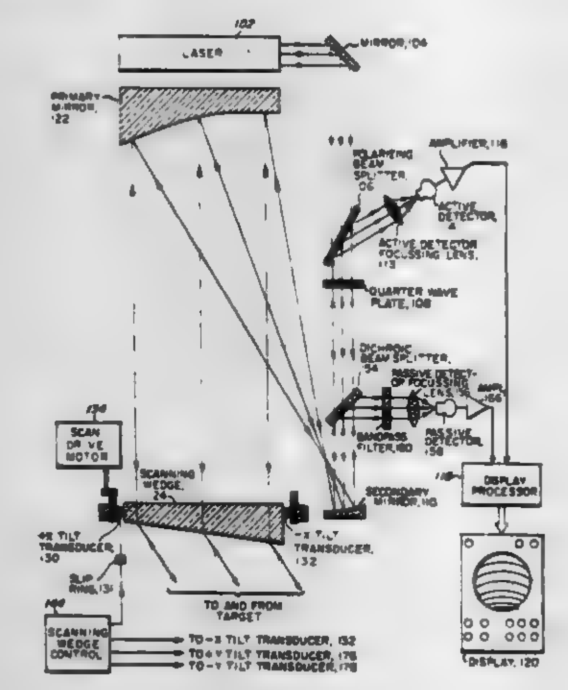
ACTIVE-PASSIVE SCANNING SYSTEM

Wayne H. Keene, Medfield, and Albert V. Jelalian, Bedford, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Aug. 6, 1975, Ser. No. 602,349

Int. Cl.³ G01B *11/26;* **G02B** *27/17*

U.S. Cl. 356—152 **13 Claims**



1. An active-passive scanning system comprising in combination:

a source of coherent light;

a rotating wedge for producing a scanning beam with said coherent light;

active detecting means;

means for producing a reference beam from a portion of said coherent light;

means for receiving a signal return beam;

means for tilting said wedge along at least one horizontal axis therethrough for aligning said reference beam and said signal return beam upon said active detector means; and

passive detecting means, at least a portion of said signal return beam being coupled to said passive detecting means.

4,326,800

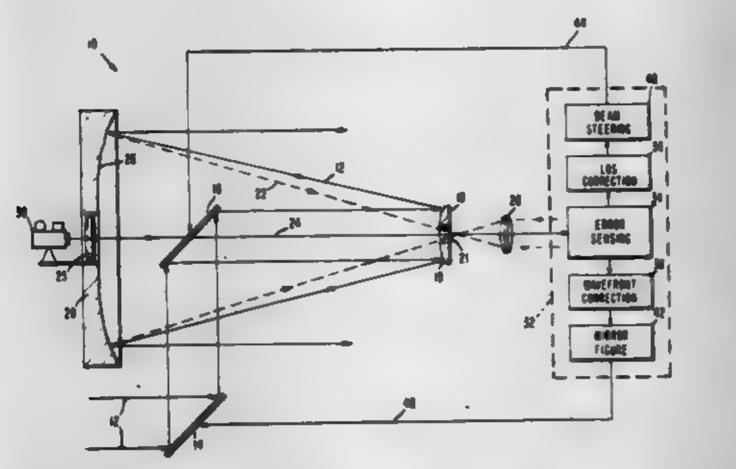
LASER BEAM WAVEFRONT AND LINE-OF-SIGHT ERROR CORRECTION SYSTEM

John M. Fitts, Santa Monica, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed May 5, 1980, Ser. No. 146,958

Int. Cl.³ G01B *11/26*

U.S. Cl. 356—152 **5 Claims**



1. A system for directing an applied main laser beam along a preselected path, said system comprising:

beam sampling means for deriving from the main laser beam a sample laser beam which has a fixed preselected spatial orientation relative to the main laser beam;

laser means for providing a spatially stabilized pilot laser beam;

first sensor means, disposed to intercept at least a portion of the sample and pilot laser beams, for providing position control signals corresponding to the spatial orientation therebetween; and

first beam control means responsive to the position control signals for repositioning the main laser beam so as to cause a preselected spatial orientation to exist between the sample and pilot laser beams;

whereby the main laser beam is positioned and maintained at a preselected orientation relative to the pilot laser beam.

4,326,801

METHOD FOR EMISSION SPECTROCHEMICAL ANALYSIS

Junichi Ono; Isao Fukui, and Naoki Imamura, all of Kyoto, Japan, assignors to Shimadzu Seisakusho, Ltd., Kyoto, Japan

Continuation-in-part of Ser. No. 862,124, Dec. 12, 1977, abandoned. This application Jun. 26, 1980, Ser. No. 163,163

Claims priority, application Japan, Dec. 20, 1976, 51-153815

Int. Cl.³ G01N *21/66*

U.S. Cl. 356—313 **4 Claims**

1. A method of emission spectrochemical analysis comprising:

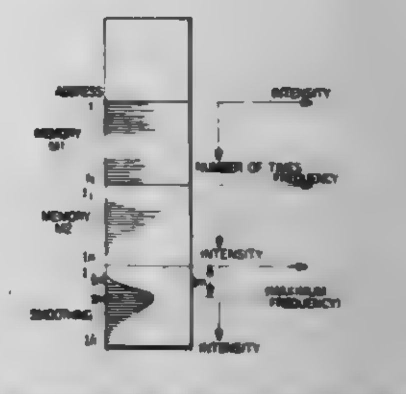
(a) producing a predetermined number of spark discharges between an electrode and a specimen containing an element in a first and second state;

(b) measuring the intensity of emission of light caused by each of said spark discharges;

(c) obtaining the frequency distribution of said measured intensities of emission;

(d) separating in said distribution an area of normal distribution and an area outside said area of normal distribution;

(e) selecting an intensity of emission value from said frequency distribution;



(f) determining the amount of said element in said first state as a function of the selected intensity of emission value multiplied by the area of normal distribution; and

(g) determining the amount of said element in said second state as a function of the selected intensity of emission value multiplied by the area outside the area of normal distribution.

4,326,802

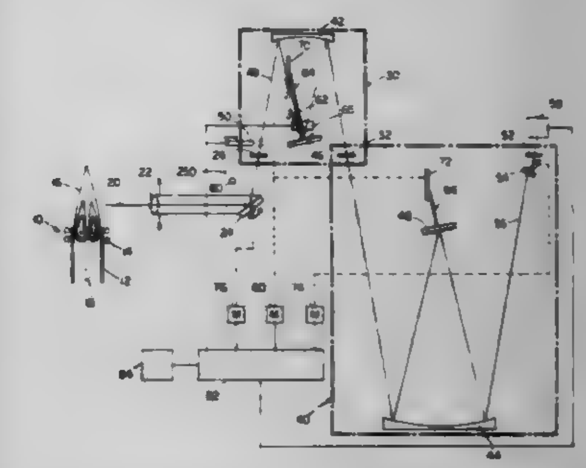
DUAL MONOCHROMATOR TYPE OF SPECTROANALYSIS SYSTEM

Stanley B. Smith, Jr., Westford; Robert G. Schleicher, Winchester, and Allan G. Deanison, Acton, all of Mass., assignors to Instrumentation Laboratory Inc., Lexington, Mass.

Filed Feb. 6, 1980, Ser. No. 118,916

Int. Cl.³ G01N *21/73;* **G01J** *3/18*

U.S. Cl. 356—316 **37 Claims**



1. A spectroanalytical system comprising sample excitation source means,

a support,

first and second radiation dispersing elements mounted on said support,

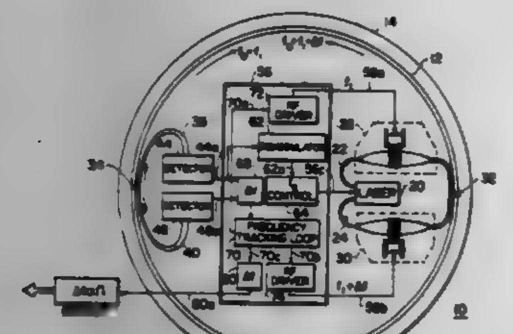
means defining a stationary entrance aperture, means defining a stationary exit aperture,

means on said support for transmitting radiation from said source through said entrance aperture to said first dispersing means along a first optical path, for transmitting radiation dispersed by said first dispersing means to said second dispersing means along a second optical path, and for transmitting radiation dispersed by said second dispersing means through said exit aperture along a third optical path,

drive means carried by said support for moving said first and second dispersing elements simultaneously and at different rates such that the spectral order of radiation from said

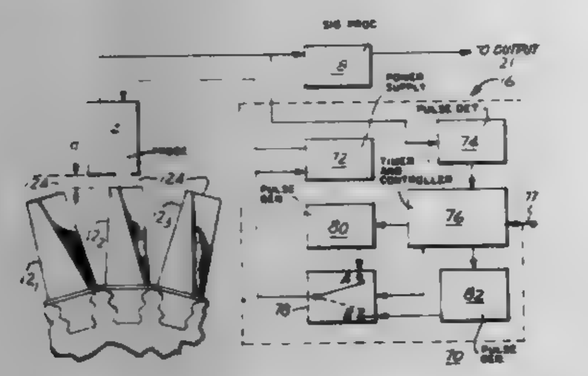
source dispersed by said first dispersing element and transmitted along said second optical path is different from the spectral order of radiation dispersed by said second dispersing element and transmitted along said third optical path through said exit aperture, and a radiation sensor responsive to radiation passing through said exit aperture.

4,326,803
THIN FILM LASER GYRO
Anthony W. Lawrence, Walpole, Mass., assignor to Northrop Corporation, Los Angeles, Calif.
Filed Sep. 20, 1979, Ser. No. 77,381
Int. Cl.^{3} G01C *19/64*
U.S. Cl. 356—350 14 Claims



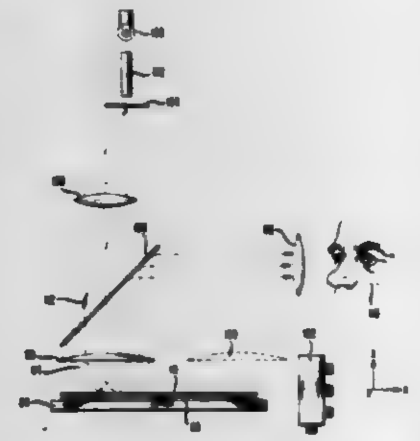
1. A passive ring resonator laser gyro, comprising:
A. ring means including a thin film, passive waveguide adapted to provide a closed, passive propagation path for optical signals,
B. means for coupling first and second coherent optical signals into said waveguide, said optical signals being oppositely directed in said waveguide and having frequencies f_1 and f_2, respectively,
C. means for controlling the frequencies of said two optical signals whereby said waveguide is resonant at frequency f_1 and at frequency f_2 for said first and second optical signals, respectively,
D. means for generating a rate signal representative of the difference in frequency of said first and second optical signals in said waveguide, whereby said rate signal is representative of the angular rate of said waveguide.

4,326,804
APPARATUS AND METHOD FOR OPTICAL CLEARANCE DETERMINATION
Paul W. Mossey, Greenhills, Ohio, assignor to General Electric Company, Cincinnati, Ohio
Filed Feb. 11, 1980, Ser. No. 120,408
Int. Cl.^{3} G01B *11/14*
U.S. Cl. 356—375 12 Claims



1. Apparatus for optically determining the clearance between the radial edge of at least one rotating blade member and a relatively stationary second member, which comprises:
(a) probe means adapted to be disposed in relatively fixed position with respect to said stationary second member for directing input light from an intermittent light source to said radial edge and for collecting output light scattered back from said radial edge, said probe means including probe output means responsive to the output light scattered back for developing a probe output signal; and
(b) signal processing means coupled to said probe output means for receiving said probe output signal and developing an intermediate electrical signal substantially representative of the instantaneous clearance between said radial edge and said second member, said signal processing means including synchronization means employing said intermittent light source for providing the presence of said input light at the time at which the clearance between said radial edge and said member is to be determined.

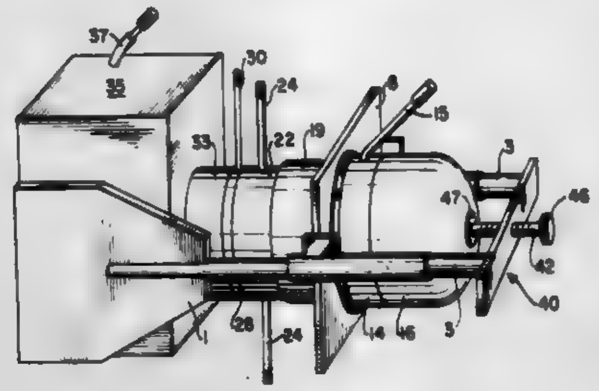
4,326,805
METHOD AND APPARATUS FOR ALIGNING MASK AND WAFER MEMBERS
Martin Feldman, New Providence; Alan D. White, Berkeley Heights, and Donald L. White, Bernardsville, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Apr. 11, 1980, Ser. No. 139,544
Int. Cl.^{3} G01B *11/27*
U.S. Cl. 356—399 7 Claims



1. In the fabrication of integrated circuits, a method of aligning spaced-apart mask and wafer members (10,60) which are each disposed perpendicular to a main longitudinal axis (83) of a lithographic system, each of said members having formed thereon two peripheral patterns (12,20,61,62) adapted for alignment purposes, each pattern on said mask member (10) overlying a pattern on said wafer member (60) to constitute an associated pair of patterns (12,61 and 20,62), each of the patterns on said members being responsive to incident illumination that conveys alignment mark information to form a focused image of said mark at a prescribed distance from said mask member, said method being characterized by the step of illuminating each associated pair of patterns (12,61, and 20,62) on said members (10,60) with an off-axis (88,90) optical beam.

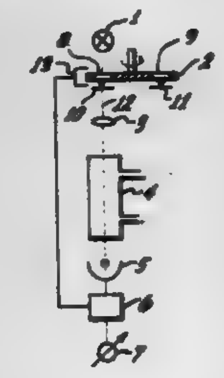
4,326,806
COPPER LIQUOR ANALYZER
Gary L. Donner, Palos Verdes Peninsula, Calif., assignor to Texaco Inc., White Plains, N.Y.
Filed Dec. 20, 1979, Ser. No. 105,455
Int. Cl.^{3} G01N *21/85, 21/09*
U.S. Cl. 356—410 7 Claims

1. A copper liquor analyzer comprising sample cell means for having a portion of a stream of copper liquor flowing through it, means for passing light of a predetermined wavelength through the copper liquor in the sample cell means, and output means receiving the light passed through the copper liquor for providing an output corresponding to the strength of the copper liquor in accordance with the received light; and said sample cell means includes entrance means for receiving the copper liquor and exit means for passing the copper liquor, light rays passage means for the passage of the light, arranged so that the entrance and exit means are connected to it, a pair of glasses, each glass having pores not greater than a predetermined size to prevent filling of the pores by copper and being



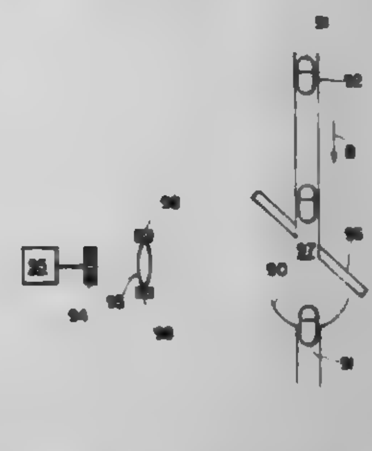
specially arranged with the passageway means, the entrance means and the exit means, and first spacer means for separating the glasses in a manner so that the copper liquor flows between the glasses and so that the light passes through the flowing copper liquor.

4,326,807
PHOTOELECTRIC GAS ANALYZER
Michael Zöchbauer, Oberursel, Fed. Rep. of Germany, assignor to Hartmann & Braun Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany
Filed Sep. 22, 1980, Ser. No. 189,620
Claims priority, application Fed. Rep. of Germany, Oct. 1, 1979, 2939735
Int. Cl.^{3} G01J *3/48*
U.S. Cl. 356—418 8 Claims



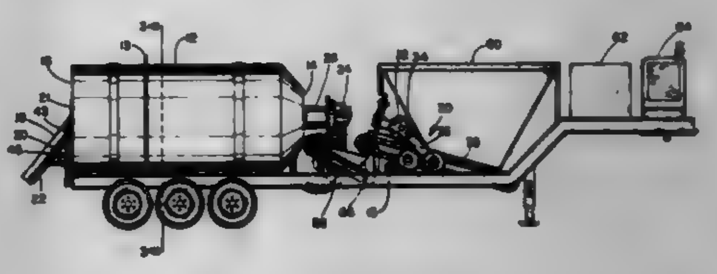
1. Photoelectric gas analyzer, for detecting the sum of the concentrations of NO and NO_2 in a gas and having a source of radiation, a cell containing the gas and disposed to receive radiation from the source, photoelectric detection means for receiving the radiation having passed through the cell, and circuit means connected to the detection means, the improvement comprising:
means for establishing two radiation beams traversing the same cell, and including
(i) a first interference filter adjusted to have a first transmission range outside any absorption band for NO to, thereby, establish one of the beams; and
(ii) a second interference filter, establishing the other one of the beams and being adjusted to have a second transmission range in an overlapping absorption region for NO and NO_2 in such a way that the effective absorption coefficient of NO_2 in the first transmission range of the first filter equals the difference of the absorption coefficients of NO_2 and NO in said second range; and
the source being a hollow cathode lamp filled with nitrogen and oxygen, the photoelectric detector means being responsive to the two beams and the circuit means constructed to provide an indication representing the sum of the concentrations of NO and NO_2.

4,326,808
METHOD AND APPARATUS FOR DETERMINING PHYSICAL CHARACTERISTICS OF OBJECT OUTER SURFACES
Timothy R. Pryor; Omer L. Hageniers; Walter J. Pastorius; Nicholas Liptay-Wagner; Donald A. Clarke, all of Windsor, Canada, and Blaine Richards, Indianapolis, Ind., assignors to Diffracto Ltd., Ontario, Canada
Filed Feb. 27, 1979, Ser. No. 15,614
Int. Cl.^{3} G01N *21/55;* G02B *5/10*
U.S. Cl. 356—445 34 Claims



1. A method of determining the physical characteristics of the outer surface of an elongate object which comprises the steps of: providing a mirror member having a mirror surface in the form of a conical surface of revolution and having an aperture at its apex which passes through said mirror member; positioning an elongate cylindrical object in said aperture in axial alignment with the axis of said mirror surface; directing electromagnetic radiation in an axial direction onto said mirror surface and thence onto the outer cylindrical object surface; forming an image of said surface; scanning said image with a scanning electromagnetic radiation detector; and, analyzing the detected signals to determine a physical characteristic of said object surface.

4,326,809
RECYCLING APPARATUS FOR ASPHALTIC CONCRETE
Robert L. Mendenhall, 1770 Industrial Rd., Las Vegas, Nev. 89102
Continuation-in-part of Ser. No. 871,351, Jan. 23, 1978, and Ser. No. 906,734, May 17, 1978. This application Apr. 14, 1980, Ser. No. 139,640
Int. Cl.^{3} B28C *5/42, 5/46*
U.S. Cl. 366—4 15 Claims



1. Apparatus for recycling asphaltic concrete compositon comprising:
a rotatable drum having a first port at a first end thereof open to atmosphere,
a burner adjacent said first end for introducing hot gases of combustion into said first port,
a second port at a second end of said drum having closure means for closing said second port,

means for recovering composition from said second port, and

wherein said closure means and said means for recovering composition cooperate to maintain said second port closed except to the extent necessary to recover composition therethrough, and whereby substantially all of said hot gases of combustion introduced into said drum are vented to atmosphere through said first port.

4,326,810

MIXING DEVICES

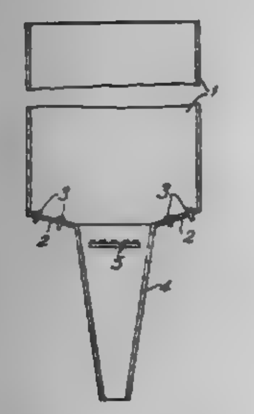
Clive Schofield, Stevenage, and John E. P. Miles, Buntingford, both of England, assignors to National Research Development Corporation, London, England

Continuation of Ser. No. 847,493, Nov. 7, 1977, abandoned, which is a continuation of Ser. No. 636,958, Dec. 2, 1975, abandoned. This application Apr. 13, 1979, Ser. No. 29,907

Claims priority, application United Kingdom, Dec. 9, 1974, 53106/74

Int. Cl.^{3} B01F *13/02*

U.S. Cl. 366—106 8 Claims



1. A process for mixing and/or homogenising finely divided cohesive materials having a tendency to channel comprising:

loading the materials into a container having a base including at least one material outlet port and a number of individually distinctly directed nozzle air ways;

supplying the container with an air flow;

applying said air flow to said individually distinctly directed nozzle air ways;

converting said air flow into a number of discrete discharges from respective air ways in the form of air jets each having a velocity of at least 100 feet per second and preferably 250 feet per second for each 8 cubic feet per minute supplied by the air flow at an overall rate of between 5 and 20 cubic feet per minute per square foot of base area;

orienting the air ways to direct the discrete discharges downwardly towards and across the base and the outlet port in intersecting angularly spaced directions;

independently producing said air discharges in a predetermined sequence; and

mixing and/or homogenising the loaded materials with said discharges, whereby aeration of loaded materials adjacent the outlet port is provided to reduce cohesive blocking or bridging of the outlet port by the materials.

4,326,811

SEALESS PRESSURIZED MIXING VESSELS

Hyok S. Lew, 7890 Oak St., Arvada, Colo. 80005

Filed Jan. 10, 1977, Ser. No. 758,141

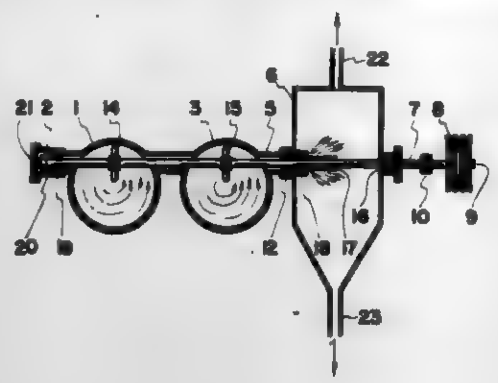
Int. Cl.^{3} B01F *7/06*

U.S. Cl. 366—290 6 Claims

1. A mixing device for agitating and blending fluid materials in mineral or in chemical processing, said device comprising:

(a) a cylindrical vessel disposed horizontally so that its axis is on a horizontal plane, said cylindrical vessel having an inlet and an outlet whereby material to be processed can be fed into and discharged from said vessel;

(b) a first propeller disposed adjacent to the cylindrical wall of said cylindrical vessel whereby rotation of said first propeller generates a thrust in a direction tangential to the cylindrical surfaces coaxial to the axis of said cylindrical vessel, said thrust creating a rotational mixing motion of the fluid material about the axis of said cylindrical vessel; and



(c) wherein a plurality of said devices are aligned parallel to each other forming a train of vessels, two adjacent vessels of said train of vessels connected to each other by a spool, whereby each propeller in each vessel of said train of vessels is driven by a single shaft running through said spools interconnecting adjacent vessels.

4,326,812

NON IMPACT PRINTER

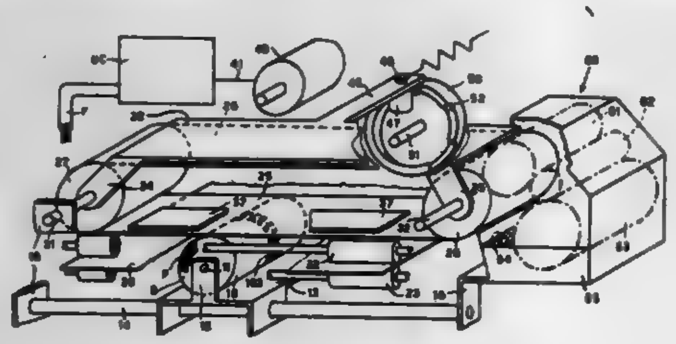
Arnaldo Pasini, Ivrea, and Franco Kairsch, Banchette, both of Italy, assignors to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy

Filed Jul. 17, 1980, Ser. No. 169,844

Claims priority, application Italy, Jul. 20, 1979, 68569 A/79

Int. Cl.^{3} B41J *3/02*

U.S. Cl. 400—121 15 Claims



1. A non-impact dot-matrix printer for printing alphanumeric characters on a printing medium, comprising an electrode wheel having a row of electrodes spaced axially along the periphery of the wheel, means for supporting the printing medium between the wheel and an ink carrier, means for selectively energising the electrodes relative to the ink carrier with electrical pulses which cause dots of ink to transfer from the ink carrier to the printing medium, and means arranged to move the electrode wheel transversely with a rolling, non-sliding movement relative to the recording medium, along a print line.

4,326,813

DOT MATRIX CHARACTER PRINTER CONTROL CIRCUITRY FOR VARIABLE PITCH PRINTING

Roy F. Lomicka, Jr., Chelmsford, and Peter N. Heller, Newton, both of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Continuation-in-part of Ser. No. 955,525, Oct. 30, 1978, abandoned. This application Oct. 23, 1979, Ser. No. 87,681

Int. Cl.^{3} B41J *3/12*

U.S. Cl. 400—124 22 Claims

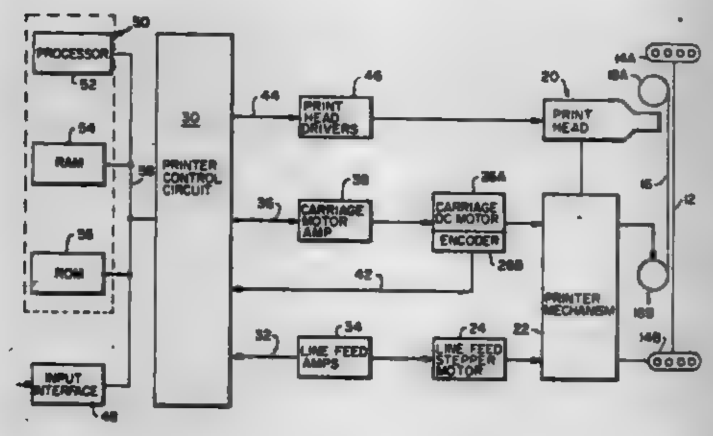
1. A control system for a dot matrix character printer for

printing characters of selectable pitch, which includes a print head containing at least one column of dot printing means, means for moving the print head relative to a medium on which characters are to be printed, and transition generator means for providing print head motion signals responsive to movement of the print head, each basic unit of print head displacement defining a transition, the control system comprising:

sequential controller means for providing signals to effectuate sequential operation of portions of the control system;

the sequential controller means providing a request-to-print signal indicating the controller's readiness to begin supplying sequential signals for printing a string of columns;

print head actuation control means for providing print head actuation signals for actuating the dot printing means;



the print head actuation control means being adapted to enable printing responsive to the concurrence of the request-to-print signal and a print head motion signal indicating arrival of the print head at the location where the column of dot printing means is to be actuated for printing the first column of a string of columns, such location being one of a multiplicity of predetermined locations; and

the sequential controller means being adapted to provide, and the print head actuation control means being further adapted to accept, a request-to-print signal independent of the position of the print head,

whereby a request-to-print signal can be provided at any point to initiate printing at the next one of said predetermined locations reached by the moving print head.

4,326,814

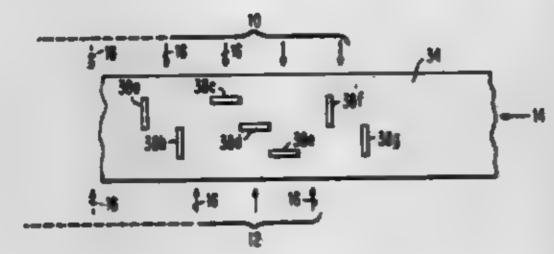
DOCUMENT PRINTING DEVICE HAVING A PLATEN WITH CHARACTER SEGMENTS THEREON

Robert R. Schaffer, Endwell, and Dean W. Skinner, Binghamton, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 19, 1980, Ser. No. 131,573

Int. Cl.^{3} B41J *3/06*

U.S. Cl. 400—125.1 8 Claims



1. Apparatus for printing on a document, said apparatus comprising:

(a) a document feed path defined in and through said apparatus,

(b) a platen, non-movably and fixedly mounted in said apparatus adjacent said document feed path, said platen having a plurality of character segments formed thereon;

(c) a plurality of movable impact members, there being at least one impact member associated with each of said character segments, said impact members being movably mounted adjacent said document feed path proximate to said platen and positioned there so that said impact members when moved will strike its associated character segment;

(d) document feeding means for feeding a document along said document feed path; and

(e) control means for selectively moving predetermined combinations of said impact members in timed relationship to the motion of a document along said document feed path to cause said moved impact members to strike their associated character segments.

4,326,815

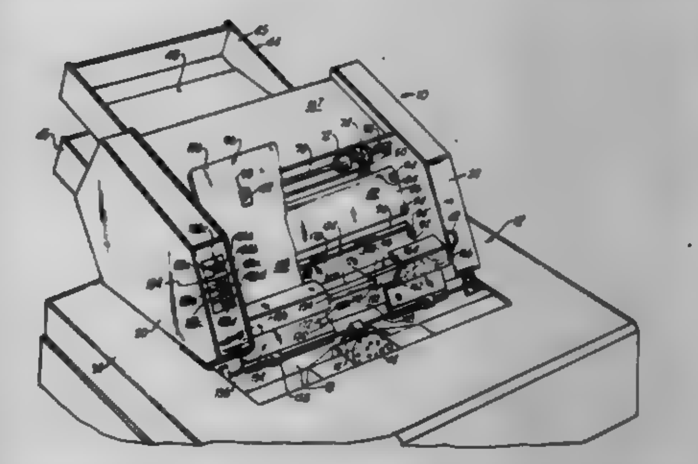
PAPER FEEDING APPARATUS AND METHOD FOR PRINTING APPARATUS

Ludwig J. Kapp, Montville, N.J., assignor to Ziyad Incorporated, Denville, N.J.

Filed Jan. 21, 1980, Ser. No. 114,115

Int. Cl.^{3} B41J *11/58*

U.S. Cl. 400—625 71 Claims



1. Paper feeding apparatus for a printing device, said printing device including a transversely extending platen, a printing head transversely movable relative to said transversely extending platen, and a guide member for guiding a sheet of paper in a desired direction, said guide member being associated with said transversely movable print head and movable therewith, said transversely extending platen including paper drive means for providing relative longitudinal movement of a sheet of paper relative to said printing head to effect printing on said sheet of paper by transversely moving said printing head relative to said transversely extending platen and by longitudinally moving a sheet of paper relative to said printing head, said paper feeding apparatus comprising:

paper storing means for storing a plurality of individual sheets of paper;

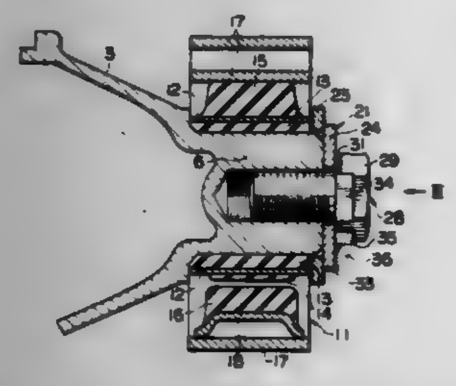
paper feed means for feeding a sheet of paper in a paper feed direction from said paper storing means to said platen, said sheet of paper having a longitudinal central portion which extends in the paper feed direction and which is centrally located intermediate the edges of said sheet of paper which extends in the paper feed direction;

paper receiving means for receiving a sheet of paper from said platen, said paper receiving means defining a paper exit path having one end arranged adjacent said platen to receive a sheet of paper therefrom after said printing means has effected printing thereon; and

centering means for transversely moving said print head and associated guide member to be in a position to overlie at least a part of the central portion of said sheet of paper when it is moved therepast upon initial feeding of a sheet of paper to said platen so that said guide member cooperates with said platen to guide said sheet of paper into said

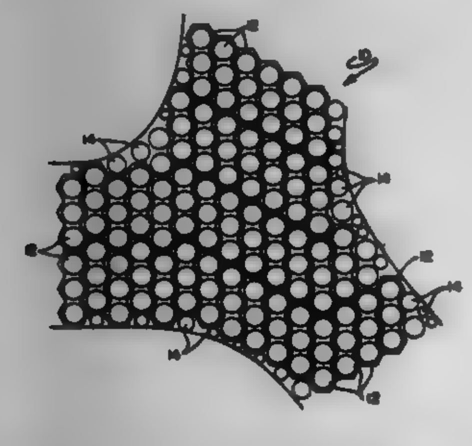
paper exit path as said sheet is moved past said guide member.

4,326,816
TRANSMISSION SUPPORT ASSEMBLY IN VEHICLE
Kunio Morisawa, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan
Filed May 28, 1980, Ser. No. 153,949
Claims priority, application Japan, Jun. 26, 1979, 54-79680
Int. Cl.³ F16D *1/00*; F16J *1/38*
U.S. Cl. 403—228 — 6 Claims



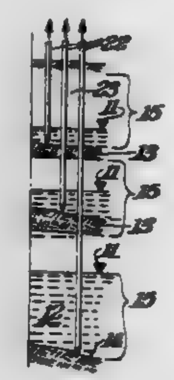
1. A transmission support assembly in a vehicle comprising:
a columnar portion having a non-circular cross section and axially extending from one end of a transmission housing;
a vibration-absorbing mount means coaxially force-fitted around said columnar portion;
a first lock washer means for preventing axial displacement of said mount means, said first lock washer means including a first annular piece in fitting engagement around said columnar portion and a second annular piece having a larger outer diameter than that of said columnar portion and in abutting engagement on the end face of said columnar portion, said first and second annular pieces being joined to each other;
a second lock washer means having at least two tabs; and
a bolt means having a non-circular head and axially screwed into said columnar portion for fastening said first and second lock washer means to said columnar portion,
the tabs of said second lock washer means engaging respectively the second annular piece of said first lock washer means and the head of said bolt for preventing relative rotation.

4,326,817
PAVING STONE AND WALKWAY FORMED THEREWITH
Mario J. Boiardi, Oneida Dr., Greenwich, Conn. 06830
Filed Feb. 22, 1980, Ser. No. 123,574
Int. Cl.³ E01C *5/00, 15/00*
U.S. Cl. 404—41 — 2 Claims



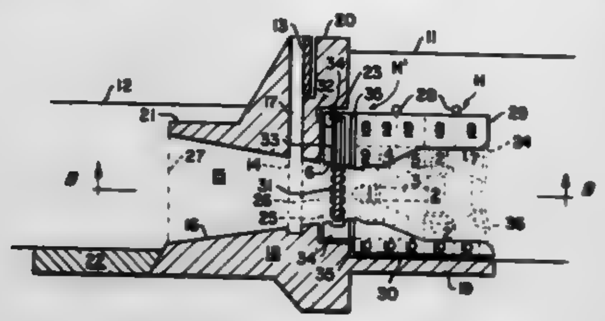
1. An array of paving stones forming a curved walkway wherein the upper surface portion of each stone includes one or more projections with generally flat upper surfaces curving downwardly at the outer edge thereof; said projections being generally circular in plan view;
said stones including individual stones circular in cross-section disposed only near the edges of said walkway, the top surface of each individual stone including a single said projection which is generally circular and planar and which at its outer edge slopes downwardly toward the cylindrical side of the stone,
additional paving stones comprising a majority of the surface area of the walkway with said additional paving stones being uniform in size and configuration, said additional paving stones having:
a. two sides and two ends,
b. the ends being planar and parallel to each other,
c. an axis bisecting the two ends,
d. in plan view the stone being symmetrical about said axis,
e. each side including six planar surfaces of equal area intersecting each other to form five angles as viewed in a plan view, the angles formed including three of about 240° and two of about 120° as measured on the exterior of the side,
the additional stones including a planar bottom and a top having three elevated projections,
the length of said stone as measured along its axis being greater than the width of said stone at its widest part as measured perpendicular to said axis, said width being greater than the height of the stone, the height being the distance perpendicular to the bottom and extending to the highest point on any projection,
said individual stones serving to fill the gaps left between said additional stones and at least one smoothly-curved edge of said walkway.

4,326,818
TECHNIQUES FOR THE STORAGE OF WATER
Dudley L. Willis, 108 Briar La., Newark, Del. 19711
Continuation of Ser. No. 951,738, Oct. 16, 1978, which is a continuation of Ser. No. 848,716, Nov. 4, 1977. This application Jan. 29, 1980, Ser. No. 116,642
Int. Cl.³ B65G *5/00*
U.S. Cl. 405—55 — 10 Claims



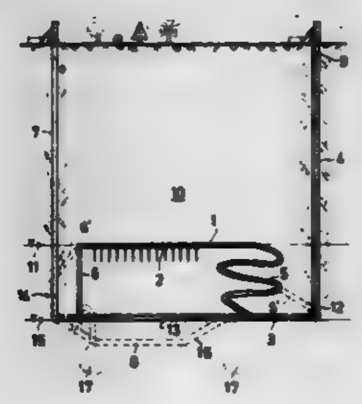
1. A reservoir for storing water or other liquids underground, which reservoir comprises a substantially flexible, impervious, continuous closed wall enclosing a predetermined land area of any desired size and any desired shape, said wall extending downwardly underground to a natural, substantially impervious aquiclude and being in water-sealing relationship with the top surface of said aquiclude, said wall being substantially impervious to the passage of liquids therethrough, said wall being made of a grouting material which will yield to natural ground movement without failure, said wall extending downwardly to said aquiclude and being horizontally supported by the soil on either side thereof, said water being stored within the voids between the soil particles within said reservoir.

4,326,819
FUNCTIONALLY TRANSFORMABLE HYDROSTATION
Francisco J. G. Atencio, Estafeta Dr. Garcia, 3101 Diamante Entre Rios, Argentina
Filed Nov. 19, 1979, Ser. No. 95,351
Int. Cl.³ E02B *9/08*
U.S. Cl. 405—78 — 8 Claims



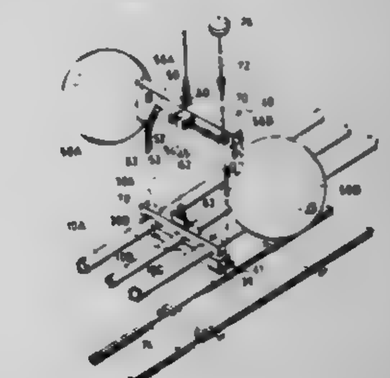
1. A fluid storing installation including, a main dam body having a fluid flow conduit therethrough provided with opposite open ends, at least one hydromotive assembly juxtaposed said dam body adjacent one said open end of said conduit, said hydromotive assembly provided with a fluid flow conduit therethrough, said hydromotive assembly conduit substantially horizontally disposed and axially aligned with said dam body conduit, an energy generation unit having at least one component disposed within said hydromotive assembly conduit and adapted to be actuated by fluid flow therethrough, said generation unit including a generator directly connected to a turbine runner, said hydromotive assembly conduit having a first open end and an opposite second open end for discharging fluid flows entering said first open end, said hydromotive assembly including a gate within said hydromotive assembly conduit operable to controllably vary the volume of fluid flow discharging through said conduit second open end and means for displacing said hydromotive assembly towards and away from said dam conduit when said hydromotive assembly is respectively positioned at or removed from said dam body.

4,326,820
FINAL DEPOSITORY FOR RADIOACTIVE WASTES
Ernst-Peter Uerpmann, Osterode; Gerhard Staupendahl, Clausthal-Zellerfeld, and Manfred Schmidt, Goslar, all of Fed. Rep. of Germany, assignors to Gesellschaft für Strahlen-und Umweltforschung mbH München, Neuherberg, Fed. Rep. of Germany
Filed Nov. 28, 1978, Ser. No. 964,140
Int. Cl.³ E21F *17/16*; G21F *9/24*
U.S. Cl. 405—128 — 9 Claims



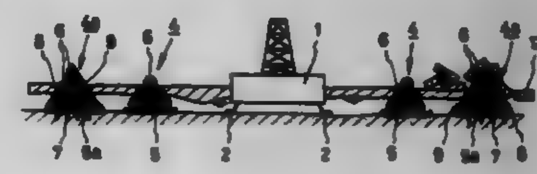
1. A final depository located underground for storing radioactive wastes contained in storable shielded containers, comprising: at least one shaft extending downwardly from the ground surface; an underground passage; a radioactive waste storage region located above said underground passage and presenting a dry, solid floor for supporting the wastes; and means defining at least one connecting passage extending downwardly from said storage region to at least one of said shaft and underground passage, said means causing all fluid communication with said storage region to be directed exclusively downwardly from said floor.

4,326,821
INSTALLING SUBMERGED PIPELINE
Walter L. Stefens, Santa Barbara, Calif., assignor to Solus Ocean Systems, Inc., Houston, Tex.
Filed Jul. 31, 1980, Ser. No. 173,828
Int. Cl.³ F16L *1/04*
U.S. Cl. 405—171 — 19 Claims



1. A system for installing submerged pipe lines comprising
means for non-abrasively gripping at least one pipeline at longitudinally spaced intervals and supporting the same vertically spaced above the seabed
detachable buoyant wheel means for permitting said pipeline to be pulled along out of contact with the seabed, and
means for detaching and retrieving said wheel means after the pipeline has been pulled to a predetermined location.

4,326,822
ARTIFICIAL ISLAND FOR INSTALLING OIL DRILLING EQUIPMENT IN ICE COVERED SEA AREAS
Masanao Oshima, Tokyo, and Nobuyoshi Yashima, Funabashi, both of Japan, assignors to Mitsui Engineering and Shipbuilding Co., Ltd., Tokyo, Japan
Filed Nov. 27, 1979, Ser. No. 97,899
Claims priority, application Japan, Nov. 30, 1978, 53-148878; Nov. 30, 1978, 53-148879
Int. Cl.³ E02B *17/00*
U.S. Cl. 405—217 — 18 Claims



1. An artificial island for installing oil drilling equipment in ice covered sea areas, comprising at least two rows of ice barricades for surrounding at least a portion of oil drilling equipment in ice covered sea water, the top portion of each said barricades projecting above the surface of the sea water, means provided at the bottom portion of at least the outermost one of said barricades to fix said barricade to the sea-bottom, and inclined ice breaking wall means provided at a side of at least the outermost one of said barricades which is opposite the side of said barricade which faces the oil drilling equipment, wherein said rows of barricades are separated from one another such that a space is formed therebetween, said space receiving at least a portion of the ice broken by said inclined ice breaking walls.

4,326,823

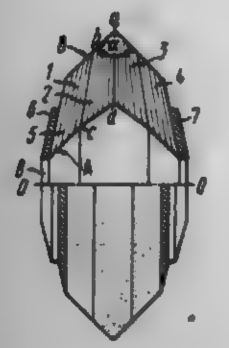
ROTATING CUTTING TOOL

Evgeny I. Beznosjuk, proezd Shokolskogo, 27, korpus 2, kv. 182, Moscow; Leonid B. Doktorov, Leningradskoe shosse, 18, kv. 27, Khimki Moskovskoi oblasti; Vyacheslav E. Musyakin, Sireneyy-Bulvar 36, kv. 51, and Sergei V. Kolomeets, Volgogradsky Prospect 164, korpus 2, kv. 95, both of Moscow, all of U.S.S.R.

Filed May 29, 1980, Ser. No. 154,212

Int. Cl.³ B26D *1/12*

U.S. Cl. 407—51 4 Claims



1. A rotating cutting tool (needle-cutter) comprising cutting elements assembled at least into two sets; said cutting elements are essentially pieces of wire fastened to one another at one end while other ends thereof are free: the fastened ends of said cutting elements form the internal non-working surface; the free ends of said cutting elements constitute the working surface in the form of a disc with the side edges thereof arranged at an angle substantially equal to 90°; the diameter of each said cutting element and the mean length thereof in a set are represented by the following mutually equal ratios

$$d_1^4/l_{S1}^2 = d_2^4/l_{S2}^2 = \ldots d_n^4/l_{Sn}^2,$$

where:

$d_1, d_2 \ldots d_n$ are the diameters of the cutting elements in sets;

$l_{S1}, l_{S2} \ldots l_{Sn}$ are the mean lengths of the cutting elements in [illegible]

1, 2 . . . n are the numbers of sets.

4,326,824

PROCESS FOR LONGITUDINAL ADJUSTMENT OF TOOLS

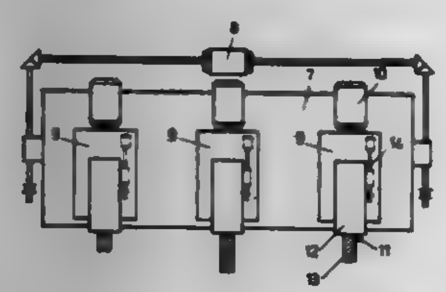
Franz Lasermann, and Eduard Wittenbreder, both of Bielefeld, Fed. Rep. of Germany, assignors to Firma Droop, Bielefeld and Herr Dipl.-Ing. M. G. Dronsek, Klingen, both of, Fed. Rep. of Germany

Division of Ser. No. 938,873, Sep. 1, 1978, abandoned. This application May 27, 1980, Ser. No. 152,993

Claims priority, application Fed. Rep. of Germany, Sep. 2, 1977, 2739533

Int. Cl.³ B23C *1/08;* B23B *49/00*

U.S. Cl. 409—132 5 Claims



1. A process for longitudinal adjustment of tools each in one of a plurality of individual working spindles of a multiple-spindle automatically controlled machine tool, from a respective working-part reference point established through respective measuring devices as a zero-point coordinate of a common processing program; the process characterized in that the tools are introduced into their respective working spindles in the direction of the individual tool lengths to be adjusted and are run in rapid advance in all cases against a respective measuring device in which the first of the tools on reaching a predetermined distance from the working-part reference point produces a first signal in which the rapid advances of the remaining spindles are stopped individually, whereby the first signal from the measuring device last reached by the tool involved switches on crawling speeds for all of the working spindles, each to produce a second signal on reaching the working-part reference points which working spindles are individually stopped on reaching the working-part reference points by the second signal from the measuring devices whereby the plurality of tools and their respective spindles are adjusted to the zero point coordinate of the common processing program.

4,326,825

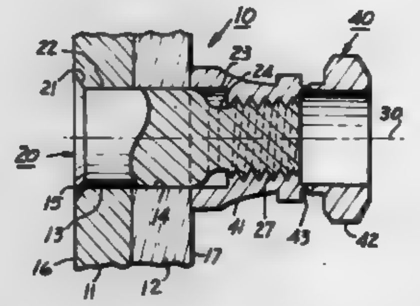
BALANCED PIN FOR SHEAR FLOW JOINT, AND JOINT INCLUDING THE PIN

Josef F. Volkmann; Edwin E. Hatter, both of Torrance, and Michael M. Schuster, Santa Monica, all of Calif., assignors to Hi Shear Corporation, Torrance, Calif.

Filed Dec. 31, 1979, Ser. No. 108,959

Int. Cl.³ F16B *5/02, 31/02, 35/00*

U.S. Cl. 411—5 25 Claims



1. A metallic balanced shear flow pin having a first and a second end and a central axis, said fastener comprising a head section, a cylindrical shank section, a transition section, a neck section, and a peripheral groove on said neck section, said sections being coaxial with one another, and provided in the order recited from said first end, said head section and peripheral groove having respective inherent strengths to resist axial tensile forces, and said cylindrical shank section having a respective inherent strength to resist lateral shear forces, said cylindrical shank section having a diameter, and said head and neck sections having respective lateral dimensions, said diameter being smaller than any lateral dimensions of said head and greater than any lateral dimensions of said neck section and of said peripheral groove, said transition section reducing the lateral dimensions of said pin between said cylindrical shank section and said neck section, and including a shoulder contiguous to said cylindrical shank section and a non-threaded intersection contiguous to said neck, said pin being made of material which can be work-hardened, and said intersection being work-hardened the better to resist fatigue forces, said inherent strengths of said head section and peripheral groove being substantially equal and only sufficient to resist axial tensile forces exerted by bending in a shear flow joint, and said inherent strength of said cylindrical shank section being sufficient to resist shear forces in said joint.

4,326,826

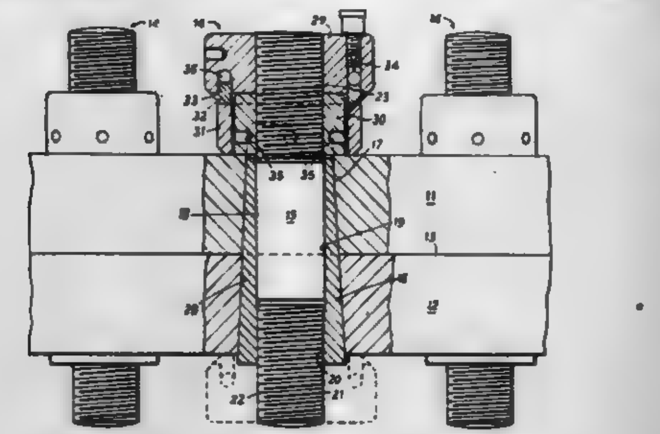
BOLTS AND METHODS OF BOLTING

Thomas W. Bunyan, London, England, assignor to Pilgrim Engineering Developments Limited, London, England

Filed Jun. 4, 1979, Ser. No. 45,199

Int. Cl.³ F16B *35/00*

U.S. Cl. 411—339 9 Claims



1. A tapered dowel bolt comprising a tapered shank having a broader end and a narrower end, said shank comprising an inner member and an outer member, said outer member having a circumferentially continuous tapered outer surface to mate with a coaxial continuous tapered bore in one or more workpieces, and an axially-extending unthreaded cylindrical bore, said inner member having a cylindrical outer surface which is a close sliding fit in said cylindrical bore, said inner member being anchored to said outer member only at the broader end of said shank and including a portion projecting from said outer member at said narrower end of said shank, and means on said projecting portion of said shank securing abutment means to said inner member.

4,326,827

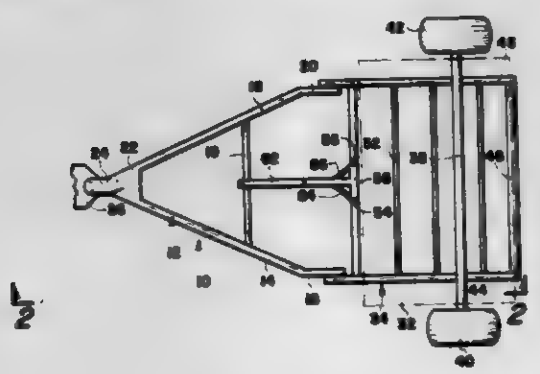
HAY BALE HANDLING APPARATUS

Darrell A. McNutt, Highway 70 East, Soper, Okla. 74759

Filed Jul. 25, 1980, Ser. No. 172,156

Int. Cl.³ B60P *1/08*

U.S. Cl. 414—24.5 8 Claims



1. Apparatus for handling cylindrical objects and adapted to be secured to a towing vehicle, said apparatus comprising A-frame means having hitch means provided at one end thereof for connection with the vehicle, wheel supported cradle means pivotally secured to the opposite end of the A-frame means for retrieving and carrying said cylindrical object thereon, means secured between the A-frame means and cradle means for limiting the movement of the cradle means in one direction, bail means pivotally secured to the cradle means and freely movable in one direction for engaging the outer periphery of the object during retrieval thereof, said bail means being of an arcuate configuration of a size at least slightly greater than half the outer circumference of the object whereby the bail encircles the object throughout more than half the circumference thereof, and spring means secured between the A-frame means and bail means for urging the bail in a direction away from engagement with the object and precluding engagement of the bail means with the A-frame means during carrying of the object for transporting thereof.

4,326,828

BALE WAGONS

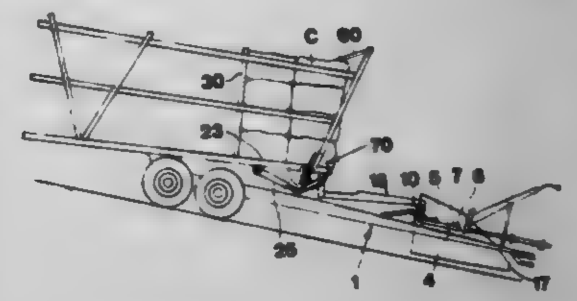
Jean-Pierre Guenon, Plombieres-les-Dijon, France, assignor to Sperry Corporation, New Holland, Pa.

Filed Aug. 20, 1980, Ser. No. 179,901

Claims priority, application United Kingdom, Aug. 25, 1979, 29690/79

Int. Cl.³ A01D *87/12;* B65G *57/32*

U.S. Cl. 414—39 3 Claims



1. In a bale wagon having a frame, a bale pickup means mounted on said frame for lifting bales from the ground; a bale receiving table mounted on said frame adjacent said bale pickup means onto which the lifted bales are transferred; said bale receiving table being moveable between a first bale loading position and a second bale unloading position; a load bed mounted on said frame adjacent said bale receiving table for receiving bales from said bale receiving table, said bale receiving table being operable to sequentially transfer a number of bales formed in a tier onto said load bed to form a stack of a plurality of tiers thereon, the improvement comprising:

bale retaining spikes moveable between a first operative position in which the bale retaining spikes project upwardly through apertures in the load bed to penetrate the underside of each of the lowermost bales of the tier of bales last transferred to the load bed by the bale receiving table and a second inoperative position where the bale retaining spikes are withdrawn beneath said apertures;

slides mounted on the underside of the load bed proximate to said apertures for guiding the bale retaining spikes for sliding movement; and

linkage means between the bale receiving the table and the bale retaining spikes so that movement of the bale retaining spikes relative to the slides and to the load bed occurs with movement of the bale receiving table, such that the bale retaining spikes are in the first operative position when the bale receiving table is in said first bale loading position and in the second operative position when the bale receiving table is in said second bale unloading position.

4,326,829

APPARATUS FOR LIFTING A HEAVY LOAD AND TRANSPORTING IT OVER AN OBSTRUCTION

Aurindo Nessi, Albate, Italy, assignor to Innocenti Santeustacchio S.p.A., Italy

Filed Jan. 23, 1980, Ser. No. 114,695

Claims priority, application Italy, Feb. 12, 1979, 20116 A/79

Int. Cl.³ B65G *67/02*

U.S. Cl. 414—357 4 Claims

1. An apparatus for lifting a heavy load and transporting it over an obstruction, comprising an overhead travelling crane having;

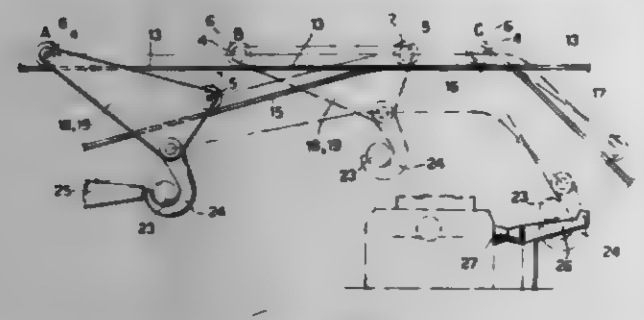
a supporting bridge structure;

a first set of horizontal, parallel rails carried by said bridge structure and extending in the direction of transport of the load above the level of said obstruction;

a carriage having a front axle and a rear axle with respect to said direction of transport, each axle being provided with wheels and the wheels of one of said front or rear axles being engaged each with a respective rail of said first set of rails to support the carriage thereon; and

drive means for driving said carriage along said rails, wherein

said bridge structure carries a second set of rails, each rail of which is disposed in a plane parallel to said direction of transport and includes a central, horizontal section extend-



ing above the level of said obstruction and end sections which slope downwardly from said central section, and

the wheels of the other of said front or rear axles being engaged each with a respective rail of said second set of rails to lower said carriage at an angle with respect to said first set of horizontal, parallel rails during movement of said wheels of said other of said front or rear axles over the end sections of said second set of rails, the carriage having load support means at its end adjacent said other of said front and rear axles.

4,326,830

SIDE LOADING VEHICLE

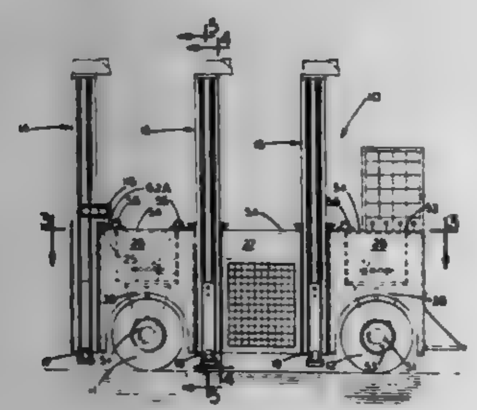
Lawrence B. Cusack, 2495 Rosewood Ave., Kamloops, British Columbia, Ca (V2B 4E5)

Filed May 6, 1980, Ser. No. 147,108

Claims priority, application United Kingdom, May 15, 1979, 16915/79

Int. Cl.[3] B60P *1/16, 1/32, 1/34, 1/52*

U.S. Cl. 414—470 17 Claims



1. A self-propelled side loading vehicle comprising:

(a) a chassis supported on front and rear pairs of wheels and having three box shaped sections separated by two transversely elongate clear ways extending from one side of the chassis to a rigid frame along a side of the chassis opposite the one side;

(b) three mast members received on guide tracks mounted on the chassis and having means for independent transverse movement within the two clear ways and along one end of the chassis, each mast member comprising upper and lower telescopic sections and a fluid cylinder for raising and lowering the upper section; and

(c) a load-bearing assembly supported by the upper section of each mast member comprising an outwardly extending bracket connected to a roller chain, the chain extending about a powered sprocket for raising and lowering the bracket connected to the chain, the bracket having a transversely extending, horizontal roller for supporting a load.

4,326,831

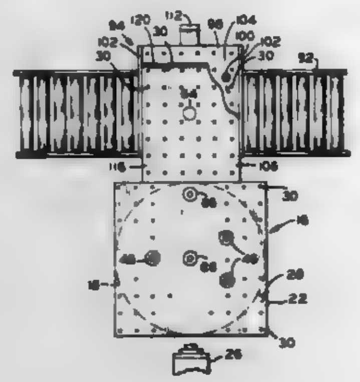
APPARATUS FOR TRANSFERRING A WORKPIECE IN AN AIR FLOAT SYSTEM

Raymond A. Bergman, 107 E. Second St., Minster, Ohio 45865

Continuation-in-part of Ser. No. 924,958, Jul. 17, 1978, Pat. No. 4,179,106, which is a continuation of Ser. No. 815,676, Jul. 14, 1977, abandoned, which is a division of Ser. No. 684,725, May 10, 1976, Pat. No. 4,058,885. This application Jan. 8, 1979, Ser. No. 1,434

Int. Cl.[3] B23Q *7/00*

U.S. Cl. 414—676 25 Claims



1. A workpiece transfer system comprising:

a support table having an upper surface adapted for supporting a workpiece or workpiece fixture and means within the table for supplying a cushion of workpiece or fixture supporting pressurized fluid to the surface of first table whereby the workpiece or workpiece fixture may be floatingly supported thereon,

a movable support element having an upper surface adapted for supporting the workpiece or workpiece fixture and means within the element for supplying a cushion of workpiece or workpiece fixture supporting pressurized fluid to the support element surface whereby the workpiece or workpiece fixture may be floatingly supported thereon,

means for moving said support element toward said support table such that the respective said upper surfaces thereof are in vertical register whereby the workpiece or workpiece fixture may be slid from the upper surface of one of said table and element to the upper surface of the other of said table and element, and for moving said support element away from said table when the workpiece or fixture has been thus transferred from said one of said table and element to the other,

said support table and said support element each comprising:

a capture pin received within its said upper surface and means for selectively extending the capture pin to protrude above the respective upper surface and enter a downwardly facing opening in the workpiece or workpiece fixture supported on the upper surface to thereby capture the workpiece or workpiece fixture so supported, and means for selectively retracting the capture pin to release the workpiece or workpiece fixture, whereby the workpiece or workpiece fixture can be positively captured by one or both of the pins as it is transferred from the support table to the support element or from the support element to the support table.

4,326,832

EXHAUST OUTER CASING

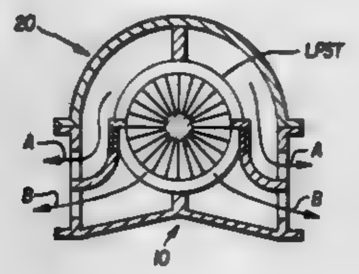
Takashi Ikeda, Tokyo, and Shinya Ayano, Fujisawa, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Oct. 12, 1979, Ser. No. 84,446

Claims priority, application Japan, Nov. 14, 1978, 53/140037

Int. Cl.[3] F01D 25/26

U.S. Cl. 415—219 R 2 Claims



1. An exhaust outer casing for a steam turbine wherein a low pressure steam turbine is constructed by an inner casing for supporting a rotatable turbine blade and an outer casing for supporting the inner casing, and said outer casing is adapted to connect to a condenser, the exhaust outer casing comprising:

a base;

a lower casing mounted on the base for supporting the inner casing and having means for receiving steam flow from the upper portion of the inner casing separately from the steam flow from the lower portion of the inner casing, and outlet means for discharging said steam flow laterally outward from the sides of the lower casing, and

an upper casing mounted on the lower casing and having means for introducing the flow to the inner casing to rotate the turbine,

wherein the bottom of the lower casing is inclined from its opposite sides to the middle thereof.

4,326,833

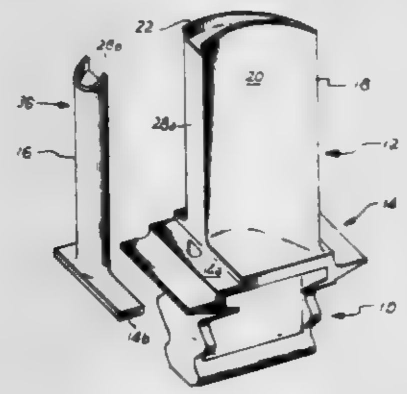
METHOD AND REPLACEMENT MEMBER FOR REPAIRING A GAS TURBINE ENGINE BLADE MEMBER

John W. Zelahy, West Chester, and Alexander Raeburn, Jr., Fairfield, both of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Mar. 19, 1980, Ser. No. 131,606

Int. Cl.[3] F01D *5/14*

U.S. Cl. 416—96 R 4 Claims



3. A replacement member for a segment of a gas turbine engine air cooled blade, the blade including a base, an airfoil and a platform therebetween generally extending beyond the airfoil, the airfoil projecting longitudinally from the platform and having chordwise spaced leading and trailing edge portions interconnected by concave and convex sidewalls, at least one edge portion having an edge chamber extending longitudinally of the airfoil and extending chordwise into the airfoil toward the other edge portion to a longitudinally extending chamber wall, the replacement member comprising:

a longitudinal portion including

(a) an edge portion; and

(b) a part of the chamber wall connected with and facing the edge portions;

(c) the edge portion and an interior surface of the chamber wall part facing the edge portion defining walls of the edge chamber; and

a foot portion connected with the longitudinal portion and comprising a part of the platform connected with and extending from the edge portion and connected with the edge chamber.

4,326,834

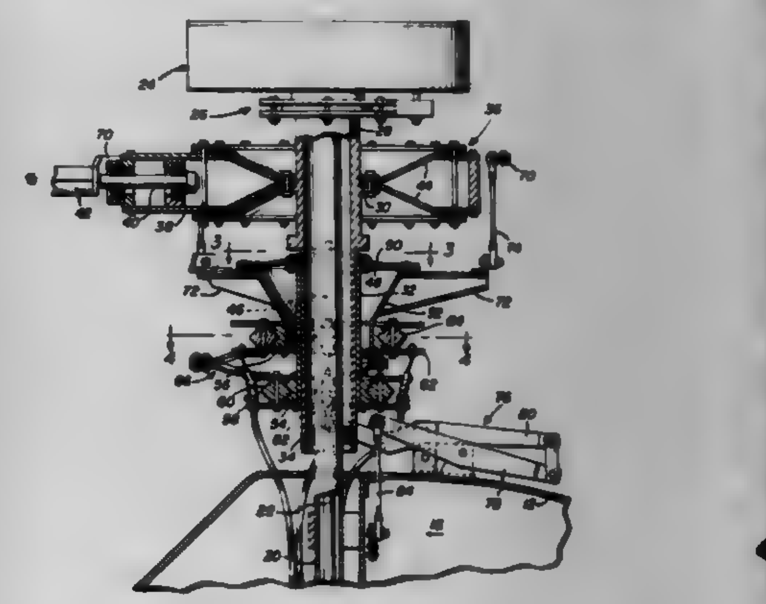
HELICOPTER ROTOR ASSEMBLY AND BLADE PITCH CONTROL

Stanislaw Ostrowski, P. O. Box 61, Gusher, Utah 84030

Filed Jun. 5, 1979, Ser. No. 45,698

Int. Cl.[3] B64C *27/52*

U.S. Cl. 416—134 A 16 Claims



~~1.~~ A helicopter rotor assembly including upright journaled support shaft means, an annular hub loosely disposed about said shaft means, a pair of annular flexible and resilient diaphragms having their outer peripheral portions anchored relative to axially spaced first inner marginal peripheral zones of said hub and their inner peripheral portions anchored relative to second peripheral zones of said shaft means oppositely axially spaced relative to the radial planes in which the corresponding first zones are disposed, said diaphragms each being radially stretched, and thus functioning in opposition to each other to yieldingly resist axial displacement of said hub relative to said shaft means from a predetermined position therealong and further function in concert to yieldingly resist angular displacement of the plane of rotation of said hub relative to a predetermined plane generally normal to the axis of rotation of said shaft means.

4,326,835

BLADE PLATFORM SEAL FOR CERAMIC/METAL ROTOR ASSEMBLY

John L. Wertz, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 29, 1979, Ser. No. 89,179

Int. Cl.[3] F01D *5/30*

U.S. Cl. 416—193 A 1 Claim

1. In a high temperature gas turbine engine ceramic and metal turbine rotor assembly of the type including a metal rotor disc having a rim with a plurality of circumferentially spaced retention slots therein and end faces thereon, and a plurality of ceramic blades, each blade including side platform

segments thereon, a blade stalk and a dependent dovetail configured root slidably received in one of said slots, adjacent ones of said platform segments including edge portions thereon closely spaced when said blades are assembled on said disc to form a substantially closed bottom surface for gas flow through said blades, an improved platform seal assembly comprising a plurality of seal members each having a flat ring segment and a plurality of integral fingers disposed generally at 90° to the plane of said ring segment, each of said seal members being fabricated from a high temperature resistant metal and being on the order of 0.005 inches in thickness so that each of said fingers is highly flexible yet light in weight, a plurality of blade connector plates corresponding in number to the number of said seal members and adapted for disposition on one of said rotor disc end faces, means rigidly attaching respective ones of

said flat ring segments to corresponding ones of said blade connector plates, and means rigidly attaching each of said connector plates to said rotor disc with said ring segments captured between said rotor and said connector plate thereby to seal between said blade stalks to prevent gas bypass therebetween while accurately positioning each of said fingers beneath said closely spaced edge portions of said platform segments so that said fingers overlap a gap found between said platform segments, said fingers being responsive to rotation of said disc to be centrifugally displaced and flexed against the underside of said platform segments to distribute seal loads at the edge portions thereon to prevent stress concentrations at the platform while sealing said gap therebetween so as to prevent gas bypass through said flow path bottom during operation of the gas turbine engine.

4,326,836

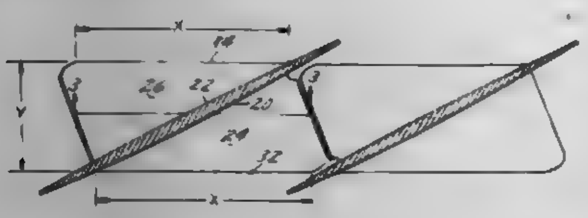
SHROUD FOR A ROTOR BLADE

David L. Fitton, South Glastonbury, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Dec. 13, 1979, Ser. No. 103,145

Int. Cl.³ F01D *5/22*

U.S. Cl. 416—196 R **6 Claims**



1. For a rotor blade of the type used in gas turbine engines which has an airfoil disposed about a spanwisely extending axis and a shroud extending laterally from the airfoil, the improvement which comprises:

a shroud having

- a laterally outward portion having a contact surface which adapts the rotor blade to engage a contact surface on an adjacent shroud of an adjacent rotor blade in the installed condition in the engine,
- a laterally inward portion extending between and integrally joined to the laterally outward portion and the airfoil for providing support to the laterally outward portion;

wherein said inward portion of the shroud has a geometric contour, said geometric contour having dimensions that cause the inward portion of the shroud to exhibit a maximum fiber unit stress in a rotational force field that is nearly uniform throughout the lateral length of the inward portion of the shroud.

4,326,837

PUMPING APPARATUS USING A STEPPING MOTOR

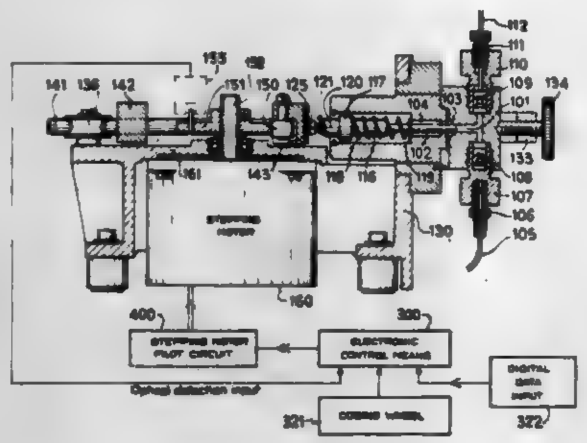
Robert E. Gilson; George W. Foster, both of Middleton, Wis., and Alain M. Bonneyrat, St-Martin-du-Tertre, France, assignors to Gilson Medical Electronics, Villiers-le-Bel, France

Filed Dec. 3, 1979, Ser. No. 99,867

Claims priority, application France, Dec. 15, 1978, 78 35399

Int. Cl.³ F04B *49/00*

U.S. Cl. 417—12 **12 Claims**



1. In pumping apparatus of the type comprising an inlet duct, an outlet duct, at least one pump body having a chamber which communicates through inlet and outlet valves with these two ducts, a piston movable in a fluid-tight manner in this chamber, as well as a cyclic actuator of the rotary cam type co-operating with this piston to cause it to slide, and a motor driving the cam, the improvement in which the motor is a fine-step stepping drive unit, and associated therewith are control means suitable for regulating the movement of the stepping motor as a function of a required delivery flow rate and as a function of a required stroke and return speed of the piston, said fine-step stepping drive unit comprises a stepping motor as such, associated with a pilot circuit, and the latter reacts to control signals by selectively passing into the windings of the stepping motor a current determined in accordance with a reference value which is in turn scaled in accordance with the control signals, this enabling the number of motor steps to be multiplied, said pilot circuit is adapted to apply to the individual windings of the stepping motor a periodically cut-off voltage of predetermined repetition rate and having a form factor defined by comparison of the current passing through each winding with the reference value.

4,326,838

SWASH PLATE TYPE COMPRESSOR FOR USE IN AIR-CONDITIONING SYSTEM FOR VEHICLES

Kenichi Kawashima; Kiyoshi Horibe, both of Hitachi, and Takashi Degawa, Mito, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 6, 1979, Ser. No. 46,042

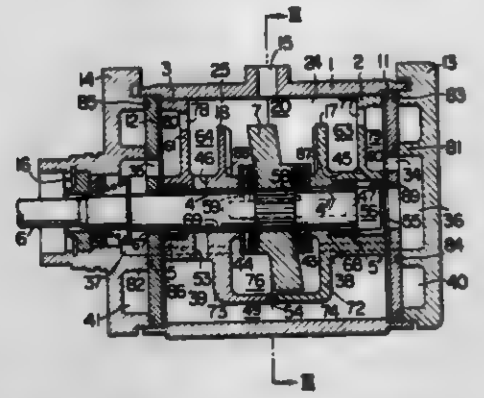
Claims priority, application Japan, Jun. 7, 1978, 53-67704; Jul. 28, 1978, 53-91479

Int. Cl.³ F04B *1/16*

U.S. Cl. 417—269 **4 Claims**

1. A swash plate type compressor for use in an air-conditioning system for vehicles, comprising a pair of cylinder blocks having a plurality of cylinder bores; a rotary shaft rotatably supported by said cylinder blocks; a swash plate fixed to said rotary shaft and disposed at a center of said cylinder blocks; pistons engageable with said swash plate and slidingly movable in said cylinder bores upon an oscillatory rotation of said swash

plate; side covers attached to the ends of said cylinder blocks through respective valve plates; a suction chamber formed in each of said side covers; a refrigerant suction passage formed in a portion of said cylinder blocks between adjacent cylinder bores above the rotary shaft for communicating a suction inlet of the compressor with the suction chambers by way of first passage bores formed in said valve plates; a crank chamber disposed at the center of said cylinder blocks and defined by partition walls enclosing a space in which said swash plate oscillatorily rotates, an opening being formed in a peripheral portion of said partition walls opposite said suction inlet for communicating said crank chamber with said refrigerant suction passage; an oil chamber disposed below said rotary shaft and around said crank chamber and defined between said cylinder bores in said cylinder blocks, said oil chamber being substantially closed except that said oil chamber is in communication with said crank chamber through a second passage bore formed in a portion of said partition walls between said crank chamber and said oil chamber, and said oil chamber having



substantially no direct communication with said suction chambers; and third passage bores formed in hubs of the respective cylinder blocks in parallel relationship with a shaft bore in said cylinder blocks accommodating said rotary shaft, each of said third passage bores having a first end opening directly into said crank chamber and a second end directly communicating with a bottom of an associated suction chamber through an associated valve plate whereby during operation of the compressor a refrigerant flow passage extends from said suction inlet to said suction chambers through said opening in said peripheral portion of said partition walls, said crank chamber and said third passage bores; during a halt in operation of the compressor lubricating oil accumulated in said suction chambers is returned to said oil chamber through said crank chamber by way of said third passage bores and said second passage bore; and during a start in operation of the compressor, when boiling of the lubrication oil in said oil chamber takes place due to foaming, oil is sprayed through said second passage bore from said oil chamber into said crank chamber so that said swash plate is lubricated.

4,326,839

CYLINDER UNLOADING MECHANISM FOR REFRIGERATION COMPRESSOR

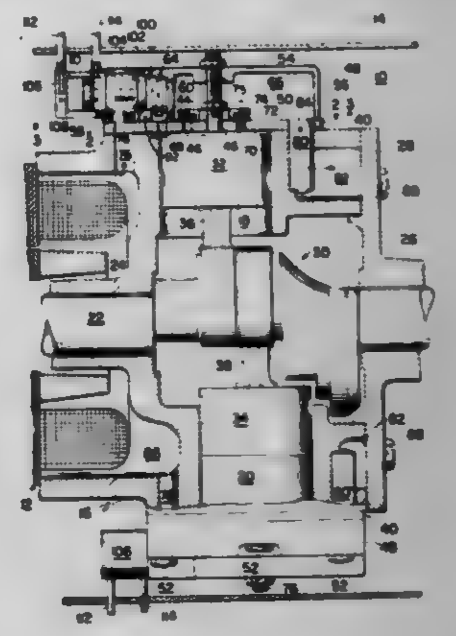
Emanuel D. Fry, Tecumseh, Mich., and Herbert G. Siewert, Sylvania, Ohio, assignors to Tecumseh Products Company, Tecumseh, Mich.

Filed Dec. 6, 1979, Ser. No. 101,228

Int. Cl.³ F04B *49/00*

U.S. Cl. 417—295 **9 Claims**

1. In a hermetic refrigeration compressor comprising: a hermetically sealed outer housing, a block in said housing and having at least one cylinder therein, a reciprocably movable piston in each cylinder, means including a cylinder head in said housing for closing an end of said cylinder and having suction and discharge ports therein communicating with said cylinder, said cylinder head having suction and discharge chambers therein respectively communicating with said suction and discharge ports, an access opening in said head, said closing means having suction and discharge passages respectively communicating with said suction and discharge chambers, spring biased suction valve means for normally closing said suction port and being opened in response to a suction stroke of said piston, and spring biased discharge valve means for normally closing said discharge port and being opened in response to a discharge stroke of said piston, a cylinder unloading mechanism comprising: a partition in said cylinder head extending across said suction chamber between said suction passage and suction port and dividing said suction chamber into first and second sections, said partition having an unloading port therein communicating with said first and second suction chamber sections; an unloading valve having a closed position closing said unloading port thereby blocking communication between said suction chamber sections to unload said cylinder, and an



open position permitting communication between said sections; and means for actuating said unloading valve between said closed and open positions in response to a control signal, said means for actuating said unloading valve comprising: a double acting springless return fluid motor connected to said access opening in the head and comprising a plunger cylinder connected to said access opening having a double acting plunger therein, said plunger extending through the access opening and being connected to said valve, said plunger dividing the plunger cylinder into two chambers, and a selectively actuatable pilot valve means connected to said plunger cylinder chambers for alternatively connecting said plunger cylinder chambers to a source of fluid pressure, whereby the unloading valve is opened and closed in accordance with the state of said pilot valve.

4,326,840

WAVE DRIVEN PUMP

Douglas C. Hicks, Newark, Del., and Charles M. Plesss, Havre de Grace, Md., assignors to University of Delaware, Newark, Del.

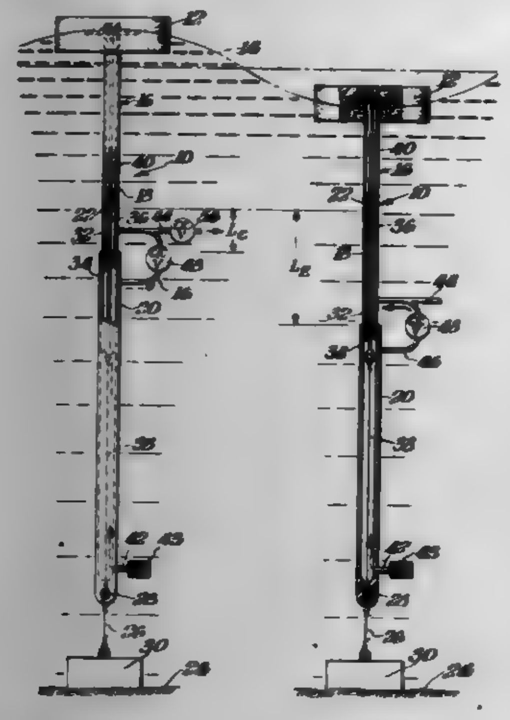
Filed Mar. 10, 1980, Ser. No. 129,037

Int. Cl.³ F03B *3/12*

U.S. Cl. 417—331 **10 Claims**

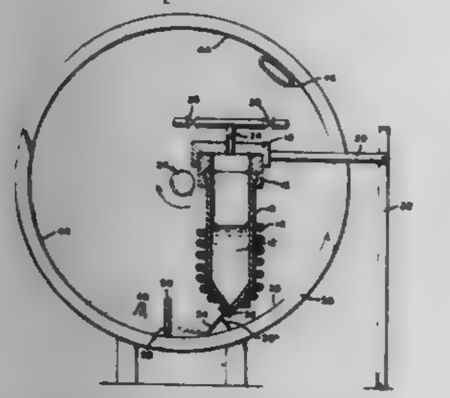
1. A wave driven pump comprising a buoyant wave follower for floating at the water surface, an elongated hollow body member connected to and depending from said wave follower for extending toward the sea floor, said body member including means for mooring said body member to the sea floor, a piston in said body member having means for mooring to the sea floor whereby the relative distance between said piston and the sea floor is maintained generally constant, said body member including a hollow cylinder connected to said wave follower and disposed around and in contact with said piston, a pumping chamber in said cylinder upstream from said piston with one end of said pumping chamber being closed by

said piston, said cylinder including a bushing defining the opposite end of said pumping chamber remote from said piston inlet means communicating with said pumping chamber and adapted to communicate with the surrounding sea water, outlet means communicating with said pumping chamber for the discharge of seawater therefrom, and means for expanding and



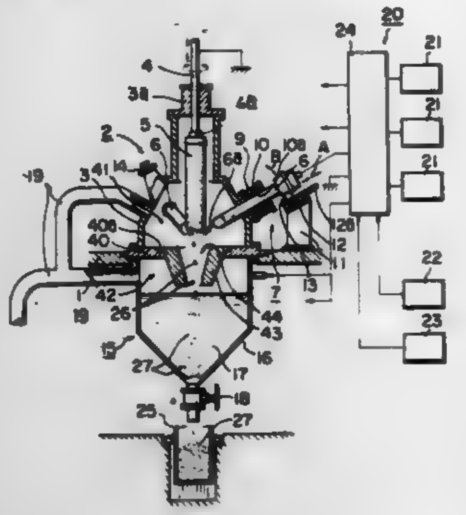
contracting the volume of said pumping chamber in response to wave movements for creating a pumping action which causes sea water to flow into said pumping chamber and then be pumped therefrom and a portion of said elongated hollow body member being made of a resilient elastic material to permit said member to change in length in accordance with the position of said wave follower.

4,326,841
APPARATUS FOR MAKING METALLIC GLASS POWDER
Ranjan Ray, Randolph, N.J., assignor to Allied Chemical Corporation, Morris Township, Morris County, N.J.
Division of Ser. No. 23,412, Mar. 23, 1979, Pat. No. 4,221,587. This application Feb. 25, 1980, Ser. No. 124,407
Int. Cl.³ B22F *9/00*
U.S. Cl. 425—8 4 Claims



1. An apparatus for making metallic glass powder comprising:
(a) holding means for holding molten metal;
(b) nozzle means in communication with said holding means for generating a jet of molten metal;
(c) means for expelling molten metal through said nozzle means to generate a jet of molten metal;
(d) a rotatable cylindrical chill body having an inner chill surface, wherein the nozzle means and the chill body are so positioned with respect to each other that a molten metal jet expelled from the nozzle means impinges against the inner surface of the chill body in the direction of movement of the chill surface at an acute angle within the range of from about 5° to about 30°.

4,326,842
DEVICE FOR THE PULVERIZATION OF RADIOACTIVE WASTES
Toshio Adachi, Nagoya, and Susumu Hiratake, Kasugai, both of Japan, assignors to Daidotokushuko Kabushikikaisha, Japan
Filed Jan. 24, 1980, Ser. No. 115,155
Claims priority, application Japan, Jan. 27, 1979, 54-8326
Int. Cl.³ G21F *9/34*
U.S. Cl. 425—10 8 Claims

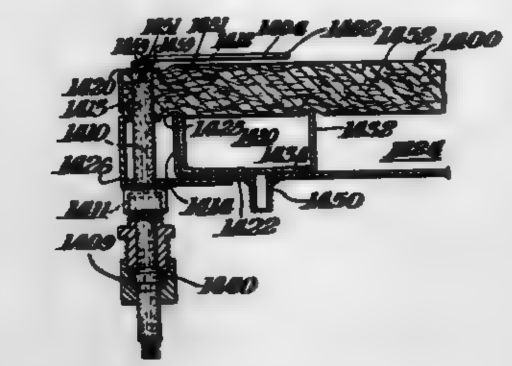


1. A pulverising device comprising:
(i) a hollow furnace body defining a space for the melting of a portion of radioactive waste,
(ii) a gripper mounted on said furnace body and adapted to support a portion of radioactive waste in said space in said furnace body,
(iii) plasma torch means mounted on said furnace body and directed to irradiate a plasma arc toward a lower end of said portion of radio-active waste supported by said gripper, and
(iv) a water vessel disposed below said space for storage of water,
whereby said portion of radio-active waste is heated so as to be melted within said space by said plasma arc, and the molten waste falls as a succession of drops into said water and becomes pulverised.

4,326,843
GAS-FIRED INFRA-RED GENERATORS AND USE THEREOF
Thomas M. Smith, 114 Villinger Ave., Cinnaminson, N.J. 08077
Continuation-in-part of Ser. No. 906,229, May 15, 1978, Pat. No. 4,157,155, Ser. No. 863,251, Dec. 22, 1977, Pat. No. 4,224,018, and Ser. No. 775,838, Mar. 9, 1977, Pat. No. 4,272,237, said Ser. No. 863,251, and Ser. No. 775,838, each is a continuation-in-part of Ser. No. 701,687, Jul. 1, 1976, abandoned, said Ser. No. 775,838, and Ser. No. 701,687, each is a continuation-in-part of Ser. No. 674,409, Apr. 7, 1976, Pat. No. 4,035,132. This application Oct. 18, 1978, Ser. No. 952,332
Int. Cl.³ F23Q *3/00*
U.S. Cl. 431—264 9 Claims

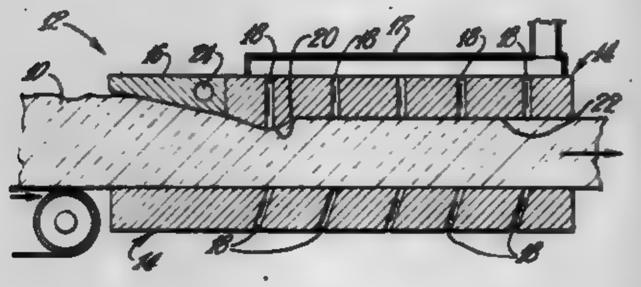
9. An electrical ignition assembly containing a ground electrode rod bent into at least about one-sixth but not more than half of a circle and secured in place at each of its ends, a sparking electrode rod mounted at a point corresponding to the center of the ground electrode circle and having a terminal

portion extending in the plane of the circular portion of the ground electrode and to within sparking distance of it, and a



proving electrode mounted within the area defined by the bent ground electrode.

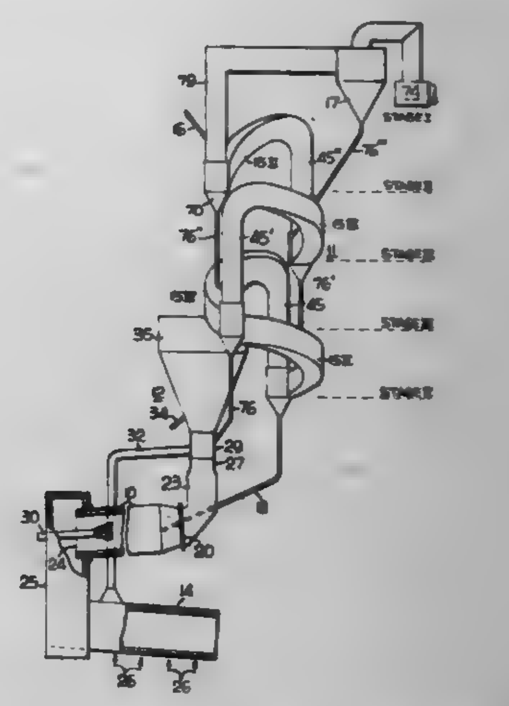
4,326,844
METHOD AND APPARATUS FOR CURING FIBROUS MINERAL MATERIAL
Ronald E. Kissell, Alexandria, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio
Filed Aug. 25, 1980, Ser. No. 181,274
Int. Cl.³ F27B *14/00*
U.S. Cl. 432—13 12 Claims



9. The method for curing fibrous mineral material of the type in which fibrous mineral material containing heat curable or thermoplastic binder thereon is passed through a curing station having a cool zone and a curing element positioned downstream from said cool zone, said curing element being adapted to apply heat and pressure to the surface of the fibrous mineral material passed through said curing station to cure the binder and said curing element defining a hot zone and a transition zone positioned between said cool zone and said hot zone, wherein the improvement comprises applying greater pressure to the fibrous mineral material in said transition zone than in either said cool zone or said hot zone.

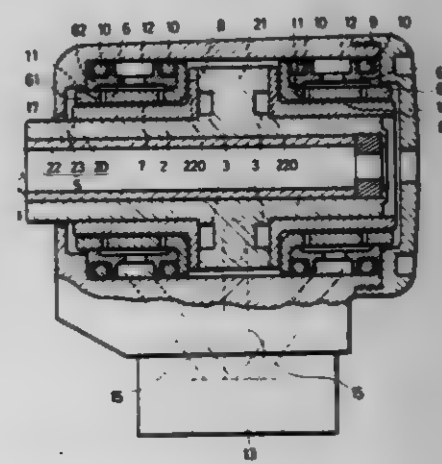
4,326,845
SUSPENSION PREHEATER FOR CEMENT CALCINING PLANT
Paul D. Hess, Brookfield, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.
Filed Jan. 2, 1981, Ser. No. 222,035
Int. Cl.³ F27B *7/02, 15/00*
U.S. Cl. 432—106 19 Claims

1. A multi-stage cement calcining plant suspension preheater having a plurality of stages each of which has a separator for separating raw cement meal from gas in which the meal is suspended and wherein said separators of said plurality of stages are serially connected and in series with a calcining combustor, characterized in that the separators in certain of said stages are helical duct inertial separators each of which comprises a hollow elongated continuous duct having its longitudinal axis disposed generally along a downwardly inclined helical path with its inlet end at a higher elevation than its outlet end, said duct having adjacent said inlet end a gas inlet opening in a vertical plane for receiving a generally horizontal gas stream with cement meal suspended therein, means including a downwardly inclined upper wall and a concave outer side wall for deflecting said horizontal stream into a downwardly inclined helical path within said duct, a generally horizontal bottom wall in the path of the helically downward directed gas stream, a meal exit opening in said bottom wall adjacent said outlet end, and a gas exhaust opening in the top



wall adjacent said outlet end, whereby said helically downward directed gas stream impinges upon said bottom wall and is deflected upward toward said gas exhaust opening while the heavier meal is urged by centrifugal and inertial forces to precipitate from said gas stream and flow along said bottom wall toward said meal exit opening.

4,326,846
DENTAL HANDPIECE
Hiroshi Sugai, and Shoji Nakayama, both of Kyoto, Japan, assignors to Kabushiki Kaisha Morita Seisakusho, Kyoto, Japan
Continuation-in-part of Ser. No. 889,646, Mar. 24, 1978. This application Feb. 25, 1980, Ser. No. 124,451
Claims priority, application Japan, Apr. 10, 1977, 52/37810
The portion of the term of this patent subsequent to Jun. 24, 1997, has been disclaimed.
Int. Cl.³ A61C *1/12*
U.S. Cl. 433—132 3 Claims



1. A dental handpiece comprising turbine blades of a single turbine driven by applying a high-speed fluid under pressure through a high-speed fluid supply apperture coupled to a turbine rotor chucking a cutting shaft, said turbine rotor being journaled in bearings and said aperture facing said blades,

wherein said blades are provided with openings or cutout portion located at both outside ends in a thrust direction of said blades so as to provide flange portions between said openings and said end portions of said blades and the width of said blades at a periphery thereof is larger than that of said high-speed fluid supply apperture.

4,326,847

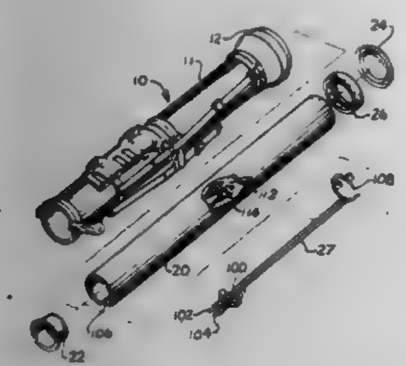
LAUNCH ENVIRONMENT SIMULATOR

George W. Roe, Rockledge, Fla., assignor to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Dec. 21, 1979, Ser. No. 105,991

Int. Cl.^{3} F41F *27/00;* G09B *9/00*

U.S. Cl. 434—12 12 Claims



1. A launch environment simulation apparatus comprising:
a. an elongated combustion chamber open at both ends;
b. means for charging the chamber with a combustible gas mixture;
c. means for igniting the gas selectable by an operator;
d. a recoil producing means comprising a plate removably attached to the rear end of the chamber wherein the plate contains at least one orifice such that the total orifice area provides an effective amount of recoil sensible to the operator of the apparatus upon ignition of the gas mixture; and
e. means for containing the combustible gas mixture within the chamber prior to ignition of the gas comprising end caps removably attached to both ends of the chamber wherein the caps disintegrate upon ignition of the gas.

4,326,848

CONSTANT BELT TENSION DEVICE

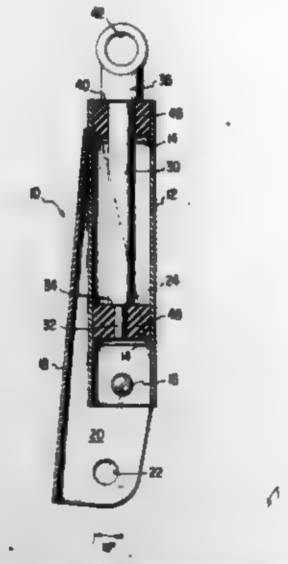
Larry T. George, Greenfield, and Herbert W. Egan, Jr., Indianapolis, both of Ind., assignors to Wallace Murray Corporation, New York, N.Y.

Filed Apr. 21, 1980, Ser. No. 142,434

Int. Cl.^{3} F16H *7/12*

U.S. Cl. 474—135 5 Claims

2. A constant-tension spring device for the accessory belt of an automobile engine, the device including, a cylindrical housing having at least one annular elastomer ring member positioned therein, the outermost sides of said elastomer ring being in contact with an inner surface portion of said cylinder, the housing having an internal ledge abutment constantly contacting said elastomer ring to maintain the outer periphery of one end face of said ring fixed with respect to said cylinder against forces in one direction, a load carrying rod having a shoulder which constantly bears against the inner periphery of the other end face of said elastomer ring, the said rod shoulder being of lesser diameter than said ledge abutment, the improvement comprising, the elastomer ring being substantially uncompressed in its normal, unloaded configuration, the sides of the ring being unbonded to thereby permit the ring sides to move away from the interior surface of the cylindrical housing, whereby movement of the rod shoulder towards the abutment causes the elastomer ring to undergo torsion about its circular axis, to thereby result in a flat segment over a portion of the load vs. deflection curve of the device, whereby the device may be operated along the flat segment of the load vs. deflection curve, to cause an accessory belt of an automotive engine



to have a constant tension to compensate for changes in belt length due to temperature, ageing, and humidity.

4,326,849

SPROCKET-WHEEL GEAR-WHEEL OR LIKE WHEEL SUBSTANTIALLY MANUFACTURED FROM A SYNTHETIC MATERIAL

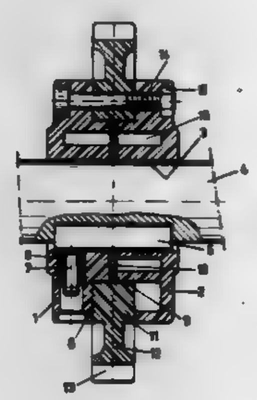
George J. Van Zijderveld, 's-Gravenzande, Netherlands, assignor to M.C.C. Nederland B.V., 's-Gravenzande, Netherlands

Filed Oct. 17, 1979, Ser. No. 85,753

Claims priority, application Netherlands, Jul. 26, 1979, 7905788

Int. Cl.^{3} F16H *55/12, 55/48*

U.S. Cl. 474—161 4 Claims



1. A sprocket-wheel, gear-wheel or like wheel substantially manufactured from a synthetic material and comprising a hub and a toothed ring or the like affixed thereto in spaced concentric relationship therewith, said hub being divided along a plane which lies substantially perpendicular to the centre-line of the hub-boring such that the hub comprises two parts of substantially annular form, the opposing radial surfaces of which are each provided with an open and radially outward directed recess of substantially annular form and with an outwardly facing periphery of non-circular form, in which both said recesses jointly accommodate a part of substantially annular form which is affixed to the said toothed ring, in which the radially inwardly facing periphery of said part corresponds in form to the said outwardly facing peripheries of the recesses in two hub parts, and in which the two hub parts are affixed to one another by fixing means which also clamps the said part affixed to the toothed ring therebetween in the recesses.

4,326,850

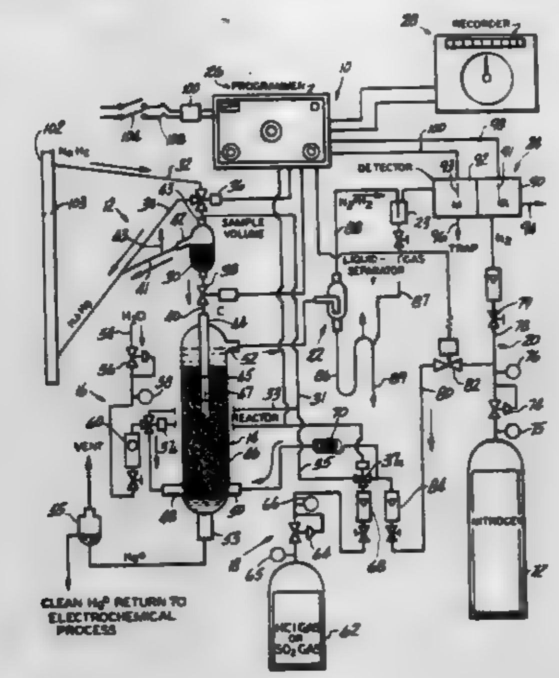
SODIUM AMALGAM MONITOR

Italo A. Capuano; Patricia A. Turley, both of Orange, and Edward W. DuBord, Hamden, all of Conn., assignors to Olin Corporation, New Haven, Conn.

Division of Ser. No. 44,295, May 31, 1979, Pat. No. 4,294,798. This application Apr. 28, 1980, Ser. No. 144,505

Int. Cl.^{3} G01N *27/62*

U.S. Cl. 23—230 R 21 Claims



1. A method of monitoring the sodium concentration in a sodium-mercury amalgam process stream which comprises the steps of:
(a) automatically withdrawing a sample of said sodium-mercury amalgam from said stream;
(b) automatically supplying said withdrawn sample in metered amounts via a feed tube to a reaction zone in a reaction chamber having at least one inlet and at least one outlet;
(c) automatically supplying an acid to said reaction zone in sufficient quantity so as to completely react with said sample to remove any metallic sodium therefrom and to generate hydrogen gas in proportion to the amount of sodium in said sample;
(d) separating the liquid and gaseous products from the reaction of said acid with said sample via a liquid-gas separator in fluid flow communication with said reaction chamber;
(e) selectively supplying an inert gas to said reaction chamber to force the gaseous reaction products from the reaction zone into the liquid-gas separator;
(f) automatically generating a signal in response to the amount of hydrogen gas generated per unit amount of said sample from the gaseous products separated in the liquid-gas separator via detector means to indicate the amount of hydrogen; and
(g) displaying said signal in units of sodium concentration in said amalgam stream.

4,326,851

LEVEL SENSOR APPARATUS AND METHOD

Ernesto Bello, Miami Springs; Steven N. Kolber, North Miami Beach, and Wallace H. Coulter, Miami Springs, all of Fla., assignors to Coulter Electronics, Inc., Hialeah, Fla.

Filed Oct. 24, 1980, Ser. No. 200,142

Int. Cl.^{3} G01N *1/14, 35/06*

U.S. Cl. 23—230 R 36 Claims

19. A method of sensing the level of a sample fluid in a fluid transfer mechanism transferring aliquots of electrically conductive sample fluids from a supply to reaction vessels, the mechanism including an arm, a shaft having an axis aligned vertically and being coupled to one end of the arm, vertical drive means for moving the arm up and down along the shaft axis, horizontal drive means for rotating the arm in an arcuate path around the shaft axis and fluid probe means depending from the other end of the arm for aspirating the aliquot from the sample supply and dispensing the aspirated aliquot in the reaction vessel, the method comprising:
forming a supply tray of a dielectric material, to include individual supply cavities which contain the fluid samples, the tray being rotatable to align an individual cavity with the arcuate path and when so aligned the individual supply cavity adopted to receive the probe means during the aspiration of the aliquot;

forming a capacitor of the sample fluid, the dielectric material and an electrode by biasing the electrode against the supply tray in a position under said individual supply cavity;
applying an AC signal to the electrode relative to a signal ground;
sensing modulation of the AC signal applied to the electrode and providing a level sense signal when the modulation is sensed;
connecting the probe means to the signal ground; and
modulating the AC signal applied to the electrode by engaging the fluid sample in the cavity with the probe means capacitively to ground the AC signal applied to the electrode through said capacitor and grounded probe means.

4,326,852

METHOD FOR INCREASING THE BULK WEIGHT OF SILICON DIOXIDE

Günter Kratel, Durach-Bechen; Gerhard Dummer, Burgkirchen; Peter Niessner, Salzberg; Burkhard Grune, Burghausen, and Gunter Stohr, Durach-Bechen, all of Germany, assignors to Wacker-Chemie GmbH, Fed. Rep. of Germany

Filed Oct. 11, 1979, Ser. No. 83,718

Claims priority, application Fed. Rep. of Germany, Oct. 12, 1978, 2844459

Int. Cl.^{3} B01D *29/20, 37/00; 46/26;* B01J *3/00*

U.S. Cl. 23—293 R 4 Claims

1. A method for increasing the bulk weight of silicon dioxide having a bulk weight of 10 to 30 g/l and a surface area of at least 50 m^2/g by means of employing a sub-atmosperic pressure at a filter face, comprising the steps of:
feeding silicon dioxide whose bulk weight is to be increased to a filter face in a mechanically-pressureless manner by means of a rotating conveying screw, the longitudinal axis of which is disposed parallel to said filter face and which has a decreasing thread pitch in feeding direction, said silicon dioxide being fed at a rate of 200 to 350 kg per hour and per m^2 of filter face; and
subjecting said silicon dioxide to a pressure of 300 to 900 mbar, absolute, so as to draw off any gases contained therein, whereby the bulk weight of the silicon dioxide is increased to between 80 and 120 g/l.

4,326,853
COKE PRODUCTION FROM LIQUID DERIVED FROM SUB-BITUMINOUS AND/OR LIGNITIC COAL

Morgan C. Sze, Upper Montclair, and Andre A. Simone, Denville, both of N.J., assignors to The Lummus Company, Bloomfield, N.J.

Continuation-in-part of Ser. No. 942,025, Sep. 13, 1978, abandoned. This application Mar. 21, 1980, Ser. No. 131,933

Int. Cl.³ C10L *9/00*

U.S. Cl. 44—1 F 17 Claims

1. In a process for the liquefaction of a coal selected from the group consisting of sub-bituminous and lignitic coals, wherein there is recovered an ash free coal liquid and an ash-containing coal liquid, the improvement comprising:

passing the ash containing coal liquid through a coking heater to effect heating thereof to an outlet temperature of from about 410° C. to about 450° C., and adiabatically effecting delayed coking of said heated ash-containing coal liquid at a pressure of from about 15 psig to about 120 psig, to produce an ash-containing soft coke having a combustible volatile matter content of from above 16 to no greater than 30 weight percent suitable as blending stock with coal for the production of metallurgical coke.

11. The process of claim 1 and further comprising blending the soft coke with bituminous coal and subjecting the blend to high temperature carbonization to produce a metallurgical coke.

16. A soft coke having a combustible volatile matter content of from above 16 to no greater than 30 percent by weight and an ash content of from 6 to 20 percent by weight, on a dry basis, produced by the process of claim 1.

4,326,854
SYNTHETIC FIRELOG

John D. Tanner, 1362 Tremblay St., Oshawa, Ontario, Canada

Continuation of Ser. No. 19,271, Mar. 9, 1979, abandoned. This application Jul. 28, 1980, Ser. No. 172,990

Int. Cl.³ C10L *5/14, 5/00*

U.S. Cl. 44—10 B 5 Claims

1. A synthetic firelog comprises an extruded mass of a material sufficiently solid to hold its shape at normal room temperatures, and carbonizable on combustion to provide a porous skeleton which will substantially maintain the configuration of the log, the material consisting essentially of 25% to 70% of particulate solid combustible material, the balance being a combustible solid binder, the binder comprising a major proportion of a normally liquid combustible byproduct modified by the presence of fatty acid salts in a quantity sufficient to solidify the binder, the combustibility of the extruded mass being such as to provide a safe but aesthetically acceptable rate of burning under fire-grate conditions from the time the log is fully alight until substantial consumption of the volatilizable content of the log.

3. A synthetic firelog comprising an extruded mass of a material sufficiently solid to hold its shape at normal room temperatures, and carbonizable on combustion to provide a porous skeleton which will substantially maintain the configuration of the log, the material comprising a mixture of particles of solid combustible material and a combustible solid binder, the binder forming at least 30% by weight of the log and comprising at least about 25% by weight of the binder of molasses, together with sufficient water-absorbent cellulosic material to solidify the molasses.

4,326,855
PROCESS FOR BENEFICIATING AND STABILIZING COAL/OIL/WATER FUELS

Eric C. Cottell, Private Rd., Bayville, N.Y. 11709

PCT No. PCT/US79/00962, § 371 Date Nov. 8, 1979, § 102(e) Date Nov. 8, 1979

PCT Filed Nov. 8, 1979, Ser. No. 118,032

Int. Cl.³ C10L *1/31*

U.S. Cl. 44—51/ 4 Claims

1. The process for producing fuel comprising making a slurry of coal particulate and water, sonifying the slurry with sufficient intensity to cause cavitation, adding oil to the sonified slurry to thereby cause spherical agglomeration of the oil and coal portions of the mixture, sonifying the slurry and oil mixture to enhance the spherical agglomeration process, screening out the water and any nonagglomerated particles from the coal particulate and adding oil to the agglomerate mass to form a stable fuel.

2. The process of claim 1 in which the agglomerate mass and oil mixture is sonified.

4,326,856
PRODUCTION OF CLEANED AND COOLED SYNTHESIS GAS

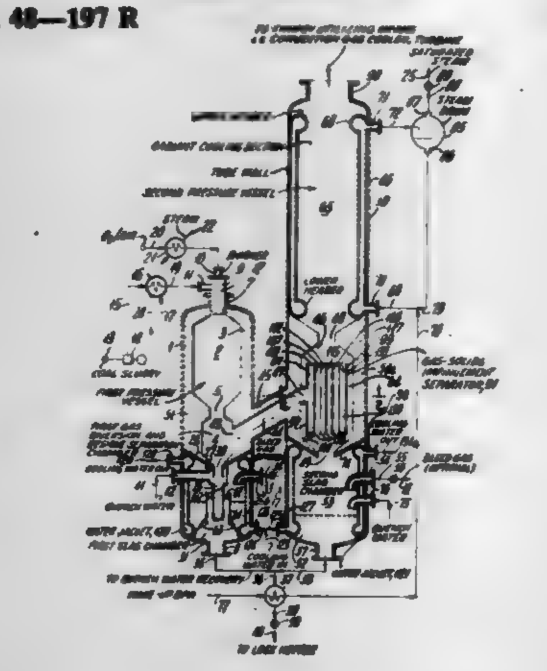
James R. Muenger, Beacon; Edward T. Child, Tarrytown, and Albert Brent, Huntington, all of N.Y., assignors to Texaco Development Corporation, White Plains, N.Y.

Continuation-in-part of Ser. No. 43,918, Mar. 30, 1979, Pat. No. 4,251,228. This application Jul. 28, 1980, Ser. No. 172,747

The portion of the term of this patent subsequent to Feb. 17, 1998, has been disclaimed.

Int. Cl.³ C10K *1/02*

U.S. Cl. 48—197 R 26 Claims



1. A process for separating entrained solid matter and slag from a hot raw gas stream comprising H_2, CO, CO_2, entrained solid matter and slag, and one or more materials from the group H_2O, H_2S, COS, CH_4, NH_3, N_2, and A as produced in the reaction zone of a gas generator by the partial oxidation of solid carbonaceous fuel at a temperature in the range of about 1800° to 3000° F. and a pressure in the range of 10 to 190 atmospheres, and cooling said hot raw gas stream comprising:

(1) passing said hot raw gas stream directly from said reaction zone downward through a connecting passage at high velocity into a thermally insulated unobstructed free-flow gas diversion and residue separation chamber where the velocity of the gas stream is reduced, said residue separation chamber having a net internal volume which is smaller than that of said reaction zone and having bottom and side outlets, separating by gravity a portion of said solid matter and slag from the gas stream without substantially reducing the temperature of the gas stream, and passing said portion of separated material by gravity through said bottom outlet into a first slag pot located directly below said first gas diversion and residue separation chamber;

(2) passing about 80.0 to 100 vol. % of the hot gas stream from said first gas diversion and residue separation chamber with a portion of said solid matter and slag removed through said side outlet then through a thermally insulated transfer line and then through at least one thermally insulated gas-solids impingement separation means located in a separate vertical pressure vessel from that containing said gas diversion and residue separation chamber, said gas-solids impingement separation means having inlet and outlet means for the hot gas stream and outlet means for the solid matter and slag separated therein, separating additional solid matter and slag from the gas stream by said gas-solids impingement means without substantially reducing the temperature of the gas stream, and passing said separated portion of material into a second slag pot located directly below the gas-solids impingement means;

(3) passing about 80.0 to 100 vol. % of the hot gas stream with a portion of said solid matter and slag removed by said gas-solids impingement separation means directly into the bottom of and upward at a reduced velocity through the unobstructed central vertical passage of a radiant cooling zone having a plurality of vertical tubes lining the inside walls, simultaneously cooling said upflowing hot gas stream to below the maximum safe operating temperature for a downstream energy utilizing means by indirect heat exchange with a coolant flowing in said vertical tubes and solidifying at least partially any remaining ash particles in the gas stream, and removing additional solid matter and slag from said gas stream by gravity, and passing said separated portion of material into said second slag pot; and

(4) removing a cleaned gas stream from said radiant cooling zone at a reduced temperature.

4,326,857
PRODUCTION OF A GAS OF A HIGH HEATING VALUE FROM COAL

Tsutomu Kato, Kawaguchi, and Mamoru Kaiho, Toride, both of Japan, assignors to Director-General of Agency of Industrial Science and Technology, Tokyo, Japan

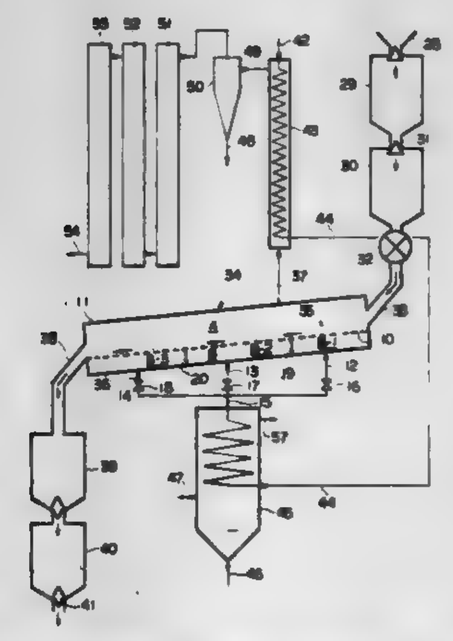
PCT No. PCT/JP79/00153, § 371 Date Feb. 15, 1980, § 102(e) Date Feb. 15, 1980, PCT Pub. No. WO80/00085, PCT Pub. Date Jan. 24, 1980

PCT Filed Jun. 15, 1979, Ser. No. 192,509

Claims priority, application Japan, Jun. 15, 1978, 53/72433

Int. Cl.³ C10J *3/00*

U.S. Cl. 48—210 15 Claims



1. A continuous process for hydrogenolytic gasification of coal to produce a combustible gas product comprising:

introducing powdery coal into a reaction chamber comprising an inclined gas dispersing plate and forming a layer of said powdery coal on said dispersing plate; said coal layer moving through said reaction chamber on said plate in the down grade direction of said plate;

introducing a gas consisting essentially of hydrogen through said dispersing plate into said coal layer; the amount of hydrogen gas introduced being not greater than 1 m³ per Kg/coal;

reacting said powdery coal with said hydrogen gas at a temperature of 400° C. to 900° C. and a pressure of 20 Kg/cm² to 100 Kg/cm²;

withdrawing coal residue from said reaction chamber, and withdrawing a combustible gas product having a heating value of 6000 Kcal/m³ to 9900 Kcal/m³ from said reaction chamber.

4,326,858
PRESSURE BUILDUP TECHNIQUE IN PRESSURE SWING ADSORPTION PROCESS

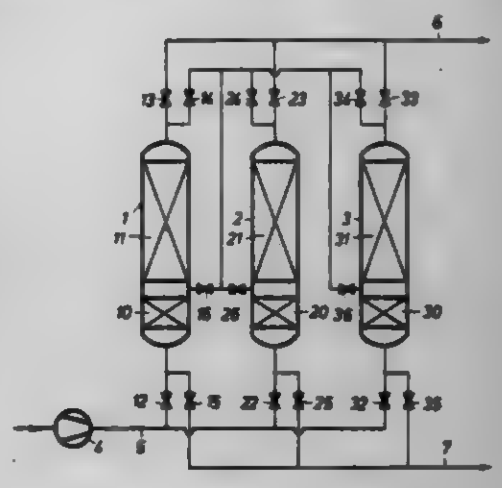
Christian Benkmann, Munich, Fed. Rep. of Germany, assignor to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany

Filed May 31, 1978, Ser. No. 911,556

Claims priority, application Fed. Rep. of Germany, Jun. 1, 1977, 2724763

Int. Cl.³ B01D *53/04*

U.S. Cl. 55—26 11 Claims



1. In a pressure swing adsorption process for the separation of gases comprising the steps of passing crude gas under a superatmospheric adsorption pressure through a drying bed of H_2O-selective adsorbent to remove gaseous H_2O and then passing resultant H_2O-free gas sequentially through a separate and distinct zeolite-containing adsorbent bed for the removal of low-boiling impurities and the further steps of pressure release, desorption and pressure buildup to adsorption pressure, the improvement in the pressure buildup step which comprises introducing an H_2O-depleted gas obtained during said process to a point intermediate the drying bed and said zeolite-containing adsorbent bed and passing said H_2O-depleted gas into the drying bed in a countercurrent direction to the flow of crude gas and into the zeolite-containing adsorbent bed in a cocurrent direction to the flow of crude gas, and continuing said passing of said H_2O-depleted gas until the pressure buildup is at least 20% of the adsorption pressure.

4,326,859
DEGASSING OF DRILLING FLUIDS

Gerald E. Burnham, Sr., 401 N. Corell St., Ville Platte, La. 70586

Filed Apr. 25, 1980, Ser. No. 143,536

Int. Cl.³ B01D *19/00*

U.S. Cl. 55—52 15 Claims

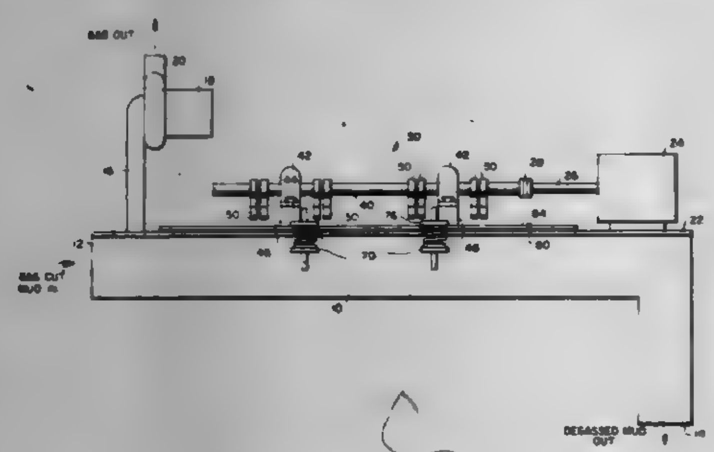
1. A method for removing entrained well gas from drilling fluid comprising the steps of:

conducting drilling fluid between opposed wall surfaces of a degassing chamber in a substantially closed degassing system isolated from the ambient in which a movable cavitator is disposed within the drilling fluid flow intermediate said opposed wall surfaces with the cavitator surfaces contacting said drilling fluid; and

imparting elliptically oscillating movements to said cavitator from outside of said degassing chamber through the wall thereof while at the same time preventing the escape of gas therefrom to alternately compress and rarefy said drilling fluid between said wall surfaces and said cavitator surfaces and thereby promote coalescence of small entrained gas bubbles into larger bubbles which may rise to the drilling fluid surface for removal.

2. Apparatus for removing entrained well gas from drilling fluid comprising:

a conduit having inlet and outlet means for flow of drilling fluid therethrough, said conduit providing opposed wall



surfaces to contact the drilling fluid and defining a degassing chamber which is substantially isolated from the ambient;

a cavitator providing surfaces respectively spaced from said opposed wall surfaces of said conduit;

means movably mounting said cavitator within said conduit for said cavitator surfaces to contact drilling fluid flowing through said conduit and preventing the escape of fluid or gas from said conduit during movement of said cavitator; and

drive means mounted externally of said conduit and drivingly connected to said cavitator, said drive means being operable to generate forces imparting elliptically oscillating movements to said cavitator whereby drilling fluid flowing through said conduit is alternately compressed and rarefied between said conduit wall surfaces and said cavitator surfaces to promote coalescence of small entrained gas bubbles into larger bubbles which may rise to the fluid surface for removal.

4,326,860
RIPPLE INSENSITIVE ELECTRIC PRECIPITATORS
Thomas C. Langesen, Silverton, N.J., assignor to NWL Transformers, Bordentown, N.J.
Filed Nov. 28, 1980, Ser. No. 211,335
Int. Cl.³ B03C *3/68*
U.S. Cl. 55—105 — 8 Claims

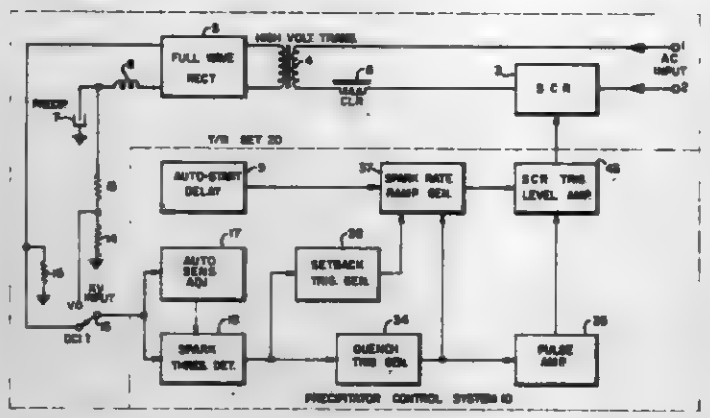
1. A control system for automatically controlling a substantially maximum voltage across a precipitator while maintaining a desired spark rate across the electrodes of the precipitator comprising

means for producing an attenuated precipitator signal proportional to the signal directly applied to the precipitator including ripple and spark components,

spark threshold means for detecting when the attenuated precipitator signal exceeds a predetermined threshold thereby to produce a threshold crossing signal,

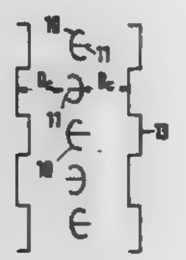
control means responsive to said threshold crossing signal for providing a ramp signal for varying the voltage applied to the precipitator as a function of the desired spark rate,

sensitivity adjust means for producing a compensating signal proportional to the magnitude of the ripple component in the attenuated precipitator signal, and



said spark threshold means including means for adjusting the DC level of the attenuated precipitator signal in accordance with the compensating signal so that the spark threshold means is insensitive to variations in the ripple component.

4,326,861
DUST-COLLECTING ASSEMBLY FOR ELECTROSTATIC PRECIPITATOR
Yoichi Matsumoto, Kobe, Japan, assignor to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany
Filed Mar. 9, 1978, Ser. No. 884,805
Claims priority, application Japan, Apr. 28, 1977, 52-48549
Int. Cl.³ B03C *3/41, 3/76*
U.S. Cl. 55—112 — 1 Claim



1. A dust-arresting assembly for use in an electrostatic precipitator having a housing provided with an inlet and an outlet and a blower for inducing the flow of a gas stream entraining high-resistance dust through said housing in a gas-flow direction, said assembly being located within said housing and comprising:

a pair of mutually parallel dust-collecting electrodes spaced apart in said housing to define a passage for said gas between them;

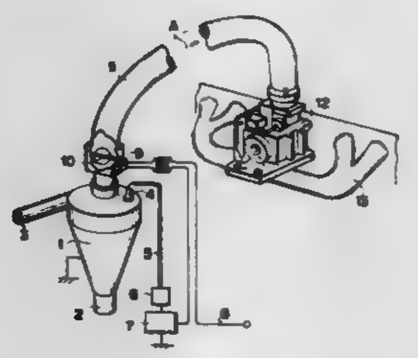
a support frame in said housing;

an array of elongated discharge electrodes disposed between said collecting electrodes and suspended from said support frame, each of said discharge electrodes having a C-shaped cross section opening on one side thereof confronting one of said collecting electrodes, the opposite side of each discharge electrode confronting the other collecting electrode with a broad-surface field-forming part convex toward said other collecting electrode and adapted to collect particles from said gas charged by reverse ionization, each discharge electrode having a multiplicity of spaced-apart needles in a row reaching from the bottom of the respective C and extending out of the C toward the respective said one of said collecting electrodes to form corona-producing means, the successive discharge electrodes along the path of the gas between said collecting electrodes being of alternating orientation with their corona-producing means facing alternately in opposite directions, cross sections through said discharge electrodes in planes perpendicular to their longitudinal dimensions being elongated in the direction of gas flow;

a high-voltage direct current source having its positive terminal connected to said collecting electrodes and its negative terminal connected to said discharge electrodes whereby said broad surfaces collect particles charged by reverse ionization; and

rapping means for rapping said collecting electrodes and for rapping said discharge electrodes for the dislodgement of dust therefrom.

4,326,862
AIR CLEANER FOR ENGINES, HAVING BACK FLOW GAS SHUT-OFF FUNCTION
Nagatoshi Suzuki, 5-7-7, Kugahara, Ohta-ku, Tokyo, Japan
Filed Jun. 10, 1980, Ser. No. 158,129
Int. Cl.³ B03C *3/14*
U.S. Cl. 55—127 — 5 Claims



1. In an air cleaner for engines having a cyclone dust collector provided with an air intake and incorporating an electrostatic filter, an air induction pipe connecting said cyclone dust collector to the engine, and a high voltage generator connected to the electrostatic filter for applying high voltage to the electrostatic filter, the improvement comprising the air cleaner including a back flow gas check valve provided within said induction pipe and a switch connected to the high voltage generator and positioned and arranged with respect to the valve such that the switch is activated by the closing of said valve to stop the operation of said high voltage generator.

4. In an air cleaner for engines having a cyclone dust collector provided with an air intake and incorporating an electrostatic filter, an air induction pipe for connecting said cyclone dust collector to the engine and a high voltage generator connected to the electrostatic filter for applying high voltage to the electrostatic filter, the improvement comprising a valve seat located within the induction pipe and defining an aperture, a valve element positioned and arranged for opening and closing the aperture of said valve seat to prevent the flow of back flow gas, and a switch connected to the high voltage generator and positioned and arranged with respect to the valve such that the switch is operated by the closing of the aperture by said valve element to shut off the high voltage generator.

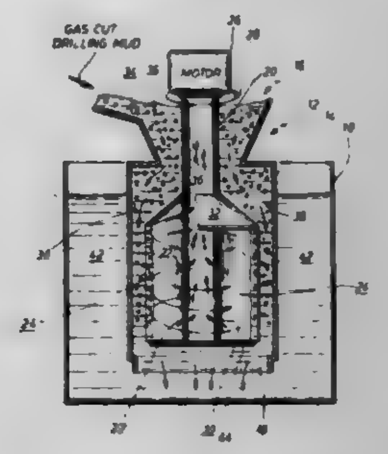
4,326,863
CENTRIFUGAL DEGASSER
Roger W. Day; Sidney W. Dunavent, and Elvis Rich, all of Houston, Tex., assignors to Geosource Inc., Houston, Tex.
Filed Jul. 21, 1980, Ser. No. 170,714
Int. Cl.³ B01D *19/00*
U.S. Cl. 55—171 — 13 Claims

1. A centrifugal degasser for use in degassing gas-cut drilling mud comprising:

a casing having an inlet port for receiving said gas-cut drilling mud and an outlet port for discharging degassed drilling mud;

a rotatable shaft disposed longitudinally within said casing, said rotatable shaft directly communicating with said inlet port to provide an exit for entrained gas within said gas-cut drilling mud;

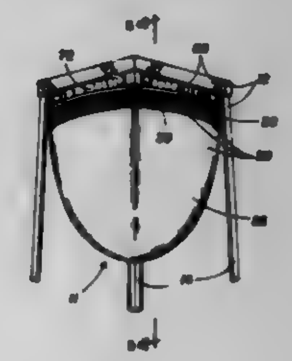
a plurality of accelerating paddles disposed along the longitudinal axis of said rotatable shaft and attached thereto for moving said drilling mud in a rotary motion, thereby



creating a centrifugal force field and a vortex within said drilling mud such that the drilling mud moves axially toward the outlet port with the heavier liquid/solid phase of the drilling mud directed toward the inside wall of said casing, and the gas dispersed within said drilling mud escaping from said drilling mud toward the shaft to discharge from the casing at the outlet port; and

means for driving said rotatable shaft connected to said rotatable shaft and operably associated therewith.

4,326,864
APPARATUS FOR AND METHOD OF COLLECTING SAWDUST PARTICLES
Werner G. Sittler, 4051 E. Calypso, Mesa, Ariz. 85206
Filed Aug. 8, 1980, Ser. No. 176,506
Int. Cl.³ B01D *46/02*
U.S. Cl. 55—364 — 2 Claims



1. A sawdust catcher, comprising:

collecting means having a bag provided with an inlet port and an outlet port for collecting sawdust from a table saw;

coupling means for attaching said bag to said table saw;

said collecting means further comprising mesh means having a peripheral coupling to said outlet port for trapping sawdust particles within said bag and further for exhausting air;

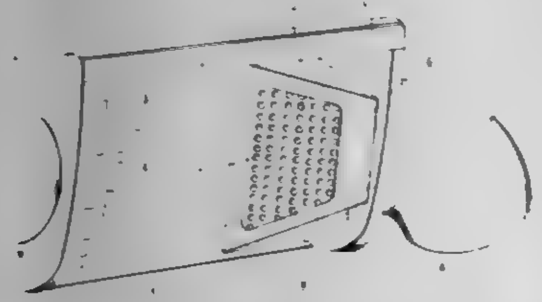
said mesh means comprising a foraminate screen;

said bag including a bottom portion;

said bag further provided with an upper portion having said inlet port at an uppermost portion thereof and having said outlet port positioned between said bottom portion and said inlet port so that sawdust can collect on an interior of said bottom portion and air can escape through said outlet port;

said screen having communication with said upper portion and further having communication with said lower portion;
said collecting means further comprising a frame having a plurality of frame rails;
said collecting means including adjusting means having communication with said frame for permitting an adjustment of the length of each of said frame rails;
said collecting means having a plurality of clamps disposed to clamp to a lower portion of said table saw and individually having a coupling to one of said plurality of frame rails;
said collecting means provided with at least an upper portion of said bag having resiliency so that the circumference of said inlet port can be stretchably varied; and
said collecting means further including connecting means for releasably connecting said bag to said frame.

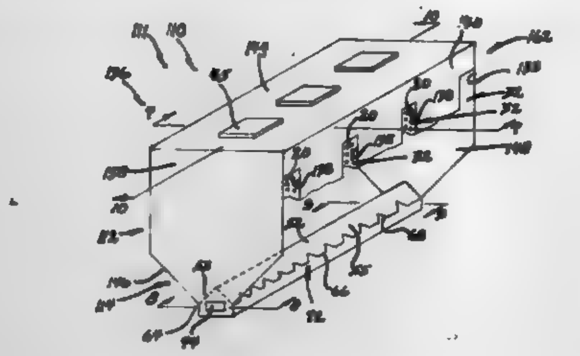
4,326,865
AIR INTAKE UNIT FOR AN INTERNAL COMBUSTION ENGINE
Karl-Heinz Siebels, Stuttgart, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany
Filed Sep. 19, 1980, Ser. No. 188,674
Claims priority, application Fed. Rep. of Germany, Sep. 22, 1979, 2938454
Int. Cl.³ B01D *59/50*
U.S. Cl. 55—385 B 8 Claims



1. An air intake unit for an internal combustion engine, the air intake unit being adapted to be installed in an area of a driver's cab o. .. utility vehicle, the air intake unit comprising an intake box having an inlet port along a longitudinal side thereof, a perforated plate for covering the inlet port, an outlet port connected to an intake conduit, the intake conduit being adapted to be connected to an internal combustion engine, and air baffle means arranged in the intake box in an area of the outlet port for shielding the outlet port with respect to the inlet port, characterized in that the air baffle means is provided with a plurality of perforations.

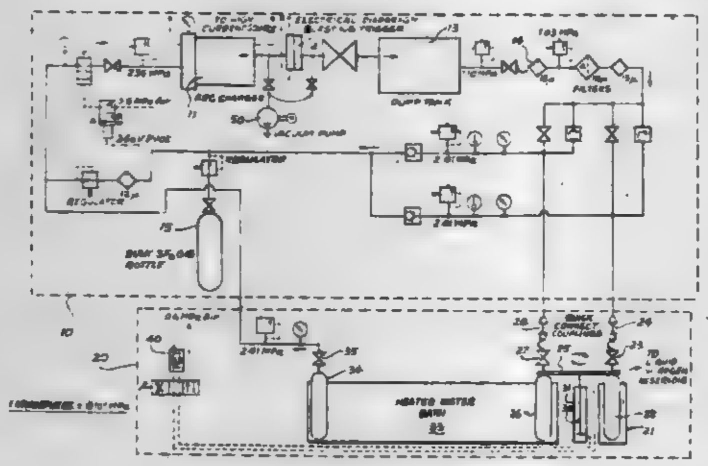
4,326,866
DISCHARGE APPARATUS FOR REMOVING GRANULAR FILTER MATERIAL FROM A FILTER HOUSING AND A FILTER APPARATUS HAVING SAME
Alan Revell, Louisville, Ky., assignor to American Air Filter Company, Inc., Louisville, Ky.
Filed Dec. 26, 1979, Ser. No. 106,750
Int. Cl.³ B01D *46/30*
U.S. Cl. 55—479 7 Claims

1. A filter apparatus comprising:
(a) filter housing including
(1) a gas treating enclosure portion having dirty gas inlet means and clean gas outlet means; and
(2) a hopper portion disposed below and open to the gas treating portion having at least two facing walls sloping downwardly toward each other;
(b) means defining a plurality of filter cells containing a granulated gas filtering material, each of said filter cells being disposed within the gas treating enclosure portion of the filter housing between the dirty gas inlet means and the clean gas outlet means and being open to the hopper portion of the filter housing so that granulated gas filtering material will fall into the hopper portion of the filter housing;
(c) an elongated baffle plate spaced above the juncture of the sloping walls of the hopper portion to define a gas filtering material conveying channel for a conveying gas stream adapted to draw granulated filtering material from the interior of the hopper portion and carry it from the filter housing during filter cleaning operations, said conveying channel being within and extending completely across the hopper portion proximate the bottom of the filter housing;
(d) a conveying gas inlet aperture in one wall of the hopper



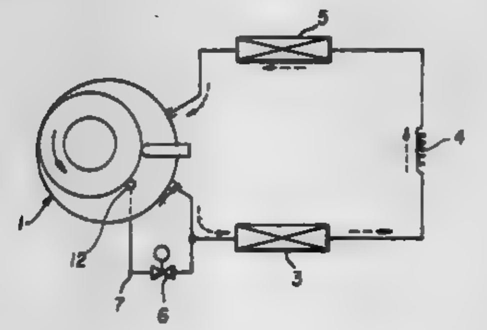
portion of the filter housing opening into the conveying channel at one end of the channel;
(e) a gas outlet aperture for the conveying gas and the gas filtering material opening into the conveying channel through the wall of the hopper portion of the filter housing at the opposite end of the conveying channel;
(f) a plurality of notches formed in said elongated baffle plate adapted to accommodate the flow of granulated filtering material from the interior of the hopper portion into the conveying channel; and
(g) a predetermined number of said notches being spaced apart along the length of the conveying channel at progressively increasing intervals starting proximate the gas inlet aperture to minimize cavitation in the granulated filtering material during filter cleaning operations.

4,326,867
GAS RECOVERY
Anthony D. Stokes, 116 Lucinda Ave., Wahroonga NSW 2076, Australia
Division of Ser. No. 25,322, Mar. 28, 1979, Pat. No. 4,274,851. This application Mar. 30, 1981, Ser. No. 248,842
Int. Cl.³ F25J *1/02;* H01H *33/82*
U.S. Cl. 62—10 6 Claims



1. A method of alternatively evacuating and replacing sulphur hexafluoride gas from and to the switching chamber of a high voltage circuit breaker comprising:
cryogenically reducing the temperature of a receiving vessel below the phase transition temperature of sulphur hexafluoride gas,
fluidly connecting the receiving vessel to the switching chamber so that the sulphur hexafluoride gas flows quickly into the receiving vessel where it liquifies and solidifies,
closing off the receiving vessel from the switching chamber to contain the sulphur hexafluoride within the receiving chamber,
fluidly reconnecting the receiving vessel to the switching chamber,
heating the receiving vessel to cause the sulphur hexafluoride to vaporize and flow into the switching chamber, and
disconnecting the receiving vessel from the switching chamber.

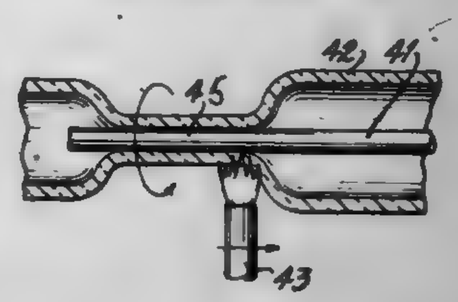
4,326,868
REFRIGERATION SYSTEM UTILIZING A GASEOUS REFRIGERANT BYPASS
Masao Ozu, Fuji; Keiichi Morita, Fujinomiya, and Hiroshi Itoh, Fuji, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan
Filed Dec. 18, 1979, Ser. No. 104,729
Claims priority, application Japan, Dec. 20, 1978, 53/156306
Int. Cl.³ F25B *13/00, 5/00*
U.S. Cl. 62—324.6 18 Claims



1. A refrigeration system of the type including a compressor, a condenser, an expansion device, an evaporator and interconnection means connected to form a refrigerant flow path therethrough wherein said system further comprises a gaseous refrigerant bypass between a high pressure zone of said system and said compressor through which a portion of the refrigerant from said high pressure gaseous refrigerant zone in said system, said zone including said condenser, is to be injected into said compressor, wherein said gaseous refrigerant bypass has one end connected to the compression chamber of said compressor and the second end in communication with the high pressure gaseous refrigerant zone including said condenser, and a portion of high pressure gaseous refrigerant from the second end is to be injected into said compression chamber of said compressor through said second end.

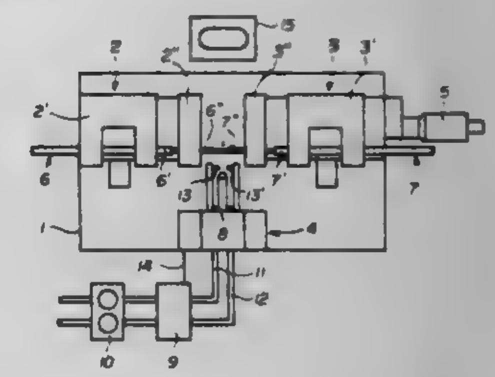
4,326,869
METHOD OF PRODUCING OPTICAL WAVEGUIDE
Shiro Kurosaki; Minoru Watanabe, and Yuichi Usui, all of Yokohama, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan
Filed Sep. 28, 1979, Ser. No. 80,159
Claims priority, application Japan, Sep. 28, 1978, 53-120176
Int. Cl.³ C03C *25/02*
U.S. Cl. 65—3.14 5 Claims

1. A method of producing an optical waveguide by melt-drawing a glass preform composite comprising a transparent glass rod having a core portion and a cladding portion and a high refractive index glass jacket for said transparent rod, which comprises the steps of (a) depositing a dopant material for raising the refractive index of glass on the internal surfaces of the pores of a porous glass rod; (b) forming a radial dopant concentration gradient decreasing from the central to the peripheral portions of said porous glass; (c) collapsing the doped rod by the application of heat to form said transparent glass rod having a core portion exhibiting a high index of refraction and an outer cladding exhibiting a low index of refraction; (d) providing said high index of refraction, circumferential jacket layer for said transparent rod of a glass matched to have a viscosity and coefficient of expansion at melt-drawing temperatures substantially similar to the viscos-



ity of said core portion of said transparent rod and the index of refraction being higher than the cladding portion by inserting said rod into a pipe of said matched glass; (e) collapsing said pipe around said transparent rod by the application of heat to form said preform composite; and (f) melt-drawing and heat-treating said composite to form said optical waveguide having a smooth outer surface, moisture resistance and improved mechanical strength.

4,326,870
PROCESS AND DEVICE FOR FUSION JOINING OF FIBER-OPTICS FIBERS
Jean-Pierre Bendit, Vieilles Geuches, Courgenay, Switzerland (2892); Jean-Paul Pellaux, Petits Chenes 2, Neuchatel, Switzerland (2000), and Georges Widmer, Berghausweg 21, Bienne, Switzerland (2501)
Filed Sep. 15, 1980, Ser. No. 186,964
Claims priority, application Switzerland, Sep. 14, 1979, 8329/79
Int. Cl.³ C03B *23/20*
U.S. Cl. 65—4.21 5 Claims



1. Process for fusion joining of the ends of optical fibers to produce an optical junction between two aligned fibers each of which fibers comprises a glass core and a glass sheathing; characterized in that the ends of the two fiber cores to be joined are disposed facing each other, with their faces cut transversely, in an approximately aligned position but such that at least one of the ends is free to be displaced laterally and there is no axial force between the two ends; and in that the ends of the fibers are heated in order to form a fused joint by producing a heat field with a predetermined distribution; for a predetermined period until attenuation of light transmitted through the fused joint increases, so as to cause partial fusion of the cores while maintaining the sheathing of the fibers intact, whereby the ends of the fibers are automatically aligned under the action of the surface tension which arises in consequence of said fusion, and whereby the fused joint is produced automatically by solidification, at the instant when alignment is achieved, whereby the material which solidifies here is fused

material which has penetrated by capillary action into the space between the cores of the fibers which are to be joined.

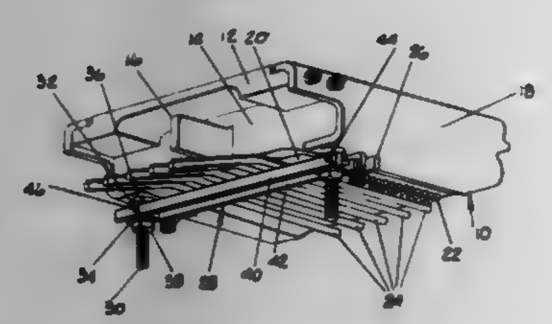
4,326,871
COOLING TUBES FOR GLASS FILAMENT PRODUCTION APPARATUS

Walter W. Harris, Toledo, Ohio, assignor to Manville Service Corporation, Denver, Colo.

Filed Feb. 11, 1980, Ser. No. 120,022

Int. Cl.[3] C03B *37/025*

U.S. Cl. 65—12 4 Claims



1. In an apparatus for forming glass filaments comprising the combination of: a chamber for the containment of molten glass, said chamber having a base, a plurality of small orifices in said base for discharging fine streams of molten glass from said chamber for attenuation into filaments; a plurality of cooling means positioned beneath and in proximity to said base, said cooling means being arranged to extend intermediate said orifices to cool glass filaments being drawn from said chamber, wherein said cooling means are each formed as a hollow tube from a base metal clad with a layer of noble metal; said base metal being selected from the group consisting of nickel, inconel, molybdenum, copper, alloys of these materials, and refractory metals, said hollow cooling tube having a wall thickness within the range of 0.010 to 0.030 inches; said noble metal being selected from the group consisting of platinum, palladium, rhodium, iridium, gold, silver, and their alloys, said noble metal cladding layer having a secondary wall thickness within the range from about 0.004 to 0.008 inches.

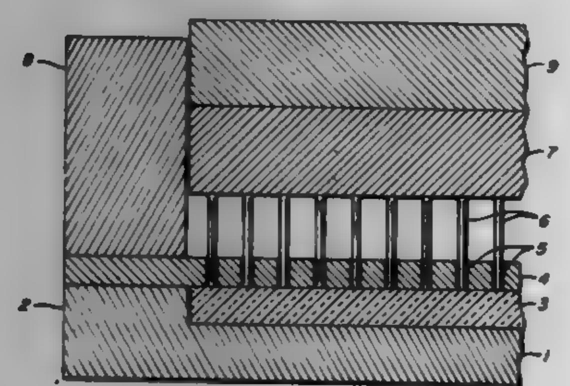
4,326,872
METHOD FOR MAKING PERFORATIONS OR DEPRESSIONS IN A GLASS WORK PIECE

Charles W. Miltenberger, Saugus; Edward J. Lucas, Simi Valley, and Ulrich Schreier, San Francisco, all of Calif., assignors to Technology Glass Corporation, Sunnyvale, Calif.

Filed Jun. 30, 1980, Ser. No. 164,699

Int. Cl.[3] C03B *23/26*

U.S. Cl. 65—112 8 Claims



1. The method of opening holes or forming depressions in a glass workpiece which comprises:

(1) providing a two piece housing for said workpiece, said housing when assembled having a cavity conforming in size and shape to said workpiece, the lower housing piece having a continuous upper surface and the upper housing piece having a smooth surface and openings in said housing piece conforming in size and position to the holes or depressions desired to be made in said workpiece,

(2) placing said workpiece on the upper surface of the housing piece and covering the upper surface of workpiece with the upper housing piece so that the upper surface of said workpiece and the lower surface of the upper housing piece are in contact with each other,

(3) inserting in the openings in said upper housing piece plugs snugly fitting said openings and extending above the upper surface of said housing piece,

(4) disposing on the upper surface of said plugs a weight sufficient to cause said plugs to exert a pressure of at least 0.2 pounds per square inch on said workpiece,

(5) heating the assembly resulting from steps 1 to 4 to a temperature intermediate the softening point and the working point of the workpiece and maintaining such temperature until the plug's descent into the workpiece ceases and the glass displaced by the descent of the plugs flows into the body of the workpiece causing a slight thickening of the workpiece,

(6) cooling said assembly to ambient temperature, and

(7) removing the workpiece from the housing and removing the plugs from the workpiece.

4,326,873
PROCESS FOR THE MANUFACTURE OF FUSED POLYPHOSPHATE GLASSES

Phillip B. Reilly, Mountain Lakes, N.J., and Paul H. Ralston, Bethel Park, Pa., assignors to Calgon Corporation, Pittsburgh, Pa.

Filed Apr. 3, 1980, Ser. No. 137,053

Int. Cl.[3] C03C *3/16*

U.S. Cl. 65—134 5 Claims

1. A process for the manufacture of polyphosphate glasses which comprises forming a slurry of a liquid hydrocarbon, soda ash, alone or in combination with a di-valent metal oxide, and a source of phosphoric acid; melting the reaction mixture; and quenching the product.

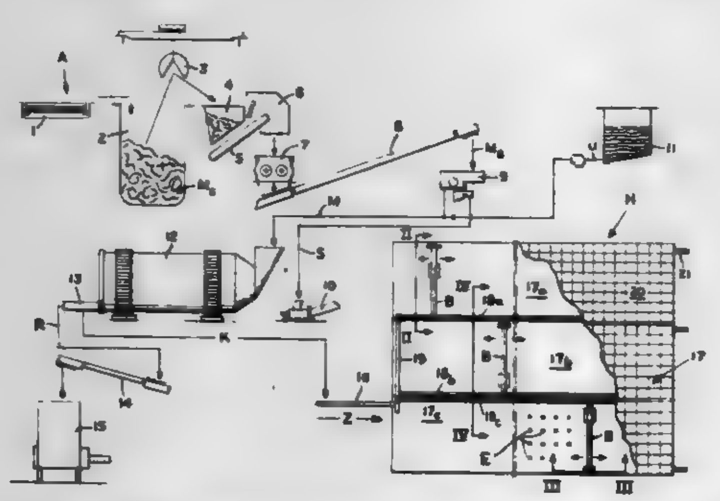
4,326,874
PROCESS AND APPARATUS FOR PREPARING COMPOSTABLE MATERIAL

Werner Bürklin, Sonnhaldenstr. 7, CH-8280 Kreuzlingen, Thurgau, Switzerland

Filed Mar. 12, 1979, Ser. No. 19,706

Int. Cl.[3] C05F *7/00*

U.S. Cl. 71—9 7 Claims



1. A process for preparing compostable material on a storage surface with a displaceable loading bridge extending over the surface at a distance thereabove, and a delivery member arranged on said bridge in facing relation with said storage surface and connected to at least one conveyor means which

brings the material to said delivery member, said process comprising feeding the compost material as loose material to a compression station carried on the bridge, compressing the compost material at said compression station to form briquetts, the compost material being compressed in a press which is suspended from the bridge and is displaced above the storage surface in the course of forming said briquettes, depositing said briquettes on one another in adjacent, spaced vertical rows on said storage surface to directly stack said briquettes in said spaced rows on the storage surface, said compost material comprising defecation sludge of more than 80% moisture mixed with comminuted portions of garbage whereby the compost material gives off gases, the compressing of the compost material to form briquettes causing expressing of liquid, the process further comprising wetting the briquettes which have already been stacked with the expressed liquid and returning gases given off by the compost material at least in part to the material to effect aeration thereof.

4,326,875
SULFUR PRODUCT AND METHOD

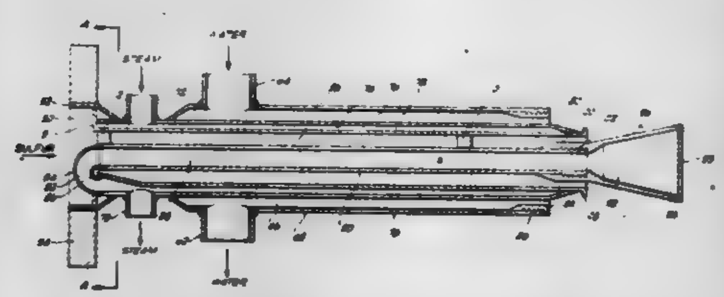
Donald C. Young, Fullerton, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Division of Ser. No. 972,729, Dec. 26, 1978, which is a continuation-in-part of Ser. No. 803,585, Jun. 6, 1977, abandoned. This application Dec. 26, 1979, Ser. No. 106,390

The portion of the term of this patent subsequent to Nov. 24, 1998, has been disclaimed.

Int. Cl.[3] C05G *3/06*

U.S. Cl. 71—11 6 Claims



1. The method of supplementing the sulfur content of soil including the steps of applying to said soil at least about 20 pounds per acre of a homogeneous hydrocarbonsulfur fusion comprising a continuous rhombic sulfur matrix containing a hydrocarbon nonreactive with sulfur, said hydrocarbon being uniformly distributed throughout said continuous sulfur matrix, wherein said fusion contains at least about 60 weight percent rhombic sulfur and at least about 0.2 weight percent of said hydrocarbon based on the weight of said fusion.

4,326,876
2-AMINOSUBSTITUTED-5-METHYLENE-THIAZOLE AND 3-AMINOSUBSTITUTED-1 METHYLENE-2,4-THIAZASPIRO[5.4]DECANE HERBICIDES

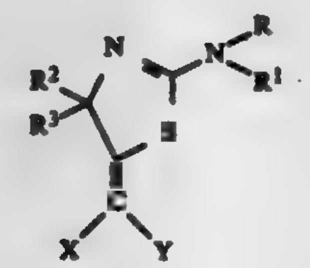
Edward I. Aoyagi, Petaluma, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Jan. 28, 1980, Ser. No. 115,593

Int. Cl.[3] C07D *277/08*

U.S. Cl. 71—090 7 Claims

1. A compound of the formula



wherein X and Y are individually hydrogen or halogen;

R^2 and R^3 are individually alkyl of 1 to 3 carbon atoms or R^2 and R^3 are joined to form a cycloalkyl group of 3 to 8 carbon atoms;

R is hydrogen, alkyl of 1 to 4 carbon atoms or alkoxyalkyl of 2 to 20 carbon atoms; and

R^1 is alkyl of 1 to 20 carbon atoms, alkenyl or alkynyl of 3 to 20 carbon atoms, cycloalkyl or polycycloalkyl of 5 to 12 carbon atoms, alkoxyalkyl of 2 to 20 carbon atoms, cyanoalkyl or cyanoalkenyl of 3 to 20 carbon atoms; with the proviso that when R and R^1 are both alkyl groups as defined above, R and R^1 each contain at least 3 carbon atoms.

4,326,877
METHOD OF STIMULATING GRASS ROOT GROWTH WITH 6-BENZYLAMINOPURINE

Yahiro Kazutoye, Chofu, Japan, assignor to Kabushiki Kaisha Kohjin, Tokyo, Japan

Filed May 30, 1980, Ser. No. 154,876

Claims priority, application Japan, Jun. 7, 1979, 54-70602

Int. Cl.[3] A01N *43/50*

U.S. Cl. 71—92 3 Claims

1. A method for stimulating the growth of grass roots, said method comprising spraying solution consisting essentially of diluted 6-benzylaminopurine on the leaves and stems of grass.

4,326,878
HERBICIDAL AND PLANT-GROWTH-REGULATING 1,2,4-TRISUBSTITUTED-1,2,4-TRIAZOLIDIN-3,5-DITHIONES

Stephen D. Ziman, San Francisco, Calif., assignor to Chevron Research, San Francisco, Calif.

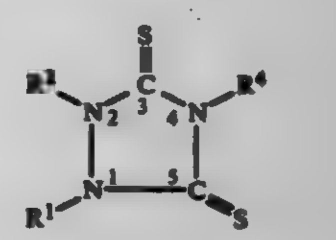
Continuation-in-part of Ser. No. 10,669, Feb. 9, 1979, Pat. No. 4,276,420, which is a continuation-in-part of Ser. No. 909,140, May 24, 1978, abandoned. This application Jul. 25, 1979, Ser. No. 60,310

The portion of the term of this patent subsequent to Jun. 30, 1998, has been disclaimed.

Int. Cl.[3] A01N *43/64*; C07D *249/12*

U.S. Cl. 71—92 8 Claims

1. A compound of the formula



wherein R^1 is alkyl of 1 to 3 carbon atoms and R^2 is alkyl of 1 to 3 carbon atoms, alkenyl of 2 to 6 carbon atoms, alkoxyalkyl of 2 to 6 carbon atoms and alkylthioalkyl of 2 to 6 carbon atoms, and R^4 is p-halophenyl wherein halo is fluoro, chloro, bromo or iodo.

4,326,879
1-PHENOXY-4-PYRIDYLBUTANES AND DERIVATIVES

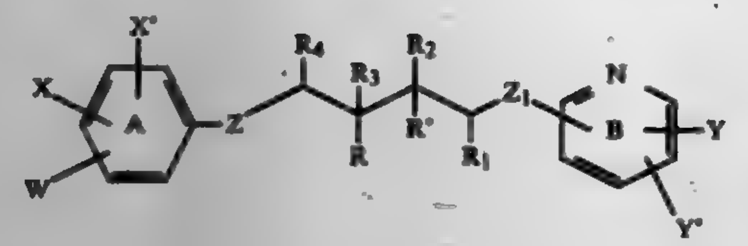
Homer K. Spencer, Randolph, and Melvin M. Graben, Hackettstown, both of N.J., assignors to Sandoz, Inc., E. Hanover, N.J.

Filed Feb. 4, 1980, Ser. No. 118,538

Int. Cl.[3] A01N *43/40*; C07D *213/64, 213/65*

U.S. Cl. 71—94 15 Claims

1. A compound of the formula:



wherein
W is CF_3 in the meta position of Ring A
each of X and X' are H,
Z and Z_1 are independently oxygen or sulfur, with the proviso that at least one is oxygen,
Y is H,
Y' is H, Cl or C_1–C_2 alkyl,
R_1, R_2 R_3 and R_4 are H.

6. The method of combatting weeds comprising applying to a weed locus a herbicidally effective amount of a compound of claim 1.

4,326,880
DERIVATIVES OF 5-(PYRIDYL-2-OXY)-2-NITROBENZOIC ACID, AND HERBICIDAL COMPOSITIONS CONTAINING THEM, AND HERBICIDAL METHODS FOR USING SAME
Hermann Rempfler, Ettingen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.
Filed Aug. 4, 1980, Ser. No. 174,985
Claims priority, application Switzerland, Aug. 14, 1979, 7430/79
Int. Cl.[3] C07D *213/64;* A01N *43/40*
U.S. Cl. 71—94 13 Claims

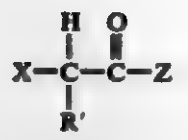
1. 5-(3'-Chloro-5'-trifluoromethylpyridyl-2'-oxy)-2-nitrobenzoic acid allyl ester.

4,326,881
PHENYLPYROL DERIVATIVES
Akiyoshi Ueda, Hiratsuka; Hideo Takagi, Kanagawa, and Kazuhiko Ohkuma, Ninomiyamachi, all of Japan, assignors to Nippon Soda Company Limited, Tokyo, Japan
Filed Dec. 18, 1978, Ser. No. 970,153
Claims priority, application Japan, Jan. 31, 1978, 53-9752
Int. Cl.[3] A01N *43/36;* C07D *207/323*
U.S. Cl. 71—95 1 Claim

1. A fungicidal composition consisting of an inert carrier and a fungicidally effective amount of 4-chloro-3-(2,3-dichlorophenyl)pyrrole.

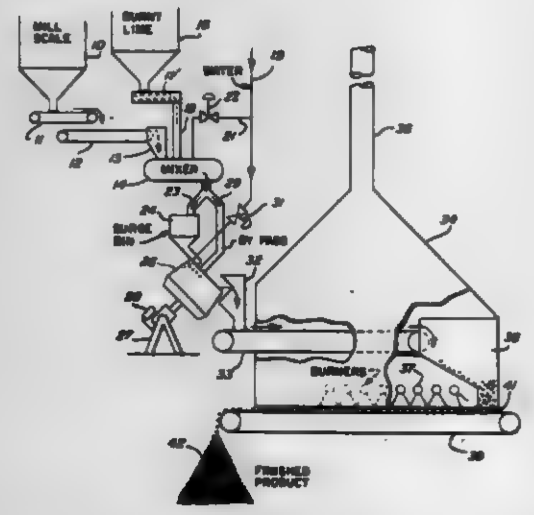
4,326,882
TRICHLOROPHENOXY ALKANOIC ACID FREE OF CHLORINATED DIBENZO-P-DIOXINS
Sidney B. Richter, Akron, and William S. Grove, Doylestown, both of Ohio, assignors to PPG Industries, Inc., Pittsburgh, Pa.
Continuation-in-part of Ser. No. 937,645, Aug. 28, 1978. This application Apr. 26, 1979, Ser. No. 33,349
Int. Cl.[3] C07C *59/68;* A01N *39/02, 39/04*
U.S. Cl. 562—472 8 Claims

1. In a process for preparing 2,4,5-tri-chlorophenoxy alkanoic acid esters or amides by reacting in a liquid organic solvent and in the presence of an inorganic or organic base 2,5-dichlorophenol with at least an equimolar amount of alpha halo compound represented by the formula:



wherein
X is bromine, chlorine or iodine;
R' is hydrogen or methyl; and
Z is a hydrolyzable group selected from aliphatic radicals containing up to 20 carbon atoms or amide or mono- or di-substituted amide, the substituent containing up to about 20 carbon atoms, and chlorinating the reaction product in the liquid phase, the improvement wherein the reaction between 2,5-dichlorophenol and the alpha halo compound is conducted at a temperature of not more than 60° C. and in the presence of at least one mole but not more than a 5 percent molar excess of base per mole of 2,5-dichlorophenol, so as to obtain a pure product that is free of analytically detectable amounts of chlorinated dibenzo-p-dioxins.

4,326,883
PROCESS FOR DEOILING AND AGGLOMERATING OIL-BEARING MILL SCALE
Arthur M. Schwarz, Munster, Ind., assignor to Inland Steel Company, Chicago, Ill.
Filed Jul. 10, 1979, Ser. No. 56,331
Int. Cl.[3] C21B *3/04;* C22B *7/02*
U.S. Cl. 75—5 24 Claims



1. A process for deoiling and agglomerating oil-bearing mill scale which comprises the steps of:
(a) blending and mechanically scouring oil-bearing mill scale with calcined lime fines to form a mix;
(b) balling the resultant mix to form green mill scale-lime pellets; and
(c) heating the green pellets in an oxidizing atmosphere to a temperature sufficient to effect ignition and substantially complete combustion of the oil in said pellets, whereby to form deoiled pellets suitable for use in a sinter mix without objectionable evolution of oil vapors during sintering.

4,326,884
PROCESS FOR OBTAINING METAL VALUES FROM ORES CONTAINING SUCH METALS AS OXIDES OR CONVERTIBLE INTO SUCH OXIDES
Vicente Soriano G.; Carmin Marino A., and Enrique R. Valdez, all of Mexico City, Mexico, assignors to Comision de Fomento Minero, Mexico City, Mexico
Filed May 13, 1980, Ser. No. 149,395
Int. Cl.[3] C22B *13/02, 17/02, 19/04*
U.S. Cl. 75—71 8 Claims

1. A process for obtaining metal values from ores containing volatilizable metals in the form of oxides or compounds convertible into oxides, which process comprises the steps of forming particles by grinding metal oxide-containing starting ores to a particle size in the range from 7 mm diameter maximum to 325 mesh minimum; isothermically reducing the metal oxides of the starting ore in a reactor in which said particles are formed into a fluidized bed at temperatures between 560° C. and 1,200° C. by a fluidizing gas comprising a reducing medium produced by controlled combustion of natural gas, thereby obtaining a gaseous mixture containing volatilized metals and gangue particles; condensing the metals to solidified form by direct contact with water; recovering the metals and the gangue from the resulting water by sedimentation and filtration; drying the metals and the gangue in a reducing atmosphere, and separating the metals from the gangue by vaporization of the metals.

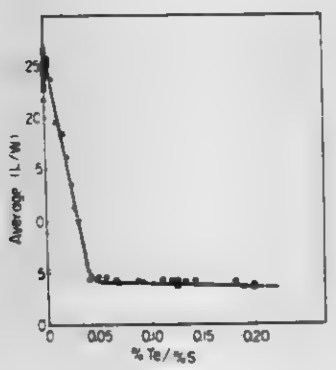
4,326,885
PRECIPITATION HARDENING CHROMIUM STEEL CASTING ALLOY
John A. Larson, and Robert B. Fischer, both of Easton, Pa., assignors to Ingersoll-Rand Company, Woodcliff Lake, N.J.
Filed Jun. 16, 1980, Ser. No. 159,913
Int. Cl.[3] C22C *38/16*
U.S. Cl. 75—125 4 Claims

1. A martensitic steel casting alloy consisting of the following anticipated range of chemistry:

	C	Mn	P	S	Si	Ni	Cr	Mo	Cu
% min.	0.01						11.5		1.0
% max.	0.06	1.00	0.040	0.040	1.50	1.00	14.0	0.50	4.5

the balance of material consisting of iron.

4,326,886
STEEL FOR COLD FORGING HAVING GOOD MACHINABILITY AND THE METHOD OF MAKING THE SAME
Shozo Abeyama, Chita; Makoto Saito, Nagoya; Atsuyoshi Kimura, Handa, and Sadayuki Nakamura, Chita, all of Japan, assignors to Daido Tokushuko Kabushiki Kaisha, Nagoya, Japan
Filed Mar. 14, 1980, Ser. No. 130,529
Claims priority, application Japan, Mar. 14, 1979, 54-28619
Int. Cl.[3] C22C *38/60*
U.S. Cl. 75—129 1 Claim



1. A method of making a steel for cold forging having good machinability containing:
C up to 0.6%,
Si up to 0.5%,
Mn up to 2.0%,
S 0.003 to 0.04%, and
Te up to 0.03%,
wherein ratio %Te/%S being at least 0.04, and further,
Al 0.01 to 0.04%,
N up to 0.02% and
O up to 0.0030%,
and optionally, at least one of the alloying elements selected from the group of:
Ni up to 4.5%,
Cr up to 3.5%, and
Mo up to 1.0%,
at least one of the alloying elements selected from the group of:
V up to 2.0%,
Nb up to 0.5%,
Ti up to 0.5%,
B up to 0.01% and
Zr up to 0.5%,
and at least one of the alloying elements selected from the group of:
Pb 0.01 to 0.3%
Se 0.003 to 0.10%,
Bi 0.01 to 0.30% and
Ca 0.0002 to 0.01%,
and the balance being substantially Fe, which method comprises the steps of:
preparing a molten steel containing the predetermined amounts of C, Si, Mn and S in a furnace or a ladle,
at the time of refining by addition of Al to the molten steel during or after vacuum degassing, introducing non-oxidizing gas in the molten steel for forceable stirring so that large-sized particles of non-metallic inclusions may float up and separate,
and adding Te, and, if necessary, Pb, Bi or Ca to the molten steel to disperse the elements uniformly therein.

4,326,887
BASIC PROCESS OF PRODUCING BASIC FLUXED PELLETS FOR IRON-MAKING
John H. McAllister, Burlington; Lindsay G. Stewart, Hamilton; Carl V. Gladysz, Mount Hope, and Jim Wilson, Hamilton, all of Canada, assignors to Dofasco Inc., Hamilton, Canada
Continuation-in-part of Ser. No. 91,430, Nov. 5, 1979, abandoned. This application Dec. 3, 1980, Ser. No. 212,300
Int. Cl.[3] C22B *9/10*
U.S. Cl. 75—257 7 Claims

1. A process for the production of a basic fluxed pellet for iron-making operations, the process including:
(A) grinding an iron-containing material to at most about 45 microns in size;
(B) grinding melt shop slag fines containing calcium and magnesium in the pre-calcined form of oxide thereof to at most about 45 microns in size;
(C) mixing together the said iron-containing material and from 1 to 20% by weight of the resultant pellet of the said melt shop slag fines to provide a mixed material in which:
(a) the silica content is from about 2.5% to about 7.0% by weight,
(b) the CaO/SiO_2 ratio is in the range 0.9 to 1.8,
(c) the MgO content is in the range of 1.0 to 2.5% by weight, and
(D) indurating the mixed material to form discrete self-sustaining pellets.

4,326,888
ANTI-RUST COMPOSITION
Jeremy G. M. Frew, 30 Montgomery St., Edinburgh, Scotland
Filed Oct. 1, 1979, Ser. No. 80,932
Claims priority, application United Kingdom, Jan. 13, 1977, 1250/77
Int. Cl.[3] C09D *5/08;* C08L *25/04*
U.S. Cl. 106—14.14 7 Claims

1. A composition for application to the rusted surface of a ferrous metal article to inactivate the rust thereon and prevent further rusting, which consists essentially of an aqueous dispersion or emulsion of a water-insoluble film-forming material forming after drying a tough durable adherent coating upon said surface, and dissolved in the aqueous phase of said emulsion citric acid and a water-soluble metal chloride in sufficient proportions to react in situ with the rust to form a reaction

product therewith to inactivate the same and prevent further rusting, the reaction product of said citric acid and said chloride with the rust remaining within said coating of said film-forming material, the amount of said film-forming material being in the range of about 50–75%, the amount of said citric acid being in the range of about 20–30%, and the amount of said chloride being in the range of about 10–20%, all percentages being by weight on a dry basis of the mixture of said film-forming material, citric acid, and chloride.

4,326,889

DENTAL COMPOSITION FROM GOLD PARTICLES, TERPINEOL AND ETHYL CELLULOSE

Franz Sperner, Hanau am Main, Fed. Rep. of Germany, assignor to W. C. Heraeus GmbH, Hanau, Fed. Rep. of Germany

Filed Oct. 9, 1979, Ser. No. 82,673

Claims priority, application Fed. Rep. of Germany, Nov. 30, 1978, 2851729

Int. Cl.³ C08K *3/08, 5/05*

U.S. Cl. 106—35 **2 Claims**

1. A dental gold composition comprising:

(1) 75% to 95% by weight gold wherein at least 95% of said gold comprises essentially spherical particles having an average particle size of from between 0.8 to 1.2 μm and a maximum particles size of 2 μm and,

(2) the remainder of said composition comprising a paste-forming oil consisting essentially of terpineol and ethyl cellulose, the by weight percentages being based on the weight of the composition.

4,326,890

BEDDING ANCHORAGE RODS

Alain Benichou, Residence de la Gare 24, Pontailler, Saore, France

Filed Oct. 2, 1978, Ser. No. 926,921

Int. Cl.³ C04B *31/00*

U.S. Cl. 106—77 **23 Claims**

1. A composition for bedding anchorage rods in mine galleries comprising:

(a) about 6 to 25 parts by weight of plaster;

(b) about 20 to 44 parts by weight of at least one member selected from the group consisting of sand and silica powder; and

(c) about 25 to 30 parts by weight of a solution of sodium silicate, said solution having at least about 2 parts by weight SiO_2 to 1 part by weight Na_2O.

4,326,891

CRYSTALLINE CALCIUM CARBONATE AS A DILUENT IN HYDROTHERMALLY CURED HYDRAULIC CEMENT COMPOSITIONS

Thomas H. Sadler, Littleton, Colo., assignor to Manville Service Corporation, Denver, Colo.

Filed May 21, 1980, Ser. No. 151,856

Int. Cl.³ C04B *7/02*

U.S. Cl. 106—99 **10 Claims**

1. In a hydrothermally cured article of manufacture comprising a blend of calcium carbonate, inorganic reinforcing fiber, hydraulic cement and ground quartz, the improvement comprising said calcium carbonate being a powdered crystalline calcium carbonate having a well-defined, highly compacted, structurally sound, crystalline structure and having at most a minor amount of carbonates with an amorphous structure and wherein the average equivalent spherical diameter of the particles of the crystalline calcium carbonate is between about 10 and 30 microns.

4,326,892

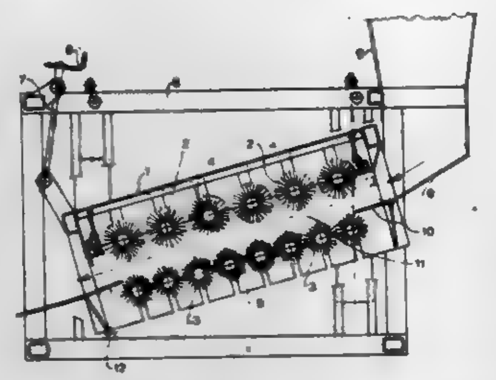
METHOD OF IMPROVING THE RECOVERY OF SUGAR FROM SUGAR BEETS BY EXTRACTION ON AND APPARATUS FOR CARRYING OUT SAID METHOD

Rud F. Madsen, and Werner K. Nielsen, both of Nakskov, Denmark, assignors to Aktieselskabet de Danske Sukkerfabrikker, Copenhagen, Denmark

Filed Dec. 11, 1979, Ser. No. 102,382

Int. Cl.³ C13D *1/08, 1/12*

U.S. Cl. 127—43 **7 Claims**



1. A method of increasing the amount of sugar recovered from sugar beets, said method comprising, in sequence, the following steps:

(a) washing the sugar beets to remove adhered impurities,

(b) mechanically removing at least a part of the outer layer of each of the washed sugar beets,

(c) slicing the sugar beets of step (b), and

(d) extracting the sliced sugar beets of step (c) with an aqueous solution to provide a sugar juice rich in sugar.

4,326,893

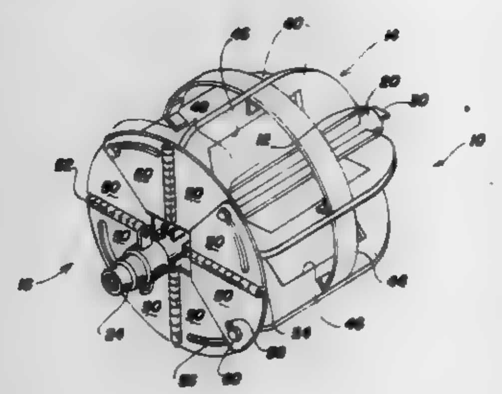
IMPLEMENT AND METHOD FOR CLEANING TUBULAR DRAINS

Jack R. Clifford, Alton, Ill., assignor to Paul L. Pratt, Bethalto and John T. Pierce, Jr., Edwardsville, both of, Ill., part interest to each

Continuation-in-part of Ser. No. 42,548, May 25, 1979, Pat. No. 4,218,803. This application Jul. 14, 1980, Ser. No. 168,727

Int. Cl.³ B08B *9/04*

U.S. Cl. 134—8 **9 Claims**



1. An implement for cleaning tubular drains, said implement comprising an elongated carriage assembly with means for cutting at its forward end and plunging means at its rearward end in spaced relationship with said cutting means, said cutting means comprising a plurality of blades radially extending from the carriage assembly, said plunging means comprising a plurality of fan shaped elements pivoted to said carriage assembly and folded backwardly into a cone when the implement is pulled forward and expanded into a plate when the implement is pulled backward, said fan shaped elements being connected as a unit whereby pressure on one or more of said fan shaped elements is transmitted to the other fan shaped elements so that said fan shaped elements close into a cone and expand into a

plate as a unit, said implement further including arcuate root cutting blades joining adjacent ones of the radially extending blades and water directing means for spraying water in front of the plunging means.

9. The method of claim 8 which further includes pumping the slurried waste from the tubular drain while said implement is towed backwards.

4,326,894

PROCESS FOR THE PRODUCTION OF CONVERSION LAYERS ON METAL SURFACES BY THE SPRAY METHOD

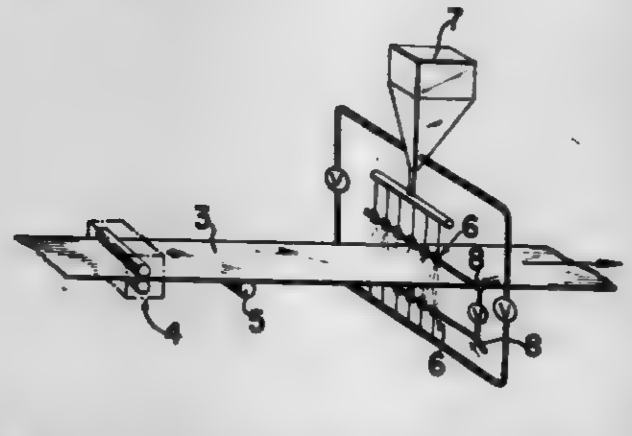
Wolfgang Kommert, Frechen, Fed. Rep. of Germany, assignor to Gerhard Collardin GmbH, Cologne, Fed. Rep. of Germany

Continuation of Ser. No. 150,109, May 15, 1980, abandoned. This application Jun. 11, 1981, Ser. No. 272,717

Claims priority, application Fed. Rep. of Germany, May 13, 1979, 2922115

Int. Cl.³ C23F *7/00, 7/26*

U.S. Cl. 148—6.14 R **8 Claims**



1. In the process for the production of conversion layers continuously on a continuously moving band or sheet-like metal surfaces of aluminum, zinc or iron, by the application of a solution creating a layer on said metal surfaces selected from the group consisting of a chromating solution, an acid solution free of chromic acid and containing fluorides and compounds of titanium, zirconium or manganese, an acid solution free of chromic acid and containing fluorides, and an acid solution free of chromic acid and containing compounds of titanium, zirconium or manganese, by the stationary spray method, onto the cleaned and rinsed metal surface, and subjecting said metal surfaces to customary aftertreatments, the improvement consisting in that said solution in a sufficient amount at a sufficient concentration to deposit a uniform layer of from 0.01 to 1 gm/m^2 on said metal surfaces is sprayed through at least one two-component jet spray nozzle with the aid of an inert compressed gas where said solution and said compressed gas are fed separately each to an opening in said two-component jet spray nozzle.

4,326,895

PROCESS FOR MANUFACTURING ALUMINUM STRIP OR SHEET HAVING IMPROVED WELDABILITY

Werner Horn, Singen, and Jürgen Hennings, Gottmadingen, both of Fed. Rep. of Germany, assignors to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Apr. 18, 1980, Ser. No. 141,430

Claims priority, application Fed. Rep. of Germany, May 2, 1979, 2917627

Int. Cl.³ C22F *1/04*

U.S. Cl. 148—11.5 A **12 Claims**

1. A process for manufacturing aluminum sheet or strip characterized by improved weldability comprising:

rolling said aluminum sheet or strip to an intermediate thickness of from about 1.5 to 2.5 times the final gauge;

etching said rolled sheet or strip in an alkaline solution; and

rolling said etched sheet or strip to final gauge.

6. A process according to claim 1 further including the steps of heat treating said aluminum sheet or strip after rolling to said final gauge.

4,326,896

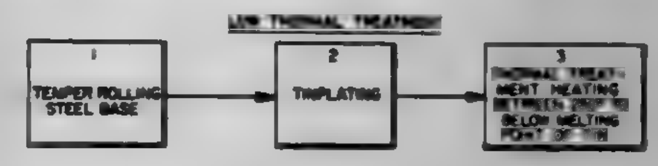
METHOD OF MAKING TIN-LAYERED STOCK MATERIAL AND CONTAINERS THEREFROM

Seung W. Lyu, Homewood, and Surya K. Misra, Naperville, both of Ill., assignors to National Can Corporation, Chicago, Ill.

Filed Sep. 15, 1980, Ser. No. 187,606

Int. Cl.³ C21D *9/46, 9/48*

U.S. Cl. 148—12 D **11 Claims**



1. A method of producing a seamless container body from tinplate stock material comprising the steps of:

a. providing a steel base stock material;

b. providing a layer of tin on at least one side of said steel base;

c. heating said stock with said layer of tin thereon to an elevated temperature above approximately 250° F., but lower than a temperature which is high enough to cause melting of said tin layer, to form an iron-tin alloy layer on said steel base; and

d. forming a seamless container body from said stock material after said heating.

4,326,897

POST WELD HEAT TREATMENT OF SHELL AND TUBE HEAT EXCHANGERS AND APPARATUS

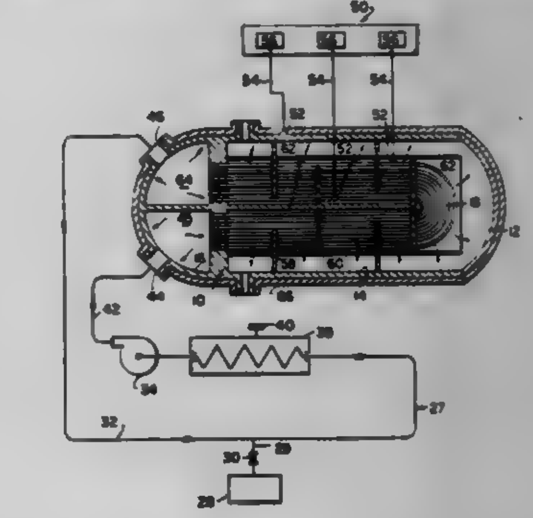
Anthony Ruhe, 1310 Pelham St., Box 791; John A. Chitty, 2 Peachtree Park, both of Fonthill, L0S 1E0, Ontario, and James H. D. Nickerson, 71 Cherie Rd., St. Catharines, L2R 6L6, Ontario, all of Canada

Filed Jun. 6, 1979, Ser. No. 46,122

Claims priority, application Canada, Apr. 26, 1979, 326458

Int. Cl.³ C22F *1/00;* **C21D** *9/08, 11/00*

U.S. Cl. 148—13.1 **20 Claims**



1. A method of heat treating a welded tubular type heat exchanger, said heat exchanger including a shell and a plurality of tubes disposed therein, said method comprising the steps of:

(a) establishing a fluid flow circuit for circulating a heating fluid from an external source through said heat exchanger;

(b) introducing a heating fluid to said circuit;

(c) applying heat to said fluid;

(d) circulating said heated fluid from said flow circuit through said heat exchanger;

(e) measuring the temperature of said heat exchanger at a plurality of points within said heat exchanger;
(f) increasing the amount of heat applied to said fluid so as to gradually raise the temperature of said fluid and said heat exchanger to a predetermined level;
(g) maintaining said increased temperature of said heating fluid and said heat exchanger at said predetermined level for a predetermined period of time; and
(h) decreasing the amount of heat applied to said fluid, so as to gradually reduce the temperature of said fluid and said heat exchanger,

whereby during said heat treatment temperature differentials between said shell and said tubes are minimized.

2. The method of claim 1 wherein said step of circulating said heated fluid through said heat exchanger comprises introducing said fluid through respective first ends of said tubes disposed within said shell, flowing said fluid through said tubes, and thereafter removing said fluid from respective other ends of said tubes.

7. The method of claim 2, 3, or 4 further comprising the step of attaching insulation around the outside surfaces of said heat exchanger, said insulation acting to retard loss of heat through the outside surfaces of said heat exchanger.

4,326,898

METHOD FOR FORMING MATERIAL SURFACES

Roy Kaplow, Newton, and Carl J. Russo, Ipswich, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation of Ser. No. 960,588, Nov. 13, 1978, abandoned, which is a continuation of Ser. No. 726,354, Sep. 24, 1976, abandoned. This application Feb. 20, 1980, Ser. No. 122,975

Int. Cl.[3] C21D *1/48*

U.S. Cl. 148—16.6 5 Claims

1. The process for forming an iron or iron alloy surface resistant to oxidation over extended periods which comprises forming an atomically clean surface of iron or an iron alloy in an environment selected from the group consisting of nitrogen, an inert gas and a vacuum free of a gas or liquid which is deteriously reactive with said iron or iron alloy and when forming said atomically clean surface in an environment of said inert gas or said vacuum, subsequently exposing said atomically clean surface to nitrogen to form a surface stable against degradation by oxidation prior to exposing said surface to oxygen.

5. An oxidation-resistant iron surface comprising iron structure including nitrogen atoms interstitially, said surface being essentially free of face-centered cubic iron structures and martensite iron structures, said composition being formed by exposing a surface of atomically clean iron to pure nitrogen for at least about 250×10^{-6} Torr-sec. at 70° F.

4,326,899

METHOD OF CONTINUOUS ANNEALING LOW-CARBON ELECTRICAL SHEET STEEL AND DUPLEX PRODUCT PRODUCED THEREBY

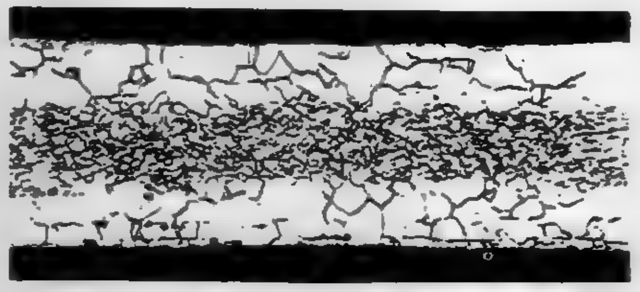
Arthur R. Henricks, Franklin Township, Westmoreland County, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed Sep. 17, 1979, Ser. No. 75,785

Int. Cl.[3] H01F *1/00*

U.S. Cl. 148—120 8 Claims

1. In the method for producing low-carbon electrical sheet steel, wherein a steel slab containing from 0.02 to 0.04% carbon is processed by hot rolling and cold rolling to produce a cold rolled sheet of from 0.016 to 0.036-inch thick and then continuous annealing the cold rolled sheet, the improvement comprising providing a duplex continuous anneal wherein the sheet is first heated to a temperature within the range 1350° to 1500° F. in a decarburizing atmosphere and there maintained for a time sufficient to decarburize the surfaces of the steel but insufficient to decarburize the steel's mid-section below the range 0.02 to 0.04% carbon, thereafter heating the partially decarburized steel to a temperature within the range 1550° to 1750° F. in a non-decarburizing - non-oxidizing atmosphere to substantially transform the steel's microstructure to austenite and then rapidly cooling the steel to effect a fine grained ferrite



having finely dispersed carbides at the steel's mid-section and a coarse grained ferrite without any significant precipitates at the steel's surface.

4,326,900

WATER-IN-OIL EMULSION EXPLOSIVE COMPOSITION

Katsuhide Hattori; Yoshiaki Fukatsu, and Masao Takahashi, all of Aichi, Japan, assignors to Nippon Oil and Fats Company Limited, Kanagawa, Japan

Filed Nov. 27, 1979, Ser. No. 97,668

Claims priority, application Japan, Nov. 28, 1978, 53/146738

Int. Cl.[3] C06B *45/00*

U.S. Cl. 149—2 12 Claims

1. Water-in-oil emulsion explosive compositions obtained by dispersing a mixture of (a) a gelatinized nitromethane product obtained by mixing nitromethane with a gelatinizer for nitromethane and (b) hollow microspheres in a water-in-oil emulsion composition comprising (i) ammonium nitrate or a mixture of ammonium nitrate and at least one other inorganic oxidizer salt, (ii) water, (iii) at least one of an oil and wax, and (iv) a sorbitan fatty acid ester surfactant.

4,326,901

FRAGMENTABLE CHARGES OF PROPELLAND POWDER COATED WITH POLYVINYL NITRATE, AND THE PROCESS FOR THEIR MANUFACTURE

Louis Leneveu, and Didier Treneules, both of Chateaulin, France, assignors to Societe Nationale des Poudres et Explosifs, Paris, France

Filed Sep. 5, 1979, Ser. No. 72,583

Claims priority, application France, Sep. 21, 1978, 78 27118

The portion of the term of this patent subsequent to Jul. 21, 1998, has been disclaimed.

Int. Cl.[3] C06B *45/24, 21/00*

U.S. Cl. 149—12 13 Claims

1. Process for the manufacture of fragmentable charges from grains of propellant powder containing nitrocellulose comprising (1) malaxating nitrocellulose in a first solvent which has a gelatinizing action for nitrocellulose thus obtaining a paste, (2) extruding the paste to obtain strands, (3) chopping the strands to obtain grains, (4) drying the grains, (5) spraying the grains with a glazing solution containing at least polyvinyl nitrate, a second solvent, and a stabiliser to obtain grains coated with polyvinyl nitrate, (6) evaporating the second solvent and (7) compressing the resulting grains at a temperature of 80° to 120° C. to form said fragmentable charges.

13. Fragmentable charges based on grains of propellant powder containing nitrocellulose, prepared by (1) malaxating nitrocellulose in a first solvent which has a gelatinizing action for nitrocellulose thus obtaining a paste, (2) extruding the paste to obtain strands, (3) chopping the strands to obtain grains, (4) drying the grains, (5) spraying the grains with a glazing solution containing at least polyvinyl nitrate, a second solvent and a stabilizer to obtain grains coated with polyvinyl nitrate, (6) evaporating the second solvent and (7) compressing the resulting grains at a temperature of 80° to 120° C. to form said fragmentable charges.

4,326,902

METHOD FOR ULTRASONICALLY WELDING COMPOSITE STRUCTURES

Gerald D. Peddie, Bonita, Calif., assignor to General Dynamics, Convair Division, San Diego, Calif.

Filed Jun. 12, 1980, Ser. No. 158,931

Int. Cl.[3] B29C *27/08;* B32B *31/20*

U.S. Cl. 156—73.1 7 Claims

1. A method of ultrasonically welding together two or more sheets of thermoplastic material members of selected thickness by the formation of a discrete weld nugget therebetween comprising the steps of:

interposing an energy concentrating member of a color contrasting with the color of said sheets of thermoplastic members between the thermoplastic members to form a sandwich structure;
subjecting the sandwich structure to sufficient pressure to bring said energy concentrating member and thermoplastic material members into intimate contact sufficient to permit ultrasonic welding;
applying sufficient ultrasonic energy to the sandwich structure for sufficient time to cause the thermoplastic material members to be welded together at said energy concentrating member; and
visually inspecting the weld nugget through the sheets of thermoplastic material members to insure that it takes the shape of said energy concentrating member thereby insuring a satisfactory weld joint.

4,326,903

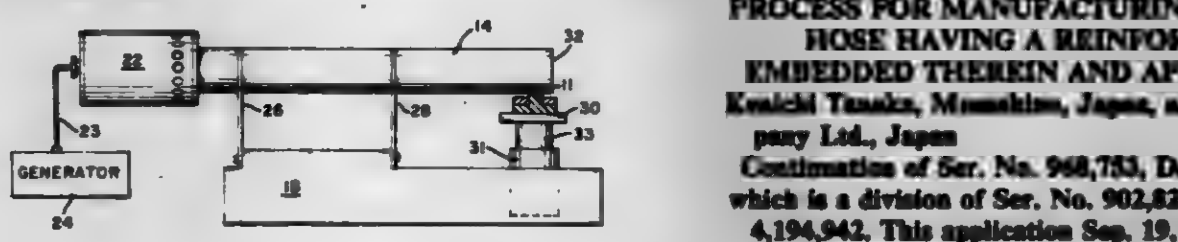
METHOD FOR SECURING PARTS TOGETHER BY ULTRASONIC ENERGY

Arthur M. Summo, Londonderry, N.H., assignor to Branson Ultrasonics Corporation, Newton, Conn.

Filed Dec. 5, 1980, Ser. No. 213,417

Int. Cl.[3] B23K *19/04;* B32B *31/20*

U.S. Cl. 156—73.1 4 Claims



1. A method for securing two parts to each other by means of a thermoplastic projection extending from one of the parts, said method comprising the steps of:

placing the parts into juxtaposition with the projection extending from one of the parts;
providing a horn adapted to be rendered resonant along its longitudinal axis at a predetermined frequency of vibration, said horn having a cavity disposed substantially at an antinodal region of longitudinal motion of the horn and oriented substantially normal to the direction of longitudinal motion of the horn;
urging the exposed end of the projection into the cavity in a direction normal to the direction of longitudinal motion of the horn;
rendering the horn resonant along its longitudinal axis at a predetermined frequency while concomitantly urging the end of the projection into the cavity to cause a softening and flowing of the projection until the exposed end of the projection is formed to the shape of the cavity;
ceasing rendering the horn resonant when the desired degree of forming has occurred, and thereby causing solidification of the softened and flowed material, and
withdrawing the formed projection from the cavity.

4,326,904

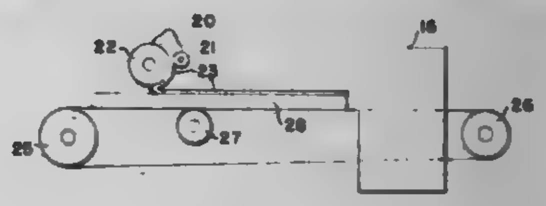
HEAT COLLAPSING FOAM SYSTEM

Rene A. Eckert, Simpsonville, and Guenter E. Schmuck, Greenville, both of S.C., assignors to National Starch and Chemical Corporation, Bridgewater, N.J.

Filed Jun. 2, 1980, Ser. No. 152,696

Int. Cl.[3] B32B *31/26;* B05D *3/00*

U.S. Cl. 156—85 12 Claims



1. A process of treating sheet materials with an aqueous treating composition comprising, providing an aqueous treating composition containing a water soluble surfactant for stabilizing a foam and a water-insoluble defoamer for breaking a foam when heat is applied to permit said composition to be foamed with gas to provide a foam which is stable in the form of a thin layer long enough to be handled and which will collapse completely when heated, foaming said composition, applying said foam to a surface of said sheet material to provide stable foam thereon, and heating said foam on said sheet material to simultaneously cause the foam to collapse and dry the composition.

9. A process as recited in claim 1 in which said aqueous treating composition comprises an adhesive and the sheet material with the foam layer thereon is pressed against another sheet of material prior to heating to simultaneously dry and collapse said foam, whereby said adhesive is prevented from migrating away from the glue line in the resulting laminate.

4,326,905

PROCESS FOR MANUFACTURING SYNTHETIC RESIN HOSE HAVING A REINFORCING MEMBER EMBEDDED THEREIN AND APPARATUS THEREOF

Kenichi Tanaka, Munakata, Japan, assignor to Kakuichi Company Ltd., Japan

Continuation of Ser. No. 968,753, Dec. 13, 1978, abandoned, which is a division of Ser. No. 902,825, May 4, 1978, Pat. No. 4,194,942. This application Sep. 19, 1980, Ser. No. 188,702

Claims priority, application Japan, Oct. 15, 1977, 52-122296

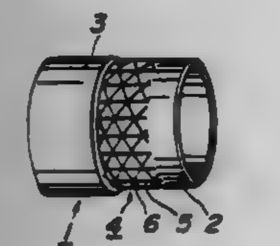
Int. Cl.[3] B65H *81/00;* B29C *19/00, 19/04;* C09J *5/02*

U.S. Cl. 156—149 9 Claims

1. A process for manufacturing a synthetic resin hose having a reinforcing member embedded, the improvements comprising the steps of;

applying a bonding agent to a plurality of warp materials in a bonding agent tub;
guiding said plurality of bonding agent bearing warps through yarn guide holes provided in a diameter adjusting

disc to the outer peripheral surface of a hollow cylindrical member;
forming a warp tubular member arranged side by side with a space each other and parallel to the axis of the tubular member by drawing it in the longitudinal axial direction of a hose being formed;
braiding a plurality of braiding yarns to form a braid member consecutively in overlying relation around on the outer peripheral surface of said warp tubular member, thereby forming a tubular reinforcing member;
bonding warps to braided yarns at the contacts therebetween by passing a first heating unit, thereby heat-setting said tubular reinforcing member;
solidifying said tubular reinforcing member by passing a first cooling unit;

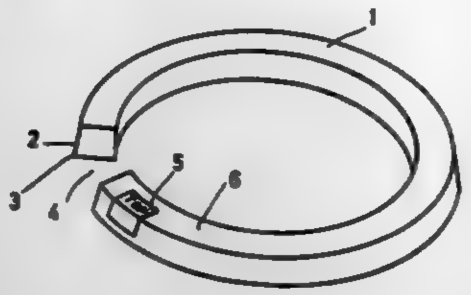


coating synthetic resin onto the inner and outer peripheral surface of said tubular reinforcing member by passing a resin applying unit;
forming the composite tubular synthetic resin hose with embedded tubular reinforcing member by passing a second cooling unit;
drawing the composite tubular body thus formed while cooling the same; and
taking up said synthetic resin hose to a winding-up reel under a constant tension; and
said steps are combined in the order described successively from one end of the hollow cylindrical member to said winding-up reel.

4,326,906
DISPLAY MOUNT AND METHOD
Carroll N. Cross, Rte. 2, Box 741, Maitland, Fla. 32751
Filed May 2, 1980, Ser. No. 145,775
Int. Cl.^{3} B31F *1/00*
U.S. Cl. 156—201 10 Claims

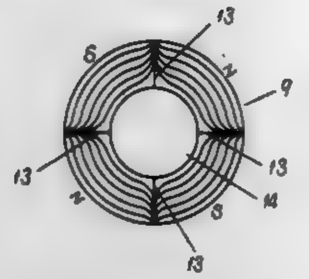
1. A process for making a display mount, or the like, comprising the steps of:
applying glue to one side of heat sealable binding material;
feeding panels onto said glued surface of said binding material;
feeding heat sealable polymer film from a roll adjacent to said binding material on the side opposite from said panels attached thereto;
sealing said polymer film to said binding material;
cutting said binding material and polymer film between said panels; and
rolling said binding material and polymer film over multiple edges of each said panel onto the back of said panel to form a polymer film pocket on the face of a panel.

4,326,907
METHOD OF IDENTIFYING PISTON RINGS
Horst Bornefeld, Burscheid; Hans P. Fert, Bergisch Gladbach, and Werner Engel, Leverkusen, all of Fed. Rep. of Germany, assignors to Goetze AG, Burscheid, Fed. Rep. of Germany
Filed Sep. 26, 1979, Ser. No. 79,214
Claims priority, application Fed. Rep. of Germany, Sep. 27, 1978, 2841917
Int. Cl.^{3} B32B *1/04*; F02F *5/00*
U.S. Cl. 156—212 3 Claims



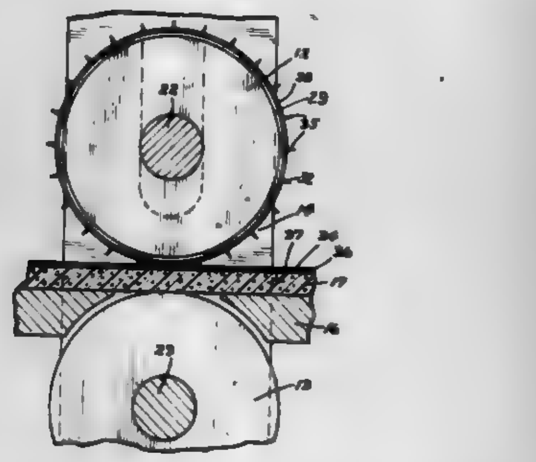
1. A method of identifying the orientation of a piston ring having opposite annular flank faces, an inner circumferential face and an outer circumferential running face; comprising the step of applying, in a single operational step, a visual, thin synthetic foil marking of less than 2μ thick exclusively to one of said flank faces and at least one part of said running face, whereby subsequent to said step the visual marking extends on said one flank face and continues on said running face.

4,326,908
PROCESS OF PRODUCING ROLL-SHAPED MAGNET
Koji Hiya, Hirakata; Yoshiyuki Miyoshi, Moriguchi, and Kanji Machida, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan
PCT No. PCT/JP79/00168, § 371 Date Mar. 7, 1980, § 102(e) Date Mar. 6, 1980, PCT Pub. No. WO80/00196, PCT Pub. Date Feb. 7, 1980
PCT Filed Jun. 29, 1979, Ser. No. 190,852
Claims priority, application Japan, Jul. 7, 1978, 53/83371
Int. Cl.^{3} H01F *3/02*
U.S. Cl. 156—215 8 Claims



1. A process of producing a roll-shaped magnet, comprising the steps of:
(a) forming at least two magnetic sheets having magnetic characteristics different from each other, each sheet being formed by mixing a plurality of magnetic particles, which have undergone a magnetic anisotropic treatment, with a medium for binding said magnetic particles so as to form a mixture, and then rolling said mixture to form a sheet wherein said magnetic particles are oriented in the direction of rolling;
(b) laminating the magnetic sheets together so as to form a laminating body;
(c) forming a plurality of wedge-shaped indentations in one surface of said laminated body;
(d) winding the laminated body around a shaft, the surface with indentations contacting said shaft so as to form the inner peripheral surface, each successive layer having indentations which are aligned so as to form a plurality of substantially radial axes, the shaft being a magnetizing pole; and
(e) magnetizing the laminated body.

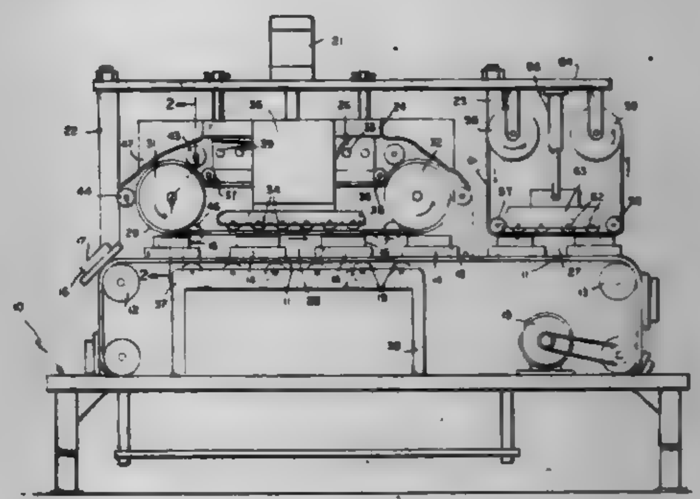
4,326,909
METHOD AND APPARATUS FOR FORMING A PERMEABLE INSULATION BOARD FOR BUILDING CONSTRUCTION
Raymond F. Slavik, Albertville, Minn., assignor to Minnesota Diversified Products, Inc., New Brighton, Minn.
Filed Jun. 30, 1980, Ser. No. 164,023
Int. Cl.^{3} B32B *31/18*, *3/10*
U.S. Cl. 156—253 3 Claims



1. A method of forming an insulation board having good moisture permeability, including the steps of:
A. first bonding a first surface of a fluid permeable insulating sheet of good heat insulation properties to a layer of impermeable highly heat reflective foil;
B. then penetrating the foil surface and the first surface of the insulating sheet to render the foil fluid permeable by forming a plurality of perforations through the foil layer and into the insulating sheet, said perforating being made by passing said mutually bonded foil layer and insulating sheet under a roller having a perforated outer shell, having the spikes of tacks extending through said perforations in said outer shell, said tack spikes being of lesser diameter than said roller shell perforations, and each such tack being mounted loosely with respect to said outer roller in such a manner as to permit some transverse movement of said spike with respect to the surface of the outer roller but to prevent withdrawal of the spike from its perforation in said roller.

4,326,910
TRANSFER APPARATUS AND METHOD
Jesse B. Davis, P.O. Box 568, 8 Sagamore Hill Dr., Port Washington, N.Y. 11050
Filed Sep. 24, 1980, Ser. No. 190,328
Int. Cl.^{3} B65C *9/25*; C09J *5/00*; B30B *5/02*; B32B *31/00*
U.S. Cl. 156—540 12 Claims

1. In an apparatus for controllably preheating the receiving surface of a work piece by conducting the latter through a pretreating station, and prior to adhering a layer of material from said apparatus including:
a belt guide system having a plurality of spaced apart guide rollers 31 and 32,
a thermal belt 29 carried on said belt guide system and defining a closed belt circuit around said guide rollers 31 and 32,
a heat source disposed adjacent to a segment of said closed belt circuit for controllably raising the belt temperature along said segment, and
drive means engaging said belt guide system and being operable to progress the belt heated segment from said heat source, to said pretreating station, whereby to contact said work piece at said pretreating station,
a conveyor chain operably guided to pass continuously adjacent to a heated portion of said thermal belt, said chain being adapted to carry at least one work piece in a manner that the receiving surface of the latter is disposed in heat exchange contact with the thermal belt,
a transfer station positioned adjacent to said preheat station and arranged coextensively with said conveyor chain and including:



a plurality of pressure rollers,
means holding a supply of foil having a thermally transferable decorative layer thereon, a thickness of said foil being registered intermediate a work piece heated surface, and said plurality of pressure rollers,
whereby the thermally transferable foil layer will be urged against the work piece heated surface to cause transfer of the said layer onto said work piece surface without interrupting movement of the conveyor chain.

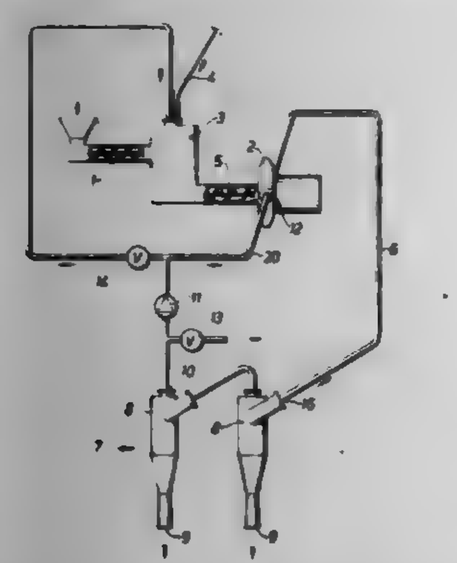
4,326,911
REACTIVE ION ETCHING OF III-V COMPOUNDS INCLUDING INP, GAAS-INP AND GAALAS
Richard E. Howard, Holmdel, and Evelyn L. Hu, Somerset, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Continuation-in-part of Ser. No. 116,540, Jan. 29, 1980, abandoned. This application Dec. 4, 1980, Ser. No. 212,976
Int. Cl.^{3} H01L *21/306*
U.S. Cl. 156—643 11 Claims

1. A process for reactive-ion-etching a III-V semiconductor substrate made of one or more compounds selected from the set of InP, GaAs-InP alloys and GaAlAs in which a plasma is ignited in a gas disposed between two electrodes, and said substrate is placed on the cathode electrode to which rf power is applied
characterized in that
said gas comprises CCl_2F_2.

4,326,912
PROCESS FOR IMPROVING THE QUALITY OF PULP OBTAINED FROM WASTEPAPER
Christopher C. Mollett, Brighton, England, assignor to Pira, The Research Association for the Paper and Board, Printing and Packaging Industries, Surrey, England
Filed Sep. 30, 1980, Ser. No. 192,289
Claims priority, application United Kingdom, Oct. 1, 1979, 33924/79
Int. Cl.³ D21C *5/02*
U.S. Cl. 162—5 13 Claims

1. A method for improving the quality of wastepaper pulp containing contaminant particles, comprising the steps of dispersing a monomer in the pulp so as to form droplets or beads which take up said contaminant particles and chemically polymerizing said monomer to increase the rigidity of said beads or droplets; said beads or droplets being subsequently removed with the contaminant particle from the pulp.

4,326,913
METHOD AND APPARATUS IN DEFIBRATION
Agne T. Mattsson, Enköping, Sweden, assignor to Aktiebolaget Bahco Ventilation, Enköping, Sweden
Filed Jan. 2, 1980, Ser. No. 109,046
Claims priority, application Sweden, Jan. 4, 1979, 7900084
Int. Cl.³ D21C *3/26;* D21B *1/04*
U.S. Cl. 162—17 10 Claims

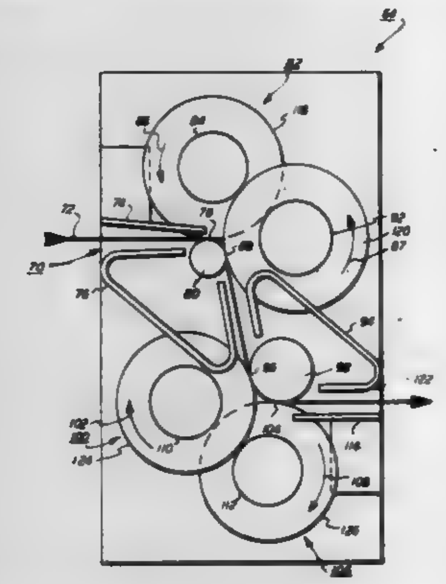


1. An apparatus for defibrating wood chip-like vegetable material, comprising:
a means defining a first source of steam;
a refiner having a housing and including means for reducing wood chip-like vegetable material to pulp;
a first refiner inlet in said refiner housing for introducing vegetable material;
means for transporting said vegetable material to said first refiner inlet;
means connected upstream from said first refiner inlet and further connected to said first source of steam for introducing steam to said wood chip-like vegetable material;
a second refiner inlet in said refiner housing;
a refiner outlet for pulp and steam, said refiner outlet being spaced from said second refiner inlet across an interior volume of said housing;
at least one separator connected to said refiner outlet for separating said steam and pulp, each said at least one separator being adapted to be pressurized by said separated steam and having a steam outlet, said separated steam defining a second source of steam;
conduit means for connecting said second source of steam to said second refiner inlet; and
means for increasing the pressure of said separated steam;
whereby said separated steam flows through at least a portion of said refiner and helps transport said pulp from said refiner.

4,326,914
DIAPHRAGMS FOR ELECTROCHEMICAL CELLS AND THE MANUFACTURE THEREOF
Karl Höhne, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany
Filed Sep. 9, 1980, Ser. No. 185,431
Claims priority, application Fed. Rep. of Germany, Sep. 20, 1979, 2938123
Int. Cl.³ C25B *13/00*
U.S. Cl. 162—105 7 Claims

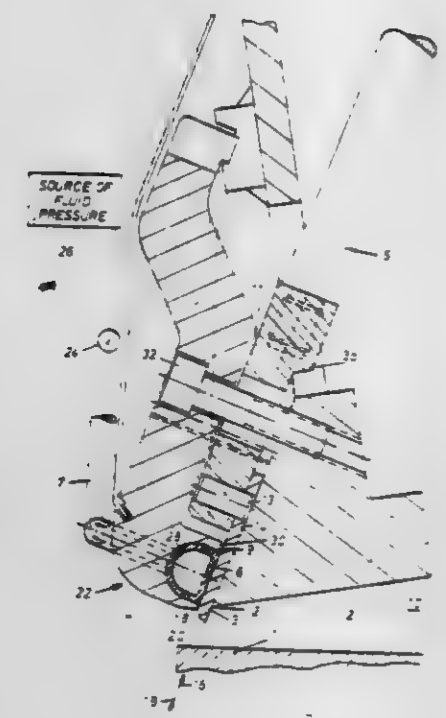
1. A method for the manufacture of a diaphragm of fibrous potassium titanate and a non-fibrous organic binder therefor, for an electrochemical cell, which comprises:
a. forming a suspension of said fibrous potassium titanate and from about 10 to about 30% by weight, based upon the weight of said fibrous potassium titanate, of said non-fibrous organic binder comprising from about 30 to 60% polytetrafluoroethylene and from about 40 to 70% styrene-butadiene copolymer, percents by weight of the organic binder; and
b. applying said suspension to an alkali-resistant plastic or metal screen having a mesh width of between about 0.1 and 0.4 mm to deposit the components of said suspension thereon.

4,326,915
SHEET DE-CURLER
Edward C. Mutschler, Jr., Pittsford, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Nov. 15, 1979, Ser. No. 94,606
Int. Cl.³ D21F *1/40;* D21H *1/00;* D21J *1/14*
U.S. Cl. 162—271 7 Claims



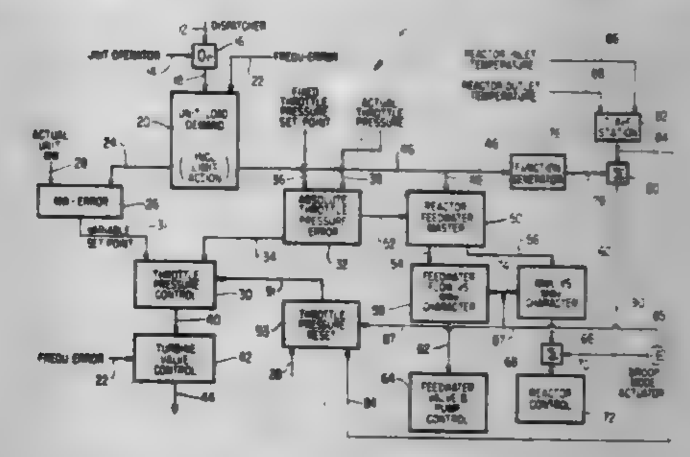
1. An apparatus for de-curling sheet material, including:
a first substantially rigid rod;
a first pair of substantially rigid rollers, one of said first pair of rollers contacting said first rod in a first contact region and the other of said first pair of rollers contacting said first rod in a second contact region;
means for rotating said first pair of rollers to move the sheet material through the contact regions to bend the sheet material about said first rod in a first direction;
a second substantially rigid rod;
a second pair of substantially rigid rollers, one of said second pair of rollers contacting said second rod in a first contact region and the other of said second pair of rollers contacting said second rod in a second contact region; and
means for rotating said second pair of rollers to move the sheet through the contact regions to bend the sheet material in a second direction opposed to the first direction.

4,326,916
BREAST BOX NOZZLE FOR A PAPER MACHINE
Heinrich Fleig, Heidenheim, and Karl Wolf, Heidenheim-Schnaitheim, both of Fed. Rep. of Germany, assignors to J. M. Voith, GmbH, Heidenheim, Fed. Rep. of Germany
Filed Oct. 16, 1980, Ser. No. 197,519
Claims priority, application Fed. Rep. of Germany, Oct. 24, 1979, 2942966
Int. Cl.³ D21F *1/06*
U.S. Cl. 162—344 6 Claims



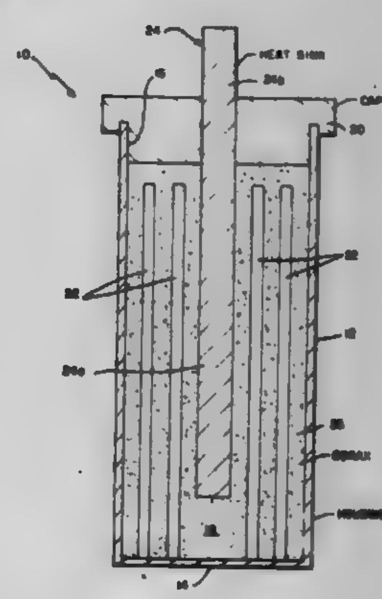
1. A breast box nozzle assembly, comprising nozzle passage means terminating in a nozzle passage discharge orifice for the flow therethrough of a fluid stream of pulp stock, said nozzle passage means comprising at least upper disposed lip structure means, a mounting surface carried by said lip structure means, a shutter situated against said mounting surface carried by said lip structure means and adjustably movable along said mounting surface in at least two directions for adjustably determining the effective opening and effective configuration of said discharge orifice, when moved in a first of said two directions along said mounting surface said shutter extending generally transversely relatively further into said stream of fluid pulp, when moved in a second of said two directions opposite to said first direction and along said mounting surface said shutter extending generally transversely relatively less into said stream of fluid pulp, adjustment means for adjustably moving said shutter in said first and second directions, and support means for operatively applying a counter pressure to a downstream side of said shutter which counter pressure opposes the fluid pressure applied to an upstream side of said shutter by said stream of fluid pulp and urges said shutter against said mounting surface, said support means comprising a support member and elastomeric means operatively interposed between said support member and said downstream side of said shutter, said elastomeric means being effective to react against said support member and apply a reacting force as said counter pressure to said downstream side of said shutter to thereby hold said shutter against said mounting surface while still permitting said adjustment means to adjustably move said shutter in either of said first and second directions.

4,326,917
METHOD OF NUCLEAR REACTOR CONTROL USING A VARIABLE TEMPERATURE LOAD DEPENDENT SET POINT
Joseph J. Kelly, Jr., and George E. Rambo, both of Lynchburg, Va., assignors to The Babcock & Wilcox Company, New Orleans, La.
Filed Oct. 2, 1979, Ser. No. 80,977
Int. Cl.³ G21C *7/00*
U.S. Cl. 376—216 11 Claims



1. A method of controlling the power output of a nuclear reactor comprising the steps of:
providing a variable average reactor coolant temperature set point having a constant temperature portion and a decreasing temperature portion for controlling the reactor power by control rod movement;
providing a control range of average reactor coolant temperatures below said variable temperature set point for controlling the reactor power in response to variable feedwater flow; and
switching control between said variable coolant temperature set point and said control range of temperatures whenever a large change in reactor power output is required.

4,326,918
STORAGE ASSEMBLY FOR SPENT NUCLEAR FUEL
Melvin E. Lapides, Mountain View, Calif., assignor to Electric Power Research Institute, Inc., Palo Alto, Calif.
Filed Mar. 13, 1980, Ser. No. 130,134
Int. Cl.³ G21C *19/20*
U.S. Cl. 376—272 5 Claims



1. An assembly for storing spent fuel rods from a nuclear reactor, said assembly comprising:
(a) housing means including a closed inner chamber for containing said fuel rods, said housing means being adapted for positioning underground;
(b) means located partially within said inner chamber and partially outside said housing means for transferring heat

generated by the fuel rods contained within said housing chamber from the latter to said surrounding ground; and

(c) particulate material located within said chamber and surrounding the fuel rods contained therein, said material being of a type which serves as a heat transfer media between said contained fuel rods and said heat transferring means and which also fuses into a solid mass around said contained rods if said heat transferring means malfunctions or otherwise fails to transfer said generated heat out of said chamber in a predetermined manner.

4,326,919

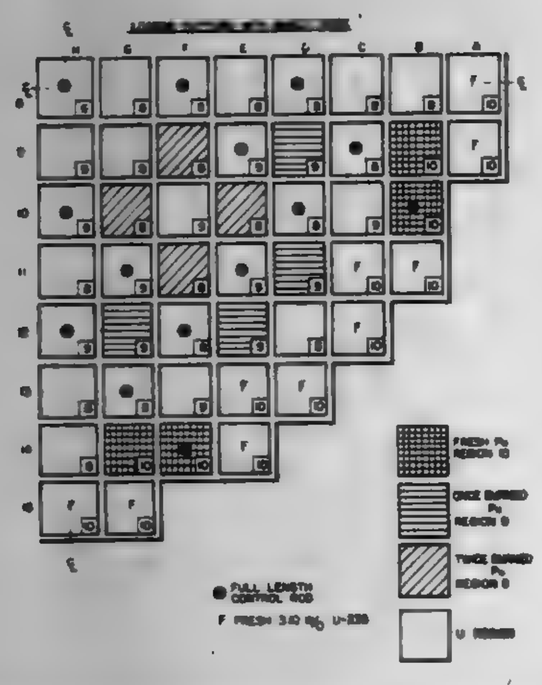
NUCLEAR CORE ARRANGEMENT

Donald J. Hill, O'Hara Township, Allegheny County, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 829,703, Sep. 1, 1977, abandoned. This application Apr. 24, 1980, Ser. No. 143,240

Int. Cl.³ G21C *19/20;* G21G *1/02*

U.S. Cl. 376—267 8 Claims



1. A method of fueling a nuclear reactor having discrete core positions, each position receiving a singular vertically disposed bundled-rod fuel assembly, each said fuel assembly including a plurality of fuel rods having nuclear fuel disposed within a metallic cladding, at least some of said fuel assemblies bearing fissionable plutonium nuclear fuel and at least some other of said assemblies bearing fissionable nuclear fuel essentially free of fissionable plutonium upon initial insertion into said core, said reactor further having rectilinearly movable control elements, the number of control elements being less than the number of fuel assemblies, each said control element being insertable into a selected one of said fuel assemblies in a corresponding one of said core positions, each said control element, upon insertion, being laterally bounded by said fuel assembly, said method comprising:

(a) inserting a plutonium bearing fuel assembly into one of said selected control element receiving core positions, said position being the position of highest control element worth in the N−1 configuration based upon a core configuration having only fuel assemblies essentially free of fissionable plutonium; and

(b) inserting said plutonium bearing fuel assemblies and said fuel assemblies essentially free of fissionable plutonium into the remaining core positions.

4,326,920

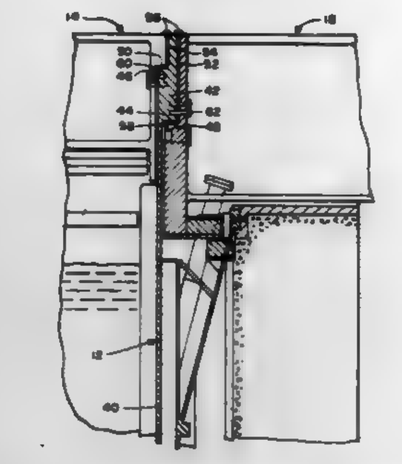
NUCLEAR REACTOR INCLUDING A REACTOR VESSEL AND TECHNIQUE FOR SUPPORTING THE LATTER

Joseph V. Facha, Reseda, Calif.; John P. Cook, Chattanooga, Tenn., and William H. Dusterman, Woodland Hills, Calif., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Apr. 23, 1979, Ser. No. 32,283

Int. Cl.³ G21C *13/02, 9/00*

U.S. Cl. 376—205 9 Claims



1. In a pool type nuclear reactor including a number of reactor components located within a vertically extending cavity which is located under a reactor deck arrangement and which is defined by a circumferential cavity wall assembly, the improvement comprising a reactor vessel separated and distinct from said deck arrangement and said cavity wall assembly for containing said reactor components, said vessel including a main body located within said cavity and an upper circumferential rim formed by a vertically exteded support flange located and interlocked between said deck arrangement and an upper section of said wall assembly, whereby to form a support means for said vessel body within said cavity and said deck arrangement above said vessel body, said support means including a first downwardly directed, circumferential shoulder extending around and forming part of said support flange, a first upwardly directed, circumferential shoulder extending around and forming part of said cavity wall assembly said first upwardly directed shoulder cooperating with said first downwardly directed shoulder for supporting said vessel within said cavity, a second downwardly directed circumferential shoulder extending around and forming part of said deck arrangement, a second upwardly directed, circumferential shoulder extending around and forming part of said support flange on the opposite side of and above said first downwardly directed shoulder but below the top of said flange, said second upwardly directed shoulder cooperating with said second downwardly directed shoulder for supporting said deck arrangement over the main body of said vessel and means for sealing between said support flange and both said deck arrangement and said wall assembly, said sealing means displaying at least a limited degree of compliance whereby to accomodate thermal displacement.

4,326,921

CONTROL ROD GUIDE THIMBLE FOR NUCLEAR REACTOR FUEL ASSEMBLIES

Dennis J. Cadwell, Plum Borough, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 16, 1980, Ser. No. 150,482

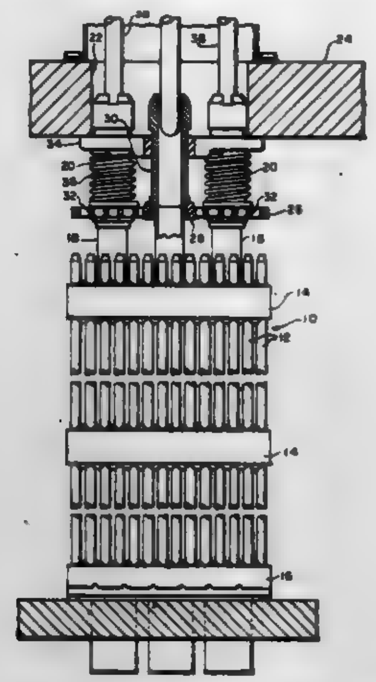
Int. Cl.³ G21C *3/30*

U.S. Cl. 376—353 5 Claims

1. A fuel assembly for a nuclear reactor comprising an array of fuel rods held in spaced relationship with each other by a series of grids spaced along the fuel rod length, multiple control rod guide thimbles interspersed among the fuel rods extend the length of said assembly and are attached to said grids to provide a basic skeleton structure for the assembly, and an

extension attached to the upper end of each of said guide thimbles;

insets in the form of local deformations in the guide thimble walls which project inwardly toward the guide thimble



axis, said insets serving to reduce the force, and therefore the wear, caused by lateral vibrating motion between the guide thimble and control rod adapted to reciprocate therein.

4,326,922

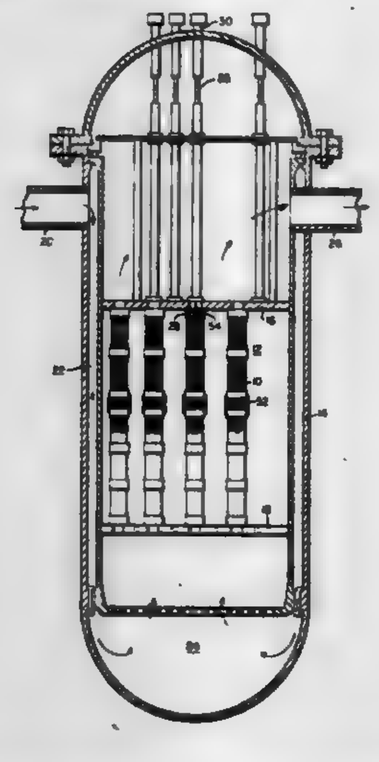
COMPOSITE NUCLEAR FUEL ASSEMBLY

Harry M. Ferrari, Edgewood, and Walter J. Dollard, Churchill, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 875,653, Feb. 6, 1978, abandoned. This application Jan. 31, 1980, Ser. No. 117,418

Int. Cl.³ G21C *3/30*

U.S. Cl. 376—435 7 Claims



1. A composite nuclear fuel assembly adapted for use with a thermal nuclear reactor having a liquid coolant flowing upwardly through a core including said assemblies in a vertical orientation, said assembly comprising:

a plurality of elongated coextending cylindrical upper nuclear fuel rods having fissionable nuclear fuel encased in a sealed cladding, said upper rods arranged in a closely spaced array;

a plurality of upper lattice structures disposed about said array of upper rods spaced at preselected elevations along said upper rods for laterally supporting said rods in individual cells, each said cell laterally enclosing a corresponding one of said upper rods;

a plurality of elongated cylindrical coextending lower nuclear fuel rods having fissionable nuclear fuel encased in a sealed cladding, said lower rods being arranged in a closely spaced array, the top of said lower rods being spaced a preselected distance below the bottom of said upper rods and each being of larger diameter than said upper fuel rods, the number of said lower rods in said assembly being smaller than the number of upper rods in said assembly; and

a plurality of lower lattice structures disposed about said array of lower rods spaced at preselected elevations along said lower rods for laterally supporting said lower rods in individual cells, each said cell laterally enclosing a corresponding one of said upper rods the lateral periphery of said lower lattice structures being sized substantially similar to the lateral periphery of said upper lattice structures;

said upper and lower rods being the only fuel bearing rods in said assembly.

4,326,923

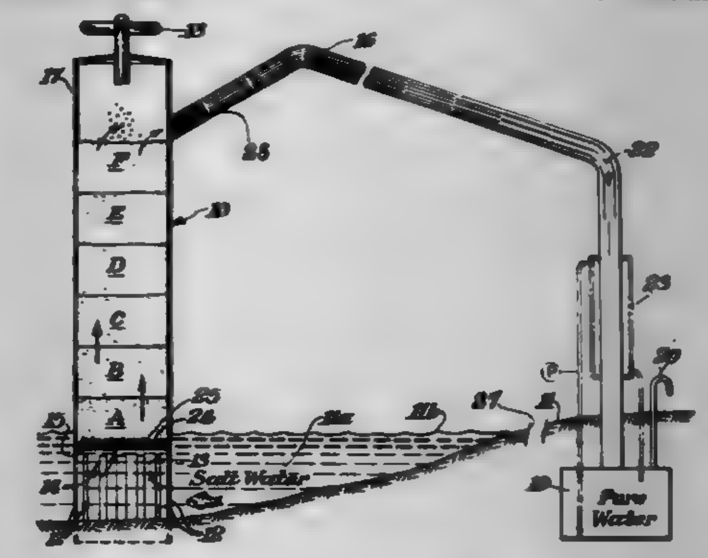
PURIFICATION APPARATUS

Carl W. Mortenson, 1175 Pleasant Hill Rd., Newark, Del. 19711

Filed Jan. 9, 1980, Ser. No. 110,636

Int. Cl.³ C02F *1/14;* B01D *3/02*

U.S. Cl. 202—185 R 10 Claims



1. Apparatus for the purification of an impure volatile liquid with the assistance of solar energy which apparatus comprises a distilling device comprising a column and a condenser;

in said column, packing comprising particulate material varying in thermal conductivity, the said material being contained within said column with the poorest thermal conductor being in the closest position within said column to said impure liquid with successively better thermal conductors being above it to form a thermal gradient with the best thermal conductor being near the outlet of said column and the said material being inert relative to said impure liquid;

means to mount said apparatus to expose it to the rays of the sun for capture of solar energy, thereby to heat said packing material and vaporize said liquid; and

said condenser comprising means to condense said vapor to a liquid, thereby converting the liquid to a purified state.

4,326,924
STABILIZATION OF METHYLCHLOROFORM

Frances M. Cummings, Corpus Christi, Tex., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 61,799, Jul. 30, 1979, abandoned. This application Nov. 17, 1980, Ser. No. 207,520

Int. Cl.^{3} B01D *3/34*

U.S. Cl. 203—6 — 7 Claims

1. In a process for purifying crude methylchloroform by distillation wherein the improvement resides in distilling the crude methylchloroform in the presence of from about 0.02 to 0.1 percent by weight, based on weight of crude methylchloroform, of polyalkylene glycol having an average molecular weight of from about 300 to about 500 so as to inhibit the rate of decomposition of methylchloroform to vinylidene chloride and so as to not significantly co-distill with methychloroform during said distillation.

4,326,925
PROCESS FOR THE PURIFICATION OF CAPROLACTAME

Paolo Senni, Colleferro, and Domenico Astarita, Segni-Colleferro, both of Italy, assignors to SNIA Viscosa Societa' Nazionale Industria Applicazioni Viscosa S.p.A., Milan, Italy

Filed Feb. 19, 1980, Ser. No. 122,675

Claims priority, application Italy, Feb. 28, 1979, 20612 A/79

Int. Cl.^{3} B01D *3/34*

U.S. Cl. 203—37 — 13 Claims

1. A process of purifying raw caprolactame by vacuum distillation, wherein said distillation is carried out, in either a continuous or discontinuous manner, in the following steps and in the order listed herebelow:

(a) feeding said raw caprolactame to a fast vacuum distillation, said fast vacuum distillation yielding a caprolactame containing distillate;

(b) feeding all of the distillate from step (a) directly to a distillation with vacuum rectification, with separation from the high-boiling, and possibly low-boiling by-product;

(c) feeding said caprolactame yielded from step (b) to a fast distillation which is carried out in the presence of a compound selected from the group consisting of an alkaline hydroxide and an alkaline-earth hydroxide, said fast vacuum distillation yielding a purified caprolactame containing distillate; and

(d) withdrawing all of the distillate of step (c) as product.

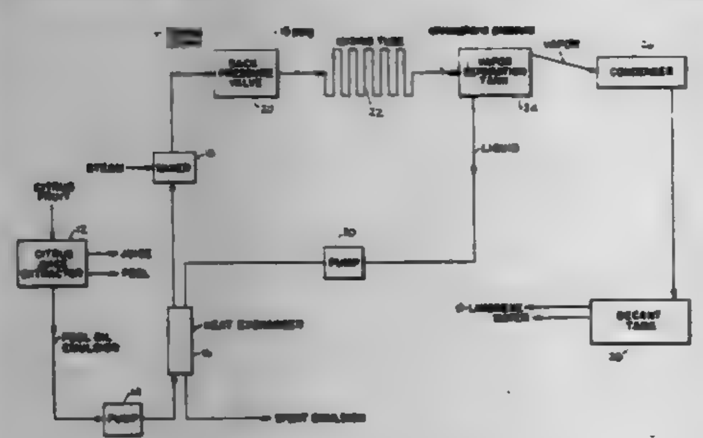
4,326,926
METHOD OF DISTILLING A VOLATILE CONSTITUENT FROM A LIQUID MIXTURE

Gordon P. Gerow, Davenport, Fla., assignor to FMC Corporation, Chicago, Ill.

Division of Ser. No. 399,238, Sep. 20, 1973, Pat. No. 4,113,573. This application Dec. 28, 1977, Ser. No. 865,150

Int. Cl.^{3} B01D *3/06*

U.S. Cl. 203—91 — 2 Claims



1. In a process for distilling a volatile constituent from a liquid mixture of immiscible materials, the steps of heating said mixture to a temperature in the range of from about 250° F. to about 275° F. while said mixture is in a flowing state and at a superatmospheric pressure, substantially and abruptly reducing the major portion of the superatmospheric pressure of said mixture to rapidly vaporize a constituent of said mixture, immediately thereafter conducting said mixture and vaporized constituent through a relatively long turbulent passage while simultaneously continuously reducing the pressure to provide heat for further vaporizing a constituent of said mixture, reducing the pressure of said mixture to atmospheric pressure at the outlet end of said turbulent passage and separating the vapors from the remaining liquid, condensing said vapors to obtain a condensate, and separating said volatile constituent from the carrier constituent in said condensate.

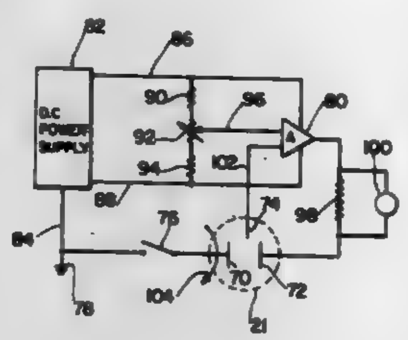
4,326,927
METHOD AND DEVICE FOR THE DETECTION AND MEASUREMENT OF ELECTROCHEMICALLY ACTIVE COMPOUNDS

Joseph R. Stetter, Naperville, Ill., and Donald R. Rutt, Merrick, N.Y., assignors to Becton, Dickinson and Company, Paramus, N.J.

Filed Jul. 25, 1980, Ser. No. 172,170

Int. Cl.^{3} G01N *27/46, 27/52*

U.S. Cl. 204—1 T — 5 Claims



1. An electrochemical sensing device comprising a sensing electrode, a counterelectrode, an electrolyte in contact with said sensing electrode and counterelectrode, said sensing electrode comprising a porous hydrophobic polytetrafluoroethylene substrate having vapor deposited or sputtered thereon a porous gold film catalyst whose thickness is in the range of 200 Å to 20,000 Å to provide a diffusion electrode, said film of gold being subjected to reduction in the presence of H_2 to enhance its stability and ability to selectively detect gases, means for exposing said sensing electrode to the gas to be detected, means electrically coupled to said sensing electrode for maintaining said sensing electrode at a potential of about 0.4 volts to about 1.5 volts with respect to the potential of the reversible hydrogen couple in the electrolyte of said cell, and means for measuring current flowing between said sensing electrode and said counterelectrode which measured current is a measure of the concentration of the noxious gas being detected.

3. A method for electrochemically detecting a noxious gas in the presence of carbon monoxide which comprises feeding a gaseous sample containing said gas to the sensing electrode of an electrochemical cell comprising a sensing electrode, a counterelectrode, an electrolyte in contact with said sensing electrode and counterelectrode, said sensing electrode comprising a porous polytetrafluoroethylene substrate having vapor-deposited thereon a porous film of gold ranging in thickness between 200 Å and 20,000 Å to provide a diffusion electrode, reducing said film of gold in the presence of hydrogen to enhance its stability and ability to selectively detect gases, maintaining the sensing electrode at a potential of about 0.4 volts to about 1.5 volts with respect to the potential of the reversible hydrogen couple in the electrolyte of said cell, and measuring current flowing between said sensing electrode and said counterelectrode which measured current is a measure of the concentration of the noxious gas being detected.

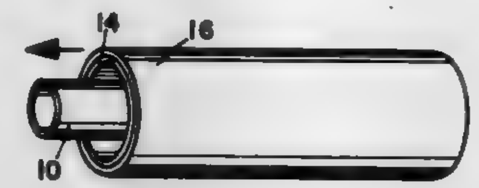
4,326,928
METHOD OF ELECTROFORMING

William P. Dugan, Pomona, Calif., assignor to General Dynamics, Pomona Division, Pomona, Calif.

Filed Jan. 26, 1981, Ser. No. 228,430

Int. Cl.^{3} C25D *1/02*

U.S. Cl. 204—9 — 2 Claims



1. The method of electroforming a metallic part comprising the steps of:

depositing an electroless base coating of metal on a tubular plastic mandrel of heat shrinkable material such as polyethylene or polypropylene and having an integral solid wall;

electrodepositing a secondary coating of metal over said base coating to form a part;

mechanically removing a portion of the metal coatings off at least one extremity of the part to facilitate removal of the mandrel;

thereafter heating the coated mandrel to shrink the mandrel away from the part formed by the coating; and

physically removing the mandrel from the finished part.

4,326,929
FORMATION OF AN ELECTRODE PATTERN

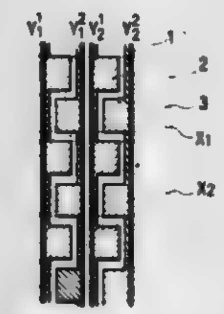
Shigehiro Minezaki, Ikoma; Toshiaki Takamatsu, Tenri, and Shuichi Kozaki, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Oct. 3, 1979, Ser. No. 81,439

Claims priority, application Japan, Oct. 3, 1978, 53-122234

Int. Cl.^{3} C25D *11/02;* B05D *5/00, 5/12*

U.S. Cl. 204—15 — 10 Claims



1. A method for forming on a substrate a metal electrode pattern and a transparent electrode pattern both of which overlap at least in part with each other, said method comprising the steps of:

etching a transparent, electrically conductive film deposited on a major surface of the substrate for the formation of the transparent electrode pattern;

overlaying the whole of the major surface of the substrate with a layer of photoresist;

removing a portion of said photoresist layer to form an area defining a metal electrode pattern;

coating substantially the entire major surface of the substrate with a layer of metal electrode material, said metal electrode material extending into said area defining said metal electrode pattern; and

removing the remaining photoresist layer with the aid of a resist remover thereby forming the metal electrode pattern.

4,326,930
METHOD FOR ELECTROLYTIC DEPOSITION OF METALS

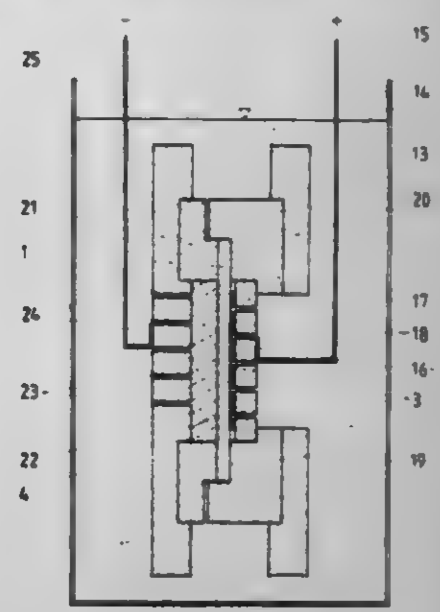
Hartmut Nagel, Dortmund, Fed. Rep. of Germany, and Samuel Stucki, Baden, Switzerland, assignors to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Filed Feb. 9, 1979, Ser. No. 10,684

Claims priority, application Switzerland, Apr. 14, 1978, 4005/78

Int. Cl.^{3} C25D *5/54, 5/56, 7/04*

U.S. Cl. 204—20 — 23 Claims



1. A method for electrolytic deposition of metals on a solid electricaly nonconductive surface, comprising:

impregnating a solid electrically nonconductive material with a reducible metal salt thereby forming a solid electrolyte material;

placing said solid electrolyte material between an anode and a cathode thereby forming an electrolytic cell;

immersing said cell in a container of distilled water maintained at a constant temperature; and

impressing a current across said electrodes of a potential sufficient to electrolyze said metal ions thereby resulting in the deposition of a metal layer along the surface of said electrolyte adjacent said cathode.

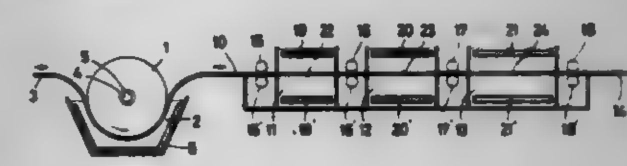
4,326,931
PROCESS FOR CONTINUOUS PRODUCTION OF POROUS METAL

Eiji Kamijo, Itami; Kazuhito Murakami, Osaka, and Katsuto Tani, Itami, all of Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Oct. 12, 1978, Ser. No. 950,618

Int. Cl.^{3} C25D *5/54, 7/06*

U.S. Cl. 204—22 — 5 Claims



1. A process for continuously plating a non-conductive porous tape, comprising the steps of:

treating said tape to render it electrically conductive,

moving said electrically conductive tape through an electrolytic bath in close contact with a moving cathode immersed in said bath to electrodeposit a layer of metal on the surface of said tape to increase the electrical conductivity of said tape, and

electroplating said tape having increased electrical conductivity in a plurality of electrolytic baths each having feed

rolls outside the bath for feeding said tape into the bath to electroplate said tape to a desired thickness.

4,326,932

HYDROGENATION

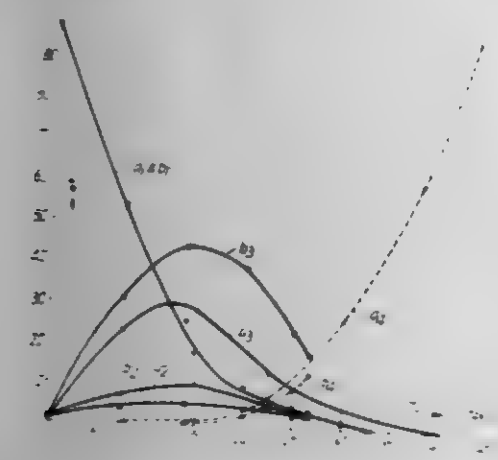
Albert Fröling, Vlaardingen; Rudolph O. de Jongh, The Hague, and Josephus M. A. Kemps, Udenhout, all of Netherlands, assignors to Lever Brothers Company, New York, N.Y.

Continuation of Ser. No. 866,147, Dec. 30, 1977, abandoned. This application Jan. 8, 1979, Ser. No. 2,048

Claims priority, application United Kingdom, Dec. 31, 1976, 54455/76

Int. Cl.^{3} C25B *3/04;* C11C *3/12*

U.S. Cl. 204—59 R 17 Claims



1. Process for the selective hydrogenation of a poly-unsaturated organic compound containing more than one double bond in a carbon chain or ring comprising hydrogenating said compound with hydrogen in the presence of a metallic hydrogenation catalyst chosen from the group consisting of palladium, platinum, rhodium, ruthenium and nickel, at a temperature of between −20° C. and 200° C. and under a pressure of between 1 and 25 atm., and applying an external electric potential differing from the equilibrium potential and having a value of between 0 V and −3 V as measured against a saturated calomel electrode, to the catalyst while it is in contact with a liquid chosen, which liquid contains 0.001 to 0.1 mole per liter of an electrolyte chosen from the group consisting of quaternary ammonium salts, sodium dodecyl-6-sulphonate, sodium acetate, sodium hydroxide and sodium methanolate.

4,326,933

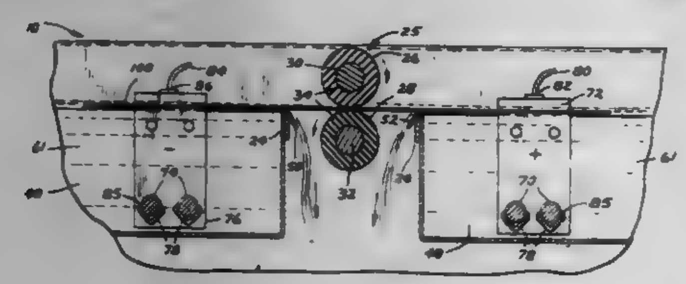
ELECTRO-CHEMICAL DEBURRING METHOD

Winston E. Sabatka, Lakeville, and Wilburn M. Bloomquist, Bloomington, both of Minn., assignors to Finishing Equipment, Inc., St. Paul, Minn.

Continuation-in-part of Ser. No. 896,465, Apr. 14, 1978, abandoned. This application May 9, 1979, Ser. No. 37,297

Int. Cl.^{3} C25F *3/02, 3/14*

U.S. Cl. 204—129.6 2 Claims



1. A method of removing burrs from flat sheet metal stampings including the steps of:

A. conveying a succession of spaced-apart horizontally disposed flat sheet metal stampings in a single horizontal plane between spaced pairs of vertially disposed horizontal rollers.

B. situating a vat having a horizontal top leading edge lip and a horizontal top trailing edge lip between each adjacent pair of rollers such that the lips are in line with and below the path of said stampings between the roller pairs, the space between adjacent vats being less than the linear dimension of the stampings in the direction the stampings are being conveyed.

C. providing an electrolyte bath for inundating at least the edges of said stampings while over said vats by delivering electrolyte to said vats at a rate such that the electrolyte overflows the vats and such that the uppermost surface of the electrolyte is maintained above the top surface of said stampings; and

D. providing an electro-chemical anodic action to remove any burrs on the stampings by providing electrodes in each vat and providing an electromotive force to each electrode such that the electrodes in every second vat are charged negatively with respect to the electrodes in the adjacent vats.

4,326,934

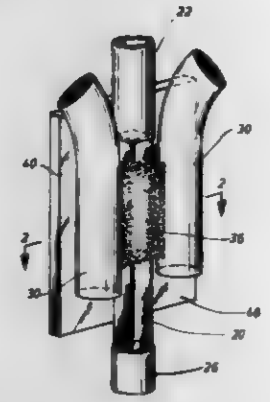
CONTINUOUS DIELECTROPHORETIC CELL CLASSIFICATION METHOD

Herbert A. Pohl, 515 Harned Ave., Stillwater, Okla. 74074

Filed Dec. 31, 1979, Ser. No. 108,709

Int. Cl.^{3} B01D *57/02*

U.S. Cl. 204—180 R 4 Claims



1. A method of classifying neutral biological particles based on the electrical polarization of said particles comprising,

generating a non-uniform electric field between a plurality of approximately isomotive electrodes in which r_{60} is not greater than about one millimeter, and

exposing a stream of said particles in a biologically non-toxic fluid medium to said non-uniform electric field by passing said stream of particles between said electrodes.

4,326,935

ELECTROCHEMICAL PROCESSES UTILIZING A LAYERED MEMBRANE

Karl Moeglich, Dunedin, Fla., assignor to Innova, Inc., Clearwater, Fla.

Division of Ser. No. 957,876, Nov. 6, 1978, Pat. No. 4,242,193. This application Jan. 10, 1980, Ser. No. 110,997

Int. Cl.^{3} B01D *57/02;* C25B *1/22;* C02F *1/46*

U.S. Cl. 204—180 P 13 Claims

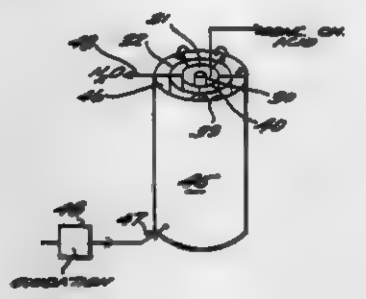
1. A method of concentrating hexavalent chromium utilizing an electrolysis system including a block of ion-transfer membrane material, means defining an electrode chamber in the block extending the length of the height of the block, and anode disposed in the electrode chamber in the block, and a cathode formed to allow liquid passage therethrough surrounding the membrane material block, with a casing surrounding the cathode, the method comprising the steps of:

passing chromium contaminated water into the casing, between the casing and the cathode;

effecting circulation of the chromium contaminated water around the periphery of the cathode, the water passing through the cathode into operative association with the membrane;

supplying DC current to the anode and cathode to effect concentration of the hexavalent chromium from the chromium contaminated water in the chamber within the membrane; and

withdrawing relatively pure water from the casing and withdrawing concentrated chromic acid from the chamber within the membrane block.



4,326,936

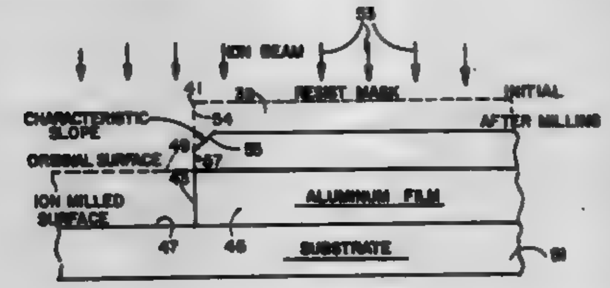
REPEATABLE METHOD FOR SLOPING WALLS OF THIN FILM MATERIAL

Addison B. Jones, Yorba Linda, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Oct. 14, 1980, Ser. No. 195,957

Int. Cl.^{3} C23C *15/00*

U.S. Cl. 204—192 E 1 Claim



1. The method of sloping walls of a thin film material on a substrate, which sloping is repeatable for the same material, comprising the steps of:

laying down a metallization resist mask of known material and thickness over the thin film material;

patterning the resist;

impinging ions at normal incidence against the thin film material and resist to slope the resist walls toward the thin film material by removing resist material;

predetermining the time interval required to slope said resist to said thin film material and said thin film material to said substrate;

continuing the ion impingement until the desired slope of thin film material to substrate is attained; and,

said predetermining of said time interval being determined in accordance with:

$$t_f = t_m + X\frac{\cos\theta_p}{R_{\theta_p}} \text{ and } X = t_f R_{\theta'}$$

where

t_f = milling time in minutes

X = thickness of thin film material in Å

$\cos\theta_p$ = cosine of the peak milling rate angle for the thin film material

R_{θ_p} = the milling rate at peak milling rate angle for the thin film material in Å/min

$$t_m = X_r\frac{\cos\theta_p'}{R'_{\theta_p}}$$

X_r = thickness of resist mask in Å

$\cos\theta_p'$—cosine of the peak milling rate angle for the resist material

R_{θ_p}' = the milling rate in Å/min. at peak milling rate angle for the resist material.

4,326,937

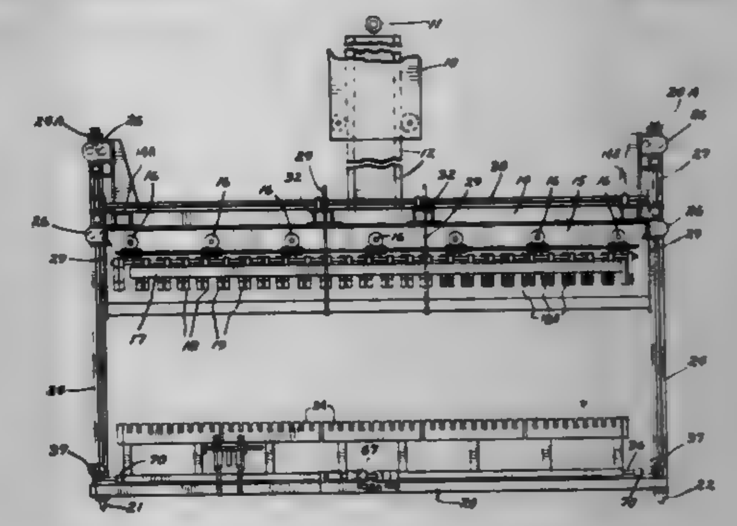
GRAB MECHANISM

Karl E. Neumeier, Stillwater, and Robert J. Sullivan, Crystal, both of Minn., assignors to PaR Systems Corp., St. Paul, Minn.

Filed Sep. 16, 1980, Ser. No. 187,750

Int. Cl.^{3} C25C *7/00, 7/06*

U.S. Cl. 204—198 15 Claims



1. A grab mechanism device for transporting a plurality of generally vertically oriented plates having lift lugs and which plates are supported in a holding container having a fixed positioning member mounted thereon comprising:

a load frame having a horizontal portion;

an aligner frame having a horizontal portion and a vertical portion, said horizontal portion having guide means for engaging the fixed positioning member and thereby mechanically aligning said aligner frame with said holding container, and said vertical portion being slidably mounted relative to said load frame;

a grab frame carried by said horizontal portion of said load frame and having grab means sized to engage the lift lugs of at least one of said plates, said grab means being controlled to selectively engage said lift lugs; and

means to permit lifting said load frame relative to said container.

4,326,938

PLANAR CARBON FIBER ELECTRODE STRUCTURE

Sankar Das Gupta; James K. Jacobs, and Samaresh Mohanta, all of Toronto, Canada, assignors to HSA Reactors Limited, Canada

Filed Dec. 3, 1979, Ser. No. 99,522

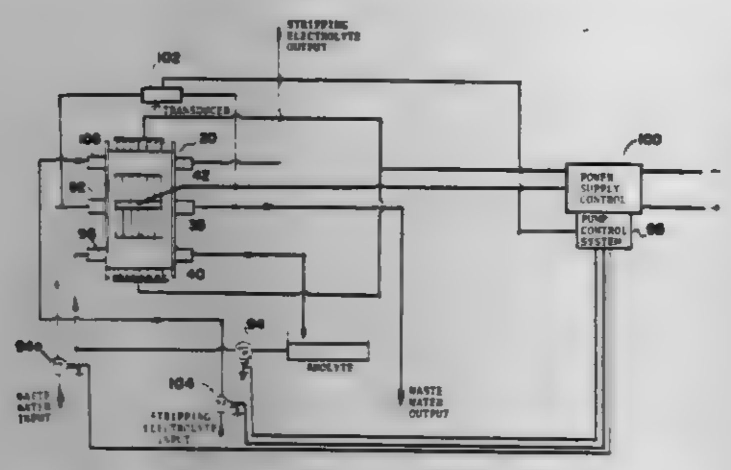
Claims priority, application Canada, Apr. 12, 1978, 317327

Int. Cl.^{3} C25B *11/02;* C02F *1/46;* H01M *4/00*

U.S. Cl. 204—228 32 Claims

1. An electrode comprising a secondary electrode component including a surface comprising a metal selected from the group consisting of titanium, tantalum, tungsten, niobium, hafnium, and alloys thereof, said secondary electrode component including a plurality of holes therethrough so as to permit a flow of electrolyte therethrough, electrical contact means in electrical contact with said secondary electrode component so

that outside electrical contact to said electrode is made through said secondary electrode component, a primary electrode component comprising a porous conductive material in electrical contact with said secondary electrode component, whereby said electrode is capable of alternating between act-



ing as a cathode and an anode by said secondary electrode component being conductive when said electrode is acting as a cathode, by becoming non-conductive when said electrode is acting as an anode, and by being capable of converting back to being conductive when said electrode is again acting as a cathode.

4,326,939

ANODE SUPPORT SYSTEM FOR A MOLTEN SALT ELECTROLYTIC CELL

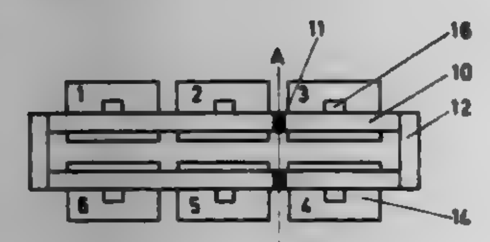
Wolfgang Schmidt-Hatting, Rüti/ZH, Switzerland, assignor to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Nov. 20, 1980, Ser. No. 208,697

Claims priority, application Switzerland, Dec. 3, 1979, 10704/79; Sep. 12, 1980, 6865/80

Int. Cl.³ C25C *7/02, 3/12, 3/16*

U.S. Cl. 204—228 **8 Claims**



1. An anode support system for supplying direct current to a molten salt electrolytic cell wherein a fraction of the total current supplied is fed to each end of the anode support system comprising at least two horizontal anode beams for supporting a plurality of anodes, at least two conductor plates for joining the ends of said at least two horizontal anode beams and at least two insulated joints provided at a location in said anode support system such that said anodes draw their normal current from the fraction supplied to each end of the anode support system whereby the metal wave in the cell is reduced without increasing the interpolar distance between the metal wave and the above lying anode.

4,326,940

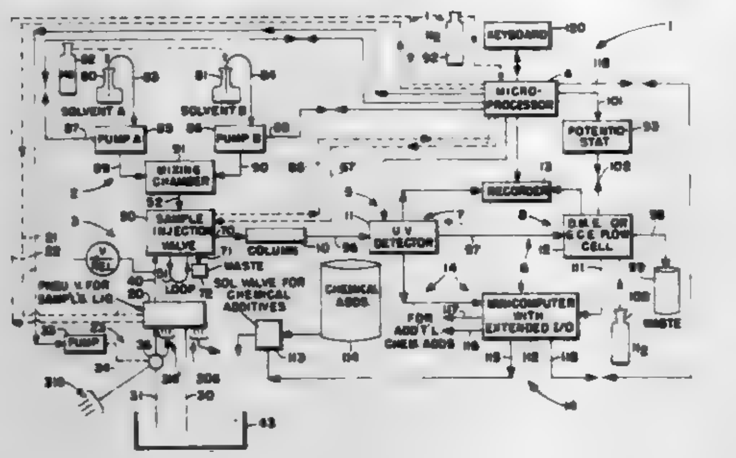
AUTOMATIC ANALYZER AND CONTROL SYSTEM FOR ELECTROPLATING BATHS

William E. Eckles; Craig V. Bishop, and Peter T. Vaitekunas, all of Cleveland, Ohio, assignors to ROHCO Incorporated, Cleveland, Ohio

Filed May 21, 1979, Ser. No. 40,505

Int. Cl.³ C25D *17/00, 21/14;* **G05B** *15/00;* **G01N** *35/00*

U.S. Cl. 204—232 **29 Claims**



17. An on-stream analyzer for electroplating baths, comprising supply means for supplying a plurality of streams of liquid, at least one from each of plural baths, selecting means for selecting one stream of liquid at a time from said supply means for analysis, separating means for passing such sample therethrough while retarding the passage of at least one of the components of such sample relative to passage of another component of such sample, and detector means for detecting the concentration of at least one component in a sample of such selected stream, said detector means including first detector means downstream of said separating means for detecting the concentration of at least one component in such sample, and second detector means fluidically downstream of said first detector means for detecting the concentration of at least another component in such sample.

27. The analyzer of claim 17, further comprising parameter control means responsive to the concentration information detected by said detector means for controlling a parameter of the bath from which the analyzed sample was derived.

4,326,941

ELECTROLYTIC CELL

Sture Westerlund, Sundsvall, Sweden, assignor to KemaNord AB, Stockholm, Sweden

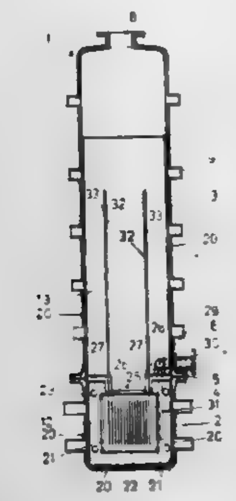
Filed Jun. 23, 1980, Ser. No. 162,258

Claims priority, application Sweden, Jun. 27, 1979, 7905619

Int. Cl.³ C25B *9/00*

U.S. Cl. 204—268 **10 Claims**

1. An electrolytic cell, including a cell housing with side walls, bottom and top, two terminal electrodes, each having a vertical base plate, one side of which having electrical connections and the other side of which being provided with a number of vertical electrode plates extending essentially at right angles to the base plate, said two terminal electrodes being arranged in the cell housing with their base plates parallel and with their electrode plates at right angles thereto, at least one bipolar electrode having a vertical base plate, both sides of which having a plurality of vertical electrode plates extending outwardly at essentially right angles to the base plate, each bipolar electrode being arranged in the cell housing between said terminal electrodes and with the base plates of each bipolar electrodes parallel with the base plates of the terminal electrodes, and being positioned in such a manner that the electrode plates of adjacent electrodes are interleaved between each other to form between the base plates a number of serially connected individual cell units, partition walls extending outwardly from the base plates of the bipolar electrodes in the same plate thereof in a sealing manner and extending to the bottom and sides of the housing as well as upwardly towards the top of the housing, whereby a free space is present between the bottom of the housing and the electrode plates, a free space is present at least between one of the sides of the housing and



the electrode plates and a free space is present in the housing above the electrode plates, which latter space above is larger than said other free spaces and a plurality of spacers extending between the partition walls and being attached to the partition walls for fixation of the partition walls and the base plates in parallel arrangement and at a stable mutual distance.

4,326,942

DEVICE FOR ELECTROLYZING METALS

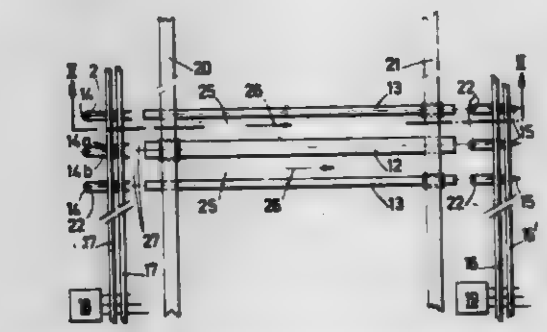
René Winand, Rixensart, Belgium, assignor to "Metallurgie Hoboken - Overpelt", Brussels, Belgium

Filed Jul. 1, 1980, Ser. No. 165,094

Claims priority, application Luxembourg, Jul. 2, 1979, 81446

Int. Cl.³ C25C *7/00, 7/02*

U.S. Cl. 204—275 **10 Claims**



1. An apparatus for electrolyzing and electrorefining metals under high current density, said device comprising an electrolysis cell inside of which is mounted at least one pair of electrode plates in substantially parallel spaced relationship forming a channel therebetween, one of said plates being connected to an anodic current supply said electrodes thereby forming an anode-cathode unit; said cell further having an inlet and an outlet pipe with an electrolytic flow therein; said cell further comprising guide means provided within the electrolytic flow upstream to the electrodes, said guide means and electrodes being movable relative to one another in such a manner as to maintain the guide means as an extension of the surface of said electrodes, so as to generally extend the channel formed therebetween.

4,326,943

ELECTRODE IN WATER ELECTROLYSIS

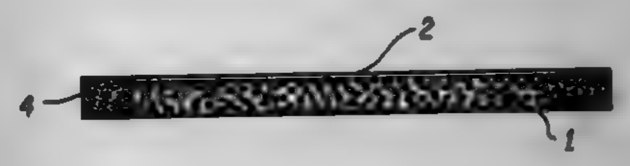
Robert Bänziger, Wettinghen; Roland Isenschmid, Veltheim; Anton Menth, Nussbaumen; René Müller, Fislisbach, and Samuel Stucki, Baden, all of Switzerland, assignors to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Filed Jun. 25, 1980, Ser. No. 162,955

Claims priority, application Switzerland, Jun. 29, 1979, 6083/79

Int. Cl.³ C25B *11/02, 11/08, 11/10, 1/00*

U.S. Cl. 204—290 F **8 Claims**



1. An electrode for the electrolysis of water comprising a porous sinter plate of titanium or a titanium alloy having on one surface a coating of a finely particulate catalyst consisting essentially of a mixture of ruthenium oxide and iridium oxide; wherein said electrode has at its outer margin a dense, non-porous zone having a smooth appearance wherein the pores in said zone are filled by impregnation with a suitable impregnating substance.

4,326,944

RAPID HYDROPYROLYSIS OF CARBONACEOUS SOLIDS

James S. Meyer, Naperville; Ken K. Robinson, St. Charles; John M. Forgac, Elmhurst, and David F. Tatterson, Downers Grove, all of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Apr. 14, 1980, Ser. No. 140,171

Int. Cl.³ C10G *1/06*

U.S. Cl. 208—8 R **22 Claims**

1. A process for treating crushed solid carbonaceous material to obtain therefrom liquid and gaseous products, comprising:

subjecting the carbonaceous material in a stream of carrier gas to a first pressure in the range of from about 1 atmosphere to about 680 atmospheres, at a first temperature of from about ambient up to the decomposition temperature of the carbonaceous material, the carbonaceous material having a particle size in the range of from about 1 micron up to about 1 millimeter in the largest dimension;

reducing substantially in a single step the pressure on the stream of carbonaceous material from the first pressure to a second pressure in the range of from about sub-atmospheric to about 272 atmospheres, the ratio of the first pressure to the second pressure being at least about 1.6, thereby accelerating the carrier gas in the stream of carbonaceous material to at least a sonic velocity;

permitting the accelerated stream of carbonaceous material to expand as a free jet and mixing hot gas with the accelerated and expanded stream of carbonaceous material to raise the temperature of the carbonaceous material by heat exchange with the hot gas, to a second temperature in the range of the decomposition temperature to about 2204° C., and thereby initiating decomposition of the carbonaceous material to form a reaction mixture containing liquids and gases; and

reducing the temperature of the reaction mixture to below the decomposition temperature, with the total time for heating the carbonaceous material from the first temperature to the second temperature, decomposing the carbonaceous material and cooling the reaction mixture to below the decomposition temperature being in the range of from about 1 millisecond to about 10 seconds.

4,326,945

COAL LIQUEFACTION PROCESS

John F. Flagg, East Sandwich, Mass.; Russell W. Johnson, Villa Park, and John G. Gatsis, Des Plaines, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed Oct. 8, 1980, Ser. No. 195,047

Int. Cl.³ C10G *1/00*

U.S. Cl. 208—8 LE 16 Claims

1. A process for the liquefaction of coal which comprises:

(a) subjecting coal particles to electromagnetic wave energy artificially externally supplied and having wavelengths of from about 0.001 to about 100 Å; and

(b) subjecting the resulting coal particles to coal liquefaction conditions including a temperature from about 32° F. to about 900° F. and a pressure from one atmosphere to about 10,000 psig sufficient to convert at least about 50% by weight of the M.A.F. coal into normally liquid products.

4,326,946

PROCESS FOR MANUFACTURE OF SOLVENT FOR COAL LIQUEFACTION

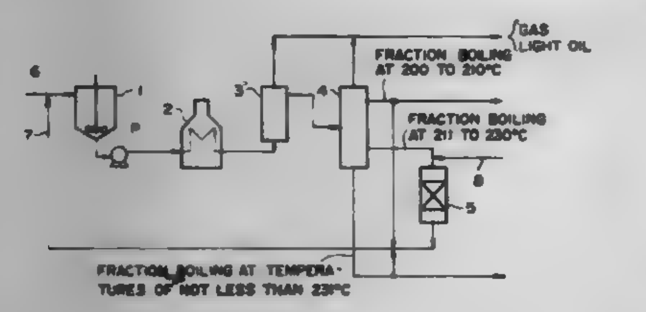
Tsukasa Chikata; Yoshihiko Sunami; Keiichi Sasaki, and Kunihiko Nishioka, all of Amagasaki, Japan, assignors to Sumitomo Metal Industries Ltd., Osaka, Japan

Filed Jun. 9, 1980, Ser. No. 157,837

Claims priority, application Japan, Jun. 12, 1979, 54-74441; Feb. 21, 1980, 55-21277

Int. Cl.³ C10G *7/00, 1/04*

U.S. Cl. 208—93 2 Claims



1. A process for the production of a solvent for use in the liquefaction of coal comprising the steps of (a) substantially separating the liquid product of coal liquefaction into a first fraction boiling at 200° to 210° C., a second fraction boiling at 211° to 230° C. and a third fraction boiling at temperatures of not less than 231° C., subjecting said second fraction to a hydrogenation treatment, (c) mixing the product of the hydrogenation treatment with at least part of said first fraction to form a resultant mixture, and (d) mixing not less than 50% of said resultant mixture from step (c) with not more than 50% of said third fraction to form the solvent.

4,326,947

HYDROCRACKING OVER ALUMINA-ALUMINUM FLUOROPHOSPHATE-CONTAINING CATALYSTS

Willard H. Sawyer, Baton Rouge, and Neville L. Cull, Baker, both of La., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Division of Ser. No. 66,940, Aug. 16, 1979, Pat. No. 4,277,373. This application Dec. 8, 1980, Ser. No. 213,921

Int. Cl.³ C10G *45/12, 47/08*

U.S. Cl. 208—111 14 Claims

1. A hydroprocessing process which comprises contacting a hydrocarbonaceous feedstock in the presence of hydrogen at hydroprocessing conditions with a catalyst comprising a hydrogenation component selected from the group consisting of Group VIB metal component, Group VIII metal component and mixtures thereof of the Periodic Table of Elements, composited with an ultrastable Y-type crystalline aluminosilicate zeolite having a unit cell size less than 24.5 Angstroms, and an alumina-aluminum fluorophosphate, said ultrastable Y-type crystalline aluminosilicate being substantially free of rare earth metals.

4,326,948

COAL LIQUEFACTION

Hyung K. Zang, Hopewell Junction, N.Y., assignor to Texaco Inc., White Plains, N.Y.

Filed Aug. 18, 1980, Ser. No. 179,377

Int. Cl.³ C10G *21/00, 29/20*

U.S. Cl. 208—177 10 Claims

1. A process for the production of a coal liquefaction product of reduced solids content which comprises subjecting coal to liquefaction treatment, mixing the liquefaction zone effluent containing undissolved solid particles with water and a hydrocarbon separation promoter and separating the mixture into an upper layer containing coal liquefaction product and separation promoter, an intermediate aqueous layer and a lower layer containing undissolved solid particles.

4,326,949

OXYGEN ALKYLATION OF PHENOL-CONTAINING HYDROCARBONACEOUS STREAMS

Richard H. Schlosberg, New Providence, N.J., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Oct. 24, 1980, Ser. No. 200,515

Int. Cl.³ C07C *37/68*; C10G *17/00*

U.S. Cl. 208—263 38 Claims

20. A method for separating phenols from a phenol-containing hydrocarbonaceous stream and converting the phenols to ethers, the method which comprises:

(a) contacting the phenol-containing stream with one or more oxides and/or hydroxides of multivalent metals capable of forming hydroxy metal phenates with the phenols of the stream, and wherein the contacting is performed at temperatures lower than the decomposition temperature of the hydroxy metal phenates;

(b) separating the hydroxy metal phenates from the stream; and

(c) reacting the hydroxy metal phenates with a quaternary compound represented by the formula $R_3R'MOR''$ or $R_3R'MX$ where each R is the same or different group selected from the C_1 to about C_{20} alkyl, aryl, acyl, arylalkyl, alkylaryl, ether and ester groups, sulfide, amine and heteroatoms of silicon, selenium or a metal selected from Groups I and II of the Periodic Table of the Elements; R' is a C_1 to C_4 alkyl group; M is selected from Group VA of the Periodic Table of the Elements; R'' is hydrogen, or a C_1 to about C_{20} alkyl, aryl, arylalkyl, alkylaryl group; and X is a halide selected from the group consisting of iodine, bromine or chlorine.

4,326,950

PROCESS FOR SEPARATING OIL SHALE WASTE MATERIAL

Brij M. Moudgil, Gainsville, Fla., and David F. Messenger, Pomona, Calif., assignors to Occidental Research Corporation, Irvine, Calif.

Continuation-in-part of Ser. No. 897,739, Apr. 19, 1978, Pat. No. 4,169,045. This application May 7, 1979, Ser. No. 36,637

The portion of the term of this patent subsequent to Sep. 25, 1996, has been disclaimed.

Int. Cl.³ B07C *5/02*

U.S. Cl. 209—3.3 10 Claims

1. A process for the separation of oil shale from a run of mine (ROM) oil shale containing particles of oil shale and refuse, the process comprising the steps of:

(a) conditioning the ROM oil shale by contacting the ROM oil shale with a coupling agent capable of selectively coating the carbonaceous matter in the particulate oil shale to the substantial exclusion of coating refuse, which coupling agent comprises at least one alcohol containing from about 6 to about 22 carbon atoms, and at least one member selected from the group consisting of a ketone and a carboxylic acid containing from about 5 to about 28 carbon atoms;

(b) combining a coloring agent with the coating of coupling agent in a quantity sufficient to make the coated oil shale particles distinguishable from the substantially non-coated refuse particles; and

(c) separating coloring agent and coupling agent coated oil shale particles from substantially non-coloring-agent and non-coupling-agent coated refuse particles.

4,326,951

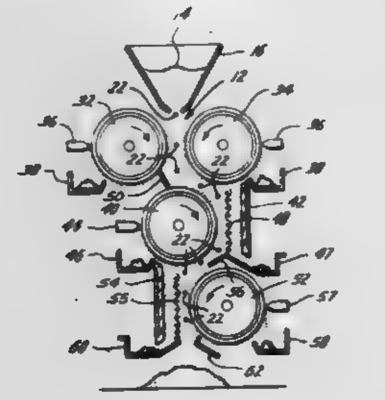
ELECTROSTATIC MINERAL CONCENTRATOR

Frank J. Broz, 8204 Easter Cove, Austin, Tex. 78758

Filed Mar. 17, 1980, Ser. No. 131,007

Int. Cl.³ B03C *7/10*

U.S. Cl. 209—127 R 5 Claims



1. Apparatus for electrostatically concentrating non-magnetic mineral particles comprising:

(a) at least one pair of oppositely charged collector electrodes spaced apart from each other and oriented so that a flow path is formed between them where material containing non-magnetic mineral particles can fall by gravity through at least a major portion of the flow path and the non-magnetic mineral particles will be charged and attracted to the electrodes, the collector electrodes each including a collector surface formed of dielectric material which together define at least a substantial portion of the flow path;

(b) ionizing means located midway between the collector electrodes for charging mineral particles at a plurality of locations spaced apart along the flow path;

(c) means for deflecting the mineral particles provided at a plurality of locations along the flow path so that the particles are periodically deflected from a straight-line path as they fall by gravity through the flow path;

(d) means for supplying electrical energy to the electrodes and ionizing means;

(e) means for introducing the material containing mineral particles at an upper portion of the flow path;

(f) means for removing collected particles from the collector electrodes; and

(g) the flow path including a first stage defined between a pair of revolving collector electrode drums spaced apart from each other, and a plurality of succeeding stages each defined between a revolving collector electrode drum on one side and a vertical plate on the other side.

4,326,952

PRECIOUS METAL RECOVERY APPARATUS

Gene J. Blake, 635 S. Cleveland, Arlington Heights, Ill. 60005

Filed Jun. 30, 1980, Ser. No. 164,232

Int. Cl.³ B01D *21/08*

U.S. Cl. 210—85 11 Claims

10. An apparatus for recovering precious metal particles from a liquid mixture environment in a vacuum evacuation system, said apparatus comprising:

apparatus enclosure means defining a sealed chamber into which said liquid mixture flows;

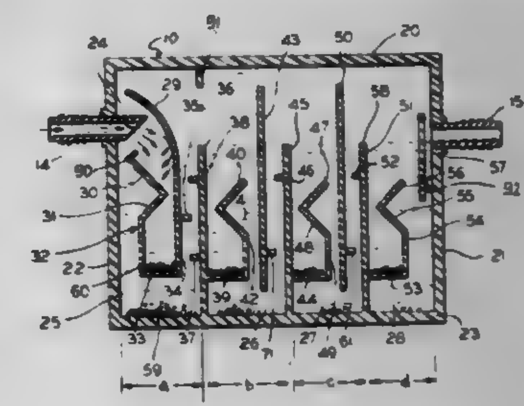
mixture input means at a first end of said chamber for directing said liquid mixture into said apparatus enclosure means;

a plurality of baffled compartment means operably disposed within said sealed chamber arranged in succession along the longitudinal axis of said apparatus enclosure means;

each of said plurality of baffled compartment means spanning the width of said enclosure means and cooperating with one another to describe a liquid mixture flow path along said longitudinal axis;

each of said plurality of baffled compartment means further including means for jogging and skimming said precious metal particles from said liquid mixture as said mixture flows through said apparatus along said flow path to promote the segregation and settling of said particles from said liquid to one or more desired regions within said sealed chamber;

flow output means at a second end of said chamber opposite



said first end for directing segregated liquid, devoid of its precious metal particles from said sealed chamber for disposal thereof as directed by said vacuum in said evacuation system;

one or more of said plurality of baffle compartment means comprising a substantially U-shaped particle entrapment region into which said liquid mixture is introduced;

an elevated standard under which said liquid mixture passes as it proceeds along said mixture flow path towards the U-shaped particle entrapment area of the next succeeding compartment;

skimming standard means over which said fluid mixture cascades to further ferret and segregate said particles of precious metal from said liquid mixture as it flows along said mixture flow path;

said skimming means further including a returning throat portion proximate to the upper portion of one or more of said U-shaped entrapment regions for more effectively accumulating particles within the entrapment region itself;

said throat returning inwardly to restrict the opening into said U-shaped region and turning outwardly thereafter to permit renewed flow of said liquid mixture along said flow path.

4,326,953

DEVICE FOR REMOVING CONTAMINATING PARTICLES FROM LUBRICATING OIL

Richard A. Gibby, 37 Willshire Dr., Tinton Falls, N.J. 07224, and Stanley B. Potter, 4 Ellen Ct., Wayside, N.J. 07712

Filed May 27, 1980, Ser. No. 153,087

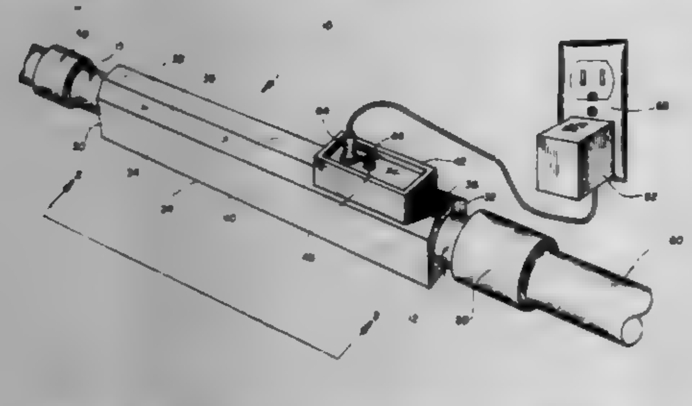
Int. Cl.³ F01M *1/10*

U.S. Cl. 210—168 11 Claims

1. A device for removing contaminating particles from lubricating oil in the lubricating system of a machine having a circulating oil line comprising:

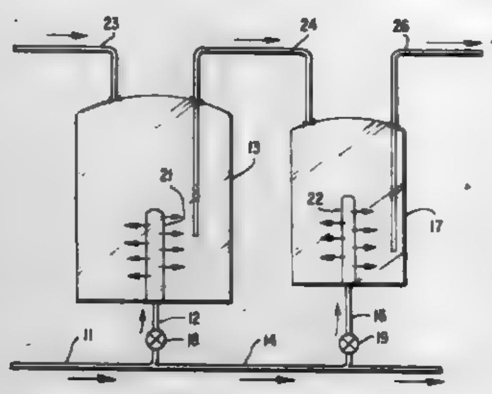
(a) a pressure tight casing forming an upper active chamber and a lower quiescent chamber;
(b) a foraminous partition between said chambers having a plurality of vertically extending passageways communicating at their upper ends with the active chamber and at their lower ends with said quiescent chamber;
(c) an oil pipe in said active chamber having an exposed inlet end and an exposed outlet end adapted to be secured in the oil line of said machine;
(d) means between said ends reducing the cross-section of the passageway through said pipe;
(e) inlet means for passing oil from said pipe upstream from said cross-section reducing means horizontally into said chamber;
(f) outlet means for passing oil into said pipe downstream from said cross-section reducing means after removal horizontally from said chamber;
(g) said active chamber providing an unobstructed path for horizontal laminar flow of oil from said inlet means to said outlet means; and
(h) means for selectively withdrawing particle-laden oil from said quiescent chamber.

4,326,954
FLUID TREATING APPARATUS
Larry L. Shroyer, Union City, Mich., assignor to Ener-Tec, Inc., Orland, Ind.
Filed Dec. 26, 1979, Ser. No. 107,053
Int. Cl.³ C02F *1/46*; B01D *35/06*
U.S. Cl. 210—222 **6 Claims**



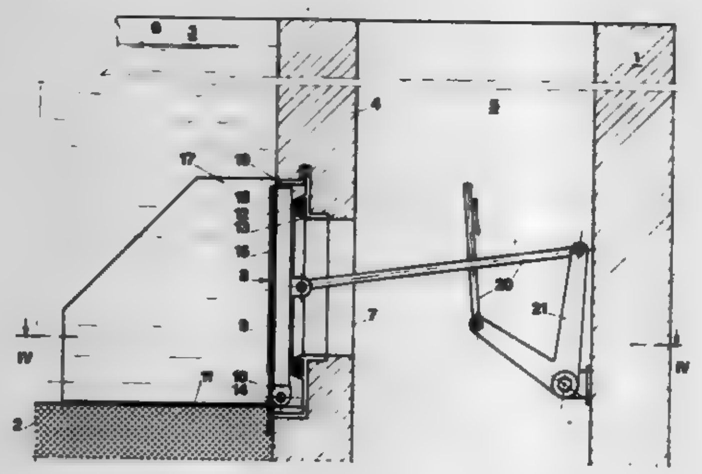
1. A fluid treating apparatus comprising an elongated tube of non-magnetic material having opposite ends and an interior passageway, said passageway extending between said opposite tube ends and being totally free of obstructions and restrictions to fluid flow therethrough, an insulated magnet wire wound around said tube into a closely packed and multilayered helical winding extending from adjacent to one of said tube ends to adjacent to the other of said tube ends, a protective covering of electrically insulating material extending over said winding and a portion of said tube on both sides of said winding between said winding and said one and other tube ends, respectively, a voltage source connector embedded in said insulating material, said connector being connected across the opposite ends of said wire, said protective covering encapsulating the connections between said voltage source connector and said wire, an AC/DC rectifier having a connector attached thereto,—said rectifier connector being joined in electrical communication with said voltage source connector, said rectifier being adapted to be connected to an AC voltage source.

4,326,955
HEMODIALYSIS WITH SODIUM BICARBONATE DIALYSATE PREPARED IN PLURAL STAGES
Albert L. Babb, and Belding H. Scribner, both of Seattle, Wash., assignors to Diachem, Inc., Arlington Heights, Ill.
Continuation-in-part of Ser. No. 48,575, Jun. 14, 1979, abandoned. This application Nov. 24, 1980, Ser. No. 209,742
Int. Cl.³ B01D *13/00*
U.S. Cl. 210—638 **11 Claims**



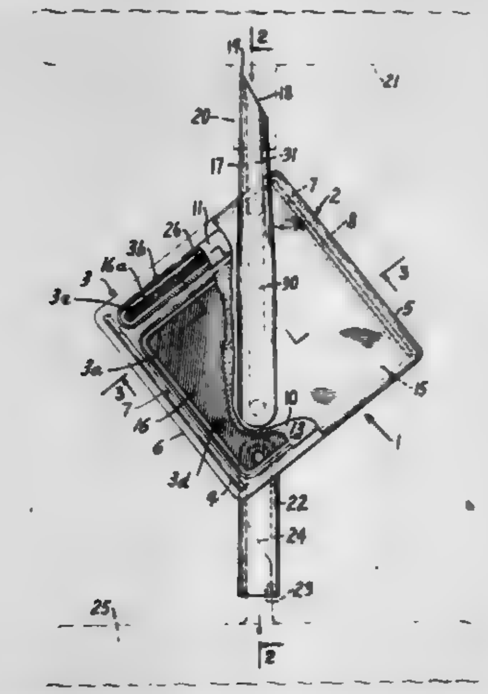
1. In a dialysis process in which blood is withdrawn from a patient, passed over one surface of a semipermeable membrane and returned to the patient in a purified state while an aqueous dialysate fluid containing dissolved sodium salts including sodium bicarbonate is passed over the opposite surface of said membrane, the improvement wherein said sodium bicarbonate is generated just prior to said passage over said membrane surface by the interaction of a stream of an aqueous solution containing dissolved sodium carbonate and a stream of an aqueous solution containing a dissolved acid of the group consisting of hydrochloric acid, acetic acid and mixtures thereof, said streams interacting in a first stage in which a stoichiometric excess of acid is provided and in at least one additional stage in which additional aqueous sodium carbonate solution is provided.

4,326,956
BACKWASHABLE FILTER SYSTEM
Otto Muller, Zurich, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland
Filed Oct. 6, 1980, Ser. No. 194,478
Claims priority, application Switzerland, Nov. 5, 1979, 9900/79
Int. Cl.³ B01D *23/24*
U.S. Cl. 210—*277* **8 Claims**



1. A backwashable filter system comprising
a basin defining an excess head chamber and a sludge water discharge channel and having a wall separating said excess head chamber from said channel and an opening in said wall between said chamber and said channel;
at least one granular filter bed in said basin below said chamber, said bed having an upper surface in a plane below said opening;
a valve selectively closing said opening, said valve having a lid pivotally mounted on an axis extending at least substantially in said plane and along a bottom of said lid for pivoting between a position within said wall near said excess head chamber and in front of said opening and a position spaced from said wall; and
means for sealing said lid laterally relative to said wall during movement of said lid from said opening to prevent lateral outflow of sludge water.

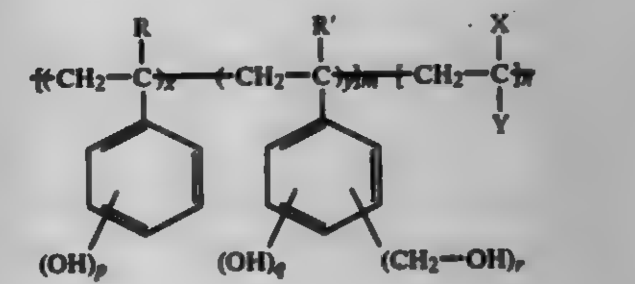
4,326,957
VENTED FILTER SPIGOT FOR INTRAVENOUS LIQUID ADMINISTRATION APPARATUS
David J. Rosenberg, Glen Cove, N.Y., assignor to Pall Corporation, Glen Cove, N.Y.
Continuation-in-part of Ser. No. 926,766, Jul. 21, 1978, Pat. No. 4,177,149. This application Feb. 2, 1979, Ser. No. 8,659
Int. Cl.³ B01D *35/02, 19/00*
U.S. Cl. 210—436 **12 Claims**



1. A vented filter spigot for gravity feed intravenous liquid administration, comprising a filter spigot housing; a filter chamber in the housing; an inlet and an outlet in the housing, the housing being arranged to have the inlet oriented up and the outlet oriented down when installed for liquid feed from a liquid supply for intravenous administration; the inlet being shaped for attachment to a supply of liquid in a rigid-walled container for intraváneous administration, and the outlet being shaped for attachment to an intravenous liquid administration apparatus; a liquid-permeable filter that is gas-impermeable when filled with liquid disposed in the filter chamber in a manner so as to extend generally vertically when the inlet is oriented up, and across the line of fluid flow through the chamber from the inlet to the outlet so that all through flow must pass through the filter; and dividing the chamber into two generally vertically-extending portions, one upstream and one downstream of the filter; a vent in an uppermost portion of the housing when the inlet is oriented up in flow communication with the upstream portion of the filter chamber; and a liquid-impermeable gas-permeable filter disposed across the line of flow through the vent, so that all vent flow must pass through the filter, the filter restricting such flow to gas to which it is permeable; first and second passages in the housing putting the inlet into fluid flow communication with the filter chamber, the first passage opening into an upper part of the upstream portion of the filter chamber, and the second passage being longer than the first and opening into a lower part of the upstream portion of the filter chamber; whereby outflow of liquid via the filter chamber through the outlet aspirates air via the vent, liquid-impermeable gas-permeable filter and first passage into the container holding the supply of liquid, and makes it possible to maintain liquid flow from the container via the second passage to the outlet.

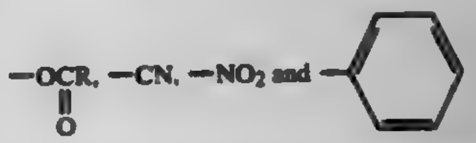
4,326,958
PERMSELECTIVE MEMBRANE
Hiroshi Kawahara, and Tetsuro Yasuda, both of Yokohama, Japan, assignors to Asahi Glass Company, Ltd., Tokyo, Japan
Filed Aug. 4, 1980, Ser. No. 174,563
Claims priority, application Japan, Aug. 22, 1979, 54/105973
Int. Cl.³ B01D *31/00*
U.S. Cl. 210—500.2 **10 Claims**

1. A permselective membrane which is obtained by fabricating and crosslinking a methylolated vinylphenol polymer having repeat units having the formula



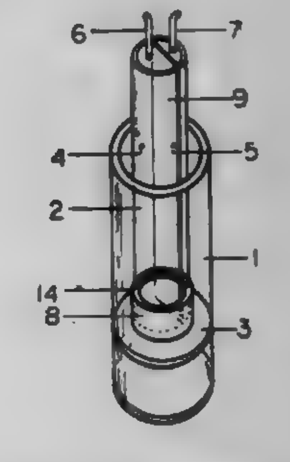
(I)

wherein p, q and r are respectively 1 or 2; x and y are respectively selected so as to give a ratio of methylol groups/hydroxy groups of from 0.01 to 2.0; m and n are respectively integers to provide $1 \geq m/m+n \geq 0.2$; and X and Y are selected from the group consisting of —R″, —Cl, —Br, —CO_2R'',



so as to copolymerize a vinyl monomer $CH_2{=}CXY$ with a vinylphenol; and R, R′ and R″ represent hydrogen atom or a C_1–C_4 alkyl group.

4,326,959
BLOOD SEPARATOR AND DISPENSER
Louis T. Ferrara, 2968 Ave. T, Brooklyn, N.Y. 11229
Filed Feb. 4, 1981, Ser. No. 231,490
Int. Cl.³ B01D *21/26*
U.S. Cl. 210—515 **4 Claims**



1. A blood separating device adapted for use with a blood centrifuge tube, said blood separating device comprising:
an elongated rotatable tubular member having a first open end and second end, said second end being closed except for two radially spaced openings, said tubular member having an outer diameter less than the inner diameter of said blood centrifuge tube; partitioning means to longitu-

dinally partition said tubular member into a first compartment and a second compartment, one of said radially spaced opening in said second end communicating with said first compartment, and the other radially spaced opening in said second end communicating with said second compartment;

first vent means located on the circumferential wall of the tubular member and communicating with said first compartment, for venting air therefrom;

second vent means located on the circumferential wall and diametrically opposed from said first vent means, and communicating with said second compartment, for venting air therefrom,

first dispensing means communicating with said first compartment at the first end of said tubular member, for dispensing drops from said first compartment;

second dispensing means communicating with said second compartment at the first end of said tubular member, for dispensing drops from said second compartment, said first and second dispensing means being constructed and arranged to enable dispensing from only one of said first or second compartment at a time;

resilient element means fitted in sealing relationship with the second end of said tubular member, and having a first orifice capable of being brought into communication with said one radially spaced opening in said second end, and a second orifice capable of being brought into communication with said other radially spaced opening in said second end, said resilient element means comprising flange means constructed and arranged to sealingly engage with the inner wall of said blood centrifuge tube, said tubular member further comprising a circumferential groove, said resilient means further comprising a notch cooperating with said circumferential groove such that rotation of said tubular member only enables communications of either said one radially spaced opening with said first orifice or said other radially spaced opening with said second orifice.

4,326,960

TUBULAR PERMSELECTIVE MEMBRANE MODULE AND METHOD

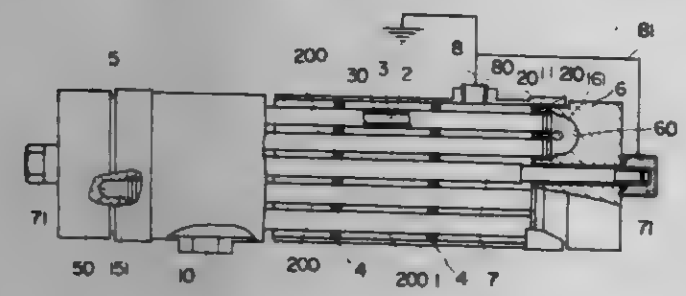
Hiroshi Iwahori, and Shigetoshi Matsumoto, both of Ibaraki, Japan, assignors to Nitto Electric Industrial Company Ltd., Osaka, Japan

Filed Aug. 14, 1980, Ser. No. 177,843

Claims priority, application Japan, Aug. 14, 1979, 54-103780

Int. Cl.³ B01D *13/00, 31/00*

U.S. Cl. 210—650 **16 Claims**



1. A tubular permselective membrane module for use in the concentration of solutions of solutes in non-conductive and inflammable organic solvents, the module of which comprises:

(1) a membrane assembly, said membrane being resistant to said organic solvents and being a reverse osmosis membrane, an ultrafiltration membrane or a microfiltration membrane,

(2) an electrically conductive support tube supporting said membrane assembly therein; the wall of said support tube being constructed with spaced perforations,

(3) an electrically conductive cylindrical case enclosing said support tube therein and having a permeate port,

(4) an electrically conductive spacer maintaining the space between said support tube and said case,

(5) electrically conductive headers sealing the ends of said case in a solution-tight engagement by means of packing materials; one of said headers having at least one of an entry port for feed-solution connected to one end of said support tube and an exit port for the treated solution connected to the other end of said support tube,

(6) an electrically conductive stay-bolt locking said case and said headers by means of nuts, and

(7) a grounding means for grounding said support tube through electrically conductive elements of said module.

4,326,961

MAGNESIUM ALUMINATE ANION EXCHANGERS

John M. Lee, and William C. Baumann, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 71,920, Aug. 31, 1979, Pat. No. 4,243,555, which is a division of Ser. No. 939,544, Sep. 5, 1978, Pat. No. 4,183,900, which is a division of Ser. No. 812,542, Jul. 5, 1977, Pat. No. 4,116,857. This application Sep. 4, 1980, Ser. No. 183,907

Int. Cl.³ B01J *41/02*

U.S. Cl. 210—683 **1 Claim**

1. A method for removing negative-valent ions or radicals from aqueous medium, said method comprising contacting said aqueous medium with crystalline $Mg(OH)_2 \cdot nAl(OH)_3 \cdot mH_2O$, where n is a value of from about 1 to about 2 and m is a value of zero or more,

thereby exchanging OH ions in the said crystalline material with the said negative-valent ions or radicals.

4,326,962

SULFUR-CONTAINING LIGNINS AS MAGNESIUM SULFITE TRI-HYDRATE DISPERSANTS

Robert L. Jones, Newtown; Lewis Volgenau, Ivyland, and Philip S. Davis, Furlong, all of Pa., assignors to Betz Laboratories, Inc., Trevose, Pa.

Filed Jul. 6, 1976, Ser. No. 702,634

Int. Cl.³ C02F *5/10*

U.S. Cl. 210—698 **6 Claims**

1. A method for dispersing magnesium sulfite trihydrate contained in an aqueous medium comprising adding to the medium an effective amount for the purpose as a dispersant of a lignosulfonate.

4,326,963

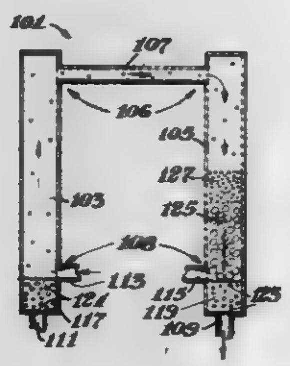
MULTIPLE BED FILTERING APPARATUS AND PROCESS

John D. Watson, Sr., and William C. Bauman, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Sep. 8, 1980, Ser. No. 184,680

Int. Cl.³ B01D *23/16, 23/24, 46/30*

U.S. Cl. 210—792 **10 Claims**



5. A method of filtering a solid from a fluid in a filter which comprises at least one hollow elongated section adapted to contain a fluid; a conduit adapted to pass a fluid into and out of the section; a movable bed of filtering particles located within the section and occupying a portion of the volume of the section; a means for flowing a solids-containing fluid into the section; and a means for flowing the fluid out of the section; said method comprising:

(a) flowing a solids-containing fluid into the section and through the movable bed of filtering particles wherein at least a portion of the solids are removed and form a precipitate on the movable bed of filtering particles; and

(b) mixing substantially all of the precipitate with the movable bed of filtering particles to distribute the precipitate throughout at least a portion of the movable bed of filtering particles;

(c) forming the precepitate-filtering particle mixture into a second movable bed of filtering particles; and

(d) repeating step (a).

4,326,964

GRANULAR FILTER MEDIUM

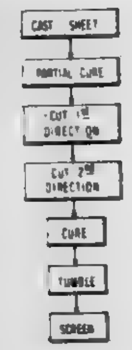
Gene Hirs, 8228 Goldie, Walled Lake, Mich. 48088

PCT No. PCT/US80/00353, § 371 Date Apr. 4, 1980, § 102(e) Date Apr. 4, 1980, PCT Pub. No. WO81/02844, PCT Pub. Date Oct. 15, 1981

Continuation-in-part of Ser. No. 23,469, Mar. 23, 1979, Pat. No. 4,197,208, and Ser. No. 23,470, Mar. 23, 1979, Pat. No. 4,197,205, which is a continuation-in-part of Ser. No. 879,296, Feb. 21, 1978, abandoned, and Ser. No. 801,702, May 31, 1977, abandoned, said Ser. No. 23,469, is a continuation-in-part of Ser. No. 879,281, Feb. 21, 1978, abandoned. This PCT application Apr. 4, 1980, Ser. No. 227,071

Int. Cl.³ B01D *23/24, 39/06*

U.S. Cl. 210—793 **7 Claims**



1. In a method of filtering contaminants from a liquid, the steps of:

flowing contaminated liquid through a deep bed filter consisting of vertically superimposed filter media layers where the uppermost layers consist of a plurality of layers of synthetic granules comprising hollow silica beads in a matrix of cured cement, said layers being superimposed in a reverse graded manner with the uppermost layer comprising the least dense particles having an effective size of approximately 0.050 inches, effective size being defined as an opening that will just pass 10% of the particles, the particles in each layer also having a uniformity coefficient of approximately 1.2 to 1.4 wherein the uniformity coefficient is defined as a number obtained by dividing the size opening which will pass 60% of the granules, if they were uniformly graded, by the sieve opening which will just pass 10% of the granules, if they were uniformly graded, these particles having a specific gravity in the range of 1.01 to about 1.40, and all of said granules being superimposed on a bottom filter media layer that is standard filter sand,

terminating the flow of contaminated liquid after the filter has become at least partially clogged by accumulated contaminants,

rejuvenating the deep bed filter by flowing backwash liquid upwards through the bed to expand all the different filter layers and to expand these layers substantially in situ but with considerable relative motion of one particle to the next to get a scrubbing action between particles so that it will facilitate the removal of accumulated contaminants,

reforming the bed with substantially distinct layers by reducing the backwash and then cutting it down entirely, so that the particles settle substantially the same as before backwash started.

4,326,965

LIQUID FABRIC-SOFTENING COMPOSITION

Alexander Lips, Birkenhead, and Stuart K. Pratley, Wirral, both of England, assignors to Levers Brothers Company, New York, N.Y.

Filed May 19, 1980, Ser. No. 150,828

Claims priority, application United Kingdom, May 21, 1979, 17531/79

Int. Cl.³ D06M *13/46, 15/16;* **C08K** *5/17;* **C08L** *5/02*

U.S. Cl. 252—8.8 **22 Claims**

1. An aqueous, liquid concentrated fabric-softening composition comprising from 25–75% by weight of an aqueous medium, from 15–60% by weight of a cationic softening agent which is a quaternary ammonium compound containing at least one C_{12}–C_{22} alkyl- or alkenyl group, said alkyl- or alkenyl group not being linked through an ester linkage, and from 4 to 25 by weight of a polymer, said polymer being water-soluble, having a viscosity (20% aqueous solution at 25° C. and 110 $sec.^{-1}$ in a Haake Viscometer) of 50 or less cP, having a vapor pressure (20% aqueous solution) equal to or lower than the vapor pressure of a 2% aqueous solution of polyethyleneglycol with a molecular weight of 6,000, said polymer having a molecular weight of at least 400.

4,326,966

AGENT FOR TEXTILE LIVENING WITH AN ANTISTATIC EFFECT AND FAVORABLE DERMATOLOGIC PROPERTIES

Jan Novak; Miloslav Soran; Karel Ulbert; Stanislav Nespurek, all of Prague; Dagmar Mikulcova, Nove Straseci, and Jiri Cmolik, Usti n/Labem, all of Czechoslovakia, assignors to Ceskoslovenska akademie ved, Prague, Czechoslovakia

Filed Jun. 12, 1980, Ser. No. 158,692

Claims priority, application Czechoslovakia, Jun. 20, 1979, 4255-79

Int. Cl.³ D06M *13/38*

U.S. Cl. 252—8.8 **2 Claims**

1. The textile livening agent with the antistatic effect and favourable dermatologic properties containing at least one additive selected from the group consisting of softening stabilizing, whitening, colouring, scenting and dermatologic additives and tensides and wherein the said agent contains 2–50 weight percent of 3-(hydroxyalkylamino)-2-hydroxypropyl esters of fatty acids of the general formula I

$$R—COO—CH_2—CH(OH)—CH_2—N(R_1R_2), \qquad I$$

where

R represents an alkyl or alkenyl group with 6–22 carbon atoms in the main chain,

R_1 is hydrogen, 2-hydroxyethyl, 3-hydroxypropyl, 1-hydroxy-2-propyl, 2-hydroxy-1-propyl, 1-hydroxy-2-butyl, 1-hydroxy-4-butyl, 1-hydroxy-3-butyl, or 2-hydroxy-3-butyl, and

R_2 represents the same substituent as R_1, except for hydrogen

the remainder to 100% by weight being water.

4,326,967

LIQUID FORMULATIONS FOR DEPOSITING PERFUMES ON FABRICS

James B. Melville, Merseyside, England, assignor to Lever Brothers Company, New York, N.Y.

PCT No. PCT/GB79/00190, § 371 Date Jun. 24, 1980, § 102(e) Date Jun. 24, 1980, PCT Pub. No. WO80/01075, PCT Pub. Date May 29, 1980

PCT Filed Nov. 16, 1979, Ser. No. 198,012

Int. Cl.[3] D06M *13/10*

U.S. Cl. 252—8.8 23 Claims

1. A liquid formulation for depositing perfumes on fabric surfaces, characterised in that the formulation comprises an aqueous base having:

(i) a first dispersed phase constituting from about 0.5% to about 50% by weight of the formulation and consisting of particles having an average size of from about 0.1 micron to about 200 micron, the particles comprising an intimate mixture of (a) from about 0.5% to about 50% by weight, based on the weight of the particles, of a perfume; and (b) from about 50% to about 99.5% by weight, based on the weight of the particles of a matrix comprising at least one water dispersible amine of the formula

$R—N\ R^1 \text{ and } R^2$

where R is an alkyl or alkenyl group having from 8 to 22 carbon atoms, R^1 is hydrogen or an alkyl or alkenyl group having 1 to 4 carbon atoms and R^2 is hydrogen or an alkyl, alkenyl or amino-alkyl group having from 1 to 22 carbon atoms; and

(ii) a second dispersed phase constituting from about 0.5% to about 30% by weight of the formulation and comprising a fabric conditioning agent, and in that the matrix contains no added cationic material.

4,326,968

METHOD FOR BREAKING PETROLEUM EMULSIONS AND THE LIKE USING MICELLAR SOLUTIONS OF THIN FILM SPREADING AGENTS COMPRISING POLYEPOXIDE CONDENSATES OF RESINOUS POLYALKYLENE OXIDE ADDUCTS AND POLYETHER POLYOLS

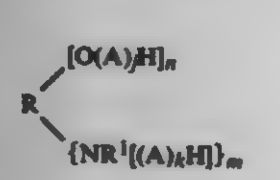
Charles M. Blair, Jr., Buena Park, Calif., assignor to Magna Corporation, Santa Fe Springs, Calif.

Filed Oct. 5, 1979, Ser. No. 82,348

Int. Cl.[3] B01D *17/04;* E21B *43/22, 43/24*

U.S. Cl. 252—8.55 D 55 Claims

1. A method for breaking petroleum emulsions of the water-in-oil type characterized by subjecting the emulsion to the action of a homogeneous micellar solution of a thin film spreading agent, said micellar solution comprising: (1) from between about 5% and about 75% by weight of a polyepoxide condensate of at least one of: (a) a polyalkylene oxide adduct of a fusible, water-insoluble organic aromatic hydrocarbon solvent-soluble synthetic resin, wherein said resin has from between about 4 to about 15 phenolic groups and is an alkyl or cycloaliphatic substituted phenol-aldehyde condensate of an ortho- or para-substituted phenol and an aldehyde, said condensate resin being thereafter further condensed with an alkylene oxide containing less than about five carbon atoms in an amount equal to at least one mole of alkylene oxide per phenolic moiety of said resin, the weight ratio of oxide to condensation product in a solvent-free state being between about 1-to-10 and about 10-to-1; and (b) a polyether polyol having the formula:



wherein:

A is an alkylene oxide group, $—C_iH_{2i}O—$;

O is oxygen;

i is a positive integer from 2 to about 10;

j is a positive integer no greater than about 100;

k is a positive integer no greater than about 100;

N is nitrogen;

R^1 is one of hydrogen, a monovalent hydrocarbon group containing less than about C_{11}, or $[A_LH]$;

L is a positive integer no greater than about 100;

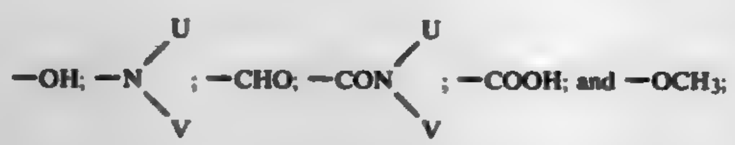
R is a hydrocarbon moiety of a polyol, a primary or secondary amine, a primary or secondary polyamine, a primary or secondary amino alcohol, or hydrogen; and

m+n is no greater than about 4 when R is other than hydrogen and one of m and n is zero and the other is unity when R is hydrogen, said polyepoxide being selected from the group consisting of the diglycidyl ether of dihydroxyphenyl-methyl methane and the lower polymers thereof, diisobutenyl dioxide, polyepoxypolyglycerols, epoxidized linseed oil and epoxidized polybutadiene,

said condensate, at about 25° C.: (A) having a solubility in water and isooctane of less than about 1%, by volume; (B) having a solubility parameter from between about 6.8 and about 8.5; and (C) spreading at the interface between white, refined mineral oil and distilled water to form a film having a calculated thickness no greater than about 20 Angstroms, at a spreading pressure of about 16 dynes per cm; (2) from between about 2% and about 30% by weight of a hydrotropic agent having one of the formulas:

$$X—Z \qquad \text{(A)}$$

wherein X is an alkyl, alicyclic, aromatic, alkylalicyclic, alkylaryl, arylalkyl, alicyclicalkyl, heterocyclic or substituted heterocyclic radical having 2 to 13 carbon atoms; and wherein Z is one of:

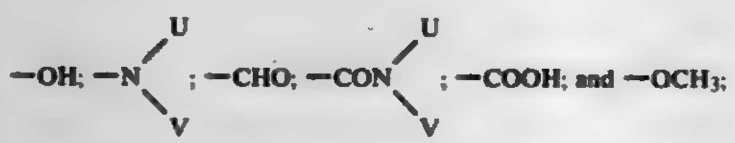


and U and V are hydrogen or hydrocarbon substituents;

$$—X—Y—R—(Z)_n \qquad \text{(B)}$$

wherein:

Z is one of

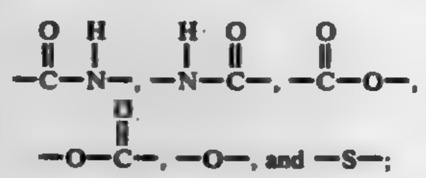


X is an alkyl, alicyclic, aromatic, alkylalicyclic, alkylaryl, arylalkyl, alicyclicalkyl, heterocyclic or substituted heterocyclic radical having 2 to 12 carbon atoms;

R is a member selected from the class consisting of, $—CH_2—$, $—C_2H_4—$, $C_3H_5\equiv$, $—C_3H_6$, and $—C_2H_4—O—C_2H_4—$;

n is either a one or two integer, the integer dependent upon the selection of R; U and V are hydrogen or hydrocarbon substituents, and

Y is a member selected from the class consisting of:



(3) from between about 2% and about 30% by weight of an amphipathic agent having at least one radical having from between about 10 and about 64 carbon atoms per molecule; and

(4) from between about 15% and about 90% by weight, water.

4,326,969

PROCESS FOR SECONDARY RECOVERY

Walter D. Hunter, Houston, Tex., assignor to Texaco Development Corp., White Plains, N.Y.

Continuation-in-part of Ser. No. 953,375, Oct. 23, 1978, abandoned. This application Apr. 21, 1980, Ser. No. 142,550

Int. Cl.[3] E21B *43/22, 43/25, 43/267*

U.S. Cl. 252—8.55 D 12 Claims

1. A process for recovering hydrocarbons from a subterranean hydrocarbon-bearing formation penetrated by an injection well and a production well which comprises;

(a) injecting into the formation via an injection well a drive fluid comprising water having dissolved therein about 0.05 to about 5 weight percent of a material of number average molecular weight from about 10,000 to about 2,000,000 selected from the group consisting of (I) polyacrylamide and (II) partially hydrolyzed polyacrylamide or the sodium, potassium or ammonium salt thereof and from about 0.01 to about 2.0 weight percent of a substance selected from the group consisting of (III) polyacrylamide and (IV) partially hydrolyzed polyacrylamide or the sodium, potassium or ammonium salt thereof alkoxylated with about 2 to about 100 weight percent of 2,3-epoxy-1-propanol wherein in the partially hydrolyzed polyacrylamide or the sodium, potassium or ammonium salts thereof the proportion of amide containing monomers is about 33 to about 88 mole percent and the proportion of the carboxy containing monomers is about 12 to about 67 mole percent,

(b) forcing the said fluid through the formation, and

(c) recovering hydrocarbons through the production well.

4,326,970

COPOLYMERS OF N,N-DIMETHYLACRYLAMIDE AND ACRYLAMIDE

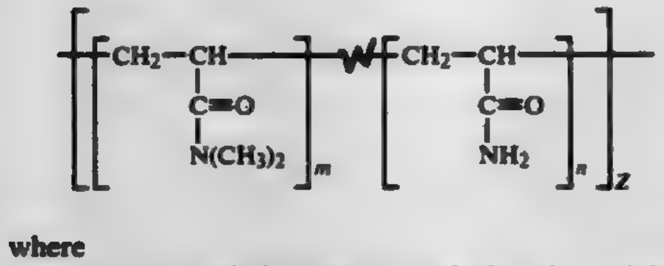
Ian W. Cottrell, Solana Beach; John K. Baird, and Jaewon L. Shim, both of San Diego, all of Calif., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 961,820, Nov. 17, 1978, Pat. No. 4,254,249. This application May 2, 1980, Ser. No. 146,531

Int. Cl.[3] E21B *43/22*

U.S. Cl. 252—8.55 D 5 Claims

1. In a process for recovering petroleum from a subterranean oil-bearing formation which comprises introducing into an input well penetrating said formation a viscous, aqueous fluid comprising an aqueous solution of a water-soluble organic polymer and forcing said viscous, aqueous fluid through said formation towards at least 1 output well penetrating said formation at a distance from said input well, the improvement which consists in employing as the water-soluble polymer an effective, viscosity-increasing amount of a hydrolyzed form of the copolymer of N,N-dimethylacrylamide and acrylamide of the formula:



I

where

m and n are whole numbers such that the weight:weight ratio of NNDMA to AM ranges from greater than 5:95 to about 95:5;

Z is a number such that the viscosity of the hydrolyzed copolymer is at least about 1000 cP (1% w/w solution in deionized water, Brookfield LVF viscometer, spindle 4, 60 rpm); and

$\sim$ indicates that the distribution of NNDMA and AM in the polymer chain is random

wherein the percent of hydrolysis which produces carboxyl groups ranges from about 5% to about 65%.

4,326,971

DETERGENT SOFTENER COMPOSITIONS

Harold E. Wixon, New Brunswick, N.J., assignor to Colgate Palmolive Company, New York, N.Y.

Continuation-in-part of Ser. No. 201,168, Oct. 27, 1980, which is a continuation-in-part of Ser. No. 96,370, Nov. 21, 1979, which is a continuation-in-part of Ser. No. 968,532, Dec. 11, 1978, Pat. No. 4,230,590. This application May 1, 1981, Ser. No. 259,728

Int. Cl.[3] C11D *1/86, 3/04, 17/06;* D06M *13/48*

U.S. Cl. 252—8.75 31 Claims

1. A detergent softener composition capable of imparting improved softness, detergency, antistatic and soil antiredeposition properties to fabrics treated therewith in the wash cycle of a laundering process comprising a particulate detergent base containing from about 5 to 40% by weight relative to the composition, of a water soluble non-soap, organic surfactant, at least about 90% thereof being of the anionic type, and from about 10 to 60% by weight relative to the composition, of water soluble, neutral to alkaline builder salt; said detergent base being in admixture with discrete particles of cationic amine softener, said softener being selected from the group consisting of (a) aliphatic di(lower) (C_1–C_4) alkyl, di(higher) C_{14}–C_{24} alkyl quaternary ammonium salts (b) heterocyclic compounds, and mixtures of (a) and (b), and said detergent base being in admixture with discrete particles of a mixture of water soluble or dispersible fatty acid soap, nonionic organic surfactant and magnesium sulfate, said nonionic constituting from about 2 to about 50% by weight of the mixture, and said magnesium sulfate constituting from about 1 to 15% of the mixture, the weight ratio of soap to softener being from about 8:1 to 1:3, the percent concentration of anionic surfactant being at least about $1.5\times+5$, wherein $\times$ represents the percent concentration of softener, said softener particles comprising from about 2 to 20% by weight of the composition and being free of the soap-nonionic-magnesium sulfate mixture, said soap-nonionic-magnesium sulfate mixture particles comprising from about 2 to 20% by weight of the composition and being free of the cationic softener, and said detergent base being free of cationic softener.

8. A composition according to claim 1 wherein said softener is methyl-1-tallow amido ethyl-2-tallow-imidazolinium methyl sulfate.

4,326,972

CONCENTRATES, LUBRICANT COMPOSITIONS AND METHODS FOR IMPROVING FUEL ECONOMY OF INTERNAL COMBUSTION ENGINE

William B. Chamberlin, III, Kirtland, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

Filed Jun. 14, 1978, Ser. No. 915,486

Int. Cl.[2] C10M *1/40*

U.S. Cl. 252—33.3 52 Claims

1. A lubricating composition comprising:

(A) A major amount of a lubricating oil; and minor effective amounts of

(B) a composition prepared by sulfurizing, at a temperature of about 100° to about 250° C., a mixture comprising (B-1) 100 parts by weight of at least one ester of a substantially aliphatic caboxylic acid containing from about 8 to about 30 carbon atoms and a substantially aliphatic alcohol, (B-2) from about 2 to about 50 parts of at least one substantially aliphatic carboxylic acid containing from about 8 to about 30 carbon atoms, and (B-3) from about 25 to about 400 parts by weight of at least one substantially aliphatic

monoolefin containing from about 8 to about 36 carbon atoms; and

(C) at least one oil-dispersible basic alkali metal sulfonate prepared by intimately contacting for a period of time sufficient to form a stable dispersion, at a temperature between the solidification temperature of the reaction mixture and its decomposition temperature;

(C-1) at least one acidic gaseous material selected from the group consisting of carbon dioxide, hydrogen sulfide, sulfur dioxide, and mixtures thereof, with

(C-2) a reaction mixture comprising

(C-2-a) at least one oil-soluble sulfonic acid, or derivative thereof susceptible to overbasing;

(C-2-b) at least one alkali metal or basic alkali metal compound;

(C-2-c) at least one lower aliphatic alcohol; and

(C-2-d) at least one oil-soluble carboxylic acid or functional derivative thereof.

4,326,973

QUATERNARY AMMONIUM SUCCINIMIDE SALT COMPOSITION AND LUBRICATING OIL CONTAINING SAME

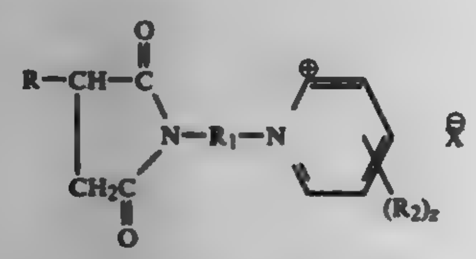
Kenneth G. Hammond, and Harry Chafetz, both of Poughkeepsie, N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed Jan. 13, 1981, Ser. No. 224,728

Int. Cl.³ C10M *1/32*

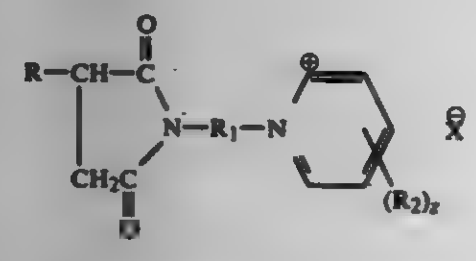
U.S. Cl. 252—34 **14 Claims**

1. A quaternary ammonium succinimide salt composition represented by the formula:



in which R is a hydrocarbyl radical having from 25 to 200 carbon atoms, R_1 is a divalent hydrocarbon radical having from 3 to 10 carbon atoms, R_2 is hydrogen or an alkyl radical having from 1 to 4 carbon atoms, z has a value from 0 to 5 and X is a halide radical.

8. A lubricating oil composition comprising a major portion of a mineral lubricating oil and a minor dispersant amount of a quaternary ammonium succinimide salt composition represented by the formula:



in which R is a hydrocarbyl radical having from 25 to 200 carbon atoms, R_1 is a divalent hydrocarbon radical having from 3–10 carbon atoms, R_2 is hydrogen or an alkyl radical having from 1 to 4 carbon atoms, z has a value from 0 to 5 and X is a halide radical.

4,326,974

OIL-IN-WATER EMULSION FOR COLD ROLLING LIGHT METALS

Rudolf Baur, Kreuzlingen, Switzerland, assignor to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Dec. 8, 1980, Ser. No. 213,849

Claims priority, application Switzerland, Sep. 12, 1980, 6863/80

Int. Cl.³ C10M *1/06*

U.S. Cl. 252—49.5 **6 Claims**

1. In an oil-in-water emulsion for cold rolling light metals, in particular aluminum or aluminum alloys, the improvement which comprises adding a small but effective stain inhibiting amount of xylitol and sorbitol to the emulsion.

4. In an oil-in-water emulsion for cold rolling light metals, in particular aluminum and aluminum alloys, said emulsion comprising an aqueous oil-in-water emulsion rolling lubricant containing polyisobutylene as hydrodynamic film former, alkylmonocarboxylic acid esters as reaction layer former, polyethoxylated sorbitanoleates as emulsifier, unsaturated, long chain alkylmonocarboxylic acids as inhibitor to prevent hydrogen embrittlement and rusting, fungicide and bactericide, and the balance essentially deionized water, the improvement which comprises adding a small but effective stain inhibiting amount of xylitol and sorbitol to the emulsion.

4,326,975

PROCESS FOR STORING HEAT WITH A EUTECTIC COMPOSITION CONTAINING AT LEAST ONE SATURATED ALIPHATIC HYDROCARBON AND AT LEAST ONE FATTY ACID

Andre Cadet, Le Havre, France, assignor to Compagnie Francaise de Raffinage, Paris, France

Filed Jul. 8, 1980, Ser. No. 166,795

Claims priority, application France, Jul. 11, 1980, 79 17972

Int. Cl.³ C09K *5/06*

U.S. Cl. 252—70 **5 Claims**

1. A process for storing solar heat by absorption of said heat in a eutectic composition comprising at least one or a mixture of saturated aliphatic hydrocarbons and at least one fatty acid selected from the group consisting of fatty acids having at least 10 carbons atoms wherein the saturated hydrocarbon or mixture of saturated hydrocarbons has a melting point equal to or greater than 20° C. and wherein the fatty acid is selected from the group consisting of stearic acid, palmitic acid and capric acid.

4,326,976

COMPOSITION AND PROCESS FOR WASHING AND BLEACHING

William R. Logan, Ottenburg; Pierre Sarot, Vilvoorde, and Edmond Bouillet, Brussels, all of Belgium, assignors to Interox, Brussels, Belgium

Filed Apr. 17, 1979, Ser. No. 30,901

Claims priority, application France, Apr. 17, 1978, 78 11637

Int. Cl.³ C11D *7/38, 7/18*

U.S. Cl. 252—99 **15 Claims**

1. A particulate composition for washing and bleaching, which is resistant to caking, comprising:

(a) active compounds consisting essentially of an alkali metal or ammonium carbonate and at least one peroxy compound selected from the group consisting of alkali metal or ammonium percarbonates, persulphates, and perborates; and

(b) anticaking agents consisting essentially of

(1) at least one alkali metal or ammonium aryl sulphonate, and

(2) at least one water insoluble inorganic compound selected from the group consisting of compounds of magnesium and compounds derived from silica or alumina,

said anticaking agent being present in an amount between

0.01 and 40% by weight, based on the total amount of said active compounds.

4,326,977

LIQUID ANTISEPTIC CLEANERS WITH IMPROVED FOAMING PROPERTIES

Irving R. Schmolka, Grosse Ile, Mich., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Nov. 10, 1980, Ser. No. 205,115

Int. Cl.³ C11D *1/722, 3/48, 17/08*

U.S. Cl. 252—106 **12 Claims**

1. A skin cleansing composition having good foaming properties comprising an agent selected from the group consisting of parachloro meta xylenol, hexachlorophene, 2-bromo-2-nitropropane diol, salicylanilide, didecyl dimethyl ammonium chloride, cetyl dimethylethyl ammonium bromide, alkyl dimethyl benzyl ammonium chloride, alkyl dimethylethyl benzyl ammonium chloride, alkyl dimethylbenzyl ammonium succinate, alkyl dimethyl-3,4-dichlorobenzyl ammonium chloride, 3,3′,4′,5-tetrachlorosalicylanilide, 3′,4′,5-trichlorosalicylanilide, 3,5-dibromo-3′-trifluoromethylsalicylanilide, 3,4,4′-trichlorocarbamilide, benzalkonium chloride, chloramine, iodine, iodophors, chlorhexidine and salts thereof, in normal antiseptic amounts agent, a polyoxyethylene-polyoxybutylene block copolymer wherein the polyoxybutylene portion of the compound has a molecular weight of from 500 to 2000 and the polyoxyethylene portions contribute from about 60 to 90 percent by weight of the compound in an amount of from 5 to 40 percent w/v and the balance substantially water.

4,326,978

SOAP BAR WITH ANTIMICROBIAL ACTION

Boris Moesch, Reinach, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

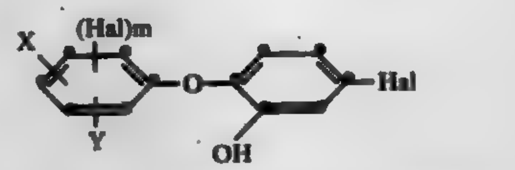
Filed Nov. 10, 1980, Ser. No. 205,823

Claims priority, application Switzerland, Nov. 16, 1979, 10253/79

Int. Cl.³ C09K *15/02;* C11D *9/18, 9/50, 17/00*

U.S. Cl. 252—107 **16 Claims**

1. A soap bar with antimicrobial action containing, as antimicrobial compound, a halogenated o-hydroxydiphenyl ether of the formula



(I)

wherein X is halogen, methyl, methoxy or hydroxy, Y is hydrogen, methyl or trifluoromethyl, Hal is a halogen atom and m is 0, 1 or 2, which soap bar additionally contains a water-insoluble, colorless magnesium silicate in an amount sufficient to effectively diminish discoloration of the bar on exposure to light.

4,326,979

NON-AQUEOUS, BUILT LIQUID DETERGENT COMPOSITION AND METHOD FOR PREPARING SAME

Jan Bus, Krimpen; Willem M. M. Möhlmann, Vlaardingen, and Norman J. Pritchard, Bilthoven, all of Netherlands, assignors to Lever Brothers Company, New York, N.Y.

Filed Oct. 31, 1980, Ser. No. 203,076

Claims priority, application United Kingdom, Nov. 9, 1979, 38966/79

Int. Cl.³ C11D *7/06, 7/50*

U.S. Cl. 252—158 **9 Claims**

1. A non-aqueous, built liquid detergent composition consisting essentially of:

(a) from 5–45% by weight of a nonionic surface-active detergent material which is a liquid or liquefiable at room temperature;

(b) from 0.1–1% by weight of an at least 30% hydrolyzed, hydrolyzable copolymer of maleic anhydride with ethylene or vinylmethylether;

(c) from 5–60% by weight of a hydroxyl group-containing solvent, in which the partially hydrolyzed copolymer (b) shows a solubility of at least 1.5% by weight after having been dissolved at about 80° C.;

(d) from 2.5–20% by weight of an alkaline material having a mean particle size of less than 50 micrometers, and yielding a pH (1% by weight aqueous solution at 20° C.) of equal to or higher than 10; and

(e) from 1–70% by weight of a builder salt.

4,326,980

ACRYLIC COPOLYMER COMPOSITION INHIBITS SCALE FORMATION AND DISPERSES OIL IN AQUEOUS SYSTEMS

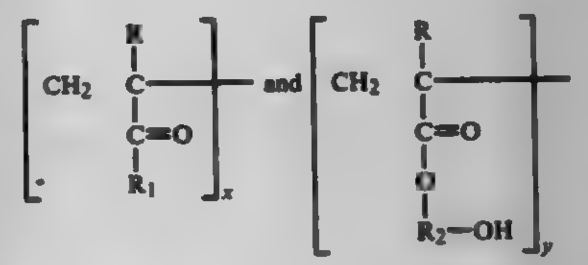
William R. Snyder, Warminster, and Diane Feuerstein, Bensalem, both of Pa., assignors to Betz Laboratories, Inc., Trevose, Pa.

Filed Feb. 23, 1981, Ser. No. 237,178

Int. Cl.³ C02F *5/10*

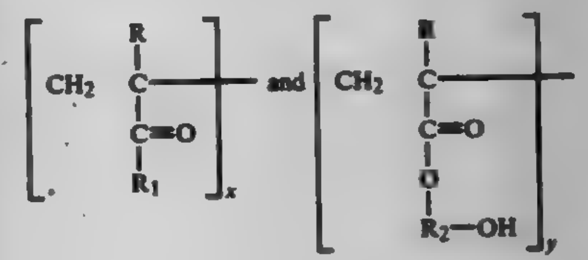
U.S. Cl. 252—180 **29 Claims**

1. Composition for treating an aqueous medium, said composition comprising an effective amount for the purpose of a water soluble polymer (I) comprising moieties (a) derived from an acrylic acid or water soluble salt thereof and moieties (b) of an hydroxylated lower alkyl acrylate, wherein the moieties of the polymer (I) have the following formula



wherein R is hydrogen or a lower alkyl of from 1 to 3 carbon atoms; R_1 is OH, OM, or NH_2 where M is a water soluble cation; R_2 is a lower alkyl of from about 2–6 carbon atoms and the molar ratio of x to y is about 34:1 to 1:4, and an effective amount of a water soluble alkyl phenoxy polyethoxyethanol compound (II) wherein the alkyl group of the alkyl phenoxy polyethoxyethanol compound has from about 6–12 carbon atoms.

6. In a method of controlling the deposition of scale imparting precipitates on the structural parts of the system exposed to an aqueous medium containing scale imparting precipitates under deposit forming conditions, said scale imparting precipitates being selected from the group consisting of calcium carbonate, calcium phosphate and calcium sulfate, which method comprises adding to said aqueous medium an effective amount for the purpose of a water soluble polymer (I) comprising moieties (a) derived from an acrylic acid or water soluble salt thereof and moieties (b) of an hydroxylated lower alkyl acrylate, wherein the moieties of the polymer have the following formula



wherein R is hydrogen or a lower alkyl of from 1 to 3 carbon atoms; R_1 is OH, OM or NH_2 where M is a water soluble cation; R_2 is a lower alkyl of from about 2–6 carbon atoms and a mole ratio of x to y is 34:1 to 1:4, the improvement comprising adding to said aqueous medium an effective amount of a water soluble alkyl phenoxy polyethoxyethanol compound (II) wherein the alkyl group of said alkyl phenoxy polyethoxyethanol compound has from about 6 to 12 carbon atoms.

4,326,981

NONSTAINING LEAK TRACER SOLUTION AND METHOD EMPLOYING SAME

Orlando G. Molina, Westminster, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Aug. 15, 1979, Ser. No. 66,609
Int. Cl.[3] C09K *11/06*
U.S. Cl. 252—301.19 **9 Claims**

1. A leak tracer solution consisting essentially of a major proportion of water, about 0.1 to about 10% by weight of a nonionic surfactant, and about 0.005 to about 1.0% by weight of a water soluble dye which is essentially non-staining on painted surfaces, and which does not migrate into or penetrate painted surfaces, said painted surfaces containing a polyurethane or epoxy resin base, said nonionic surfactant being of the group consisting of (a) straight chain, primary, aliphatic oxyalkylated alcohol, wherein said alcohols can contain from 8 to 20 carbon atoms and the oxyalkyl groups are ethylene oxide and propylene oxide groups, and (b) ethoxylates of linear secondary aliphatic alcohols, with the hydroxyl groups randomly distributed, the linear aliphatic portion of said alcohols being a mixture of alkyl chains containing in the range from 10 to 17 carbon atoms, and containing an average of from 3 to 12 moles of ethylene oxide.

4,326,982

PROCESS FOR THE MANUFACTURE OF FINE-CRYSTALLINE FLUORESCENT BRIGHTENERS OF THE BIS-TRIAZINYLAMINOSTILBENE SERIES IN THE β-CRYSTAL FORM

Konrad Neumann, Wyhlen, and Ernst Schenkenberger, Rheinfelden, both of Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 839,693, Oct. 5, 1977, abandoned. This application Jul. 13, 1979, Ser. No. 57,543
Claims priority, application Fed. Rep. of Germany, Oct. 14, 1976, 2646273
Int. Cl.[3] D06L *3/12*
U.S. Cl. 252—301.23 **3 Claims**

1. A process for the manufacture of fine-crystalline fluorescent brighteners of the bis-triazinylamino-stilbene series in the β-crystal form by grinding in an aqueous medium, which process consists essentially of mixing a water-containing fluoroescent brightener filter cake in the β- and/or α-crystal form with an aqueous organic solution of a dispersant selected from an alkali salt of an alkylsulphonic acid, alkylarylsulphonic acid, alkylcarboxylic acid or alkylarylcarboxylic acid, a condensation product of an arylsulphonic acid with formaldehyde, N-polyvinylpyrrolidone, CaO-free sulphite cellulose lye, starch ethers and polysaccharides, a carboxylate of polymerised maleic acid, a carboxylate of polymerised acrylic acid and a copolymer of maleic acid with allyl acetate in a ratio of fluorescent brightener to dispersant of between about 20:1 and 100:1 by weight at a temperature between 70° and 85° C., and grinding at this temperature.

4,326,983

MICELLAR SOLUTIONS OF THIN FILM SPREADING AGENTS COMPRISING A POLYETHER POLYOL

Charles M. Blair, Jr., Buena Park, Calif., assignor to Magna Corporation, Santa Fe Springs, Calif.

Filed Oct. 5, 1979, Ser. No. 82,349
Int. Cl.[3] B01D *17/04*; E21B *43/22*
U.S. Cl. 252—358 **52 Claims**

1. A homogeneous micellar thin film spreading agent solution, comprising:

(1) from between about 5% and about 75% by weight of a polyether polyol having the formula:

$$R\begin{matrix}\nearrow [O(A)_iH]_n\\ \searrow \{NR^1[(A)_kH]\}_m\end{matrix}$$

wherein:

A is an alkylene oxide group, $—C_iH_{2i}O—$;
O is oxygen;
i is a positive integer from 2 to about 10;
j is a positive integer no greater than about 100;
k is a positive integer no greater than about 100;
N is nitrogen;
R^1 is one of hydrogen, a monovalent hydrocarbon group containing less than about C_{11}, or $[A_LH]$;
L is a positive integer no greater than about 100;
R is a hydrocarbon moiety of a polyol, a primary or secondary amine, a primary or secondary polyamine, a primary or secondary amino alcohol, or hydrogen; and
m+n is no greater than about 4 when R is other than hydrogen and one of m and n is zero and the other is unity when R is hydrogen,

said polyether polyol at about 25° C.: (a) being less than about 1% by volume soluble in water and in isooctane; (b) having a solubility parameter in the range of between about 6.9 and about 8.5; and (c) spreading at the interface between distilled water and refined mineral oil to form a film having a thickness no greater than about 20 Angstroms at a spreading pressure of about 16 dynes per cm;

(2) from between about 2% and about 30% by weight of a hydrotropic agent having one of the formulas: wherein X is an alkyl, alicyclic, aromatic, alkylalicyclic, alkylaryl, alicyclicalkyl, heterocyclic or substituted heterocyclic radical having 2 to 13 carbon atoms; and wherein Z is one of:

$$—OH;\ —N\begin{matrix}\nearrow U\\ \searrow V\end{matrix};\ —CHO;\ —CON\begin{matrix}\nearrow U\\ \searrow V\end{matrix};\ —COOH;\text{ and }—OCH_3;$$

where U and V are hydrogen or hydrocarbon substituents.

$$X—Y—R—(Z)_n \qquad \text{(B)}$$

wherein:

Z is one of

$$—OH;\ —N\begin{matrix}\nearrow U\\ \searrow V\end{matrix};\ —CHO;\ —CON\begin{matrix}\nearrow U\\ \searrow V\end{matrix};\ —COOH;\text{ and }—OCH_3;$$

X is an alkyl, alicyclic, aromatic, alkylalicyclic, alkylaryl, arylalkyl, alicyclicalkyl, heterocyclic or substituted heterocyclic radical having 2 to 12 carbon atoms;
R is a member selected from the class consisting of, $—CH_2—$, $—C_2H_4—$, $C_3H_5{\equiv}$, $—C_3H_6$, and $—C_2H_4—O—C_2H_4—$;
n is either a one or two integer, the integer dependent upon the selection of R;

Y is a member selected from the class consisting of:

$$—\overset{O}{\overset{\|}{C}}—\overset{H}{\overset{|}{N}}—,\ —\overset{H}{\overset{|}{N}}—\overset{O}{\overset{\|}{C}}—,\ —\overset{O}{\overset{\|}{C}}—O—,\ —O—\overset{O}{\overset{\|}{C}}—,\ —O—,\text{ and }—S—;$$

and U and V are hydrogen or hydrocarbon substituents;

(3) from between about 2% and about 30% by weight of an amphipathic agent having at least one radical having from between about 10 and about 64 carbon atoms per molecule; and

(4) from between about 15% and about 90% by weight, water.

4,326,984

MICELLAR SOLUTIONS OF THIN FILM SPREADING AGENTS COMPRISING POLYEPOXIDE CONDENSATES OR RESINOUS POLYALKYLENE OXIDE ADDUCTS AND POLYETHER POLYOLS

Charles M. Blair, Jr., Buena Park, Calif., assignor to Magna Corporation, Santa Fe Springs, Calif.

Filed Oct. 5, 1979, Ser. No. 82,364
Int. Cl.[3] B01D *17/04*; E21B *43/22*
U.S. Cl. 252—358 **46 Claims**

1. A homogeneous thin film spreading agent solution, comprising: (1) from between about 5% to about 75% by weight of a polyepoxide condensate of at least one of: (a) a polyalkylene oxide adduct of a fusible, water-insoluble organic aromatic hydrocarbon solvent-soluble synthetic resin, wherein said resin has from between about 4 to about 15 phenolic groups and is an alkyl or cycloaliphatic substituted phenol-aldehyde condensate of an ortho- or para-substituted phenol and an aldehyde, said condensate resin being thereafter further condensed with an alkylene oxide containing less than about five carbon atoms in an amount equal to at least one mole of alkylene oxide per phenolic moiety of said resin, the weight ratio of oxide to condensation product in a solvent-free state being between about 1-to-10 and about 10-to-1; and (b) a polyether polyol having the formula:

$$R\begin{matrix}\nearrow [O(A)_iH]_n\\ \searrow \{NR^1[(A)_kH]\}_m\end{matrix}$$

wherein:

A is an alkylene oxide group, $—C_iH_{2i}O—$;
O is oxygen;
i is a positive integer from 2 to about 10;
j is a positive integer no greater than about 100;
k is a positive integer no greater than about 100;
N is nitrogen;
R^1 is one of hydrogen, a monovalent hydrocarbon group containing less than about C_{11}, or $[A_LH]$;
L is a positive integer no greater than about 100;
R is a hydrocarbon moietyy of a polyol, a primary or secondary amine, a primary or secondary polyamine, a primary or secondary amino alcohol, and hydrogen; and
m+n is no greater than about 4 when R is other than hydrogen and one of m and n is zero and the other is unity when R is hydrogen, said polyepoxide being selected from the group consisting of the diglycidyl ether of dihydroxyphenyl-methyl methane and the lower polymers thereof, diisobutenyl dioxide, polyepoxypolyglycerols, epoxidized linseed oil and epoxidized polybutadiene,

said condensate, at about 25° C.: (A) having a solubility in water and isooctane of less than about 1%, by volume; (B) having a solubility parameter from between about 6.8 and about 8.5; and (C) spreading at the interface between white, refined mineral oil and distilled water to form a film having a calculated thickness no greater than about 20 Angstroms, at a spreading pressure of about 16 dynes per cm; (2) from about 2% and about 30% by weight of a hydrotropic agent having one of the formulas:

$$X—Z \qquad \text{(A)}$$

wherein

X is an alkyl, alicyclic, aromatic, alkylalicyclic, alkylaryl, arylalkyl, alicyclicalkyl, heterocyclic or substituted heterocyclic radical having 2 to 13 carbon atoms; and wherein Z is one of:

$—OH;$

$—N\begin{matrix}\nearrow U\\ \searrow V\end{matrix};$

$—CHO;$

$—CON\begin{matrix}\nearrow U\\ \searrow V\end{matrix};$

$—COOH;$ and $—OCH_3;$

and U and V are hydrogen or hydrocarbon substituents,

$$X—Y—R—(Z)_n \qquad \text{(B)}$$

wherein:

Z is one of

$—OH;$

$—N\begin{matrix}\nearrow U\\ \searrow V\end{matrix};$

$—CHO;$

$—CON\begin{matrix}\nearrow U\\ \searrow V\end{matrix};$

$—COOH;$ and $—OCH_3;$

X is an alkyl, alicyclic, aromatic, alkylalicyclic, alkylaryl, arylalkyl, alicyclicalkyl, heterocyclic or substituted heterocyclic radical having 2 to 12 carbon atoms;
R is a member selected from the class consisting of,

$—CH_2—$, $—C_2H_4—$, $C_3H_5{\equiv}$, $—C_3H_6—$, and $—C_2H_4—O—C_2H_4—$;

n is either a one or two integer, the integer dependent upon the selection of R;
Y is a member selected from the class consisting of:

$$—\overset{O}{\overset{\|}{C}}—\overset{H}{\overset{|}{N}}—,\ —\overset{H}{\overset{|}{N}}—\overset{O}{\overset{\|}{C}}—,\ —\overset{O}{\overset{\|}{C}}—O—,\ —O—\overset{O}{\overset{\|}{C}}—,$$

-continued

—O—, and —S—;

—O—, and —S—;

and U and V are hydrogen or hydrocarbon substituents;

(3) from between about 2% and about 30% by weight of an amphipathic agent having at least one radical having from between about 10 and about 64 carbon atoms per molecule; and

(4) from between about 15% and about 90% by weight, water.

4,326,985

MICELLAR SOLUTIONS OF THIN FILM SPREADING AGENTS COMPRISING AN ACYLATED POLYETHER POLYOL

Charles M. Blair, Jr., Buena Park, Calif., assignor to Magna Corporation, Santa Fe Springs, Calif.

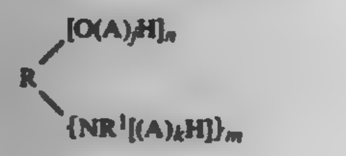
Filed Oct. 5, 1979, Ser. No. 82,365

Int. Cl.[3] B01D *17/04*

U.S. Cl. 252—358 **50 Claims**

1. A homogeneous micellar thin film spreading agent solution, comprising:

(1) from between about 5% and about 75% by weight of an acylated polyether polyol having the formula:



wherein:

A is an alkylene oxide group, $—C_iH_{2i}O—$;

O is oxygen;

i is a positive integer from 2 to about 10;

j is a positive integer no greater than about 100;

k is a positive integer no greater than about 100;

N is nitrogen;

R^1 is one of hydrogen, a monovalent hydrocarbon group containing less than about C_{11}, or $[A_LH]$;

L is a positive integer no greater than about 100;

R is a hydrocarbon moiety of a polyol, a primary or secondary amine, a primary or secondary polyamine, a primary or secondary amino alcohol, or hydrogen; and

m+n is no greater than about 4 when R is other than hydrogen and one of m and n is zero and the other is unity when R is hydrogen.

said acylated polyether polyol being the reaction product of said polyether polyol and a member selected from the class consisting of mono- and polybasic carboxylic acids, acid anhydrides, and iso-, diiso-, and polyisocyanates, said acylated polyether polyol at about 25° C.: (a) being less than about 1% by volume soluble in water and in isooctane; (b) having a solubility parameter in the range of between about 6.9 and about 8.5; and (c) spreading at the interface between distilled water and refined mineral oil to form a spreading film having a thickness no greater than about 20 Angstroms at a film pressure of about 16 dynes per cm; (1) from between about 2% and about 30% by weight of a hydrotropic agent having one of the formulas:

X—Z (A)

wherein X is an alkyl, alicyclic, aromatic, alkylalicyclic, alkylaryl, arylalkyl, alicyclicalkyl, heterocyclic or substituted heterocyclic radical having 2 to 13 carbon atoms; and wherein Z is one of:

—OH; $—N\langle^{U}_{V}$; —CHO; $—CON\langle^{U}_{V}$; —COOH; and $—OCH_3$;

where U and V are hydrogen or hydrocarbon substituents;

$X—Y—R—(Z)_n$, (B)

wherein:

Z is one of

—OH; $—N\langle^{U}_{V}$; —CHO; $—CON\langle^{U}_{V}$; —COOH; and $—OCH_3$;

X is an alkyl, alicyclic, aromatic, alkylalicyclic, alkylaryl, arylalkyl, alicyclicalkyl, heterocyclic or substituted heterocyclic radical having 2 to 12 carbon atoms;

R is a member selected from the class consisting of, $—CH_2—$, $—C_2H_4—$, $C_3H_5{=}$, $—C_3H_6$, and $—C_2H_4—O—C_2H_4—$;

n is either a one or two integer, the integer dependent upon the selection of R;

Y is a member selected from the class consisting of:

$—\overset{O}{\overset{\|}{C}}—\overset{H}{\overset{|}{N}}—$, $—\overset{H}{\overset{|}{N}}—\overset{O}{\overset{\|}{C}}—$, $—\overset{O}{\overset{\|}{C}}—O—$, $—O—\overset{O}{\overset{\|}{C}}—$, —O—, and —S—;

and U and V are hydrogen or hydrocarbon substituents;

(3) from between about 2% and about 30% by weight of an amphipathic agent having at least one radical having from between about 10 and about 64 carbon atoms per molecule; and

(4) from between about 15% and about 90% by weight, water.

4,326,986

COMPOSITION AND METHOD FOR SUPPRESSING VAPOR LOSS OF VOLATILE HYDROCARBONS

Gerard P. Canevari, Cranford, N.J., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Jul. 6, 1976, Ser. No. 702,692

Int. Cl.[3] C09K *3/00*

U.S. Cl. 252—384 **11 Claims**

1. An evaporation retarding mixture capable of forming a continuous stable film over the surface of a liquid hydrocarbon body consisting essentially of: a surfactant or mixture of surfactants and a polyglycol, said surfactant or mixture of surfactants being selected from materials that are insoluble in the liquid hydrocarbon body, which have hydrophobic moieties at the end of hydrophilic hydrocarbon groups having greater than 8 carbon atoms and which materials are capable of forming stable foams with air and water and said polyglycol being selected from dihydroxy derivatives of linear aliphatic hydrocarbons having a molecular weight of from about 100 to about 1200, the amount of polyglycol in said composition ranging from about 5 wt. % to about 50 wt. % based on the total weight of the evaporation retarding mixture.

4,326,987

REACTION PRODUCTS OF ALKYL AND ALKENYL SUCCINIC ACIDS AND ETHER DIAMINES

Carl C. Hendricks, East Alton, Ill.; Richard L. Godar, and Kenneth R. Roux, both of St. Louis, Mo., assignors to Petrolite Corporation, St. Louis, Mo.

Filed Feb. 25, 1980, Ser. No. 124,031

Int. Cl.[3] C23F *11/12, 11/14*

U.S. Cl. 252—392 **21 Claims**

1. A composition comprising the reaction product of

(1) an alkenyl or alkyl succinic acid or the anhydride thereof; and

(2) an alkyl etherdiamine.

4,326,988

CATALYST, METHOD OF PRODUCING THE CATALYST, AND POLYMERIZATION PROCESS EMPLOYING THE CATALYST

Melvin B. Welch, Bartlesville, Okla.; Richard E. Dietz, Borger, Tex., and Charles E. Capshew, Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 12, 1980, Ser. No. 177,312

Int. Cl.[3] C08F *4/64, 4/68*

U.S. Cl. 252—429 B **22 Claims**

1. A method of making a catalyst comprising mixing a first catalyst component solution and a second catalyst component, wherein the first catalyst component is formed by the chemical combination of:

(1) a metal halide compound selected from the group consisting of metal dihalide compounds and metal hydroxyhalide compounds and the metal of the metal halide compound is selected from the group consisting of Group IIA metals and Group IIB metals, and

(2) a transition metal compound in which the transition metals are selected from Groups IVB and VB and the transition metal is bonded to at least one radical selected from the group consisting of hydrocarbyloxides, amides, imides, and mercaptides;

wherein the second catalyst component is a precipitating agent selected from the group consisting of (a) organometallic compounds of Groups I, II, and III selected from the group consisting of lithium alkyls, Grignard Reagents, dialkyl magnesium compounds, dialkyl zinc compounds, and hydrocarbyl aluminum halides, (b) metal halides and oxyhalides of metals of Group IIIA, IVA, IVB, VA, and VB, (c) hydrogen halides, and organic acid halides selected from the group consisting of compounds having the formula

$$R'''—\overset{O}{\overset{\|}{C}}—X$$

wherein R''' is an alkyl, aryl, or cycloalkyl group or combinations thereof and X is a halide, and depositing prepolymer on said catalyst in an amount in the range of about 1 to about 50 weight percent of the prepolymerized catalyst, said prepolymer being formed by polymerizing monomers selected from the group consisting of aliphatic mono-1-olefins and conjugated dienes.

4,326,989

CATALYST OF NICKEL COMPOUND AND LIGAND IN PRESENCE OF A REDUCING METAL

Ismael Colon, Middlesex; Louis M. Maresca, Belle Mead, and George T. Kwiatkowski, Green Brook, all of N.J., assignors to Union Carbide Corporation, Danbury, Conn.

Division of Ser. No. 72,310, Sep. 11, 1979, Pat. No. 4,263,466, which is a continuation-in-part of Ser. No. 955,758, Oct. 30, 1978, abandoned. This application Nov. 12, 1980, Ser. No. 206,147

Int. Cl.[3] B01J *31/02*

U.S. Cl. 252—429 R **2 Claims**

1. A catalyst composition comprising an anhydrous nickel compound and at least one ligand selected from the group consisting of a triaryl phosphine having 6 to about 14 carbon atoms in each aryl moiety and an aromatic bidentate compound containing at least one ring nitrogen atom and about 5 to about 30 carbon atoms, at least one metal selected from metallic magnesium and manganese and at least one promoter selected from alkali, alkaline earth, zinc, magnesium, manganese, and aluminum halides, sulfates or phosphates, wherein the amount of ligand is about 0.1 to about 100 moles per gram atom of nickel and the amount of the metallic magnesium and manganese is at least about 1 gram atom per gram atom of nickel and the amount of promoter is at least 0.1 moles per gram atom of nickel.

4,326,990

PASSIVATING AGENT COMPOSITION AND METHOD FOR ITS PREPARATION

Harold W. Mark, and Ernest A. Zuech, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Feb. 14, 1980, Ser. No. 121,560

Int. Cl.[3] B01J *31/12*

U.S. Cl. 252—431 C **19 Claims**

1. A composition comprising:

a stannous dihydrocarbylphosphorodithioate and an antimony (III) dihydrocarbylphosphorodithioate in an amount sufficient to provide the composition with a weight ratio of antimony to tin in the range of from about 5:1 to about 20:1.

4,326,991

PROCESS FOR PREPARING A CATALYST FOR HYDROTREATMENT OF HEAVY HYDROCARBON OILS

Sachio Asaoka; Yoshimi Shiroto; Munekazu Nakamura, all of Yokohama, Japan, assignors to Chiyoda Chemical Engineering & Construction Co., Ltd., Yokohama, Japan

Filed Oct. 15, 1979, Ser. No. 84,764

Claims priority, application Japan, Oct. 14, 1978, 53-125609; Dec. 13, 1978, 53-153200

Int. Cl.[3] B01J *21/06, 21/10, 23/22, 27/04*

U.S. Cl. 252—432 **4 Claims**

1. A process of preparing a catalyst for the hydrotreatment of heavy hydrocarbon oils which comprises contacting a substrate of porous clay mineral consisting essentially of magnesium silicate and having a double-chain structure, with a heavy hydrocarbon oil containing at least 200 ppm by weight of vanadium, at a temperature of 350°-450° C., under a hydrogen pressure of 30-250 atm., so as to accumulate at least about 2% by weight of vanadium on said substrate.

4,326,992

PROCESS FOR PREPARING A SUPPORTED MOLYBDENUM CARBIDE COMPOSITION

Lynn H. Slaugh, and Ronald J. Hoxmeier, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Dec. 8, 1980, Ser. No. 213,972

Int. Cl.³ B01J *23/28, 27/22*

U.S. Cl. 252—443 **4 Claims**

1. A process for preparing a supported molybdenum carbide composition which comprises impregnating a porous, inert support with a solution of molybdic acid dissolved in aqueous ammonium hydroxide, heating the impregnated support in order to dry said support and subsequently heating the impregnated support to a temperature ranging from about 650° C. to about 750° C. in a carbiding gas mixture which comprises hydrogen in a concentration ranging from about 1 to about 20 percent by volume, a carbiding component selected from the group consisting of lower alkane, lower alkene, carbon monoxide and mixtures thereof in a concentration ranging from about 0.5 to about 5 percent by volume and the balance being a noble gas.

4,326,993

NOVEL CRACKING CATALYSTS AND CATALYST SUPPORTS

Arthur W. Chester, Cherry Hill, and William A. Stover, Woodbury, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 17, 1979, Ser. No. 104,522

Int. Cl.³ B01J *29/28, 29/32*

U.S. Cl. 252—455 Z **12 Claims**

1. A composition, suitable for use as a catalyst or catalyst support, prepared by mixing from 1 to 99 wt. % of colloidal dispersions of alumina particles, from 1 to 99 wt. % of colloidal dispersions of silica particles, from 1 to about 75 wt. % of a suitable particulate weighting agent and from 1 to about 75 wt. % of a crystalline aluminosilicate zeolite hydrocarbon conversion component and thereafter drying the resultant composite; said alumina and silica particles each having diameters in the range of 10 to 10,000 Å and said composite having at least 40% of the pore volume in the 30 to 300 Å diameter range, between 60 and 80 Å, and at least 25% of total pore volume in excess of 30 Å between said 60 and 80 Å range.

4. A catalyst as defined in claim 1 wherein said hydrocarbon conversion component is a zeolite selected from the group consisting of ZSM-4, ZSM-5, ZSM-11, ZSM-12, ZSM-35 and ZSM-38.

9. A composition comprising a hydroconversion catalyst support or matrix prepared as described in claim 1 by mixing therewith from 20 to 90 wt. % of colloidal alumina particles and from 10 to 80 wt. % of colloidal silica particles and a hydrogenating component selected from metals of Group VIB and VIII of the Periodic Table.

4,326,994

ENHANCEMENT OF ZEOLITE CATALYTIC ACTIVITY

Werner O. Haag, Lawrenceville, N.J., and Rudolph M. Lago, Yardley, Pa., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Feb. 14, 1980, Ser. No. 121,339

Int. Cl.³ B01J *29/28, 29/06*

U.S. Cl. 252—455 Z **17 Claims**

1. A method for increasing the catalytic activity of an acid zeolite having a determinable initial activity and characterized by a silica to alumina mole ratio of at least 12 and a constraint index within the approximate range of 1 to 12, comprising contacting said zeolite with water for a sufficient treating time, temperature and water partial pressure wherein said time, temperature and pressure is represented by the following relationship of treating time and water pressure at constant temperatures:

$$0.01(Pt)_T < (Pt) < 10(Pt)_T$$

where

$(Pt)_T = 2.6 \times 10^{-9} e\ 16000/T$

P = Water Partial Pressure, atmosphere

t = Treating Time, Hours

T = Temperature, °K.

4,326,995

CATALYST FOR HYDROTREATING CARBONACEOUS LIQUIDS

Lloyd Berg; Frank P. McCandless, both of Bozeman, Mont., and Ronald J. Ramer, Idaho Falls, Id., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Dec. 7, 1979, Ser. No. 101,361

Int. Cl.³ B01J *21/04, 23/85, 23/88*

U.S. Cl. 252—465 **2 Claims**

1. In a catalyst for the continuous-flow hydrogenation and denitrogenation of carbonaceous liquids produced in the solvent refining of coal containing combined sulfur of 0.2–0.8% and combined nitrogen of 0.5–1.5% by weight within carbonaceous compounds, said catalyst having a base comprising a major proportion of alumina with deposited oxides of catalytic metals, the improved combination comprising a base material that includes a surface area of about 250 m^2/g, a pore volume of about 0.7 ml/g and an average pore diameter of 120–130 Angstroms and said deposited oxides of catalytic metal include in percent total weight 10–11% WO_3, 2–3% NiO, 6–7% CoO and 12–13% MoO_3.

4,326,996

FRAGRANCE COMPOSITION COMPRISING SUBSTITUTED CYCLOHEXANE DERIVATIVES

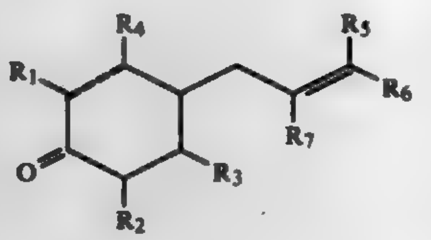
Brian J. Willis, Bergenfield, N.J., and Robert G. Eilerman, Merrick, N.Y., assignors to Fritzsche Dodge & Olcott Inc., New York, N.Y.

Filed Jan. 30, 1980, Ser. No. 116,839

Int. Cl.³ A61K *7/46*

U.S. Cl. 252—522 R **5 Claims**

1. A perfume composition which comprises one or more of the substituted cyclic ketones having the structure:



wherein the dotted line may be a carbon-carbon double bond or a carbon-carbon single bond; and wherein each of R_1, R_2, R_3, R_4, R_5, R_6 and R_7 may be hydrogen or lower alkyl in an amount effective to impart fragrance thereto in combination with conventional perfume ingredients.

4,326,997

FRAGRANCE COMPOSITIONS OF ALICYCLIC KETONE AND ALCOHOL DERIVATIVES

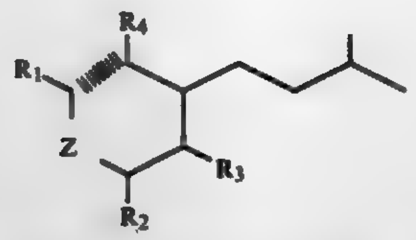
Brian J. Willis, Bergenfield, N.J.; Robert G. Eilerman, Merrick, N.Y., and John M. Yurecko, Jr., Bayonne, N.J., assignors to Fritzsche Dodge & Olcott Inc., New York, N.Y.

Filed Oct. 8, 1980, Ser. No. 194,967

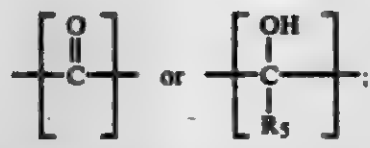
Int. Cl.³ A61K *7/46*

U.S. Cl. 252—522 R **14 Claims**

1. A fragrance composition which comprises at least one compound having the structure:



wherein the dashed line represents either a carbon-carbon double bond or a carbon-carbon single bond; wherein Z is either



and wherein each of R_1, R_2, R_3, R_4 and R_5 is hydrogen or C_1 to C_4 alkyl, in an amount effective to impart fragrance thereto and conventional fragrance ingredients.

4,326,998

METHYL SUBSTITUTED NORBORNANE CARBOXALDEHYDES PERFUME COMPOSITIONS

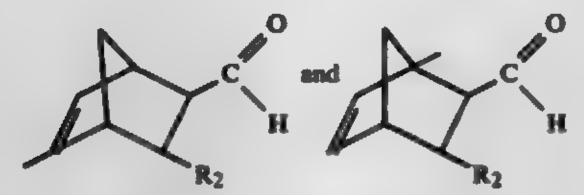
Philip T. Klemarczyk, Old Bridge; James M. Sanders, Eatontown; Manfred H. Vock, Locust; Joaquin F. Vinals, Rumson; Frederick L. Schmitt, Holmdel, and Edward J. Granda, Englishtown, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 152,187, May 22, 1980, Pat. No. 4,284,824. This application Mar. 25, 1981, Ser. No. 247,323

Int. Cl.³ A61K *7/46*

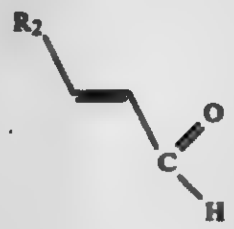
U.S. Cl. 252—522 R **2 Claims**

1. A process for augmenting or enhancing the aroma of a perfume or cologne composition comprising the step of adding to a perfume or cologne base an aroma augmenting or enhancing quantity of a product containing a mixture of methyl substituted norbornane carboxyaldehydes having the structures:



wherein R_2 is methyl produced according to the process which consists of the step of admixing a mixture of methyl cyclopentadienes having the structures:

with an alpha, beta unsaturated aldehyde defined according to the structure:



wherein R_2 is methyl in the presence of a catalyst having the structure:

$$R_m'AlX_n$$

wherein R' is C_1–C_3 alkyl and X is chloro or bromo with $m+n=3$ and m being 1 or 2 and n being 1 or 2; the reaction taking place at a temperature of between 0° C. and 50° C.; the reaction taking place in the presence of an inert solvent and in the presence of triethanolamine.

4,326,999

LUBRICANT AND RELEASE AGENT FOR MOLDED RUBBER ARTICLES

Hans-Ferdi Fink, Essen, and Rolf Freiberger, Schermbeck-Damm, both of Fed. Rep. of Germany, assignors to Th. Goldschmidt AG, Essen, Fed. Rep. of Germany

Filed Sep. 25, 1979, Ser. No. 78,767

Claims priority, application United Kingdom, Oct. 16, 1978, 40588/78

Int. Cl.³ L08L *91/00;* **G08L** *83/04*

U.S. Cl. 524—261 **8 Claims**

1. A composition for use as a lubricant and release agent in the manufacture of molded long rubber hoses consisting essentially of a mixture of a hardenable, modified silicone resin prepared by the condensation reaction of alkyl or aryl substituted polysiloxane having SiO-alkyl groups thereon with hydroxyl containing polyester, and an oil, the oil having the property of not dissolving or swelling rubber, the weight ratio of resin to oil being from 5:1 to 1:20.

4,327,000

STABILIZER MIXTURES FOR STABILIZING CHLORINATED THERMOPLASTICS

Horst Müller, Fürth, and Hermann O. Wirth, Bensheim, both of Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Mar. 24, 1980, Ser. No. 133,160

Claims priority, application Switzerland, Apr. 5, 1979, 3188/79

Int. Cl.³ C08K *5/36*

U.S. Cl. 524—285 **10 Claims**

1. A stabilizer mixture consisting of

(a) a thioether of the formula I

$$\left(R-CO-\overset{\displaystyle R_1}{\overset{|}{CH}}-CO-O-Y-\overset{\displaystyle X}{\overset{|}{CH}}- \right)_2 -S\left(Z-S\right)_n \quad (I)$$

wherein n is 0 or 1, R as recurrent symbol is the same or different on each recurrence and is C_1–C_{18}alkyl, C_5–C_8 cycloalkyl, C_6–C_{10} aryl which is unsubstituted or substituted by C_1–C_4alkyl, R_1 as recurrent symbol is the same or different on each recurrence and is hydrogen or C_1–C_4alkyl, X as recurrent symbol is the same or different on each recurrence and is hydrogen or a group of the formula II

$$R-CO-\overset{\displaystyle R_1}{\overset{|}{CH}}-CO-O-Y- \quad (II)$$

Y as recurring symbol is the same or different on each recurrence and is C_1–C_6alkylene or a group of the formula III

$$\left(CH_2\right)_m \underset{\displaystyle OR_2}{\underset{|}{CH}} \left(CH_2\right)_p \quad (III)$$

wherein the $—CH_2)_m$ group is bonded to the oxygen atom and R_2 is hydrogen or a group of the formula IV

$$\mathrm{R{-}CO{-}\underset{\underset{\displaystyle R_1}{|}}{CH}{-}CO{-}} \qquad \text{(IV)}$$

m is an integer from 1 to 4 and p is an integer from 0 to 3, and Z is C_1–C_6alkylene or a group of the formula V

$$\mathrm{{-}CH_2{-}\underset{\underset{\displaystyle OR_2}{|}}{CH}{-}CH_2{-}} \qquad \text{(V)}$$

wherein R_2 is as previously defined, and

(b) a stabilizer containing a metal selected from the group consisting of zinc, calcium, cadmium, barium, magnesium, tin and antimony, or also zinc in combination with at least one of the above metals.

4,327,001

LOW SMOKE POLYOLEFIN JACKET COMPOSITION FOR ELECTRICAL WIRE

Archie West, Greenville, and Dhirajlal B. Radadia, Lincoln, both of R.I., assignors to Gulf & Western Manufacturing Company

Filed Jul. 1, 1980, Ser. No. 165,145

Int. Cl.³ C08L *91/00*

U.S. Cl. 524—322 **8 Claims**

1. A cross-linked polyolefin jacketing composition for use on wire and cable having superior resistance to the propagation of flame, a low smoke emission level and low emission of toxic byproducts when subjected to heat or flame, as well as low moisture absorption characteristics and high resistance to weathering, oils and chemicals, which consists essentially of a polyethylene-vinyl acetate copolymer, magnesium silicate, and alumina hydrate in major proportions, and, in minor proportions, carbon black, polymerized 1,2-dihydro 2,2,4 trimethyl quinoline, stearic acid, vinyl-tris (β-methoxethoxy)silane, triallyl cyanurate, and di-cumyl peroxide in anhydrous aluminum silicate.

4,327,002

HIGH NITRILE COPOLYMER RESINS CONTAINING EPOXIDIZED OIL FOR IMPROVED IMPACT RESISTANCE

Daniel W. Feldman, Beachwood, Ohio, assignor to The Standard Oil Company, Cleveland, Ohio

Filed Dec. 26, 1979, Ser. No. 106,972

Int. Cl.³ C08L *9/04, 9/08, 91/00*

U.S. Cl. 524—114 **6 Claims**

1. The composition which comprises an intimate mixture of 100 parts by weight of

(I) a polymer prepared by the polymerization in an aqueous medium of 100 parts by weight of

(A) from 60 to 90% by weight of at least one nitrile having the structure

$$\mathrm{CH_2{=}\underset{\underset{\displaystyle R}{|}}{C}{-}CN}$$

wherein R is hydrogen, a lower alkyl group having from 1 to 4 carbon atoms, or a halogen, and

(B) from 10 to 40% by weight based on the combined weight of (A) plus (B) of at least one member selected from the group consisting of

(1) styrene,

(2) an ester having the structure

$$\mathrm{CH_2{=}\underset{\underset{\displaystyle R_1}{|}}{C}{-}COOR_2}$$

wherein R_1 is hydrogen, an alkyl group having from 1 to 4 carbon atoms, or a halogen, and R_2 is an alkyl group having from 1 to 6 carbon atoms,

(3) an alpha-olefin having the structure

$$\mathrm{CH_2{=}\overset{\overset{\displaystyle R'}{|}}{\underset{\underset{\displaystyle R''}{|}}{C}}}$$

wherein R′ and R″ are alkyl groups having from 1 to 7 carbon atoms,

(4) a vinyl ether selected from the group consisting of methyl vinyl ether, ethyl vinyl ether, the propyl vinyl ethers, and the butyl vinyl ethers,

(5) vinyl acetate, and

(6) indene,

in the presence of from 1 to 40 parts by weight of

(C) a rubbery polymer of a conjugated diene monomer selected from the group consisting of butadiene and isoprene and from 0 to 50% by weight of at least one comonomer selected from the group consisting of styrene, a nitrile monomer having the structure

$$\mathrm{CH_2{=}\underset{\underset{\displaystyle R}{|}}{C}{-}CN}$$

wherein R has the foregoing designation, and an ester having the structure

$$\mathrm{CH_2{=}\underset{\underset{\displaystyle R_1}{|}}{C}{-}COOR_2}$$

wherein R_1 and R_2 have the foregoing designations, and from about 0.1 to 20 parts by weight of

(II) at least one member selected from the group consisting of epoxidized soybean oil, epoxidized linseed oil, and epoxidized butyl linseed oil.

4,327,003

POLYMERIZATION PROCESS FOR THE PRODUCTION OF PVC LATEX AND PASTE RESIN

Paul L. C. Hao; W. W. Hsu; W. S. Lin; S. N. Tong; H. K. Hung, and M. C. Chang, all of Hsinchu, Taiwan, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan

Continuation of Ser. No. 856,602, Dec. 1, 1977, abandoned, Continuation-in-part of Ser. No. 689,743, May 25, 1976, abandoned. This application Jul. 11, 1980, Ser. No. 168,765

Claims priority, application Taiwan, Aug. 30, 1975, 64-11795; Sep. 13, 1975, 64-11902; Japan, Jul. 2, 1976, 51/77932

Int. Cl.³ C08F *2/24, 2/32*

U.S. Cl. 523—336 **8 Claims**

1. An emulsion polymerization process for preparing a polyvinyl chloride latex having a particle size predominantly of 0.8 to 2 microns which comprises:

(a) forming in a polymerization zone a mixture of a vinyl chloride monomer, water, and a water-soluble initiator so as to initiate the polymerization reaction as a water-in-oil reaction phase; the weight ratio of monomer to water at the beginning of the polymerization being greater than 3,

(b) feeding into the mixture of (a) above over an extended period an aqueous emulsifier solution so that as the emulsion polymerization reaction proceeds the water-in-oil initial reaction phase changes to an oil-in-water reaction phase, and

(c) collecting polyvinyl chloride latex after polymerization is complete having particles predominantly 0.8 to 2 microns in diameter.

4,327,004

AQUEOUS DISPERSIONS OF PLASTICS IN WHICH THE AVERAGE DIAMETER OF THE DISPERSION PARTICLES IS IN THE RANGE FROM ABOUT 50 TO 500 NM, AND A PROCESS FOR THEIR PREPARATION

Adolf Schmidt, Cologne, and August Böckmann, Krefeld, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jul. 30, 1980, Ser. No. 173,568

Claims priority, application Fed. Rep. of Germany, Apr. 2, 1980, 3012821

The portion of the term of this patent subsequent to Apr. 27, 1999, has been disclaimed.

Int. Cl.³ C08L *27/06*

U.S. Cl. 524—745 **14 Claims**

1. In a process for the preparation of an aqueous dispersion of a synthetic polymer by polymerization of a monomer or mixture of monomers thereof in an aqueous medium in the presence of an initiator and an emulsifier, the improvement wherein said emulsifier comprises an alkali metal salt of a polysulfonic acid of an alkane of 8 to 22 carbon atoms.

4,327,005

PROCESS FOR THE PREPARATION OF STABILIZED POLYMER DISPERSIONS IN POLYOL AT LOW TEMPERATURE

Gerhard G. Ramlow, Grosse Ile; Duane A. Heyman, Monroe, and Richard A. Moore, Trenton, all of Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Aug. 18, 1980, Ser. No. 179,137

Int. Cl.³ C08K *5/06, 2/14, 5/15;* C08G *65/00*

U.S. Cl. 524—377 **11 Claims**

1. In a process for the preparation of a graft copolymer dispersion in a polyol prepared by the in situ polymerization, in the presence of a free-radical initiator, of an ethylenically unsaturated monomer or mixture of monomers in a polyol, the improvement comprises conducting said polymerization in the presence of an effective amount of a preformed polymeric stabilizer wherein said stabilizer consists of an alkylene oxide adduct of a copolymer of styreneallyl alcohol having an equivalent weight of 220 to 8000.

4,327,006

WRITING LIQUID FOR USE WITH AN OPAQUE RECORDING MATERIAL FOR FORMING TRANSPARENCIES FOR OVERHEAD PROJECTION AND THE LIKE

Claude Ceintrey, Paris, France, assignor to La Cellophane, Paris, France

Division of Ser. No. 912,546, Jun. 5, 1978, Pat. No. 4,252,601. This application Sep. 2, 1980, Ser. No. 183,376

Claims priority, application France, Mar. 1, 1978, 78 05816

Int. Cl.³ B44C *1/22;* C08K *5/01;* C09D *11/16;* C08K *5/02*

U.S. Cl. 524—315 **8 Claims**

1. A writing liquid for transparentizing an opaque layer of an organic styrene resin pigment uniformly distributed as fine particles in a film forming binder carried on a transparent or opaque support, said writing liquid consisting essentially of a mixture of a solvent for the styrene resin pigment and one or more chlorofluoroalkanes having a boiling point of more than 0° C. at atmospheric pressure and represented by the formula:

$$(\mathrm{CFxClyHz}){-}(\mathrm{CFx'Cly'Hz'})_n{-}(\mathrm{CFx''Cly''Hz''})_m$$

wherein

n=0 or 1

x, x′, x″=0, 1, 2 or 3

y, y′, y″=0, 1, 2 or 3

z, z′, z″=0, 1 or 2

when n=0 then m=0 and x+y+z=4

when n=1 then m=0 or 1

when n=1 then m=0

then x+y+z=x′+y′+z′=3 and when n=1 and m=1

then x+y+z=x″+y″+z″=3 and x′+y′+z′=2

at a weight ratio of solvent to chlorofluoroalkane of from 10:90 to 80:20 with the proviso that in the case of gaseous chlorofluoroalkanes the amount of the gaseous chlorofluoroalkane is limited by its solubility at room temperature in said solvent or in a liquid chlorofluoroalkane when a mixture of a gaseous chlorofluoroalkane and a liquid chlorofluoroalkane is used.

4,327,007

POLYETHYLENE TEREPHTHALATE COMPOSITION CONTAINING ALIPHATIC PLASTICIZER AND NUCLEATING AGENT

Nicholas Vanderkooi, Jr., Pompton Plains, and Harold W. Tuller, Long Valley, both of N.J., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Dec. 22, 1980, Ser. No. 219,088

Int. Cl.³ C08K *5/11;* C08L *67/00*

U.S. Cl. 524—315 **24 Claims**

1. A composition comprising:

polyethylene terephthalate;

up to about 15 percent based on the weight of the polyethylene terephthalate of a plasticizer which comprises an ester of an aliphatic carboxylic acid having from 2 to 8 carbon atoms and at least 1 carboxyl group, and an alcohol having from 1 to 10 carbon atoms and 1 hydroxyl group; and

up to about 10 percent, based on the weight of the polyethylene terephthalate, of a nucleating agent which comprises the sodium salt of a hydrocarbon acid having from 9 to about 25 carbon atoms, and at least 1 carboxyl group.

4,327,008

URETHANE RHEOLOGY MODIFIERS AND COATING COMPOSITIONS CONTAINING SAME

Karl F. Schimmel, Verona; Jerome A. Seiner, Pittsburgh; Roger M. Christenson, and Rostyslaw Dowbenko, both of Gibsonia, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Dec. 29, 1980, Ser. No. 221,146

Int. Cl.³ C08G *18/12, 18/48*

U.S. Cl. 524—104 **44 Claims**

1. A urethane rheology modifier characterized in having a branched structure and terminal hydrophobic groups, derived from the reaction of:

(a) for each 8 moles of a polyalkylene oxide having a molecular weight of from about 2,000 to about 20,000;

(b) from about 0.1 moles to about 3 moles of a polyfunctional material, said material being a compound having at least 3 active hydrogens capable of reacting with isocyanate or a polyisocyanate having at least 3 isocyanate groups;

(c) from about 7 moles to about 30 moles of a diisocyanate;

(d) from about 3 moles to about 14 moles water; and

(e) sufficient monofunctional active hydrogen-containing compound or monoisocyanate to end-cap substantially all free isocyanate or hydroxy groups.

32. A coating composition consisting essentially of a film-forming polymeric resin and about 0.1% to about 10%, based on the film-forming polymeric resin solids, of a rheology modifier, said modifier characterized in having a branched structure, terminal hydrophobic groups and derived from the reaction of:

(a) for each 8 moles of a polyalkylene oxide having a molecular weight of from 2,000 to about 20,000;

(b) from about 0.1 moles to about 3 moles of a polyfunctional material, said material being a compound having at least 3 active hydrogens capable of reacting with isocyanates or is a polyisocyanate having at least 3 isocyanate groups;

(c) from about 7 moles to about 30 moles of a diisocyanate;
(d) from about 3 moles to about 14 moles water; and
(e) sufficient monofunctional active hydrogen-containing compound or monoisocyanate to end-cap substantially all free isocyanate or hydrogen groups.

4,327,009
ANTI-BLOCK ADDITIVES FOR OLEFIN POLYMERS
James A. Allen; George W. Knight, both of Lake Jackson, and Morris S. Edmondson, Alvin, all of Tex., assignors to The Dow Chemical Company, Midland, Mich.
Filed Sep. 29, 1980, Ser. No. 191,594
Int. Cl.³ C08K *5/06*
U.S. Cl. 524—114 **10 Claims**

1. A process for reducing block, but retaining high cling, of extrusion-cast films of linear, low density, ethylene copolymers which inherently exhibit high block and high cling, said process comprising
incorporating into the said copolymer, prior to extrusion-casting into films, an effective amount in the range of about 0.04 to about 4 weight percent of at least one block-reducing agent comprising a liquid organic having a molecular weight in the range of about 300 to about 5000, a Saybolt viscosity of at least 100 centistokes at 25° C., a boiling point above 285° C., and
extrusion-casting the mixture into a thin film.

4,327,010
SOLUTION OF FLUORINATED POLYMER HAVING CARBOXYLIC ACID SALT GROUPS
Manabu Suhara, and Kiyotaka Arai, both of Yokohama, Japan, assignors to Asahi Glass Company, Ltd., Tokyo, Japan
Continuation of Ser. No. 6,876, Jan. 25, 1979, Pat. No. 4,259,226. This application Dec. 10, 1979, Ser. No. 101,685
The portion of the term of this patent subsequent to Mar. 31, [illegible], has been disclaimed.
Int. Cl.³ C08K *5/05;* **C08L** *27/14*
U.S. Cl. 524—388 **8 Claims**

1. A solution of a fluorinated polymer which is selected from the group consisting of a homopolymer of a fluorinated vinyl monomer having a carboxylic acid group or a functional group convertible into a carboxylic acid group, and a copolymer of said fluorinated vinyl monomer with a fluorinated olefin, wherein said flourinated polymer has less than 900 of an equivalent of carboxylic acid groups having the formula:

—COOM

wherein M represents an alkaline metal atom or a metal atom in group IIa or IIb of the Periodic Table or an ammonium group or an amine group, in a highly polar organic solvent having a hydroxyl group.

4,327,011
PRINTING INK AND VEHICLE THEREFOR
Robert H. Ripley, Grand Rapids; Robert W. Karsten, Zeeland, both of Mich.; Eugene M. Brandon, Marlton, N.J., and James W. Lockerby, Downers Grove, Ill., assignors to Century Inks Corporation, Park Ridge, Ill.
Continuation-in-part of Ser. No. 96,193, Nov. 20, 1979, abandoned. This application Jan. 19, 1981, Ser. No. 226,392
Int. Cl.³ C08K *5/01*
U.S. Cl. 524—474 **14 Claims**

1. A printing ink vehicle comprising 50–70% by weight polymer solids in 30 to 50% of an essentially aliphatic hydrocarbon solvent boiling between 390°–595° F., such solids being prepared from monomers polymerized to a resin having a molecular weight in the range of 4,000 to 50,000, such monomers comprising:
30–63% styrene, and 37 to 70% of acrylates and methacrylates of which at least 25% are monomers having at least C_6 alkyl chain length.

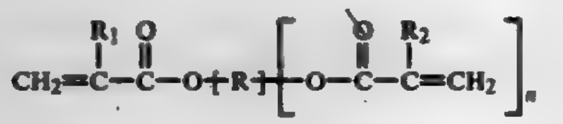
4,327,012
POLYMER BLENDS WITH IMPROVED HYDROLYTIC STABILITY
Gideon Salee, Williamsville, N.Y., assignor to Hooker Chemicals & Plastics Corp., Niagara Falls, N.Y.
Continuation-in-part of Ser. No. 193,052, Oct. 2, 1980, abandoned, which is a continuation of Ser. No. 90,179, Nov. 1, 1979, abandoned. This application Mar. 20, 1981, Ser. No. 245,709
Int. Cl.³ C08L *67/02*
U.S. Cl. 523—203 **26 Claims**

1. A thermoplastic polymeric composition comprising, in admixture, (a) a linear aromatic polyester of monomer components consisting essentially of a bisphenol and a dicarboxylic acid, and (b) a SAN polymer.

16. The composition of claim 1 which also includes a filler material.

4,327,013
POLY(ACRYLATE) CONTAINING COMPOSITIONS AND PROCESS FOR PRODUCING MOLDED ARTICLES
Edward N. Peters, Piscataway, N.J., assignor to Union Carbide Corporation, Danbury, Conn.
Continuation-in-part of Ser. No. 35,012, May 1, 1979, abandoned. This application Mar. 27, 1980, Ser. No. 129,883
Int. Cl.³ C08K *7/14*
U.S. Cl. 524—538 **13 Claims**

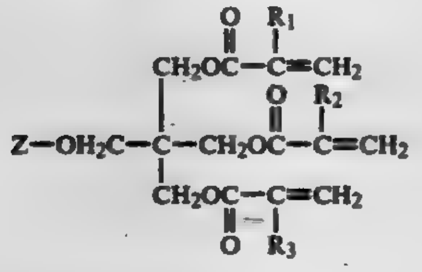
1. A molding composition for producing fiber reinforced molded articles comprising:
(A) a curable resin portion containing:
(i) from 5 to about 60 weight percent of a poly(acrylate) characterized by the following empirical formula:



wherein R is the hydroxyl-free residue of an organic polyhydric alcohol which contained hydroxyl groups bonded to different carbon atoms, R_1 and R_1 are independently hydrogen or methyl, and n is 1 to 3, (ii) from about 5 to about 60 weight percent of a monoethylenically unsaturated monomer which is soluble in and copolymerizable with (i), wherein (i) plus (ii) have a viscosity of from about 1 to about 50 centipoise, (iii) from about 0.2 to about 3 weight percent of an elevated temperature free-radical curing catalyst capable of effecting the coreaction of (i) and (ii), and
(B) one or more reinforcing fibers with a melting point or a glass transition temperature above about 130° C., wherein said fibers are present in amounts of from about 15 to about 80 weight percent; said weight percents in (A) and (B) being based on the total weight of the composition.

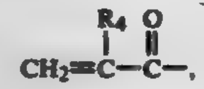
4,327,014
RESIN-FORMING MATERIAL, IMPLANT MATERIAL AND COMPOSITIONS FOR RESTORATIVE MATERIAL SUITABLE FOR MEDICAL OR DENTAL USE
Haruyuki Kawahara, Moriguchi; Teruo Makita, Kobe; Shozo Kudo, Minoo, and Takashi Funakoshi, Osaka, all of Japan, assignors to Kanebo Ltd., Tokyo, Japan
Filed Apr. 9, 1980, Ser. No. 138,814
Claims priority, application Japan, Apr. 11, 1979, 54-44752; Apr. 11, 1979, 54-44753
Int. Cl.³ C08K *3/28*
U.S. Cl. 523—116 **7 Claims**

1. A composition of matter, especially useful as a dental filling material, comprising
(A) from about 50 to about 95% by weight of finely divided, inorganic filler material and which is safe and effective for use in a dental filling in the human body, wherein at least 50% by weight of said filler material is at least one nitride substance having a Moh's hardness of at least 7 and is selected from the group consisting of vanadium nitride, boron nitride, aluminum nitride, silicon nitride, titanium nitride and zirconium nitride, and the balance of said filler material is one or more inorganic dental filler substances which are different from said nitride substance, have a Moh's hardness of at least 5 and are useful as a filler for dental filling materials, and
(B) from about 50 to about 5% by weight of polymerizable monomer component capable of polymerizing to form a binder resin, wherein said monomer component consists essentially of
(1) from 60 to 100% by weight of at least one, first polymerizable monomer having the formula (I)



(I)

wherein Z is hydrogen or



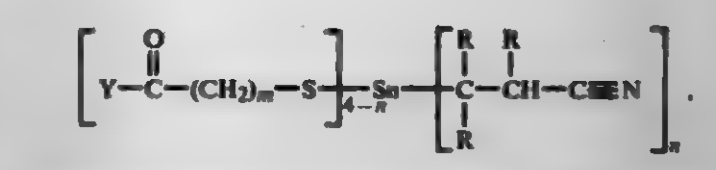
and R_1, R_2, R_3 and R_4, which are the same or different, each is selected from the group consisting of hydrogen, methyl, ethyl or propyl, and
(2) up to 40% by weight of at least one, second polymerizable monomer which is different from said first polymerizable monomer and is suitable for use as a resin-forming monomer for dental filling materials.

4,327,015
FLAME RESISTANT, TRANSPARENT POLYCARBONATES COMPRISING BISULFITE ADDUCTS
Frank Druschke, Stuttgart; Dieter Margotte, Krefeld; Wolfgang Cohnen, Leverkusen, and Karsten Idel, Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany
Filed May 11, 1981, Ser. No. 262,109
Claims priority, application Fed. Rep. of Germany, May 22, 1980, 3019527
Int. Cl.³ C08K *5/41, 5/42*
U.S. Cl. 524—162 **5 Claims**

1. Polycarbonates based on diphenols, characterized in that they comprise from 0.001 to 0.4% by weight, relative to the weight of polycarbonate, of an additive selected from the group consisting of aldehyde-bisulphite adducts and ketone-bisulphite adducts.

4,327,016
ORGANOTIN COMPOUNDS, AND THEIR USE
Wolfgang Wehner, Zwingenberg; Horst Müller, Fürth, and Hans-Günter Köstler, Heppenheim, all of Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.
Filed May 1, 1980, Ser. No. 145,417
Claims priority, application Switzerland, May 7, 1979, 4255/79
Int. Cl.³ C07F *7/22;* **C08K** *5/58*
U.S. Cl. 524—180 **10 Claims**

1. A compound of the formula I



(I)

wherein each R independently is hydrogen or C_1–C_4 alkyl, Y is the —OR′ or —S—R″ group, in which R′ is C_{12}–C_{16} alkyl and R″ is C_8–C_{20} alkyl, C_2–C_{20} alkenyl, C_6–C_{20} aryl or C_7–C_{20} aralkyl, m is an integer from 1 to 6, and n is 1 or 2.

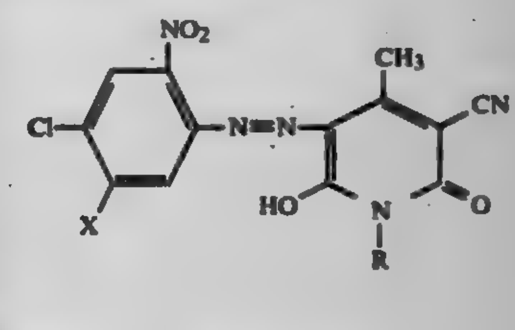
10. A method for stabilizing halogen-containing thermoplastic polymers against the degradative effects of heat and light which comprises incorporating into said thermoplastic an effective stabilizing amount of a compound according to claim 1.

4,327,017
AGENT OF CHROMA AND BRIGHTNESS FOR PIGMENTS
Seigo Iwamoto, Tokyo, and Eiichi Saito, Hachioji, both of Japan, assignors to Nihonshikizai Kogyo Co., Ltd. and Takeda Chemical Industries, Ltd., both of Osaka, Japan, part interest to each
Filed Mar. 6, 1980, Ser. No. 127,981
Claims priority, application Japan, Mar. 8, 1979, 54-27481; Nov. 8, 1979, PCT/JP79/00288
Int. Cl.³ C09C *3/10;* **C09F** *1/04*
U.S. Cl. 260—105 **4 Claims**

1. An agent for improving the chroma and brightness of pigments, which consists of the product of reaction of a basic polyaluminum or aluminum salt with a resin acid or its salt, said resin acid being derived from a rosin or a modified rosin.

4,327,018
AZO DYES AND THE PRODUCTION AND USE THEREOF
Hans W. Liechti, Oberwil; Kurt Burdeska, Basel, and Jürgen Markert, Ettingen, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.
Continuation of Ser. No. 855,100, Nov. 25, 1977, abandoned. This application Sep. 17, 1979, Ser. No. 75,861
Claims priority, application Luxembourg, Dec. 1, 1976, 76304
Int. Cl.³ C09B *29/36*
U.S. Cl. 260—156 **3 Claims**

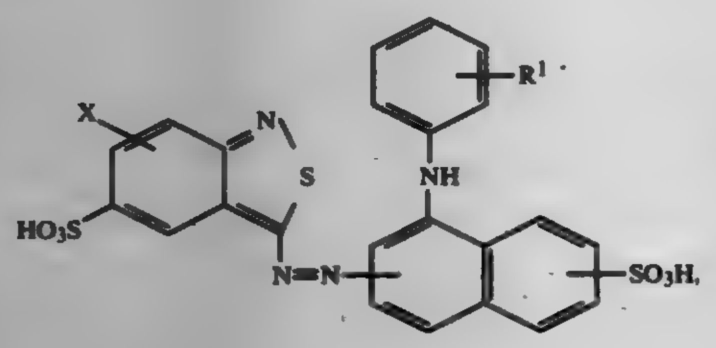
1. An azo dye of the formula



wherein
R is alkyl of 1 to 4 carbon atoms; and
X is chloro or phenoxy.

4,327,019
ACID AZO DYES FROM A 3-AMINO-BENZISOTHIAZOLE-[2,1]-5-SULFONIC ACID DIAZO COMPONENT
Heinz Eilingsfeld, Frankenthal; Guenter Hansen; Guenther Seybold, both of Ludwigshafen, and Georg Zeidler, Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany
Continuation of Ser. No. 757,431, Jan. 6, 1977, abandoned. This application Dec. 28, 1978, Ser. No. 973,800
Claims priority, application Fed. Rep. of Germany, Jan. 17, 1976, 2601633
Int. Cl.[3] C07C *107/04;* C09B *29/039, 29/095*
U.S. Cl. 260—158 7 Claims

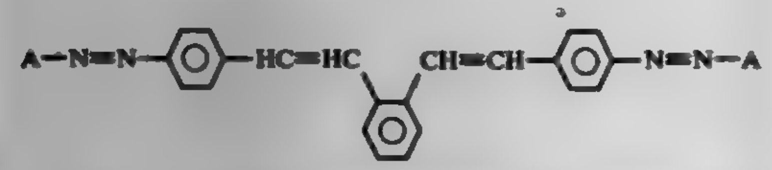
1. An acid dye which in the form of the free acid has the formula



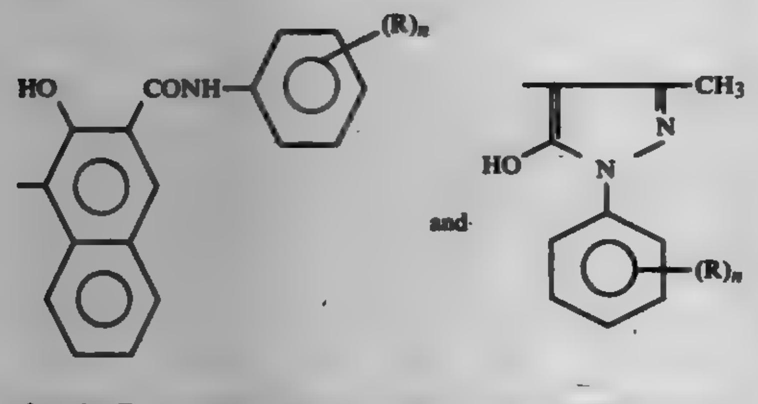
wherein:
X is hydrogen, chloro, bromo, nitro, C_1- to C_4-alkyl, methoxy, ethoxy or NHCO-(C_1 to C_4-alkyl)
R^1 is hydrogen, chloro, methyl, methoxy or ethoxy.

4,327,020
BIS-AZO COMPOUNDS
Masaomi Sasaki, Shizuoka; Masafumi Ohta, and Kyoji Tsutsui, both of Numazu, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan
Filed Jun. 11, 1980, Ser. No. 158,455
Claims priority, application Japan, Jun. 20, 1979, 54-76714
Int. Cl.[3] C07C *107/04, 107/08;* C09B *35/03, 35/033*
U.S. Cl. 260—160 14 Claims

1. A Bis-azo compound of the formula



in which A represents identical substituents selected from the group consisting of



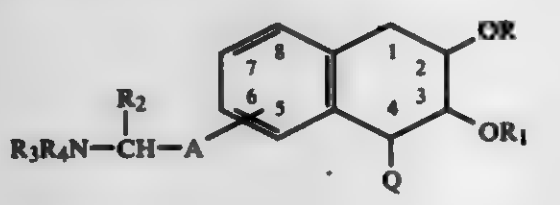
wherein R represents alkyl, alkoxy, nitro, dialkylamino or halogen, and n represents an integer 0, 1, 2 or 3 and when n is 2 or 3, R represents identical or different substituents selected from the group consisting of alkyl, alkoxy, nitro, dialkylamino and halogen.

4,327,021
PVC PLASTICIZED WITH DICYCLOHEXYLBIPHENYL AND PRIMARY PLASTICIZER
Brian C. Davis, Wilmington, Del., and Robert P. Bryer, Kennett Square, Pa., assignors to Suntech, Inc., Philadelphia, Pa.
Continuation-in-part of Ser. No. 74,024, Sep. 10, 1979, abandoned, which is a continuation-in-part of Ser. No. 821,012, Aug. 1, 1977, Pat. No. 4,167,504. This application Nov. 24, 1980, Ser. No. 209,446
Int. Cl.[3] C08K *5/12;* C08L *27/06*
U.S. Cl. 524—297 3 Claims

1. In the process of plasticizing a polyvinychloride resin with a primary and secondary plasticizer, the improvement of using dicyclohexylbiphenyl as the secondary plasticizer in an amount sufficient to replace from about 10% to about 40% of said primary plasticizer.

4,327,022
HETEROCYCLIC ALKYL NAPHTHOLS
Denis M. Bailey, East Greenbush, N.Y., assignor to Sterling Drug Inc., New York, N.Y.
Continuation-in-part of Ser. No. 388,962, Aug. 16, 1973, Pat. No. 4,169,108. This application Aug. 1, 1979, Ser. No. 63,343
Int. Cl.[3] C07D *295/08, 295/14*
U.S. Cl. 260—239 B 16 Claims

1. A compound having the formula



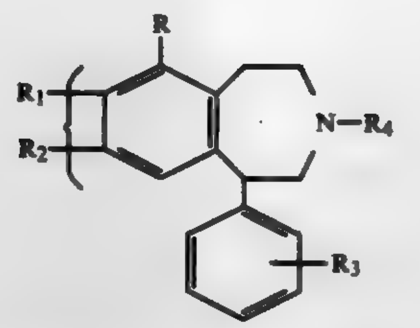
wherein
the side chain represented by

$$R_3R_4N-\underset{}{\overset{R_2}{\overset{|}{C}}}H-A-$$

occupies either position 5 or position 6 of the naphthalene nucleus;
R and R_1 are independently hydrogen, lower-alkanoyl, benzoyl or benzoyl substituted by from 1 to 2 lower-alkyl groups;
Q is hydrogen or methyl;
A is a direct linkage or CR_5R_6 where R_5 and R_6 are independently hydrogen or methyl;
R_2 is hydrogen or methyl, provided that when A is a direct linkage, or when R_5 and/or R_6 are methyl, then R_2 is hydrogen;
NR_3R_4 is pyrrolidino, piperidino, hexamethyleneimino, morpholino or any of these having from one to two lower-alkyl substituents;
or an acid-addition salt thereof.

4,327,023
INTERMEDIATES FOR PREPARING 7,8-AMINO, HYDROXY-1-PHENYL-2,3,4,5-TETRAHYDRO-1H-3-BENZAZEPINES
Kenneth G. Holden, Haddonfield; Carl Kaiser, Haddon Heights, both of N.J., and Joseph Weinstock, Phoenixville, Pa., assignors to SmithKline Corporation, Philadelphia, Pa.
Division of Ser. No. 117,181, Jan. 31, 1980, Pat. No. 4,284,556. This application Aug. 7, 1980 Ser. No. 176,178
Int. Cl.[3] C07D *223/16*
U.S. Cl. 260—239 BB 4 Claims

1. A compound of the formula:

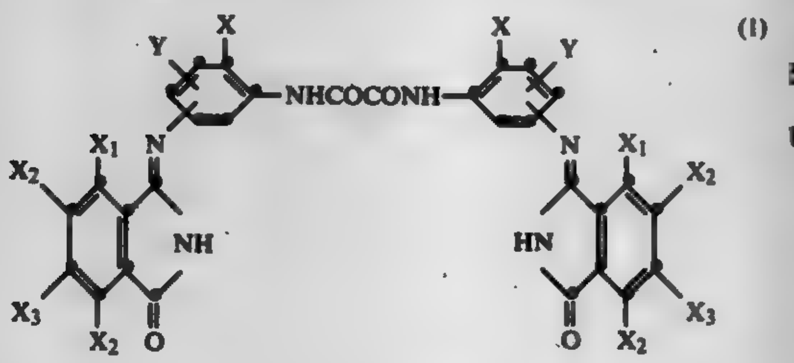


in which:
R is hydrogen, halo or lower alkyl of 1-3 carbons;
R_1 is amino, acetamido, nitro or methylsulfonamidoyl;
R_2 is benzyloxy, or when R_1 is nitro, hydroxy;
R_3 is hydrogen, halo, methyl, methoxy, methylthio or hydroxy, and
R_4 is benzyl, methyl, allyl and, when R_1 is nitro, hydrogen; together with the pharmaceutically acceptable acid addition salts thereof.

4,327,024
IMINOISOINDOLINONE PIGMENTS, PROCESS FOR THEIR PRODUCTION AND USE THEREOF
Ernst Model, Basel, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.
Filed Nov. 10, 1980, Ser. No. 205,806
Claims priority, application Switzerland, Nov. 20, 1979, 10343/79
Int. Cl.[3] C07D *209/50;* C08K *5/00*
U.S. Cl. 260—325 PH 4 Claims

1. An iminoisoindolinone pigment of the formula

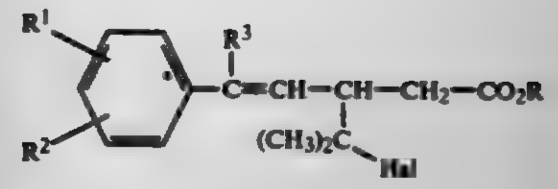
(I)



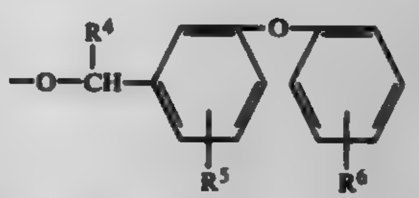
wherein X and Y are hydrogen, halogen, alkyl or alkoxy, each of 1 to 4 carbon atoms, X_2 is chlorine or bromine, and X_1 and X_3 are chlorine, bromine, alkoxy of 1 to 4 carbon atoms, or aryloxy.

4,327,025
PREPARATION OF STYRYL-CYCLOPROPANE-CARBOXYLIC ACID ESTERS AND INTERMEDIATE THEREFOR
Manfred Jautelat, Burscheid; Dieter Arlt, Cologne; Reinhard Lantzsch, Leverkusen; Rainer Fuchs, Wuppertal; Hans-Jochem Riebel, Wuppertal; Rolf Schröder, Wuppertal, and Horst Harnisch, Much, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany
Filed Apr. 7, 1980, Ser. No. 137,685
Claims priority, application Fed. Rep. of Germany, Apr. 23, 1979, 2916321
Int. Cl.[3] C07D *325/00, 317/44;* C07C *121/60, 69/76*
U.S. Cl. 260—338 1 Claim

1. A compound of the formula



in which
R is C_{1-4}-alkyl or,

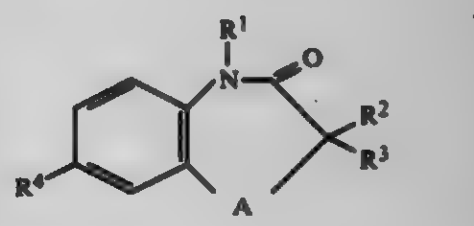


R^4 is hydrogen, cyano or ethynyl,
R^5 and R^6 is hydrogen or fluorine,
R^1 is alkoxy or alkylthio, either of which may be optionally substituted by halogen,
R^2 is hydrogen or alkoxy, or
R^1 and R^2 together are optionally halogen-substituted alkylenedioxy,
R^3 is hydrogen or chlorine, and
Hal is chlorine or bromine.

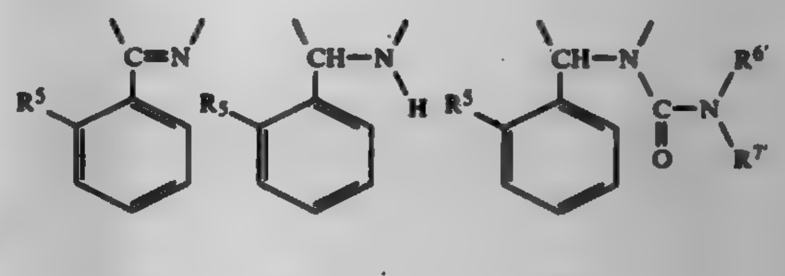
4,327,026
BENZODIAZEPINE DERIVATIVES
Quirico Branca, Basel; Albert E. Fischli, and Andre' Szente, both of Riehen, all of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.
Filed Jul. 16, 1981, Ser. No. 283,711
Claims priority, application Switzerland, Jul. 31, 1980, 5841/80
Int. Cl.[3] C07D *243/24*
U.S. Cl. 260—239.3 D 12 Claims

1. A compound of the formula

I

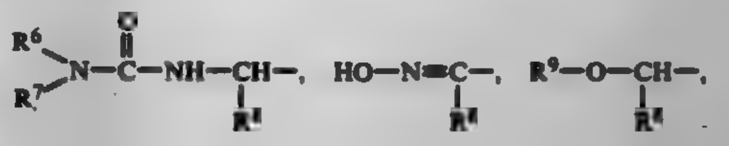


wherein A is the group



(a), (b) or (c),

R_1 is lower Alkyl, R^2 and R^3 each are hydrogen or lower alkyl, R^4 is the group



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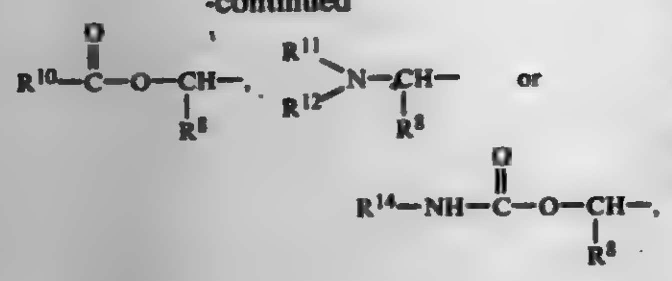
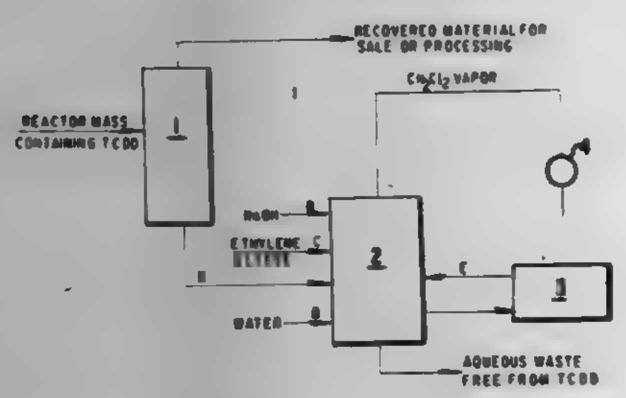


R^5 is hydrogen or halogen, R^8 is hydrogen or lower alkyl, R^9 is lower alkyl or lower alkoxyalkyl, R^{10} is lower alkyl, R^{11} is hydrogen, lower alkyl or lower hydroxyalkyl, R^{12} is hydrogen or lower alkyl and R^{14} is lower alkyl or phenyl optionally substituted by lower alkyl, halogen, nitro, or lower alkoxy, and either R^6 is hydrogen or lower alkyl and R^7 is lower alkyl or lower hydroxyalkyl or R^6 and R^7 together with the nitrogen atom are a 3- to 7-membered heterocycle which, when it is at least 5-membered, can contain as a ring member an oxygen or sulfur atom or a group of the formula $>N\text{-}R^{13}$, in which R^{13} is hydrogen or lower alkyl, and either $R^{6'}$ is hydrogen or lower alkyl and $R^{7'}$ is lower alkyl or $R^{6'}$ and $R^{7'}$ together with the nitrogen atom are a 3- to 7-membered heterocycle which, when it is at least 5-membered, can contain as a ring member an oxygen or sulfur atom or a group of the formula $>N\text{-}R^{-'}$, in which $R^{13'}$ is lower alkyl, with the proviso that R^4 is the group $R^{6'}R^{7'}N\text{-}CO\text{-}NH\text{-}CH(R^8)$-when A is the group (c),
and pharmaceutically acceptable acid addition salts thereof.

4,327,027
CHEMICAL DETOXIFICATION OF TOXIC CHLORINATED AROMATIC COMPOUNDS
Kenneth J. Howard, North Little Rock, and Albert E. Sidwell, Jacksonville, both of Ark., assignors to Vertac Chemical Corporation, Memphis, Tenn.
Continuation-in-part of Ser. No. 48,817, Jun. 15, 1979, abandoned. This application Feb. 7, 1980, Ser. No. 119,481
Int. Cl.³ C07D *317/44*; C07C *37/68*
U.S. Cl. 260—340.3 **14 Claims**



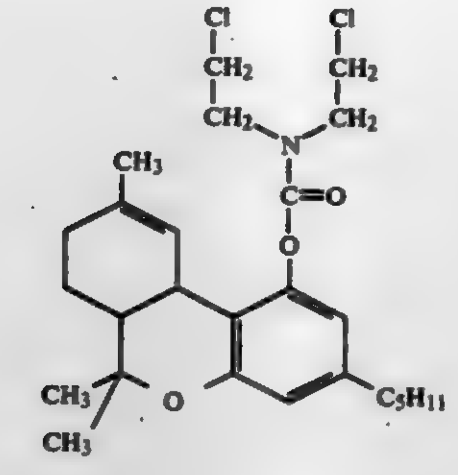
1. A method for the reduction of the content of chlorinated aromatic dioxins in reaction products to virtually zero consisting essentially of reacting a high boiling still bottom residue containing chlorinated aromatic dioxins resulting from production and distillation of 2,4,5-trichlorophenol with an amount, in excess of stoichiometrical based on the total organic halogen content, of alkaline reactants selected from the group consisting of:
(1) alkali metal alcoholates of alcohols selected from the group consisting of alkanols having from 1 to 5 carbon atoms, polyalkoxyalkane glycols having from 4 to 20 carbon atoms, alkanepolyols having from 2 to 5 carbon atoms and 2 to 3 hydroxyls, and monoalkyl ethers of said alkanepolyols with alkanols having from 1 to 4 carbon atoms and
(2) mixtures of said alcohols with alkaline reactants selected from the group consisting of alkali metal hydroxides and carbonates,
at a reaction temperature of from 140° C. to 220° C. for a time sufficient to convert the organic chlorine of the halogenated aromatic compounds in the still bottoms into inorganic chloride, and recovering the still bottoms virtually free of chlorinated aromatic dioxins.

9. A method for the reduction of the content of chlorinated dibenzo-p-dioxins in reaction products to virtually zero consisting of
(1) reacting a high boiling still bottom residue containing chlorinated dibenzo-p-dioxin resulting from the production and distillation of 2,4,5-trichlorophenol with an amount, in excess of stoichiometrical based on the total organic halogen content, of alkaline reactants selected from the group consisting of:
(a) alkali metal alcoholates of alcohols selected from the group consisting of alkanols having from 1 to 5 carbon atoms, polyalkoxyalkane glycols having from 4 to 20 carbon atoms, alkanepolyols having from 2 to 5 carbon atoms and 2 to 3 hydroxyls, and monoalkyl ethers of said alkanepolyols with alkanols having from 1 to 4 carbon atoms and
(b) mixtures of said alcohols with alkaline reactants selected from the group consisting of alkali metal hydroxides and carbonates,
at a reaction temperature of from 140° C. to 220° C. for a time sufficient to convert substantially all the organic chlorine of the halogenated aromatic compounds in the still bottoms into inorganic chloride, and recovering the still bottoms virtually free of chlorinated dibenzo-p-dioxins
(2) substantially dissolving the still bottoms virtually free of chlorinated dibenzo-p-dioxins in water,
(3) extracting the aqueous mass with an organic solvent for chlorinated dibenzo-p-dioxins immiscible in water,
(4) discharging the extracted aqueous mass vitually free of chlorinated dibenzo-p-dioxins,
(5) recycling said organic solvent extract to step (1), and
(6) recovering said organic solvent from said reaction step 1 by distillation and condensation.

11. A method for the reduction of the content of chlorinated dibenzo-p-dioxins adsorbed on a solid adsorbent to virtually zero consisting essentially of contacting said solid adsorbent with an aromatic organic liquid at a temperature of between 80° C. and 220° C. for a time sufficient to desorb and dissolve substantially all of said chlorinated dibenzo-p-dioxins, reacting said aromatic organic liquid containing chlorinated dibenzo-p-dioxins with an amount, in excess of stoichiometrical based on the total organic halogen content, of alkaline reactants selected from the group consisting of
(1) alkali metal alcoholates of alcohols selected from the group consisting of alkanols having from 1 to 5 carbon atoms, polyalkoxyalkane glycols having from 4 to 20 carbon atoms, alkanepolyols having from 2 to 5 carbon atoms and 2 to 3 hydroxyls, and monoalkyl ethers of said alkane polyols with alkanols having from 1 to 4 carbon atoms, and
(2) mixtures of said alcohols with alkaline reactants selected from the group consisting of alkali metal hydroxides and carbonates,
at a reaction temperature of from 140° C. to 220° C. for a time sufficient to convert the organic halogen into inorganic halide, and recovering a aromatic organic liquid virtually free of chlorinated dibenzo-p-dioxins.

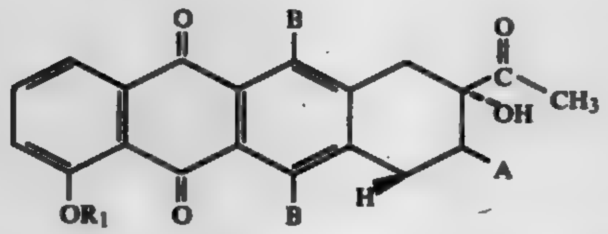
4,327,028
COMPOSITION OF MATTER
Norman C. Kaplan, Del Mar, Calif., assignor to Calcol, Inc., Cleveland, Ohio
Filed Aug. 17, 1978, Ser. No. 934,465
Int. Cl.³ C07D *311/78*
U.S. Cl. 260—345.3 **1 Claim**

1. Δ-9-N,N-Bis-dichloroethyl carbamate Tetrahydrocannabinol having the formula:



4,327,029
ANTHRACYCLINE DERIVATIVES, THEIR PREPARATION AND USE
Luigi Bernardi, Milan; Paolo Masi, Milan; Antonino Suarato, Milan, and Federico Arcamone, Nerviano, all of Italy, assignors to Farmitalia Carlo Erba S.p.A., Milan, Italy
Division of Ser. No. 850,933, Nov. 14, 1977, Pat. No. 4,166,848. This application Jan. 8, 1979, Ser. No. 2,072
Claims priority, application United Kingdom, Nov. 16, 1976, 47601/76
Int. Cl.³ C07C *39/40*
U.S. Cl. 260—351.1 **10 Claims**

1. A compound of the formula:



wherein R_1 is a C_2–C_4 alkyl; a C_3–C_6 cycloalkyl or benzyl; A and B are OH or A and B are $OCOOR_4$ or B is OH and A is $OCOOR_4$; and R_4 is alkyl.

4,327,030
PROCESS FOR REDUCING THE POLYUNSATURATES CONTENT IN MIXTURES OF UNSATURATED FATTY ACIDS AND/OR FATTY ACID ESTERS
Kenneth R. McVay, Fairfield; Stephen C. Lakes, and Karl T. Zilch, both of Cincinnati, all of Ohio, assignors to Emery Industries, Inc., Cincinnati, Ohio
Filed Feb. 13, 1981, Ser. No. 234,280
Int. Cl.³ C11C *3/00*
U.S. Cl. 260—407 **14 Claims**

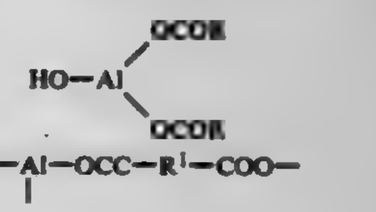
1. A process for reducing the amount of polyunsaturated fatty acid and/or polyunsaturated fatty acid ester present in admixture with monounsaturated fatty acid and/or monounsaturated fatty acid ester which comprises heating the admixture of fatty acids and/or fatty acid esters in the presence of a polymerization initiating amount of at least one organic peroxide polymerization initiator at a temperature and for a period of time which is sufficient to effect the selective polymerization of a substantial amount of polyunsaturated fatty acid and/or polyunsaturated fatty acid ester present in said admixture, and thereafter separating the polymerized polyunsaturated fatty acid and/or polyunsaturated fatty acid ester from said admixture.

4,327,031
ANTI-SOLAR COSMETIC COMPOSITION
Claude Bouillon, Eaubonne; Charles Vayssie, Aulnay-sous-Bois, and Francoise Richard, Montreuil-sous-Bois, all of France, assignors to L'Oreal, Paris, France
Division of Ser. No. 947,152, Sep. 29, 1978, Pat. No. 4,250,108, which is a division of Ser. No. 497,469, Aug. 14, 1974, Pat. No. 4,165,336, which is a continuation-in-part of Ser. No. 440,570, Feb. 7, 1974, abandoned. This application Aug. 29, 1980, Ser. No. 182,759
Claims priority, application Luxembourg, Feb. 19, 1973, 67061
The portion of the term of this patent subsequent to Aug. 21, 1996, has been disclaimed.
Int. Cl.³ C07C *123/00*; C07F *3/06*; C07C *143/24*
U.S. Cl. 260—429.9 **9 Claims**

5. The zinc salt of (2-oxo-3-bornylidene methyl) benzene sulfonic acid produced by reacting benzylidene camphor with oleum at a temperature not exceeding 50° C., and reacting the reaction mixture with an effective amount of zinc carbonate so as to produce said zinc salt.

4,327,032
ACICULAR ALUMINIUM SALTS OF CARBOXYLIC ACIDS AND PROCESSES FOR THEIR PREPARATION
Friedrich Lohse, Oberwil; Rolf Schmid, Gelterkinden, and Willy Fatzer, Bottmingen all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.
Filed Jan. 4, 1980, Ser. No. 109,716
Claims priority, application Switzerland, Jan. 16, 1979, 403/79; Jan. 16, 1979, 404/79
Int. Cl.³ C07F *5/06*
U.S. Cl. 260—448 R **8 Claims**

1. An acicular to rod-shaped aluminium monohydroxide salt of a carboxylic acid, which salt is free from water of crystallisation and has the formula I or contains the structural element of the formula II, or mixtures of these salts,



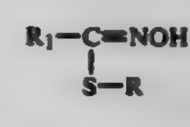
(I)

(II)

in which R is methyl, or ethyl or R^1 is the divalent group $—C_nH_{2n}—$, in which n is a number from 3 to 10.

4,327,033
PROCESS FOR THE PRODUCTION OF METHOMYL OXIME
Joseph T. Blackwell, III, Greensboro, N.C., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.
Filed Nov. 10, 1980, Ser. No. 205,811
Int. Cl.³ C07C *119/16*
U.S. Cl. 260—453.3 **4 Claims**

1. In the process for the manufacture of alkylthio hydroxamates of the formula:



where R_1 is lower alkyl or lower methoxyalkl; and R_2 is lower alkyl or lower cyanoalkyl by chlorinating an aldoxime of the formula:

$$R_1-\overset{\overset{NOH}{\|}}{C}-H$$

at a temperature range of $-10°$ C. to $0°$ C. to form an alkylhydroxamic acid chloride of the formula

$$R_1-\overset{\overset{N-OH}{\|}}{C}-Cl;$$

and then thioesterifying said alkylhydroxamic acid chloride at a temperature range of about $0°$ C. to $10°$ C. at a pH in the range 6–7, the improvement which comprises employing N-methylpyrrolidone as solvent in both reaction steps.

4,327,034

SULFAMIC ACID HALIDES AND PROCESSES FOR THE PREPARATION OF SULFAMIC ACID HALIDES

Gerhard Hamprecht, Weinheim; Adolf Parg, Bad Durkheim, and Karl-Heinz Koenig, Frankenthal, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jun. 25, 1979, Ser. No. 51,743

Claims priority, application Fed. Rep. of Germany, Jul. 1, 1978, 2828969; Mar. 23, 1979, 2911456

Int. Cl.³ C07C *155/02, 79/44, 143/12, 125/06*

U.S. Cl. 260—455 A **8 Claims**

1. A sulfamic acid halide of the formula

$$\begin{matrix} R^1 \searrow & \\ & N-SO_2Y \\ R^2 \nearrow & \end{matrix}$$

wherein,

R^1 is a straight or branched alkyl of 1–20 carbons being unsubstituted or substituted by halogen, or a cycloalkyl of 4–8 carbons;

$$R^2 \text{ is } -\overset{\overset{O}{\|}}{C}-N=C=O,\ -\overset{\overset{O}{\|}}{C}-N=C\begin{matrix} \diagup Y \\ \diagdown Y \end{matrix},\ R^4-X-\overset{\overset{X}{\|}}{C}-\overset{\overset{X}{\|}}{C}-,$$

$$R^3-\overset{\overset{X}{\|}}{C}-\overset{\overset{X}{\|}}{C}-\ -\overset{\overset{X}{\|}}{P}\begin{matrix} \diagup R^5 \\ \diagdown R^5 \end{matrix},\ -CH_2-X-R^6,\ R^3-\overset{\overset{O}{\|}}{S}-,$$

$$R^3-S-S-\text{ or } R^3-\overset{\overset{O}{\|}}{\underset{\underset{O}{\|}}{S}}-$$

R^3 and R^4 are each an alkyl of 1–20 carbons being unsubstituted or substituted by 1 or 2 halogen atoms, 1 or 2 alkoxy groups of 1–4 carbons or combination thereof, a straight or branched alkenyl or alkynyl of 2–20 carbons being unsubstituted or substituted by 1 or 2 halogen atoms, 1 or 2 alkoxy groups of 1–4 carbons or combination thereof, a cycloalkyl of 4–8 carbons being unsubstituted or substituted by a chlorine atom, an aralkyl or alkylaryl of 7–12 carbons being unsubstituted or substituted by 1 or 2 halogen atoms, 1 or 2 nitro groups, 1 or 2 alkoxy groups of 1–3 carbons or combination thereof, an aryl of 6–12 carbons being unsubstituted or substituted by 1 or 2 halogen atoms, 1 or 2 nitro groups, 1 or 2 alkoxy groups of 1–3 carbons or combination thereof, a heterocyclic radical having 5 or 6 members containing 1 or 2 nitrogen atoms, an oxygen atom or combination thereof being unsubstituted or substituted by 1 or 2 halogen atoms, 1 or 2 nitro groups, 1 or 2 alkoxy groups of 1–3 carbons or combination thereof;

R^3 may also be F or Cl;

R^5 is Cl, $-X-R^6$ or $-R^6$;

R^6 is an alkyl of 1–20 carbons;

X is O or S;

Y is Cl or if R^2 is

$$-\overset{\overset{O}{\|}}{C}-N=C=O \text{ or } -\overset{\overset{O}{\|}}{C}-N=C\begin{matrix} \diagup Y \\ \diagdown Y \end{matrix},$$

then Y is halogen, and any of the above listed alkyl, cycloalkyl, alkenyl, alkynyl, aralkylaryl, alkylaryl, or heterocyclic radicals may also be substituted with an alkyl of 1–4 carbons, a carbalkoxy of 2–4 carbons or a chlorocarbonyl, with the proviso that when R^2 is $-CH_2-X-R^6$, then R^1 is alkyl or cycloalkyl as defined above which are halogen free in the β-position to the nitrogen and X is S; when R^2 is

$$R^3-\overset{\overset{O}{\|}}{\underset{\underset{O}{\|}}{S}}-,$$

then R^1 is a cycloalkyl of 4–8 carbons or an alkyl of 1–20 carbons substituted by halogen.

4,327,035

PROCESS FOR THE PREPARATION OF CARBONIC ACID ESTERS

Walter Heitz, Kirchhain, and Peter Ball, Neu Oetting, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jan. 17, 1980, Ser. No. 112,893

Claims priority, application Fed. Rep. of Germany, Jan. 30, 1979, 2903506

Int. Cl.³ C07C *68/00*

U.S. Cl. 260—463 **3 Claims**

1. Process for the preparation of carbonic acid esters of monoalcohols or polyalcohols characterized in that ureas of the formula

$$H_2N-\overset{\overset{O}{\|}}{C}-NH_2$$

are reacted with C_1–C_{20} monoalcohols or with C_5–C_{20} polyalcohols in the molar ratio of at least 1:2 in the presence of a catalyst selected from the group consisting of

(i) saltlike or covalent compounds of main groups 1 and 2 and subgroups 1, 2, 3, 4, 5, 6, 7 and 8 of the Periodic Table of the elements;

(ii) orthostannates, amines, phosphines, phosphineoxides, thioethers, thiolates, $B(-O-C_6H_5)_3$, $B(C_6H_5)_3$ and $Al(OR)_3$ where R is an aliphatic or an aromatic hydrocarbon radical;

(iii) saltlike or covalent compounds of main groups 4, 5, and 6 in combination with any of (i) or (ii);

(iv) combination of any member of (i) with any other of (i) or (ii);

(v) combination of any member of (ii) with any other of (ii); said catalyst amounting to between about 10^{-3} and 5 mol percent relative to the number of mols of said urea, said combinations characterized in that they combine electron donors and electron acceptors at reaction temperatures between 120° and 270° C. and at a reaction time of 5 to 10 hours.

4,327,036

CHLORINATION PROCESS

Frank D. Marsh, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

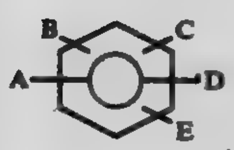
Filed May 8, 1980, Ser. No. 148,006

Int. Cl.³ C07C *121/50;* **C07B** *9/00*

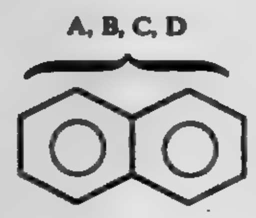
U.S. Cl. 260—465 G **16 Claims**

1. Process for nuclear chlorination of non-phenolic aromatic compounds, said process comprising contacting and reacting a non-phenolic aromatic compound having a net Hammett σ value of about -0.1 to about 2.0 with chlorine monoxide in the presence of at least one half an equivalent amount, based on the chlorine monoxide, of an acid having a pK_a no greater than that of trichloroacetic acid, provided, however, when the net Hammet σ value is about 0.7 to about 2.0, the acid has a pK_a no greater than that of trifluoroacetic acid.

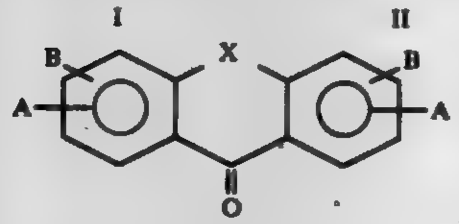
5. Process for nuclear chlorination of non-phenolic aromatic compounds, said process comprising contacting and reacting a non-phenolic aromatic compound having a net Hammett σ value of about -0.1 to about 2.0 with chlorine monoxide in the presence of at least one half an equivalent amount, based on the chlorine monoxide, of an acid having a pK_a no greater than that of trichloroacetic acid, provided, however, when the net Hammett σ value is about 0.7 to about 2.0, the acid has a pK_a no greater than that of trifluoroacetic acid, said non-phenolic aromatic compound being of the formula selected from the group consisting of



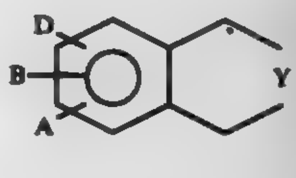
I



II

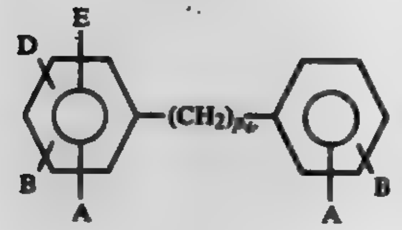


III

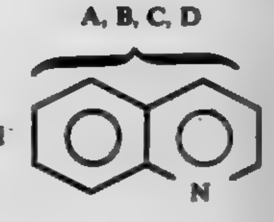


IV

A, B, C, D



and



V VI

wherein:

each of A and B is independently selected from H, OR, OCF_3, NH_2, NR_2, $NR_3^{\oplus}$, $PR_3^{\oplus}$, NO_2, CN, F, Cl, Br, I, CZ_3,

$$\overset{\overset{O}{\|}}{OC}-R',\ CO_2R,\ \overset{\overset{O}{\|}}{C}-H,\ \overset{\overset{O}{\|}}{C}-R',\ CO_2H,\ SO_2R',\ \overset{\overset{O}{\|}}{S}-R,$$

$$SO_3H,\ SO_2Cl,\ \overset{\overset{O}{\|}}{C}-NH_2,\ \overset{\overset{O}{\|}}{C}-NHR,\ \overset{\overset{O}{\|}}{C}-NR_2,$$

$$SO_2NH_2,\ SO_2NHR,\ SO_2NR_2,\ \overset{\overset{O}{\|}}{P}-(OR)_2,\ NH\overset{\overset{O}{\|}}{C}-R',$$

perfluoroalkyl of 1–8 carbon atoms, alkyl of 1–10 carbon atoms and alkyl of 1–10 carbon atoms substituted with any of the foregoing except H, perfluoroalkyl and alkyl;

C is H, OR, Cl, Br, F, CZ_3,

$$\overset{\overset{O}{\|}}{OC}-R',\ CO_2R,\ \overset{\overset{O}{\|}}{C}-R',\ CO_2H,\ NH\overset{\overset{O}{\|}}{C}-R'$$

or alkyl of 1–10 carbon atoms;

D is H or Cl;

E is H or Cl;

R is alkyl of 1–10 carbon atoms or aryl;

R′ is alkyl of 1–10 carbon atoms, aryl or CZ_3;

X is

or $(CH_2)_n$;

Y is $(CH_2)_m$;

each Z is independently selected from Cl, Br, and F;

m is 3–6;

n is 0–3; and

p is 0–10,

provided, however, in III and V each of A and B is selected independently.

10. Process of claim 5 wherein: the non-phenolic compound is of formula I;

A is selected from H, OR″, NH_2, NR''_2, NO_2, CN, Cl, CF_3, CCl_3, CO_2R'',

$$\overset{\overset{O}{\|}}{C}-H,\ \overset{\overset{O}{\|}}{C}-R'',\ CO_2H,\ SO_2R'',\ SO_3H,\ \overset{\overset{O}{\|}}{P}-(OR'')_2,\ NH\overset{\overset{O}{\|}}{C}-R''$$

and alkyl of 1–4 carbon atoms;

B is selected from H, OR″, NR''_2, NO_2, CN, Cl, CF_3, CCl_3, CO_2R'',

$$\overset{\overset{O}{\|}}{C}-H,\ \overset{\overset{O}{\|}}{C}-R'',\ CO_2H,\ SO_2R'',\ NH\overset{\overset{O}{\|}}{C}-R''$$

and alkyl of 1–4 carbon atoms; and

R″ is alkyl of 1–4 carbon atoms.

4,327,037

PRODUCTION OF UNSATURATED NITRILES

Robert K. Grasselli, Chagrin Falls; Dev D. Suresh, Warrensville Heights, and Harley F. Hardman, Lyndhurst, all of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Division of Ser. No. 430,964, Jan. 4, 1974, Pat. No. 4,139,552. This application Feb. 27, 1978, Ser. No. 881,313

Int. Cl.³ C07C *120/14*

U.S. Cl. 260—465.3 **1 Claim**

1. In the process for the ammoxidation of propylene or isobutylene by contacting propylene, isobutylene or mixtures thereof with molecular oxygen and ammonia in the vapor phase in the presence of a catalyst, the improvement comprising using as the catalyst $Sb_{0.5}Ca_{0.5}Ni_{2.5}Co_{4.5}Fe_3BiMo_{12}O_x$ wherein x is the number of oxygens required to satisfy the valence requirements of the other elements present.

4,327,038

METHOD FOR PREPARING OPTICALLY ACTIVE 2,2-DIMETHYL-3-(2,2-DICHLOROVINYL)CYCLO-PROPANECARBOXYLIC ACID

Yukio Suzuki, Toyonaka, Japan, assignor to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Jan. 16, 1981, Ser. No. 225,750

Claims priority, application Japan, Jan. 31, 1980, 55-11313

Int. Cl.³ C07C *61/04;* **C07B** *19/00*

U.S. Cl. 260—501.16 **7 Claims**

1. A method for preparing (1R, cis)-2,2-dimethyl-3-(2,2-dichlorovinyl)cyclopropanecarboxylic acid, which comprises reacting 2,2-dimethyl-3-(2,2-dichlorovinyl)-cyclopropanecarboxylic acid containing 70% or more of the cis-form with an equimolar or less amount of (+) -1-phenyl-2-(p-tolyl)ethylamine, allowing a (1R, cis)-2,2-dimethyl-3-(2,2-dichlorovinyl)-cyclopropanecarboxylic acid salt of (+)-1-phenyl-2-(p-tolyl)ethylamine to precipitate from a solvent, and then decomposing the resulting precipitated salt with a base or an acid to yield (1R, cis)-2,2-dimethyl-3-(2,2-dichlorovinyl)-cyclopropanecarboxylic acid.

7. (+)-1-Phenyl-2-(p-tolyl)ethylammonium (1R, cis)-2,2-dimethyl-3-(2,2-dichlorovinyl)cyclopropanecarboxylate.

4,327,039

PROCESS FOR THE PRODUCTION OF 3-AMINO-1-HYDROXYPROPANE-1,1-DIPHOSPHONIC ACID

Helmut Blum, and Karl-Heinz Worms, both of Dusseldorf, Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien (Henkel KGaA), Dusseldorf-Holthausen, Fed. Rep. of Germany

Filed Oct. 1, 1980, Ser. No. 192,733

Claims priority, application Fed. Rep. of Germany, Oct. 27, 1979, 2943498

Int. Cl.³ C07C *9/38*

U.S. Cl. 260—502.5 **2 Claims**

1. A process for the preparation of 3-amino-1-hydroxypropane-1,1-diphosphonic acid consisting essentially of the steps of reacting β-alanine with a substantially stoichiometric to an excess amount with respect to said β-alanine of a phosphonating reactant selected from the group consisting of:

(1) a mixture of phosphorous acid and PCl_5, and

(2) a mixture of phosphorous acid, PCl_3 and Cl_2,

under anhydrous conditions in the presence of a chlorinated hydrocarbon diluent, at a temperature of from 80° C. to 130° C., hydrolyzing the reaction mixture, and recovering said 3-amino-1-hydroxypropane-1,1-diphosphonic acid.

4,327,040

PREPARATION OF PHOSPHORIC ACID PROPARGYL ESTERS

Günter Arend, Dormagen, and Peter Feyen, Mettmann, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

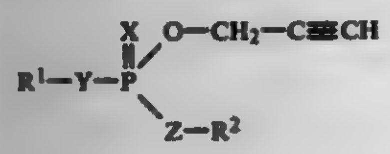
Filed Jun. 9, 1980, Ser. No. 158,032

Claims priority, application Fed. Rep. of Germany, Jul. 2, 1979, 2926652

Int. Cl.³ C07F *9/113, 9/173*

U.S. Cl. 260—973 **13 Claims**

1. A process for the preparation of a phosphoric acid propargyl ester of the formula



wherein

R^1 and R^2 each independently is an aryl radical or a C_{1-4}-alkyl, C_{1-4}-alkenyl or C_{1-4}-alkynyl radical, and

X, Y and Z each independently is oxygen or sulphur, comprising reacting a phosphoric acid monoester chloride or diester chloride with at least the equivalent amount of propargyl alcohol in a two-phase water-organic solvent system in the presence of an aqueous solution of an inorganic base as an acid-trapping agent, and a catalyst comprising about 0.001 to 100 mol %, relative to the phosphoric acid ester chloride, of a tertiary amine or quaternary ammonium or phosphonium salt with at least 9 C atoms.

4,327,041

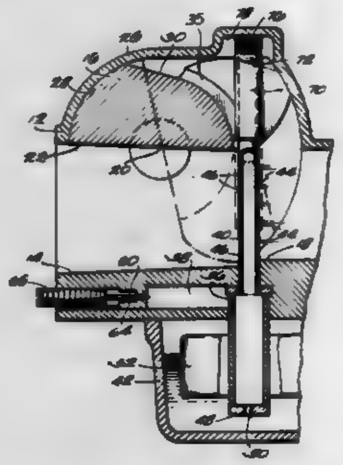
CARBURETOR HAVING A CONCENTRIC TUBE FUEL SUPPLY

Gene F. Baltz, Lake Villa, and Paul W. Breckenfeld, Winthrop Harbor, both of Ill., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed Jul. 29, 1980, Ser. No. 173,346

Int. Cl.³ F02M *9/08*

U.S. Cl. 261—41 B **2 Claims**



1. A carburetor comprising a housing having a throat with opposite ends, a pivotable throttle member positioned in said throat intermediate said opposite ends and pivotable on a rotational axis between an open position and a fluid flow restricting position, said pivotable throttle member including a first surface partially forming said throat when said throttle member is in said open position and extending transversely of said throat when said throttle member is in said fluid flow restricting position, and a second surface removed from said throat when said throttle member is in said open position and facing downstream when said throttle member is in said fluid flow restricting position, said second surface including a pair of axially spaced cam surfaces extending partially circumferentially of and transversely of said rotational axis, said second surface also having therein a slot located between said cam surfaces and extending partially circumferentially of and transversely of said rotational axis, means for supplying fuel to said throat intermediate said opposite ends and including a conduit extending into said throat and said slot, said conduit including therein a plurality fuel supply openings spaced along the length thereof, and fuel flow control means for varying the number of said openings in fuel supplying communication with said throat in response to pivotable movement of said throttle member between said fluid flow restricting position and said open position, said fuel flow control means including a sleeve extending into said slot and supported for slidable movement in telescopic relation to said conduit, and cam followers extending fixedly in opposite directions from said sleeve in parallel relation to said rotational axis and in engagement with said cam surfaces, whereby said sleeve is slidable on said conduit in response to pivotable movement of said throttle member to vary the number of openings in fuel supplying communication with said throat.

4,327,042

DRAFT DEVICE FOR A BUBBLE COLUMN

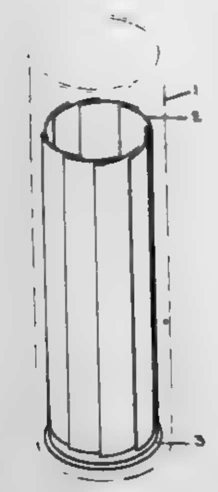
Hiroshi Hagino, Tokyo; Hideo Odagiri, and Junichi Okutani, both of Hofu, all of Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

Filed Dec. 22, 1980, Ser. No. 218,774

Claims priority, application Japan, Dec. 25, 1979, 54-167667

Int. Cl.³ F02M *17/20*

U.S. Cl. 261—77 **7 Claims**



1. In a bubble column for reactions wherein gas and liquid are mixed comprising a cylindrical vertically disposed column and means for introducing a gas to the bottom of said column, an improved draft device which comprises a plurality of plates coaxially disposed within said column; each of said plates having one vertical edge in outwardly spaced, overlapping relation to a vertical edge of adjacent plate, and the other vertical edge in inwardly spaced, overlapping relation to a vertical edge of the other adjacent plate.

4,327,043

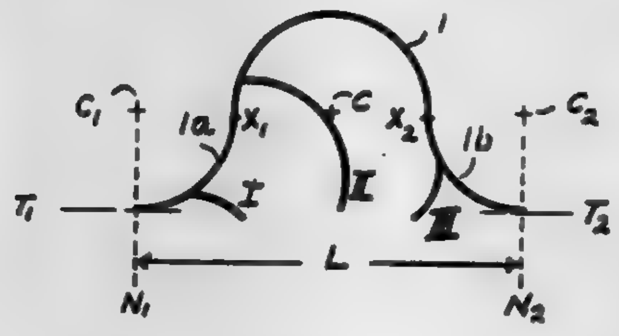
TOWER PACKING ELEMENT

Max Leva, 5600 Munhall Rd., Pittsburgh, Pa. 15217

Filed Dec. 22, 1980, Ser. No. 219,311

Int. Cl.³ B01F *3/04*

U.S. Cl. 261—94 **13 Claims**



1. In a packing for a gas-liquid contacting tower and the like, a plurality of randomly packed mutually interlocking packing elements providing a bed, each packing element comprising an intermediate portion curved concavely, and end portions curved convexly, slot means formed in said packing element in both said intermediate and end portions, first tongue means depending from said slot means in said concavely-curved intermediate portion and extending away only inwardly from said intermediate portion and second tongue means depending from said slot means in said convexly-curved end portions and extending away from said end portions in only the same general direction from said packing element as said first tongue means.

4,327,044

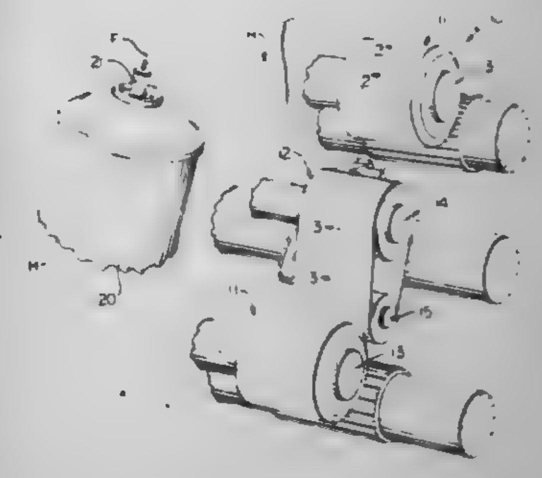
METHOD OF IMPROVING OUTER PORTION OF A TEXTILE FIBER PROCESSING COMPONENT

John J. Dolan, Blairgowrie, Scotland, and Syd Roecroft, Bolton, England, assignors to Dayco Corporation, Dayton, Ohio

Filed Oct. 24, 1980, Ser. No. 200,169

Int. Cl.³ B29C *25/00*

U.S. Cl. 264—36 **10 Claims**



1. In a method of improving the outer portion of a rotatable textile fiber processing component to define the desired properties of minimum compression set for said outer portion and a working surface which has a comparatively low coefficient of friction, said method comprising the steps of, making said outer portion substantially of butadiene copolymer rubber, subjecting said outer portion to the action of a halogen to define said desired properties, mounting said component on a rotatable support means of a textile processing equipment, and then operating said equipment whereby said outer portion of said component is worked, the improvement comprising the step of applying additional halogen on said outer portion with said component in a stationary position in its working environment in said equipment while supported on said rotatable support means therefor after said outer portion has been worn from said working thereof whereby said outer portion is rejuvenated so that further operation of said equipment can take place with said component again having said desired properties.

4,327,045

COOLING PROCESS SUITABLE FOR FOAM MOLDING OF A SYNTHETIC RESIN AND ITS COOLING APPARATUS

Shigeo Nishikawa, and Masaaki Yokoyama, both of Yokkaichi, Japan, assignors to Yuka Badische Company Limited, Yokkaichi, Japan

Filed Mar. 25, 1980, Ser. No. 133,782

Claims priority, application Japan, Mar. 28, 1979, 54-35428

Int. Cl.³ B29D *27/00*

U.S. Cl. 264—51 **8 Claims**

1. A cooling process for cooling molded foam synthetic thermoplastic resin articles in a cavity in a mold prior to removal from the mold, comprising:

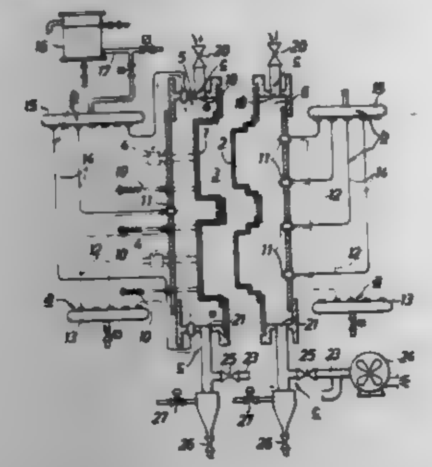
providing a chamber in the mold;

flowing gas at high speed through a plurality of nozzles into said chamber;

introducing cooling water into said gas in said nozzles, said nozzle being effective to disperse said cooling water into mist which fills said chamber and adheres to walls of said mold to remove heat therefrom; and

forcibly suctioning said mist and said gas from said chamber while continuing the steps of flowing and introducing

whereby the step of forcibly suctioning is effective to remove said mist and steam from said chamber after said



mist has removed latent heat from said mold and to permit replacement of the suctioned mist by fresh mist.

4,327,046

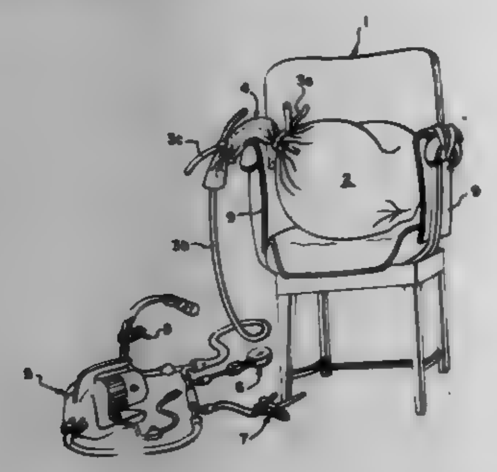
METHOD FOR PRODUCING A RIGID, SHAPED MASS SUPPORT SYSTEM

Thomas A. Davis, Scotch Plains, N.J., and Donald R. Cowsar, Birmingham, Ala., assignors to Southern Research Institute, Birmingham, Ala.

Filed Dec. 7, 1979, Ser. No. 101,511

Int. Cl.³ B29J *1/00*; B29D *27/00*; B29C *1/02*

U.S. Cl. 264—102 **9 Claims**



1. A method for producing a rigid, shaped, mass support system comprising:

(A) charging a flexible container made of elastic stretchable polymeric film, with a uniform mixture comprising:

(a) a multiplicity of rigid particles of a mesh size relatively small compared to the size of the system;

(b) a curable adhesive polymeric resin binder material;

(B) molding the charged flexible container to conform to the shape of the mass such as the contour of that portion of a person's body which the system is intended to support;

(C) evacuating the molded charged container to remove volatiles from and fix the shape of said container;

(D) curing the adhesive binder material to solidify the molded contents of the container to form a composite;

(E) removing the polymeric film from the composite obtained in step (D); and

(F) applying a coating which adheres to the surface of the composite obtained in step (E).

4,327,047

METHOD FOR PRODUCING DISC RECORDS HAVING MOLDED-IN CENTER HOLES

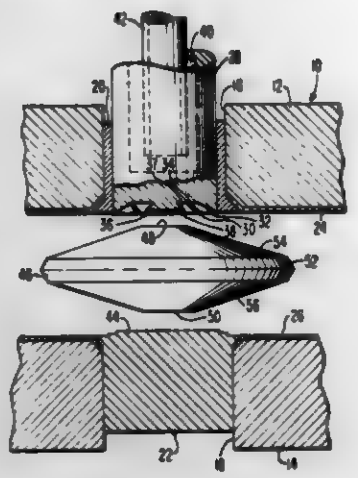
Michael L. McNeely, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Division of Ser. No. 93,012, Nov. 9, 1979. This application Oct. 24, 1980, Ser. No. 200,140

Claims priority, application United Kingdom, Apr. 30, 1979, 14992/79

Int. Cl.³ B29D *17/00*

U.S. Cl. 264—107 **3 Claims**



1. A method of molding an information record with a molded-in center hole comprising the steps of

(a) placing a preform of plastic material between the open mold plates of a mold press with one of the mold plates having a center hole-forming pin, which pin has a recess in its end surface,

(b) heating the mold plates and closing them against the preform to heat the preform and cause the plastic material to flow outwardly and fill the cavity between the mold plates so as to form the record,

(c) directly heating the center hole-forming pin and moving it through the material of the preform to form the center hole with some of the material entering and filling the recess in the pin,

(d) directly cooling each of said mold plates and the center pin to harden the plastic material, and

(e) opening said mold plates and retracting said center hole-forming pin to permit removal of the molded disc, the pin retaining in its recess some of the hardened plastic material.

4,327,048

HIGH DENSITY INFORMATION DISC PROCESSING

Frederick R. Nyman, Carmel; Barry Stevens, and James A. Calamari, Jr., both of Indianapolis, all of Ind., assignors to RCA Corporation, New York, N.Y.

Filed Jan. 14, 1981, Ser. No. 224,905

Int. Cl.³ B29D *17/00*

U.S. Cl. 264—107 **16 Claims**

1. In the manufacture of a conductive high density information disc having video and audio information in the form of geometric variations in an information track which can be reconstituted in electrical signal form with a playback stylus, wherein a conductive plastic material is compression molded to form said disc, and said disc is cleaned with an aqueous solution to remove water soluble salts from the surface of said disc, the improvement which comprises treating said disc with an additional high temperature aqueous wash at a temperature of from about 110° to 130° F. for a period of time so as to improve the stability of the surface of the disc with respect to elevated temperature and high relative humidity.

4,327,049

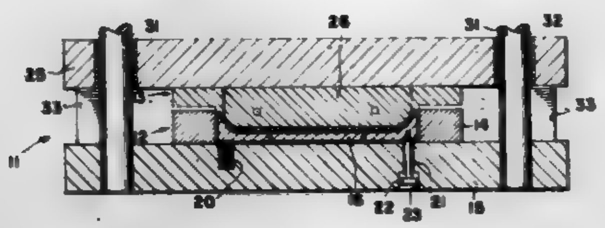
METHOD OF FORMING AUTOMOTIVE HEADLINERS FROM COMPOSITE FOAMED RESIN BLANKS

Frederick O. Miller, 1267 Passolt St., Saginaw, Mich. 48603

Filed Feb. 14, 1980, Ser. No. 121,294

Int. Cl.³ B29C *17/10*; B29D *27/00*

U.S. Cl. 264—138 **8 Claims**



1. A method of forming an article from a substantially uniform thickness blank composed of a first layer of resilient or relatively soft, cellular, foamed thermoplastic material laminated to and sandwiched between a second layer of a relatively stiff, cellular, foamed thermoplastic material and a third layer of fabric, said method comprising heating said blank to an elevated temperature sufficiently high to cause said first and second layers of foamed material to become plastic or tacky but insufficient to melt the material of any of said layers or to damage said fabric; deforming said blank while its temperature remains elevated to the shape of the article to be formed; tapering said blank toward its marginal edges and while its temperature remains elevated by compressing the marginal edges of said blank to reduce the size of the cells of both of said first and second layers of foamed material; and cooling said deformed blank.

4,327,050

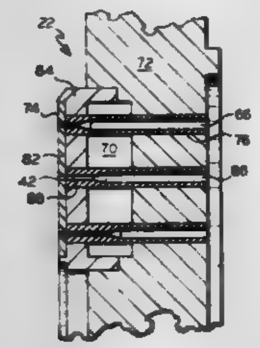
EXTRUSION AND PELLETING APPARATUS AND METHOD

Emigdio J. Salmon, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sep. 22, 1980, Ser. No. 189,478

Int. Cl.³ B28B *11/16*

U.S. Cl. 264—142 **12 Claims**



1. A method for pelletizing a thermoplastic material comprising:

supplying a flow of molten thermoplastic material,

forming said flow of molten material into a plurality of individual streams having substantially equal cross sectional area and substantially equal stream flow velocity at a preselected plane of reference by passing each said stream through a passageway having an upstream portion of a first length and a first relatively large cross sectional area and a downstream portion of a second length and a second relatively small cross sectional area, each said second length being selected from one of at least two different chosen lengths to provide substantially equal stream flow velocity therethrough, and

dividing each of said individual streams into substantially equal pellet lengths at said plane of reference.

4,327,051

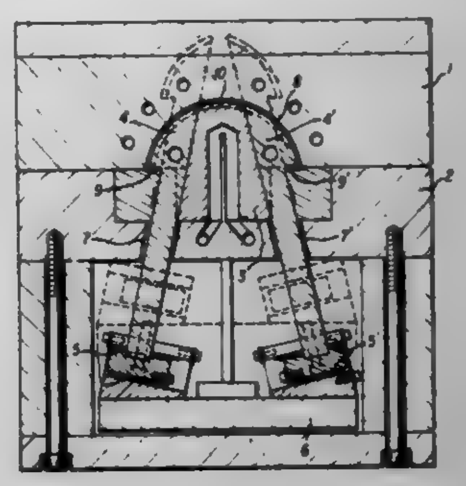
METHOD OF MOLDING GUTTER FITTINGS

Ronald Edmondson, Otford, United Kingdom, assignor to Plastiers Limited, London, England

Filed Jul. 6, 1978, Ser. No. 922,200

Int. Cl.³ B29C *7/00*

U.S. Cl. 264—318 **9 Claims**



1. A method for molding and releasing from a mold gutter fitting made out of resilient plastic material which fitting comprises a channel shaped body provided with a transverse groove to receive resilient material and having inwardly turned lips extending over the ends of the groove, at least one of the lips being provided on its inner edge with a downwardly turned clipping nib extending over an end of the transverse groove so as to engage a side of a gutter inserted into the fitting, the improved method comprising using a main core and two side cores to mold the gutter fittings, and effecting relative movement between the core and side cores so as to draw the lips together until the stress thereby induced in the fitting causes the lips to spring away from each other to thereby disengage the clipping nib from the cores.

4,327,052

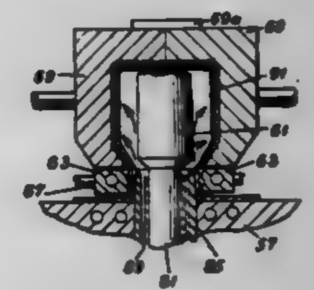
PROCESS FOR MAKING CONTAINERS

Donald G. Sauer, Harwinton, Conn., assignor to National Can Corporation, Chicago, Ill.

Division of Ser. No. 8,607, Feb. 1, 1979, Pat. No. 4,224,275, which is a continuation-in-part of Ser. No. 820,444, Aug. 1, 1977, abandoned, which is a continuation of Ser. No. 615,813, Sep. 22, 1975, abandoned. This application Sep. 23, 1980, Ser. No. 189,751

Int. Cl.³ B29C *17/04*

U.S. Cl. 264—512 **11 Claims**



1. A process for plastic container manufacture comprising the steps of:

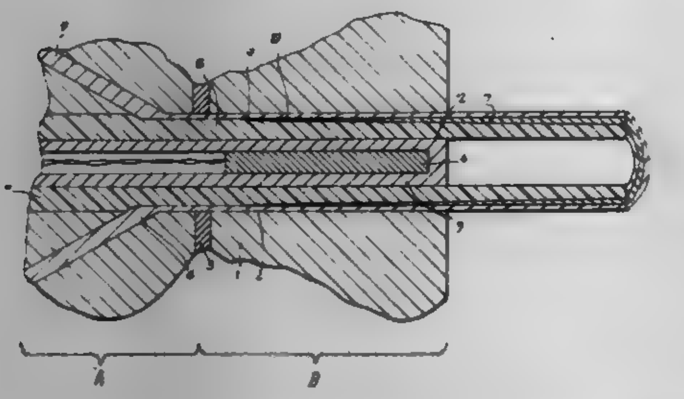
(A) clamping an outer portion of a preformed thermoplastic member positioned adjacent a female forming means,

(B) relatively projecting a first male forming means into a face of said thermoplastic member to stretch and form said thermoplastic member into a hollow article having an opening and integral side wall and end wall portions,

(C) removing said hollow article from said female forming means and said first male forming means,

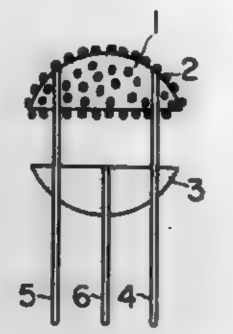
(D) relatively positioning said hollow article in operative relationship to a second male forming means,
(E) positioning a container neck forming means around at least a portion of said side wall,
(F) clamping said side wall between said neck forming means and said second male forming means,
(G) projecting said second male forming means within said hollow article to stretch and form said hollow article into an elongated hollow body having an opening an integral side wall and end wall portions,
(H) relatively positioning a blow mold cavity means about said side wall and end wall portions of said elongated hollow body,
(I) positioning sealing means adjacent said opening of said elongated hollow body to seal said opening,
(J) pressurizing the interior of said resulting hollow body by injecting fluid thereinto to enlarge the volume of said hollow body to an extent sufficient to generally conform said wall portions against said blow mold cavity means thereby forming said hollow body into a container,
(K) separating said blow blow molding cavity from said container,
(L) trimming residual portions of said preformed member from said container adjacent said opening, and
(M) removing said formed container.

4,327,053
BLOW MOLDING HOLLOW ARTICLES FROM POLYOLEFINS CONTAINING ANISOTROPIC FILLER
Frederic N. Cogswell, and David T. Mitchell, both of Welwyn Garden City, England, assignors to Imperial Chemical Industries Limited, London, England
Continuation-in-part of Ser. No. 831,668, Sep. 8, 1977, abandoned. This application Mar. 23, 1979, Ser. No. 24,434
Claims priority, application United Kingdom, Aug. 23, 1977, 35263/77; Mar. 23, 1978, 11677/78
Int. Cl.³ B29C *17/07*
U.S. Cl. 264—515 **3 Claims**



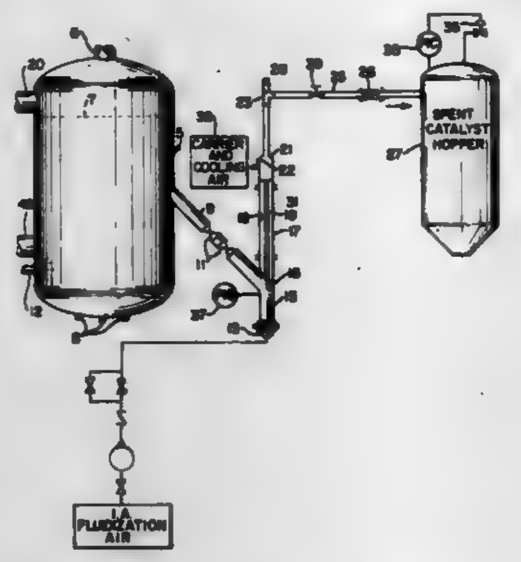
1. A method for producing hollow articles from a polyolefin containing anisotropic filler in which the ratio of filler to polyolefin is at least 15:85 and not more than 4:6 by weight, and the filler is dispersed throughout the polyolefin comprising:
extruding said filled polyolefin, initially in a molten state, through a die having a mandrel for constraining said filled polyolefin into a tubular shape and producing thereby a tubular extrudate having an outer surface and an inner surface, coextruding between the die and the outer surface of said filled polyolefin, a liquid having a freezing temperature lower than that of polymeric material, cooling the liquid and the outer surface of said filled polyolefin during their passage through the die, to a temperature below the freezing temperature of said polyolefin but above the freezing temperature of the liquid to thereby form a stiff skin at the outer surface of said filled polyolefin, while maintaining the inner surface of said filled polyolefin molten, squeezing the extrudate at suitable intervals to fuse the molten inner surface together and thereby seal discrete lengths, and inflating the sealed lengths to conform to a surrounding mould, thereby to produce the shaped article.

4,327,054
GAS SENSOR ASSEMBLY
Eturo Yasuda, Okazaki, and Minoru Ohta, Anjo, both of Japan, assignors to Nippon Soken, Inc., Nishio, Japan
Filed Dec. 19, 1979, Ser. No. 105,120
Claims priority, application Japan, Jan. 25, 1979, 54-8492[U]
Int. Cl.³ G01N *27/12*
U.S. Cl. 422—95 **3 Claims**



1. A gas sensor assembly comprising:
a first and a second sinter separated from each other by a space and each composed of a metal oxide having an electric resistance value varying in dependence on the composition and temperature of a detected gas, said first sinter having deposited thereon a catalyst for causing an oxidation reaction of the components of said detected gas;
a first and a second electrode both of which extend through and are connected to both of said first and second sinters, respectively, to support the same in an opposing spaced relation; and
a third electrode connected only to said second sinter in such a manner that said third electrode is apart from said first and second electrodes,
whereby a change in the electric resistance value of said first sinter which is temperature compensated by said second sinter can be detected.

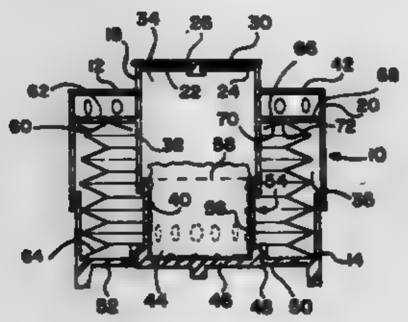
4,327,055
CONTINUOUS CATALYST UNLOADING DEVICE
Edward C. Luckenbach, Mountainside, and Arthur C. Worley, Mt. Tabor, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.
Continuation-in-part of Ser. No. 108,558, Dec. 31, 1979, abandoned. This application May 28, 1981, Ser. No. 267,738
Int. Cl.³ B01J *4/00, 8/18;* **F27B** *15/08*
U.S. Cl. 422—110 **9 Claims**



1. A continuous catalyst regeneration system for use in a hydrocarbon processing system comprising:

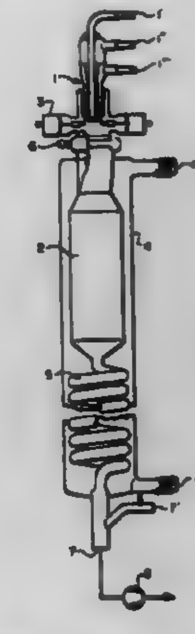
(a) a regeneration vessel;
(b) a spent catalyst hopper;
(c) a discharge conduit for removing catalyst downwardly from said vessel, said discharge conduit having a bent portion in a lower end thereof;
(d) valve means disposed in a mid-portion of said conduit for closing said discharge conduit;
(e) a substantially vertically oriented carrier pipe connected to the top of said bent portion of said discharge conduit for conveying catalyst from said discharge conduit to said hopper, said carrier pipe having a dual purpose refractory lining therein, which reduces the internal diameter thereof to provide a catalyst flow restriction zone and for providing said restriction zone with an erosion resistant inner surface;
(f) a fluidization means connected to a bottom section of said discharge conduit for introducing fluidization air into said carrier pipe at a substantially constant flow rate for facilitating the conduction of catalyst material through said carrier pipe;
(g) a transport pipe connected between said carrier pipe and said hopper;
(h) means for introducing carrier and cooling air into said transport pipe, and
(i) a pressure control means disposed downstream of said restriction zone controlling in combination with said restriction zone the flow rate of the catalyst and air to said spent catalyst hopper, said pressure control means venting said air as said spend catalyst settles in said hopper.

4,327,056
DEODORANT DISPENSER
Conrad J. Gaiser, P.O. Box 534, Zephyr Cove, Nev. 89448
Filed Oct. 9, 1980, Ser. No. 195,599
Int. Cl.³ A61L *9/12*
U.S. Cl. 422—124 **12 Claims**



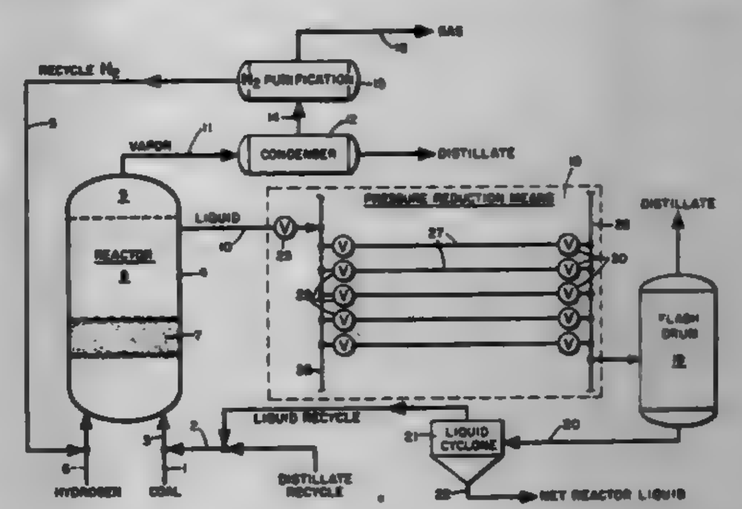
1. A deodorant dispensing package for static and forced dispensing of a deodorant which comprises:
(a) first and second telescoping movable housing members defining a closed chamber;
(b) internal walls dependent therefrom defining inner and outer compartments within said closed chamber;
(c) a deodorant composition within said closed chamber;
(d) first port means in said housing members venting said inner compartment externally of said housing;
(e) second port means in said housing communicating between said inner and outer compartments;
(f) a deodorant vaporization surface wetted with said deodorant composition located within said inner compartment between said first and second port means;
(g) third port means in said housing members venting said outer compartment externally of said housing;
(h) resilient means biasing said first and second housing members into an expanded position; and
(i) means limiting venting of said outer compartment through said third port means whereby the telescopic movement of said members forces air from said package.

4,327,057
APPARATUS FOR THE COMBUSTION OF HARMFUL GASES
Rolf Brüning, Bruchköbel, and Jürgen Roth, Maintal, both of Fed. Rep. of Germany, assignors to Heraeus Quarzschmelze GmbH, Hanau, Fed. Rep. of Germany
Filed Oct. 8, 1980, Ser. No. 195,162
Claims priority, application Fed. Rep. of Germany, Oct. 20, 1979, 7929723[U]
Int. Cl.³ F01N *3/04, 3/26, 3/34, 3/38*
U.S. Cl. 422—173 **6 Claims**



1. An apparatus for the oxidative combustion of harmful gases comprising a vertically disposed cooling jacket provided with a coolant inlet and a coolant outlet, a combustion chamber surrounded by said cooling jacket and a condenser connected to said combustion chamber and disposed therebeneath, a flushing device disposed above said combustion chamber and in gaseous communication therewith, said flushing device being arranged and constructed to wet the inside surface of said combustion chamber with a film of liquid, a burner disposed above said flushing device and in gaseous communication with said flushing device and an electrical igniter disposed between said flushing device and said burner.

4,327,058
CAPILLARY PROCESSING UNIT
John A. Tillinghast, North Hampton, N.H., assignor to Wheelabrator-Frye, Inc., Hampton, N.H.
Filed Jul. 8, 1980, Ser. No. 167,159
Int. Cl.³ B01J *3/02, 3/04, 8/02;* **C10G** *1/00*
U.S. Cl. 422—232 **6 Claims**



1. A system for the manufacture of synthetic hydrocarbon products from a solid carbonaceous feed, said system comprising:

(a) treatment means for converting said solid carbonaceous feed into at least one fluid hydrocarbon stream at an elevated temperature and pressure;
(b) product recovery means for recovering a fluid hydrocarbon product at a pressure lower than that of said fluid stream coming from said treatment means;
(c) conduit means in communicating relationship with said treatment means and said product recovery means; and
(d) reducing means located in said conduit means for reducing the corrosion in said conduit means as said fluid hydrocarbon stream passes therethrough and for reducing the pressure of said stream, said reducing means comprising at least one elongated tube defining a fluid flow passage having a transverse area that is substantially smaller than that of said conduit means at the point where said conduit means is connected to said reducing means, the reduction in pressure being effected substantially entirely be friction of the fluid within said tube, and valve means for isolating the flow of said fluid in said tube without effecting substantial pressure drop of the fluid.

4,327,059

APPARATUS FOR DISPERSING A LIQUID INTO ANOTHER LIQUID

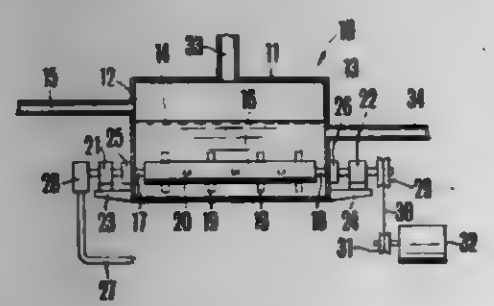
Kensuke Fujimura; Naomichi Yamamoto; Masahiro Ogawa, and Nobuyoshi Tanigawa, all of Ube, Japan, assignors to UBE Industries Ltd., Japan

Division of Ser. No. 105,014, Dec. 19, 1979, Pat. No. 4,291,549. This application May 29, 1980, Ser. No. 154,427

Claims priority, application Japan, Feb. 7, 1979, 54-12277

Int. Cl.³ B01D *11/04*

U.S. Cl. 422—259 **1 Claim**



1. A device for dispersing one liquid into another liquid comprising, a container for holding a quantity of one of the liquids, a hollow drum having an outer cylindrical surface rotatably mounted in the container, a plurality of spaced hollow pipe stems extending outwardly of said drum surface each having a nozzle orifice at an end thereof smaller in diameter than an interior of its hollow pipe stem, whereby a pressure differential is established in said pipe stem with respect to said container, another liquid supply means connected to the drum for supplying the other liquid to the nozzle orifices, and drive means connected to the drum for rotating the drum and moving the nozzles rapidly in the container to increase the dispersion of the other liquid into the one liquid.

4,327,060

STERILIZING-CONTAINING DEVICE FOR DENTAL TOOLS

Alessandro Nisii, Via Vallombrosa 18, Rome, Italy

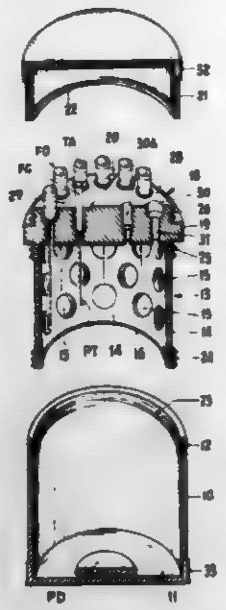
Filed May 2, 1980, Ser. No. 145,966

Claims priority, application Italy, May 8, 1979, 48978 A/79

Int. Cl.³ A61L *2/06, 2/18*

U.S. Cl. 422—300 **12 Claims**

1. A sterilizing container device for dental tools comprising: a container body consisting of a first supporting part having a head adapted to locate and support dental tools separately thereon and a second receiving part adapted to receive and support said first part in a first position wherein the latter is received within said second part and means sealingly securing said parts in said first position wherein only said head is outside said receiving part, and a second position wherein substantially all of said supporting part extends upwardly from the upper



end of said receiving part; and a closure cap closing said head and being sealingly secured to said first part over said head in an airtight manner.

4,327,061

METHOD OF STABILIZING WET PROCESS PHOSPHORIC ACID FOR SOLVENT EXTRACTION

John A. Hermann, Oklahoma City, Okla., and Michael F. Lucid, Houston, Tex., assignors to Kerr-McGee Chemical Corporation, Oklahoma City, Okla.

Continuation-in-part of Ser. No. 13,546, Feb. 21, 1979, abandoned. This application Jun. 30, 1980, Ser. No. 164,583

Int. Cl.³ B01D *11/00;* **C01G** *56/00;* **C22B** *60/02;* **C01B** *25/16*

U.S. Cl. 423—8 **9 Claims**

1. A process for recovering vanadium comprising:
treating at least a portion of a quantity of aqueous phosphoric acid having soluble impurities including vanadium associated therewith to concentrate the same and provide a quantity of concentrated aqueous phosphoric acid in which at least a portion of said soluble impurities associated therewith are supersaturated;
contacting at least a portion of said concentrated aqueous phosphoric acid containing said supersaturated soluble impurities with a crystal seed bed consisting of impurities similar to the soluble impurities associated with said aqueous phosphoric acid to cause at least a substantial portion of said supersaturated soluble impurities to precipitate;
separating said precipitated impurities from said concentrated aqueous phosphoric acid and the remaining unprecipitated soluble impurities including vanadium;
providing an aqueous diluent;
admixing said concentrated aqueous phosphoric acid and the remaining unprecipitated soluble impurities with said aqueous diluent to form a diluted solution;
contacting said diluted solution with an organic extractant to selectively extract vanadium from the remaining unprecipitated soluble impurities without the substantial precipitation of any other of the remaining soluble impurities; and
recovering said vanadium selectively extracted by said organic extractant.

4,327,062

PROCESS FOR PRODUCING CHLORIDE OF ELEMENTS OF GROUP III, IV OR V OF PERIODIC TABLE

Tadashi Iwai; Hisayuki Mizuno, and Masao Miura, all of Ube, Japan, assignors to UBE Industries, Ltd., Yamaguchi, Japan

Filed Feb. 4, 1981, Ser. No. 231,462

Claims priority, application Japan, Feb. 13, 1980, 55-15493; Jul. 15, 1980, 55-95692

Int. Cl.³ C01B *9/02*

U.S. Cl. 423—292 **18 Claims**

1. A process for producing the chloride of an element selected from the group consisting of boron, silicon, zirconium and vanadium comprising the steps of:
(i) impregnating activated carbon particles with an aqueous solution of at least one compound, other than the chloride, of said element;
(ii) heating the activated carbon particles having a supported aqueous solution of said compound thereon at a temperature of 300° through 1000° C. in an inert gas atmosphere; and,
(iii) reacting the resultant activated carbon particles with chlorine.

4,327,063

METHOD OF PURIFYING CYCLIC DICHLOROPHOSPHAZENES CONTAINING TRACE AMOUNTS OF PROTIC IMPURITIES

John W. Fieldhouse, Mogadore, and Daniel F. Graves, Clinton, both of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Aug. 25, 1980, Ser. No. 181,028

Int. Cl.³ C01B *25/10*

U.S. Cl. 423—300 **17 Claims**

1. A method of purifying a cyclic dichlorophosphazene containing trace amounts of protic impurities which comprises the steps of:
(a) heating said cyclic dichlorophosphazene in a reactor to a temperature of from 115° C. to 150° C.;
(b) adding a gaseous or liquid boron trihalide to the reactor in an amount in excess of the amount of protic impurities present in the cyclic dichlorophosphazene, while maintaining the temperature of the reactor below 150° C.;
(c) pressurizing said reactor with an inert gas to an internal pressure which is sufficient to permit intimate contact between the cyclic dichlorophosphazene and the boron trihalide;
(d) agitating the contents of the reactor for a sufficient time to permit reaction of substantially all of the protic impurities in the cyclic dichlorophosphazene with the boron trihalide; and
(e) purging said reactor with said inert gas to remove the products formed from the reaction of said protic impurities and said boron trihalide and excess boron trihalide, thereby producing a cyclic dichlorophosphazene which is substantially free of protic impurities.

4,327,064

SOLUTION POLYMERIZATION OF CYCLIC DICHLOROPHOSPHAZENE OLIGOMERS IN CYCLOALIPHATIC SOLVENTS

John W. Fieldhouse, Mogadore, and Steven L. Fenske, Uniontown, both of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Aug. 4, 1980, Ser. No. 174,765

Int. Cl.³ C01B *25/10*

U.S. Cl. 423—300 **9 Claims**

1. A solution polymerization process for producing substantially linear ungelled polydichlorophosphazene polymers having a degree of polymerization of from 20 to 50,000 which comprises:
(a) polymerizing substantially pure cyclic oligomers represented by the formula $(NPCl_2)_n$, in which n is from 3 to 7, in solution in a cycloaliphatic hydrocarbon solvent at a temperature of from about 150° C. to about 300° C. for a period of from 4 to 30 hours in the presence of a catalyst selected from the group consisting of boron trihalides and complexes of boron trihalides with oxygenated phosphorus compounds; and
(b) recovering the resultant polymer.

4,327,065

METHOD OF PREPARING SILICA AEROGEL

Guy von Dardel, Gyllenkroks Alle 19, S-222 24 Lund; Sten A. Henning, Herdevägen 2, and Leif O. G. Svensson, Dekanvägen 7, both of S-240 10 Dalby, all of Sweden

Filed Apr. 22, 1980, Ser. No. 142,812

Claims priority, application Sweden, Apr. 30, 1979, 7903766

Int. Cl.³ C01B *33/158*

U.S. Cl. 423—338 **6 Claims**

1. A method of preparing silica aerogel in the form of a moulded substantially crack-free block comprising the steps of hydrolyzing a silicic acid ester dissolved in an alcohol with water added thereto, in a mould adapted to the desired dimensions, to form a silica alcogel, said hydrolysis being carried out at or below room temperature, washing and aging the alcogel for a period of 2 to 20 days, said washing being performed with an alcohol to remove water from said alcogel, then converting said alcogel to an aerogel by placing it in a closed pressure vessel with alcohol in an amount to at least reach the critical temperature and pressure thereof, subjecting the alcogel-alcohol mixture to a treatment consisting of heating the mixture above the critical point of the alcohol at a mean rate not exceeding 25° C./hr., releasing the alcohol vapor from said vessel to reduce the pressure isothermally at a mean rate not exceeding 10 bars/hr. to atmospheric pressure and then lowering the temperature in said vessel at a mean rate not exceeding 75° C./hr. to ambient temperature, wherein the duration of the treatment in said pressure vessel is at least 24 hours.

4,327,066

METHOD OF PREPARING SILICON CARBIDE

Motoo Seimiya, Yokosuka, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jun. 25, 1980, Ser. No. 162,819

Claims priority, application Japan, Nov. 14, 1979, 54/146498

Int. Cl.³ C01B *31/36*

U.S. Cl. 423—345 **11 Claims**

1. A method of producing β-silicon carbide which comprises heating solid silica in a gas atmosphere consisting essentially of a gas feed of hydrocarbon gas and hydrogen gas wherein the silica is heated to a temperature of 1200° C. to 1600° C. and the volume ratio of hydrogen (H_2)/hydrocarbon (methane equivalent) is between 1 and 100.

2. A method of producing β-silicon carbide which comprises heating solid silica in a gas atmosphere consisting essentially of a gas feed of hydrocarbon gas, hydrogen gas and a diluent gas, wherein the volume ratio of diluent gas/hydrocarbon is between 0.1 and 50, wherein the silica is heated to a temperature of 1200° C. to 1600° C. and the volume ratio of hydrogen (H_2)/hydrocarbon (methane equivalent) is between 1 and 100.

4,327,067

METHOD FOR REFINING METAL CARBIDES CONTAINING FREE CARBON

Kunio Kato, Kiryu; Yoshiki Sugiyama, Gifu, and Ryo Enomoto, Ohgaki, all of Japan, assignors to Ibigawa Electric Industry Co., Ltd., Ohgaki, Japan

Filed Jan. 2, 1980, Ser. No. 109,114

Claims priority, application Japan, Jan. 18, 1979, 54-3337

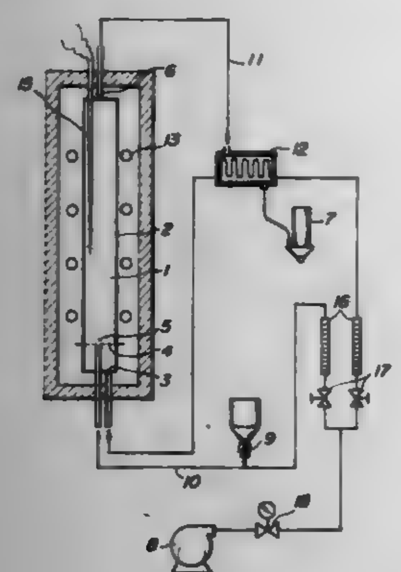
Int. Cl.³ C01B *31/30, 31/34, 31/36*

U.S. Cl. 423—345 **5 Claims**

1. A method of refining metal carbide powders of average grain size of not more than 200μ containing free carbon, comprising:

producing a fluidizing bed made up of heat resistant particles selected from the group consisting of silica, alumina, mullite, magnesia, zirconia, zircon sand and silicon carbide having an average grain size of 150–500μ by means of an oxidizing gas which has a bed height at minimum fluidizing gas velocity within a range of 0.2–3.0 m;

charging metal carbide powders which are finer than the heat resistant particles from a lower part of the fluidizing bed;



burning the free carbon during floatation and rise of the metal carbide powders in the fluidizing bed at a temperature of 800°–1.100° C. without substantial oxidation of the metal carbide; and

subsequently scattering and discharging refined metal carbide powders together with combustion gas from an upper part of the fluidizing bed for recovery of the refined powders, said metal carbide powders being at least one of the carbides of silicon, titanium, tantalum, niobium, tungsten and vanadium.

4,327,068

METHOD AND THE REUSE OF SEWAGE WATERS OF THE COMBINED UREA-AMMONIA INSTALLATIONS

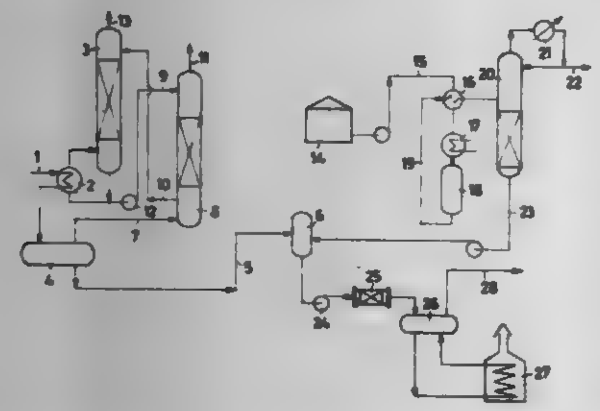
Vincenzo Lagana, Milan, and Umberto Zardi, San Donato Milanese, both of Italy, assignors to Snamprogetti, S.p.A., Milan, Italy

Continuation of Ser. No. 162,425, Jun. 24, 1980, abandoned, which is a continuation of Ser. No. 791,331, Apr. 27, 1977, abandoned. This application Feb. 13, 1981, Ser. No. 234,159

Claims priority, application Italy, May 14, 1976, 23296 A/76

Int. Cl.³ C01C *1/04*

U.S. Cl. 423—359 **2 Claims**



1. In a multistage process for producing urea, including a first stage for the production, from a gaseous mixture of hydrogen, nitrogen, CO_2 and H_2O from steam reforming, of a mixture of hydrogen and nitrogen for use as a feed in the synthesis of ammonia, in which water in said gaseous mixture is condensed as a first aqueous condensate, said first aqueous condensate is separated from the gases therein and CO_2 is then separated from said gases as a feed in urea synthesis, a second stage for the synthesis of ammonia from the mixture of hydrogen and nitrogen, and a third stage for the synthesis of urea from the ammonia and CO_2 with the production of H_2O, the improvement consisting essentially of condensing the H_2O, produced in said third stage as a second aqueous condensate, mixing said first and second aqueous condensates to form a combined aqueous condensate containing impurities including ammonia, urea, carbon dioxide, nitrogen, methanol, and hydrogen, passing said combined aqueous condensate through a filter adapted to remove solids therefrom, feeding said filtered combined aqueous condensate containing said impurities to a boiler so that steam is produced therefrom, and then utilizing said steam in the steam reforming in said first stage.

4,327,069

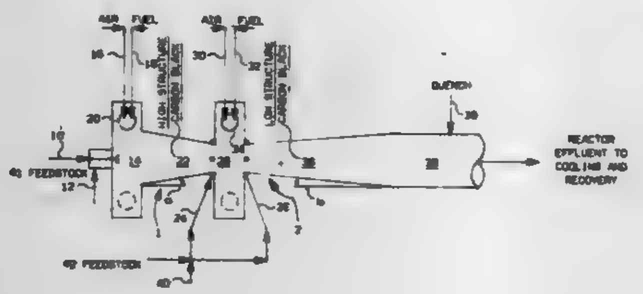
PROCESS FOR MAKING CARBON BLACK

Paul J. Cheng, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jun. 25, 1980, Ser. No. 163,006

Int. Cl.³ C01B *31/02;* C09C *1/48*

U.S. Cl. 423—450 **7 Claims**



1. Process for producing carbon black of negative tint residual by pyrolytic decomposition of hydrocarbons in a carbon black furnace, comprising

(a) establishing a first flow of hot combustion gases formed by the combustion of a first fuel stream and a first oxygen containing stream,

(b) introducing a first stream of hydrocarbon feedstock into a first carbon black forming zone of said furnace and into admixture with said first flow of hot combustion gases to form a first carbon black forming mixture in which at least a portion of said first stream of hydrocarbon feedstock is converted to carbon black,

(c) passing said first carbon black forming mixture from said first carbon black forming zone under carbon black formation conditions into a second carbon black forming zone of said furnace which is in open connection and fluid communication with said first carbon black forming zone,

(d) establishing a second flow of hot combustion gases formed by the combustion of a second fuel stream and a second oxygen containing stream,

(e) introducing a second stream of hydrocarbon feedstock into a second carbon black forming zone of said furnace and into admixture with said second flow of hot combustion gases and into admixture with said first carbon black forming mixture such as to form a second black forming mixture in which at least a portion of said second stream of hydrocarbon feedstock is converted to carbon black,

(f) maintaining operation parameters in said first and said second carbon black forming zones such that in one of the carbon black forming zones, being a high structure zone, the hydrocarbon feedstock is converted into a high structure carbon black, and such that in the other carbon black forming zone, being a low structure zone, the hydrocarbon feedstock is converted into a low structure carbon black,

(g) passing said second carbon black forming mixture from said second carbon black forming zone into a quench zone,

(h) contacting said second carbon black forming mixture with a quench fluid to produce a carbon black containing smoke at a temperature below carbon black formation temperature,

(i) separating carbon black of negative tint residual from said smoke as the product of the process.

4,327,070

PRODUCTION OF POTASSIUM FORMATE FROM POTASSIUM SULFATE

Robert A. Meyers, Tarzana, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Aug. 8, 1980, Ser. No. 176,601

Int. Cl.³ H02K *44/00;* C07C *53/06*

U.S. Cl. 423—555 **4 Claims**

1. A method comprising contacting, in aqueous media at a pressure in the range of about 1.0 to about 3 atmospheres and at a temperature of not more than about 100° C., spent seed from an MHD reactor including potassium sulfate with calcium formate to form water-soluble potassium formate and water-insoluble calcium sulfate, separating said calcium sulfate, substantially free of potassium, from said aqueous media; and feeding the aqueous, water-soluble potassium formate to an MHD reactor as a potassium source.

4,327,071

METHOD OF PREPARING POTASSIUM HYDRIDE

Kuen-Wai Chiu, Mars, and John R. Strickler, Pittsburgh, both of Pa., assignors to Mine Safety Appliances Company, Pittsburgh, Pa.

Filed May 7, 1981, Ser. No. 261,429

Int. Cl.³ C01B *6/04*

U.S. Cl. 423—646 **6 Claims**

1. A method of preparing potassium hydride and mixtures thereof with other alkali metal hydrides comprising contacting hydrogen and potassium or potassium alloys with other alkali metals dispersed in an inert liquid in the presence of a catalytically effective amount of potassium phenanthride.

4,327,072

TYROSYLATED PROINSULIN C-PEPTIDE DERIVATIVES

Ken Inouye, Kobe; Masao Kono, Ibaraki; Nobuo Yoshida, Nishinomiya; Masuhisa Nakamura, Toyonaka; Tadashi Okabayashi, Nishinomiya, and Ken'ichi Igano, Nara, all of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

Filed Nov. 27, 1979, Ser. No. 97,671

Int. Cl.³ G01N *33/56;* A61K *43/00;* C07C *103/52*

U.S. Cl. 424—1 **9 Claims**

1. A proinsulin C-peptide derivitive of the formula:

Y-Tyr-Gly-R

wherein Y represents a hydrogen atom or an amino protecting group, Tyr represents a tyrosine residue, wherein at least one of the hydrogen atoms on the phenyl ring may be substituted by a radioactive iodine, Gly represents a glycine residue, and R represents a peptide residue corresponding to an amino acid sequence which includes at least positions 7–21 of human proinsulin C-peptide.

4,327,073

AUTOMATED METHOD FOR QUANTITATIVE ANALYSIS OF BIOLOGICAL FLUIDS

Henry V. Huang, 232 S. Catalina, Pasadena, Calif. 91106

Filed Apr. 7, 1980, Ser. No. 138,182

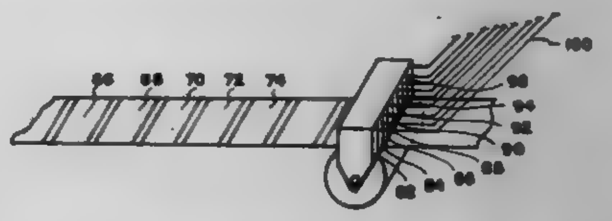
Int. Cl.³ G01N *33/54, 33/56, 33/58, 35/00*

U.S. Cl. 424—1 **17 Claims**

1. A method for quantitative analysis of a biological fluid for a plurality of substances, each of which forms specific reaction conjugates with a respective reactive compound which comprises the steps of:

(a) admixing said biological sample with a standard solution of tracer-labelled, known quantities of said substances;

(b) contacting the resultant mixture of biological sample and standard solution with a sensitized substrate carrier having a plurality of said respective reactive compounds bonded onto preselected areas of an inert substrate carrier forming a substrate carrier sensitized at each of a plurality of preselected areas with a respective one of a plurality of immobi-



lized reactive compounds interspaced by areas of said substrate carrier free of said compounds to permit said labeled and unlabeled substances contained in said mixture to competitively conjugate with their respective reactive compounds immobilized on said substrate carrier;

(c) washing excess of said sample from each of said preselected areas of said substrate carrier in a common washing treatment to obtain an exposed substrate carrier; and

(d) measuring the concentration of said conjugated substances on the preselected areas of said carrier.

4,327,074

METHOD FOR DIAGNOSIS AND SELECTIVE TREATMENT OF INFECTIONS OF BACTERIA HAVING β-GLUCURONIDASE ACTIVITY

David Rubin, 03, Jerusalem, all of Israel, and David Rubin, Jerusalem, Israel, assignors to Adolf W. Schwimmer, Savyon and Erwin S. Schwartz, Tel-Aviv

Continuation-in-part of Ser. No. 951,269, Oct. 13, 1978. This application Feb. 12, 1979, Ser. No. 11,619

Int. Cl.³ A61K *49/00, 43/00*

U.S. Cl. 424—1.5 **3 Claims**

1. A process for treating infections caused by bacteria having β-glucuronidase activity, comprising:

intravenously or orally administering to the patient an alkalinizing agent in an amount sufficient to maintain the pH of the internal tissues of the patient at a level of approximately 7.4; and

parenterally administering a glucuronide compound, the aglycone of which is toxic to bacterial cells, in an anti-bacteria effective amount,

whereby the β-glucuronidase activity of the bacterial cells causes deconjugation of the glucuronide at the site of the infection and release of the aglycone thereat.

4,327,075

SYNTHETIC ANTIGENICALLY-ACTIVE POLYPEPTIDE AND A PROCESS FOR ITS PREPARATION

Björn Lüning, Stockholm, Sweden, assignor to AB Bonnierföretagen, Stockholm, Sweden

Filed Apr. 14, 1980, Ser. No. 139,887

Claims priority, application Sweden, Apr. 20, 1979, 7903505

Int. Cl.³ A61K *39/00, 37/00;* C07C *103/52;* C01N *31/00*

U.S. Cl. 424—12 **8 Claims**

1. A synthetic antigenically active polypeptide, which includes the amino acid sequence: H-Asp-Ala-Glu-Gln-Arg-Gly-Glu-Leu-Ala-Ile-ARg-Asp-Ala-Asn-Ala-Arg-Leu-Ser-Glu-Leu-OH.

4,327,076

COMPRESSED CHEWABLE ANTACID TABLET AND METHOD FOR FORMING SAME

Wayne J. Puglia, Bellerose Village; Kanit J. Patanasinth, Tarrytown; Andrew T. Lombardo, Bronx, all of N.Y.; John E. Beam, Norwalk, Conn., and Donald A. M. Mackay, Pleasantville, N.Y., assignors to Life Savers, Inc., New York, N.Y.

Filed Nov. 17, 1980, Ser. No. 207,157

Int. Cl.^{3} A61K *9/20, 9/42, 33/08, 33/10*

U.S. Cl. 424—38 5 Claims

1. A compressed chewable antacid tablet having good hardness and flexibility and easy bite-through which comprises a blend of (a) a particulate pretreated fat composition comprising an edible fatty material comprising hydrogenated tallow, hydrogenated vegetable oil, almond oil, coconut oil, corn oil, cottonseed oil, refined linseed oil, light liquid petrolatum, heavy liquid petrolatum, olein, olive oil, palm oil, peanut oil, persic oil, sesame oil, soybean oil or safflower oil, a fat sorbing material having the fatty material sorbed thereon or therein, the fat sorbing material comprising microcrystalline cellulose, cornstarch, tapioca, dextrin, sucrose, sorbitol, xylitol or mannitol, and one or more tablet bonders said tablet bonders comprising tabletting sugar, dextrose monohydrate or mixtures thereof, blended therewith or mixtures thereof with one or more antioxidants, flavors, colorant or mixtures thereof; (b) a pretreated active ingredient composition comprised of a mixture of particles of active ingredient which comprises an antacid, or mixtures thereof with edible oil, binder, emulsifier, flavor, colorant or mixtures thereof; the particles of active ingredient being coated with the other components of said pretreated active ingredient composition; and (c) a pretreated direct compaction tabletting aids composition comprising one or more tablet bonders comprising tabletting sugar, dextrose monohydrate or mixtures thereof, or mixtures thereof with flavors.

4,327,077

COMPRESSED CHEWABLE ANTACID TABLET AND METHOD FOR FORMING SAME

Wayne J. Puglia, Bellerose Village; Kanit J. Patanasinth, Tarrytown; Andrew T. Lombardo, Bronx, and Walter Vink, Purdys Station, all of N.Y., assignors to Life Savers, Inc., New York, N.Y.

Filed May 29, 1981, Ser. No. 268,314

Int. Cl.^{3} A61K *9/20, 9/42, 33/08, 33/10*

U.S. Cl. 424—38 12 Claims

1. A compressed chewable antacid tablet having good breakage resistance and flexibility which comprises particles of a recrystallized fatty material comprising chocolate, synthetic chocolate or hydrogenated tallow, an antacid bound up in said particles of recrystallized fatty material, and a direct compaction vehicle which binds said particles of recrystallized fatty material and antacid, under compression, into a chewable tablet, said direct compaction vehicle comprising sorbitol, mannitol, dextrose monohydrate, anhydrous lactose, dicalcium phosphate dihydrate, co-crystallized sucrose with modified dextrins, cerelose or other corn syrup solids.

4,327,078

COSMETIC AGENTS INCLUDING SOLUBLE ELASTIN

Egbert Charlet, Rösrath, and Martin Kludas, Berlin, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 856,562, Dec. 1, 1977, abandoned. This application Mar. 5, 1979, Ser. No. 17,773

Claims priority, application Fed. Rep. of Germany, Dec. 11, 1976, 2656226; Oct. 7, 1977, 2745284

Int. Cl.^{3} A61K *7/00, 7/42, 7/48*

U.S. Cl. 424—45 7 Claims

1. A cosmetic agent containing as an active ingredient soluble elastin in which about 80% of said soluble elastin has a molecular weight in the range of from 3,000 to 10,000, about 10% of said soluble elastin has a molecular weight of about 10,000 to 25,000 and about 10% of said soluble elastin has a molecular weight in the range of 25,000 to 100,000, in an amount effective to combat skin withering for a visible cosmetic effect (1) in admixture with a solid or liquefied gaseous diluent or (2) in admixture with a liquid diluent.

4,327,079

DENTIFRICE COMPOSITIONS

Hideki Aoki, Funabashi, Japan, assignor to Dental Chemical Co., Ltd., Tokyo, Japan

Filed Oct. 29, 1980, Ser. No. 201,727

Claims priority, application Japan, Nov. 15, 1979, 54/147011

Int. Cl.^{3} A61K *9/16*

U.S. Cl. 424—57 1 Claim

1. A dentifrice composition for tooth paste consisting essentially of: 30 to 35 parts by weight of an abrading agent containing 5 to 35 parts by weight of synthetic hydroxyapatite powder and the balance of at least one member selected from the group consisting of calcium phosphate and calcium pyrophosphate; 20 to 35 parts by weight of at least one filler selected from the group consisting of glycerin and sorbitol; 30 to 35 parts by weight of water; 0.27 to 3 parts by weight of at least one alkali metal chloride selected from the group consisting of NaCl and KCl; and, 0.01 to 0.3 parts by weight of $MgCl_2$.

4,327,080

NOVEL BENDROFLUMETHIAZIDE FORMULATIONS AND METHOD

Thomas M. Wong, North Brunswick, and Mahendra R. Patel, East Brunswick, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Jul. 13, 1981, Ser. No. 282,359

Int. Cl.^{3} A61K *9/20, 31/79, 47/00*

U.S. Cl. 424—80 24 Claims

1. A solid substantially dry water-free bendroflumethiazide-containing formulation, having excellent disintegration and dissolution properties, comprising one or more excipients and a dry granulation including one or more fillers, and a preformed partial coprecipitate comprised of bendroflumethiazide, and a bendroflumethiazide wetting agent to convert said bendroflumethiazide into a more hydrophilic form, said preformed partial coprecipitate and filler being substantially homogeneously mixed with said one or more excipients.

4,327,081

METHOD OF ENHANCING ABSORPTION OF ANTITUMOR AGENT INTO GASTRO-INTESTINAL TUMOR SITE AND ORALLY ADMINISTRABLE ANTITUMOR COMPOSITIONS THEREFOR

Akira Matsuda, Omiya; Osamu Yoshioka, Yono; Katsutoshi Takahashi, Tokyo; Kooichi Yoshida, Soka, and Hiroshi Ninomiya, Sayama, all of Japan, assignors to Nippon Kayaku Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 894,844, Apr. 10, 1978, Pat. No. 4,273,761. This application Oct. 26, 1979, Ser. No. 88,527

Claims priority, application Japan, Apr. 12, 1977, 52-41687; Jul. 14, 1977, 52-83528

Int. Cl.^{3} A61K *31/78*

U.S. Cl. 424—81 12 Claims

1. A peroral antitumor composition containing an effective amount of bleomycin a sufficient amount of an alkali metal salt of polyacrylic acid having molecular weight 1,000,000 to 10,000,000 to enhance absorption of said active compound into the gastrointestinal tumor site, and a pharmaceutical adjuvant or adjuvants.

4,327,082

MASTITIS VACCINATION

Rodney E. Armitage, Northcliff, South Africa, assignor to Adcock-Ingram Laboratories Limited, Johannesburg, South Africa

Filed Aug. 14, 1980, Ser. No. 178,217

Claims priority, application South Africa, Jul. 12, 1979, 79/4883

Int. Cl.^{3} A61K *39/085, 39/00*

U.S. Cl. 424—92 3 Claims

1. A method of vaccinating a cow against mastitis including the steps of administering to the cow an effective amount of an intravaginal anti-mastitis vaccine during the lactation period followed by administering an effective amount of an intracisternal anti-mastitis vaccine to the cow during the dry period, wherein the intravaginal and intracisternal vaccines contain Toxoided Alpha-Toxin, detoxified Leucocidin and an extract of the bacteria Staphylococcus aureus.

4,327,083

TREATMENT OF HYPERTENSION WITH BISULFITE

Jose A. A. Alvarez, Mexico City, Mexico, assignor to T & R Chemicals, Inc., Clint, Tex.

Continuation-in-part of Ser. No. 859,705, Dec. 12, 1977, abandoned. This application Sep. 14, 1979, Ser. No. 75,423

Int. Cl.^{3} A31K *33/04*

U.S. Cl. 424—162 2 Claims

1. A process for achieving improvement in hypertension in a human suffering from said condition comprising orally introducing into said human sodium bisulfite as an aqueous solution at the rate of from about 0.2 to 2.0 mgm of sodium bisulfite per kilogram of body weight per 24 hours.

4,327,084

AQUEOUS SOLUTION FOR INTRAVENOUS ADMINISTRATION

Karl Groke, Eggersdorf, Austria, assignor to Chemie Linz Aktiengesellschaft, Linz, Austria

Continuation-in-part of Ser. No. 892,863, Mar. 31, 1978, abandoned. This application Oct. 26, 1979, Ser. No. 88,651

Claims priority, application Fed. Rep. of Germany, Jul. 8, 1977, 2731013

Int. Cl.^{3} A61K *31/00, 47/00, 31/625, 31/505*

U.S. Cl. 424—176 3 Claims

1. A pharmaceutical composition comprising a clear, aqueous solution capable for infusion by intravenous administration, said solution comprising from about 0.1 to about 1% w/v of 3-methoxy-4-(4'-aminobenzol-sulphonamido)-1,2,5-thiadiazole as a medicinally-acceptable basic water-soluble salt, from about 0.02 to about 0.15% w/v of 2,4-diamino-5-(3',4',5'-trimethoxybenzyl)-pyrimidine, from about 5 to about 20% w/v of a sugar compound selected from the group consisting of sorbitol, xylitol, mannitol, glucose, fructose and a mixture of glucose and fructose, and water, said solution having a pH value within the range of 6 to 8, with the proviso that said composition does not contain any organic solvent.

4,327,085

BIOLOGICALLY ACTIVE COMPOSITIONS AND METHODS OF USE

Francoise Audibert, Neuilly-sur-Seine, and Pierre Lefrancier, Bures-sur-Yvette, both of France, assignors to Agence Nationale de Valorisation de la Recherache (ANVAR), Neuilly sur Seine, France

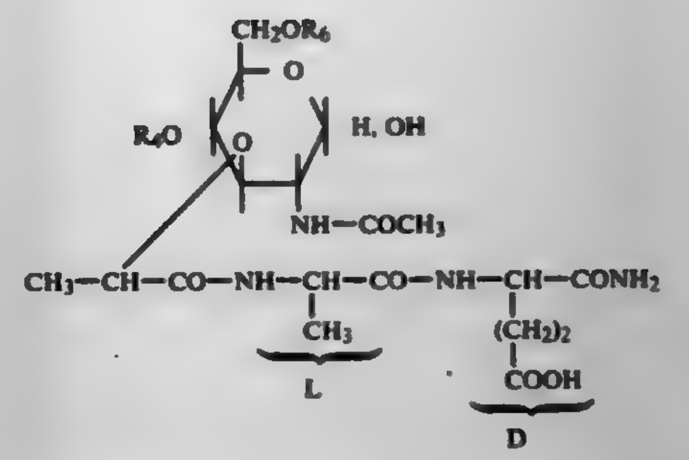
Continuation of Ser. No. 914,074, Jun. 9, 1978. This application Mar. 31, 1980, Ser. No. 135,935

Claims priority, application France, Oct. 23, 1973, 73 37806; Jul. 1, 1974, 74 22909

Int. Cl.^{3} A61K *37/00*

U.S. Cl. 424—177 23 Claims

1. The compound of the general formula



wherein R_4 is selected from the group consisting of hydrogen, acetyl and succinyl and R_6 is succinyl.

4,327,086

PROCESS FOR HEAT TREATMENT OF AQUEOUS SOLUTION CONTAINING HUMAN BLOOD COAGULATION FACTOR XIII

Tsunekazu Fukushima, Kobe; Tomiyuki Matsunaga, Hirakata, and Satoshi Funakoshi, Katano, all of Japan, assignors to The Green Cross Corporation, Osaka, Japan

Filed Mar. 20, 1981, Ser. No. 245,971

Claims priority, application Japan, Mar. 27, 1980, 55-40050

Int. Cl.^{3} A61K *37/00, 35/14, 35/48*

U.S. Cl. 424—177 9 Claims

1. A process for heat treatment to inactive hepatitis virus in human blood coagulation factor XIII compositions, which comprises carrying out the heat treatment at 50° to 80° C. of an aqueous solution containing the human blood coagulation factor XIII for 3 to 15 hours in the presence of 10% (W/V) or more of at least one principal stabilizer selected from the group consisting of neutral amino acids, monosaccharides and sugar alcohols and 10% (W/V) or more of at least one auxiliary stabilizer selected from the group consisting of salts of organic hydrocarbon and hydroxyhydrocarbon carboxylic acids having 3 to 10 carbon atoms.

4,327,087

STABILIZED NETILMICIN FORMULATIONS

Bernard E. Rosenkrantz, Bloomfield, and Elliot Stupak, West Caldwell, both of N.J., assignors to Schering Corporation, Kenilworth, N.J.

Continuation-in-part of Ser. No. 869,741, Jan. 16, 1978, Pat. No. 4,223,022. This application Apr. 17, 1980, Ser. No. 141,029

Int. Cl.^{3} A61K *31/71;* C07H *15/22*

U.S. Cl. 424—180 6 Claims

1. A pharmaceutical product comprising a sealed parenteral package, and a pH-and color-stabilized sterile aqueous antibiotic solution suitable for parenteral use consisting essentially of a parenterally acceptable salt of netilmicin, said solution having a pH in the range of 5.0–7.0, said composition being within said package.

4,327,088

PHOSPHONOOXY- OR GLYCOSYLOXY-SUBSTITUTED ACRYLOPHENONES, COMPOSITIONS AND USES THEREOF

Nobuo Shinma, Clifton, N.J.; Isao Umeda, Yokohama, Japan; Hideo Ishitsuka, Yokohama, Japan, and Yasuji Suhara, Yokohama, Japan, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

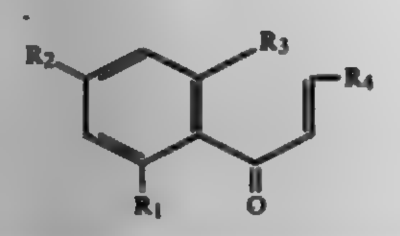
Filed May 12, 1980, Ser. No. 148,616

Claims priority, application United Kingdom, May 23, 1979, 17971/79

Int. Cl.³ A61K *31/66, 31/72;* **C07F** *9/38;* **C07H** *15/20*

U.S. Cl. 424—180 **52 Claims**

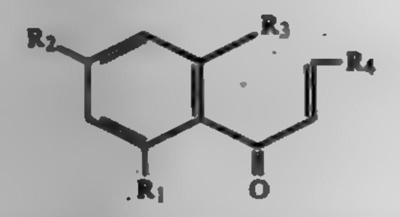
1. A compound of the formula:



I

wherein R_1 is phosphonooxy, aminoglycosyloxy or acylaminoglycosyloxy; R_2 and R_3 each are lower alkoxy; and R_4 is benzimidazolyl, furyl which is unsubstituted or substituted with lower alkyl, thienyl which is unsubstituted or substituted with lower alkyl, or phenyl which is substituted with lower alkyl, lower alkoxy, methylthio, methylenedioxy, acetoxy or methoxymethoxy, or pharmaceutically acceptable salts thereof.

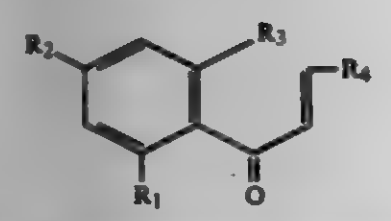
48. A method for treating a mammal infected by an enterovirus comprising administering to said mammal a compound of the formula:



I

wherein R_1 is phosphonooxy, aminoglycosyloxy or acylaminoglycosyloxy; R_2 and R_3 each are lower alkoxy; and R_4 is benzimidazolyl, furyl which is unsubstituted or substituted with lower alkyl, thienyl which is unsubstituted or substituted with lower alkyl, or phenyl which is substituted with lower alkyl, lower alkoxy, methylthio, methylenedioxy, acetoxy or methoxymethoxy, or pharmaceutically acceptable salts thereof in an amount which is effective as an anti-enteroviral agent.

49. A method for treating a mammal infected by a rhinovirus comprising administering to said mammal a compound of the formula:



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wherein R_1 is phosphonooxy, aminoglycosyloxy or acylaminoglycosyloxy; R_2 and R_3 each are lower alkoxy; and R_4 is benzimidazolyl, furyl which is unsubstituted or substituted with lower alkyl, thienyl which is unsubstituted or substituted with lower alkyl or phenyl which is substituted with lower alkyl, lower alkoxy, methylthio, methylenedioxy, acetoxy or methoxymethoxy, or pharmaceutically acceptable salts thereof in an amount which is effective as an anti-rhinoviral agent.

4,327,089

O-(N-ALKOXY-PYRIDINECARBOXIMIDOYL) PHOSPHATES, PROCESS FOR PRODUCING THE SAME, AND INSECTICIDAL OR ACARIDICAL COMPOSITIONS CONTAINING THE SAME

Takahiro Haga, Kusatsu; Tadaaki Toki; Toru Koyanagi, both of Moriyama, and Osamu Imai, Kusatsu, all of Japan, assignors to Ishihara Sangyo Kaisha Ltd., Osaka, Japan

Filed Dec. 12, 1980, Ser. No. 215,777

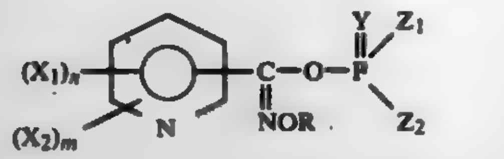
Claims priority, application Japan, Dec. 12, 1979, 54-160268

Int. Cl.³ A01N *57/16;* **G07F** *9/58*

U.S. Cl. 424—200 **19 Claims**

1. An O-(N-alkoxy-pyridinecarboximidoyl)phosphate represented by the following formula (I):

(I)



wherein X_1 is a halogen atom; X_2 is a lower alkyl group having 1 to 2 carbon atoms, an acetyloxy group, a trifluoromethyl group or a nitro group; Y is an oxygen atom or a sulfur atom; R is a lower alkyl group having 1 to 3 carbon atoms; n is an integer of 0 to 3; m is an integer of 0 to 1; and Z_1 and Z_2 are each a lower alkoxy group having 1 to 3 carbon atoms, a lower alkylthio group having 1 to 3 carbon atoms, a phenyl group which may be substituted with a lower alkyl group having 1 to 4 carbon atoms, a phenoxy group, a haloalkoxy group or a lower alkylamino group having 1 to 4 carbon atoms.

11. An insecticidal or acaricidal composition comprising an insecticidally or acaricidally effective amount of an O-(N-alkoxy-pyridinecarboximidoyl)phosphate having the formula (I) according to claim 1 as an active ingredient and an agriculturally acceptable adjuvant.

4,327,090

OXIMINOPHOSPHORIC ACID DERIVATIVES, THEIR PREPARATION AND THEIR USE IN PEST CONTROL

Rainer Buerstinghaus, Weinheim-Luetzelsachsen; Karl Kiehs, Lampertheim; Hardo Siegel, Speyer, and Heinrich Adolphi, Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 8, 1980, Ser. No. 213,790

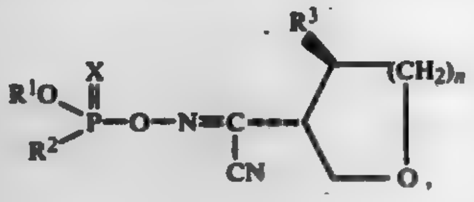
Claims priority, application Fed. Rep. of Germany, Dec. 29, 1979, 2952738

Int. Cl.³ A61K *31/665;* **C07D** *306/09, 307/06*

U.S. Cl. 424—203 **5 Claims**

1. An oximinophosphoric acid derivative of the formula

(I)



where

R^1 is unbranched or branched alkyl of up to 4 carbon atoms,

R^2 is unbranched or branched alkoxy or alkylthio of up to 4 carbon atoms, unbranched or branched alkyl of up to 3 carbon atoms, phenyl, amino, alkylamino or dialkylamino, where each alkyl is unbranched or branched and of up to 4 carbon atoms,

R^3 is hydrogen or methyl,

X is oxygen or sulfur and

n is 1 or 2.

4. A pesticide comprising solid and/or liquid additives and a pesticidally effective amount of an oximinophosphoric acid derivative of the formula I as claimed in claim 1.

4,327,091

N,N-DI AND N,N,N-TRI(HYDROXY-LOWER ALKYL) AMMONIUM SALTS OF SUBSTITUTED 3,4-DIHYDRO-2H-1,2-BENZOTHIAZINE 1,1 DIOXIDE AND PHARMACEUTICAL COMPOSITIONS THEREOF

Alex Sele, Muttenz; Pier G. Ferrini; Georges Haas, both of Binningen; Knut A. Jaeggi, Basel, and Alberto Rossi, Oberwil, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 4,113, Jan. 17, 1979, Pat. No. 4,213,980. This application Jan. 28, 1980, Ser. No. 116,200

Claims priority, application Switzerland, Jan. 30, 1978, 993/78

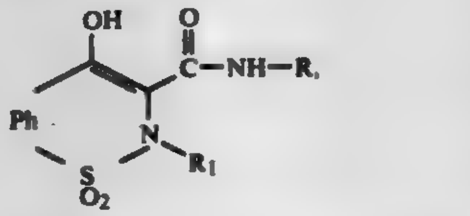
The portion of the term of this patent subsequent to Jul. 22, 1997, has been disclaimed.

Int. Cl.³ A61K *31/54;* **C07D** *417/12*

U.S. Cl. 424—246 **10 Claims**

1. A substituted 3,4-dihydro-2H-1,2-benzothiazine 1,1-dioxide of the formula

(I)



wherein Ph represents 1,2-phenylene or 1,2-phenylene substituted by lower alkyl, lower alkoxy, lower alkanoyl, halogen trifluoromethyl or nitro, R represents benzopyrone or benzopyrone substituted by lower alkyl, lower alkoxy, halogen, hydroxy, lower alkanoyloxy, optionally lower-alkylated or lower alkanoylated amino, trifluoromethyl or, at two adjacent carbon atoms, by lower alkylene or lower alkylenedioxy, and R_1 represents hydrogen, lower alkyl, hydroxy-lower alkyl, lower alkoxy-lower alkyl, lower alkenyl, phenyl-lower alkyl or phenyl-lower alkyl substituted by lower alkyl, alkoxy, halogen, trifluoromethyl or nitro, in the form of a N,N-di(hydroxy-lower alkyl)-or N,N,N-tri(hydroxy-lower alkyl)-ammonium salt.

10. A pharmaceutical preparation containing an anti-inflammatorically effective amount of a compound as claimed in claim 1, together with conventional adjuvants and/or carriers.

4,327,092

AMINOCYCLOPENTANE ALKENOIC ACIDS AND ESTERS AND PHARMACEUTICAL FORMULATIONS

Eric W. Collington, Welwyn; Peter Hallett, Buntingford, and Christopher J. Wallis, Royston, all of England, assignors to Glaxo Group Limited, England

Filed Apr. 29, 1981, Ser. No. 258,737

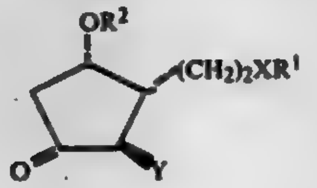
Claims priority, application United Kingdom, Jan. 7, 1981, 00326/81

Int. Cl.³ C07D *413/12;* **A61K** *31/535, 31/54;* **C07D** *417/12*

U.S. Cl. 424—246 **8 Claims**

1. Compounds of the general formula (1)

(1)



wherein

X is cis or trans —CH═CH—;

R^1 is straight or branched C_{1-7} alkyl bearing as a terminal substituent —$COOR^3$ where R^3 is a hydrogen atom, C_{1-6} alkyl or C_{7-10} aralkyl;

Y represents a saturated heterocyclic amino group which has 5 to 8 ring members and (a) optionally contains in the ring —O—, —S—, —SO_2—, —NR^4 (where R^4 is a hydrogen atom, C_{1-7} alkyl or aralkyl having a C_{1-4} alkyl portion; and/or (b) is optionally substituted by one or more C_{1-4} alkyl groups;

R^2 is C_{1-5} alkyl substituted by thienyl or furanyl (the thienyl and furanyl groups being optionally substituted by C_{1-6} alkyl, C_{1-6} alkoxy, aryl or phenyl (C_{1-3}) alkyl or phenyl (C_{1-3})-alkoxy (the aryl or phenyl group in each case being optionally substituted by C_{1-3} alkyl, C_{1-3} alkoxy or halogen), aryloxy, C_{5-7} cycloalkyl, halogen, nitro or thienyl);

and the physiologically acceptable salts and the solvates thereof.

8. A pharmaceutical composition comprising an effective amount of a compound as claimed in claim 1 together with one or more pharmaceutical carriers.

4,327,093

3,7-DISUBSTITUTED-2 OR 3-CEPHEM-4-CARBOXYLIC ACID COMPOUNDS

Ikuo Ueda, Toyonaka; Masakazu Kobayashi; Hisashi Yamada, both of Ikeda, and Hiroki Ono, Nagaokakyo, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

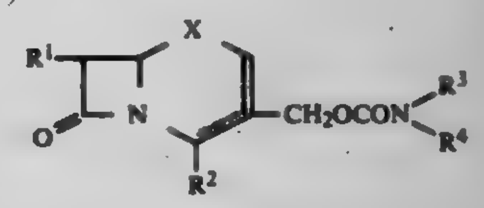
Filed Oct. 17, 1979, Ser. No. 85,684

Claims priority, application United Kingdom, Oct. 24, 1978, 41754/78

Int. Cl.³ C07D *501/38*

U.S. Cl. 424—246 **9 Claims**

1. 3,7-Disubstituted-2 or 3-cephem-4-carboxylic acid compounds of the formula:



wherein R^1 is acylamino or ar(lower)alkylamino; R^2 is carboxy or carboxy protected by a pharmaceutically acceptable group; —N—R^3, R^4 is di(lower)alkylamino(lower)alkylamino, an unsaturated or saturated 3 to 8 membered heteromonocyclic (lower)alkylamino group containing 1 to 4 nitrogen atoms, an unsaturated or saturated 3 to 8 membered heteromonocyclic (lower)alkylamino group containing 1 to 4 nitrogen atoms substituted by lower alkyl or hydroxy(lower) alkyl, an unsaturated or saturated 5 to 6 membered heteromonocyclic group containing 2 to 4 nitrogen atoms, an unsaturated or saturated 5 to 6 membered heteromonocyclic group containing 2 to 4 nitrogen atoms substituted by lower alkyl or hydroxy(lower)alkyl or hydroxypiperidino, and X is —S— or

$$\overset{O}{\uparrow}\\-S-,$$

and pharmaceutically acceptable salts thereof.

4,327,094

INSECTICIDAL AND ACARICIDAL 3,5-DIOXO-2,3,4,5-TRIAZINE COMPOUNDS

Masato Mizutani, Kyoto; Kazunori Tsushima, Nishinomiya; Yuzuru Sanemitsu, Ashiya, and Masachika Hirano, Ibaraki, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

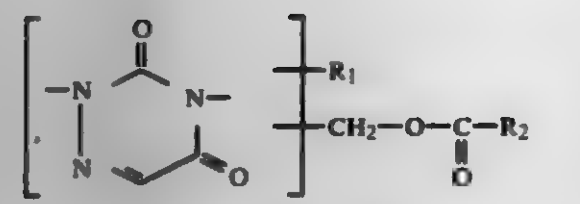
Filed Jan. 16, 1981, Ser. No. 225,749

Claims priority, application Japan, Jan. 29, 1980, 55-9544; Apr. 28, 1980, 55-56455

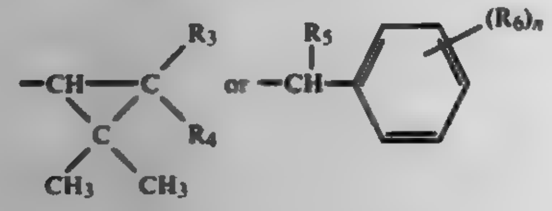
Int. Cl.³ C07D *253/06;* **A01N** *43/64*

U.S. Cl. 424—249 **6 Claims**

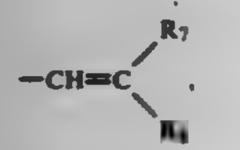
1. A carboxylate of the formula,



wherein R_1 is an allyl or propargyl group, R_2 is a group of



in which R_3 is a hydrogen atom or a methyl group, and when R_3 is a hydrogen atom, R_4 is a group of

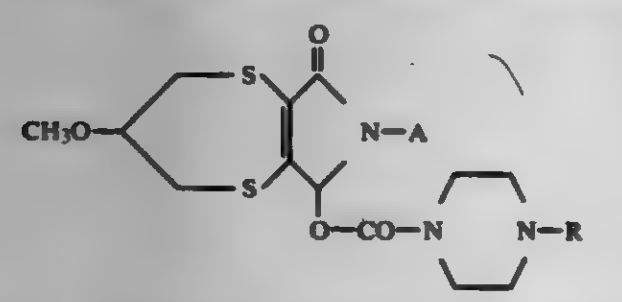


(in which R_7 is a chlorine, bromine or fluorine atom, or a methyl, vinyl, methoxycarbonyl or methoxymethyl group, R_8 is a hydrogen, chlorine, bromine or fluorine atom or a methyl group), and when R_3 is a methyl group, R_4 is a methyl group, R_5 is an isopropyl or cyclopropyl group, R_6 is an alkyl group having 1 to 3 carbon atoms or alkoxyl group having 1 to 3 carbon atoms, or a chlorine, bromine or fluorine atom, n is 1 to 2, and $-(R_6)_n$ may include a 3,4-methylenedioxy group.

6. A method for controlling an insect and/or acarid, which comprises applying an insecticidally and/or acaricidally effective amount of the compound according to claim 1 to the insect and/or acarid.

4,327,095
METHOXY DERIVATIVES OF 1,4-DITHIEPINO-[2,3-C]-PYRROLE
Daniel Farge, Thiais; Andre Leger, Paris, and Gerard Ponsinet, Sucy-En-Brie, all of France, assignors to Rhone-Poulenc Industries, Paris, France
Filed Mar. 13, 1980, Ser. No. 130,132
Claims priority, application France, Mar. 15, 1979, 79 06562
Int. Cl.³ A61K *31/385;* **C07D** *513/04*
U.S. Cl. 424—250 13 Claims

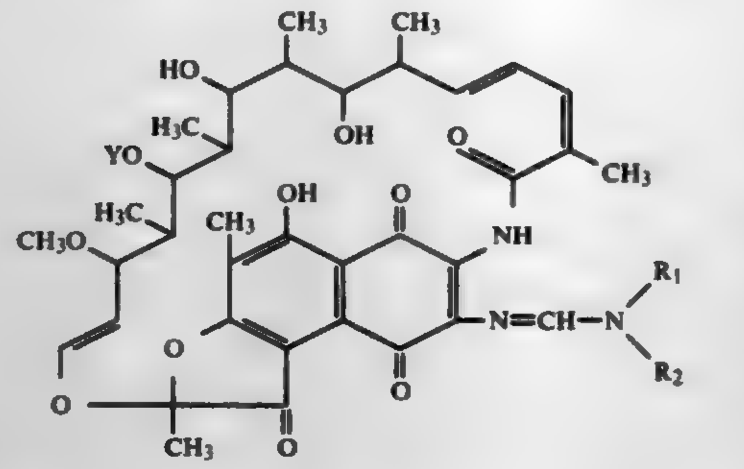
1. A 1,4-dithiepino[2,3-c]pyrrole compound of the formula:



wherein A represents pyrid-2-yl, quinol-2-yl or 1,8-naphthyridin-2-yl, or pyrid-2-yl, quinol-2-yl or 1,8-naphthyridin-2-yl substituted by one halogen, alkyl of 1 through 4 carbon atoms or alkoxy of 1 through 4 carbon atoms, and R represents hydrogen, alkyl of 1 through 4 carbon atoms or alkanoyl of 1 through 4 carbon atoms, and when R is hydrogen or alkyl non-toxic pharmaceutically acceptable acid addition salts thereof.

4,327,096
3-AMIDINO ANSAMYCINS
Leonardo Marsili; Giovanni Franceschi, and Aurora Sanfilippo, all of Milan, Italy, assignors to Farmitalia Carlo Erba S.p.A., Milan, Italy
Filed Feb. 9, 1981, Ser. No. 232,533
Int. Cl.³ A61K *31/395;* **C07D** *498/08*
U.S. Cl. 424—250 12 Claims

1. A 3-amidino rifamycin having the formula

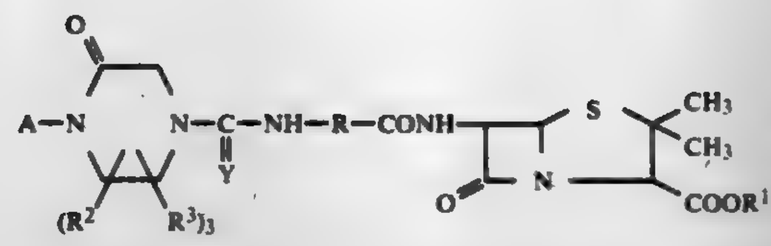


Wherein: Y is —H or —$COCH_3$; R_1 is selected from the group consisting of linear or branched alkyl having from 1 to 7 carbon atoms, and alkenyl having 3 or 4 carbon atoms; R_2 is selected from the group consisting of linear or branched alkyl having from 1 to 7 carbon atoms, chloroalkyl having from 2 to 4 carbon atoms, alkenyl having 3 or 4 carbon atoms, cycloalkyl having from 3 to 7 carbon atoms in the ring, cycloalkylalkyl having from 3 to 6 carbon atoms in the ring, phenyl, bornyl, unsubstituted arylalkyl hydrocarbon having 7 or 8 carbon atoms, arylalkyl hydrocarbon having 7 or 8 carbon atoms and substituted with one halogen atom in the aryl group; and R_1 and R_2 along with the N atom to which they are bonded form a cyclic moiety, said moiety being pyrrolidinyl, piperidinyl, hexahydroazepinyl, or heptahydroazocinyl, each of which may be unsubstituted or substituted with 1 or 2 methyl radicals, 4-alkylpiperazinyl, morpholinyl, or 1,2,3,4-tetrahydroisoquinolinyl.

11. An antibacterial composition which comprises a rifamycin compound as claimed in claims 1 and 2, and effective amount of an antibacterial acceptable carrier or diluent therefor.

4,327,097
NOVEL PENICILLINS
Isamu Saikawa; Shuntaro Takano, both of Toyama; Chosaku Yoshida, Takaoka; Okuta Takashima, Toyama; Kaishu Momonoi, Shinminato; Seietsu Kuroda, Toyama; Miwako Komatsu, Toyama; Takashi Yasuda, Toyama, and Yutaka Kodama, Toyama, all of Japan, assignors to Toyama Chemical Co., Ltd., Tokyo, Japan
Division of Ser. No. 915,873, Jun. 15, 1978, Pat. No. 4,219,554, which is a division of Ser. No. 654,060, Jan. 30, 1976, Pat. No. 4,112,090, which is a continuation-in-part of Ser. No. 571,479, Apr. 24, 1975, Pat. No. 4,087,424. This application Jun. 12, 1979, Ser. No. 47,818
Claims priority, application Japan, May 9, 1974, 49-50663; May 13, 1974, 49-52254; May 31, 1974, 49-60787; Aug. 13, 1974, 49-91996; Sep. 26, 1974, 49-109954; Dec. 13, 1974, 49-142499; Mar. 27, 1975, 50-37207
Int. Cl.³ A61K *31/495;* **C07D** *499/70*
U.S. Cl. 424—250 14 Claims

1. An antibacterial compound of the formula (I),



wherein R is a group represented by the formula,

wherein R[5] represents a conventional penicillin substituent selected from the group consisting of alkyl, cycloalkyl, cycloalkenyl, cycloalkadienyl, aryl, aralkyl, aryloxy, alkylthioalkyl, furyl, thienyl, oxazolyl, thiazolyl, isoxazolyl, isothiazolyl, imidazolyl, pyrazolyl, pyridyl, pyrazyl, pyrimidyl, pyridazyl, quinolyl, isoquinolyl, quinazolyl, indolyl, indazolyl, 1,3,4-oxadiazolyl, 1,2,4-oxadiazolyl, 1,3,4-thiadiazolyl and 1,2,4-thiadiazolyl, each of which may be substituted by halogen, hydroxy, nitro, alkyl, alkoxy, alkylthio, acyl or alkylsulfonylamino; R[6] represents a hydrogen atom; and R[5] and R[6] together with a common carbon atom may form a conventional penicillin substituent selected from the group consisting of cycloalkyl, cycloalkenyl and cycloalkadienyl ring;

R[1] represents a hydrogen atom, a conventional penicillin blocking group of a conventional penicillin or a conventional salt-forming cation of a conventional penicillin; each pair of R[2] and R[3] are linked to the same carbon atom, and each R[2] and R[3] of the three pairs of R[2] and R[3], which may be the same or different, represent individually a conventional penicillin substituent selected from the group consisting of hydrogen, halogen, carboxyl, alkyl, cycloalkyl, aryl, acyl, aralkyl, alkoxycarbonylalkyl, acyloxyalkyl, alkoxy, alkoxycarbonyl, cycloalkyloxycarbonyl, aralkoxycarbonyl, aryloxycarbonyl, amino and carbamoyl; any of which may be substituted by halogen, alkyl, alkoxy, alkylthio, acyl or nitro; and any pair of R[2] and R[3] together with a common carbon atom may form a conventional penicillin substituent which is a cycloalkyl ring;

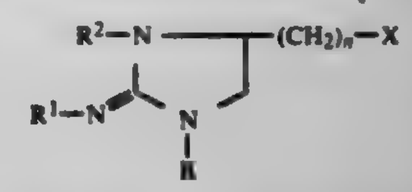
A represents a conventional penicillin substituent selected from the group consisting of halogen, hydroxy, nitro, cyano, alkyl, alkenyl, alkadienyl, cycloalkyl, cycloalkenyl, cycloalkadienyl, aryl, acyl, aralkyl, acyloxyalkyl, alkoxy, cycloalkyloxy, alkoxycarbonyl, aryloxy, cycloalkyloxycarbonyl, aryloxycarbonyl, aralkoxycarbonyl, alkylsulfonyl, cycloalkylsulfonyl, arylsulfonyl, carbamoyl, thiocarbamoyl, acylcarbamoyl, acylthiocarbamoyl, alkylsulfonylcarbamoyl, arylsulfonylcarbamoyl, alkylsulfonylthiocarbamoyl, arylsulfonylthiocarbamoyl, sulfamoyl, alkoxycarbonylthioalkyl, alkoxythiocarbonylthioalkyl, amino, thiazolyl, pyridyl, pyridazyl, pyrazyl, thiadiazolyl, thiazolyl, tetrazolyl and quinolyl, each of which may be substituted by a conventional penicillin substitutent selected from the group consisting of halogen, hydroxyl, alkyl, alkoxy, alkylthio, nitro, cyano, amino, carboxyl, and acyl; and

Y represents an oxygen or sulfur atom.

5. An antibacterial pharmaceutical composition comprising an antibacterially effective amount of a compound of claim 1 and a pharmaceutically acceptable carrier.

4,327,098
PHARMACEUTICAL COMPOSITIONS USEFUL IN THE TREATMENT OF CARDIOVASCULAR HYPERTENSION AND CONTAINING 4-SUBSTITUTED-2-IMINOIMADAZOLIDINE COMPOUNDS
Albert D. Cale, Jr., Mechanicsville, Va., assignor to A. H. Robins Company, Inc., Richmond, Va.
Division of Ser. No. 9,899, Feb. 6, 1979, Pat. No. 4,247,705. This application May 5, 1980, Ser. No. 146,610
Int. Cl.³ A61K *31/495, 31/445, 31/415*
U.S. Cl. 424—250 10 Claims

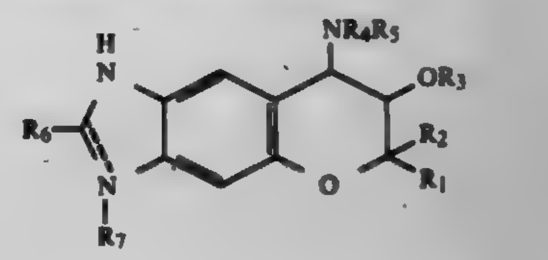
1. A method for the treatment of cardiovascular hypertension in a patient comprising administering a pharmaceutical carrier and a hypertension inhibiting quantity of a 2-iminoimidazolidine compound corresponding to the formula:



wherein R is loweralkyl; R[1] is a member selected from hydrogen, loweralkyl, phenyl, loweralkylphenyl, and chlorophenyl; R[2] is a member selected from loweralkyl, phenyl, loweralkylphenyl, and chlorophenyl; X is a member selected from amino, diloweralkylamino, di(phenylloweralkyl)amino, 1-piperidino, 1-piperazino, 1-morpholino, and choro; and n is the integer 1 or 2, or a pharmaceutically acceptable acid addition salt thereof.

4,327,099
PYRANO DERIVATIVES, A PROCESS FOR THEIR PREPARATION AND THEIR USE
John M. Evans, Roydon, and Roger E. Markwell, Great Dunmow, both of England, assignors to Beecham Group Limited, England
Filed Jan. 28, 1981, Ser. No. 229,190
Claims priority, application United Kingdom, Feb. 2, 1980, 8003495/80
Int. Cl.³ A61K *31/435, 31/415;* **C07D** *487/00, 235/02*
U.S. Cl. 424—256 10 Claims

1. A compound of the formula (I):



(I)

wherein

R_1 and R_2 are independently selected from a hydrogen atom and a C_{1-3} alkyl group;

R_3 is a hydrogen atom, a C_{1-3} alkyl or C_{2-4} acyl group;

R_4 is a hydrogen atom or C_{1-5} alkyl group;

R_5 is a C_{1-5} alkyl group, a straight chain C_{1-3} alkyl group terminally substituted by a chlorine atom;

or

R_4 and R_5 are joined so that together with the nitrogen atom to which they are attached they form pyrrolidyl or piperidinyl;

R_6 is a hydrogen atom, or a C_{1-5} alkyl, phenyl, CF_3 or XH group wherein X is an oxygen or sulphur atom, the dotted line represents a bond, and R_7 is not present; or R_6 is an oxygen atom joined to the ring carbon atom by a double bond, the dotted line is not present, and R_7 is hydrogen;

the NR_4R_5 and OR_3 moieties are trans; and pharmaceutically acceptable salts thereof.

9. A pharmaceutical composition for treating hypertension,

comprising an anti-hypertensive effective amount of a compound according to claim 1 and a pharmaceutically acceptable carrier.

10. A method for the treatment of hypertension in mammals including man, comprising administering to the sufferer an anti-hypertensive effective amount of a compound according to claim 1.

4,327,100

2-(ALKOXY-PHENYL)-IMIDAZO(4,5-B)PYRIDINES AND SALTS THEREOF

Volkhard Austel; Manfred Reiffen, both of Biberach; Joachim Heider, Warthausen, and Willi Diederen, Biberach, all of Fed. Rep. of Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Fed. Rep. of Germany

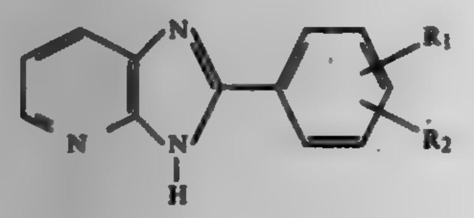
Filed Jun. 30, 1980, Ser. No. 163,970

Claims priority, application Fed. Rep. of Germany, Jul. 11, 1979, 2927987

Int. Cl.[3] A61K *31/44;* C07D *471/04*

U.S. Cl. 424—256 **9 Claims**

1. A compound of the formula



wherein

R_1 is alkoxy of 1 to 3 carbon atoms; and

R_2 is (aralkylsulfinyl of 7 to 9 carbon atoms)-(alkoxy of 2 to 3 carbon atoms); or (unsubstituted, mono-, di- or trisubstituted phenylsulfinyl)-(alkoxy of 2 to 3 carbon atoms), where the substituents are attached to the phenyl moiety and are nitro, alkyl of 1 to 3 carbon atoms, alkoxy of 1 to 3 carbon atoms or halogen;

a 3H-tautomer thereof; or a non-toxic, pharmacologically acceptable acid addition salt thereof.

9. The method of raising the blood pressure or increasing the strength of heart muscle contraction in a warm-blooded animal in need thereof, which comprises perorally, parenterally or rectally administering to said animal an effective hypertensive or positively inotropic amount of a compound of claim 1.

4,327,101

QUINOLINE COMPOUND USEFUL AS ANTIBACTERIAL AGENTS IN WARM-BLOODED ANIMALS

Yoshitaka Mushika, Kawanishi; Junichi Tani, Osaka; Totaro Yamaguchi, Yono, and Satoshi Ohshima, Iwatsuki, all of Japan, assignors to Tanabe Seikaku Co., Ltd., Osaka, Japan

Filed Sep. 19, 1980, Ser. No. 188,713

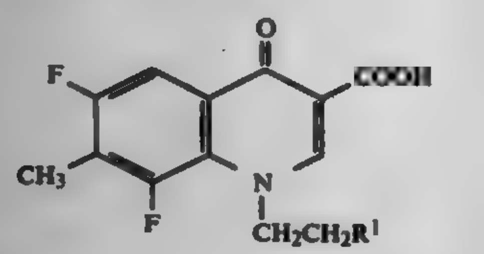
Claims priority, application Japan, Oct. 5, 1979, 54-129120

Int. Cl.[3] A61K *31/47;* C07D *215/56*

U.S. Cl. 424—258 **5 Claims**

1. A quinoline compound of the formula:

(I)



wherein R^1 is hydrogen or fluorine, or a pharmaceutically acceptable salt thereof.

4. An anti bacterial composition comprising an amount of the compound of claim 1 which, when administered to a warm blooded animal, provides an effective amount of said compound, and a pharmaceutically acceptable carrier.

4,327,102

CERTAIN 2-(PHENYL SULFINYL METHYL OR ETHYL) PYRIDINE DERIVATIVES, COMPOSITION CONTAINING SAME AND METHOD OF USING SAME

Roger Crossley, Reading, England, assignor to John Wyeth & Brother Limited, Maidenhead, England

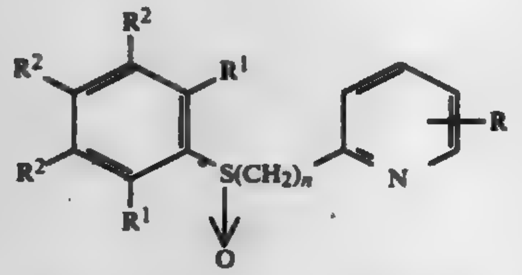
Filed Feb. 9, 1981, Ser. No. 232,452

Claims priority, application United Kingdom, Feb. 20, 1980, 5668/80; Feb. 20, 1980, 5669/80

Int. Cl.[3] C07D *213/34;* A61K *31/44*

U.S. Cl. 424—263 **10 Claims**

1. A compound of formula I



wherein R represents hydrogen or lower alkyl, R^1 represents hydrogen or fluorine, R^2 represents hydrogen, fluorine, chlorine or trifluoromethyl, n is 1 or 2 or a pharmaceutically acceptable acid addition salt thereof.

10. A method of treating ulcers or hypersecretion in a mammal, which method comprises orally administering to said mammal in need of such treatment an effective amount of a compound as claimed in claim 1.

4,327,103

3-{3-[4-(4-FLUOROBENZOYL)PIPERIDYL]PROPYL}-2-METHYL INDOLE

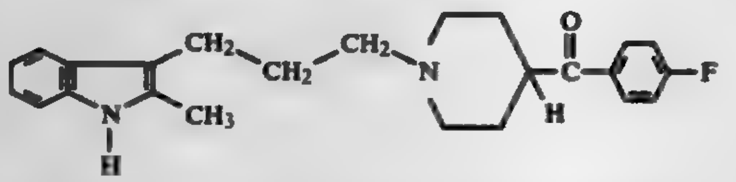
Grover C. Helsley, Pottersville; Joseph T. Strupczewski, Flemington, both of N.J., and Beth A. Gardner, San Jose, Calif., assignors to Hoechst-Roussel Pharmaceuticals Incorporated, Somerville, N.J.

Filed Jul. 7, 1980, Ser. No. 166,419

Int. Cl.[3] A61K *31/445;* C07D *403/06, 401/06*

U.S. Cl. 424—267 **4 Claims**

1. A compound of the formula



or an acid addition salt thereof prepared from a pharmaceutically acceptable acid.

2. A method of depressing the central nervous system which comprises administering to a patient a pharmaceutically effective amount of 3-{3-[4-(4-fluorobenzoyl)piperidyl]-propyl} -2-methyl indole or an acid addition salt thereof prepared from a pharmaceutically acceptable acid.

4,327,104

1-PHENYL-2-(1,2,4-TRIAZOLYL-1-YL)-ETHYL ETHER

Helmut Timmler; Karl Büchel, both of Wuppertal; Wilhelm Brandes, Cologne; Paul-Ernst Frohberger, and Hans Scheinpflug, both of Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

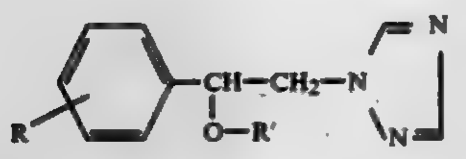
Filed Oct. 6, 1976, Ser. No. 729,935

Claims priority, application Fed. Rep. of Germany, Oct. 27, 1975, 2547953

Int. Cl.[3] A01N *43/64;* C07D *249/08*

U.S. Cl. 424—269 **8 Claims**

1. A 1-phenyl-2-(1,2,4-triazol-1-yl)-ethyl ether of the formula



in which

R is 2,4-diCl, phenyl, phenoxy, or phenyl or phenoxy carrying at least one substituent selected from halogen, cyano, nitro and halogenoalkyl with 1 or 2 carbon atoms and up to 3 identical or different halogen atoms,

R' is alkenyl or alkynyl with up to 4 carbon atoms,

or a salt thereof with a physiologically tolerated acid.

6. A fungicidal or bactericidal composition containing as active ingredient a fungicidally or bactericidally effective amount of a compound according to claim 1 or a salt thereof with a physiologically tolerated acid in admixture with a diluent.

4,327,105

AMINO-PENICILLIN DERIVATIVE, AND THERAPEUTIC COMPOSITION CONTAINING THE SAME

Juan B. A. Scalesciani, Calle Y.B. Alberdi, Buenos Aires, Argentina

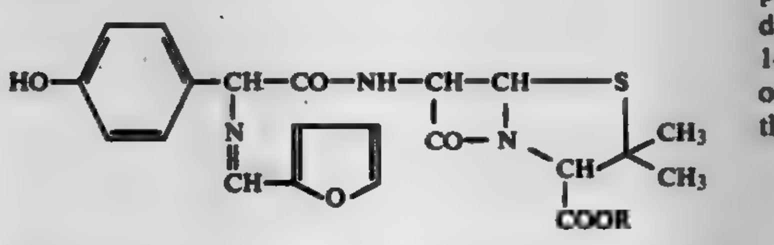
Filed Mar. 9, 1981, Ser. No. 241,641

Claims priority, application Italy, Dec. 2, 1980, 26351 A/80

Int. Cl.[3] A61K *31/43;* C07D *499/70*

U.S. Cl. 424—271 **2 Claims**

2. A therapeutic composition comprising an antibacterially effective amount of a compound of the formula:



in which R=H, Na or K, and a therapeutically acceptable carrier.

4,327,106

2-(PHENYL-AMINO)-2-IMIDAZOLINES AND SALTS

Helmut Stähle; Herbert Köppe; Werner Kummer, all of Ingelheim am Rhein, Fed. Rep. of Germany, and Christian Lillie, Vienna, Austria, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Fed. Rep. of Germany

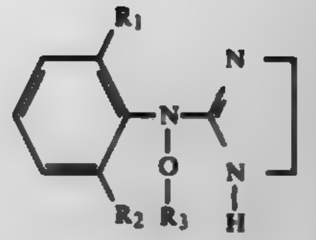
Filed Dec. 10, 1980, Ser. No. 215,105

Claims priority, application Fed. Rep. of Germany, Dec. 12, 1979, 2950345

Int. Cl.[3] A61K *31/415;* C07D *231/06*

U.S. Cl. 424—273 R **8 Claims**

1. A compound of the formula



wherein

R_1 and R_2 are each fluorine, chlorine, bromine or trifluoromethyl, and

R_3 is alkyl of 1 to 4 carbon atoms, alkenyl of 2 to 4 carbon atoms, cyclopropylmethyl, benzyl or thienyl-2-methyl,

or a non-toxic, pharmacologically acceptable acid addition salt thereof.

4,327,107

METHOD USEFUL IN THE TREATMENT OF SUGAR CATARACTS USING 4-SUBSTITUTED-2-IMINOIMIDAZOLIDINE COMPOUNDS

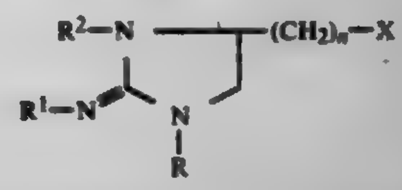
Albert D. Cale, Jr., Mechanicsville, Va., assignor to A. H. Robins Company, Inc., Richmond, Va.

Division of Ser. No. 9,899, Feb. 6, 1979, Pat. No. 4,247,705. This application May 5, 1980, Ser. No. 146,608

Int. Cl.[3] A61K *31/415, 31/495, 31/445*

U.S. Cl. 424—273 R **7 Claims**

1. A method for the treatment of sugar cataracts in a patient comprising administering a pharmaceutical carrier and a sugar cataract formation inhibiting quantity of a 2-iminoimidazolidine compound corresponding to the formula:



wherein R is loweralkyl; R^1 is a member selected from hydrogen, loweralkyl, phenyl, loweralkyl phenyl, and chlorophenyl; R^2 is a member selected from loweralkyl, phenyl, loweralkylphenyl, and chlorophenyl; X is a member selected from amino, diloweralkylamino, di(phenylloweralkyl)amino, 1-piperidino, 1-piperazino, 1-morpholino, and chloro; and n is the integer 1 or 2, or a pharmaceutically acceptable acid addition salt thereof.

4,327,108

METHODS USEFUL IN THE TREATMENT OF CARDIAC ARRHYTHMIA USING 4-SUBSTITUTED-2-IMINOIMIDAZOLIDINE COMPOUNDS

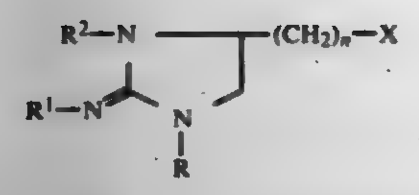
Albert D. Cale, Jr., Mechanicsville, Va., assignor to A. H. Robins Company, Inc., Richmond, Va.

Division of Ser. No. 9,899, Feb. 5, 1979, Pat. No. 4,247,705. This application May 5, 1980, Ser. No. 146,612

Int. Cl.[3] A61K *31/415, 31/495, 31/445*

U.S. Cl. 424—273 R **6 Claims**

1. The method for the treatment of cardiac arrhythmia in a patient comprising administering a pharmaceutical carrier and a cardiac arrhythmia inhibiting quantity of a 2-iminoimidazolidine compound corresponding to the formula:



wherein R is loweralkyl; R^1 is a member selected from hydrogen, loweralkyl, phenyl, loweralkylphenyl, and chlorophenyl; R^2 is a member selected from loweralkyl, phenyl, loweralkylphenyl, and chlorophenyl; X is a member selected from amino, diloweralkylamino, di(phenylloweralkyl)amino, 1-piperidino, 1-piperazino, 1-morpholino, and chloro; and n is the integer 1 or 2, or a pharmaceutically acceptable acid addition salt thereof.

4,327,109
NOVEL ALKADIENYLCYCLOPROPANECARBOXYLATES

Toshio Mizutani, Toyonaka; Nobushige Itaya; Nobuo Ohno, both of Ikeda; Takashi Matsuo, Amagasaki; Shigeyoshi Kitamura, and Yositosi Okuno, both of Toyonaka, all of Japan, assignors to Sumitomo Chemical Company Limited, Osaka, Japan

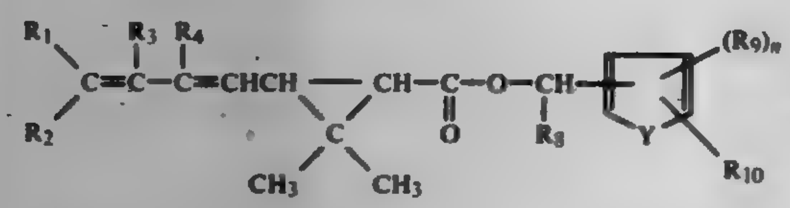
Division of Ser. No. 642,920, Dec. 22, 1975, Pat. No. 4,229,469, which is a division of Ser. No. 265,494, Jun. 23, 1972, Pat. No. 3,954,814. This application Apr. 22, 1980, Ser. No. 142,698

Claims priority, application Japan, Jun. 28, 1971, 46/47444

Int. Cl.[3] A01N *43/10, 53/00;* C07C *69/587;* C07D *333/16*

U.S. Cl. 424—275 11 Claims

1. A compound of the formula,



wherein R_1, R_2, R_3 and R_4 are respectively hydrogen or methyl, R_8 is hydrogen or ethynyl, R_9 is hydrogen, halogen or alkyl, R_{10} is halogen, alkyl, alkenyl, alkynyl, benzyl, thenyl, furylmethyl, phenoxy, methyl-, methoxy- or chlorine-substituted phenoxy or phenylthio, Y is sulfur or —CH═CH—, and n is 1 or 2 provided that when Y is sulfur, R_9 and R_{10} may be bonded at the ends to form a trimethylene chain.

11. A process for controlling insects, characterized by contacting the insects with the compound according to claim 1.

4,327,110
PESTICIDAL SYMMETRICAL N-SUBSTITUTED BIS-CARBAMOYLOXIMINO DISULFIDE COMPOUNDS

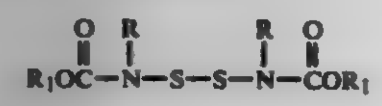
Themistocles D. J. D'Silva, South Charleston, W. Va., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Mar. 28, 1977, Ser. No. 781,997

Int. Cl.[2] A61K *31/33, 31/385;* C07D *407/2, 409/2*

U.S. Cl. 424—277 8 Claims

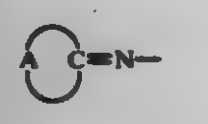
1. A compound of the formula:



wherein:

R is alkyl having from 1 to 4 carbon atoms;

R_1 is



wherein

A is a divalent alkylene chain having from 2 to 24 aliphatic carbon atoms completing a 2-oximino-1,4-dithiane, 2-oximino-1,3-dithiane, 4-oximino-1,3-dithiolane, 2-oximino-1,4-dioxane, 2-oximino-tetrahydro-1,4-thiazine-3-one, 2-oximino-1,3-dithiolane, 2-imino-4-oximino-1,3-dithiolane, 3-oximinothiophane, 2-oximinothiophane, 2-oximino-tetrahydro-1,4-oxazine-3-one, 2-oximino-1,3,5-trithiane, 4-oximino-1,3,5-oxathiane, 2-oximino-1,4-oxathiane, 4-oximino-1,3-oxathiolane, 2-oximino-thiazolidin-3-one, 2-oximino-1,3-thiazolidin-4-one or 2-oximino-tetrahydro-1,4-thiazine-5-one ring structure wherein sulfur may be in any of its oxidation states.

2. N,N'-Bis-[1,4-Dithiane-2-(O-(M-methylcarbamoyl)oximino]disulfide.

4. A method of controlling insects, mites and nematodes which comprises subjecting them to an insecticidally, miticidally or nematocidally effective amount of a compound according to claim 2.

4,327,111
N-SUBSTITUTED MERCAPTOACYL PRIPIONAMIDES

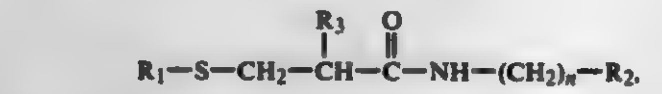
Joseph E. Sundeen, Yardley, Pa., and Tamara Dejneka, Skillman, N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Jul. 14, 1980, Ser. No. 168,933

Int. Cl.[3] A61K *31/335;* C07D *323/02;* A61K *31/265, 31/16*

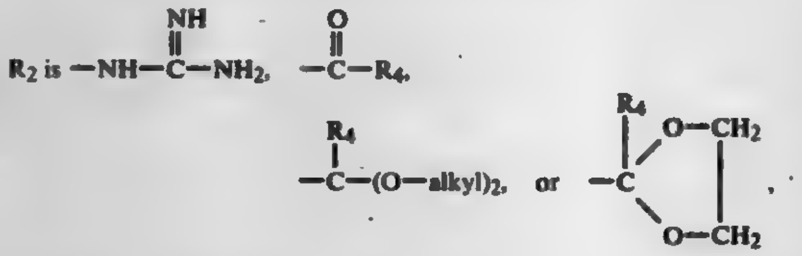
U.S. Cl. 424—278 16 Claims

1. A compound having the formula



or a salt thereof, wherein

R_1 is hydrogen, alkanoyl, or arylcarbonyl;



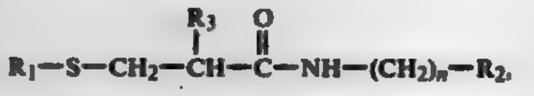
wherein R_4 is hydrogen, alkyl or aryl;

R_3 is alkyl of 3 to 8 carbon atoms, cycloalkyl of 3 to 7 carbon atoms, aryl or arylalkyl; and

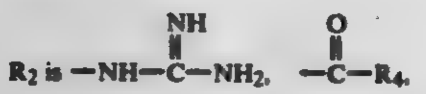
n is an integer of 1 to 20;

wherein the term "aryl" refers to phenyl or phenyl substituted; with 1, 2 or 3 alkyl, alkoxy, halogen, amino, hydroxy or alkanoyloxy groups; the terms "alkyl" and "alkoxy" refer to groups having 1 to 8 carbon atoms; and the term "alkanoyl" refers to groups having 2 to 10 carbon atoms.

16. A method for reducing the adverse effects of mammalian collagenase in a host mammal in need thereof, which comprises administering to said mammal an effective amount of a compound having the formula



or a salt thereof, wherein R_1 is hydrogen, alkanoyl, or arylcarbonyl;



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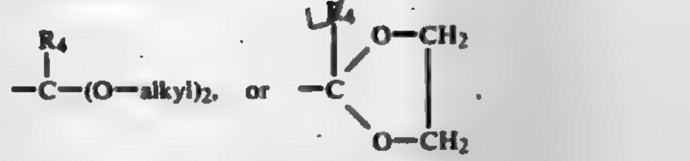


wherein R_4 is hydrogen, alkyl or aryl;

R_3 is alkyl of 3 to 8 carbon atoms, cycloalkyl of 3 to 7 carbon atoms, aryl or arylalkyl; and

n is an integer of 1 to 20;

wherein the term "aryl" refers to phenyl or phenyl substituted; with 1, 2 or 3 alkyl, alkoxy, halogen, amino, hydroxy or alkanoyloxy groups; the terms "alkyl" and "alkoxy" refer to groups having 1 to 8 carbon atoms; and the term "alkanoyl" refers to groups having 2 to 10 carbon atoms.

4,327,112
PROCESS FOR INCREASING BLOOD PRESSURE

Richard J. Wurtman, Boston, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation-in-part of Ser. No. 88,226, Oct. 25, 1979, which is a continuation of Ser. No. 898,740, Apr. 27, 1978, abandoned. This application May 2, 1980, Ser. No. 145,909

Int. Cl.[3] A61K *31/195*

U.S. Cl. 424—319 2 Claims

1. The process for increasing blood pressure in an animal having a condition characterized by rapid firing of sympathetic neurons and low blood pressure which comprises administering to said animal a compound consisting of tyrosine in an amount effective to increase norepinephrine released into sympathetic neuronal synapses and to increase blood pressure.

4,327,113
ALKANOLAMINE DERIVATIVES

Leslie H. Smith, Macclesfield, England, assignor to Imperial Chemical Industries Limited, London, England

Division of Ser. No. 123,926, Feb. 22, 1980, Pat. No. 4,260,632, which is a division of Ser. No. 15,411, Feb. 26, 1979, Pat. No. 4,221,807, which is a division of Ser. No. 787,375, Apr. 14, 1977, Pat. No. 4,141,987, which is a division of Ser. No. 582,883, Jun. 2, 1975, Pat. No. 4,034,106. This application Dec. 12, 1980, Ser. No. 215,873

Claims priority, application United Kingdom, Jun. 5, 1974, 24837/74

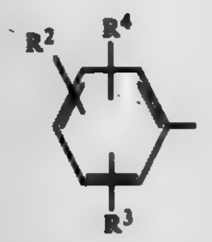
Int. Cl.[3] A61K *31/18;* C07C *143/78*

U.S. Cl. 424—321 9 Claims

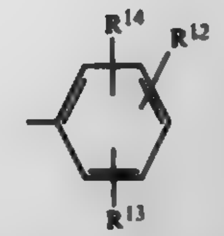
1. An alkanolamine derivative selected from a compound of the formula:

$$R.OCH_2.CHOH.CH_2NH—A—NH—X—Y—R^1$$

wherein A is alkylene of from 2 to 12 carbon atoms; wherein X is sulphonyl (—SO_2—); wherein Y is a direct link, or is alkylene or alkyleneoxy each of up to 6 carbon atoms; and wherein R is aryl of the formula:



and R^1 is aryl of the formula:



wherein R^2, R^3, R^{12} and R^{13}, which may be the same or different, each is hydrogen, halogen, hydroxy, amino, nitro or cyano, or alkyl, hydroxyalkyl, cycloalkyl, alkenyl, alkynyl, alkoxy, alkylthio, cycloalkoxy, alkenyloxy, alkynyloxy or alkanoyl each of up to 6 carbon atoms or aryl, aryloxy or dialkylamino each of up to 12 carbon atoms; or wherein R^2 and R^3 together, and/or R^{12} and R^{13} together, form trimethylene, tetramethylene, 1-oxotetramethylene, propenylene, but-2-enylene or buta-1,3-dienylene such that together with the adjacent benzene ring they form respectively indanyl, 5,6,7,8-tetrahydronaphthyl, 5-oxo-5,6,7,8-tetrahydronaphthyl, indenyl, 5,8-dihydronaphthyl or naphthyl; wherein R^4 is hydrogen or amidic of the formula:

$R^{15}R^{16}N—CO—Q—$

$R^{15}R^{16}N—CO—NH—Q—$

$R^{15}R^{16}N—CO—Q^1—O—$

$R^{16}—X^1—NR^{15}—Q—$

or

wherein X^1 is carbonyl or sulphonyl, wherein Q is a direct link or is alkylene or alkenylene each of up to 6 carbon atoms; wherein Q^1 is alkylene of up to 6 carbon atoms; wherein R^{15} is hydrogen or alkyl of up to 6 carbon atoms; wherein R^{16} is hydrogen or alkenyl, cycloalkyl, hydroxyalkyl or alkoxyalkyl each of up to 6 carbon atoms, or alkyl, aryl, aralkyl or aralkenyl each of up to 10 carbon atoms; and where R^{14} is amidic as defined above for R^4; and an acid-addition salt thereof.

8. A method for the treatment or prophylaxis of heart diseases and hypertension in a warm-blooded animal which comprises administering to said animal an effective amount of at least one compound claimed in claim 1.

4,327,114
SUBSTITUTED 1,8-DIHYDROXY-9-(10H)ANTHRACENONES

Rolf Brickl, Warthausen, and Hans Eberhardt, Biberach, both of Fed. Rep. of Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Fed. Rep. of Germany

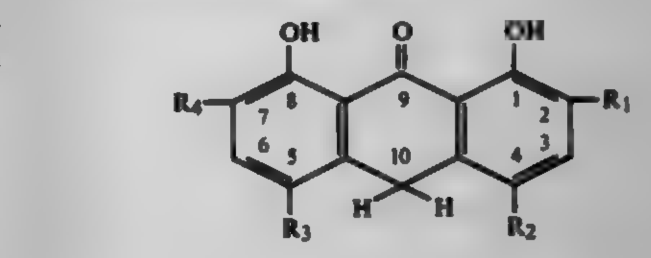
Filed Jan. 8, 1981, Ser. No. 223,335

Claims priority, application Fed. Rep. of Germany, Jan. 22, 1980, 3002089

Int. Cl.[3] A61K *31/12;* C07C *50/34*

U.S. Cl. 424—331 9 Claims

1. A compound of the formula



wherein R_1, R_2, R_3 and R_4 are each hydrogen, halogen, branched alkyl of 3 to 12 carbon atoms or cycloalkyl of 3 to 12 carbon atoms, provided, however, that at least one of R_1 to R_4 is other than hydrogen.

8. A topical dermatologic pharmaceutical composition con-

sisting essentially of an inert pharmaceutical carrier and an effective dermatologic amount of a compound of claim 1.

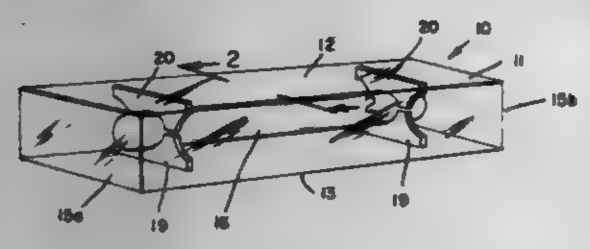
4,327,115
CLARIFICATION OF FRUIT JUICE WITH HONEY
Robert W. Kime, Romulus, N.Y., assignor to Cornell Research Foundation, Inc., Ithaca, N.Y.
Filed Jun. 17, 1980, Ser. No. 160,263
Int. Cl.³ A23L *2/30, 2/34*
U.S. Cl. 426—12 **33 Claims**

1. A process for treating fresh, pasteurized, or fermented unclarified or preclarified fruit juice to clarify it and to render it stable to haze formation by mixing the juice with honey in an amount sufficient to clarify the juice and agitating the mixture for a time sufficient to clarify the juice thereby forming a clarified juice and a precipitate and separating the clarified juice from the precipitate mixing the juice with honey and a clarifying enzyme in a total amount sufficient to clarify the juice and agitating the mixture for a time sufficient to clarify the juice thereby forming a clarified juice and a precipitate and separating the clarified juice from the precipitate.

4,327,116
BAKERY PRODUCTS CONSISTING PREDOMINANTLY OF BRAN AND METHOD OF PRODUCING THEM
Alois Weith, Vienna, Austria, assignor to STAMAG Stadlauer Malzfabrik Aktiengesellschaft, Vienna, Austria
Filed Dec. 19, 1978, Ser. No. 970,988
Claims priority, application Austria, Dec. 22, 1977, 9226/77
Int. Cl.³ A21D *8/00;* **A23L** *1/168*
U.S. Cl. 426—19 **20 Claims**

1. A bakery product consisting predominantly of bran which has been obtained by baking a shaped dough, said dough comprising prior to baking, 100 parts by weight of bran selected from the group consisting of wheat bran, rye bran and mixtures thereof, from 200 to 300 parts by weight of water, and from 2.5 to 15 parts by weight of vegetable thickening agent which is carob bean flour.

4,327,117
THAW INDICATOR FOR FROZEN FOODS
Roger D. Lenack, 20357 Tuba St., Chatsworth, Calif. 91311, and Isidore J. Lenack, deceased, late of Reseda, Calif. (by Nellie S. Lenack, executrix)
Filed Mar. 18, 1980, Ser. No. 131,530
Int. Cl.³ A22C *17/10;* **G01K** *11/06*
U.S. Cl. 426—88 **14 Claims**



1. A thaw indicator for frozen products adapted to be attached to the product and to indicate whether a product which has been kept at or below its freezing temperature has been permitted to thaw at some time subsequent to its initial freezing, said thaw indicator comprising:

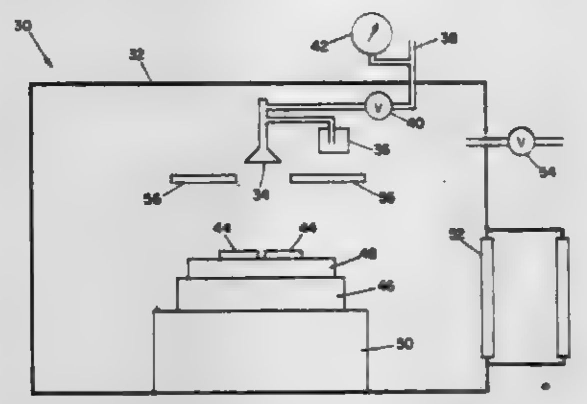
an outer hollow vessel having a plurality of walls;
an inner hollow vessel suspended by a plurality of spaced support retaining means and wholly received within said outer hollow vessel;
an inner liquid reagent adapted to be initially contained within said inner hollow vessel;
an outer liquid reagent adapted to be contained within the space between said two hollow vessels;
said inner liquid reagent completely filling said inner hollow vessel so as to provide a uniform outward pressure force against the wall of said inner hollow vessel;
said inner liquid reagent and said outer liquid reagent having freezing temperatures comparable to the freezing temperature of the product to which the thaw indicator is attached;
said inner liquid reagent and said outer liquid reagent producing an irreversible chemical reaction when intermixed;
said outer liquid reagent and said inner liquid reagent having their freezing temperatures so related to each other that:
(a) during an initial decrease in ambient temperature which causes the product to be frozen and which further causes both reagents to enter their respective solid states, said outer liquid reagent reaches its freezing point and enters its solid state upon freezing and thereby increases it pressure before said inner reagent reaches its freezing point and enters its solid state upon freezing so that the wall of said inner hollow vessel does not rupture, fracture or otherwise lose its integrity as the barrier between said outer liquid reagent and said inner liquid reagent because the inward pressure from the initially frozen outer liquid reagent is resisted by the inner liquid reagent which completely fills said inner hollow vessel and the outward pressure from the subsequently frozen inner liquid reagent is resisted by the inward pressure from the previously frozen outer liquid reagent; and
(b) upon an appropriate increase in temperature which causes the product to thaw, said outer liquid reagent will thaw first and enter its liquid state first because it is closer to the exterior of the thaw indicator, receives the increase in temperature first and effectively shields the inner liquid reagent, so that the resultant outward pressure from the still frozen inner liquid reagent and the resultant pressure differential then does cause said still frozen inner liquid reagent to rupture, break or otherwise destroy the integrity of said inner hollow vessel since the liquid filled outer vessel does not retain sufficient inward pressure as a liquid to resist the outward pressure, and subsequently said inner liquid reagent will thaw and enter its liquid state, and therefore both of said reagents will intermix and interract in an irreversible manner after said inner liquid reagent thaws and returns to its liquid state, said inner liquid reagent adapted to intermix or interract with said outer liquid reagent so as to visibly cause a change in the color or state of the mixture or solution then within said outer vessel;

therefore showing through at least one of said outer vessel walls if (b) has occurred that the frozen state has not been properly maintained but the frozen product has been permitted to thaw at some time subsequent to its initial freezing.

4,327,118
PROCESS FOR THE PREPARATION OF NEW LYSINE-CONTAINING SOLID COMPOSITIONS FOR ADDITION TO ANIMAL FEED
Daniel Georges, Paris, and Jean P. Tinitignac, Sceaux, both of France, assignors to Rhone-Poulenc Industries, Paris, France
Filed Aug. 27, 1980, Ser. No. 181,881
Claims priority, application France, Aug. 29, 1979, 79 21646
Int. Cl.³ A23K *1/16;* **A23L** *1/30*
U.S. Cl. 426—656 **10 Claims**

1. A process for the preparation of a stable lysine-containing solid particulate composition, the particles of which do not agglomerate in the presence of atmospheric moisture, which comprises treating a concentrated lysine fermentation broth containing 10 to 40% by weight of lysine and 15 to 70% by weight of water with an inorganic substance selected from the group consisting of (i) lime, in the presence of an amount of carbon dioxide sufficient to produce 2 to 30% of calcium carbonate in the final composition, (ii) precipitated magnesium carbonate, and mixtures thereof, and optionally at least one inorganic filler selected from the group consisting of silicas, silicates and aluminosilicates, and forming solid particles of the resulting mixture to obtain a particulate solid composition containing 10 to 35% by weight of lysine and 10 to 50% by weight of the inorganic substance.

4,327,119
METHOD TO SYNTHESIZE AND PRODUCE THIN FILMS BY SPRAY PYROLYSIS
Steven A. Lis, Needham; Harvey B. Serreze, Dover, and Peter M. Sienkiewicz, Randolph, all of Mass., assignors to Radiation Monitoring Devices, Inc., Watertown, Mass.
Filed Feb. 3, 1981, Ser. No. 231,127
Int. Cl.³ B05D *1/02, 1/38*
U.S. Cl. 427—74 **32 Claims**



1. In the process of making a thin film comprising preparing a first solution with first solute elements including a salt of a first constituent element of said film and spraying said solution onto a heated substrate to form a first film on said substrate, the solute and solvent elements not constituting said film forming volatile reaction products after contacting said heated substrate, the improvement wherein

said solution also includes an agent in sufficient amount to change the oxidation state of at least one said solute element after contacting said heated substrate.

4,327,120
METHOD FOR COATING A METAL SUBSTRATE
Paul A. Siemers, Clifton Park, and Harvey D. Solomon, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.
Filed Jan. 28, 1981, Ser. No. 229,243
Int. Cl.³ B05D *1/08, 5/06*
U.S. Cl. 427—34 **9 Claims**

1. A method which comprises, plasma or flame spraying a metal substrate with a UV sensitive indicating mixture comprising,

(A) a particulated plasma or flame sprayable hardcoat material selected from the group consisting of, metal, metal carbide or metal oxide,
(B) an effective amount of a particulated UV sensitive metal oxide phosphor,

where hardcoat component (H) and phosphor component (P) of such UV sensitive indicating mixture are further characterized with respect to particle diameter D_H and D_P, respectively, in accordance with the following Energy of Melting (E_M) formula,

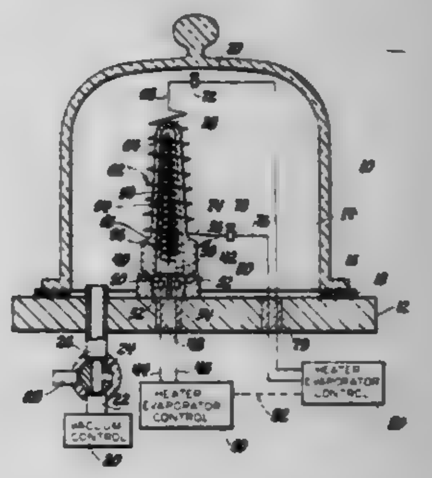
$$\frac{D_H}{D_P} = \frac{(E_M)_P\sqrt{\rho_P}}{(E_M)_H\sqrt{\rho_H}}$$

where D_H=diameter of hardcoat particles, D_P=diameter of phosphor particle, ρ_H=density of hardcoat particle, ρ_P=density of phosphor particle and $E_M=C_P\Delta T_M+H_f$, where C_P=specific heat, DETAL T_M=increment in temperature required to melt the particle and H_f=Heat of fusion.

4,327,121
RELEASE COATINGS
Lorin S. Gray, III, Portland, Me., assignor to Scott Paper Company, Philadelphia, Pa.
Filed Oct. 2, 1980, Ser. No. 193,191
Int. Cl.³ B05D *3/06*
U.S. Cl. 427—44 **16 Claims**

1. In a method of forming a plastic sheet or film on or against an easy release surface, setting the plastic sheet or film and stripping it from the release surface, the improvement wherein the release surface is provided by a substrate coated on at least one side with a coating composition comprising acrylic functional material which has been polymerized on the substrate by electron beam radiation, of which from about 15% to about 85% by weight of the acrylic functional material is provided by one or more aliphatic non-cyclic monofunctional acrylates having a molecular weight of from 212 to 324 before polymerization and the remainder is provided by one or more multi-functional acrylates.

4,327,122
EVAPORATED ELECTRODES FOR ZIRCONIA EXHAUST GAS OXYGEN SENSORS
Thomas Chakupurakal, St. Clair Shores, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Aug. 13, 1980, Ser. No. 177,617
Int. Cl.³ B05D *5/12*
U.S. Cl. 427—57 **6 Claims**



5. A method of forming an adherent and porous metal electrode onto a surface of a zirconia exhaust gas oxygen sensor body, the improvement comprising etching the zirconia surface with an acid mixture consisting essentially of about 20–35% by volume concentrated hydrofluoric acid and the balance concentrated sulfuric acid for at least about 0.5 hour at about 180°–220° C., ultrasonically agitating the etchant for at least about an hour during etching, then heating the zirconia body to about 800°–1250° C. for at least about an hour, heating the zirconia body to about 600°–800° C. for several minutes in an evacuated chamber, evaporating electrode metal onto the hot zirconia surface from a conforming resistance heating helix having the electrode metal distributed substantially throughout its length, the helix being spaced less than about 4 mm from the zirconia surface, evaporating the metal onto the zirconia surface from the conforming resistance heating helix at a rate of about 0.5–1.0 micrometers per minute, and then maintaining the zirconia body above about 600° C. for at least 3 minutes after terminating evaporation and before exposing the evaporated metal to atmospheric pressure.

6. An apparatus for evaporating a catalytic metal electrode onto inner and outer surfaces of a hollow tapered zirconia exhaust gas oxygen sensor thimble comprising a vacuum deposition chamber and associated evacuation means, a support in the chamber for the thimble, inner and outer resistance heating coils conforming to said inner and outer surfaces respectively, said coils each being of intertwined strands of tungsten and

catalytic metal, and means for regulating electrical current passing through the coils to successively preheat the zirconia thimble, evaporate the catalytic metal onto the zirconia thimble and post-heat the zirconia thimble.

4,327,123

METHOD OF METALLIZING A PHOSPHOR SCREEN

Aaron W. Levine, Lawrenceville; Kazimiera D. Tomeczek, Hamilton Square, both of N.J., and Stanley A. Harper, New Providence, Pa., assignors to RCA Corporation, New York, N.Y.

Filed Feb. 20, 1981, Ser. No. 236,243

Int. Cl.³ H01J *29/22;* B05D *1/38, 7/22, 3/02*

U.S. Cl. 427—64 8 Claims

1. A method of metallizing a phosphor screen including the steps of

(a) coating said phosphor screen with an aqueous emulsion containing an acrylic copolymer,
(b) drying said coating, thereby forming a volatilizable substrate on said phosphor screen,
(c) depositing a metal layer on said substrate and then
(d) volatilizing said substrate, characterized in that said copolymer consists essentially of about
34 to 80 weight percent of one member of the group consisting of methyl methacrylate and ethyl methacrylate,
20 to 60 weight percent ethyl acrylate and
1 to 14 weight percent methacrylic acid.

4,327,124

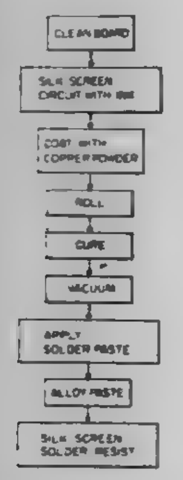
METHOD FOR MANUFACTURING PRINTED CIRCUITS COMPRISING PRINTING CONDUCTIVE INK ON DIELECTRIC SURFACE

Raymond C. DesMarais, Jr., 1 Mansur St., North Chelmsford, Mass. 01863

Continuation of Ser. No. 928,876, Jul. 28, 1978, abandoned, which is a continuation of Ser. No. 707,365, Jul. 21, 1976, abandoned. This application Dec. 13, 1979, Ser. No. 103,157

Int. Cl.³ H05K *3/12*

U.S. Cl. 427—96 6 Claims



1. The method of making an electrically conductive circuit on a dielectric surface, comprising the steps of

(a) printing a stratum of electrically conductive ink comprising a pre-mixed composition of a phenolic thermosetting resin, electrically conductive metal powders of approximately 325 mesh and an oxide reducing acid catalyst on said surface in a predetermined circuit pattern of relatively low electrical conductivity, said resin, said powders and said catalyst being present in said ink by weight percent respectively of approximately 23%, 71% and 6%,
(b) applying and embedding a stratum of electrically conductive metal particles of approximately 325 mesh over and into said ink stratum prior to the curing thereof,
(c) curing said ink stratum, and,
(d) printing and alloying a stratum of electrically conductive solder over said metal particle stratum and applying sufficient heat thereto to alloy said solder to said metal particle stratum to form a solderable circuit pattern of relatively high electrical conductivity.

4,327,125

COLLOIDAL COMPOSITIONS FOR ELECTROLESS DEPOSITION COMPRISING COLLOIDAL COPPER-STANNIC OXIDE PRODUCT

Nathan Feldstein, 63 Hemlock Cir., Princeton, N.J. 08540

Division of Ser. No. 938,890, Aug. 31, 1978, Pat. No. 4,265,942, which is a continuation-in-part of Ser. No. 672,044, Mar. 30, 1976, abandoned, which is a division of Ser. No. 607,506, Aug. 26, 1975, Pat. No. 3,993,799, which is a continuation-in-part of Ser. No. 512,224, Oct. 4, 1974, abandoned. This application Apr. 4, 1980, Ser. No. 137,448

Int. Cl.³ C23C *3/02*

U.S. Cl. 427—97 11 Claims

1. A process for metallizing a non-conductor substrate by electroless metal deposition comprising the steps of:

(1) contacting said substrate with a colloidal composition, wherein said colloidal composition comprises colloidal copper-stannic oxide product derived from the redox reaction between copper ions and stannous ions in an alkaline pH, and
(2) contacting the treated substrate with a compatible electroless plating bath.

4,327,126

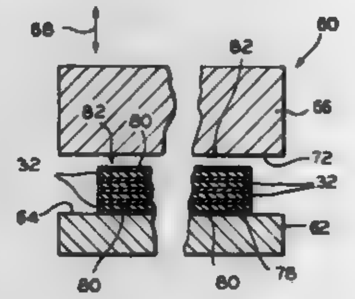
METHOD OF MAKING PRINTED CIRCUIT BOARDS

Ralph Ogden, 1304 Fisher St., Munster, Ind. 46321

Filed Nov. 10, 1980, Ser. No. 205,108

Int. Cl.³ C23C *3/02*

U.S. Cl. 427—97 10 Claims



1. In the method of making printed circuit boards that are to include a dielectric substrate having printed circuitry applied thereto in a pattern defined by a film of electrically conductive metal electrolessly plated on the substrate that is electroplated over in conformity to such pattern, with the remainder of the film being etch removed from the substrate,

the manner of making the substrate which comprises the steps of:
hot setting a thermosetting resin and filler mixture to form and cure the substrate in planar configuration defining opposed side faces forming the substrate side surfacings, with the cure being limited to the resin B stage cure,
catalyzing at least one side surfacing of the substrate,
then electrolesly plating said substrate one side surfacing with the film of electrically conductive metal,
then taking a plurality of said substrates, stacking them with elastomeric sheets in intercalated relation therebetween, with one of said elastomeric sheets engaged with each said one side surfacing, in coextensive relation therewith, for each substrate in the stack, and subjecting said stack to compressive pressure, acting normally of said substrates and said sheets, and heat, to hot pressure set said substrates to cure same through their C stage cure, while, in the case of each substrate, compressing said film thereof against said one side surfacing thereof with uniform pressure over said one side surfacing thereof through the elastomeric sheet engaging same.

4,327,127

PROCESS FOR MAKING TRANSFER ELEMENTS

George P. Dapp, and Michael A. Scott, both of Huntington, N.Y., assignors to Columbia Ribbon & Carbon Mfg. Co., Inc., Plainview, N.Y.

Division of Ser. No. 963,856, Nov. 27, 1978, Pat. No. 4,238,549. This application Jun. 16, 1980, Ser. No. 159,737

Int. Cl.³ B41M *5/00*

U.S. Cl. 427—146 4 Claims

1. A method for producing a pressure-sensitive transfer element adapted to transfer solid fluorescing images to a copy sheet under the effect of imaging pressure comprising the steps of:

(a) preparing a coating composition by dissolving from about 2.6 to 6% by weight of a synthetic thermoplastic resinous binder material, from about 2.6 to 6% by weight of a hard wax, from about 4.3 to 9% by weight of a non-volatile oily material which is compatible with and softens or plasticizes said wax, and a fluorescing dye in a volatile organic solvent, said dye being soluble in said resinous binder material and in said oily material and in said solvent and being capable of emitting intense radiation within the range of from about 300 mu to about 700 mu when exposed to a light source rich in ultraviolet radiation, at least a portion of said hard wax being insoluble in said solvent, to provide a coating composition having a solids content within the range of from about 13% to about 20%;
(b) applying said coating composition as a uniform thin layer to a smooth plastic film foundation; and
(c) evaporating said volatile organic solvent to form a solid, complete transfer imaging layer containing said fluorescing dye in the form of a solid solution.

4,327,128

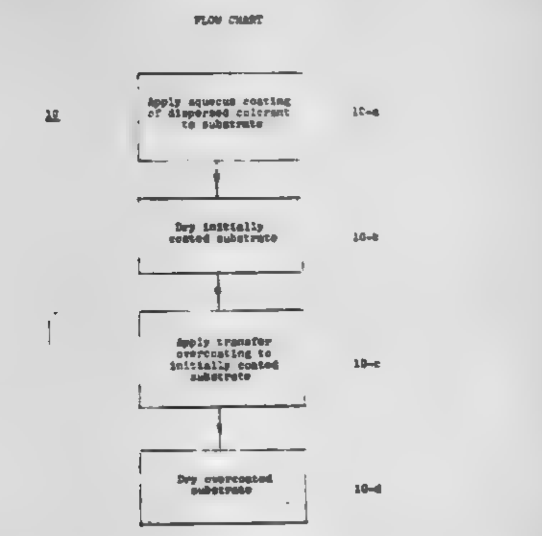
TRANSFER COATING METHODS, COMPOSITIONS AND PRODUCTS

John F. Thurlow, Gorham, Me., assignor to Dennison Manufacturing Company, Framingham, Mass.

Filed Dec. 7, 1979, Ser. No. 101,346

Int. Cl.³ B41M *3/12*

U.S. Cl. 427—153 27 Claims



1. The method of coating a substrate for the transfer of impressions which comprises applying two coatings to said substrate wherein:

(a) one of the coatings is wax-free and contains colorant,
(b) the other of the coatings is continuous and includes wax or wax-like material as the only organic ingredient,
thereby to provide greater image definition and intensity than coating alone.

4,327,129

METHOD OF MAKING LASER BEAM OPTICAL DECOUPLING ELEMENT FOR AN ASTABLE LASER RESONATOR

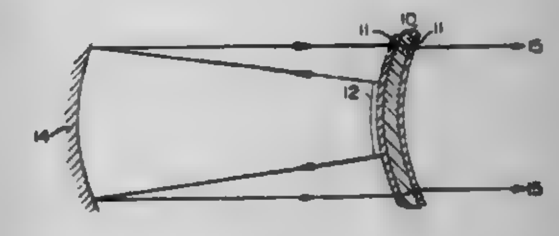
Gunther Sepp, Ottobrunn, Fed. Rep. of Germany, assignor to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung, Munich, Fed. Rep. of Germany

Continuation of Ser. No. 912,388, Jun. 5, 1978, abandoned, which is a division of Ser. No. 794,739, May 9, 1977, abandoned, which is a continuation-in-part of Ser. No. 620,798, Oct. 8, 1975, abandoned. This application Jan. 7, 1980, Ser. No. 109,925

Claims priority, application Fed. Rep. of Germany, Oct. 16, 1974, 2449123

Int. Cl.³ B05D *5/06*

U.S. Cl. 427—164 1 Claim



1. A method for producing an optical decoupling element for a laser beam to have a diffraction limited divergence in an astable laser resonator having a given configuration, comprising the steps of preparing a substrate of a material which is transparent to the respective laser radiation, said preparing including grinding and polishing the front and rear surfaces of said substrate, providing a mask with a mathematically computed boundary configuration such that said optical element has a diffraction limited divergence characteristic, and using said mask with said boundary configuration by securing said mask to one surface of said substrate so that said boundary configuration of the mask separates a central area from an outer area on said substrate surface, and vapor depositing a highly reflective layer on said substrate, whereby said high reflective layer covers one of said areas and the respective other area remains transparent to the respective laser radiation.

4,327,130

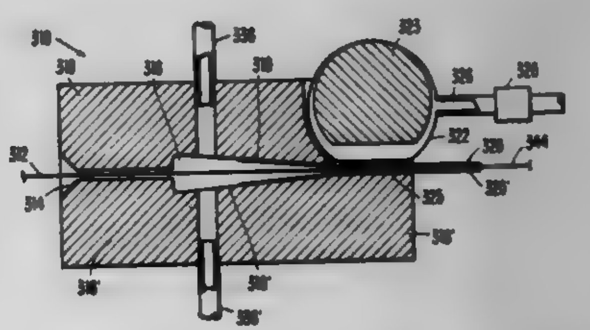
METHOD AND APPARATUS FOR FORMING A COATING ON BOTH SIDES OF A SUBSTRATE

David J. Pipkin, Longmont, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 53,143, Jun. 27, 1979, abandoned, said Ser. No. 53,143, is a continuation-in-part of Ser. No. 882,281, Feb. 23, 1978, abandoned. This application Nov. 17, 1980, Ser. No. 207,390

Int. Cl.³ B05D *3/12*

U.S. Cl. 427—209 20 Claims



1. Apparatus for coating a moving web with a coating liquid, the apparatus comprising:

a pair of stationary smoothing films mounted one on each side of the moving web;
a backing surface adapted to engage at least a portion of one of said smoothing films opposite the moving web so as to guide the web in a fixed-position path of travel;

a pair of metering means to meter a coating liquid to both sides of the web through at least one orifice which is positioned adjacent the confluence of the smoothing films and the web, whereby the web may be coated on both sides with the properties of the coatings being independently controlled; and

first pliant pressure generating means positioned to bear against at least a portion of the other of said smoothing films in a manner to position said other film adjacent the web and to provide both a static force and a high-hydrodynamic-pressure coating zone between the web and both of said films, compliance of said pressure generating means to said backing surface providing a coating zone whose length, in the direction of web movement, applies said hydrodynamic pressure to the liquid for at least a critical time interval which is sufficient to insure uniform coating thickness to the length of the web.

15. A method for coating a moving web with a coating liquid comprising:

conducting one side of a web over a first smoothing film which is supported by a backing support means;

urging a second smoothing film toward the opposite side of the web by means of pliant pressure generating means;

metering a coating liquid at a predetermined rate onto both sides of the web adjacent the confluence of each smoothing film and the web; and

varying the pressure of the pressure generating means to vary the force with which the smoothing films are urged against the web.

4,327,131

METHOD OF COATING A CERAMIC SUBSTRATE

Louis E. Branovich, Howell Township, Monmouth County; Edward Daly, Keyport, both of N.J.; Albert F. Newman, Sun City, Ariz., and Willis M. Smith, Fair Haven, N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 5, 1980, Ser. No. 213,435

Int. Cl.³ B05D *3/02*

U.S. Cl. 427—229 **10 Claims**

1. Method of rapidly coating a ceramic substrate with a uniform coating of copper, said method including the steps of

(A) heating the ceramic to about 250° C.

(B) placing an aqueous slurry of an inorganic copper salt selected from the group consisting of cuprous chloride and malachite on the ceramic at that temperature, and

(C) heating the coated ceramic in a reducing atmosphere at about 800° C.

4,327,132

METHOD FOR LINING OF INNER SURFACE OF A PIPE

Kiyonori Shinno, 67-7, Shimaizumi 8-chome, Habikino City, Osaka, Japan

Continuation of Ser. No. 80,719, Oct. 1, 1979, abandoned. This application Mar. 5, 1981, Ser. No. 240,703

Int. Cl.³ B05D *1/02, 7/22*

U.S. Cl. 427—235 **4 Claims**

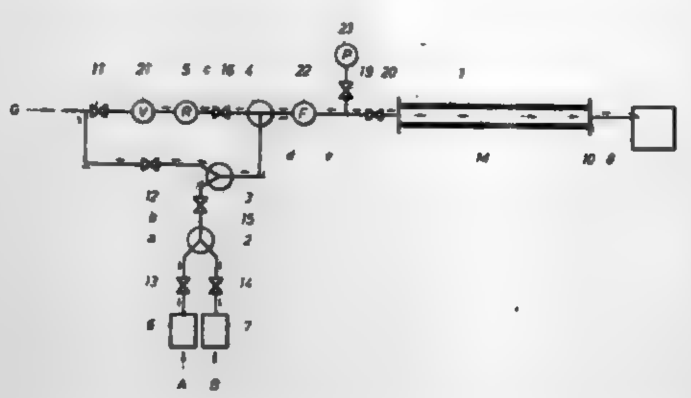
1. A method for coating the inner surface of a pipe comprising the steps of:

producing a first gaseous flow and mixing it with small, liquid, coating-material particles to form a first flowing mixture fluid containing gas from said first gaseous flow and said small, liquid coating material particles;

producing a second gaseous flow and mixing said first flowing mixture fluid therewith to produce a second flowing mixture fluid containing gas from said first and second gaseous flows and small coating material particles;

introducing said second flowing mixture fluid into a first end of the pipe to be coated;

wherein is further included the step of controlling the volume of said second gaseous flow independently of controlling the concentration of coating material particles in said first flowing mixture to control the amount of coating



material particles exiting from a downstream end of said pipe being coated.

4,327,133

ADDITIVES FOR CLOTHES DRYERS

Jerome Rudy, Livingston, N.J., and Anthony A. Rapisarda, Elmhurst, N.Y., assignors to Lever Brothers Company, New York, N.Y.

Division of Ser. No. 853,663, Nov. 21, 1977, Pat. No. 4,238,531, which is a continuation of Ser. No. 589,993, Jun. 24, 1975, abandoned, which is a continuation of Ser. No. 376,586, Jul. 5, 1973, abandoned, which is a division of Ser. No. 158,090, Jun. 29, 1971, abandoned. This application Jun. 20, 1980, Ser. No. 161,639

The portion of the term of this patent subsequent to Dec. 9, 1997, has been disclaimed.

Int. Cl.³ B05D *3/12*

U.S. Cl. 427—242 **10 Claims**

1. An article of manufacture for applying a fabric softening agent to damp fabric in a hot air tumbler fabric dryer in the drying cycle which comprises a composition comprising:

a. an amount effective to soften said fabric of a fabric softening agent; and

b. at least about 5 percent by weight of said composition of a distributing agent for said fabric softening agent wherein the combination of said fabric softening agent and said distributing agent is meltable, sublimeable, soluble, softenable, or otherwise spreadable at the temperatures encountered in said fabric dryer;

said composition being carried on a backing strip or sheet.

6. A method for applying a fabric softening agent to damp fabric in a hot air tumbler fabric dryer comprising adding to said fabric in the drying cycle an article of manufacture which comprises a composition comprising:

a. an amount effective to soften said fabric of a fabric softening agent; and

b. at least about 5 percent by weight of said composition of a distributing agent for said fabric softening agent wherein the combination of said fabric softening agent and said distributing agent is meltable, sublimeable, soluble, softenable, or otherwise spreadable at the temperatures encountered in said fabric dryer;

said composition being carried on a backing strip or sheet.

4,327,134

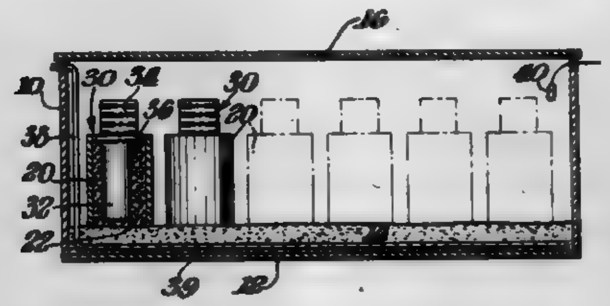
STRIPPING OF DIFFUSION TREATED METALS

Alfonso L. Baldi, Wynnewood, Pa., assignor to Alloy Surfaces Company, Inc., Wilmington, Del.

Continuation-in-part of Ser. No. 98,654, Nov. 29, 1979, Pat. No. 4,290,391, Ser. No. 25,456, Mar. 20, 1979, and a continuation-in-part of Ser. No. 963,313, Nov. 24, 1978, abandoned, Ser. No. 851,504, Nov. 14, 1977, and Ser. No. 752,844, Dec. 21, 1976, Pat. No. 4,208,453. This application May 6, 1980, Ser. No. 147,191

Int. Cl.³ C23F *1/00*

U.S. Cl. 427—253 **3 Claims**



1. In the stripping of aluminide diffusion cases from a superalloy surface by treatment with an aqueous solution of fluoride-containing nitric acid, the improvement according to which that treatment is followed by treatment with a bath consisting essentially of aqueous fluoride-free nitric acid and having a concentration between about 10 and about 30% by weight, for at least about 5 minutes.

4,327,135

SHEET-GUIDING FOIL AS A COVERING FOR IMPRESSION CYLINDERS

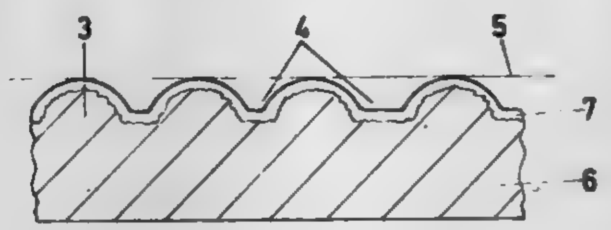
Arno Wirz, Bammental; Peter Sobotta, Heidelberg; Franz Arendt, Walldorf, and Otto K. Gramlich, Mannheim, all of Fed. Rep. of Germany, assignors to Heidelberger Druckmaschinen Aktiengesellschaft, Heidelberg, Fed. Rep. of Germany

Filed Apr. 18, 1980, Ser. No. 141,670

Claims priority, application Fed. Rep. of Germany, Apr. 24, 1979, 2916505

Int. Cl.³ B41F *1/20*

U.S. Cl. 428—600 **3 Claims**



1. A sheet-guiding foil as a sheath for an impression cylinder in rotary offset perfecting presses, comprising a chemically resistant, wear-resistant and rigid backing layer with good ink transfer behavior formed entirely of nickel, chrome-nickel-steel or a plastic material having a high modulus of elasticity, said backing layer having a smooth rear surface and a front surface integrally formed with spherical calottes of equal height and of statistically uniform distribution, and a thin chromium layer applied to said front surface formed with said spherical calottes for evening out microroughness.

4,327,136

POLYMERIC MULTI-LAYER SHEET MATERIAL AND TRAY

Kenneth P. Thompson, Canton, N.C., and Richard C. Ihde, Strongsville, Ohio, assignors to Champion International Corporation, Stamford, Conn.

Filed Aug. 27, 1980, Ser. No. 181,769

Int. Cl.³ B65D *5/00*

U.S. Cl. 428—35 **10 Claims**

1. In a multi-layer sheet material from which containers adapted to heat food in microwave ovens may be erected, said sheet material comprising a core layer and separate transparent surface layers on both sides of said core layer, the improvement comprising:

(a) a single ply intermediate layer located between said core layer and at least one of said adjacent surface layers, said intermediate layer being a relatively thin layer of polyethylene terephthalate, and

(b) a design printed on each side of said intermediate layer whereby said design is visible through the adjacent surface layer and is prevented by said adjacent surface layer from being physically contacted.

4,327,137

MULTILAYERED HOLLOW CONTAINER

Yuji Sawa; Shigeru Endo, and Tsutomu Uehara, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 30,714, Apr. 16, 1979, abandoned. This application Sep. 30, 1980, Ser. No. 192,443

Claims priority, application Japan, Apr. 28, 1978, 53-50922

Int. Cl.³ B32B *1/02, 27/06*

U.S. Cl. 428—35 **4 Claims**

1. A multi-layered hollow container having a wall comprising at least one layer of a thermoplastic polyester and at least one layer of a polycarbonate,

said layer of thermoplastic polyester and said layer of polycarbonate being intra-dielaminated, co-extruded and then direct-blown prior to solidifying to form the multi-layered hollow container having a permeability coefficient to gaseous oxygen of less than 15 ml/m²·day·atom, and a tensile secant modulus of elasticity of more than 10 kg/mm² at 1% strain and at a temperature of 80° C.,

the thickness of said layer of a polycarbonate being more than 10 micrometers and 5 to 60% of the total thickness of the wall of said multi-layered hollow container.

4,327,138

APPLICATION OF AMBIENT TEMPERATURE CURED POLYMERS OR PREPOLYMERS TO A CURED ELASTOMER

Walter R. Hausch, Akron, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Continuation-in-part of Ser. No. 73,760, Sep. 10, 1979, abandoned. This application Jun. 30, 1980, Ser. No. 164,127

Int. Cl.³ F16L *11/12;* **B32B** *25/04, 25/12, 25/14*

U.S. Cl. 428—36 **12 Claims**

1. A repaired tire having a laminate in the form of a filled tire opening, comprising:

a cured elastomeric tire substrate having an opening therein, the surface of said opening being clean,

at least one treating agent layer effectively bonded to the

surface of said opening, said treating agent layer selected from the group consisting of an N-halohydantoin, an N-haloamide, and an N-haloimide, and

an opening filling amine curable polymer or prepolymer effectively bonded to said treating agent layer at ambient temperature.

7. A repaired radiator hose having a laminate in the form of a filled hose opening, comprising:

a cured elastomeric hose substrate having an opening therein, the surface of said opening being clean,

at least one treating agent layer effectively bonded to the surface of said opening, said treating agent layer selected from the group consisting of an N-halohydantoin, an N-haloamide, and an N-haloimide, and

an opening filling amine curable polymer or prepolymer effectively bonded to said treating agent layer at ambient temperature.

4,327,139

RIGID MAGNETIC RECORDING DISK HAVING PERFLUOROPOLYETHER LUBRICANT

Dieter Schaefer, Lindenberg; Herbert Motz, Willstaett; Dieter Mayer, Ludwigshafen; Paul Deigner, Willstaett; Joachim Hack, Ludwigshafen, and Roland Falk, Achern, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Aug. 15, 1979, Ser. No. 66,556

Claims priority, application Fed. Rep. of Germany, Sep. 11, 1978, 2839378

Int. Cl.[3] G11B *5/82;* **B32B** *7/02, 27/00*

U.S. Cl. 428—65 **2 Claims**

1. A magnetic recording medium which comprises a rigid-disk base and a magnetizable layer applied to at least one side thereof and containing magnetic particles finely dispersed in a polymeric binder and additives, and which possesses a lubricating coating on the surface of the magnetic layer, wherein the lubricating coating consists of a layer, of from 1 to 20 mg/m^2, of one or more perfluoropolyether oil mixtures selected from the group consisting of

(a) a perfluoropolyether oil mixture of the general formula

$$A-O-(C_3F_6O)_m-(CF_2O)_n-\underset{\displaystyle CF_3}{\underset{|}{(CF}}-O)_q-B \qquad (1)$$

where m is an integer from 15 to 100, n is an integer from 1 to 80, q is an integer from 1 to 9, the sum (m+n+q) is an integer from 17 to 100, the ratio of n to m+q is from 0.06 to

$$1{:}1, -C_3F_6O-, \quad -\underset{\displaystyle CF_3}{\underset{|}{CF_2O}}- \quad \text{and} \quad -CF_2-O-$$

are oxyperfluoroalkylene units distributed at random along the chain, and A and B are identical or different groups selected from amongst $-CF_3$, $-C_2F_5$ and $-C_3F_7$, and

(b) a perfluoropolyether oil mixture of the general formula

$$A-O-(C_2F_4O)_p-(CF_2O)_r-B \qquad (2)$$

where p is an integer from 30 to 300, r is an integer from 5 to 300, the sum (p+r) is an integer from 35 to 600, the ratio of r to p is from 0.15 to 1.5:1, $-C_2F_4O-$ and $-CF_2O-$ are oxyperfluoroalkylene units distributed at random along the chain and A and B are $-CF_3$ or $-C_2F_5$.

4,327,140

HIGH DENSITY INFORMATION DISC LUBRICANTS

Joseph R. Preston, Radnor, Ohio, assignor to RCA Corporation, New York, N.Y.

Filed Feb. 5, 1981, Ser. No. 231,750

Int. Cl.[3] B32B *3/02*

U.S. Cl. 428—65 **5 Claims**

1. In a high density information record adapted for use with a playback stylus to effect recovery of signals occupying a bandwidth of at least several megahertz when relative motion at a desired rate is established between said record and said stylus, said record comprising a disc of a conductive material containing an information track constituted by a surface relief pattern in said track to accommodate recovery of signals of said bandwidth upon establishment of relative motion at said rate, said record coated with a methyl alkyl siloxane lubricant having the formula

$$(CH_3)_3SiO-\left[\begin{array}{c} CH_3 \\ | \\ Si-O \\ | \\ R_1 \end{array}\right]_x-\left[\begin{array}{c} CH_3 \\ | \\ SiO \\ | \\ R_2 \end{array}\right]_y-Si(CH_3)_3$$

wherein R_1 and R_2 are alkyl groups of 4–20 carbon atoms, x is an integer of 2–4, y is an integer of 0–2 and wherein the sum of x plus y is 4 or less, the improvement which comprises adding to said lubricant an amino alkoxy silane compound of the formula

$$H_2N-R_1-Si(OR_2)_3$$

wherein R_1 is an alkylene group and R_2 is an alkyl group of up to 12 carbon atoms.

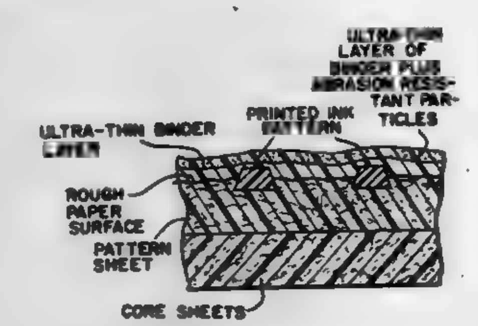
4,327,141

ABRASION-RESISTANT LAMINATE

Herbert I. Scher, and Israel S. Ungar, both of Randallstown, Md., assignors to Nevamar Corporation, Odenton, Md. Division of Ser. No. 966,921, Dec. 6, 1978, Pat. No. 4,263,081, which is a continuation of Ser. No. 959,404, Nov. 9, 1978, abandoned, and a continuation-in-part of Ser. No. 879,848, Feb. 22, 1978, Pat. No. 4,255,480, which is a continuation-in-part of Ser. No. 758,265, Jan. 10, 1977, abandoned. This application Apr. 1, 1980, Ser. No. 136,581

Int. Cl.[3] B32B *3/00*

U.S. Cl. 428—148 **10 Claims**



1. In an abrasion-resistant decorative laminate meeting NEMA abrasion resistance standards and also capable of withstanding 175–200 cycles of initial wear in the same test, comprising:

a backing layer and laminated thereto a thermoset laminating resin impregnated decorative facing sheet, said decorative facing sheet having a print design thereon and an ultra-thin abrasion-resistant coating having a thickness of up to about 0.2 mils over said print design, said ultra-thin abrasion-resistant coating comprising a mixture of (1) an abrasion-resistant hard mineral of particle size 20–50 microns in high concentration sufficient to provide for abrasion resistance without interfering with visibility and (2) a stabilizing binder material for said mineral which binder is compatible with said thermoset resin impregnated throughout said print sheet, said binder not interfering with visibility, and with said ultra-thin abrasion-resistant coating being at or near the surface of said laminate, the improvement comprising

an ultra-thin layer having a thickness of up to about 0.3 mils of binder material impregnated with said thermoset resin and located either directly over the print design surface of said decorative facing sheet beneath said ultra-thin abrasion-resistant coating, or above said abrasion-resistant coating.

4,327,142

METHOD OF MANUFACTURING GOODS OF LAMINATES AND GOODS SO MANUFACTURED

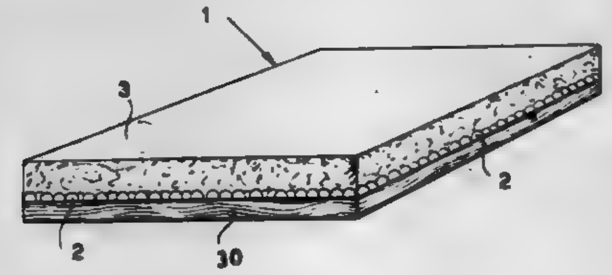
Vittorio Norzi, Via S. Carlo 131, Rho (Milan), Italy

Filed Nov. 19, 1979, Ser. No. 95,370

Claims priority, application Italy, Dec. 6, 1978, 30570 A/78; Dec. 6, 1978, 69791 A/78

Int. Cl.[3] B32B *27/14*

U.S. Cl. 428—198 **9 Claims**



9. In a method of manufacturing a laminated construction panel by injecting and expanding a plastic material onto a face of a base layer in a mold, the improvement which comprises improving the bond obtained between the base layer and the injected, expanded layer by wetting said face of said base layer, before the injection and expansion step, with a liquid volatile solvent, applying onto said wetted face a layer of pre-expanded pellets of a plastic thereby partially dissolving the pellets so as to cause them to stick to said base layer, evaporating the solvent through the interstices between the pellets and thereafter carrying out the injecting and expanding of said plastic material on the layer of pre-expanded beads, said plastic material being compatible with said beads thereby achieving a stable and durable bond between the injected and expanded plastic material and said base layer.

4,327,143

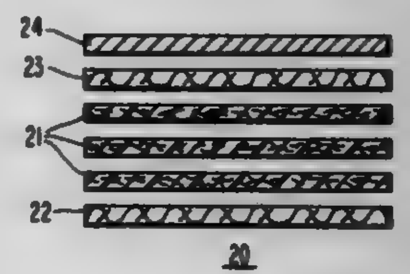
MOISTURE RESISTANT LAMINATES IMPREGNATED WITH AN IMPREGNATING COMPOSITION COMPRISING EPOXY RESIN AND A DICYANDIAMIDE DERIVATIVE

William M. Alvino, Penn Hills; Janet L. Hammill, King of Prussia, and Martin P. Seidel, Monroeville, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 23, 1981, Ser. No. 228,016

Int. Cl.[3] B32B *7/00;* **H05K** *1/00;* **C09J** *5/02;* **B05D** *3/02*

U.S. Cl. 428—236 **15 Claims**



1. A process for producing a resin impregnated, B-staged glass fabric sheet material free of crystal formations, comprising the steps of:

(A) impregnating glass fabric material with a low solvent resin system comprising an epoxy resin and an amount of curing agent, in organic solvent solution, effective to cure the epoxy resin to the C-stage, the curing agent consisting essentially of the reaction product of dicyandiamide and an aminophylic reagent selected from the group consisting of aldehydes, ketones, alkyl mono glycidyl ethers having the formula:

$$\overset{\displaystyle O}{CH_2\!\!-\!\!\!-\!\!CHCH_2OR,}$$

where R = an alkyl group having from 1 to 4 carbon atoms, acetone, styrene oxide, ethylene oxide, propylene oxide, acetic anhydride, benzoyl chloride, acetyl chloride, and mixtures thereof, where the weight ratio of curing agent: organic solvent is between about 1:4 to 7,

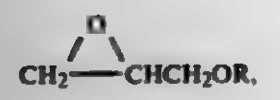
(B) removing excess resin from the glass fabric material, and

(C) heating the impregnated glass fabric material to remove solvent and to partially cure it and form a B-staged sheet where said B-staged sheet is free of crystal formation.

5. The process of claim 1, wherein the greeness of the resin-impregnated sheet material is from about 0.5% to about 15%, and where a plurality of cut, resin-impregnated sheets are stacked on top of each other, and consolidated under heat and pressure into a unitary, bonded laminate free of crystal formations.

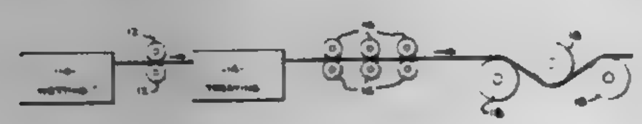
7. A resin impregnated, B-staged glass fabric material, suitable as a core sheet for a printed circuit board, the resin comprising an epoxy resin and an amount of curing agent effective to cure the epoxy resin to the C-stage, the curing agent consisting essentially of N-cyano-N′-hydroxymethyl guanidine, where the greenness of the resin impregnated glass fabric is from about 0.5% to about 15% and the B-staged sheet is free of crystal formations.

10. A resin impregnated, heat and pressure consolidated, completely cured circuit board, comprising a stack-up assembly of a plurality of sheets bonded together, where at least the surface sheets of the laminate are glass fabric impregnated with a resin comprising an epoxy resin and an amount of curing agent effective to cure the epoxy resin to the C-stage, the curing agent consisting essentially of the reaction product of dicyandiamide and an aminophylic reagent selected from the group consisting of aldehydes, alkyl mono glycidyl ethers having the formula:



where R=an alkyl group having from 1 to 4 carbon atoms, acetone, styrene oxide, ethylene oxide, propylene oxide, acetic anhydride, benzoyl chloride, acetyl chloride, and mixtures thereof, said laminate being free of crystal formations.

4,327,144
LUBRICATOR PAD AND METHOD
Henry J. Wintringham, Virginia Beach, Va., assignor to Southland Manufacturing Co., Inc., Norfolk, Va.
Filed Aug. 26, 1980, Ser. No. 181,350
Int. Cl.^{3} B32B *7/00, 23/00;* **B05D** *3/02*
U.S. Cl. 428—264 **17 Claims**

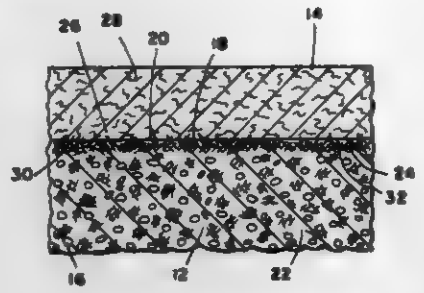


1. A method of treating cloth wicking material for use in a lubricator pad to reduce the tendency of said cloth wicking material to wick water without impairing its ability to wick lubricant, said method comprising the sequential steps of:
(1) wetting a body of cloth wicking material;
(2) soaking said body of cloth wicking material in an aqueous treating solution containing polyethylene glycol tertdoecyl thioether; and
(3) slowly drying said body of cloth wicking material.
9. A body of cloth wicking material treated by the method of claim 1.

4,327,145
PROCESS FOR PRODUCING SHEET MOLDING COMPOUND
Tomomasa Mitani, Izumi; Yoshimi Ogasawara, and Shunichi Hiraishi, both of Sakai, all of Japan, assignors to Dainippon Inc. & Chemicals, Inc., Tokyo, Japan
Continuation-in-part of Ser. No. 87,381, Oct. 22, 1979, abandoned. This application Aug. 6, 1980, Ser. No. 175,408
Int. Cl.^{3} C08K *7/14*
U.S. Cl. 428—290 **5 Claims**

1. A process for producing an easily handleable sheet molding compound which comprises impregnating glass fibers with a resin composition comprising (A) an unsaturated polyester having a hydroxyl value of 20 to 55 and an acid value of 5 to 20 with a hydroxyl value/acid value ratio of from 1.7 to 10, (B) a polymerizable monomer and (C) a polyisocyanate compound having not more than 20 carbon atoms excepting the carbon atoms of the isocyanate groups and selected from the group consisting of diisocyanates and polymethylenepolyphenyl isocyanates, the proportions of the unsaturated polyester (A) and the polyisocyanate compound (C) being such that the mole ratio of the hydroxyl groups of the unsaturated polyester (A) to the isocyanate groups of the polyisocyanate compound (C) is from 0.7 to 1.3, and said composition being free from an oxide or hydroxide of magnesium or calcium, said impregnation being effected so that the glass fiber content becomes 40 to 75% by weight; and molding the resin-impregnated glass fibers into a sheet.

4,327,146
HIGH DENSITY INTERFACE GYPSUM BOARD AND METHOD FOR MAKING SAME
George H. White, North Tonawanda, N.Y., assignor to National Gypsum Company, Dallas, Tex.
Filed Oct. 27, 1980, Ser. No. 201,216
Int. Cl.^{3} B32B *5/14, 5/20, 13/08, 31/12*
U.S. Cl. 428—308.8 **7 Claims**



6. A paper-covered gypsum board having a gypsum core and at least one paper cover sheet adhered thereto, by the setting reaction characteristics of gypsum crystals, said gypsum core having generally therethroughout a great multiplicity of fine foam cells, and a thin layer of set gypsum at the gypsum core-paper interface which has a substantially higher density than said gypsum core, whereby a greater number of gypsum crystals are disposed in interlocking relationship with the paper, by having been formed while in contact with the paper, within interstices thereof, wherein the starch content of the gypsum core is a minor amount of no more than about 2 lbs. per thousand square feet of board per half inch of thickness.

4,327,147
SHEAR-ACTIVATED INNERSEAL
David T. Ou-Yang, Cottage Grove, Wash., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.
Filed May 22, 1981, Ser. No. 266,140
Int. Cl.^{3} B32B *5/16, 7/02, 27/18*
U.S. Cl. 156—69 **24 Claims**

20. A sheet material useful as a tamper indicating, torque-activated innerseal, said sheet material comprising a layer of foamed film having an exfoliation strength of less than about 0.17 kg/cm width and bearing, on at least one of its major surfaces at least about 0.001 gm/cm^2 of a torque-activated, tack free adhesive composition comprising
(i) from about 4 to 10 parts by weight of a block copolymer having the general formula A-B-A wherein A represents a block prepared from a monovinyl aromatic hydrocarbon having a glass transition temperature above about 20° C. and an average molecular weight between about 2,000 and 100,000, and B represents a block prepared from a conjugated diene and homologues thereof having a glass transition temperature below about 20° C. and an average molecular weight between about 10,000 and 200,000;
(ii) from about 5–20 parts by weight of an organic tackifier; and
(iii) from about 70 to 90 parts by weight of a hydrocarbon material selected from the group consisting of microcrystalline wax, amorphous polyolefin, and mixtures thereof,
wherein after said sheet material has been placed over the lip around the opening of said container with said torque-activated adhesive contacting said lip, and wherein after sufficient torque has been applied to said sheet material to shear said adhesive contacting said lip and cause said sheet material to adhere to said lip, said adhesive adheres to said lip more strongly than said adhesive adheres to said foamed film so that when said sheet material is removed from said opening, at least a portion of said adhesive remains adhered to said lip and provides a visual indication that said sheet material has been removed.

4,327,148
SELF-CONTAINED COLOR FORMING PRESSURE SENSITIVE RECORD PAPER OF THE SINGLE COATING TYPE
Kohji Toyama; Mitsuru Fuchigami; Isao Nagayasu, and Hirokazu Tsukahara, all of Takasago, Japan, assignors to Mitsubishi Paper Mills, Ltd., Tokyo, Japan
Filed Nov. 28, 1979, Ser. No. 98,174
Int. Cl.^{3} B41M *5/16*
U.S. Cl. 428—320.8 **3 Claims**

1. A self-contained color forming pressure sensitive record paper of the single coating type prepared by coating a base paper sheet with a uniform coating mixture of an aqueous suspension of microcapsules containing a color former and an aqueous suspension of microcapsules containing a color developer and then drying, characterized by adding a powdered polyolefin having a particle diameter of 5 to 30μ as a microcapsule protective

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4,327,149
EXTRUDED RIGID THERMOPLASTIC SHEET HAVING OPTICALLY SMOOTH SURFACES
Tsuneyuki Katoh; Keishiro Hiraga, both of Yokohama; Junji Seki, Tokyo, and Makoto Suzuki, Kamakura, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Japan
Continuation of Ser. No. 2,253, Jan. 10, 1979, Pat. No. 4,247,507. This application Jun. 18, 1980, Ser. No. 160,494
Int. Cl.^{3} B32B *27/16, 27/30;* **G02C** *7/02;* **G02F** *1/29*
U.S. Cl. 428—332 **4 Claims**

1. An extruded rigid thermoplastic sheet of a methyl methacrylate polymer which possesses a heat distortion temperature of at least 70° C., as measured according to ASTM-648, at a fiber stress of 18.5 kgf/cm^2, said thermoplastic sheet having optically smooth surfaces exhibiting a degree of optical distortion (δ) of from 0.03 to 0.06.

4,327,150
METHOD OF BONDING PLASTICIZED ELASTOMER TO METAL AND ARTICLES PRODUCED THEREBY
William T. White, Huntsville; Johnny M. Clemons, Trinity, and Frank E. Ledbetter, III, Huntsville, all of Ala., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.
Filed Dec. 19, 1980, Ser. No. 218,585
Int. Cl.^{3} B32B *15/06, 15/08;* **C09J** *5/04*
U.S. Cl. 428—332 **5 Claims**

1. The method of bonding a plasticized rubber elastomer body to a metal surface which comprises:
(a) applying a primer to the metal surface;
(b) applying an adhesive to the resulting primed surface;
(c) dissolving a portion of said plasticized rubber elastomer in an organic solvent;
(d) removing the plasticizers from the resulting solution;
(e) combining the resulting de-plasticized rubber elastomer with a portion of said adhesive to produce a liquid;
(f) casting the resulting liquid on a flat surface and allowing the cast material to dry so as to produce a sheet of deplasticized, adhesive-containing material;
(g) disposing said sheet between and in contact with the adhesive-coated metal surface and the plasticized rubber elastomer body; and
(h) heating the resulting assembly under pressure until said sheet is bonded to said surface and said body.
5. A bonded article comprising a metal substrate having adhesively bonded thereto a sheet comprising a mixture of adhesive and de-plasticized rubber elastomeric material and a rubber elastomeric body adhesively bonded to said sheet.

4,327,151
ENCAPSULATED BLEACHES AND METHODS FOR THEIR PREPARATION
Louis R. Mazzola, Mahwah, N.J., assignor to Lever Brothers Company, New York, N.Y.
Division of Ser. No. 717,718, Aug. 25, 1976, Pat. No. 4,078,099. This application Oct. 14, 1977, Ser. No. 842,209
The portion of the term of this patent subsequent to Jan. 23, 1996, has been disclaimed.
Int. Cl.^{3} B05D *7/00;* **C11D** *7/18*
U.S. Cl. 428—407 **17 Claims**

1. A coating for encapsulating granulated agents, said agents being capable of substantially passing through a U.S. sieve size of about 10 mesh and at least about 80% of said agents being substantially retained on a U.S. sieve size of about 45 mesh, comprising:
(a) about 15 to about 25% of the total encapsulate weight of a first coating on said agents consisting essentially of a major proportion of a substantially saturated fatty acid being substantially non-reactive with said agents and having a melting point range of about 85° F. to about 135° F. and a plasticizing amount of a microcrystalline wax having a melting point range of about 125° F. to about 210° F.; and
(b) about 30% to about 40% of the total encapsulate weight of a second coating on said first coating, said second coating consisting essentially of a major proportion of said fatty acid, a sufficient amount of said microcrystalline wax to plasticize said second coating and about 5 to about 20% of the total encapsulate weight of a polyoxyethylene-polyoxypropylene copolymer having at least about 65% by weight of polyoxyethylene and having a molecular weight of about 8000 to about 16,500.
7. A coating for encapsulating granulated agents, said agents being capable of substantially passing through a U.S. sieve size of about 10 mesh and at least about 80% of said agents being substantially retained on a U.S. sieve size of about 45 mesh, comprising:
(a) about 5% to about 15% of the total encapsulate weight of a first coating on said agents, said first coating consisting essentially of a major portion of a substantially saturated fatty acid being substantially non-reactive with said agents and having a melting point range of about 85% to about 135° F. and a plasticizing amount of a microcrystalline wax having a melting point range of about 125° F. to about 210° F.;
(b) about 25% to about 40% of the total encapsulate weight of a second coating on said first coated agents, said second coating consisting essentially of a major proportion of said fatty acid, a sufficient amount of said microcrystalline wax to plasticize said second coating and about 5 to about 20% by weight of the total encapsulated weight of a polyoxyethylene-polyoxypropylene copolymer having at least about 65% by weight of polyoxyethylene and having a molecular weight of about 8000 to about 16,500; and
(c) about 5% to about 15% of the total encapsulate weight of a third coating on said second coated agents, said third coating consisting essentially of a major portion of said fatty acid and a sufficient amount of said microcrystalline wax to plasticize said third coating.
13. A coating for encapsulating granulated agents, said agents being capable of substantially passing through a U.S. sieve size of about 10 mesh and at least about 80% of said

agents being substantially retained on a U.S. sieve size of about 45 mesh, comprising:

(a) about 35% to about 55% of the total encapsulate weight of a coating on said agents consisting essentially of a major proportion of a fatty acid being substantially nonreactive with said agents and having a melting point range of about 85° F. to about 135° F., a plasticizing amount of a microcrystalline wax having a melting point range of about 125° F. to about 210° F.; and

(b) about 5% to about 20% by weight of the total encapsulate weight of a polyoxyethylene-polyoxypropylene copolymer having a molecular weight of about 8000 to about 16,500.

4,327,152

PROTECTIVE COATING TO RETARD CRACK GROWTH IN ALUMINUM ALLOY

Robert N. Miller, Acworth, and Richard L. Smith, Atlanta, both of Ga., assignors to Lockheed Corporation, Burbank, Calif.

Filed Sep. 29, 1980, Ser. No. 191,371

Int. Cl.³ B32B *15/08, 27/40, 27/38;* **C23F** *11/14*

U.S. Cl. 428—419 **4 Claims**

1. A protective coating to retard crack growth in aluminum alloy when applied thereto comprising:

an amine compound which is the reaction product of hexafluoroisopropanol and cyclohexylamine mixed in a 1 to 1 molar ratio mixed with a primer in a concentration of approximately 5% by weight, said primer being a polymeric organic material mixed with a solvent and compatible with said compound with respect to the curing properties thereof of the ultimate coating; and

a low-permeability organic film topcoat overlying and covering the compound and primer mixture aforesaid.

3. The coating of claim 1 wherein said primer is a polysulfide.

4,327,153

COMPOSITE PIEZOELECTRIC MATERIAL IN THE FORM OF A FILM AND A METHOD OF FABRICATION OF SAID MATERIAL

Francois Micheron, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Sep. 15, 1980, Ser. No. 186,845

Claims priority, application France, Sep. 14, 1979, 79 22984

Int. Cl.³ B32B *27/00*

U.S. Cl. 428—421 **8 Claims**

1. A composite material endowed with piezoelectric properties by induction of electrical anisotropy, wherein said material is reinforced with at least one layer of polymer-impregnated fabric in at least one region of said material, said polymer being selected from the group consisting of polyvinylidene fluoride, polyvinyl chloride, polyvinyl fluoride, and copolymers thereof, and said electrical anisotropy having been induced by subjecting the material to a polarizing electric field normal to the faces of the material.

4,327,154

HIGH-STRENGTH COMPONENTS OF COMPLEX GEOMETRIC SHAPE AND METHOD FOR THEIR MANUFACTURE

Axel Rossmann, Karlsfeld, Fed. Rep. of Germany, assignor to Motoren- und Turbinen-Union Muenchen GmbH, Munich, Fed. Rep. of Germany

Filed Aug. 7, 1978, Ser. No. 931,381

Claims priority, application Fed. Rep. of Germany, Aug. 18, 1977, 2737246

Int. Cl.³ B22F *3/00*

U.S. Cl. 428—545 **9 Claims**

1. A high strength component comprising a shell of the desired final shape and a core having a given shape fitting into said shell, said core being made of atomized metallic particles which are initially of substantially spherical shape having hollow spaces therein, said particles being pressed into said given shape to form said core directly in said shell whereby said metallic particles are bonded at their outer surfaces to one another and to said shell, while said hollow spaces remain

separated from one another, said shell of homogeneous metallic material permanently surrounding said core, whereby strength as well as complex geometric shapes may be attained.

4,327,155

COATED METAL STRUCTURES AND METHOD FOR MAKING

Rodney E. Hanneman, Clifton Park, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 29, 1980, Ser. No. 220,663

Int. Cl.³ B05D *1/08, 5/06*

U.S. Cl. 428—556 **15 Claims**

1. In the method of periodically applying a protective metallic or ceramic coating on the surface of a substrate subject to surface erosion, corrosion or wear when in use, by plasma or flame spraying the substrate surface with powdered metal or a powdered metal oxide blend whereby it is difficult to determine after a particular service period whether additional surface spraying is required, the improvement which comprises, plasma or flame spraying the substrate with a mixture of metal powder, or metal oxide powder having an effective amount of a UV sensitive phosphor to produce a UV sensitive metallic or ceramic indicating coating for signaling, upon exposure to U.V. radiation, when additional plasma or flame spraying of the metal substrate with powdered metal or powdered metal oxide should be undertaken.

4,327,156

INFILTRATED POWDERED METAL COMPOSITE ARTICLE

Kenneth R. Dillon, White Bear Lake, and Richard N. Gardner, Stillwater, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed May 12, 1980, Ser. No. 148,809

Int. Cl.³ B22F *3/00;* **C22C** *1/05*

U.S. Cl. 428—568 **37 Claims**

1. A metal composite article comprising:

(a) less than about 15 percent of the volume of said article of granules of a refractory of about 1 to about 100 micrometers mean diameter, said refractory being

(i) metal carbide, boride, oxide, silicide, or nitride,

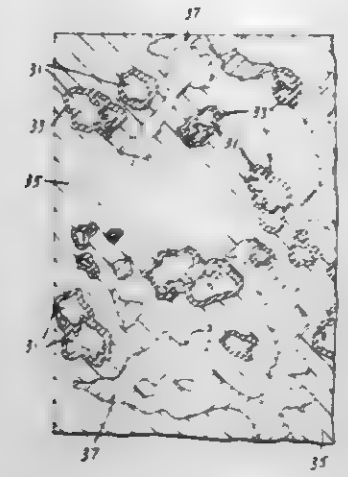
(ii) metal selected from the group consisting of tungsten, molybdenum, tantalum, niobium, vanadium, and titanium, or

(iii) combinations thereof;

(b) a monolithic skeleton comprising about 35 to about 70 percent of the volume of said article of a solid first metal or alloy which has a homogeneous crystalline appearance at a temperature below its melting point when viewed under an optical microscope and has lower Rockwell

hardness than said refractory, said first metal or alloy fully enveloping said refractory granules, the latter being uniformly dispersed in said skeleton; and

(c) about 15 to about 50 percent of the volume of said article of a continuous metallic phase occupying the connected porosity in said skeleton, said continuous phase comprising a solid second metal or alloy which wets said skeleton,



has a Rockwell hardness less than or equal to the Rockwell hardness of said first metal or alloy, and has a melting point below the melting point of said first metal or alloy;

said article thereby comprising two intermeshed matrices and being substantially free of voids.

4,327,157

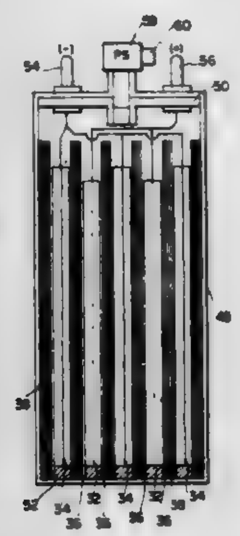
STABILIZED NICKEL-ZINC BATTERY

Albert Himy, University Park, Md., and Otto C. Wagner, Long Branch, N.J., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 20, 1981, Ser. No. 236,348

Int. Cl.³ H01M *2/00*

U.S. Cl. 429—61 **33 Claims**



1. A sealed alkaline nickel zinc cell comprising:

A. a nickel-nickel hydroxide cathode;

B. a zinc-zinc oxide anode comprising:

(1) a corrosion inhibitor selected from the group consisting of (a) from 0.5 to 10.0 weight percent of PbO, (b) from 0.5 to 10.0 weight percent of SnO_2, (c) from more than zero to 1.0 weight percent of Tl_2O_3, (d) from more than zero to 1.0 weight percent of $In(OH)_3$, and (e) mixtures thereof, provided that the total weight percent of corrosion inhibitor does not exceed 10.0 weight percent and the weight percent of Tl_2O_3 plus $In(OH)_3$ does not exceed 1.0 weight percent;

(2) from 0.5 to 10.0 weight percent of a slight corrosion accelerator selected from the group consisting of (a) CdO, (b) Bi_2O_3, (c) Ga_2O_3, and (d) mixtures thereof, provided that the total weight percent of slight corrosion accelerators does not exceed 10.0 weight percent; and

(3) zinc active material;

wherein the weight percentages are based on the total weight of the corrosion inhibitor, slight corrosion accelerator, and zinc active material when the anode is in the uncharged state;

C. a mass transport separator;

D. an alkaline electrolyte; and

E. means for charging the cell by interrupted current wherein the charge frequency is from more than zero to 16 Hertz and the rest interval between charge pulses is a minimum of 60 milliseconds.

4,327,158

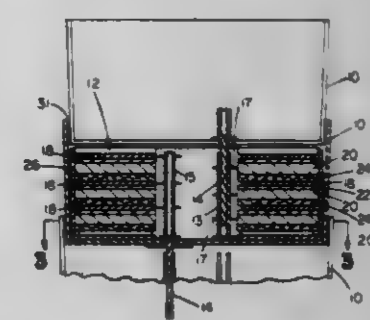
METAL/GAS BATTERY

Gerhard L. Holleck, Wayland, Mass., assignor to EIC Laboratories, Inc., Newton, Mass.

Filed Aug. 15, 1980, Ser. No. 178,523

Int. Cl.³ H01M *12/06*

U.S. Cl. 429—101 **9 Claims**



1. A metal/gas battery comprising

a pressure vessel containing gas under pressure, and

within said pressure vessel, a plurality of electrode stacks, each said stack comprising an electrolyte and at least one anode/cathode pair and being contained in a cup,

each said cup comprising

a bottom portion and

an uninterrupted side wall contiguous with said bottom portion,

said cups being stacked such that, between each pair of adjacent cups, a gap is formed, said cups having hydrophobic surfaces along said gap, said gap being sufficiently large so as to allow said gas in said pressure vessel to enter each said stack, and sufficiently small so as to inhibit electrolyte bridging.

4,327,159

NON-AQUEOUS ELECTROCHEMICAL CELL

Steven D. Jones, Brook Park, and George E. Blomgren, Lakewood, both of Ohio, assignors to Union Carbide Corporation, Danbury, Conn.

Filed Dec. 29, 1980, Ser. No. 230,281

Int. Cl.³ H01M *6/14*

U.S. Cl. 429—101 **9 Claims**

1. A non-aqueous cell comprising an anode, a cathode collector and a cathode-electrolyte comprising an ionizing solute dissolved in a cathodic solvent of an halogenocarbonylchalcogenyl halide as represented by the formula

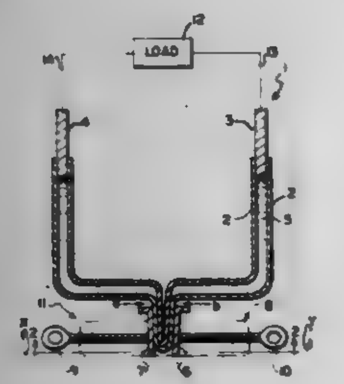
$$X_1-\overset{\overset{\displaystyle O}{\|}}{C}-Y-X_2$$

where X_1 and X_2 are halogens and where Y is a chalcogen having an atomic number of 16 or more.

4,327,160
NON-AQUEOUS CELL
Steven D. Jones, Brook Park, and George E. Blomgren, Lakewood, both of Ohio, assignors to Union Carbide Corporation, Danbury, Conn.
Filed Dec. 29, 1980, Ser. No. 220,282
Int. Cl.[3] H01M *6/16*
U.S. Cl. 429—101 14 Claims

1. A non-aqueous electrochemical cell comprising an anode, a cathode collector and a cathode-electrolyte solution comprising an ionizing solute dissolved in a solvent and wherein said cathode-electrolyte contains as an active cathode material an organo halide of at least one element selected from the group consisting of Group IVA and Group VA of the Periodic Table and having an atomic number of 14 or more.

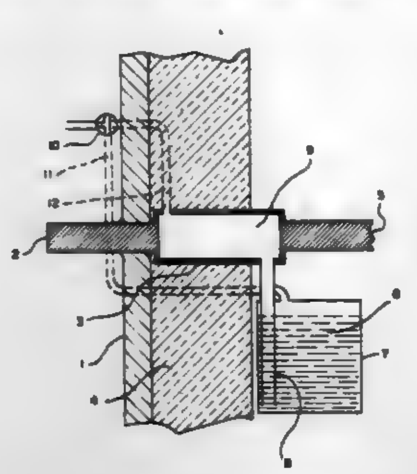
4,327,161
ELECTROCHEMICAL STORAGE CELL DEVICE
Ronald P. Reitz, P.O. Box 1543, Annapolis, Md. 21404
Filed Jul. 8, 1980, Ser. No. 164,715
Int. Cl.[3] H01M *6/30*
U.S. Cl. 429—110 10 Claims



1. An electrical apparatus comprising:
(a) a first electrode means comprising the cathode of an electrochemical storage cell that utilizes an electrolyte solution,
(b) a second electrode means spaced from said first electrode means and comprising the anode of said electrochemical storage cell,
(c) a flexible non-porous electrically insulative housing means wherein said electrolyte solution and said first and second electrode means are housed such that said first and second electrode means are in physical contact with said electrolyte solution,
(d) means for bending said flexible non-porous electrically insulative housing means for forming a bent portion thereof, and
(e) means for applying pressure to said bent portion of said housing means such that said pressure is applied at various selected magnitudes so as to selectively control the flow of electrolyte ions of said electrolyte solution through said bent portion of said flexible non-porous electrically insulative housing means.

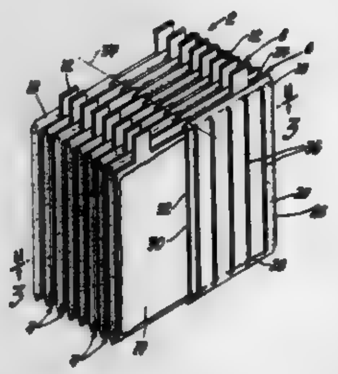
4,327,162
BATTERY TERMINAL FOR HIGH TEMPERATURE BATTERIES
Waldemar Borger, Kelkheim, Fed. Rep. of Germany, assignor to Varta Batterie Aktiengesellschaft, Hanover, Fed. Rep. of Germany
Filed Aug. 25, 1980, Ser. No. 181,001
Claims priority, application Fed. Rep. of Germany, May 30, 1980, 2936282
Int. Cl.[3] H01M *2/06, 10/50*
U.S. Cl. 429—120 7 Claims

1. A battery terminal for high temperature batteries having a housing with heat insulation, said terminal comprising: a portion which takes the form of a hollow conductor in the region of its passage through the heat insulation of the battery housing, and said hollow interior being filld with a low melting



point metal during operation of the battery and being emptied of said metal during battery rest.

4,327,163
HALF-ENVELOPE SEPARATOR ASSEMBLIES ON INDIVIDUAL PLATES
Ellis G. Wheadon, Anderson, Ind., assignor to General Motors Corporation, Detroit, Mich.
Filed Nov. 14, 1980, Ser. No. 206,712
Int. Cl.[3] H01M *2/18*
U.S. Cl. 429—139 5 Claims



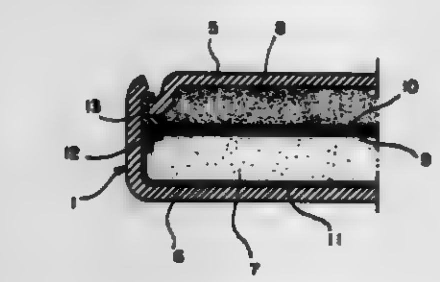
1. An electric storage battery having an electrochemically active cell element comprising:
an electrode plate having upper, lower and first and second lateral edges defining two opposing electrode faces;
an electrode sheath encasing at least part of said electrode plate, said electrode sheath comprising two sheets of microporous dendrite-suppressing battery separator material, each of said sheets overlying one of said electrode faces and being defined at least in part by peripheral borders which extend beyond and substantially parallel to said edges, said borders of each of said sheets being joined to the borders of the other of said sheets outboard said edges such as to prevent dendrite growth thereat;
a counterelectrode plate having upper, lower and first and second lateral edges defining two opposing counterelectrode faces;
a counterelectrode sheath encasing at least part of said counterelectrode plate, said counterelectrode sheath comprising two sheets of microporous dendrite-suppressing battery separator material, each of said sheets overlying one of said counterelectrode faces and being defined at least in part by peripheral borders which extend beyond and substantially parallel to said edges, said borders of each of said sheets being joined to the borders of the other of said sheets outboard said edges such as to prevent dendrite growth thereat;
an opening in each of said sheaths for ready ingress and egress of battery electrolyte to and from said sheaths during cycling; and

said respectively sheathed electrode and counterelectrode being juxtaposed in face-to-face relation such that said opening in said electrode sheath faces a direction opposite to the direction faced by the opening in said counterelectrode sheath and the respective sheaths overlap each other in the region of said element lying between adjacent plates; whereby a continuous barrier of said separator material is provided between adjacent plates, at least one sheath border is interposed between all proximate edges of adjacent plates for reduced dendrite edge growth, and electrolyte mobility within the element is enhanced.

4,327,164
BATTERY SEPARATOR
Stewart C. Feinberg, Monroeville, Pa.; Christian B. Lundsager, Ashton, Md.; Joseph T. Lundquist, Jr., Columbia, Md., and Robert A. Balouskus, Sykesville, Md., assignors to W. R. Grace & Co., New York, N.Y.
Continuation-in-part of Ser. No. 37,721, May 10, 1979, abandoned. This application Jul. 25, 1980, Ser. No. 172,400
Int. Cl.[3] H01M *2/16*
U.S. Cl. 429—144 7 Claims

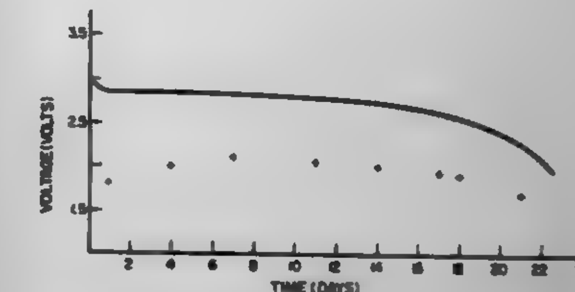
1. A battery separator having high electrical conductivity and inhibition to dendrite formation comprising a sheet formed from a substantially uniform mixture of a thermoplastic rubber, an inert filler having an average particle size ranging from about 0.01 to 10 microns, a thermoplastic rubber modifier and a processing agent selected from stearic acid, stearic acid metal salts, stearic acid amides, and natural or synthetic waxes; said thermoplastic rubber to filler being present in a volume ratio of from 10:1.5 to 10:6 and the weight percent, based on the total mixture, of said rubber modifier is from 2 to 10 weight percent and of said processing agent is from about 0.5 to 5 weight percent.

4,327,165
SEAL FOR GALVANIC ELEMENT
Thomas Kühl, Eppstein, Fed. Rep. of Germany, assignor to Varta Batterie Aktiengesellschaft, Hanover, Fed. Rep. of Germany
Filed Aug. 8, 1980, Ser. No. 176,268
Claims priority, application Fed. Rep. of Germany, Sep. 12, 1979, 2936781
Int. Cl.[3] H01M *2/08*
U.S. Cl. 429—174 4 Claims



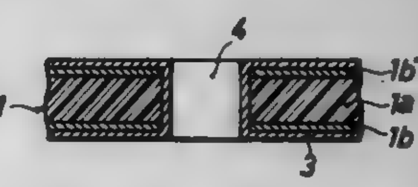
1. A galvanic element having a rotationally symmetrical housing comprising a cup portion and a lid portion within which the active elements are contained and which is tightly sealed, said cup portion and lid portion being tightly united through a shrink force which is produced by initially bringing said portions to substantially different temperatures, and then permitting the temperatures to equalize.

4,327,166
NONAQUEOUS CELL HAVING A MnO_2/POLY-CARBON FLUORIDE CATHODE
Violeta Z. Leger, North Olmsted, Ohio, assignor to Union Carbide Corporation, Danbury, Conn.
Filed Sep. 29, 1980, Ser. No. 191,997
Int. Cl.[3] H01M *6/14*
U.S. Cl. 429—194 8 Claims



1. A nonaqueous cell comprising an anode selected from the group consisting of lithium, potassium, sodium, calcium, magnesium, aluminum and alloys thereof, an electrolyte of an ionizing solute dissolved in an organic solvent and a cathode, said cathode comprising manganese dioxide having a water content of less than 1 weight per cent based on the weight of the manganese dioxide; the improvement wherein a poly-carbon fluoride is added to the manganese dioxide cathode and has the formula $(C_yF_x)_n$ wherein y is 1 or 2 and x is greater than 0 up to about 1.1.

4,327,167
METHOD OF PRODUCING PRINTED CIRCUIT BOARDS
Osamu Tanabe, Nagaokakyo, Japan, assignor to Dainippon Screen Manufacturing Co., Ltd., Kyoto, Japan
Filed Nov. 14, 1980, Ser. No. 207,199
Claims priority, application Japan, Mar. 14, 1980, 55-33070
Int. Cl.[3] G03G *13/22;* B44C *1/22*
U.S. Cl. 430—31 2 Claims



1. A method of producing printed circuit boards comprising the steps of: coating an electrophotographic photosensitive film on both sides of a synthetic resin insulating plate or substrate and on the inner wall of the holes made through the substrate at predetermined locations wherein the electrophotographic photosensitive film is coated to both sides of the entire substrate and to the inner wall of the holes without any interruption in the film, the insulating substrate having a conductive metal layer on both sides and conductive metal on said inner wall of said holes; forming a wiring pattern with acid-resistant toner on the photosensitive film by means of the electrophotography; removing the exposed parts of the photosensitive film that are not covered with the wiring patterns of the toner; etching the substrate to remove the exposed parts of conductive metal layers that are not covered with the photosensitive film and toner; and removing the remaining acid-resistant toner and the photosensitive film from the substrate.

4,327,168

ELECTROPHOTOGRAPHIC ELEMENT CONTAINING DISAZO PIGMENT CHARGE GENERATING MATERIAL

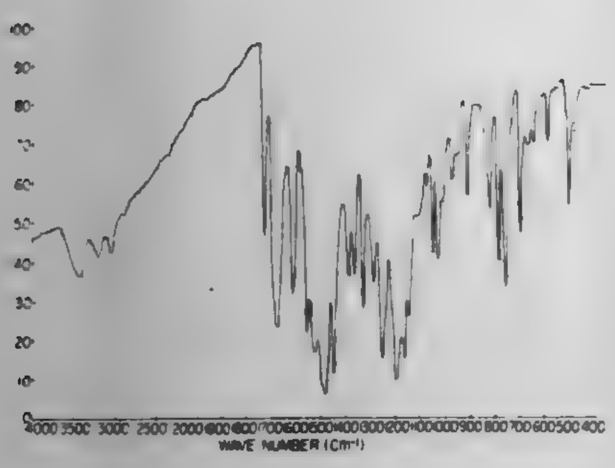
Mitsuru Hashimoto, Numazu, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

Filed Dec. 17, 1980, Ser. No. 217,305

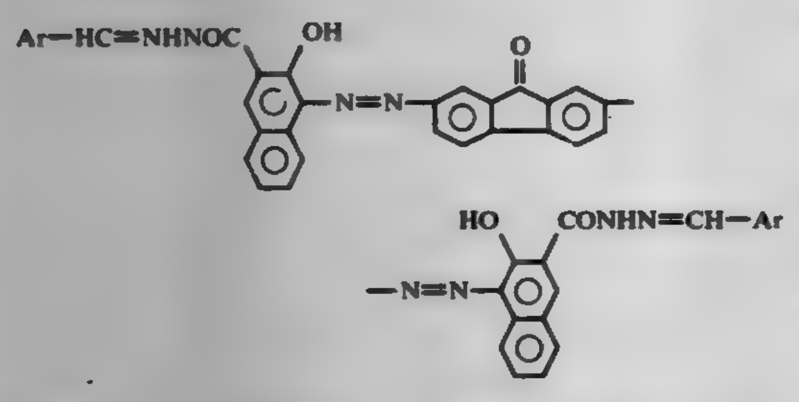
Claims priority, application Japan, Dec. 28, 1979, 54-170458

Int. Cl.³ G03G *5/06*

U.S. Cl. 430—57 **12 Claims**

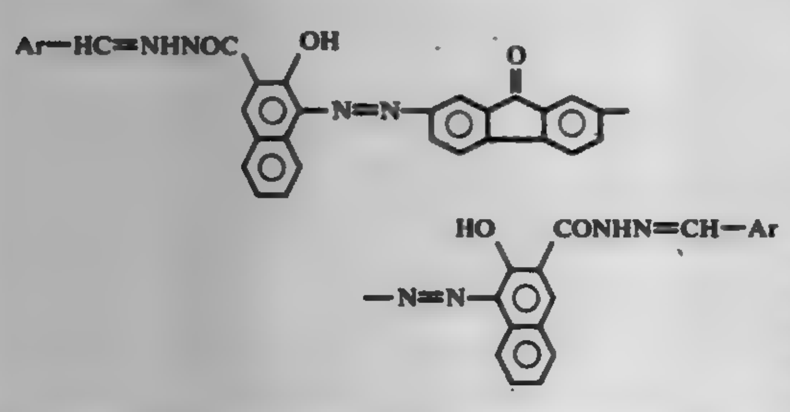


1. An electrophotographic element comprising; an electrically conductive support and a photosensitive layer superposed thereon, said photosensitive layer consisting essentially of a disazo pigment having the formula



wherein Ar is substituted or non-substituted phenyl, substituted or non-substituted naphthyl, anthryl, pyrenyl, pyridyl, thienyl, furyl or carbazolyl, and a resinous binder.

10. An electrophotographic element comprising, in successive layers, an electrically conductive support; a charge transfer layer consisting essentially of a charge transfer material and a resinous binder; and a charge generation layer consisting essentially of a disazo pigment having the formula



wherein Ar is substituted or non-substituted phenyl, substituted or non-substituted naphthyl, anthryl, pyrenyl, pyridyl, thienyl, furyl or carbazolyl.

4,327,169

INFRARED SENSITIVE PHOTOCONDUCTIVE COMPOSITION, ELEMENTS AND IMAGING METHOD USING TRIMETHINE THIOPYRYLIUM DYE

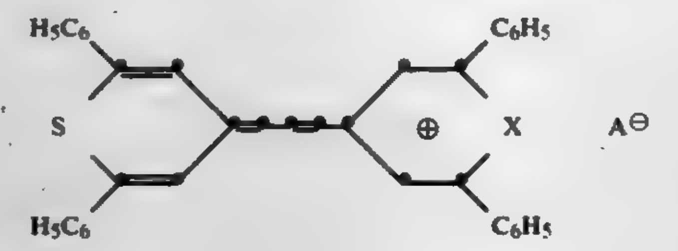
Suzanne P. Clark; George A. Reynolds, and Jerome H. Perlstein, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 19, 1981, Ser. No. 226,340

Int. Cl.³ G03G *5/06*

U.S. Cl. 430—75 **14 Claims**

1. An infrared sensitive heterogeneous photoconductive composition, said composition comprising a continuous phase of a film-forming electrically insulating polymer having dispersed therein a plurality of crystalline particles consisting of an electrically insulating polymer and a trimethine thiopyrylium dye conforming to the general formula:



wherein:

X is sulfur or selenium and $A^{\ominus}$ is an anion.

4,327,170

PHOTOPOLYMERIZABLE UNSATURATED POLYESTERS AND COPYING MATERIAL PREPARED THEREWITH

Jürgen Sander, Kelkheim, and Klaus Horn, Hofheim, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 24, 1980, Ser. No. 220,089

Claims priority, application Fed. Rep. of Germany, Dec. 29, 1979, 2952698

Int. Cl.³ G03C *1/68*

U.S. Cl. 430—285 **5 Claims**

1. A photopolymerizable mixture which contains, as the essential constituents,

(a) a polymeric binder,

(b) a photoinitiator, and

(c) a polyester of an α,α'-bis-methylene-dicarboxylic acid and a dihydroxy compound.

4,327,171

METHOD OF MAKING AN INTRA-OCULAR LENS-MOUNT ELEMENT

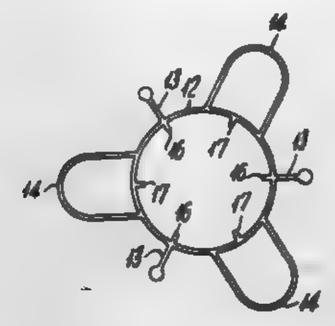
Stanley Poler, 78 E. Second St., New York, N.Y. 10003

Continuation of Ser. No. 858,373, Dec. 7, 1977, abandoned, which is a division of Ser. No. 780,682, Mar. 23, 1977, Pat. No. 4,080,709, which is a continuation-in-part of Ser. No. 691,033, May 28, 1976, Pat. No. 4,073,014. This application Sep. 25, 1979, Ser. No. 78,672

Int. Cl.³ B44C *1/22;* **C23C** *1/02;* **C03C** *15/00, 25/06*

U.S. Cl. 430—323 **18 Claims**

1. The method of making a self-supporting intra-ocular lens mount, which method comprises preparing to greatly enlarged scale a master plan view of the mount, said plan view being of a configuration defining a ring-like body with radially outward feet at angularly spaced locations and with lens-periphery engageable radially inward formations, selecting a thin flexible sheet of an etchable plastic material which is tolerated by the body and coating a surface thereof with photosensitive material, photographically exposing said photosensitive coating at reduced scale from said master plan view, developing the exposed coating to a positive image of the ring-like body upon the sheet, subjecting the developed side of the sheet to an etching chemical solution, and continuing the etching process



until a substantially completed ring-like plastic blank results consistent with the positive image configuration.

4,327,172

PHOTOGRAPHIC IMAGE DEFINITION IMPROVEMENT

Charles E. Martin, Lewisville, N.C., and Ervin J. Rachwal, Framingham, Mass., assignors to Western Electric Company, Inc., New York, N.Y.

Filed Dec. 16, 1980, Ser. No. 217,058

Int. Cl.³ G03C *5/50*

U.S. Cl. 430—407 **6 Claims**

1. A method of improving the definition of the image on a photographic emulsion, including the steps of:

exposing a pre-fogged photographic emulsion to actinic radiation representative of an object to produce in the emulsion a latent positive image of the object;

developing the positive image of the object;

bleaching the positive image from the emulsion;

generally exposing the emulsion to actinic radiation to produce a latent negative image of the object; and

developing the negative image of the object.

4,327,173

COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Kozo Aoki; Yoshio Seoka, and Yukio Yokota, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jan. 23, 1981, Ser. No. 227,908

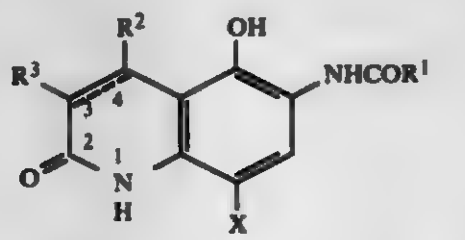
Claims priority, application Japan, Jan. 23, 1980, 55-6512

Int. Cl.³ G03C *1/76, 1/40*

U.S. Cl. 430—505 **17 Claims**

1. A color photographic light-sensitive material comprising a support having coated thereon at least one silver halide emulsion layer, said photographic material containing a cyan dye forming coupler represented by formula (I)

(I)



wherein R^1 represents a substituted or unsubstituted alkyl group or a substituted or unsubstituted aryl group; R^2 and R^3 each represents hydrogen, a halogen atom, an alkyl group, an aryl group, an alkoxy group, an alkoxycarbonyl group, an alkylcarbonyl group, an arylcarbonyl group, an alkylcarbamoyl group, an arylcarbamoyl group, wherein said groups may be substituted or unsubstituted, or a nitryl group; X represents hydrogen or a coupling-off group; and the bond between the carbon atom at the 3-position and the carbon atom at the 4-position may be a single or double bond.

4,327,174

METHOD OF PREPARING A CARRIER MATERIAL FOR PHOTOGRAPHY

Walter von Meer, Bad Iburg, Fed. Rep. of Germany, assignor to Felix Schoeller, Jr., Osnabrück, Fed. Rep. of Germany

Continuation of Ser. No. 878,977, Feb. 17, 1978, abandoned, which is a continuation-in-part of Ser. No. 674,179, Apr. 6, 1976, abandoned. This application Jun. 9, 1980, Ser. No. 157,718

Claims priority, application Fed. Rep. of Germany, Apr. 11, 1975, 2515823

Int. Cl.³ G03C *1/87*

U.S. Cl. 430—530 **18 Claims**

1. Sheet material comprising a paper core, an aqueous layer applied on both sides of the paper core including a mixture having in combination therein 0.25 to 5 grams of starch or starch derivative and 20 to 30 mVal of NaCl or KCl per square meter as an aqueous solution containing starch, said sheet material during drying being enhanced by microwave radiation and whereafter a layer of synthetic resin is coated onto said applied aqueous layer.

4,327,175

SILVER HALIDE COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Yuzo Toda; Hidetoshi Kobayashi, and Junji Koizumi, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Apr. 27, 1981, Ser. No. 258,215

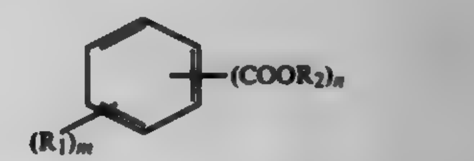
Claims priority, application Japan, Apr. 25, 1980, 55/55084

Int. Cl.³ G03C *1/40*

U.S. Cl. 430—546 **16 Claims**

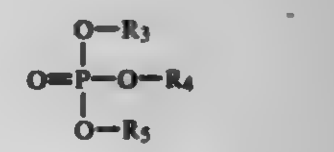
1. A silver halide color photographic light-sensitive material comprising a support having thereon a layer comprising a color coupler dispersed within a high boiling point organic solvent, said high boiling point organic solvent being selected from compounds of general formulae (I) and (II), and said color coupler being selected from compounds of general formulae (III) and (IV):

(I)

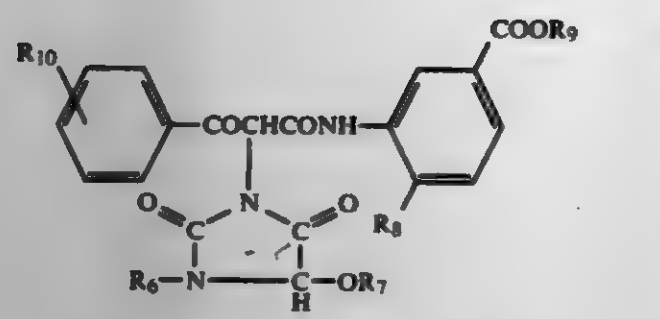


wherein R_1 is an alkyl group, an alkoxy group, an acyloxy group, an aryloxy group or a halogen atom; R_2 is a cyclic saturated hydrocarbon residue; m is 0 or an integer of 1 to 5; and n is an integer of 1 to 6; and wherein when m or n is an integer of 2 or more, each R_1 and R_2 may be the same or different;

(II)

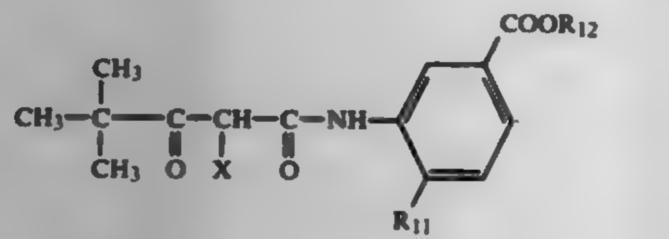


wherein R_3 is a cyclic saturated hydrocarbon residue; and R_4 and R_5, which may be the same or different, each represents a cyclic saturated hydrocarbon residue, an alkyl group or an aryl group;



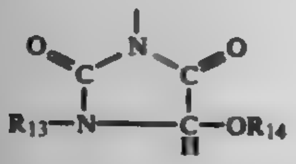
(III)

wherein R_6 is an alkyl group containing 1 to 10 carbon atoms, which may be substituted with a phenyl group; R_7 is an alkyl group containing 1 to 12 carbon atoms, which may be substituted with an alkoxy group, an alkylsulfonamido group or an alkylsulfonyl group; R_8 is a chlorine atom or a methoxy group; R_9 is an alkyl group containing 10 to 20 total carbon atoms, which may be substituted with an alkoxy group, a phenoxy group, an alkoxycarbonyl group or an alkylsulfonamido group; and R_{10} is hydrogen, a methyl group or a methoxy group;



(IV)

wherein R_{11} is a chlorine atom or a methoxy group; R_{12} is an alkyl group containing 10 to 20 total carbon atoms, which may be substituted with an alkoxy group, a phenoxy group, an alkylcarbonyl group or an alkylsulfonamido group; and X is a 2,4-dioxo-5,5-dimethyl-3-oxazolydinyl group or a group having the formula:



(wherein R_{13} is an alkyl group containing 1 to 10 carbon atoms, which may be substituted with a phenyl group; and R_{14} is an alkyl group containing 1 to 10 carbon atoms, which may be substituted with an alkoxy group, an alkylsulfonamido group or an alkylsulfonyl group).

4,327,176
DRY IMAGE FORMING MATERIAL

Ryo Matsui; Tadao Matsushika; Yoshio Hayashi, and Tetsuo Shiga, all of Fuji, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Nov. 3, 1980, Ser. No. 203,034

Claims priority, application Japan, Nov. 9, 1979, 54-144333

Int. Cl.^{3} G03C *1/02*

U.S. Cl. 430—619 16 Claims

1. A dry image forming material comprising:

(a) a non-photosensitive organic silver salt oxidizing agent;

(b) a reducing agent for silver ions;

(c) a photosensitive silver compound or a photosensitive silver compound-forming component capable of forming a photosensitive silver compound by the reaction thereof with said organic silver salt oxidizing agent (a); and

(d) a high impact acrylic resin having an Izod impact strength (notched) of at least 0.4 ft.lb/in as measured in accordance with ASTM D 256 and consisting essentially of a blend of at least on rigid thermoplastic acrylic polymer and at least one rubber-elastic polymer, or at least one copolymer comprising rigidity-providing acrylic monomer units and rubber elasticity-providing monomer units or a combination thereof with at least one rigid thermoplastic acrylic polymer and/or at least one rubber-elastic polymer; or consisting essentially of one prepared by polymerizing at least one member selected from unsubstituted C_1–C_4 alkyl, cyclohexyl, C_6–C_{10} aryl, benzyl or tetrahydrofurfuryl esters of methacrylic acid in the presence of at least one rubber-elastic polymer and/or at least one copolymer comprising rigidity-providing monomer units and rubber elasticity-providing monomer units;

said at least one rigid thermoplastic acrylic polymer being an acrylic homopolymer of an unsubstituted C_1–C_4 alkyl, cyclohexyl, C_6–C_{10} aryl, benzyl or tetrahydrofurfuryl ester of methacrylic acid, or an acrylic copolymer comprising monomer units of at least one member selected from unsubstituted C_1–C_6 alkyl, C_6–C_{10} aryl, benzyl or tetrahydrofurfuryl esters of methacrylic acid, and being of M 75 to M 120 in Rockwell hardness;

said at least one copolymer comprising rigidity-providing monomer units of at least one member selected from unsubstituted C_1–C_4 alkyl, cyclohexyl, C_6–C_{10} aryl, benzyl or tetrahydrofurfuryl esters of methacrylic acid and 0.5 to 300% by weight, based on the rigidity-providing monomer units, of rubber elasticity-providing monomer units of at least one member selected from unsubstituted C_1–C_{22} alkyl esters of acrylic acid and unsubstituted C_7–C_{22} alkyl esters of methacrylic acid.

4,327,177
METHOD AND MEANS FOR CONTROLLING THE SEX OF MAMMALIAN OFFSPRING AND PRODUCT THEREFOR

Wallace Shrimpton, 320 Judah St., San Francisco, Calif. 94122

Division of Ser. No. 564,807, Apr. 3, 1975, abandoned, which is a division of Ser. No. 814,906, Apr. 10, 1969, Pat. No. 3,894,529. This application Aug. 18, 1980, Ser. No. 179,044

Int. Cl.^{3} A01N *1/02*

U.S. Cl. 435—2 13 Claims

1. A method for separating X sperm and Y sperm according to phenotypic differences to make possible the control of the sex of mammalian offspring, comprising the steps of mixing fresh sperm with a nutrient medium; cooling the mixture of sperm and medium to a low temperature to immobilze the sperm; introducing the cooled mixture of sperm and medium to a separation medium in the form of a separate body of nutrient medium, at least part of said separation medium being substantially equivalent in density to the density of said mixture and having a uniform density gradient extending from a lightest density at the top to a heaviest density at the bottom; applying buoyant forces to the sperm introduced to said separation medium tending to separate the sperm at levels of suspension within the separation medium according to individual sperm density; and separating a portion of the separation medium of known density containing a suspended sperm fraction of equivalent density and desired predetermined sex characteristics.

4,327,178
URINARY KALLIKREIN ASSAY: SPECIFIC SUBSTRATES AND ASSAY METHOD

James W. Ryan, and Alfred Chung, both of Miami, Fla., assignors to University of Miami, Coral Gables, Fla.

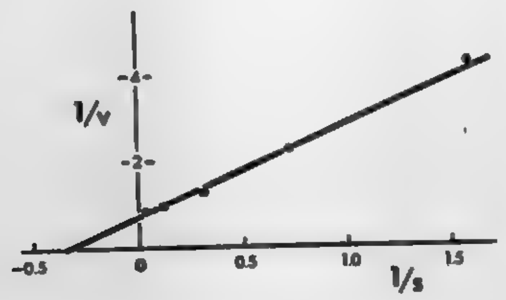
Continuation of Ser. No. 34,930, May 1, 1979, abandoned. This application Mar. 31, 1981, Ser. No. 249,645

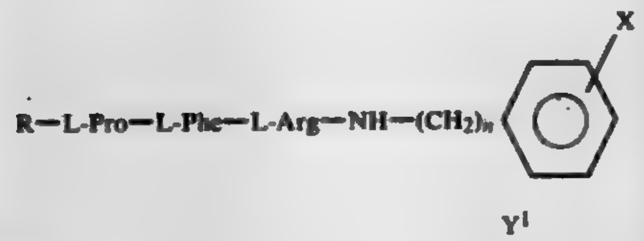
Int. Cl.^{3} C12Q *1/38, 1/36*

U.S. Cl. 435—23 17 Claims

9. A method for the assay of human urinary kallikrein comprising:

mixing said kallikrein with a substrate compound having the formula





wherein

R is hydrogen, acetyl, benzoyl, cyclopentanecarbonly, succinyl, R_1—Ser, or R_1—Phe-Ser where R_1 is hydrogen, acetyl, benzoyl, cyclopentanecarbonyl or succinyl;

X is hydrogen, tritium, 3-iodo or 4-iodo; and,

n is 0 or 1;

at least a portion of the molecules of said substrate having a $[^3H]$, $[^{14}C]$ or $[^{125}I]$substituted for the C_1, H or I atoms in that portion of the substrate connected by amide linkage to the carboxy group of the arginine moiety, said substrate being present at a concentration less than 10 μm in a buffer having a pH in the range 7.5–10.5;

incubating the kallikrein with the substrate to permit kallikrein-catalyzed hydrolysis thereof;

terminating the kallikrein-catalyzed hydrolysis;

separating the hydrolysis product from the substrate; and,

measuring the amount of product formed by counting the radioactivity thereof, whereby an assay of the kallikrein activity is obtained.

4,327,179
METHOD OF BREEDING OF YEAST ON SOLUTIONS, CONTAINING LACTOSE, AND GROUND CEREAL PRODUCTS AND/OR OTHER SUGAR AND POLYSACCHARIDE PRODUCTS

Otto Moebus, Lämmerstücken 36, D-2300 Kiel-Russee; Michael Teuber, Gartenstrasse 114, D-2302 Flintbeck, and Peter Kiesbye, Zastrowstrasse 16, D-2300 Kiel, all of Fed. Rep. of Germany

Continuation of Ser. No. 858,891, Dec. 8, 1971, abandoned. This application Mar. 14, 1980, Ser. No. 130,228

Claims priority, application Fed. Rep. of Germany, Dec. 15, 1976, 2656663; Nov. 24, 1977, 2752485

Int. Cl.^{3} C12P *39/00*

U.S. Cl. 435—42 12 Claims

1. A process for producing yeast from dairy liquids containing lactose and natural materials containing sugars and polysaccharides, comprising in combination the steps of:

a. preparing a mixture of the lactose containing dairy liquid and the natural materials containing sugars and polysaccharides, an amylase of the type that converts starch into dextrine, and lactic acid bacteria;

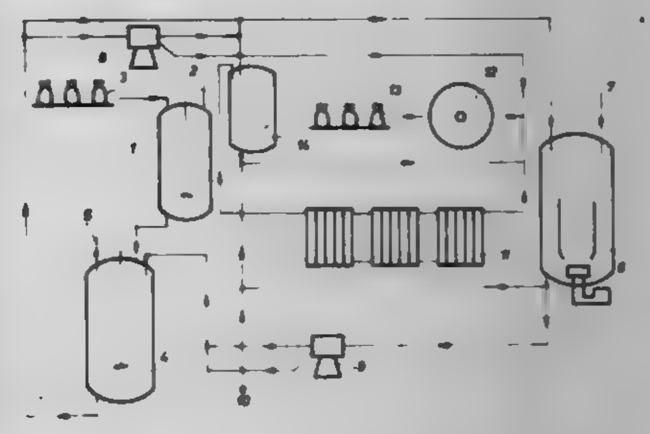
b. fermenting the lactose into lactic acid and converting the sugars and polysaccharides to dextrines, ammonia being added during this conversion to control the pH of the mixture;

c. subsequent to the lactose conversion step, adding amylase to hydrolyze the dextrines; and

d. either concomitant with or subsequent to the dextrine hydrolysis, adding a yeast to the suspension resulting from the lactose and sugar-polysaccharide and fermenting the mass under aerobic conditions, controlling the pH by addition of ammonia;

e. and further wherein the yeast fermentation step (d.) is conducted semicontinuously in two distinct repeated phases, as follows:

(i) an amount, Δg, of suspension from the lactose and starch conversion step comprising lactic acid, ammonium lactate and carbohydrates as sources for carbon and nitrogen is flowed to a fermentor during a time period Δt_1, the lactic acid concentration increasing during Δt_1 to a predetermined level;



(ii) after the lactic acid has reached said predetermined level, the flow of suspension from the lactose and starch conversion step is terminated for a time period Δt_2 to permit the lactic acid accumulated during the time period Δt_1 to become assimilated;

(iii) at the termination of Δt_2, an amount of yeast suspension equal in weight to the suspension from the lactose and starch conversion step, Δg, is withdrawn;

(iv) thereafter the process steps (i)–(iii) are repeated.

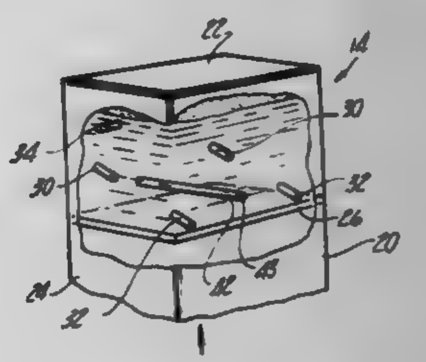
4,327,180
METHOD AND APPARATUS FOR ELECTROMAGNETIC RADIATION OF BIOLOGICAL MATERIAL

Kuo-Chun Chen, Birmingham, Mich., assignor to Board of Governors, Wayne State Univ., Detroit, Mich.

Filed Sep. 14, 1979, Ser. No. 75,636

Int. Cl.^{3} C12N *13/00*

U.S. Cl. 435—173 14 Claims



1. Apparatus for subjecting biological material to electromagnetic radiation, comprising: an electromagnetic radiation source; an elongated, hollow waveguide having one of its ends connected to the radiation source; a partition extending across the waveguide to form a chamber in the waveguide on the side of the partition opposite to that directed toward the radiation source; a liquid solution disposed in the chamber so as to extend fully across the waveguide; means for maintaining fluid within the chamber at a constant temperature; and a biological material container disposed within the chamber, said container having dimensions, in the direction of propogation of the radiation, which are sufficiently small compared to the wavelength of the radiation to prevent induction of the radiation

within the container, whereby a biological sample disposed within the container is irradiated with radiation without appreciable heating.

10. The method of irradiating a biological sample with electromagnetic radiation without raising the temperature of the sample, comprising: placing the sample in an elongated container having a small cross-sectional dimension compared to the wavelength of the radiation, so that no radiation is induced into the container when the container is irradiated with the radiation; placing said container within a liquid chamber; passing radiation through the chamber in a direction transverse to the extension of the container; supporting the biological sample within the chamber in a liquid media substantially similar to the liquid in the container; and maintaining the liquid in the container at a constant temperature so that the biological specimen is maintained at said relative constant temperature while it is subjected to the radiation.

4,327,181

AEROBIC SUBMERGED FERMENTATION OF SPORULATING, ECTOMYCORRHIZAL FUNGI

John H. Litchfield, and William T. Lawhon, Jr., both of Worthington, Ohio, assignors to Battelle Development Corporation, Columbus, Ohio

Filed May 15, 1980, Ser. No. 150,095

Int. Cl.³ C12N *11/14*

U.S. Cl. 435—176 **5 Claims**

1. A method for mass production of sporulating, ectomycorrhizal fungi comprising inoculating a liquid growth medium with Thelephora terrestris and cultivating by aerobic submerged fermentation at a pH of between about 4.0 and 7.0 for a time sufficient to produce fungal growth.

4,327,182

PURIFICATION OF INFLUENZA SUB-UNIT VACCINE

Jorn D. Benedictus, Groton, Mass., assignor to Connaught Laboratories Incorporated, Swift Water, Pa.

Filed Jan. 22, 1981, Ser. No. 227,240

Int. Cl.³ C12N *7/02*

U.S. Cl. 435—239 **7 Claims**

1. A process for preparing a purified influenza sub-unit vaccine containing haemagglutinin (HA) and neuraminidase (NA) units from influenza virus-containing allantoic fluid which was formed by propagating the virus in a host medium, and which contains particulate matter of size ranges less than, the same as, and greater than the virus, which process comprises:

(a) subjecting said allantoic fluid to multiple selective membrane filtration to remove from said fluid undesirable dissolved solids and undesirable particulate matter in the size ranges which are less than and greater than the virus,
(b) selectively solubilizing the HA and NA units from the virus with a surfactant, and
(c) subjecting the resulting fluid to multiple selective membrane filtration to separate the haemagglutinin (HA) and neuraminidase (NA) from larger particles of virus and particulate matter and then to remove the surfactant from the HA and NA to produce the HA and NA sub-unit vaccine.

4,327,183

METHOD FOR PURIFYING FATTY ACID ESTERS OF SACCHARIDE

Takayoshi Masuda; Masaru Honjo; Tsutomu Takase, and Yoshimoto Watanabe, all of Nagoya, Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

PCT No. PCT/JP80/00059, § 371 Date Dec. 5, 1981, § 102(e) Date Oct. 17, 1980, PCT Pub. No. WO80/02156, PCT Pub. Date Oct. 16, 1980

PCT Filed Apr. 3, 1979, Ser. No. 198,009

Claims priority, application Japan, Apr. 5, 1979, 54/40378; Apr. 5, 1979, 54/40379

Int. Cl.³ C07H *13/02*

U.S. Cl. 435—274 **9 Claims**

1. A method for purifying crude fatty acid esters of saccharide containing at least fatty acid glycerides as impurity, which method comprises decomposing the fatty acid glycerides by the treatment thereof with a lipid splitting enzyme or with a combination of a lipid splitting enzyme and a reducing agent in the presence of water.

4,327,184

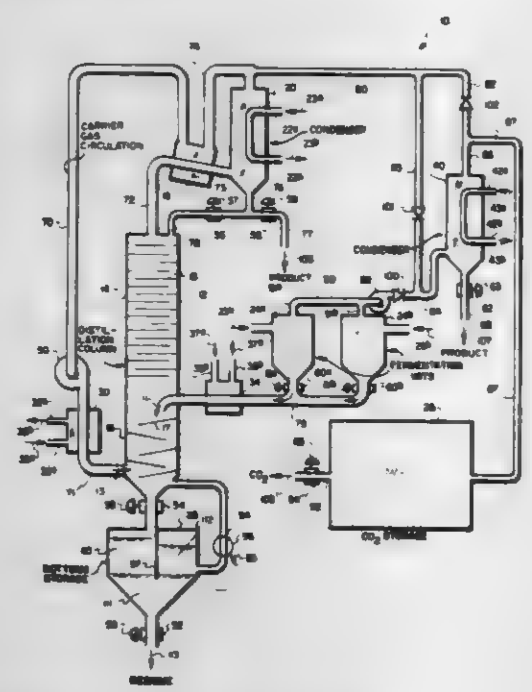
INERT-GAS STRIPPING AND DISTILLATION APPARATUS

Steven A. Johnson, Preston, Id., and Junior D. Seader, Salt Lake City, Utah, assignors to University of Utah, Salt Lake City, Utah

Filed Oct. 25, 1979, Ser. No. 88,254

Int. Cl.³ B01D *3/00;* **C12P** *7/06*

U.S. Cl. 435—287 **9 Claims**



1. A distillation apparatus comprising:
distillation means;
first condenser means connected to the distillation means for condensing a product from a carrier gas;
circulation means for circulating the carrier gas through the distillation means and the first condenser means, the carrier gas carrying the product from the distillation means to the first condenser means;
fermentation means for producing a product-containing slurry;
first conduit means for delivering the product-containing slurry from the fermentation means to the distillation means;
second condenser means connected to the fermentation means for recovering gases generated in the fermentation means;
second conduit means for delivering the gases recovered in the second condenser means to the circulation means for use as at least a part of the carrier gas;

first removal means for removing the product from the first condenser means.

4,327,185

REFRACTORY COMPOSITIONS WITH BINDER

Samuel B. Bonsall, Clearfield, Pa., assignor to Eltra Corporation, Morris Township, Morris County, N.J.

Filed Dec. 5, 1980, Ser. No. 213,514

Int. Cl.³ C04B *35/52*

U.S. Cl. 501—89 **8 Claims**

1. A refractory composition comprising about 60 to 98 weight percent of discrete, size graded aggregate particles of high alumina, carbon and clay, and as binder a resol phenol formaldehyde resin in liquid form prior to heating and having a viscosity at 25° C. of up to about 3000 cps.

4,327,186

SINTERED SILICON CARBIDE-TITANIUM DIBORIDE MIXTURES AND ARTICLES THEREOF

Yorihiro Murata, Tonawanda, and Gary W. Weber, Amherst, both of N.Y., assignors to Kennecott Corporation, Stamford, Conn.

Filed Jun. 23, 1980, Ser. No. 161,726

Int. Cl.³ C04B *35/56, 35/58*

U.S. Cl. 501—92 **11 Claims**

1. A binary composite sintered ceramic article produced under substantially pressureless sintering conditions comprising from about 80 to about 95% by weight of silicon carbide and from about 5 to about 20% by weight of titanium diboride.

5. A method of producing a composite ceramic article which comprises the steps of:

a. mixing from about 5 to about 95 percent by weight of submicron silicon carbide, from about 5 to about 95 percent by weight of finely-divided titanium diboride, from about 0.5 to about 5.0 percent by weight of carbon or a carbon source material, and from about 0.2 to about 3.0 percent by weight of a sintering aid,
b. forming the mixture into a green body in the shape of the article,
c. freeze drying and subsequently vacuum drying said green body, and
d. sintering said green body under substantially pressureless conditions to produce a sintered article comprising silicon carbide and titanium diboride.

4,327,187

METHOD OF PRODUCING SINTERED BODY OF CERAMICS

Michiyasu Komatsu; Akihiko Tsuge, both of Yokohama; Katsutoshi Komeya, Kanagawa, and Akio Ando, Kawasaki, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Feb. 19, 1980, Ser. No. 122,659

Claims priority, application Japan, Feb. 22, 1979, 54-19013

Int. Cl.³ C04B *35/50, 35/58*

U.S. Cl. 501—97 **8 Claims**

1. A sintered ceramic body having a relative density of at least 95%, a flexural strength of at least 70 Kg/mm² at room temperature and at least 60 Kg/mm² at 1200° C., and a critical thermal shock temperature of at least 400° C., produced by the process of:

admixing yttrium oxide, aluminum oxide, aluminum nitride, at least one material selected from the group consisting of titanium oxide, magnesium oxide and zirconium oxide, and silicon nitride to form a powder mixture consisting essentially of at most 10%, exclusive of 0%, by weight of yttrium oxide, at most 10%, exclusive of 0%, by weight of aluminum oxide, at most 10%, exclusive of 0%, by weight of aluminum nitride, at most 5%, exclusive of 0%, by weight of at least one material selected from the group consisting of titanium oxide, magnesium oxide and zirconium oxide, and the balance essentially of silicon nitride; shaping said powder mixture into a desired form; and sintering under a non-oxidizing atmosphere at 1500° to 1900° C.

4,327,188

MULTICELLULAR MONOLITHIC CERAMIC BODY AND PREPARATION THEREOF

Yasuhiko Endo, Yokohama; Takashi Mimori, Takasago, and Motohiro Gotô, Himeji, all of Japan, assignors to Asahi Glass Company, Ltd., Tokyo, Japan

Filed Nov. 18, 1980, Ser. No. 208,002

Claims priority, application Japan, Dec. 25, 1979, 54-167666

Int. Cl.³ C04B *35/44, 35/46, 35/50*

U.S. Cl. 501—134 **10 Claims**

1. A multicellular monolithic ceramic body having many gas passages partitioned by thin walls, consisting essentially of: aluminum titanate as the major constituent and from 4 to 10 wt. % SiO_2, said ceramic body having a thermal expansion coefficient less than 0:15% at 1000° C., a compressive strength greater than 350 kg/cm² as taken along the direction of the gas passages based only on the solid surface of said body and not including open areas of said body and a porosity of greater than 35%.

4,327,189

REVERSIBLE DEFLOCCULATION OF CLAY SLURRIES

Marvin M. Crutchfield, Creve Coeur, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Jun. 5, 1980, Ser. No. 156,703

Int. Cl.³ C09C *1/42*

U.S. Cl. 501—148 **11 Claims**

1. A method for the controlled deflocculation and reflocculation of clay slurries having a pH between about pH2 and about pH9 which comprises contacting the clay slurry with a sufficient amount to deflocculate the clay slurry of a polymer having the general formula:

$$R^1-O\text{+}\underset{\displaystyle\underset{\displaystyle COOM}{|}}{CHO}\text{+}_n-R^2$$

wherein n averages at least 4; M is selected from the group consisting of alkali metals, ammonium and alkanol amine groups having from 1 to about 4 carbon atoms; and R¹ and R² are individually any chemically stable group which stabilizes the polymer against rapid depolymerization in alkaline solution; and

(b) reflocculating said clay slurry when said polymer depolymerizes.

4,327,190

PROCESS FOR THE PRODUCTION OF C_1 TO C_4 OXYGENATED HYDROCARBONS

William J. Ball, Capel; Leonard Cotton, Ewell, and David G. Stewart, Epsom, all of England, assignors to The British Petroleum Company Limited, London, England

Filed Apr. 18, 1980, Ser. No. 141,560

Claims priority, application United Kingdom, Apr. 24, 1979, 14253/79

Int. Cl.³ C07C *27/06*

U.S. Cl. 518—714 **9 Claims**

1. A process for the production of oxygenated hydrocarbon compounds containing from one to four carbon atoms which process comprises contacting synthesis gas at a temperature in the range of from about 150° to 450° C. and a pressure in the range of from about 1 to 700 bars with a catalyst comprising a supported mixture essentially consisting of rhodium and chromium metals, each of said metals being present in an amount in the range of from about 0.01 to 25 weight percent based on the combined weight of the metals and support.

4,327,191

PREPARATION OF ANION EXCHANGE RESINS BY BROMINATION OF VINYL AROMATIC POLYMERS

Adrien Dromard, Paris, and Ramanadin, Ales, both of France, assignors to Rhone-Poulenc Industries, Courbevoie, France

Filed Aug. 18, 1980, Ser. No. 178,893

Claims priority, application France, Sep. 7, 1979, 79 22394

Int. Cl.³ B01J *41/00;* **C08F** *8/20*

U.S. Cl. 521—31 **14 Claims**

1. A process of preparing anion exchange material, which process comprises the steps: (a) polymerizing at least one alkyl vinyl aromatic monomer having at least one alkyl group containing about 1 to 3 carbon atoms in the presence of a mineral support in order to form a polymer film of less than 15 mg/m² on the surface of said mineral support; (b) brominating in an organic medium the alkyl groups of the polymer with a brominating agent selected from the group consisting of N-bromoamides and N-bromoimides; and (c) aminating the resulting brominated polymer.

4,327,192

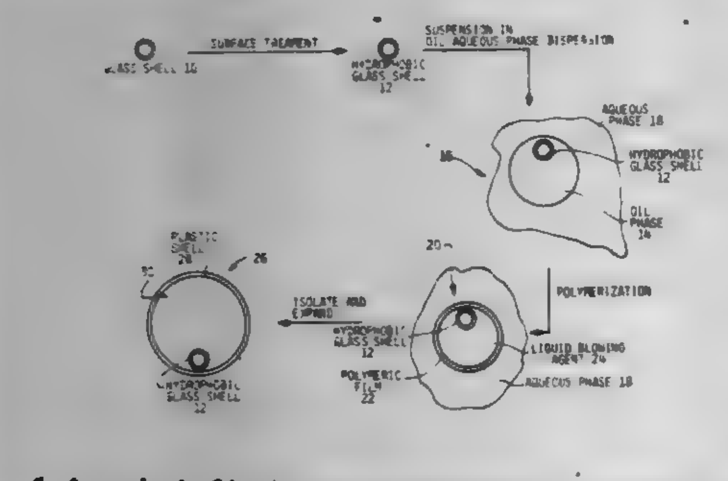
METHOD OF FABRICATING NESTED SHELLS AND RESULTING PRODUCT

Timothy M. Henderson, and Lawrence B. Kool, both of Ann Arbor, Mich., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Oct. 6, 1980, Ser. No. 194,134

Int. Cl.³ C08J *9/16*

U.S. Cl. 521—56 **6 Claims**



1. A method of in situ microencapsulation of hollow nested shells of the type which comprise an inner shell floating within a surrounding outer shell, said method comprising the steps:

(a) surface treating a precursor shell so as to render the outer surface of said precursor shell hydrophobic,

(b) suspending the surface-treated precursor shell within the oil phase of an oil-aqueous phase dispersion, with said oil phase including an organic film-forming monomer and a liquid blowing agent, and

(c) initiating polymerization within said oil phase such that particles are formed comprising a polymeric film at the oil-aqueous phase boundary of said dispersion encapsulating said surface-treated precursor shell, and

(d) heating the polymeric particle formed in said step (c) to a temperature sufficient to cause volatilization of the liquid blowing agent thereby expanding said particle to form a homogeneously integral monocellular substantially spherical polymeric shell having said precursor shell encapsulated therewithin.

4,327,193

FOAMING SYNTHETIC RESIN COMPOSITIONS STABILIZED WITH CERTAIN HIGHER ETHERS, ESTERS OR ANHYDRIDES

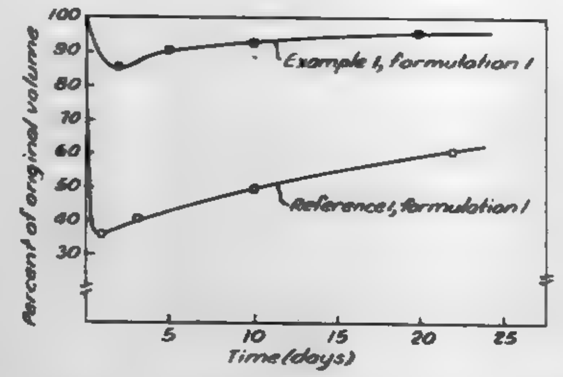
Tsuneo Hoki, and Yutaka Matsuki, both of Suzuka, Japan, assignors to Asahi-Dow Limited, Tokyo, Japan

Filed Mar. 6, 1981, Ser. No. 241,336

Claims priority, application Japan, Mar. 10, 1980, 55-29100

Int. Cl.³ C08J *9/14*

U.S. Cl. 521—88 **7 Claims**



1. A foamable synthetic resin composition comprising a normally solid aliphatic olefin polymer, a volatile organic blowing agent and 0.1 to 10 percent by weight, based on said olefin polymer of at least one compound of the formula I:

$$R_1-X-R_2 \qquad (I)$$

wherein R_1 and R_2 represent an aliphatic hydrocarbon group having 3 to 24 carbon atoms, respectively, with at least one thereof having 10 or more carbon atoms, and X represents a radical selected from the group consisting of

$$-\overset{O}{\overset{\|}{C}}-O-,\ -\overset{O}{\overset{\|}{C}}-S-,\ -\overset{O}{\overset{\|}{C}}-O-\overset{O}{\overset{\|}{C}}-,\ -S-\text{ and }-O-.$$

4,327,194

FLEXIBLE POLYURETHANE FOAM PREPARED FROM A REACTION MIXTURE WHICH INCLUDES A POLYETHER TRIOL CONTAINING AN EFFECTIVELY DISPERSED FINELY DIVIDED SOLID PARTICULATE MATERIAL

Kiran B. Chandalia, Cheshire, and Henry G. Barnowski, Durham, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Continuation-in-part of Ser. No. 6,951, Jan. 25, 1979, Pat. No. 4,278,770, which is a continuation-in-part of Ser. No. 898,274, Apr. 20, 1978, abandoned, which is a continuation-in-part of Ser. No. 881,297, Feb. 27, 1978, abandoned. This application Feb. 2, 1981, Ser. No. 230,767

Int. Cl.³ C08G *18/14*

U.S. Cl. 521—99 **23 Claims**

1. In a process for preparing a flexible polyurethane foam from a reaction mixture comprised of a polyether polyol, an organic polyisocyanate, a foaming agent and a reaction catalyst, said foam exhibiting a SAC factor of about 1.7 to about 2.2, the improvement wherein:

said polyether polyol is a triol having a molecular weight of about 1,000 to about 6,500 and at least 10 percent of primary hydroxyl groups and which is the product of sequentially oxyalkylating a trihydroxy alcohol first with propylene oxide or a mixture thereof with ethylene oxide and then with ethylene oxide, said triol containing a proportion of an effectively dispersed finely divided solid particulate material, said particulate material having, prior to dispersion in said triol, an average primary particle size of about 0.007 to about 10 microns and a pH ranging from about 3 to about 5, and further having, in dispersion in said triol, an effective maximum particle size of less than about 100 microns.

4,327,195

POLYURETHANE CONTAINING POLYPEPTIDES

Gheorghe Cioca, Belleville, and Paul A. Fertell, Wilmington, both of N.J., assignors to Seton Company, Newark, N.J.

Filed Sep. 29, 1980, Ser. No. 191,863

Int. Cl.³ C08G *18/14*

U.S. Cl. 521—102 **8 Claims**

1. In a composition including polyurethane foam, prepared by the reaction of a polyreactive hydrogen compound and a polyisocyanate the improvement comprising a particulate polypeptide derived from collagen incorporated into said composition.

4,327,196

METHOD FOR PRODUCING EXPANDED AND CURED POLYESTER RESIN

Robert W. West, Memphis, Tenn.; Paul E. Stott, Cheshire, and James Ahnemiller, Middlebury, both of Conn., assignors to Uniroyal, Inc., New York, N.Y. and Alpha Chemical Corporation, Collierville, Tenn.

Filed Dec. 22, 1980, Ser. No. 219,420

Int. Cl.³ C08J *9/00*

U.S. Cl. 521—120 **18 Claims**

1. A foamable and curable polyester composition consisting essentially of, all parts being by weight:

(a) 100 parts liquid unsaturated polyester resin,

(b) 2.7–32 millimoles mono-substituted sulfonyl hydrazide blowing agent for the resin having the structural formula RSO_2NHNH_2, wherein R is C_1–C_{12} alkyl, C_5–C_6 cycloalkyl, C_7–C_{10} aralkyl, phenyl, naphthyl or phenyl substituted with halogen, C_1–C_{12} alkyl or C_1–C_{12} alkoxy,

(c) 0.001–2 parts organic metal salt primary promoter for the organic peroxide or organic hydroperoxide cure of the resin wherein the metal is selected from copper and vanadium,

(d) 0–0.4 part organic metal salt secondary promoter for the organic peroxide or organic hydroperoxide cure of the resin, wherein the metal is selected from cadmium, calcium, chromium, cobalt, iron, lead, lithium, manganese, nickel, tin and zirconium,

(e) 0–2 parts surface active agent,

(f) 0–250 parts filler,

(g) 0.5–2.5 parts organic peroxide or organic hydroperoxide per 100 parts (a) plus (f); provided that if the amount of (d) is zero the amount of (c) is at least 0.01 part.

4,327,197

FIRE-RETARDANT ANHYDRIDE COPOLYMERS

Adolph V. Di Giulio, and Jack N. Bauer, both of Pittsburgh, Pa., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Division of Ser. No. 147,034, May 6, 1980, Pat. No. 4,304,874. This application Aug. 5, 1981, Ser. No. 290,137

Int. Cl.³ C08J *9/00*

U.S. Cl. 521—147 **5 Claims**

1. A fire-retardant foam composition having a density of between 1 and 10 pounds per cubic foot and consisting of a copolymer of 50 to 95 mole percent of a monovinyl aromatic monomer and 5 to 50 mole percent of the anhydride of an ethylenically unsaturated dicarboxylic acid monomer, from 10 to 20 parts per hundred parts of copolymer of an at least tribrominated diphenylether, and 4 to 8 parts per hundred parts of copolymer of a metal oxide synergist for the ether.

4,327,198

POLYMERIC MOLDING COMPOSITIONS HAVING THE HIGH IMPACT STRENGTH

Doyle A. Weemes, Greeneville, and Robert W. Seymour, Kingsport, both of Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 24, 1981, Ser. No. 257,446

Int. Cl.³ C08L *51/08*

U.S. Cl. 525—63 **12 Claims**

1. Composition of matter comprising

(a) a polyester derived from 100 mole % dibasic acid and 100 mole % glycol, at least 50 mole % of said dibasic acid being terephthalic acid or a mixture of a substantial amount of terephthalic acid with isophthalic acid, said glycol component comprising at least 75 mole % of one or more aliphatic or cycloaliphatic glycols having from 2 to 12 carbon atoms, said polyester having an I.V. of about 0.4–1.5,

(b) about 5 to about 35 weight %, based on the weight of the composition, of polyethylene having a melt index of about 0.1–15.0 and a density of about 0.910–0.965, and

(c) about 0.25 to about 5 weight %, based on the weight of the composition, of poly(tetramethylene terephthalate)-co-2-butene-1,4-diol having an I.V. of 0.9 to 1.5 grafted with a low density polyethylene.

4,327,199

THERMOPLASTIC CRYSTALLINE POLYESTER MODIFIED ACRYLIC COPOLYMER RUBBER

Aubert Y. Coran, and Raman Patel, both of Akron, Ohio, assignors to Monsanto Company, St. Louis, Mo.

Filed Jan. 19, 1981, Ser. No. 226,317

Int. Cl.³ C08L *67/02*

U.S. Cl. 525—176 **15 Claims**

1. A thermoplastic composition comprising a blend of about 25 to 98 parts by weight of neutralized acid containing acrylic copolymer rubber, and about 75 to 2 parts by weight of thermoplastic crystalline polyester per 100 parts by weight of said rubber and thermoplastic crystalline polyester combined.

4,327,200

WATER-DILUTABLE OXAZOLIDINE GROUP CONTAINING EPOXY RESIN ESTERS, COATING COMPOSITIONS PREPARED THEREFROM, AND THEIR USE AS CATHODICALLY DEPOSITABLE PAINTS

Wolfgang Leitner; Georg Pampouchidis, and Anton Bleikolm, all of Graz, Austria, assignors to Vianova Kunstharz, A.G., Werndorf, Austria

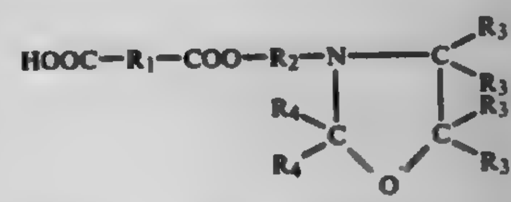
Filed Oct. 29, 1980, Ser. No. 201,968

Claims priority, application Austria, Nov. 5, 1979, 7082/79; April 25, 1980, 2224/80; April 25, 1980, 2225/80

Int. Cl.³ C08L *61/32;* **C08G** *59/58, 63/68*

U.S. Cl. 525—531 **24 Claims**

1. Binders water-dilutable upon partial or total neutralization with inorganic and/or organic acids, comprising the reaction product obtained by heating an epoxy resin having at least 2 1,2-epoxy groups per molecule and an epoxy equivalent of at least 160 with a semiester of an aliphatic, cycloaliphatic, or aromatic dicarboxylic acid and an N-2-hydroxyalkyloxazolidine having the general formula—



wherein

R_1 is a saturated or unsaturated aliphatic, cycloaliphatic, or aromatic hydrocarbon radical,

R_2 is a straight chain or branched alkylene radical,

R_3 is a hydrogen atom or an alkyl radical, and

R_4 is a hydrogen atom or an alkyl radical with up to 6 carbon atoms,

the quantity of oxazolidine semiester being chosen in order that the epoxy-free final product has a theoretical amine number of at least 35 mg KOH/g.

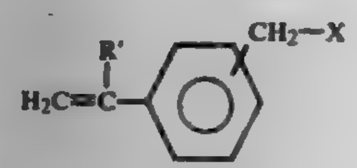
4,327,201

CATIONICALLY POLYMERIZABLE MACROMOLECULAR MONOMERS AND GRAFT COPOLYMERS THEREFROM

Joseph P. Kennedy, Akron, and Kurt C. Frisch, Jr., Midland, both of Mich., assignors to The University of Akron, Akron, Ohio

Filed Oct. 22, 1980, Ser. No. 199,656
Int. Cl.³ C08F *110/10*
U.S. Cl. 526—131 18 Claims

1. A macromolecular monomer comprising the reaction product of a cationically polymerizable monomer, said monomer being isobutylene, and a vinyl substituted hydrocarbon halide having the formula



where R' is a hydrocarbon having from 1 to 18 carbon atoms, and where X is selected from the group consisting of F, Cl, Br, and I,

in said reaction the amount of said vinyl substituted hydrocarbon halide is from about 5.0 moles to about 1.0×10^{-5} moles per mole of said isobutylene monomer, and

wherein said macromolecular monomer has polymerizable head groups, said polymerizable head groups being vinyl or substituted vinyl groups.

4,327,202

STYRENE COPOLYMER FOR CONTACT LENSES

William M. Foley, Jr., Glendale, Calif., assignor to John D. McCarry, El Toro, Calif.

Continuation-in-part of Ser. No. 920,670, Jun. 30, 1978, Pat. No. 4,243,790, which is a continuation-in-part of Ser. No. 797,005, May 16, 1977, abandoned. This application Apr. 21, 1980, Ser. No. 142,334
The portion of the term of this patent subsequent to Jan. 6, 1998, has been disclaimed.
Int. Cl.³ C08F *212/06, 212/08, 214/18;* G02C *7/04*
U.S. Cl. 526—245 11 Claims

1. A contact lens having a durometer hardness of at least about 80, a saturated hydration level of at least about 30%, being sufficiently hard and tough to be cut and polished at ambient temperature, consisting essentially of the polymerization product of the following monomers in combination with suitable cross-linking agents:

styrene monomer, comprising from about 20% to about 30% of the lens;

optionally including from about 1% to about 10% of methacrylic acid;

the balance of the lens consisting essentially of acrylic monomer having the general formula

$$CH_2{=}C(R){-}C({=}O){-}OR' \qquad \text{I}$$

wherein R is hydrogen, methyl or ethyl, and R' is alkyl, and acrylic monomer having the general formula

$$CH_2{=}C(R){-}C({=}O){-}O{-}(CH_2)_n{-}CH(R''){-}CH_2{-}OH \qquad \text{II}$$

wherein n is 0 or 1, R is hydrogen, methyl or ethyl, and R" is hydrogen when n is 0 and hydrogen or hydroxyl when n is 1.

6. A contact lens having a durometer hardness of at least about 80, a saturated hydration level of at least about 20%, being sufficiently hard and tough to be cut and polished at ambient temperature, consisting essentially of the polymerization product of the following monomers in combination with suitable cross-linking agents:

vinyl toluene, comprising from about 4% to about 20% of the lens;

methylmethacrylate or lauryl methacrylate, comprising from about 1% to about 10% of the lens;

optionally including up to about 3% of methacrylic acid;

the balance of the lens consisting essentially of acrylic monomer having the general formula

$$CH_2{=}C(R){-}C({=}O){-}OR' \qquad \text{I}$$

wherein R is hydrogen, methyl or ethyl, and R' is alkyl other than methyl methacrylate and lauryl methacrylate, or of the general formula

$$CH_2{=}C(R){-}C({=}O){-}O{-}(CH_2)_n{-}CH(R''){-}CH_2{-}OH \qquad \text{II}$$

wherein n is 0 or 1, R is hydrogen, methyl or ethyl, and R" is hydrogen when n is 0 and hydrogen or hydroxyl when n is 1.

7. A contact lens having a durometer hardness of at least about 80, a saturated hydration level of at least about 20%, being sufficiently hard and tough to be cut and polished at ambient temperature, consisting essentially of the polymerization product of the following monomers in combination with suitable cross-linking agents:

pentafluorostyrene, comprising from about 4% to about 20% of the lens;

optionally including up to about 10% of methacrylic acid;

the balance of the lens consisting essentially of acrylic monomer having either the general formula

$$CH_2{=}C(R){-}C({=}O){-}OR' \qquad \text{I}$$

wherein R is hydrogen, methyl or ethyl, and R' is alkyl, or of the general formula

$$CH_2{=}C(R){-}C({=}O){-}O{-}(CH_2)_n{-}CH(R''){-}CH_2{-}OH \qquad \text{II}$$

wherein n is 0 or 1, R is hydrogen, methyl or ethyl, and R" is hydrogen when n is 0 and hydrogen or hydroxyl when n is 1.

8. A contact lens having a durometer hardness of at least about 80, a saturated hydration level of at least about 20%, being sufficiently hard and tough to be cut and polished at ambient temperature, consisting essentially of the polymerization product of the following monomers in combination with suitable cross-linking agents:

pentafluorostyrene, comprising from about 4% to about 20% of the lens;

dodecafluoroheptyl methacrylate, comprising from about 4% to about 10% of the lens;

optionally including up to about 10% of methacrylic acid;

the balance of the lens consisting essentially of acrylic monomer having either the general formula

$$CH_2{=}C(R){-}C({=}O){-}OR' \qquad \text{I}$$

wherein R is hydrogen, methyl or ethyl, and R' is alkyl, or of the general formula

$$CH_2{=}C(R){-}C({=}O){-}O{-}(CH_2)_n{-}CH(R''){-}CH_2{-}OH \qquad \text{II}$$

wherein n is 0 or 1, R is hydrogen, methyl or ethyl, and R" is hydrogen when n is 0 and hydrogen or hydroxyl when n is 1.

9. A contact lens having a durometer hardness of at least about 80, a saturated hydration level of at least about 20%, being sufficiently hard and tough to be cut and polished at ambient temperature, consisting essentially of the polymerization product of the following monomers in combination with suitable cross-linking agents:

styrene monomer, comprising from about 4% to about 20% of the lens;

dodecafluoroheptyl methacrylate, ethoxyethyl methacrylate, or methoxyethyl methacrylate, methyl methacrylate, or lauryl methacrylate, comprising from about 4% to about 10% of the lens;

optionally including up to about 10% of methacrylic acid;

the balance of the lens consisting essentially of acrylic monomer having either the general formula

$$CH_2{=}C(R){-}C({=}O){-}OR' \qquad \text{I}$$

wherein R is hydrogen, methyl or ethyl, and R' is alkyl other than methyl methacrylate and lauryl methacrylate, or of the general formula

$$CH_2{=}C(R){-}C({=}O){-}O{-}(CH_2)_n{-}CH(R''){-}CH_2{-}OH \qquad \text{II}$$

wherein n is 0 or 1, R is hydrogen, methyl or ethyl, and R" is hydrogen when n is 0 and hydrogen or hydroxyl when n is 1.

4,327,203

POLYSILOXANE WITH CYCLOALKYL MODIFIER COMPOSITION AND BIOMEDICAL DEVICES

William G. Deichert, Macedon; Gary D. Friends, Ontario; John B. Melpolder, Hilton, and Joon S. Park, Rochester, all of N.Y., assignors to Bausch & Lomb Incorporated, Rochester, N.Y.

Filed Feb. 26, 1981, Ser. No. 238,522
Int. Cl.³ C08F *236/20*
U.S. Cl. 526—279 24 Claims

1. A shaped article suitable for use in biomedical applications being a polymer formed by polymerizing (a) one or more polysiloxane monomers α,ω terminally bonded through divalent hydrocarbon groups to an activated unsaturated group with (b) a cycloalkyl modulus modifier and (c) a tear film stabilizer to form a crosslinked three-dimensional polymeric network.

4,327,204

PROCESS FOR PRODUCING POLYURETHANE ELASTOMER BY MIXING A HARDENER COMPOSITION WITH AN ISOCYANATE COMPOSITION

Yoshijiro Oyaizu, Yaizu; Wataro Koike, Shizuoka, and Chihiro Yazawa, Yokohama, all of Japan, assignors to Ihara Chemical Industry Co., Ltd., Tokyo, Japan

Filed Mar. 18, 1980, Ser. No. 131,555
Claims priority, application Japan, Apr. 11, 1979, 54-43000
Int. Cl.³ C08G *18/10*
U.S. Cl. 528—61 9 Claims

1. In a process for producing a polyurethane elastomer by mixing (a) a hardener composition containing a polyamine, a long chain polyol having an average molecular weight of 300 to 4,000 and a catalyst with (b) an isocyanate composition, an improvement characterized in that said isocyanate composition comprises a prepolymer having terminal isocyanate group and an average molecular weight of 500 to 5,000 and an organic diisocyanate monomer with or without a triisocyanate monomer and a ratio of isocyanate groups of said prepolymer to amino groups of said polyamine is in a range of 0.6:1 to 1.5:1 and a ratio of a total of isocyanate groups in said isocyanate composition to a sum of amino groups of said polyamine and hydroxyl group of said long chain polyol is in a range of 0.8:1 to 1.4:1.

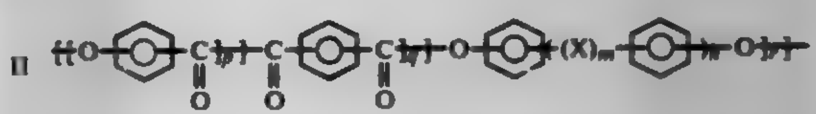
4,327,205

BULK POLYCONDENSATION PROCESS FOR PRODUCING AROMATIC POLYESTERS

Yasuyuki Kato, Niihama; Haruo Suzuki, Ibaraki; Masatsune Kondo, Niihama; Hiroaki Sugimoto, Nara; Junichi Kimura, and Zyunso Saito, both of Niihama, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Jan. 14, 1981, Ser. No. 224,881
Claims priority, application Japan, Jan. 24, 1980, 55-7543
Int. Cl.³ C08G *63/22*
U.S. Cl. 528—128 2 Claims

1. A process for producing by bulk polycondensation an aromatic polyester of the formula,



wherein X is a hydrocarbon radical having 1 to 20 carbon atoms, —O—, —SO_2—, —S—, or —CO—, m is 0 or 1 and n is 0 or 1; when p=0, q=r=an integer of 3 to 600; when q=r=0, p=an integer of 3 to 600; when p≠0, q≠0 and r≠0, p+q+r=3 to 600; p, q, r are integers and q=r, which comprises using a horizontal jacketed reactor provided with one or two agitator shafts bearing impellers fixed thereto and carrying out the bulk polycondensation in said reactor while circulating a heat-transfer medium through the jacket, agitator shaft(s), and, if necessary, impellers to heat or cool the reaction system to obtain a particulate material having a weight-average particle size of 0.5 to 20 mm.

4,327,206

PROCESS FOR PREPARING POLY-1,4-CYCLOHEXANEDICARBOXYLATE POLYESTERS HAVING HIGH TRANS ISOMER CONTENT

Winston J. Jackson, Jr., Kingsport, Tenn., and William R. Darnell, Weber City, Va., assignors to Eastman Kodak Co., Rochester, N.Y.

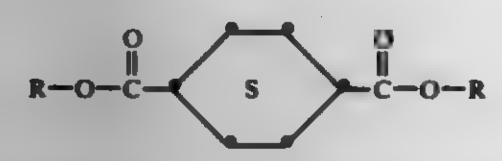
Filed Mar. 27, 1981, Ser. No. 248,586
Int. Cl.³ C08G *63/04, 63/22*
U.S. Cl. 528—179 9 Claims

1. Process for preparing poly-1,4-cyclohexanedicarboxylate

polyesters having a trans isomer content of at least 80 percent, the process comprising

a. preparing a reaction mixture of

1. at least 50 mole percent of an alkyl or aryl diester of trans-1,4-cyclohexanedicarboxylic acid having the general formula



wherein the R's are the same or different and are selected from alkyl groups containing 1 to 4 carbon atoms or phenyl,

2. up to 50 mole percent of a diester of an aromatic dicarboxylic acid having the general formula

$$R-O-\overset{\overset{O}{\|}}{C}-R'-\overset{\overset{O}{\|}}{C}-O-R$$

wherein the R's are the same or different and are selected from alkyl groups containing 1 to 4 carbon atoms or phenyl and R' is an aromatic ring structure containing 8 to 20 carbon atoms,

3. at least one diacyl ester of an aromatic diol having the general formula

$$R'''-\overset{\overset{O}{\|}}{C}-O-Ar-O-\overset{\overset{O}{\|}}{C}-R''$$

wherein the R'''s may be the same or different and are selected from alkyl groups containing 1 to 4 carbon atoms or phenyl and Ar is the aromatic residue remaining after removal of the hydroxyl groups from an aromatic diol and may be substituted with an alkyl group containing 1 to 4 carbon atoms or phenyl and may contain two or more aromatic diol residues, and

4. a catalytic amount of a suitable ester exchange and polymerization catalyst

b. initially heating said reaction mixture sufficient for ester exchange to occur and to eliminate ester condensation byproduct, the byproduct having the following general formula

$$R''-\overset{\overset{O}{\|}}{C}-O-R$$

wherein R'' is an alkyl group containing 1 to 4 carbon atoms or phenyl and R is an alkyl group containing 1 to 4 carbon atoms or phenyl, and

c. reducing pressure to further remove said ester condensation byproduct and to increase the molecular weight of the polyester product.

4,327,207

PRODUCTION OF THERMALLY STABILIZED POLYESTER WITH ALKYLENE CARBONATES AND SODIUM OR POTASSIUM IODIDE

Stanley D. Lazarus, Petersburg, Va., assignor to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Jun. 2, 1980, Ser. No. 155,374
Int. Cl.³ C08G *63/30*
U.S. Cl. 525—439 **9 Claims**

1. A high molecular weight linear polyester stabilized against thermal degradation comprising a polyester reacted with a thermally stabilizing amount of an alkylene carbonate having a 5 or 6 membered ring in the presence of a catalytic amount of a compound selected from the group consisting of sodium iodide, potassium iodide or mixtures thereof.

4. In a process for the preparation of a high molecular weight linear condensation polyester wherein terephthalic acid is esterified with a glycol containing 2 to 10 carbon atoms per molecule under esterification conditions and the resulting esterification product is polycondensed, the improvement which comprises providing a reduction in the free carboxyl content of the polyester to a carboxyl concentration of less than 10 gram equivalents per 10^6 grams of polyester by reacting the polyester in molten form with a thermally stabilizing amount of a stabilizer comprising an alkylene carbonate having a 5 to 6 membered ring in the presence of a catalytic amount of a compound selected from the group consisting of sodium iodide, potassium iodide or mixtures thereof.

4,327,208

CONTINUOUS PROCESS FOR THE HYDROLYTIC PRODUCTION OF POLYCAPROLACTAM HAVING A LOW-MONOMER AND LOW-DIMER CONTENT

Günter Lehr, Krefeld; Uwe Hucks, Alpen; Hugo Vernaleken, Krefeld; Werner Nielinger, Krefeld, and Erhard Tresper, Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 38,510, May 14, 1979, abandoned. This application Jul. 9, 1980, Ser. No. 167,055
Claims priority, application Fed. Rep. of Germany, May 18, 1978, 2821686
Int. Cl.³ C08G *69/16*
U.S. Cl. 528—323 **7 Claims**

1. A continuous process for producing a polymer of ε-caprolactam having low monomer and low dimer content wherein at least 60% of the polymer consists of units from caprolactam which comprises polymerizing the monomers hydrolytically, subjecting the polymer melt thus obtained to vacuum to remove unreacted caprolactam monomer and caprolactam dimer as a gaseous phase contained therein, condensing directly the removed monomer and dimer from the gaseous phase on the melt of caprolactam to form a molten caprolactam composition which is directly subjected to said hydrolytic polymerization.

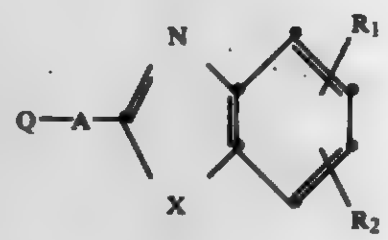
4,327,209

PROCESS FOR THE PRODUCTION OF DIBENZAZOLYL COMPOUNDS

Werner Schreiber, Basel, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Nov. 28, 1980, Ser. No. 211,481
Claims priority, application Switzerland, Dec. 6, 1979, 10829/79
Int. Cl.³ C07D *413/06, 405/04, 409/14*
U.S. Cl. 542—466 **11 Claims**

1. A process for the production of benzazolyl compounds of the formula



(I)

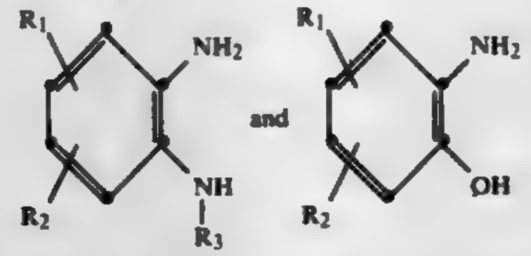
by condensation, in the presence of a solvent and a catalyst, of organic carboxylic acids of the formulae

HOOC—*B*

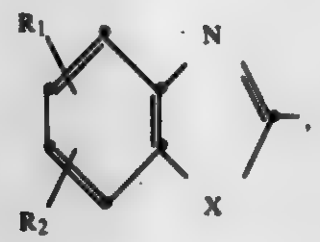
and

HOOC—B_1

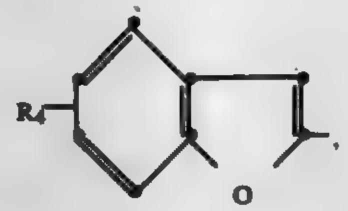
wherein B is the 5-carboxy-fur-(2)-yl radical, the HOOC—CHOH—CH_2— or HOOC—CHOH—CHOH— radical or a benzoxazol-(2)-yl radical, and B_1 is the 5-carboxy-then-(2)-yl radical, HOOC—CHOH—CH_2— or HOOC—CHOH—CHOH— radical, with aminobenzenes of the formulae



wherein R_1 is hydrogen, halogen, lower alkyl, lower alkoxy, hydroxy-lower alkyl, —COCN or —COO— lower alkyl, R_2 is hydrogen, halogen, lower alkyl, lower alkoxy, hydroxy-lower alkyl, —COCN or —COO— lower alkyl, X is oxygen or a R_3N-group, wherein R_3 is hydrogen, lower alkyl, hydroxy-lower alkyl, phenyl or benzyl, A is 2,5-furylene, 2,5-thenylene, a bridge member containing at least one double bond between 2 carbon atoms, or is the direct bond, and Q is a radical of the formula



wherein X, R_1 and R_2 are as defined above, and, if A is the direct bond, Q is also a radical of the formula



wherein R_4 is hydrogen, lower alkyl, lower alkoxy or halogen, which process comprises carrying out said condensation in a eutectic mixture of 73.5% by volume of diphenyl ether and 26.5% by volume of diphenyl as solvent.

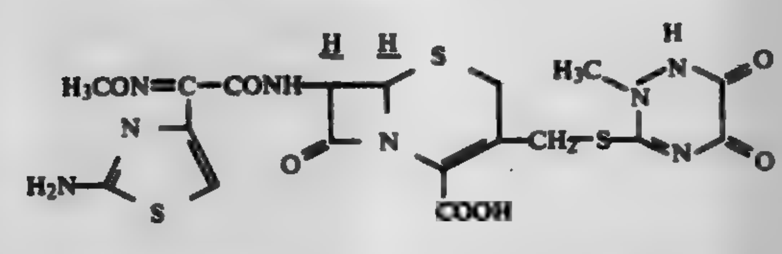
4,327,210

THIAZOLYLACELAMIDE CEPHALOSPORINS

Marc Montavon, and Roland Reiner, both of Basel, Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Nov. 24, 1978, Ser. No. 963,255
Claims priority, application Switzerland, May 30, 1978, [redacted]
Int. Cl.³ C07D *501/36*
U.S. Cl. 544—027 **8 Claims**

1. A compound of the formula



its easily hydrolysable esters, easily hydrolysable ethers, its pharmaceutically acceptable salts or hydrates thereof.

4,327,211

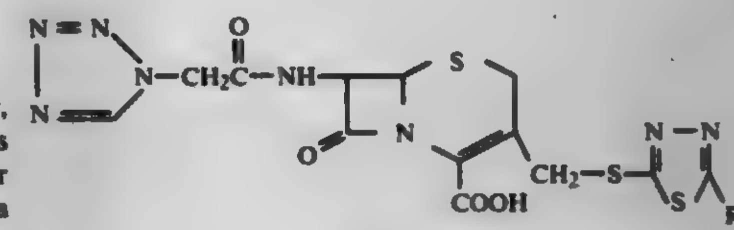
METHOD FOR PREPARATION OF CEPHALOSPORIN COMPOUNDS

Masahiro Murakami; Masatera Kobayashi; Takanori Sone, all of Nobeoka, and Chisei Shibuya, Fuji, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Japan

Filed Nov. 26, 1980, Ser. No. 210,746
Int. Cl.³ C07D *501/56*
U.S. Cl. 544—27 **4 Claims**

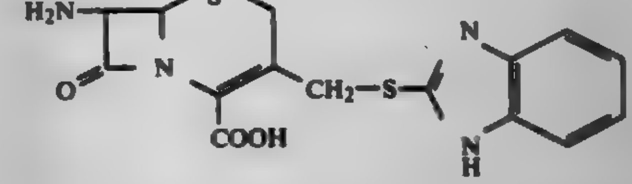
1. A method for preparing a cephalosporin compound represented by the formula (III)

(III)



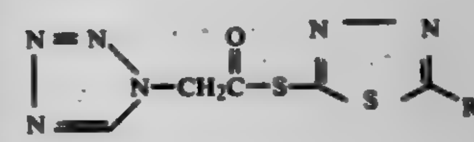
wherein R represents hydrogen or methyl group, or a pharmaceutically acceptable salt thereof, which comprises reacting 7-amino-3-(benzimidazol-2-yl)thiomethyl-3-cephem-4-carboxylic acid represented by the formula (I)

(I)



or a salt thereof with a compound represented by the formula (II)

(II)



wherein R represents hydrogen or methyl group, in the presence of an acidic catalyst.

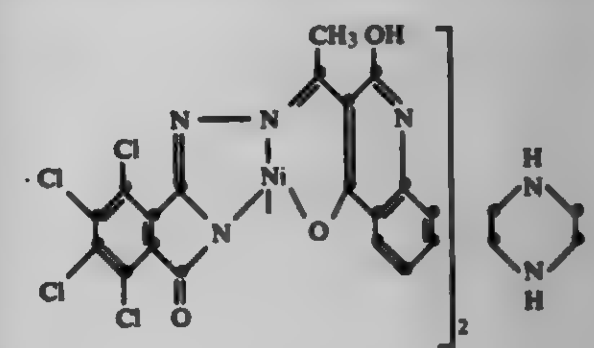
4,327,212

ISOINDOLINE-AZINE NICKEL COMPLEX WITH PIPERAZINE

Paul Lienhard; Frenkendorf, and Francois L'Eplattenier, Therwil, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

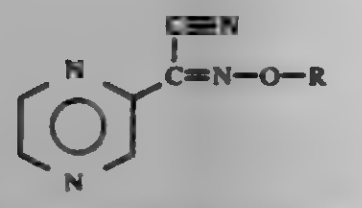
Filed May 19, 1980, Ser. No. 151,032
Claims priority, application Switzerland, May 29, 1979, [redacted]
Int. Cl.³ C07D *403/12, 403/14*
U.S. Cl. 544—225 **1 Claim**

1. The isoindoline-azine nickel complex of the formula



4,327,213
ALPHA-HYDROCARBONOXYIMINO-PYRAZINEACETONITRILES
Jacob A. van Zorge, Ameide, Netherlands, assignor to ACF Chemiefarma VA, Netherlands
Filed Dec. 29, 1977, Ser. No. 865,484
Claims priority, application United Kingdom, Jan. 7, 1977, 0024/77
Int. Cl.³ C07D *241/12*
U.S. Cl. 544—336 8 Claims

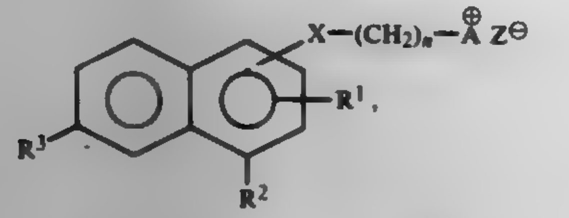
1. A pyrazinyl compound of the formula:



or a pharmaceutically acceptable salt thereof, wherein R is alkyl of 1 to 6 carbon atoms, cyanomethyl, alkenyl of 3 to 6 carbon atoms, alkynyl of 3 or 4 carbon atoms, cycloalkyl of 5 or 6 carbon atoms, or phenylalkyl of 1 to 3 carbon atoms in the alkyl group, said phenyl alkyl being unsubstituted or substituted in the phenyl ring with methoxy, chloro, nitro or cyano.

4,327,214
SUBSTITUTED ALKYLAMMONIUM SALTS, THE MANUFACTURE THEREOF, THE USE THEREOF FOR REGULATING PLANT GROWTH, AND AGENTS THEREFOR
Costin Rentzea, Heidelberg; Hubert Sauter, Mannheim, and Johann Jüng, Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany
Filed Sep. 12, 1980, Ser. No. 186,602
Claims priority, application Fed. Rep. of Germany, Oct. 8, 1979, 2940765
Int. Cl.³ C07D *487/04, 453/02*
U.S. Cl. 546—133 4 Claims

1. A substituted alkylammonium salt of the formula



where R^1, R^2 and R^3 are identical or different and each denotes hydrogen, C_{1-4}-alkyl, fluorine, chlorine or bromine, X is oxygen or sulfur, n denotes one of the integers 2, 3 and 4, A denotes quinuclidine or pyrrolizidine, and Z is the anion of any non-phytotoxic acid HZ.

4,327,215
PREPARATION OF ERYTHRO-α-PIPERID-2-yl-2,8-BIS-(TRIFLUOROMETHYL)-QUINOLIN-4-yl-METHANOL
Eckhard Hickmann; Heinz-Guenter Oeser, both of Ludwigshafen, and Leander Moebius, Erpolzheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany
Filed Oct. 3, 1980, Ser. No. 193,473
Claims priority, application Fed. Rep. of Germany, Oct. 5, 1979, 2940443
Int. Cl.³ C07D *401/06*
U.S. Cl. 546—176 7 Claims

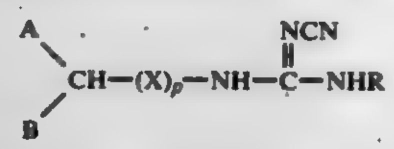
1. A process for the preparation of erythro-α-piperid-2-yl-2,8-bis-(trifluoromethyl)-quinolin-4-yl-methanol which comprises the steps of reacting 2,8-bis-(trifluoromethyl)-quinoline-4-carboxylic acid or a salt thereof with a pyrid-2-yl-magnesium halide in a cyclic saturated ether or in an aliphatic dialkyl ether or an alkoxyalkyl ether in a molar ratio of from 1:2 to 1:8 at from 0° to 80° C. to give pyrid-2-yl 2,8-bis-(trifluoromethyl)-quinolin-4-yl ketone and the latter is hydrogenated in a conventional manner to give erythro-α-piperid-2-yl-2,8-bis-(trifluoromethyl)-quinolin-4-yl-methanol.

4,327,216
PROCESS FOR PRODUCING 2,3,5,6-TETRACHLOROPYRIDINE AND 3,5,6-TRICHLOROPYRIDIN-2-OL
Pierre Martin, Rheinfelden, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.
Filed Nov. 24, 1980, Ser. No. 209,783
Claims priority, application Switzerland, Nov. 30, 1979, 10660/79
Int. Cl.³ C07D *213/61*
U.S. Cl. 546—250 8 Claims

1. A process for the production of a mixture of 2,3,5,6-tetrachloropyridine and 3,5,6-trichloropyridin-2-ol which comprising reacting trichloroacetic acid chloride with acrylonitrile, in an organic solvent inert to trichloroacetic acid chloride and acrylonitrile, in the presence of a catalyst selected from the group consisting of metals and metal compounds of the main group VIII or the subgroups Ib, IIb, VIa or VIIa of the periodic system, at a temperature of between about 70° and 220° C. in a closed system and at a pressure corresponding to the respective reaction temperature.

4,327,217
CYANOGUANIDINE DERIVATIVES
Satoru Tanaka, Higashi-Kurume; Katsutoshi Shimada, Tokyo; Kazunori Hashimoto, Matsudo; Kiichi Ema, and Koichiro Ueda, both of Tokyo, all of Japan, assignors to Eisai Co., Ltd., Tokyo, Japan
Division of Ser. No. 120,876, Feb. 12, 1980, Pat. No. 4,287,346.
This application Aug. 13, 1980, Ser. No. 178,017
Claims priority, application Japan, Feb. 16, 1979, 54-15989; Feb. 16, 1979, 54-15990
Int. Cl.³ C07D *213/89, 401/12, 401/14, 295/12*
U.S. Cl. 546—281 40 Claims

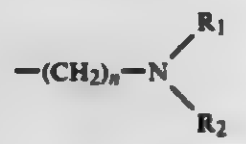
1. A cyanoguanidine derivative of the formula:



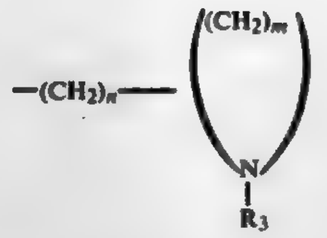
wherein A represents (1) a substituted or unsubstituted phenyl wherein the substituents are selected from the group consisting of lower alkyl, lower alkenyl, halogen, lower alkoxy, lower alkylthio, lower alkylsulfonyl and halogen substituted lower alkyl, (2) furyl, (3) thienyl or (4) cycloalky group;

B represents pyridyl or pyridine-N-oxide group;

R represents a group of the formula:



wherein R_1 and R_2 are the same or different, and each represents a lower alkyl group, or together with the nitrogen atom to which they are bonded form a member selected from the group consisting of pyrrolidine, piperidine, piperazine or morpholine, and n is an integer of 1–3, or R represents a group of the formula



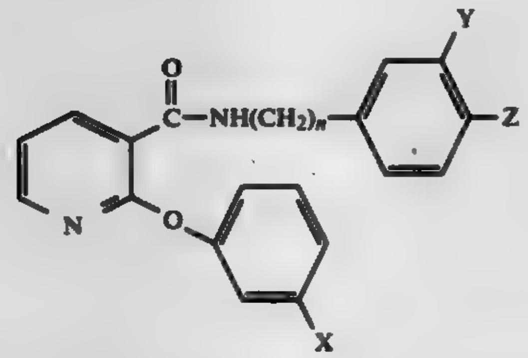
wherein R_3 is a lower alkyl group, n is an integer of 1–3, and m is an integer of 4–5;

X represents an alkylene or an alkylene containing the terminal sulfur atom; and

p is 0 or 1, with the proviso that (i) when A is unsubstituted phenyl and B is pyridyl, p is 1 and (ii) when A is unsubstituted phenyl and B is pyridine-N-oxide, p is 0, or a pharamceutically acceptable acid addition salt thereof.

4,327,218
N-ARYL, 2-PHENOXY NICOTINAMIDE COMPOUNDS AND THE HERBICIDAL USE THEREOF
Arnold D. Gutman, Berkeley, Calif., assignor to Stauffer Chemical Company, Westport, Conn.
Division of Ser. No. 80,971, Oct. 1, 1979, Pat. No. 4,270,946.
This application Nov. 28, 1980, Ser. No. 210,990
Int. Cl.³ C07D *213/64*
U.S. Cl. 546—291 52 Claims

1. A compound having the formula



in which n is 0 or 1; X is halogen, C_1–C_3 alkyl, trifluoromethyl or carboethoxy; Y and Z are independently hydrogen, lower alkyl, halo-lower alkyl, thio(halo-lower alkyl), nitro, cyano or halogen; provided that:

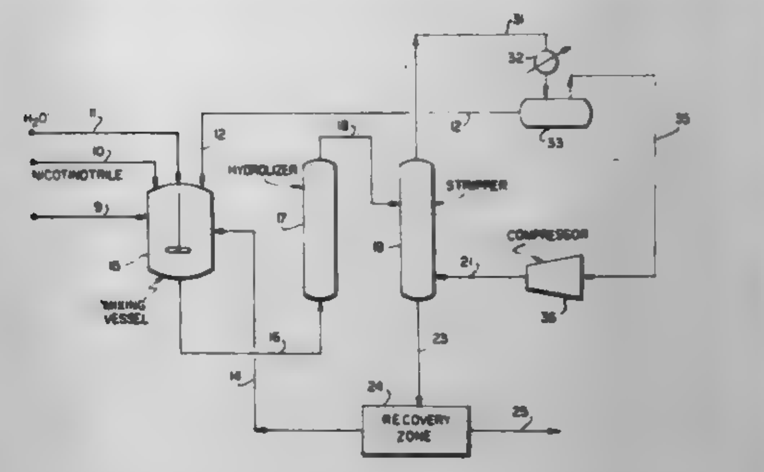
if X is carboethoxy, Z is halogen and Y is hydrogen or halogen; and

if Y and Z are both halogen, X is halogen, trifluoromethyl or carboethoxy.

4,327,219
NICOTINAMIDE PRODUCTION
Abraham P. Gelbein, Plainfield, N.J., assignor to The Lummus Company, Bloomfield, N.J.
Filed Apr. 21, 1980, Ser. No. 141,943
Int. Cl.³ C07D *213/56*
U.S. Cl. 546—317 10 Claims

1. In a process for hydrolyzing nicotinonitrile to nicotinamide with an aqueous ammonia solution to produce an aqueous effluent containing nicotinamide, unconverted nicotinonitrile, ammonia and ammonium nicotinate, the improvement comprising:

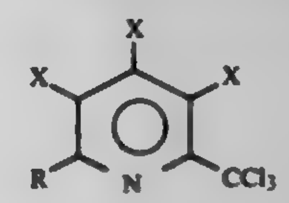
stripping the effluent with gaseous ammonia to produce a molten nicotinamide bottoms, essentially free of nicotinonitrile, and containing less than 10 wt.% water, and an overhead containing water vapor, ammonia and nicotinonitrile; condensing from the overhead an aqueous solution of ammonia and unreacted nicotinonitrile; and



recycling the said aqueous solution of ammonia and unreacted nicotinonitrile to the hydrolyzing.

4,327,220
PROCESS FOR REDUCING PICOLINE DERIVATIVES USING COPPER CATALYST
Jon A. Orvik, Danville, Calif., assignor to The Dow Chemical Company, Midland, Mich.
Filed Dec. 29, 1980, Ser. No. 220,392
Int. Cl.³ C07D *213/26, 213/64*
U.S. Cl. 546—345 5 Claims

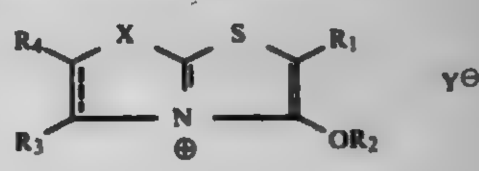
1. A process for reducing a trichloromethyl group in the 2-position of a pyridine ring to a dichloromethyl group which comprises treating a compound corresponding to the formula



wherein each X independently represents hydrogen or chloro and R represents hydrogen, chloro, phenoxy or phenoxy substituted with one or more lower alkyl, lower alkoxy or halo groups with a stoichiometric amount of water and a catalyst which is a monovalent or divalent copper compound or metallic copper in an amount which is sufficient to catalyze said reduction and a reducing agent capable of said reduction in the presence of said copper catalyst, said treating being carried out at a temperature of from about 40° C. to about 150° C. and in the presence of a solvent for a time sufficient to convert the trichloromethyl group to a dichloromethyl group.

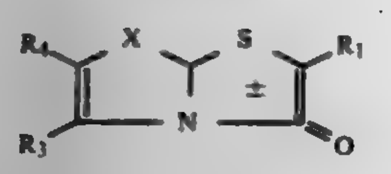
4,327,221
2-SUBSTITUTED-3-HYDROXYTHIAZOLO(2,3-b)-THIAZOLIUM SALTS AND MESOIONIC DIDEHYDRO DERIVATIVES THEREOF
Peter H. L. Wei, Springfield, Pa., assignor to American Home Products Corporation, New York, N.Y.
Filed Oct. 15, 1980, Ser. No. 197,357
Int. Cl.³ C07D *277/60*
U.S. Cl. 548—154 11 Claims

1. A compound having the formula:



or

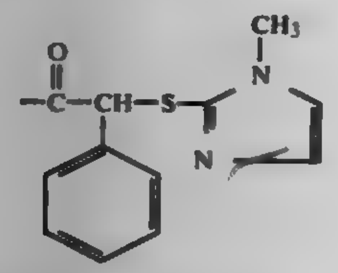
-continued



wherein

R_1 is phenyl or phenyl substituted with chloro, fluoro, bromo or lower alkyl;

R_2 is hydrogen, lower alkanoyl or the group



R_3 is hydrogen, alkoxycarbonylalkyl of 3 to 10 carbon atoms, phenyl or phenyl substituted with fluoro, chloro, bromo or lower alkyl;

R_4 is hydrogen or alkoxycarbonylalkyl of 3-10 carbon atoms;

X is CH_2, S or NR_5, wherein R_5 is hydrogen or lower alkyl; and

Y is a halide and

where the dotted line represents an optional double bond in the 5,6-position.

4,327,222

3,4-DIARYLISOXAZOL-5-ACETIC ACIDS AND PROCESS FOR MAKING SAME

Ronald G. Micetich, Sherwood Park; Chia-Cheng Shaw, Edmonton, and Ram B. Rastogi, Beaconsfield, all of Canada, assignors to CDC Life Sciences Inc., Toronto, Canada

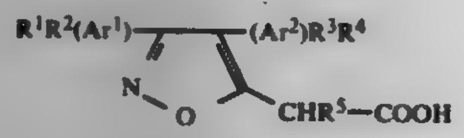
Filed Sep. 23, 1980, Ser. No. 190,060

Claims priority, application Canada, Oct. 5, 1979, 337097

Int. Cl.³ C07D *261/08*; A61K *31/42*

U.S. Cl. 548—247 24 Claims

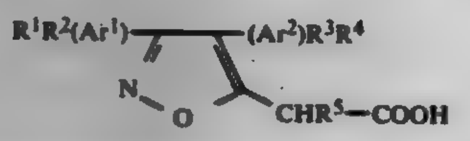
1. A compound of the formula 1



1

and pharmaceutically acceptable salts thereof in which Ar^1 and Ar^2 are the same or different and are selected from phenyl and naphthyl, R^1, R^2, R^3 and R^4 are the same or different substituents attached to Ar^1 and Ar^2, respectively, and are selected from hydrogen, halogen, trifluoromethyl, lower alkyl, and lower alkoxy, and R^5 is selected from hydrogen, lower alkyl, and lower alkoxy, with the term "lower" denoting the presence of 1-4 carbon atoms in a straight or branched chain.

15. A process for preparing a compound of the formula 1



1

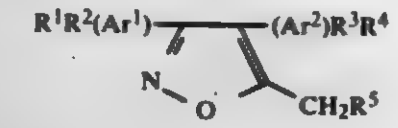
and pharmaceutically acceptable salts theory in which Ar^1 and Ar^2 are the same or different and are selected from phenyl and naphthyl, R^1, R^2, R^3 and R^4 are the same of different substituents attached to Ar^1 and Ar^2, respectively, and are selected from hydrogen, halogen, trifluoromethyl, lower alkyl, and lower alkoxy, with the term "lower" denoting the presence of 1-4 carbon atoms in a straight or branched chain, which comprises treating an aryl-(aryl-substituted methyl)-ketone of the formula 2

$$R^1R^2(Ar^1)—CO—CH_2—(Ar^2)R^3R^4 \qquad 2$$

in which R^1, R^2, R^3, R^4, Ar^1, and Ar^2 are as defined above with hydroxylamine in the presence of a strong base to obtain the corresponding oxime of formula 3

$$R^1R^2(Ar^1)—\underset{\underset{NOH}{\|}}{C}—CH_2—(Ar^2)R^3R^4 \qquad 3$$

in which R^1, R^2, R^3, R^4, Ar^1, and Ar^2 are as defined above, treating said last-named oxime with two molar equivalents of n-butyllithium followed by treatment with a lower alkyl ester of an acid of the formula $R^5COOAlk$ in which R^5 is selected from hydrogen and lower alkoxy and Alk is lower alkyl, to obtain the corresponding isoxazole of the formula 4



4

in which R^1, R^2, R^3, R^4, Ar^1, and Ar^2 are as defined above and R^5 is selected from hydrogen and lower alkoxy, treating said last-named compound with 1.0-1.1 molar equivalents of n-butyllithium followed by treatment with solid carbon dioxide, and isolating the corresponding compound of formula 1 in which R^1, R^2, R^3, R^4, Ar^1, and Ar^2 are as defined above and R^5 is selected from hydrogen and lower alkoxy; and, when it is desired to obtain a compound of formula 1 in which R^5 is lower alkyl, treating a compound of formula 1 in which R^1, R^2, R^3, R^4, Ar^1, and Ar^2 are as defined above and R^5 is hydrogen with two molar equivalents of n-butyllithium followed by treatment with a lower alkyl halide in which the halogen has an atomic weight greater than 19, and isolating the corresponding compound of formula 1 in which R^1, R^2, R^3, R^4, Ar^1, and Ar^2 are as defined above and R^5 is lower alkyl.

4,327,223

PROCESS FOR PRODUCING 1,3-DITHIOL-2-YLIDENE MALONATES

Hisanori Matsui, Nishinomiya; Hiroshi Tanaka; Kunihiro Yabutani, both of Neyagawa, and Hitoshi Kurono, Toyonaka, all of Japan, assignors to Nihon Nohyaku Co., Ltd., Tokyo, Japan

Filed Apr. 7, 1981, Ser. No. 252,004

Int. Cl.³ C07D *339/06*

U.S. Cl. 549—39 6 Claims

1. A process for producing 1,3-dithiol-2-ylidene malonic acid dialkyl esters which is characterized by reacting a dialkyloxycarbonylketene dimercaptide with a trihalogenoethane in the presence of a base.

4,327,224

α[(ALKYLAMINO)ALKYL]-4-HYDROXY-3-(ALKYLTHIO)BENZENEMETHANOLS, DERIVATIVES THEREOF AND INTERMEDIATES THEREFOR

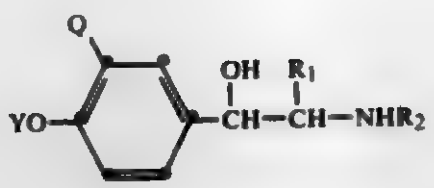
Sydney Archer, Bethlehem, N.Y., assignor to Sterling Drug Inc., New York, N.Y.

Filed Jun. 25, 1976, Ser. No. 700,036

Int. Cl.³ C07C *69/14*

U.S. Cl. 560—142 14 Claims

1. A compound having in the free base form the formula:



wherein:

R_1 is hydrogen, methyl or ethyl;

R_2 is lower alkyl;

Q is lower alkylthio or lower alkylsulfinyl; and

Y is hydrogen, lower alkanoyl, benzoyl or benzoyl substituted with from 1 to 2 methyl groups;

or an acid-addition salt thereof.

4,327,225

PROCESS FOR PRODUCING 2-PENTENOIC ESTER

Nobuo Isogai; Motoyuki Hosokawa; Takashi Okawa, and Natsuko Wakui, all of Niigata, Japan, assignors to Mitsubishi Gas Chemical Co., Inc., Tokyo, Japan

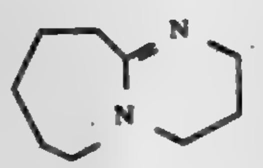
Filed Oct. 9, 1980, Ser. No. 195,524

Claims priority, application Japan, Oct. 12, 1979, 54/131377

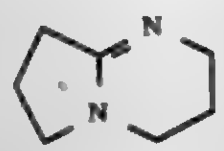
Int. Cl.³ C07C *67/333*

U.S. Cl. 560—205 5 Claims

1. A process for producing a 2-pentenoic ester which comprises isomerizing the corresponding 3-pentenoic ester in the presence of dicyclized amidine selected from the group consisting of 1,8-diazabicyclo(5,4,0)undecene-7, represented by the formula



and 1,5-diazabicyclo(4,3,0)nonene-5 represented by the formula



and mixtures thereof.

4,327,226

PROCESS AND APPARATUS FOR PRODUCING AROMATIC DICARBOXYLIC ACIDS

Motoo Shigeyasu, and Takehiko Kitamura, both of Matsuyama, Japan, assignors to Matsuyama Petrochemicals Inc., Osaka, Japan

Division of Ser. No. 958,918, Nov. 8, 1978, abandoned, which is a continuation of Ser. No. 771,493, Feb. 24, 1977, Pat. No. 4,159,493. This application Jul. 23, 1980, Ser. No. 171,510

Claims priority, application Japan, Feb. 24, 1976, 51/18422; Feb. 24, 1976, 51/18423

Int. Cl.³ C07C *51/16*

U.S. Cl. 562—416 31 Claims

1. In a process for producing an aromatic dicarboxylic acid by liquid-phase oxidation of a benzene derivative with molecular oxygen in a lower aliphatic carboxylic acid as a solvent in the presence of an oxidation catalyst, the improvement comprising feeding a starting material liquid comprising said benzene derivative or a solution of said benzene derivative in said solvent in a uniformly dispersed state into the liquid-phase reaction system by passing said starting material liquid through a porous material causing the pressure of the starting material liquid just after passing through said porous material to drop more than about 1 kg/m² in relation to the pressure of the starting material liquid just before passing through said porous material.

4,327,227

PROCESS FOR PRODUCING PURIFIED BROMINATED AROMATIC COMPOUNDS

James T. Ayres; David L. McAllister, both of El Dorado, Ark., and John L. Sands, West Lafayette, Ind., assignors to Great Lakes Chemical Corporation, West Lafayette, Ind.

Continuation-in-part of Ser. No. 122,860, Feb. 20, 1980, abandoned, which is a continuation of Ser. No. 926,934, Jul. 21, 1978, abandoned, which is a continuation of Ser. No. 784,235, Apr. 4, 1977, abandoned. This application Jul. 8, 1980, Ser. No. 163,957

Int. Cl.³ C07C *41/22*

U.S. Cl. 568—639 16 Claims

1. A process for purifying crude solid decabromodiphenyl ether containing occluded bromine and hydrogen bromide as impurities comprising the steps of:

grinding the crude decabromodiphenyl ether to provide particles predominantly less than about 20 microns in diameter and substantially entirely less than about 100 microns in diameter; and

subsequently heating the crude ground decabromodiphenyl ether at a temperature of about 150°-300° C. for a time sufficient to effect substantial removal of the impurities therefrom.

4,327,228

3-NITRO-1-PHENYL-1-(M-CHLOROPHENYL)-PROPAN-2-OL.

Paul Smith, Hoddesdon, England, assignor to Beecham Group Limited, England

Filed Jun. 3, 1980, Ser. No. 156,189

Claims priority, application United Kingdom, Jun. 14, 1979, 20746/79

Int. Cl.³ C07C *4/00*

U.S. Cl. 568—705 1 Claim

1. 3-Nitro-1-phenyl-1-(m-chlorophenyl)propan-2-ol.

4,327,229

RECOVERY OF BISPHENOL-A VALUES

Ashok K. Mendiratta, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jan. 19, 1981, Ser. No. 226,271

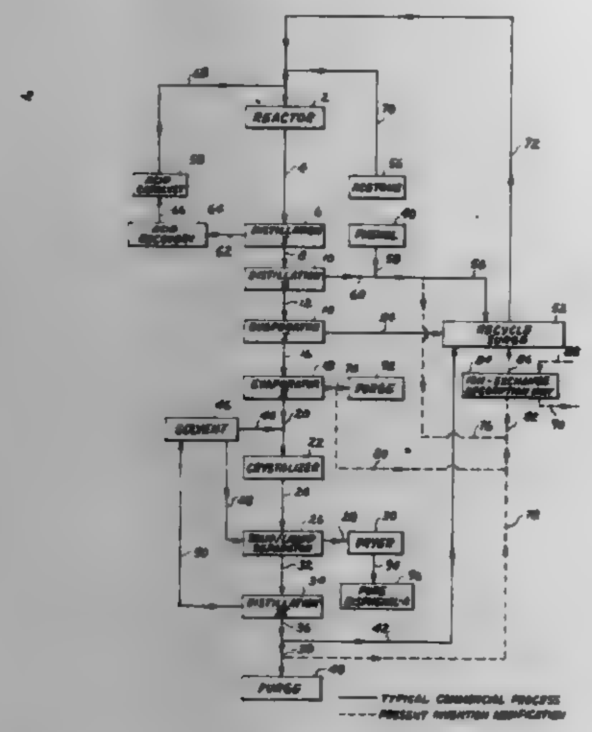
Int. Cl.³ C07C *39/16*; *37/82*

U.S. Cl. 568—728 9 Claims

1. In the process of making bisphenol-A comprising reacting acetone and phenol in the presence of mineral acid catalyst to produce a mixture of bisphenol-A, and phenol-acetone condensation by-products having color bodies therein, separating the mixture of bisphenol-A and condensation by-products into crude bisphenol-A, lower boiling condensation reaction by-products and higher-boiling condensation by-products having most of the color bodies therein by distillation/evaporation; crystallizing the crude bisphenol-A in the presence of an organic solvent to produce high purity bisphenol-A and a solvent liquor containing phenol-acetone condensation by-products having color bodies therein; separating the high purity bisphenol-A from the solvent liquor; distilling the solvent liquor to produce organic solvent for recycling and residual liquor containing phenol-acetone condensation reaction by-products having color bodies therein including isomeric impurities, purging from the system the higher-boiling condensation reaction by-products and part of the residual liquor, to maintain bisphenol-A product, color quality and to avoid build-up of by-products in the system; and recycling the balance of residual liquor; the improvement comprising:

(a) adding phenol to part (e.g., up to 50%) of the higher-boiling condensation by-products having color bodies therein obtained from the separation of the mixture of the bis-

phenol-A and condensation by-products by distillation-/evaporation into crude bisphenol-A, lower boiling condensation reaction by-products and a tarry residue containing higher-boiling condensation by-products having color bodies therein, and passing the resulting liquor through cation exchange resin to remove color bodies and thereby produce a phenol liquor suitable for recycling; and



(b) adding phenol to part of the purged residual liquor, (e.g., up to 75%) containing phenol-acetone condensation by-products having color bodies therein obtained from the purge stream of higher-boiling condensation reaction by-products and residual liquor after distilling the solvent liquor to produce organic solvent for recycling; and passing the resulting liquor through cation exchange resin to remove color bodies and thereby produce a phenol liquor suitable for recycling.

4,327,230

METHOD FOR THE CONTINUOUS PREPARATION OF ALCOHOLATES

Otto Ackermann; Hans Leuck; Günther Meyer, all of Troisdorf-Sieglar, and Gerhard Schmeling, Brühl, all of Fed. Rep. of Germany, assignors to Dynamit Nobel AG, Troisdorf, Fed. Rep. of Germany

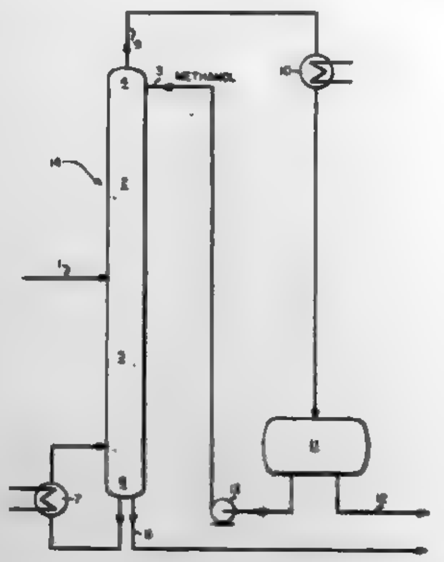
Continuation of Ser. No. 913,416, Jun. 7, 1978, abandoned. This application Mar. 10, 1980, Ser. No. 128,421

Claims priority, application Fed. Rep. of Germany, Jun. 11, 1977, 2726491

Int. Cl.³ C07C *29/70, 35/04, 35/06, 35/08*

U.S. Cl. 568—851 **17 Claims**

1. A process for the continuous production of an alkali metal alcoholate of a higher alcohol which comprises continuously introducing an excess of a higher alcohol selected from the group consisting of ethanol, n-propanol, n-butanol, 2-methylpropanol-(1), n-pentanol, 2-methylbutanol-(4), 2-methylbutanol-(1), 2,2-dimethylpropanol-(1), n-hexanol, 2-ethylhexanol-(1), isopropanol, butanol-(2), pentanol-(2), pentanol-(3), 2-methylbutanol-(3), 2-methylpropanol-(2), 2-methylbutanol-(2), cyclopropanol, cyclobutanol, cyclopentanol and cyclohexanol into a reaction vessel provided with different reaction zones, superposed with at least one rectification zone, continuously introducing an alkali metal alcoholate of a lower alcohol selected from the group consisting of methanol and ethanol into said reaction vessel and continuously and simultaneously distilling over and removing from said said reaction vessel a composition which is substantially pure lower alcohol and removing from said reaction vessel a solution of alkali metal alcoholate of higher alcohol in the higher alcohol and constantly adding lower alcohol to said rectification zone, the reflux rate of the lower alcohol amounting in the rectification zone from 6 to up to 200 mols per mol of alkali metal alcoholate of lower alcohol introduced into said reaction vessel provided that when the lower alcohol is ethanol, the higher alcohol is not ethanol.



4,327,231

PROCESS FOR THE PRODUCTION OF TERTIARY ALCOHOLS

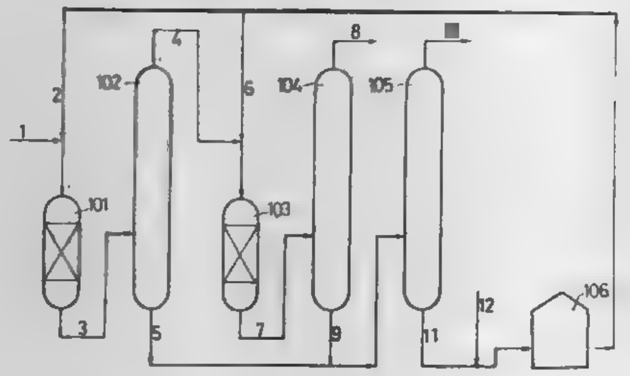
Yoshiharu Okumura, Kawagoe; Hiroshi Furukawa, and Katsumi Kaneko, both of Ooi, all of Japan, assignors to Toa Nenryo Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 3, 1980, Ser. No. 126,822

Claims priority, application Japan, Apr. 27, 1979, 54-51463

Int. Cl.³ C07C *29/04*

U.S. Cl. 568—899 **9 Claims**



1. In a process for the production of tertiary alcohols by causing an isoolefin or a hydrocarbon mixture containing an isoolefin to react with water in the presence of a solid catalyst, the improvement which comprises carrying out the reaction in the presence of 5 to 800 parts by weight per 100 parts by weight of water of a neo-type polyhydric alcohol or derivative thereof.

4,327,232

CYCLOPROPANE RING-CONTAINING COMPOUNDS AS INHIBITOR COMPONENTS IN METHYLCHLOROFORM

Alvetta Pryor, Houston, and Nobuyuki Ishibe, Lake Jackson, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Feb. 19, 1981, Ser. No. 235,883

Int. Cl.³ C07C *17/42*

U.S. Cl. 570—108 **6 Claims**

1. In a stabilizer formulation useful in stabilizing methylchloroform used in vapor degreasing wherein said formulation contains an alkylene oxide as a component of said stabilizer, the improvement which comprises employing a bicyclic, a tricyclic or a quadricyclic compound which contains a fused cyclopropane ring in place of the epoxide in said formulation.

4,327,233

METHOD FOR PRODUCING CARBOCYCLIC COMPOUNDS FROM CYCLIC SULFIDE

Richard I. Martinez, Gaithersburg, and John T. Herron, Darnestown, both of Md., assignors to The United States of America as represented by the Secretary of Commerce, Washington, D.C.

Filed Mar. 26, 1981, Ser. No. 247,684

Int. Cl.³ C07C *1/00*

U.S. Cl. 585—357 **18 Claims**

1. A method for producing a carbocyclic compound, which comprises contacting an organic compound containing a 4–8 membered cyclic sulfide moiety and having the formula

wherein A is a moiety containing a divalent 3–7 carbon alkylene bridge whose two termini are joined to a sulfur atom to form said cyclic sulfide moiety, with ozone, in the vapor phase, and recovering from the resultant reaction mixture a product containing a 3–7 membered carbocyclic ring formed by extrusion of said sulfur atom and joining of said two termini through a carbon-carbon single bond; wherein substantially no non-sulfur-containing compound having olefinic unsaturation instead of said 3–7 membered carbocyclic ring is produced in said reaction mixture.

15. A method of producing cyclobutane, which comprises contacting thiolane with ozone, in the vapor phase, at a temperature of from 0° to 125° C., and recovering the resultant cyclobutane; wherein said ozone is supplied as a mixture of from 1 to 10% ozone in oxygen, and the total initial pressure of thiolane and said ozone-oxygen mixture is from 0.1 to 100 Torr.; and wherein substantially no ethylene is produced.

4,327,234

HYDROGENATION PROCESS USING SUPPORTED NICKEL CATALYST

Gerhard P. Nowack, and Marvin M. Johnson, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 5, 1980, Ser. No. 213,424

Int. Cl.³ C08L *7/00*

U.S. Cl. 585—267 **12 Claims**

1. A method for the hydrogenation of an unsaturated hydrocarbon comprising contacting the unsaturated hydrocarbon with hydrogen under suitable hydrogenation conditions in the presence of a catalyst comprising nickel on a calcium phosphate support, wherein an effective amount of said nickel is free of chemical combination with phosphorus.

4,327,235

METHOD FOR PREFERENTIAL HYDROGENATION OF TERMINAL METHYLENE GROUP IN COMPOUND POSSESSING TERMINAL METHYLENE GROUP

Yukimichi Nakao, and Shoei Fujishige, both of Ibaragi, Japan, assignors to Agency of Industrial Science & Technology and Ministry of Inernational Trade & Industry, both of Tokyo, Japan

Filed Dec. 16, 1980, Ser. No. 217,189

Claims priority, application Japan, Jun. 30, 1980, 55/88666

Int. Cl.³ C07C *7/10*

U.S. Cl. 585—270 **4 Claims**

1. A method for preferential hydrogenation of a methylene group in an organic compound containing a group represented by the general formula:

$$CH_2{=}\overset{\displaystyle R}{\overset{|}{C}}-$$

wherein, R is one member selected from the group consisting of alkyl groups and aryl groups and C to which R and CH_2 are attached is a tertiary carbon atom, which method comprises exposing the organic compound to hydrogen in an alcohol solution containing a nickel boride colloid.

4,327,236

HYDROCARBON-CONVERSION CATALYST AND ITS METHOD OF PREPARATION

Marvin R. Klotz, Batavia, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Division of Ser. No. 54,958, Jul. 3, 1979, Pat. No. 4,268,420, which is a continuation-in-part of Ser. No. 897,360, Apr. 18, 1978, Pat. No. 4,269,813, which is a continuation-in-part of Ser. No. 733,267, Oct. 18, 1976, abandoned, and Ser. No. 819,974, Jul. 28, 1977, abandoned, and Ser. No. 836,403, Sep. 26, 1977, abandoned. This application Aug. 29, 1980, Ser. No. 182,796

Int. Cl.³ C10G *47/04, 35/06*

U.S. Cl. 585—481 **23 Claims**

1. A process for the conversion of a hydrocarbon stream, which process comprises contacting said stream at conversion conditions with a catalytic composition comprising a crystalline borosilicate and a porous refractory inorganic oxide, said borosilicate and said inorganic oxide having been intimately admixed with one another, said borosilicate comprising a molecular sieve material providing an X-ray diffraction pattern comprising the following X-ray diffraction lines and assigned strengths:

d(A)	Assigned Strength
11.2 ± 0.2	W-VS
10.0 ± 0.2	W-MS
5.97 ± 0.07	W-M
3.82 ± 0.05	VS
3.70 ± 0.05	MS
3.62 ± 0.05	M-MS
2.97 ± 0.02	W-M
1.99 ± 0.02	VW-M

and having the following composition in terms of mole ratios of oxides:

$$0.9\pm0.2M_{2/n}O:B_2O_3:YSiO_2:ZH_2O$$

wherein M is at least one cation having a valence of n, Y is between 4 and about 600, and Z is between 0 and about 160.

4,327,237

PROCESS FOR PREPARING VISCOSITY INDEX IMPROVERS FOR LUBRICATING OILS BY CRACKING SYNTHETIC RUBBERS IN THE LIQUID PHASE

Luigi Imparato; Giampaolo Gerbaz, both of Milan, and Enrico Betta, Pero, all of Italy, assignors to Agip Petroli, S.p.A., Rome, Italy

Filed Jun. 4, 1980, Ser. No. 156,428

Claims priority, application Italy, Sep. 10, 1979, 25567 A/79

Int. Cl.³ C07C *4/04*

U.S. Cl. 585—648 **4 Claims**

1. A process for the preparation of viscosity index improvers for lubricating oils, which process comprises thermally cracking, at a temperature of between 250° C. and 350° C., in an inert atmosphere, under vigorous stirring, a solution of a mono-olefin copolymer in mineral oil, said solution containing of from 0.01 to 0.5 weight percent, based on the weight of the solution, of free radical scavengers.

4,327,238

DEHYDROGENATION OF ORGANIC COMPOUNDS WITH A PROMOTED ZINC TITANATE CATALYST

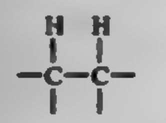
Alan D. Eastman, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Feb. 28, 1980, Ser. No. 125,436

Int. Cl.³ C07C *5/32, 5/333*

U.S. Cl. 585—661 14 Claims

1. A process for the catalytic dehydrogenation of at least one dehydrogenatable organic compound which has at least one



grouping comprising the step of contacting said at least one dehydrogenatable organic compound, under suitable dehydrogenation conditions in the substantial absence of free oxygen with a catalyst composition comprising zinc, titanium, and at least one promoter selected from the group consisting of chromium, antimony, bismuth, the lanthanides, the actinides, oxides thereof, and compounds convertible to the oxides thereof, wherein the concentration by weight of said at least one promoter in said catalyst composition is less than the total concentration by weight of said zinc and said titanium in said catalyst composition wherein said zinc and said titanium are present in said catalyst composition in the form of zinc titanate which is prepared by calcining a mixture of zinc oxide and titanium dioxide in the presence of free oxygen at a temperature in the range of about 650° C. to about 1050° C.

4,327,239

METHOD FOR PRODUCING HYDROCARBONS AND OXYGEN FROM CARBON DIOXIDE AND WATER

William H. Dorrance, Ann Arbor, Mich., assignor to Organization Control Services, Inc., Ann Arbor, Mich.

Filed Feb. 26, 1981, Ser. No. 238,487

Int. Cl.³ C07C *1/12*

U.S. Cl. 585—733 10 Claims

1. A method for producing hydrocarbons and oxygen from water and carbon dioxide comprising:

flowing water as steam into contact with a hydrated zeolite contained in a first reaction vessel, said zeolite that possesses thermal stability to above 500° C. and having pores large enough to pass molecules of up to 4 angstroms kinetic diameter, and containing metal cation in a high oxidation state having a standard reduction potential less positive than 3 volts, the temperature in said first reaction vessel being above 500° C. and the pressure in said reactor vessel being above 14.7 psia and sufficiently high to prevent dehydration of said zeolite, thereby to cause a reaction of said water with said zeolite which generates oxygen and which converts said zeolite to a solid product containing substantially the same number of moles of water of hydration as in said zeolite prior to said reaction and containing the metal cation in a lower oxidation state;

withdrawing oxygen from said first reaction vessel;

withdrawing said solid reaction product from said first reaction vessel and passing it through a heat exchanger and then into a second reaction vessel, the pressure in said reaction vessel being above 14.7 psia and sufficiently high to prevent dehydration of said solid reaction product, flowing carbon dioxide into contact with said solid reaction product, the temperature in said second reaction vessel being below 400° C. and being at least 200° C. less than the temperature in said first reaction vessel, thereby to cause a reaction of said carbon dioxide with said solid reaction product which produces a mixture of hydrocarbons and water and which converts said solid reaction product to said zeolite containing the metal cation in its high oxidation state;

withdrawing the mixture of hydrocarbons and water from said second reaction vessel; and

withdrawing the zeolite from said second reaction vessel and passing it through said heat exchanger into said first reaction vessel, said zeolite from the second reaction vessel being heated in said heat exchanger from said solid reactant product passing through said heat exchanger from said first reaction vessel.

4,327,240

HYDROCARBON ISOMERIZATION CATALYST AND PROCESS

George J. Antos, Bartlett, Ill., assignor to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 68,278, Aug. 20, 1979, Pat. No. 4,256,566, which is a continuation-in-part of Ser. No. 833,332, Sep. 14, 1977, Pat. No. 4,165,276. This application Dec. 3, 1980, Ser. No. 212,642

The portion of the term of this patent subsequent to Mar. 17, 1998, has been disclaimed.

Int. Cl.³ C07C *5/13*

U.S. Cl. 585—744 12 Claims

1. A process for isomerizing saturated hydrocarbons which comprises contacting said hydrocarbon at isomerization conditions with a catalytic composite comprising a combination of a catalytically effective amount of a pyrolyzed rhenium carbonyl component with a porous carrier material containing a uniform dispersion of catalytically effective amounts of a platinum group component, which is maintained in the elemental metallic state during the incorporation and pyrolysis of the rhenium carbonyl component, of a tin component, and of a halogen component.

4,327,241

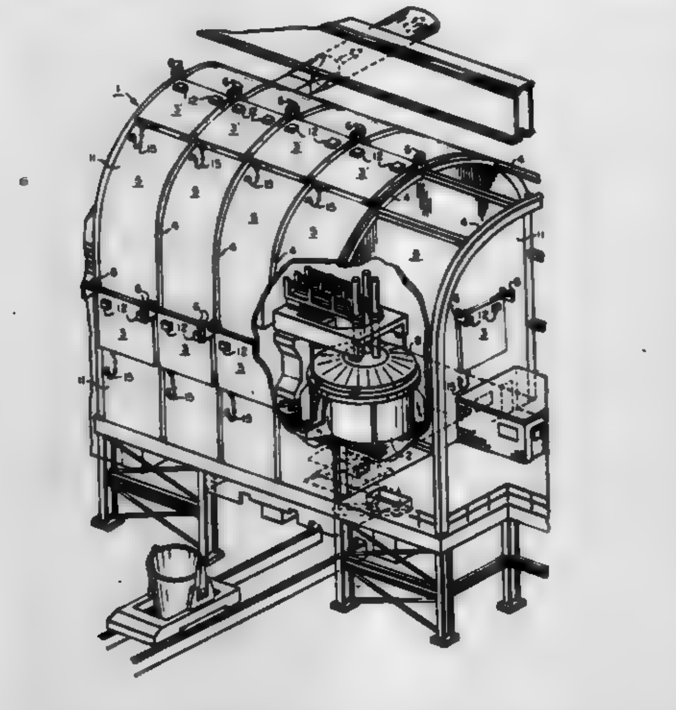
EXPLOSION VENTING MEANS FOR METALLURGICAL FURNACE

Richard F. Obenchain, 3340 Comanche Rd., Pittsburgh, Allegheny County, Pa. 15241

Filed Oct. 22, 1980, Ser. No. 199,617

Int. Cl.³ F27D *23/00*

U.S. Cl. 373—9 11 Claims



1. In a metallurgical furnace station enclosure wherein a housing is provided formed from frame members which support a series of panels, the housing enclosing the furnace during charging, melting, refining and tapping, the improvement wherein:

a plurality of said panels are constructed as explosion venting panels adapted for restrictive movement relative to the frame members of the housing, said venting panels movable from a closed position during normal operation of the furnace to a restricted open position upon explosive forces being exerted from within the enclosure.

4,327,242

METHOD FOR CONTROLLING GAS PRESSURE SEALED IN COAXIAL COMMUNICATION CABLE

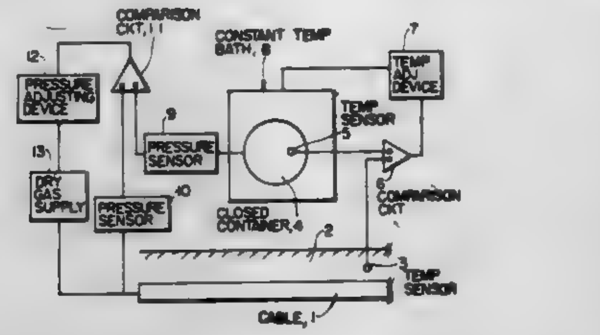
Yasunori Saito, Yokohama, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Mar. 18, 1980, Ser. No. 131,338

Claims priority, application Japan, Apr. 3, 1979, 54-40629; Jul. 13, 1979, 54-89681

Int. Cl.³ H02G *1/00;* H01B *11/18;* H01P *3/06*

U.S. Cl. 174—11 R 6 Claims



1. A method for stabilizing the electrical length of a coaxial communication cable having a gas sealed in the electrically insulated space between the inner and outer conductors of the coaxial cable comprising: maintaining constant the density of said gas by controlling the pressure of said gas so as to satisfy the following equation in accordance with variations in the temperature of said coaxial cable:

$$P(T) = P(T_0) \cdot \left(1 + \frac{T - T_0}{273 + (T - T_0)}\right).$$

wherein T_o is a predetermined reference temperature, P(T) is said pressure of said gas, T is said temperature, and $P(T_o)$ is the absolute pressure of said gas sealed in said coaxial cable at said reference temperature, thereby maintaining constant the dielectric constant of the sealed gas regardless of temperature changes and, thus, stabilizing the electrical length of the cable.

4,327,243

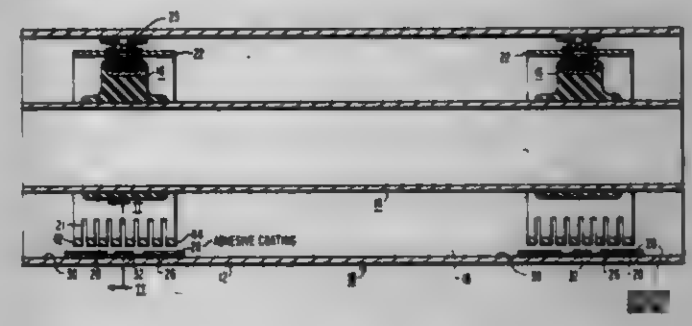
GAS INSULATED TRANSMISSION LINE WITH ADHESIVE PARTICLE TRAP CARRIER

Melvyn D. Hopkins, North Grafton, Mass., and Philip C. Bolin, Wilkins, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 2, 1981, Ser. No. 222,115

Int. Cl.³ H01B *9/06, 9/04;* H02G *5/06*

U.S. Cl. 174—14 R 12 Claims



1. A gas insulated transmission line comprising:

a cylindrical outer sheath at low electric potential;

an inner conductor disposed within said outer sheath;

an insulating gas disposed within said outer sheath;

an insulating support insulatably supporting said inner conductor within said outer sheath;

a cylindrical, apertured particle trapping ring disposed within, and spaced-apart from said outer sheath;

a circumferentially-extending flexible insulating sheet secured to said particle trapping ring and disposed on the interior surface of said outer sheath, said sheet having an adhesive coating disposed thereon facing said ring;

a circumferentially-extending insulating leaf spring, preformed on the radius of curvature of said outer sheath, secured to said ring and disposed intermediate said insulating sheet and said ring, said leaf spring contacting and loading said insulating sheet to hold said insulating sheet on the interior surface of said outer sheath; and

a stiffener spring secured to said ring intermediate said ring and said leaf spring, said stiffener spring preloading said leaf spring and said insulating sheet outwardly away from said ring and toward said outer sheath.

4,327,244

SUPERCONDUCTIVE CABLE

Imre Horvath, Rümlang, and Kurt Kwasnitza, Glattbrugg, both of Switzerland, assignors to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Filed Feb. 1, 1980, Ser. No. 117,634

Claims priority, application Switzerland, Feb. 9, 1979, 1279/79

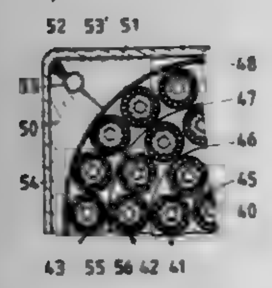
Int. Cl.³ H01B *12/00, 7/34*

U.S. Cl. 174—15 S 14 Claims

1. An electrical superconductive cable, comprising:

a plurality of bundles of wire strands, said plurality of bundles of wire strands being disposed such that said cable is divided by said bundles into one of a plurality of concentric annular sections and a plurality of radial sections, each of said plurality of bundles of wire strands including a

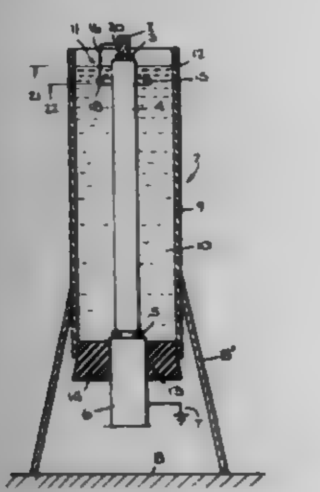
plurality of wire strands, each of said plurality of wire strands being covered by a sheath, each of said plurality of bundles of wire strands being covered by a sheath, each of said sheaths being formed from a highly electrically resistive, non-magnetic, heat conductive material, each of said



plurality of wire strands including a plurality of wires, each of said plurality of wires including a plurality of superconductive filaments embedded in a matrix material; housing means for at least partially enclosing said cable; and cooling means integral with said cable for cooling said cable.

4,327,245
SEALING END FOR DIRECT CURRENT ELECTRIC CABLES

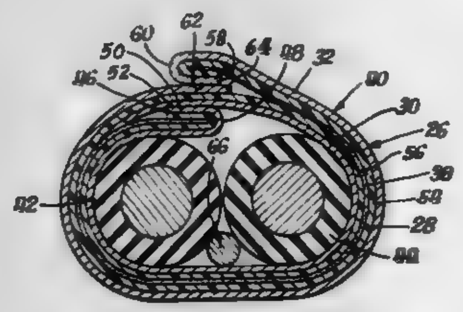
Piero Metra, Varese, Italy, assignor to Industrie Pirelli, S.p.A., Milan, Italy
Filed Jun. 13, 1980, Ser. No. 159,121
Claims priority, application Italy, Jun. 21, 1979, 23752 A/79
Int. Cl.³ H02G *15/064*
U.S. Cl. 174—19 **17 Claims**

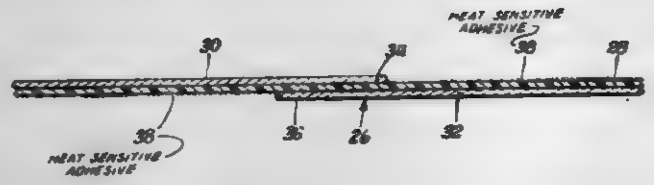


1. A sealing end installation on a direct current cable, said cable comprising a conductor, a sheath around said conductor and layers of material, including a layer of semiconductive material and a layer of cable insulation, intermediate said sheath and said conductor, said layer of insulation having a resistivity of at least 10^{10} ohm-meter, said layers and said sheath being removed from around an end portion of said conductor to provide an end portion of said conductor from which the layers and said sheath have been removed and the sheath and all the layers of the cable outwardly of a length of said cable insulation which is adjacent said end portion of said conductor being removed from around said length of said cable insulation to provide an end of said sheath spaced longitudinally of said cable from said end portion of said conductor and to provide an exposed length of said cable insulation which extends substantially from said end portion of said conductor to said end of said sheath, a hollow container of insulating material which retains liquid disposed around said exposed length of cable insulation, said container having its inner wall spaced outwardly from said exposed length of cable insulation to provide a space between said exposed length of cable insulation and said inner wall for receiving a liquid and said container extending from adjacent said end portion of said conductor to adjacent the end of said exposed length of said cable insulation remote from said end portion of said conductor and having a length longitudinally of said conductor sufficient to withstand the voltage between said conductor and said sheath without breakdown, a liquid having a resistivity in the range from 10^8 to 10^6 ohm-meter in said space between said inner wall of said container and said exposed length of cable insulation and extending from adjacent said end portion of said conductor to adjacent said end of said exposed length of cable insulation remote from said end portion of said conductor, said liquid being free to circulate within said space and to contact said inner wall of said container and substantially all of said exposed length of cable insulation, and said liquid being conductively connected to said conductor at the end of the liquid nearer said end portion of said conductor and being conductively connected at the opposite end of the liquid to said sheath to provide a direct current path through said liquid and from said end portion of said conductor to said sheath which has a resistivity no greater than one-hundredth of the resistivity of said cable insulation, the longitudinal length of said direct current path and the longitudinal length of the exposed length of cable insulation within said container being sufficient to withstand the voltage between said conductor and said sheath without breakdown, and sealing means providing a fluid-tight seal between said sheath and a portion of the container adjacent said end of said exposed length of cable insulation remote from said end portion of said conductor.

4,327,246
ELECTRIC CABLES WITH IMPROVED SHIELDING MEMBERS

John W. Kincaid, Batavia, Ill., assignor to Belden Corporation, Geneva, Ill.
Filed Feb. 19, 1980, Ser. No. 122,296
Int. Cl.³ H01B *11/06, 9/02*
U.S. Cl. 174—36 **19 Claims**

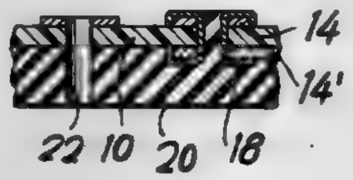




1. A shielding member helically coiled about and for shielding at least one insulated electrical conductor, said helically coiled shielding member comprising: an elongated ribbon of insulating material having two opposite sides and two parallel edges; a pair of elongated metallic foil strips arranged in a parallel relationship with the ribbon, each strip having two opposite sides and two parallel edges, with a respective side of each strip bonded to a respective one of the opposite sides of the ribbon, one of the edges of one of the foil strips being substantially coterminus with one edge of the elongated ribbon, and one of the edges of the other of the foil strips being substantially coterminus with the other edge of the elongated ribbon, the width of each of the foil strips being approximately one half the width of the ribbon, and each of the other edges of the foil strips slightly overlapping one another, said ribbon being helically wound about said at least one insulated electrical conductor with each of said foil strips surrounding and forming a shielding envelope for at least one insulated electrical conductor; and a layer of adhesive on a portion of the exposed surface of the ribbon and extending along the length of the ribbon.

4,327,247
PRINTED WIRING BOARD

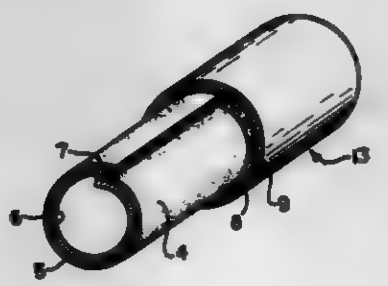
Kazuyuki Mituhashi, Ohmihachiman; Kunio Matumoto, Hikone; Haruo Shirai, and Yoshikatu Tanaka, both of Kyoto, all of Japan, assignors to Shin-Kobe Electric Machinery Co., Ltd., Tokyo and Shirai Eenshi Kogyo Co., Ltd., Kyoto, both of, Japan
Continuation-in-part of Ser. No. 947,480, Oct. 2, 1978, abandoned. This application Nov. 19, 1979, Ser. No. 95,323
Int. Cl.³ H05K *1/14*
U.S. Cl. 174—68.5 **7 Claims**



1. A printed wiring board having first and second electrically conductive circuit layers on an insulating laminate, characterized in that said insulating laminate comprises a first insulating layer having a thickness of 0.01 to 0.5 mm and a second insulating layer attached to said first insulating layer so as to have a desired thickness, first and second metal foil circuit layers being provided on opposite sides of said first insulating layer, a surface defining an aperture through only said first insulating layer, a hollow tubular conductor in said aperture electrically interconnecting at least a part of said first metal foil circuit layer with at least a part of said second metal foil circuit layer, an insulator within said hollow tubular conductor, device mounting through holes through both of said insulating layers and separate from said hollow tubular conductor, and insulating material integral with said second insulating layer and completely filling said central aperture of said hollow tubular conductor to inhibit breakage of the conductor material of said hollow tubular conductor.

4,327,248
SHIELDED ELECTRICAL CABLE

Larry J. Campbell, Kent, Ohio, assignor to Eaton Corporation, Cleveland, Ohio
Filed Oct. 6, 1980, Ser. No. 194,317
Int. Cl.³ H01B *7/18*
U.S. Cl. 174—107 **13 Claims**

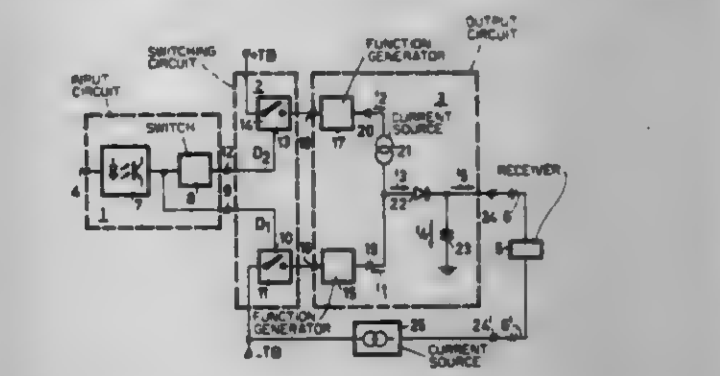


1. A shielded electrical cable having improved flexibility and resistance to wrinkling on bending, said cable comprising:

(a) at least one insulated electrical conductor;
(b) a flexible metal tape disposed in emcompassing relationship in the form of a shield about the electrical conductor;
(c) a coating of a copolymer of ethylene and a monomer having a reactive carboxyl group disposed on at least the outer surface of the shield;
(d) a covering disposed in emcompassing relationship about the coated shield, said covering made from a flexible or semi-rigid non-olefinic polymeric material; and
(e) an adhesive disposed intermediate the shield coating and the covering and adapted to bond them together.

4,327,249
DIRECT CURRENT TELEGRAPHY SYSTEMS

Gerrit Rademaker, Hilversum, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed May 16, 1980, Ser. No. 150,385
Claims priority, application Netherlands, Jun. 5, 1979, 7904375
Int. Cl.³ H04B *1/62;* **H03K** *13/02;* **H04L** *15/00*
U.S. Cl. 178—3 **6 Claims**



1. An electronic transmitter for direct current telegraphy systems, in which transmitter binary information signals are converted into line currents for transmission over a telegraph line, and which transmitter comprises; an input circuit for generating command signals from the information signals, a telegraph voltage source having a first terminal and a second terminal, a switching circuit controlled by the command signals for connecting one of the two terminals of the telegraph voltage source to the telegraph line, and an output circuit coupled to the switching circuit and the telegraph line and comprising a current source for applying line current to the telegraph line, characterized in that the output circuit further comprises a function generator device which is coupled to the switching circuit and to the current source, the value of the line current supplied by the current source varying in response to level transitions in the command signals, in accordance with a power of e having a positive exponent.

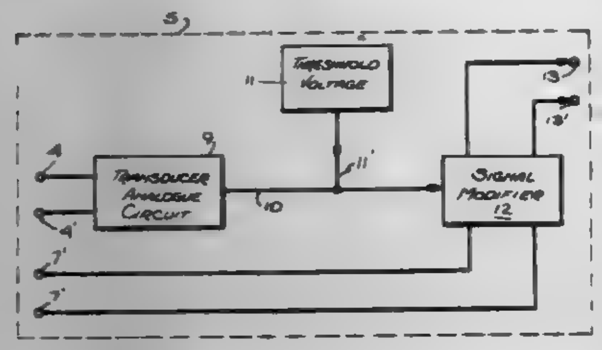
4,327,250
DYNAMIC SPEAKER EQUALIZER

Daniel R. von Recklinghausen, Arlington, Mass., assignor to Electro Audio Dynamics Inc., Great Neck, N.Y.
Filed May 3, 1979, Ser. No. 35,496
Int. Cl.³ H04R *3/00*
U.S. Cl. 179—1 F **8 Claims**

1. Means for protecting an electro-dynamic transducer comprising the combination of sensing means for forming a control signal representative of an operation characteristic of the transducer, signal modifying means coupled in the transducer driving signal input including means for modifying the transducer input signal in accordance with the said control signal,

said sensing means comprising an analog circuit forming a signal based upon the operational condition of the driven transducer and including integrator means coupled to a differential amplifier and means applying a predetermined threshold voltage to the amplifier, and

said signal modifying means including a high pass filter coupled to the driving signal and a FET coupled between

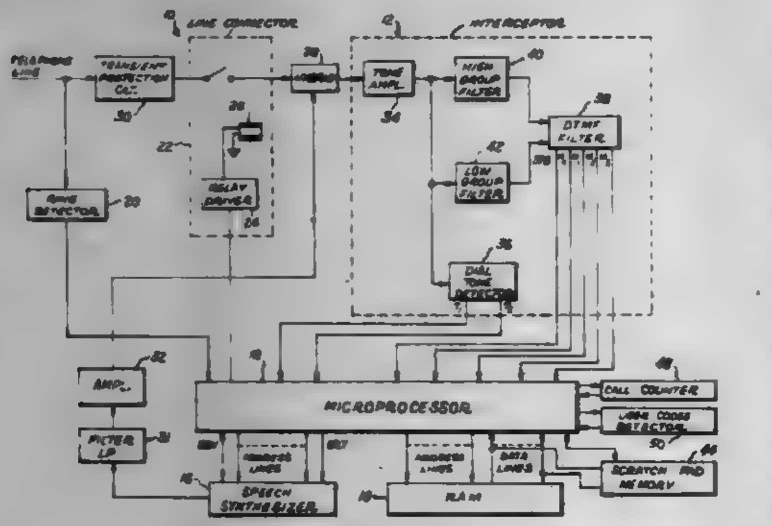


the high pass filter and the output of the said differential amplifier.

4,327,251
AUTOMATIC TELEPHONE DIRECTORY MESSAGE SYSTEM

Joseph Fomenko, Rochester; John A. Kuecken, Pittsford, and James J. Sloboda, North Rose, all of N.Y., assignors to Radionics Inc., Webster, N.Y.

Filed Mar. 17, 1980, Ser. No. 130,948
Int. Cl.³ H04M *1/05, 11/10*
U.S. Cl. 179—1 SM 17 Claims



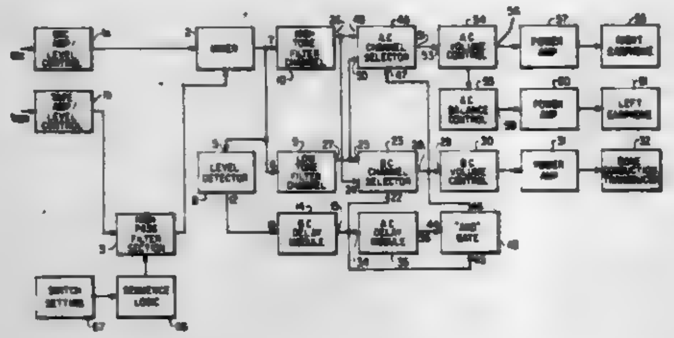
1. A telephone directory message system which comprises means for detecting numbers representing user codes and messages to be transmitted to callers or users which are entered on a telephone line, memory means for storing user code numbers and accompanying message numbers and having a plurality of different locations each for a separate user code number and its accompanying message number, means for writing each of said user code numbers and said message numbers which accompany them into said different locations in said memory, speech synthesizer means having a vocabulary of words of speech corresponding to said message numbers, and means responsive to said user code numbers for operating said synthesizer in accordance with the message numbers stored in the same location with said user code numbers for transmitting signals representing said speech words on said telephone lines.

4,327,252
APPARATUS FOR CONDITIONING HEARING

Alfred A. A. Tomatis, 68, Boulevard de Courcelles, 75017 Paris, France

Filed Apr. 18, 1980, Ser. No. 141,648
Claims priority, application Canada, Feb. 8, 1980, 345300
Int. Cl.³ H04R *3/00*
U.S. Cl. 179—1 N 20 Claims

1. Apparatus for conditioning the hearing of a patient comprising an input stage providing audio frequency electrical signals derived from acoustic signals, means connected to an output of the input stage for determining the envelope level of the audio frequency electrical signals, means for comparing the envelope level with a predetermined threshold level and deriving a first logic signal when the envelope level is below the predetermined threshold level and a second logic signal when the envelope level is above the predetermined threshold level, two channels connected in parallel to the output of the input stage, the first channel containing first filter means defining a first response curve over the audio frequency spectrum and the second channel containing second filter means defining a second response curve over the audio frequency spectrum, first channel selector means connected between, the two channels and, a first output stage, the first output stage comprising an electromechanical vibrator for applying vibrations to the patient's skull, the first channel selector means being operable under control of the envelope level comparing means to con-



nect a predetermined one of the two channels to the first output stage when the first logic signal is derived and to connect the other channel to the first output stage when the second logic signal is derived, second channel selector means connected between, the two channels and, on the other hand, a second output stage, the second output stage comprising speaker means for applying acoustic air waves to the patient's ear, first time delay means connected to receive an output of the envelope level comparing means thereby to derive from the logic signals applied to the first channel selector means delayed logic signals which are time delayed by a predetermined amount with respect to the logic signals applied to the first channel selector means, the second channel selector means being operable under control of the first time delay means to connect the predetermined one of the two channels to the second output stage when the delayed first logic condition is obtained and to connect the other channel to the second output stage when the delayed second logic condition is obtained.

4,327,253
CIRCUIT ARRANGEMENT FOR CONSECUTIVELY MONITORING OPERATING CONDITIONS OF DIRECT CURRENT DEVICES

Robert Lechner, Otterfing, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Sep. 8, 1980, Ser. No. 184,761
Claims priority, application Fed. Rep. of Germany, Sep. 26, 1979, 2938981
Int. Cl.³ H04M *3/22*
U.S. Cl. 179—18 FG 6 Claims

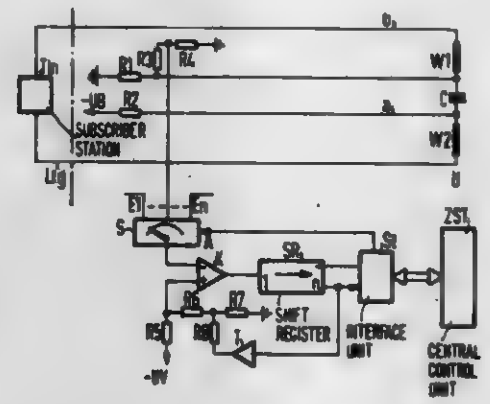
1. Circuit arrangement for monitoring operating conditions of a group of direct current devices, said operating conditions represented by different potentials occurring at a sampling point of each of said direct current devices, said circuit arrangement comprising:

(a) a selector unit having parallel signal inputs, an output and a control input for receiving an address control signal for activating selectively each one of said signal inputs during a monitoring cycle, and each of said signal inputs being connected to the sampling point of a respective one of said direct current devices;

(b) means for generating an address control signal train and having an output connected to said control input of said selector unit;

(c) a comparator having a monitoring signal input, a reference signal input and an output carrying control signals, and said monitoring signal input being connected to the output of said selector unit;

(d) a voltage source for generating a basic reference voltage for comparison to said potentials to be monitored at said sampling points, said voltage source being coupled to said reference signal input of said comparator;



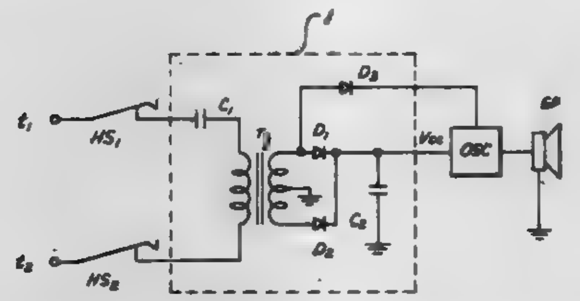
(e) means for buffering said control signals for one monitoring cycle, said buffering means having an input connected to said output of said comparator and an output for supplying said control signals delayed by one monitoring cycle; and

means for rating the delayed control signals and for providing feedback of the rated control signals to said reference signal input of said comparator wherein the rated control signals are superposed on said basic reference voltage for establishing an adjustable reference voltage level dependent on the operating condition of the respective monitored device during the previous monitoring cycle.

4,327,254
RINGER CIRCUIT FOR TELEPHONE

Katsuaki Kumazaki, Tokyo, Japan, assignor to Tandy Corporation, Fort Worth, Tex.

Filed Mar. 10, 1980, Ser. No. 129,164
Claims priority, application Japan, Mar. 8, 1979, 54-28661[U]
Int. Cl.³ H04M *1/00*
U.S. Cl. 179—84 T 4 Claims

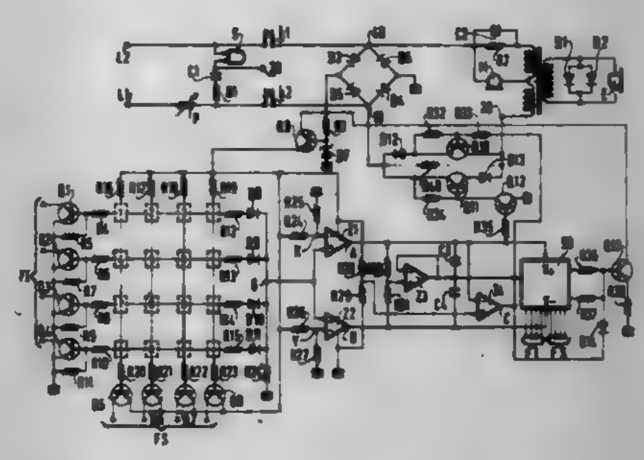


1. A ringer circuit for a telephone, comprising: a transformer having its primary winding connected through hook-switches with the circuit of the telephone; a DC current blocking capacitor connected in series with the primary winding of said transformer; a rectifying circuit for rectifying the secondary voltage of said transformer; an oscillator for providing an oscillating output in response to the rectified output of said rectifying circuit; a sound generator for generating sounds in response to the oscillating output of said oscillator; and a diode operatively connected between the transformer and the oscillator so that the secondary voltage of said transformer is half-wave rectified to generate a trigger voltage which is provided to the oscillator, so that the oscillating output of the oscillator has an interrupted waveform applied to the sound generator.

4,327,255
KEYPAD CALLER FOR A TELEPHONE SET

Jacky Sassylo, Bagneux, France, assignor to Compagnie Industrielle des Telecommunications Cit-Alcatel, Paris, France

Filed Nov. 18, 1980, Ser. No. 208,102
Claims priority, application France, Nov. 23, 1979, 79 28900
Int. Cl.³ H04M *1/50*
U.S. Cl. 179—90 K 1 Claim

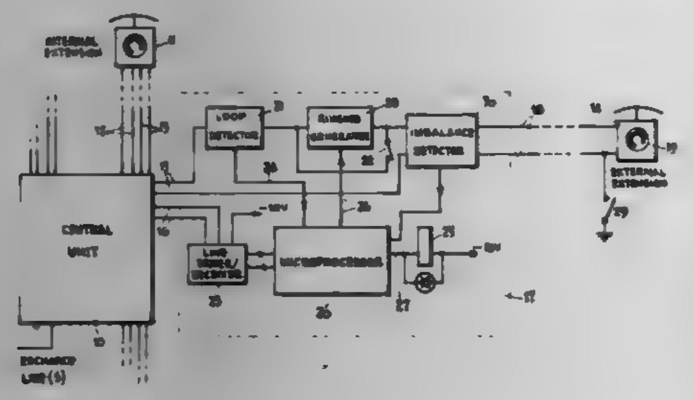


1. In a keypad caller for an automatic telephone set including a keypad with at least ten keys, each suitable for putting one column out of four in contact with one row out of four, the columns being supplied from telephone line voltage via a fullwave rectifier bridge and a voltage regulator, a ringing circuit of the set being upstream from said bridge and the microphone and receiver circuits being downstream therefrom, a two-frequency oscillator, said keypad including at one end of each of said rows a transistorized switch for earthing a corresponding resistance of said two-frequency oscillator which emits one of the four lower frequencies and including at the opposite end to the voltage regulator of each of said columns, a transistorized switch for connecting to the low impedance of said regulator a corresponding resistance of said two-frequency oscillator which further emits one of the four higher frequencies, the emission of the group of two frequencies, lower and higher, being made possible only by contact of said key, the improvement comprising:

first and second comparators, and wherein the other ends of said rows are connected to the non-inverting inputs of said first and second comparators in parallel whose inverting inputs are connected to said voltage regulator and whose respective outputs constitute a positive and negative voltage supply source of said two frequency oscillator only when a single key is depressed, said first and second comparators both supplying a negative voltage which inhibits said two-frequency oscillator when no key is depressed and both supplying a positive voltage which inhibits the two-frequency oscillator when two keys are depressed simultaneously, and

a third comparator whose negative or inverting input receives the output signal from said first comparator and whose positive or non-inverting input is connected to the common point of two resistances disposed between earth and said voltage regulator, so as to deliver an on/off control voltage depending on whether at least one key is depressed or released to a first transistorized switch disposed to conduct in a first direction between the microphone-receiver and one of the wires of the telephone line and wherein said first comparator delivers an on/off control voltage depending on whether at least one key is depressed or released to a second transistorized switch disposed in parallel with said first switch to conduct in the opposite direction to said first direction, thereby providing an analog inhibiting system for the two-frequency oscillator when two keys are depressed simultaneously.

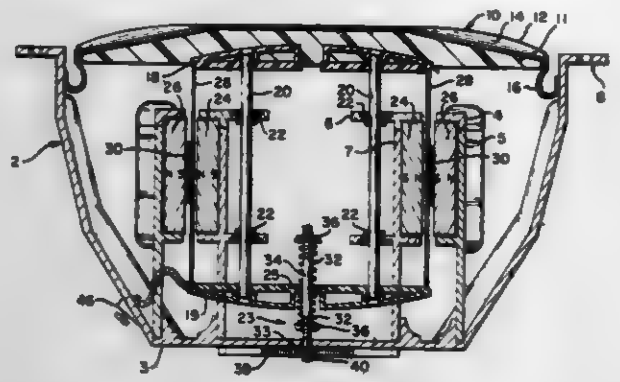
4,327,256
TELEPHONE SYSTEM
Stephen J. Crooks, North Yorkshire, and Robert A. Stevenson, Durham, both of England, assignors to The General Electric Company Limited, London, England
Filed Apr. 29, 1980, Ser. No. 144,970
Claims priority, application United Kingdom, May 4, 1979, 15576/79
Int. Cl.³ H04Q *5/20*
U.S. Cl. 179—99 R **6 Claims**



1. A telephone system of the kind which has at least three telephone instruments and provision for speech connections to be set up automatically by operation of manually operated controls associated with the telephone instruments between any of said instruments, and, selectively, either another of said instruments or a line to a remote exchange, said telephone system comprising

(A) a central unit to which said telephone instruments are connected each by only
(I) a respective first pair of wires for carrying two-way speech signals and
(II) a respective second pair of wires for carrying control and indicating signals between the central unit and the telephone instrument,
(B) the central unit being arranged to operate in response to control signals received over the second pair of wires to connect the first pair of wires to any one of the telephone instruments selectively to either an intercom highway or to an exchange line,
(C) wherein to enable a further telephone instrument to be connected into the system over a single pair of wires and, at least for some facilities of the system, to emulate a telephone instrument having two pairs of connecting wires as aforesaid,
(I) an adaptor unit is connected, adjacent the central unit, between the single pair of wires which are terminated by the further telephone instrument and first and second further pairs of wires which are connected to the central unit,
(II) said first and second further pairs of wires corresponding to the previously mentioned first and second pairs of wires and being arranged respectively to carry speech signals and control signals,
(a) said adaptor unit comprising loop detection means to supply an off-hook control signal to the second further pair of wires in response to the single pair of wires being looped when the further telephone instrument is off-hook and
(b) means to supply a calling signal to the single pair of wires in response to the central unit supplying a signal over the second further pair of wires to signify that the further telephone instrument is to be called.

4,327,257
ALIGNMENT DEVICE FOR ELECTRO-ACOUSTICAL TRANSDUCERS
Leslie H. Schwartz, 23726 Kittridge St., Canoga Park, Calif. 91307
Filed Sep. 10, 1979, Ser. No. 74,144
Int. Cl.³ H04R *9/06*
U.S. Cl. 179—115.5 R **9 Claims**



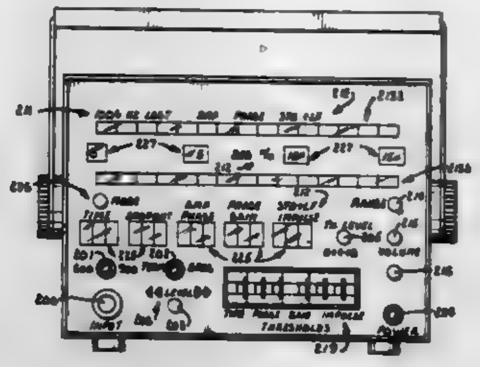
1. A speaker for transforming applied electrical currents into acoustical energy comprising a voice coil assembly having a coil adapted for conducting said applied electrical currents, a diaphragm coupled to said voice coil assembly, magnetic means for providing a magnetic field in an air gap, support means for centering said voice coil assembly in said air gap and for allowing for the axial movement of said voice coil assembly and said diaphragm in response to the magnetic interaction between the magnetic fields produced by said voice coil and said magnetic means, wherein the improvement comprises:

said support means including a rigid top spider assembly disposed between the top of said voice coil assembly, which is rigid, and said diaphragm, a rigid bottom spider assembly affixed to the bottom of said voice coil assembly, at least one rod connecting said top and bottom spider assemblies, and a chassis for supporting said magnetic means and for carrying at least one alignment bushing through which said at least one rod is slideably mounted, and means for returning said voice coil assembly to a predetermined position along the length of said air gap in the absence of applied electrical currents,
wherein said means for returning said voice coil assembly includes at least one spring operatively disposed between said spider-voice coil assembly and said chassis, and
including means for adjusting the tension of said at least one spring.

4,327,258
METHOD AND APPARATUS FOR RAPID EVALUATION OF PARAMETERS AFFECTING VOICEBAND DATA TRANSMISSION
Louis H. Zumbahlen, Jr., Boulder Creek, and Charles Volkland, Santa Clara, both of Calif., assignors to Halcyon, Inc., San Jose, Calif.
Filed Apr. 3, 1980, Ser. No. 136,987
Int. Cl.³ H04B *3/46*
U.S. Cl. 179—175.3 R **34 Claims**

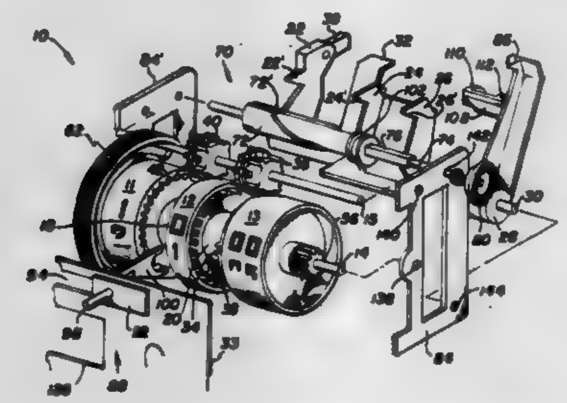
1. An apparatus for evaluating impairments affecting voiceband data transmission including phase and amplitude jitter, said apparatus including

means for receiving a test tone capable of having data affecting impairments thereon,
means for detecting said impairments on said received test tone,
means for producing a digital representation of said impairments,
means for displaying phase jitter in a linear digital display, and
means for simultaneously displaying amplitude jitter in a separate and independent linear digital display, both of



said displaying means being in visual proximity with each other.

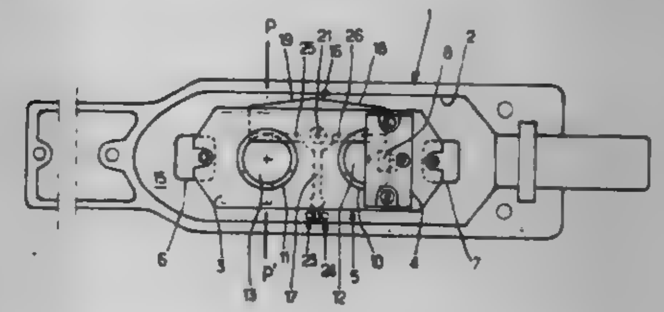
4,327,259
TIMING MECHANISM
Maurice E. Schuder, Indianapolis, and Richard W. Stafford, Clayton, both of Ind., assignors to Emhart Industries, Inc., Indianapolis, Ind.
Filed May 12, 1980, Ser. No. 148,714
Int. Cl.³ H01H *43/10*
U.S. Cl. 200—38 A **15 Claims**



1. In a timing mechanism wherein coupled drum wheels of a digital interval timer are rotatably set at a predetermined period of time; wherein at least one cam having a notch opening to an outer periphery of said cam is rotatably coupled to at least one of said drum wheels; and wherein an actuator means engages said cam to open and close an electrical switch, said switch opening when said actuator means drops into said notch, an improvement characterized by said actuator means including a pivoting member pivotally mounted with respect to said notch, said pivotally mounted member and said notch provide means such that a resultant force vector between said notch and said pivoting member when they are engaged is in a direction away from said notch, and means whereby said drum wheels may be rotated in either direction after said electrical switch has been opened.

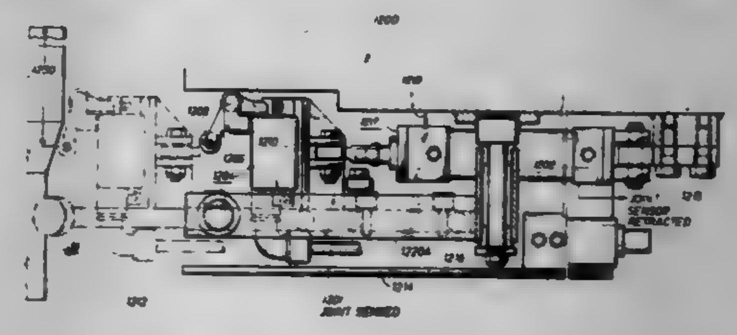
4,327,260
LOCKING DEVICE FOR TWO PUSH BUTTONS
Jean-Claude Vignaud, Angouleme, and Gérard Juéry, Ruelle, both of France, assignors to La Telemecanique Electrique, France
Filed Apr. 16, 1980, Ser. No. 140,920
Claims priority, application France, Apr. 17, 1979, 79 10281
Int. Cl.³ H01H *9/20, 33/52*
U.S. Cl. 200—50 C **4 Claims**

1. In a control device having: a box with a housing; first and second push buttons slidably mounted in the box and movable between first and second positions along two predetermined parallel directions of actuation, said first and second push buttons having first and second respective operating members; resilient means for normally resetting said push buttons into their first position; support means lodged in said housing; first and second electrical switches respectively mounted on said support means for cooperation with said first and second operating members; a locking device comprising pivot means fixedly mounted within said box between the said electrical switches and said operating members, said pivot means defining a pivoting axis parallel to the said directions of actuation; a T-shaped bolt arranged between said operating members and said switches, said T-shaped bolt having a first arm forming the head of the "T", a second arm perpendicular to the said first arm, said second arm being resiliently deformable, having a free end and forming the upright of the "T"; stop pins fixedly mounted within said box and between which the said free end is engaged, said first arm comprising first and second portions



disposed on each side of said pivot means, each said portion comprising a stop surface perpendicular to the said directions of actuation and, on the edge of the said arm portion placed opposite to a respective operating member, a respective surface inclined with respect to said directions of actuation, said bolt being pivotably mounted about said pivot means on the center of the said first arm for pivoting said first arm between a first position wherein said first arm is parallel to the plane containing the said two directions of actuation and a second position, wherein the stop surface of one of the said portions of said first arm is disposed opposite to that one of said operating members which is thus prevented to move into its second position, whereas the other operating member is in its second position and cooperates with the respective inclined surface to pivot the said first arm into said second position.

4,327,261
APPARATUS FOR SENSING A DISTENDED LOCATION ON A DRILL PIPE
Loren B. Sheldon, Houston, Tex., assignor to BJ-Hughes Inc., Houston, Tex.
Continuation of Ser. No. 777,673, Mar. 15, 1977, abandoned. This application Jan. 12, 1979, Ser. No. 3,035
Int. Cl.³ H01H *3/16, 21/28;* **B25B** *1/04*
U.S. Cl. 200—61.41 **12 Claims**



1. Apparatus for sensing a distended location on the exterior surface of a drill pipe comprising:

a sensor arrangement including an arm contactable with the exterior surface of a drill pipe and pivotally movable with respect thereto from a first, normal, position to a second, deflected, position;
means for positioning said sensor arrangement relative to said pipe exterior to dispose said arm in contact with the drill pipe; and

means actuated by said arm in said second position for generating an electrical signal when said arm is deflected a predetermined angular amount from said normal position by a distended location of a predetermined diameter on a drill pipe.

4,327,262

GAS-BLAST SWITCH

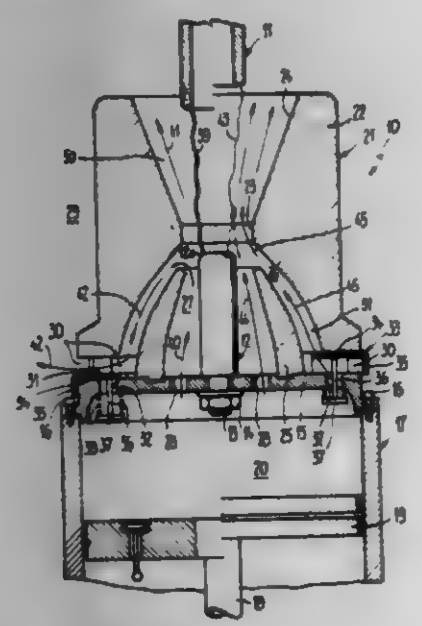
Peter Kull, Schafisheim, Switzerland, assignor to Sprecher & Schuh AG, Aarau, Switzerland

Filed Jan. 21, 1980, Ser. No. 114,230

Claims priority, application Switzerland, Feb. 13, 1979, 1395/79

Int. Cl.³ H01H *33/88*

U.S. Cl. 200—148 A **8 Claims**



1. A gas-blast switch comprising:

a fixed contact element;

a movable contact element cooperating with said fixed contact element;

a blast nozzle operatively associated with one of the contact elements;

means defining a pump chamber containing an extinguishing gas which can be placed under pressure during the course of a cutoff stroke of the gas-blast switch;

said pump chamber having an outlet;

said blast nozzle having an inlet connected with the outlet of the pump chamber;

said blast nozzle having a nozzle throat arranged downstream with respect to the flow direction of the extinguishing gas from an end of the related contact element;

a valve arrangement disposed between the inlet of the blast nozzle and the pump chamber;

said valve arrangement being pre-biased in its closing direction and responding to excess pressure prevailing in the pump chamber and opening in the direction of the inlet;

said valve arrangement comprising at least one switching valve movable between a rest position and a work position;

means for biasing said switching valve into its rest position;

said switching valve, when in said rest position, flow communicating the inlet of the blast nozzle with a space surrounding said blast nozzle and disconnecting the inlet of the blast nozzle from the pump chamber; and

said switching valve being movable into its work position in response to excess pressure prevailing in the pump chamber; and

said switching valve, when in said work position, flow communicating the pump chamber with the inlet of the blast nozzle and disconnecting the blast nozzle from the surrounding space.

4,327,263

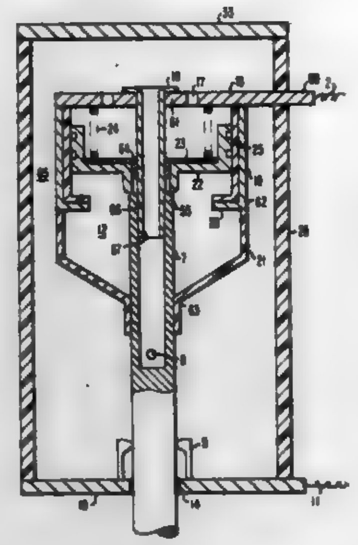
SWITCHING DEVICE

Takeyoshi Sakurai, Amagasaki, and Noboru Kobayashi, Kobe, both of Japan, assignors to Mitsubishi Denke Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 17, 1980, Ser. No. 160,249

Int. Cl.³ H01H *33/88*

U.S. Cl. 200—148 A **1 Claim**



1. A switching device comprising:

a pair of contact members capable of engagement with and separable from each other, said contact members having respective openings therein;

a cylinder surrounding and coaxial with said contact members and forming a chamber containing therein an arc-extinguishing fluid, said arc-extinguishing fluid being pressurized by the arc drawn between said contact members during separation thereof; and

additional pressurizing means for pressurizing said arc-extinguishing fluid within said chamber, said additional pressurizing means including an interlocking member disposed on said cylinder and capable of an interlocked movement with said contact members during separation thereof, interlocked movement of said interlocking member during contact member separation pressurizing said arc-extinguishing fluid within said chamber.

4,327,264

FASTENING DEVICE FOR A SWITCH

Jakob Botz, Ingersheim; Rolf Feger, Bietigheim-Bissingen; Erich Mutschler, Bietigheim-Bissingen; Hubert Spazierer, Bietigheim-Bissingen, and Adam Weber, Bietigheim-Bissingen, all of Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Continuation of Ser. No. 898,767, Apr. 21, 1978, abandoned. This application Mar. 3, 1980, Ser. No. 126,327

Claims priority, application Fed. Rep. of Germany, Apr. 29, 1977, 2719194; Dec. 31, 1977, 2759182

Int. Cl.³ H01H *9/08;* **G12B** *9/00*

U.S. Cl. 200—295 **3 Claims**

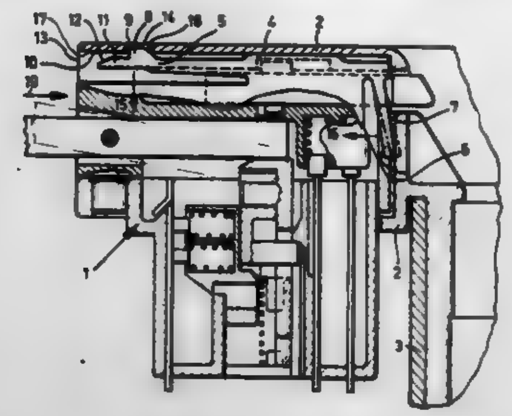
1. A fastening device for a switch housing comprising:

a receiving member comprising a cavity adapted to receive said switch housing, said cavity having a side wall forming a limiting surface for limiting lateral movement of said switch housing, and a rear wall perpendicular to said side wall, said side wall having a shoulder;

at least one resilient holding element, said resilient holding element including a portion adapted to engage said shoulder said resilient holding element urging said portion in a first direction into engagement with said shoulder;

means for connecting said resilient holding element to said switch housing; and

at least one resilient second element disposed between said switch housing and said rear wall for urging said housing away from said rear wall and thereby for urging said portion in a second direction into engagement with said shoulder, said second direction being substantially perpendicular to said first direction, wherein said resilient second element is integrally connected with said resilient holding element and said connecting means comprises a movable web connecting said resilient second element and said switch housing.



4,327,265

METHOD FOR PRODUCING ONE OR MORE CONTACT CONNECTIONS BETWEEN A LACQUER-INSULATED WIRE AND ONE OR MORE CONTACT PARTS OF AN ELECTRIC COMPONENT

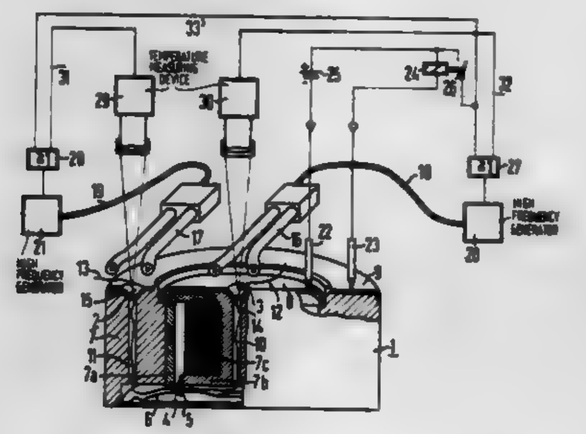
Egon Edinger, Graefelfing, and Friedrich Pedall, Munich, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Mar. 25, 1980, Ser. No. 133,927

Claims priority, application Fed. Rep. of Germany, Apr. 23, 1979, 2916349

Int. Cl.³ H05B *6/06;* **B23K** *13/00, 31/02*

U.S. Cl. 219—10.41 **1 Claim**



1. A method for producing at least two contact connections at at least two solder locations between a lacquer-insulated wire which rapidly becomes brittle with excessive heat and corresponding contact member at each solder location of an electrical component by means of soft solder, comprising the steps of: providing an apportioned solder amount and a separate high frequency generator heat source which is allocated to each of said at least two solder locations; providing a temperature measuring device at each solder location by which a temperature of the solder location is monitored; switching on the heat sources; switching off both heat sources simultaneously when an electrical contact is established between both lacquer-insulated wires and their contact members as determined by current flow from one of the contact members through the lacquer insulated wire to the other contact member with the two contact connections being series connected by said electrical component and when a predetermined maximum temperature has not been attained at either location; monitoring a temperature at both soldering locations and switching off one of the heat sources before the other if the temperature measured at said one soldering location exceeds said predetermined maximum prior to electrical contact at both solder locations and while continuing to heat the other location until either said maximum temperature is attained or wire contact at both solder locations is achieved.

4,327,266

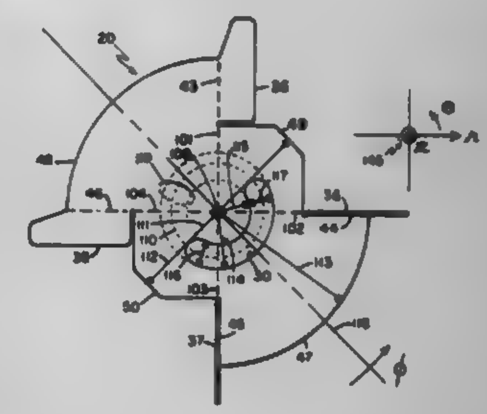
MICROWAVE OVENS FOR UNIFORM HEATING

Buddy J. Austin, Atkins, and James E. Simpson, Coralville, both of Iowa, assignors to Amana Refrigeration, Inc., Amana, Iowa

Filed Sep. 12, 1980, Ser. No. 186,490

Int. Cl.³ H05B *6/74*

U.S. Cl. 219—10.55 F **16 Claims**



1. A microwave oven comprising a main oven body having walls and a reclosable door defining a heating cavity and further comprising a high frequency feeder section having a feeder opening for supplying microwave energy into said heating cavity wherein the improvement comprises

a planar antenna plate having one and only one inner edge defining a single aperture for admission of said microwaves from only a part of said feeder opening directly across the plane of said plate to said cavity, said antenna plate comprising electrically conductive material having a periphery and having a plurality of conductive wings on said periphery, said aperture having a bisector being a one and the only one axis of bilateral symmetry of said antenna plate, said plate being located to have a spacing from said feeder opening so as to permit propagation of said microwave energy from the rest of said feeder opening to said wings and to said cavity;

shaft means for extending through said feeder opening and being attached at a point of attachment to and holding said plate for said spacing of said plate from said feeder opening, said aperture being shaped so that the longest straight line which can be drawn inside said aperture along a radius through said point is shorter than the longest straight line which can be drawn inside said aperture perpendicular to any radius through said point; and

means for rotating said plate so that said inner edge rotates relative to said feeder opening,

whereby uniform microwave heating of a body to be heated in said cavity is achievable.

4,327,267

HIGH FREQUENCY ENERGY SUPPLY IN A HIGH FREQUENCY HEATING APPLIANCE

Nobuo Ikeda, and Hirofumi Yoshimura, both of Nara, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 29, 1980, Ser. No. 173,496

Claims priority, application Japan, Sep. 10, 1979, 54-125843[U]

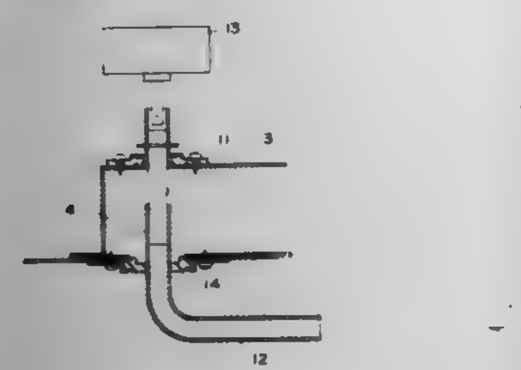
Int. Cl.³ H05B *6/72*

U.S. Cl. 219—10.55 F **3 Claims**

1. In an energy feeding device for a high frequency heating appliance including a heating chamber, said energy feeding

device having a high frequency oscillator for generating high frequency electromagnetic wave energy, a waveguide for transmitting high frequency electromagnetic wave energy from said oscillator, a rotary antenna for transmitting high frequency electromagnetic wave energy from said waveguide into the heating chamber, and a driving means for rotating said rotary antenna, the improvement comprising:

a revolving drive shaft connected to said driving means at one end of said drive shaft and being made of a material having a low dielectric loss;



said rotary antenna being a metal pipe and having a socket portion at one end thereof which connects said rotary antenna to said drive shaft;

the end of said socket portion having a substantially larger inner diameter than said one end of said drive shaft which forms a radial clearance between the inner periphery of the socket end and the outer periphery of said drive shaft; and the end of said socket portion being rounded.

4,327,268

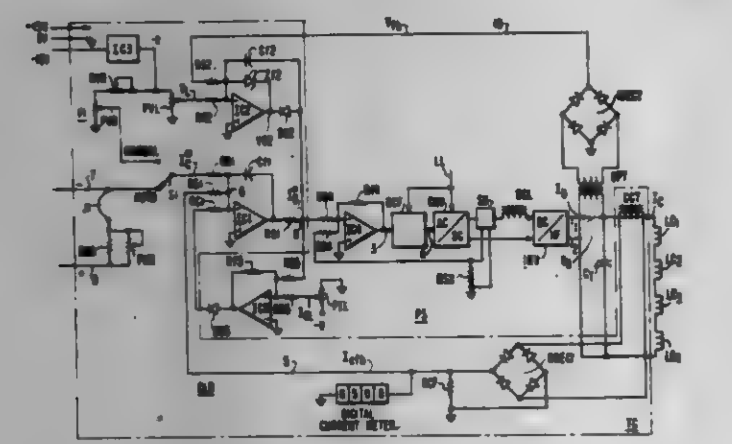
CURRENT CONTROL SYSTEM FOR AN INDUCTION HEATING APPARATUS

William E. Frank, Baltimore, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 30, 1980, Ser. No. 154,691

Int. Cl.³ H05B *6/08*

U.S. Cl. 219—10.77 **1 Claim**



1. In an induction heating apparatus having induction coil means supplied with high frequency high power current from a tank circuit energized under a voltage supplied by a power generator; the combination of:

means for sensing coil current drawn by said induction coil means from said tank circuit;

first feedback means responsive to said current sensing means for deriving a coil current feedback signal;

current controller means normally responsive to said coil current feedback signal for applying to said power generator a control signal for adjusting said coil current;

second feedback means responsive to the voltage applied by said power generator to said tank circuit for deriving a voltage feedback signal;

a steering diode; and

voltage limited means operative in a comparator mode in response to said voltage feedback signal and a reference voltage signal for backbiasing said steering diode until said supplied voltage exceeds a predetermined critical voltage determined by said reference voltage signal;

with said voltage limiter means forward biasing said steering diode when said predetermined critical voltage has been exceeded; and with said steering diode, when forward biased, transferring said voltage limiter means into an integrator mode for limiting the operation of said current controller means, thereby to prevent excessive voltage from said power generator.

4,327,269

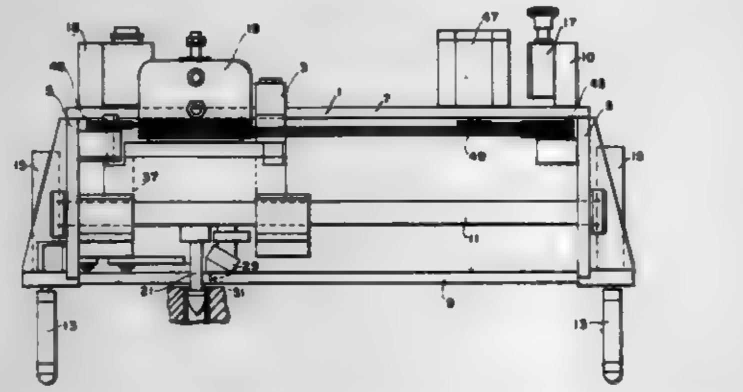
APPARATUS FOR CONTINUOUSLY WELDING A PORTION OF A ROW OF TUBES TO A TUBESHEET

Raymond Glatthorn, St. Petersburg, Fla., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 23, 1980, Ser. No. 162,266

Int. Cl.³ B23K *9/02*

U.S. Cl. 219—60.2 **9 Claims**



1. Apparatus for continuously welding at least a portion of a row of tubes to a tubesheet, said apparatus comprising:

a base;

means for attaching said base to said tubesheet over at least a portion of a row of tubes;

a carriage slidaly disposed in the base to traverse at least a portion of a row of tubes;

a spindle rotatably disposed in the carriage, the spindle having a centrally disposed guide pin, which fits inside a tube, the guide pin being slidably disposed in said spindle, said spindle having means disposed therein for sliding said guide pin in and out of the tube;

means for applying frictional resistance to the spindle to prevent it from turning, except when the guide pin is in a tube;

a welding torch disposed in said spindle adjacent said guide pin;

a sheave disposed on the spindle;

sheaves disposed adjacent the ends of the base;

continuous belting means engaging said sheaves adjacent said ends of the base and looping around said spindle sheave;

means for driving said belting means;

means for intermittently operating the means for sliding the guide pin in and out of a tube, whereby the welding torch will move rectilinearly when the guide pin is not in a tube and follow a circular path when the guide pin is in a tube forming a continuous weld to weld at least a portion of a row of tubes to the tubesheet.

4,327,270

SUBMERGED-ARC SPOT WELDING APPARATUS

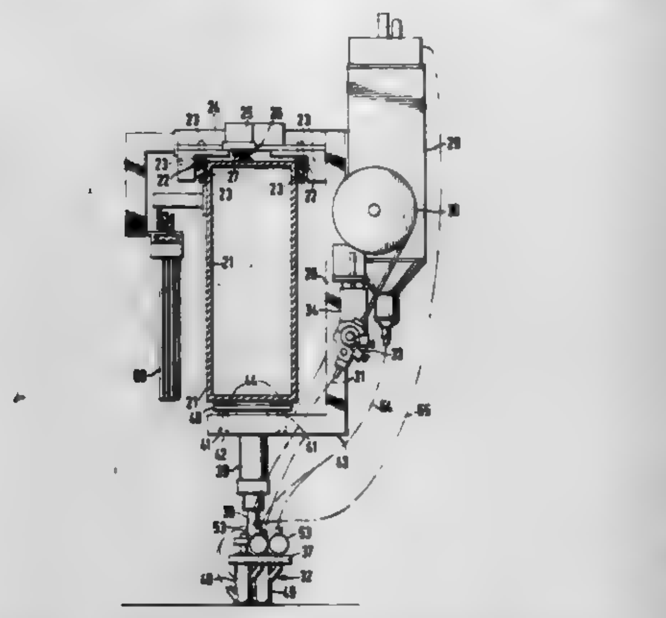
Börje R. Lundin, Laxa, Sweden, assignor to ESAB Aktiebolag, Sweden

Continuation of Ser. No. 890,933, Mar. 28, 1978, abandoned. This application Aug. 15, 1980, Ser. No. 178,452

Claims priority, application Sweden, Mar. 28, 1977, 7703491; May 9, 1977, 7705343

Int. Cl.³ B23K *9/18*

U.S. Cl. 219—73.2 **16 Claims**



12. Apparatus for submerged-arc spot welding, comprising a track spaced from support means for supporting a structure to be welded; a carriage supported and guided by said track; welding means supported by said carriage; a thrust member supported by said carriage and movable between a first position in which said thrust member engages a structure to be welded and a second position in which said thrust member is spaced a distance from a structure to be welded; motive means for moving said thrust member between said first and second positions, said motive means including a cylinder movable with respect to said carriage towards and away from a structure to be welded and a single piston rod associated with said cylinder, said piston rod being rigidly connected to said thrust member and mounted for reciprocating movement in said cylinder; guiding means for guiding the movement of said cylinder with respect to said carriage; first stop means for limiting the movement of said cylinder towards a structure to be welded; and second stop means rigidly connected to said track and extending along said track for limiting the movement of said cylinder away from a structure to be welded when said thrust member is in said first position, said second stop means abutting said cylinder when said thrust member is in said first position and cooperating with said cylinder and said guiding means to completely immobilize said welding means during a submerged-arc spot welding operation carried out when said thrust member is in said first position.

4,327,271

CONDENSATION HEATING APPARATUS

Peter D. Bentley, Brighton, and James F. Pollock, Hook, both of England, assignors to United Kingdom Atomic Energy Authority, London, England

Filed May 16, 1980, Ser. No. 150,429

Int. Cl.³ B23K *1/00, 31/02;* **H05K** *3/34*

U.S. Cl. 219—85 E **4 Claims**

1. Condensation heating apparatus comprising,

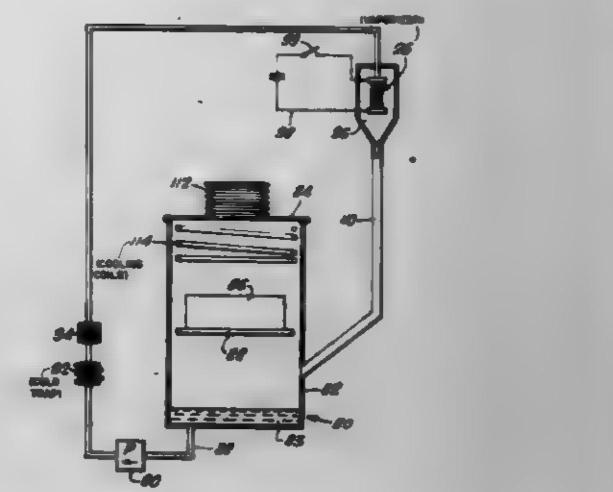
(a) a chamber;

(b) a removable closure portion of the chamber to enable an article to be inserted into and withdrawn from the chamber;

(c) a flexible portion of the chamber arranged to be free to respond to the pressure inside the chamber so as to equalise the pressure inside the chamber with atmospheric pressure by the flexure of said flexible portion;

(d) a permeable electrically conducting matrix outside the chamber for heating a liquid to cause vaporization thereof;

(e) a first duct downwardly extending from the matrix to the chamber so as to introduce the vapour into the chamber;



(f) an electric circuit connected to the matrix for energising the matrix;

(g) a displacement pump for displacing the liquid through the matrix;

(h) a second duct for connecting the pump to the matrix and

(i) a drain means for draining the vapor condensed in the chamber and for connecting the chamber to the pump.

4,327,272

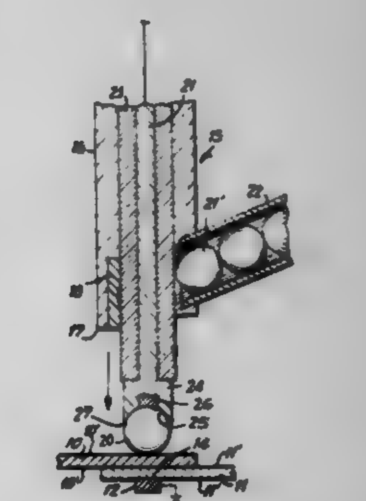
METHOD FOR SPOT WELDING GALVANIZED SHEET METAL

Milton Hinden, Massapequa, N.Y., assignor to The Hinden Trust, Massapequa, N.Y.

Filed Mar. 14, 1979, Ser. No. 20,443

Int. Cl.³ B23K *11/16*

U.S. Cl. 219—94 **11 Claims**



1. The method of connecting two superimposed sheets of galvanized coated ferrous metal by welding which comprises the steps of contacting an area of an outer surface of one of said superimposed sheets with a first electrode, contacting an outer surface of the other of said superimposed sheets at an area in registry with said area contacted by said first electrode with a consumable ferrous metal member having a greater hardness than the galvanized coating to provide the necessary penetration to the ferrous metal of said superimposed sheets, said consumable metal member having a reduced contact area engaging said surface of said other sheet, contacting a major portion of the surface of said consumable metal member with a conductive carrier electrode, and continuously urging said

carrier electrode toward said first electrode while simultaneously passing an electrical current between said electrodes sufficient substantially to deform said consumable metal member and to interfuse contacting portions of said sheets disposed between said member and said first electrode.

4,327,273

METHOD OF TREATING A WORKPIECE WITH ELECTRON BEAMS AND APPARATUS THEREFOR

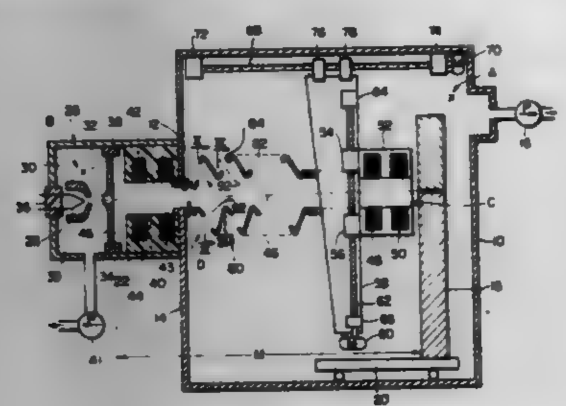
Hisanao Kita; Yoshinori Karatsu; Takamitsu Nakazaki, and Yoji Akutsu, all of Ibaraki, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 19, 1980, Ser. No. 131,857

Claims priority, application Japan, Mar. 23, 1979, 54-34768; Jun. 6, 1979, 54-70038

Int. Cl.³ B23K *15/00*

U.S. Cl. 219—121 EC **3 Claims**



1. An apparatus for treating a workpiece with electron beams comprising:

a first vacuum chamber;

an electron beam gun disposed in said first vacuum chamber for generating electron beams, said electron beam gun including a filament, a grid or cathode, and an anode with an aperture;

a first focusing coil disposed on the downstream side of said anode of said electron beam gun for focusing the electron beams on said workpiece to be treated;

a first deflecting coil disposed on the downstream side of said first focusing coil;

a second vacuum chamber having a front wall with an aperture and a rear wall and enclosing said workpiece therein, said second vacuum chamber hermetically fixed to said first vacuum chamber, and said aperture of said second vacuum chamber opposed said aperture of said anode of said electron beam gun;

the distance between the rear wall of said second vacuum chamber and said anode of said electron beam gun being such that said workpiece is allowed to separate from said anode of said electron beam gun by a distance larger than the mean free path of gas molecules generated in treating said workpiece;

a second focusing coil disposed between said aperture of said second vacuum chamber and said workpiece in said second vacuum chamber, for focusing the electron beams on said workpiece; and

a second deflecting coil disposed on the downstream side of said second focusing coil in said second vacuum chamber.

4,327,274

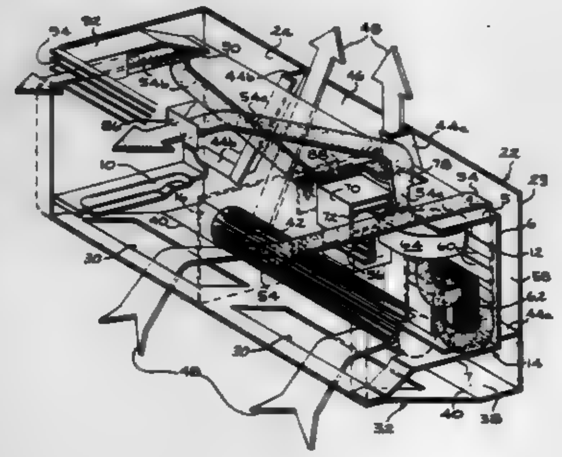
VENTILATION SYSTEM FOR COMBINATION MICROWAVE OVEN AND EXHAUST VENT

James A. White, Louisville; Frank L. Rice, Jeffersontown, and Walter E. Lewis, Louisville, all of Ky., assignors to General Electric Company, Louisville, Ky.

Continuation of Ser. No. 935,436, Aug. 21, 1978, abandoned. This application Apr. 23, 1980, Ser. No. 142,943

Int. Cl.³ H05B *6/64;* F24C *15/30*

U.S. Cl. 219—10.55 R **17 Claims**



1. An assembly combining a microwave oven appliance with an exhaust vent hood, said assembly adapted for positioning in an elevated position above a cooking surface, comprising:

means forming a housing for said appliance having a top, a bottom and a rear surface,

means forming a support structure for said housing having a top and a back wall, said support structure adapted for mounting in said elevated position independently of said housing, said housing and support structure having cooperation means for slidably moving said housing into and out of said structure with said top surface of said housing positioned below said top wall of said structure,

elongated rib means spacing said rear surface from said back wall; said rear surface, back wall and rib means defining a first channelized air space therebetween when said housing is within said structure,

plate means spaced below said bottom surface for providing a second air space therebetween, said first and second air spaces communicating with one another, said plate means defining an opening through which air can flow from a level below said plate means into said second air space,

means enclosing the sides of said second air space for channelizing the same,

means for forcibly moving air from below said plate into said second air space, and through said second air space into and through said first air space,

an air entry formed in said rear surface of said housing, means for drawing oven cooling air into said housing through said entry, and

means, including said housing, said support structure and said rib means, forming a third channelized air space separate from said first and second air spaces and communicating with said air entry in said rear surface for providing oven cooling air to the interior of said oven separate from air flowing through said first and second air spaces.

4,327,275

LASER WELDING OF AN ELECTRON GUN

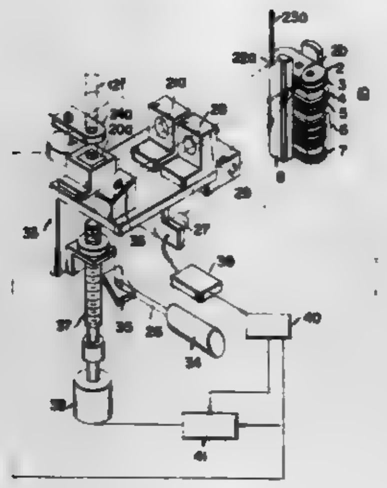
Shuuji Asabe, Fujisawa; Minoru Nemoto, Yokohama; Kenji Ushimi, Sagamihara, and Akira Ono, Tokyo, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Nov. 9, 1979, Ser. No. 93,138

Claims priority, application Japan, Nov. 14, 1978, 53-139339

Int. Cl.³ B23K *26/04*

U.S. Cl. 219—121 LD **7 Claims**



1. A method for laser beam welding a strap conductor to an electrode of an electrode gun, the strap conductor for applying a voltage to a predetermined portion of the electrode, comprising the steps of:

disposing a strap conductor at a predetermined position along a surface of the electrodes to be laser beam welded to the electrodes;

providing a laser beam generator for generating, upon actuation, a laser beam for welding, the laser beam having a predetermined optical axis;

providing a positioning light source for generating a positioning light beam having an optical axis bearing a fixed predetermined relationship to the optical axis of the laser beam;

causing relative movement of the electrodes and strap conductor relative to the optical axes of the laser and positioning beams;

causing said positioning beam to be incident on an edge of the surface of the electrode, the positioning beam being at least partially reflected therefrom;

detecting reflected light obtained when said positioning light beam is reflected by the edge of the electrode from the point to be welded, light reflected from portions of the electrode other than the edge being stopped by a pin hole aperture;

stopping said relative movement in response to the detection of the reflected light; and

actuating the laser beam generator so as to expose a welding point of the strap conductor to the laser beam for welding in response to the detection of said reflected light so as to effect welding of the electrode and strap conductor together.

7. An apparatus for welding a strap conductor to an electrode of an electron gun, comprising:

a laser beam generator for producing a laser beam for effecting the welding of electron gun parts including said electrode and strap conductor to be welded together,

a positioning light source for producing light for positioning a welding point,

a light-sensing means for (a) detecting reflected light obtained when said light for positioning is reflected by an edge of said electrode which corresponds to said welding point but differs from the welding point and (b) generating a position signal in response to the detection, the light sensing means including a lens for focusing light reflected from the electrode, a pin-hole aperture positioned at the focus of the lens for blocking light reflected from the electrode other than from the edge and an optical sensor for detecting light passing through the pinhole, whereby only light reflected from the edge is detected by the sensor,

a means for causing relative movement of the optical axes of said laser beam and positioning light source, said axes having a fixed predetermined positional relation to each other, with respect to the electrodes and strap conductor, and

a means for controlling the operation of said moving means according to said positioning signal generated by said light-sensing means.

4,327,276

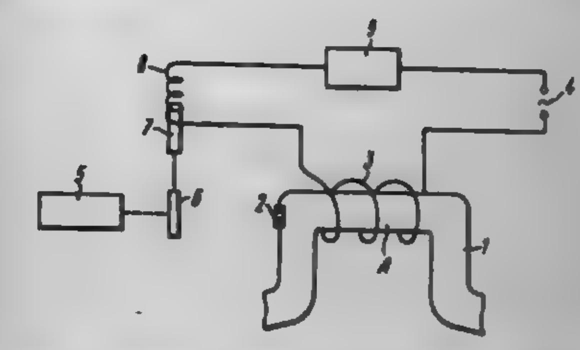
WATER TREATMENT APPARATUS

Viktor M. Injushin, ulitsa Shevchenko, 162"D", kv. 18., Alma-Ata; Valentin I. Khokhlov, oblast, Kaskelensky raion, selo Kargalinka, ulitsa Kirova, 32, Alma-Atinskaya, both of U.S.S.R.; Fedor Akhremenko, deceased, late of Ust-Kamenogorsk, U.S.S.R., and by Galina T. Akhremenko, administrator, ulitsa Burova, 45, kv. 42, Ust-Kamenogorsk, U.S.S.R.

Filed Feb. 27, 1980, Ser. No. 125,251

Int. Cl.³ B23K *27/00*

U.S. Cl. 219—121 L **3 Claims**



1. A water treatment apparatus, comprising: a water line; a circuit having a coil mounted about said water line and an electric power source connected thereto; an electromagnet in said circuit and a timer in series with said coil; one section of said water line provided with a light inlet port made of a transparent material; a source of monochromatic light having an axis thereof aligned with a geometric center of said inlet port in said water line section; and a screen mounted connected to be actuated by said electromagnet under control of said timer for periodic interruption of said beam radiated by said source of monochromatic light.

4,327,277

METHOD FOR LASER SOLDERING

Kevin R. Daly, Stow, Mass., assignor to Raytheon Company, Lexington, Mass.

Continuation of Ser. No. 936,671, Aug. 24, 1978, abandoned. This application May 19, 1980, Ser. No. 150,768

Int. Cl.³ B23K *26/00, 1/12*

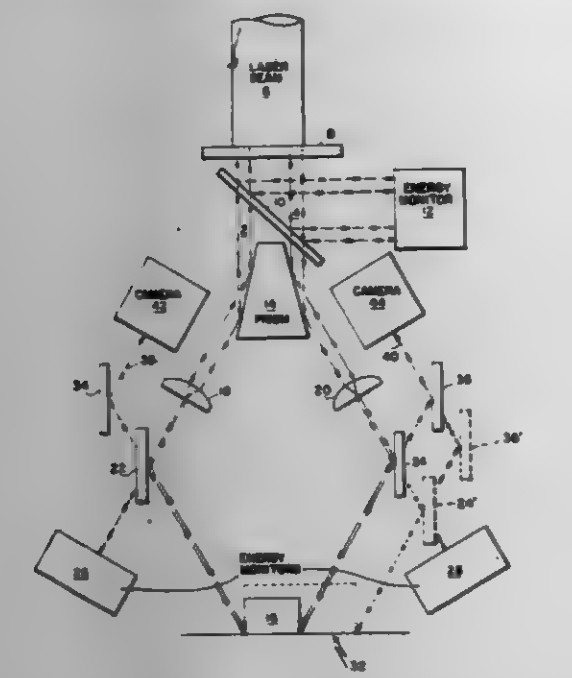
U.S. Cl. 219—121 LD **4 Claims**

1. A method of soldering an electronic chip component having solder on opposing ends to two supporting conductor pads connected to a substrate, comprising the steps of:

providing pulsed coherent laser radiation having pulse widths of less than 10 milliseconds with a repetition rate of less than 10 pulses per second, the pulse train duration of said radiation being less than one second;

separating said radiation into two simultaneous spatially separate beams having substantially equal energy;

directing said beams inward toward said opposing ends of said electronic chip component to reflow said solder; and



removing said beams to substantially simultaneously form solder joints between said component and said pads.

4,327,278

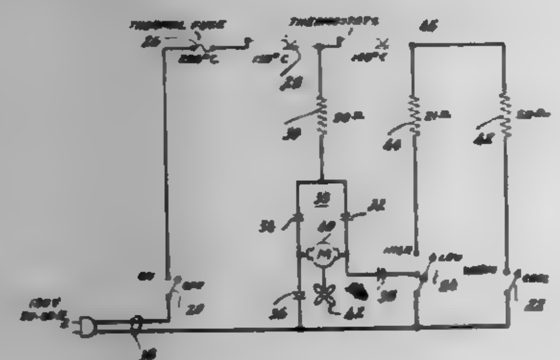
SIMPLIFIED MULTIPLE SPEED HAIR DRYER

John W. Tomaro, Maplewood, N.J., assignor to Conair Corporation, Edison, N.J.

Filed Sep. 10, 1979, Ser. No. 74,389

Int. Cl.³ A45D *20/10;* H05B *1/02*

U.S. Cl. 219—364 2 Claims



1. A two speed, multiple heat hair dryer comprising:

means for coupling said hair dryer to a source of potential, first and second heater elements,

a bridge rectifier circuit,

a d.c. motor connected across said bridge rectifier circuit,

first switch means connected to an arm of said bridge rectifier circuit for switching said arm into and out of said bridge rectifier circuit,

means for coupling said first heater element and said bridge rectifier circuit in series across said source of potential,

said d.c. motor being driven at a first speed when said first switch mmeans is open and at a second higher speed when said first switch means is closed,

said second heater element being electrically connected to said first switch means for simultaneously electrically coupling said second heater element in parallel to said first heater element across said source of potential through said first switch means when said arm of said bridge rectifier circuit is switched into said bridge rectifier circuit,

a third heater element and second switch means for selectively electrically coupling said third heater element across said source of potential through said second switch means,

said first heater element providing a first heat level when said first and second switch means are open,

said first and second heater elements providing a second heat level when said first switch means is closed, and said second switch means is open,

said first and third heater elements providing a third heat level when said second switch means is closed and said first switch means is open, and

said first, second and third heater elements providing a fourth heat level when said first and second switch means are closed.

4,327,279

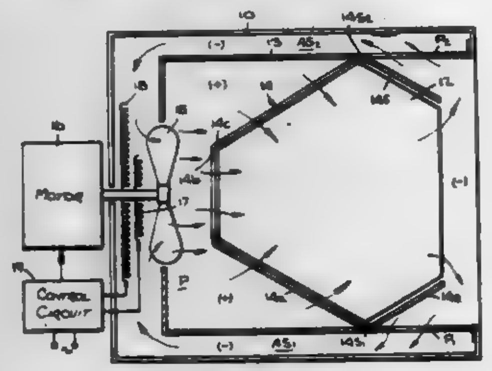
COUNTER-TOP REHEATING UNIT FOR PACKAGED PRE-COOKED MEALS

Raul Guibert, Los Angeles, Calif., assignor to Sunsetl, Ltd., Los Angeles, Calif.

Continuation-in-part of Ser. No. 97,787, Nov. 27, 1979. This application Dec. 30, 1980, Ser. No. 221,208

Int. Cl.³ A21B *1/22;* F27D *11/02*

U.S. Cl. 219—400 6 Claims



1. A counter-top reheating unit for packages containing pre-cooked meals, the unit being adapted to quickly raise the temperature of the meals to a service temperature level that is below the temperature at which cooking takes place, said unit comprising:

A. a box-like case having an inner box nested therein, said case and said box having an open front; the dimensions of the inner box relative to the case being such as to define a rear air space and side air spaces communicating therewith;

B. a compartment for accommodating a stack of said packages with spacings therebetween, said compartment fitting within the inner box and having a perforated rear wall spaced from the rear of the inner box to define therewith a plenum, said compartment having a front air space leading to said side air spaces; and

C. means to heat the air in the rear air space to a temperature well above the service temperature level and to blow the resultant hot air into said plenum to create a positive pressure therein, thereby developing a negative pressure in said air spaces, the resultant pressure differential forcing the hot air through said perforated wall and causing the hot air to flow at high velocity through said package spacings in heat exchange relationship with said pre-cooked meals, the hot air then passing from the front air space into said side air spaces and back to said rear air space to create a flow loop recirculating the hot air through said compartment.

4,327,280

SMOOTH TOP COOKERS

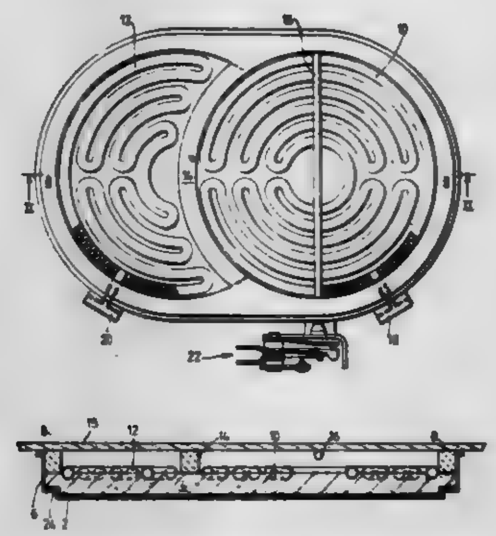
Joseph A. McWilliams, Droitwich, England, assignor to Micropore International Limited, Droitwich, England

Filed Feb. 6, 1980, Ser. No. 118,951

Int. Cl.³ H05B *3/76*

U.S. Cl. 219—464 13 Claims

1. In an electric cooker having a continuous smooth top and at least one radiant heater located against the underside of the smooth top, the smooth top being transparent and substantially non-absorptive to radiant cooking heat, and at least one radiant heater comprising a metal dish having a base supporting a base layer of thermal insulating material and a sidewall against which a peripheral wall of thermal insulating material is mounted; and at least two heater elements supported on said base layer of thermal insulating material with a dividing wall of thermal insulating material therebetween, said dividing wall extending to a height substantially equal to the height of said peripheral wall, and both walls extending beyond the sidewall of the metal dish to the underside of said smooth top; wherein one of said elements is encircled by said dividing wall and a part of said peripheral wall to define with a first portion of the smooth top a first chamber, said first portion of the smooth top



constituting a first heating zone effective over a predetermined first planar area of the smooth top upper surface, said one element being energisable independently to heat said first zone and said encircling wall preventing loss of radiant cooking heat outside of the circled area; and wherein said other element is surrounded by a wall of thermal insulating material to define with a second portion of the smooth top a second chamber, said section portion of the smooth top constituting a second heating zone effective over a predetermined second planar area of the smooth top upper surface adjacent to and contiguous with said first area, said surrounding wall comprising said dividing wall and a part of said peripheral wall and said two heater elements being energisable together to heat both zones and generate heat over an elongated planar area bounded by said peripheral wall.

4,327,281

AQUARIUM IMMERSION HEATER WITH DRY OPERATION PREVENTION THERMOSTATIC SWITCH

Wolfgang Jager, Wustenrot-Finsterrot, Fed. Rep. of Germany, and Erhard Boettger, El Segundo, Calif., assignors to Ebo-Jager, Inc., El Segundo, Calif.

Filed Feb. 19, 1980, Ser. No. 122,000

Claims priority, application Fed. Rep. of Germany, Jul. 6, 1979, 2927280

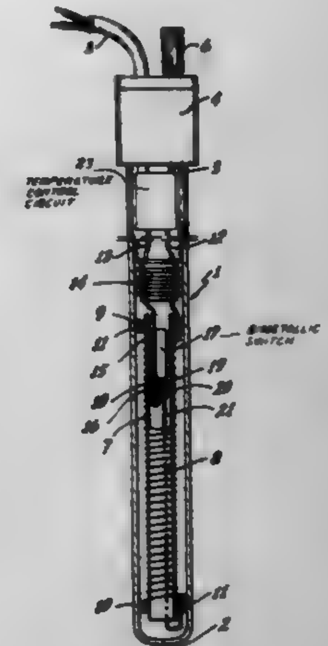
Int. Cl.³ H05B *1/02, 3/80*

U.S. Cl. 219—523 4 Claims

1. In an aquarium heater having a tubular housing, and with a control circuit in the upper part of the housing for temperature responsive off and on switching of a heating element disposed in the lower part of the housing, and with the heating element constructed by an elongated non-metallic support tube on which a helical heating wire is wound, the improvement comprising

a temperature responsive breaker switch coupled within a feed line leading to one end of the heating wire,

the temperature responsive breaker switch located slightly below the upper end in the interior of the elongated non-metallic support tube supporting the heating wire and extending within a number of turns of the heating wire and with the length of the breaker switch within the number of turns supported on the elongated support tube representing a small fraction of the length of the elongated support tube, and



with the space between the tubular housing wall and the tube supporting the heating wire and the interior space of tube supporting the wire filled with sand so that the temperature responsive breaker switch is completely enclosed by sand. pg,10

4,327,282

ELECTRICAL RESISTANCE HEATING ELEMENT

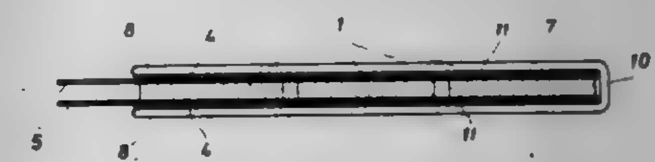
Karl-Heinz Nauerth, Erlenbach, Fed. Rep. of Germany, assignor to Firma Fritz Eichenauer, Kandel, Fed. Rep. of Germany

Filed Oct. 18, 1979, Ser. No. 86,175

Claims priority, application Fed. Rep. of Germany, Oct. 21, 1978, 2845965

Int. Cl.³ H05B *3/02*

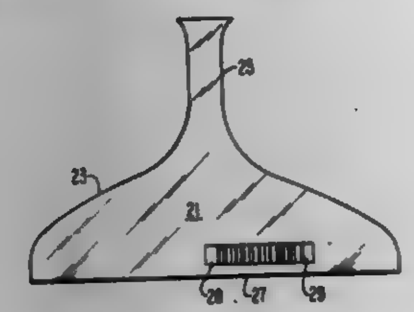
U.S. Cl. 219—541 14 Claims



1. An electrical resistance heating element comprising electrical resistance heating means including at least one heating conductor element made of a material with a positive temperature coefficient of electrical resistance and having opposite substantially planar surfaces; substantially planar, electrically conductive contact means on the opposite surfaces of said heating conductor element; electrical connecting elements for said heating means including two substantially planar, electrically conductive contact plates having a size and shape corresponding substantially to the layout of the heating means and being respectively placed loosely upon the opposite surfaces of the heating conductor element so that it is sandwiched therebetween, a planar surface of each contact plate being in contact with a respective contact means on said heating conductor

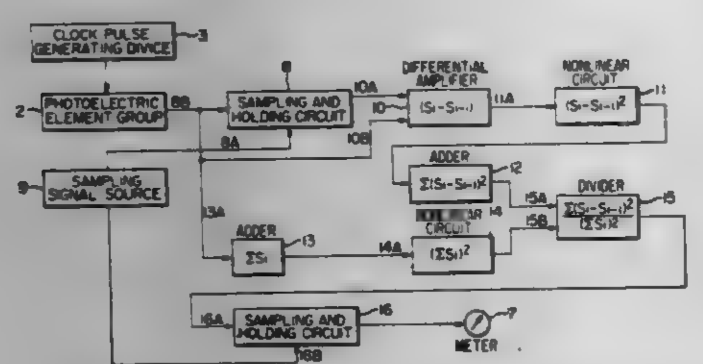
element, and electrical connecting terminals for said contact plates; and electrically non-conductive securing means including holding elements, each of which is applied along respective edges of the contact plates for holding the contact plates elastically against the opposite surfaces of said at least one heating conductor element at the respective edges thereof.

4,327,283
WORKPIECE WITH MACHINE-READABLE MARKING RECESSED THEREIN AND METHOD OF MAKING SAME
Philip M. Heyman, Robbinsville, and Robert L. Quinn, Trenton, both of N.J., assignors to RCA Corporation, New York, N.Y.
Filed Sep. 24, 1979, Ser. No. 78,440
Int. Cl.³ G06K *19/02*
U.S. Cl. 235—487 8 Claims



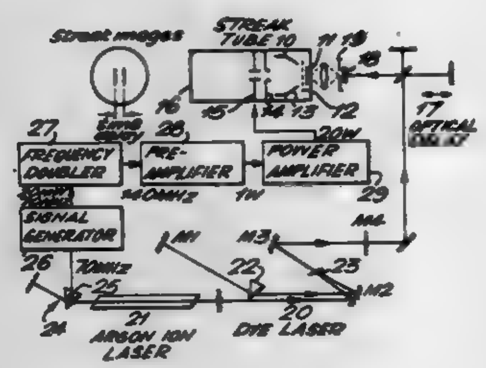
1. A workpiece comprising a main body, a thin coating on a portion of said body, and an undercoating between, and in direct contact with, said coating and said main body, said coating and said undercoating being integral with said main body, said coating having an external surface and a coded machine-readable marking in said external surface, said marking comprising a related sequence of substantially parallel bars of at least two different widths recessed into said surface and through said coating, and separated by substantially parallel spacings, said bars and the surrounding surface having substantially different light reflectances.

4,327,284
FOCUSING DETECTION DEVICE
Toshitstsu Suzuki, Yokohama, Japan, assignor to Ricoh, Co., Ltd., Tokyo, Japan
Filed Mar. 12, 1980, Ser. No. 129,627
Claims priority, application Japan, Mar. 17, 1979, 54/31290
Int. Cl.³ G01J *1/36*
U.S. Cl. 250—204 3 Claims



1. A focusing detection device characterized in that it comprises a group of photoelectric elements which share a small light receiveing area in an imaging surface or in a surface optically equivalent thereto and which are disposed adjacent to one another; an electrically driving device for sequentially obtaining an output from one of the terminals of the photoelectric element group; a circuit for sampling and holding an output from said one terminal; a device for obtaining the difference between the output of the photoelectric element group and the output of the photoelectric element before the sampling and holding is effected; a circuit for nonlinearizing the output of the device for obtaining the difference; a device for summing the output of this circuit over part or the entirety of the photoelectric element; and a device for obtaining extreme values within the range of the displacement of an optical image rendered to the photoelectric elements corresponding to the summed value.

4,327,285
ELECTRON-OPTICAL IMAGE TUBES AND STREAK CAMERAS
Daniel J. Bradley, 51 Wellington Rd., Dublin 4, Ireland
Filed Mar. 23, 1979, Ser. No. 23,312
Claims priority, application United Kingdom, Mar. 23, 1978, 11546/78
Int. Cl.³ H01J *31/50;* G01J *1/00*
U.S. Cl. 250—213 VT 22 Claims

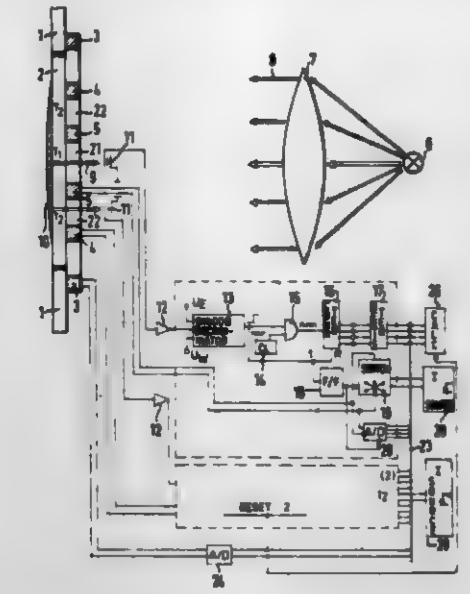


1. Apparatus for obtaining a record of repetitive optical phenomena having durations in the picosecond or sub-picosecond range, comprising an image tube for receiving repetitive pulse-form images and converting them to electron images; electron deflecting means to deflect the electrons in their passage through the tube; a continuous wave mode-locked laser arranged to generate a repetitive series of pulses; guide means for directing the laser pulse train to the image tube; means to supply to the deflecting means a time-resolving scanning voltage; means to scan the electron images in the tube in a linear direction; synchronising means to synchronise the deflection of the electron images in the tube with the repetition rate of the pulse train from the continuous wave mode-locked laser; and means to scan the electron image across the tube to read out the time-resolved image profile.

4,327,286
METHOD AND APPARATUS FOR MEASURING THE RISK OF ICE FORMATION
Andreas Thoma, Gernering, Fed. Rep. of Germany, assignor to Apparatebau Gauting GmbH, Gauting, Fed. Rep. of Germany
Filed Jul. 7, 1980, Ser. No. 166,167
Claims priority, application Fed. Rep. of Germany, Jul. 12, 1979, 2928208
Int. Cl.³ G01W *1/00*
U.S. Cl. 250—231 R 18 Claims

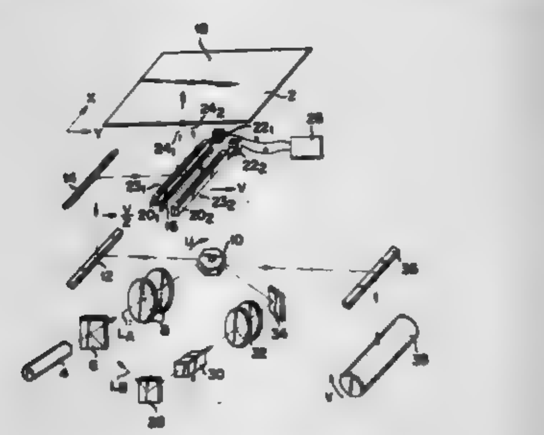
1. The method of recognizing a risk of icing on a surface subject to continuous or graduated temperature varitation in which the icing over of the surface is detected by directing light on the surface and measuring the light back-scattered by ice, and characterized by:

cooling two detection surfaces to different temperatures;
measuring the times within which the detection surfaces ice over after cooling has begun; and
determining the temperature of the detection surfaces in the iced-over state and the temperature of said first mentioned



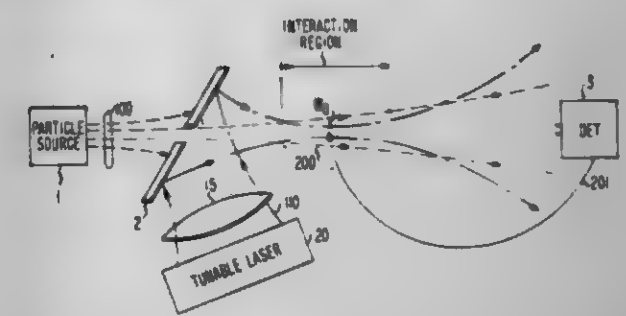
surface, the risk of icing being determined in terms of time of the ice formation at points of different temperature.

4,327,287
LASER SCANNING APPARATUS
Tutomu Saito, Yokohama, and Ryoji Yamaguchi, Yutaka, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan
Filed Feb. 7, 1980, Ser. No. 119,636
Claims priority, application Japan, Feb. 14, 1979, 54-14923
Int. Cl.³ G02B *27/17*
U.S. Cl. 250—234 12 Claims



1. A laser scanning apparatus comprising:
a laser beam source;
a laser beam deflecting means for deflecting a laser beam produced from said laser beam source such that said laser beam scans a stationary document in a main scanning direction thereof;
an optical means provided between said laser beam deflecting means and said stationary document and serving to deflect said laser beam from said laser beam source such that said laser beam scans in an auxiliary scanning direction substantially perpendicular to said main scanning direction, said optical means including a movable reflector system moved in said auxiliary scanning direction while maintaining a constant length of the beam path between said laser beam deflecting means and said document; and
an optical detecting means moved together with said movable reflector system and receiving scattered beam component from said document.

4,327,288
METHOD FOR FOCUSING NEUTRAL ATOMS, MOLECULES AND IONS
Arthur Ashkin, Rumson; John E. Bjorkholm, Holmdel; Richard R. Freeman, Middletown, all of N.J., and David B. Pearson, Staten Island, N.Y., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Sep. 29, 1980, Ser. No. 192,343
Int. Cl.³ H01S *1/00*
U.S. Cl. 250—251 8 Claims



1. Apparatus for focusing a beam of particles (100) which comprises:
laser means (20) for producing a beam of laser radiation (110);
means (15, 2) for superimposing said beam of laser radiation onto said beam of particles such that both beams propogate substantially along the same axis for an interaction region;
characterized in that
said beam of laser radiation is a TEM*$_{01}$ mode beam and said laser beam is detuned from a resonant transition for at least a portion of the particles in said beam of particles by an amount $\Delta\nu$ in the range of values determined by the steps of:
(1) evaluating the parameter 2R as a function of $\Delta\nu$ from the equation

$$R^2 = \frac{w_0^4}{P}\ \frac{2\pi^3 hc}{\lambda^3\Delta\nu_N}\left(\Delta\nu^2 + \frac{\Delta\nu_N^2}{4}\right)\left[\exp\left(\frac{2E_t}{h\Delta\nu}\right) - 1\right]$$

with

$$E_t = \frac{mv_0^2\Delta\theta^2}{2}\left[1 + \frac{d}{\Delta\nu^{\frac{1}{2}}}\left\{1 + a\frac{\Delta\nu}{\Delta\nu^2 + \frac{\Delta\nu_N^2}{4}} + b\frac{1}{\Delta\nu^2}\right\}^{\frac{1}{2}}\right]^2$$

where

$$d = \left[\frac{\pi^2 h\Delta\nu_N w_0^2}{3m\lambda^3 v_0}\right]^{\frac{1}{2}}$$

$$a = \frac{\lambda^5\Delta\nu_N}{8\pi^5 cmv_0^2\Delta\theta}\ \frac{P}{w_0^4}$$

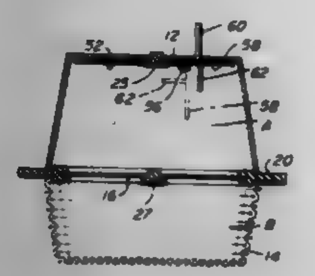
$$b = \frac{5\lambda^5 m^2 v_0^4\Delta\theta^4}{32\pi^5 ch^3\Delta\nu_N}\ \frac{P}{w_0^4}$$

P is the laser power, ν_N is the natural linewidth (FWHM) of the particle resonance, c is the speed of light, λ is the wavelength of the laser radiation, m is the particle mass, h is Planck's constant, v_0 is the most probable particle velocity, $\Delta\theta$ is the half-angular divergence of the particle beam, w_0 is the laser beam focal spot size, and $\Delta\nu$, the laser detuning $= \nu - \nu_0$, ν being the laser beam frequency in the particle restframe and ν_0 being the particle resonance frequence for 2R;
(2) determining the value of $\Delta\nu$ which minimizes 2R with $E_t = (mv_0^2\Delta\theta^2/2)$ which value shall be designated $(\Delta\nu_{opt})$ no heat;
(3) determining the value $(2R)_o$ the value of 2R for

$\Delta\nu = (\Delta\nu_{opt})$ no heat, from the equation for R^2 in step 1; and

(4) determining the range of values of $\Delta\nu$ between the intersections of the curve of 2R derived from the evaluation in step 1 and the curve $2R = (2R)_c$.

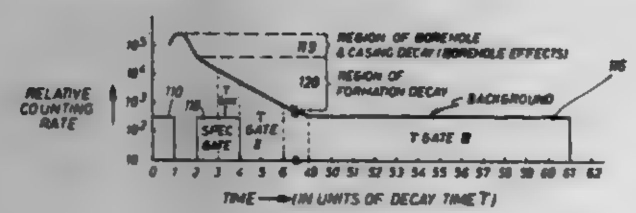
4,327,289
IONIZATION DETECTOR CALIBRATION
Elias E. Solomon, 30 Christina Ct., Duxbury, Mass. 02332
Filed Dec. 26, 1978, Ser. No. 972,661
Int. Cl.³ G01D *18/00;* H01J *47/02*
U.S. Cl. 250—252 4 Claims



1. For an ionization detector having a chamber, electrodes associated with the chamber and an ionization source, apparatus for calibrating the detector to simulate the presence of particles of combustion comprising, probe means extendable into the chamber and having a first fixed position wherein the ionization current is unalterable, and a second temporary position wherein the ionization current is lowered to simulate particles of combustion, said probe means being constructed with at least two zones including a first zone of an electrically conductive material and a second zone having an electrical conductivity less than that of the first zone.

2. For an ionization detector having a chamber, electrodes associated with the chamber and an ionization source, apparatus for calibrating the detector to simulate the presence of particles of combustion comprising, means associated with the chamber and having a first fixed position wherein the ionization current is unaltered, and a second temporary position wherein the ionization current is lowered to simulate particles of combustion, said particle simulation means including attenuation means and means for pivotally supporting the attenuation means whereby in the first position the attenuation means is disposed laterally of and substantially outside of the ionization path and in the second position is pivotally moved at least partially into the ionization path to attenuate ionization current and thus simulate particles of combustion.

4,327,290
METHOD AND APPARATUS FOR NUCLEAR WELL LOGGING WITH OPTIMIZED TIMING FOR SIMULTANEOUS MEASUREMENT OF THERMAL NEUTRON DECAY TIME AND GAMMA RAY PULSE HEIGHT SPECTRA
Ronald E. Plasek, Houston, Tex., assignor to Schlumberger Technology Corp., Houston, Tex.
Filed Nov. 2, 1979, Ser. No. 90,800
Int. Cl.³ G01V *5/00*
U.S. Cl. 250—262 40 Claims



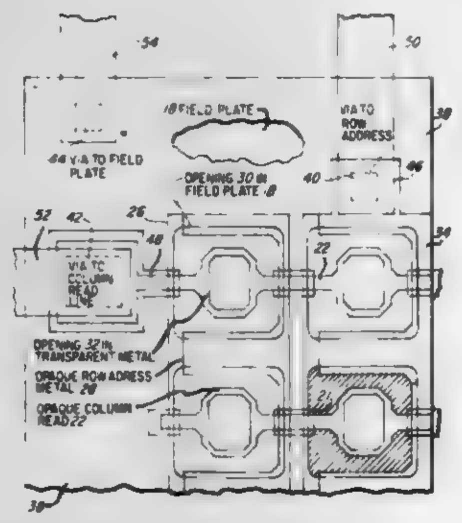
6. In apparatus for investigating earth formations traversed by a well bore of the type including a well tool adapted to be moved through the well bore, neutron burst producing means carried by the well tool for irradiating the formation and other well bore media surrounding the well tool with cycles of time-spaced bursts of fast neutrons, and detector means carried by the well tool for detecting gamma rays resulting from neutron interactions with nuclei of the formation and for generating corresponding signals representative of the energies of the detected gamma rays; the improvement comprising:

means for generating gamma ray count signals during plural sets of first and second tau gates, each set occurring after each of a predetermined plural number of neutron bursts by the neutron burst producing means;

means for generating the signals representative of energies of the detected gamma rays during spectroscopy gates occurring between bursts of the predetermined plural number of bursts; and

circuit means responsive to the gamma ray count signals for generating a signal proportionally representative of the thermal neutron decay time tau of the formation.

4,327,291
INFRARED CHARGE INJECTION DEVICE IMAGING SYSTEM
Richard A. Chapman; Michael A. Kinch, both of Dallas, and Jaroslav Hynecek, Richardson, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Filed Jun. 16, 1980, Ser. No. 159,991
Int. Cl.³ H01J *31/49*
U.S. Cl. 250—332 13 Claims



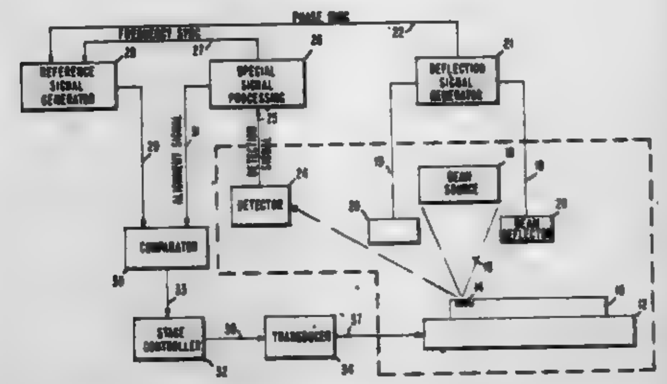
1. An infrared imager system comprising:

(a) means for focusing infrared energy emanating from a scene;

(b) an infrared detector matrix in the path of the focused infrared energy for converting the infrared energy into electrical signals, said detector matrix having a plurality of charge injection device (CID's) detector elements, each charge injection device detector element having a substrate of semiconductor material, a plurality of electrodes supported by said substrate, said plurality of electrodes including a first non-uniform width electrode centrally disposed as to a second electrode to substantially reduce dark current, said electrodes operative to store charges generated by the infrared energy impinging on the CID element, said charges producing changes in voltages representative of impinging infrared energy; and

(c) means for producing video signals from the voltage changes representative of the impinging infrared energy.

4,327,292
ALIGNMENT PROCESS USING SERIAL DETECTION OF REPETITIVELY PATTERNED ALIGNMENT MARKS
Victor Wang, Oxnard Beach, and Robert L. Seliger, Agoura, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.
Filed May 13, 1980, Ser. No. 149,600
Int. Cl.³ A61K *27/02;* G01M *21/00*
U.S. Cl. 250—491 24 Claims



1. A process for aligning the surface of a chosen member with the scan field of a focused beam of radiation or particles which includes the steps of:

(a) providing a set of alignment marks on said surface of said member, said marks in said set being spaced at a predetermined periodicity;

(b) providing a continuous back and forth scanning movement of said beam over said set of alignment marks at a predetermined and fixed velocity to produce a serial detection electrical signal that is indicative of the periodicity of spacing of said set of alignment marks and whose phase angle corresponds to the relative position of said set of alignment marks;

(c) electronically processing said detection signal to generate an alignment signal comprising a fundamental periodic signal of a selected frequency;

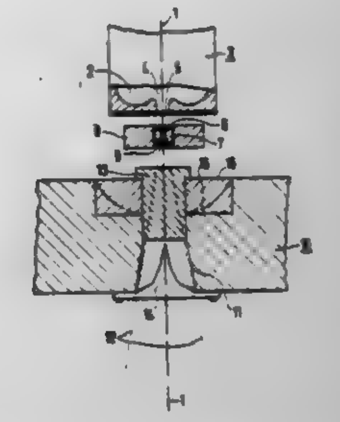
(d) providing a reference electrical signal comprising a periodic signal of said selected frequency and predetermined phase, said phase having a predetermined relationship to said scan field of said beam;

(e) comparing the phase angle of said alignment signal and the phase angle of said reference signal and generating an error signal which is proportional to the phase difference of said alignment signal and said reference signal;

(f) providing lateral relative movement between said scan field of said beam and said set of alignment marks in response to said error signal until said alignment signal and said reference signal become congruent in phase whereby highly accurate alignment of said surface of said chosen member with said scan field of said focused beam of radiation is produced.

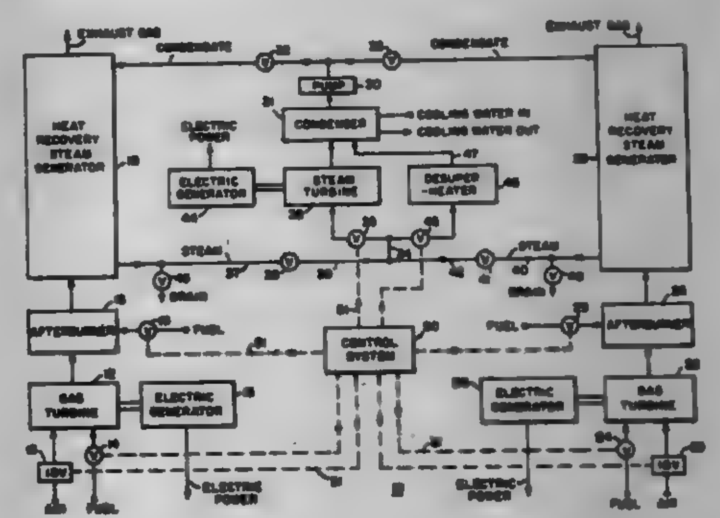
4,327,293
ELECTRON ACCELERATOR AND TARGET WITH COLLIMATOR
Leonhard Taumann, Lafayette, Calif., assignor to Siemens Medical Laboratories, Inc., Walnut Creek, Calif.
Filed Apr. 23, 1980, Ser. No. 143,156
Claims priority, application Fed. Rep. of Germany, Jul. 3, 1979, 2926841
Int. Cl.³ H05H *7/12;* H01J *35/00;* G21K *1/00*
U.S. Cl. 250—505 5 Claims

1. An electron accelerator structure comprising an acceleration tube, a target exposed to the electron beam issuing from said tube, and a collimator having an aperture for masking an X-ray cone, characterized in that the edge zone of the collimator toward the target is made of a material of low effective cross-section for (gamma, n) processes, whereby neutron generation is reduced, said edge zone having radially to the target



a dimension which approximately corresponds to the half-value depth of the x-radiation in this material.

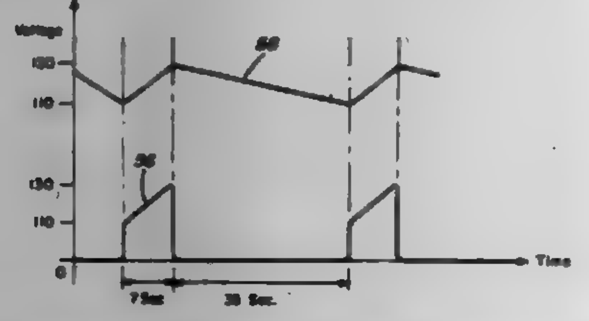
4,327,294
COMBINED CYCLE ELECTRIC POWER PLANT AND A GAS TURBINE HAVING AN IMPROVED OVERSPEED PROTECTION SYSTEM
Jack R. Smith, Pittsburgh, and Terry J. Reed, North Huntingdon, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.
Division of Ser. No. 495,739, Aug. 8, 1974, Pat. No. 4,167,096. This application Feb. 5, 1979, Ser. No. 9,013
The portion of the term of this patent subsequent to Sep. 11, 1996, has been disclaimed.
Int. Cl.³ F02C *9/28*
U.S. Cl. 290—40 C 6 Claims



1. A combined cycle electric power plant comprising at least one gas turbine, means for generating steam in response to heat energy from said gas turbine, a steam turbine driven by steam supplied to it from said steam generating means, an electric generator driven by said turbine, means for controlling the operation of said turbines and said steam generating means, said controlling means including a gas turbine control system having means for generating an electric fuel reference signal to control the turbine speed and load, at least one throttle valve for said gas turbine, means for controlling the position of said throttle valve to control the flow of fuel to said gas turbine in response to the fuel reference signal from said speed and load controlling means, means for generating an electric signal representative of the turbine speed, means for generating an electric fuel limit signal in response to the speed signal to limit the turbine speed to a predetermined reference value, means for directly coupling the fuel limit signal to said throttle valve position control means to provide relatively fast turbine overspeed protection and protection against unnecessary temperature induced plant stresses, means for shutting off the flow of

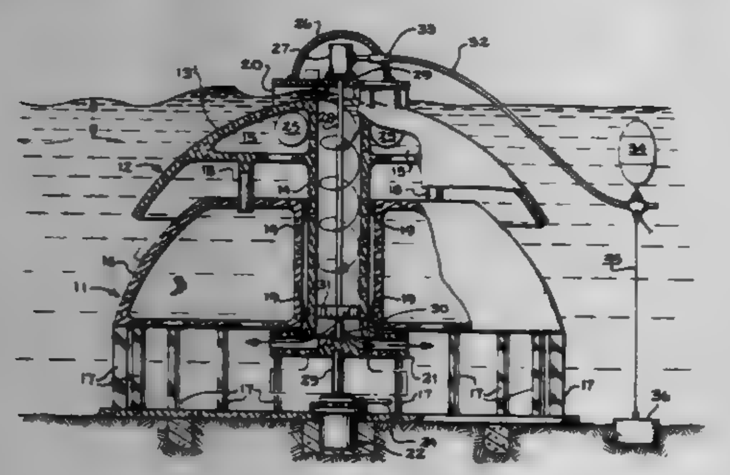
fuel to trip said gas turbine independently of said valve position control means at a turbine speed value above the predetermined reference speed value, a circuit breaker associated with said electric generator, means for sensing the status of said breaker, means for generating a first reference signal corresponding to a first speed value when the plant breaker is open and for generating a second reference signal corresponding to a second reference speed value when the plant breaker is closed, said fuel limit signal generating means responding to the difference between the speed signal and the generated speed reference signal, and the turbine trip speed being higher than both the first and the second reference speed values.

4,327,295
ENERGY CONSERVING DRIVE SYSTEM
Clifford T. Deane, Englewood, Fla., assignor to Electro-Kinetics, Inc., Cream Ridge, N.J.
Filed Sep. 12, 1980, Ser. No. 186,596
Int. Cl.³ H02J *3/30*
U.S. Cl. 290—40 C 5 Claims



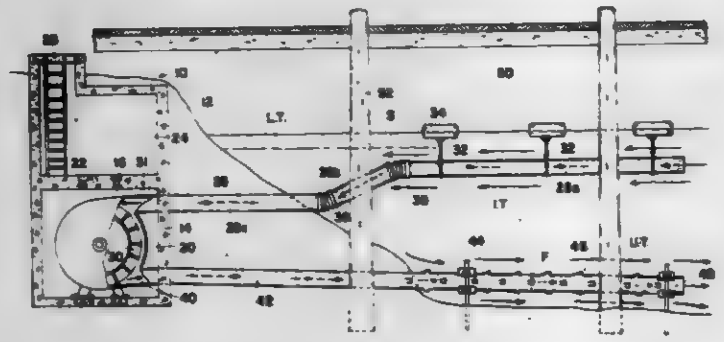
1. An energy conserving drive system, comprising a generator, a drive motor, an energy storing flywheel, battery powered circuit means interconnecting the generator and the motor for energization of the motor operating at a relatively high speed under an operating voltage, switch means connected to the circuit means for intermittently interrupting said energization of the motor, and reduction gear means drivingly interconnecting the motor with the flywheel and the generator for rotation thereof at lower speed than the motor.

4,327,296
WAVE-POWERED MOTOR
Paul F. R. Weyers, Sunnyvale, Calif., assignor to Lockheed Missiles & Space Company, Inc., Sunnyvale, Calif.
Filed Jan. 8, 1981, Ser. No. 223,283
Int. Cl.³ F03B *13/10*; H02P *9/04*
U.S. Cl. 290—53 24 Claims



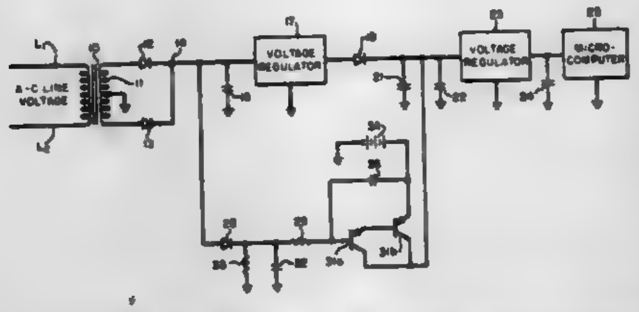
1. A method for extracting energy from sea waves, said method comprising the steps of:
(a) positioning station-keeping means beneath the sea;
(b) securing energy conversion means to said station-keeping means, said energy conversion means including:
(i) an atoll member capable of vertical motion relative to said station-keeping means,
(ii) a shaft secured to said atoll member, and
(iii) means for converting energy of successive sea waves impinging on said atoll member into rotational energy of said shaft;
(c) moving said energy conversion means through a range of vertical positions at which said successive sea waves impinge on said atoll member;
(d) measuring energy conversion for said vertical positions in said range to determine a position at which conversion of energy from said impinging sea wave to rotational energy of said shaft is maximum for a particular set of sea state and tidal conditions;
(e) maintaining said energy conversion means at said position of maximum energy conversion for said particular set of conditions as long as said conditions remain substantially unchanged;
(f) moving said energy conversion means through other vertical positions in said range when new sea state conditions occur;
(g) measuring energy conversion for said other vertical positions to determine a new position at which conversion of energy from said impinging sea waves to rotational energy of said shaft is maximum for said new sea state conditions; and
(h) maintaining said energy conversion means at said new position of maximum energy conversion for said new sea state conditions as long as said new sea state conditions and said tidal conditions remain substantially unchanged.

4,327,297
SYSTEM FOR GENERATING ENERGY FROM TIDAL ACTIVITY
Hubert H. Harrison, 132 Richardson Dr., Mill Valley, Calif. 94941
Filed Jan. 19, 1981, Ser. No. 226,066
Int. Cl.³ F03B *13/12*
U.S. Cl. 290—53 4 Claims



1. A tide-driven generator comprising:
an on-shore power station;
an inlet conduit extending from a predetermined depth below the zone of surface wave action of a body of sea water to said station;
means for maintaining said inlet conduit at said predetermined depth;
a discharge conduit extending from said station, along the ocean bed to open into said body of sea water adjacent the ocean bed; and
a prime mover at said station connected between said inlet and discharge conduit to be driven by flow of sea water therethrough.

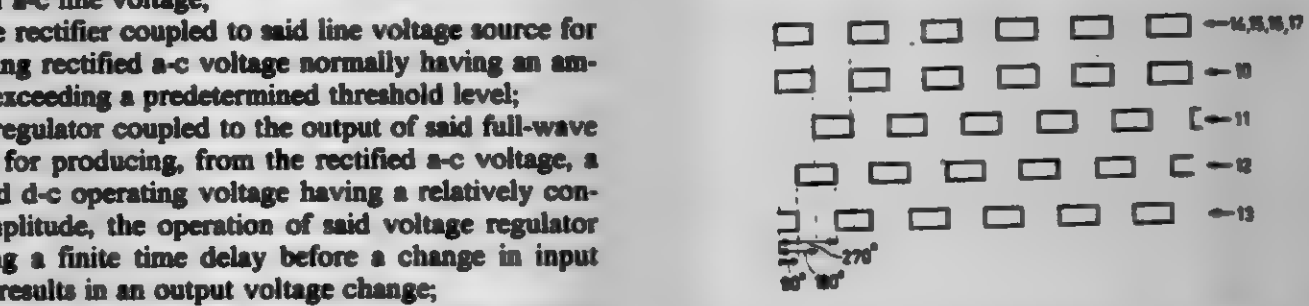
4,327,298
BATTERY BACKUP SYSTEM FOR A MICROCOMPUTER
Albert J. Burgin, Dryden, N.Y., assignor to Borg-Warner Corporation, Chicago, Ill.
Filed Dec. 14, 1979, Ser. No. 103,635
Int. Cl.³ H02J *9/06*; G06F *1/00*
U.S. Cl. 307—66 3 Claims



1. A power supply system for providing uninterrupted d-c power for a microcomputer, comprising:
a source of a-c line voltage;
a full-wave rectifier coupled to said line voltage source for developing rectified a-c voltage normally having an amplitude exceeding a predetermined threshold level;
a voltage regulator coupled to the output of said full-wave rectifier for producing, from the rectified a-c voltage, a regulated d-c operating voltage having a relatively constant amplitude, the operation of said voltage regulator exhibiting a finite time delay before a change in input voltage results in an output voltage change;
coupling means for coupling the output of said voltage regulator to the microcomputer to normally effect energization of the microcomputer in response to the regulated d-c operating voltage;
a battery;
a normally-off PNP darlington transistor pair having base, emitter and collector terminals;
means, including the conduction path between the emitter and collector terminals of said PNP darlington transistor pair, for coupling said battery to the microcomputer;
monitoring means for sensing the rectified a-c voltage at the output of the full-wave rectifier, and prior to the application of that voltage to the input of said voltage regulator, to produce a control voltage having an amplitude which is directly proportional to the amplitude of the rectified a-c voltage;
means for applying the control voltage to the base terminal of said PNP darlington transistor pair to immediately turn said transistor pair on in the event that the amplitude of the rectified a-c voltage falls below the predetermined threshold level, whereupon the battery voltage is applied to the microcomputer before the drop in the rectified a-c voltage can manifest in a voltage change at the output of the voltage regulator thereby to maintain continuous uninterrupted operation of the microcomputer;
and a feedback capacitor coupled from the emitter terminal to the base terminal of the darlington transistor pair to facilitate a smooth transition during a switch over from a-c line voltage produced power to battery power.

4,327,299
STEPPING MOTOR
Bernardus H. A. Goddijn, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed May 21, 1980, Ser. No. 152,079
Claims priority, application Netherlands, Jun. 20, 1979, 7904816
Int. Cl.³ H02K *37/00*
U.S. Cl. 310—49 R 4 Claims

1. A stepping motor having a stator (2) which at least comprises a first annular stator section (3) with an annular coil (8) and a magnetically conductive enclosure (6) surrounding said annular coil, which enclosure terminates in the first (10) and second (11) annular system of teeth,
a second annular stator section (4) with an annular coil (9) and a magnetically conductive enclosure (7) surrounding said annular coil, which enclosure terminates in a third (12) and fourth (13) annular system of teeth, and
an axially magnetized annular permanent-magnetic member (5), which is disposed between the two stator sections coaxially with said stator sections, the second (11) and the third (12) annular system of teeth adjoining said permanent-magnetic member, and
a rotor (2) with a toothing (14, 15, 16, 17) which cooperates with the first, the second, the third, and the fourth system of teeth, the first system of teeth and the second system of teeth mutually making a nominal electromagnetic angle of 180° relative to the rotor toothing, the third and the fourth systems of teeth mutually making a nominal electromagnetic angle of 180° relative to the rotor toothing, the first and the fourth system of teeth mutually making a nominal electromagnetic angle of 90° relative to the rotor toothing,

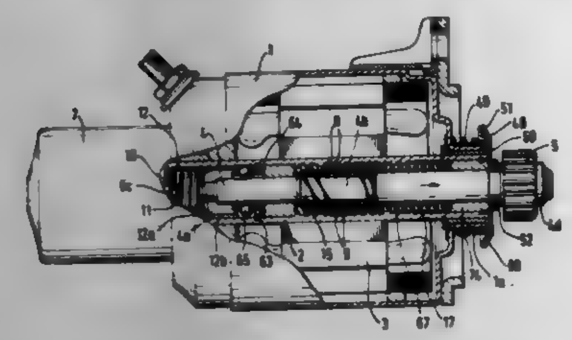


and the second and the third system of teeth mutually making a nominal electromagnetic angle of 90° relative to the rotor toothing, characterized in that, in order to reduce stepping-angle errors for one specific energization, the geometry of the teeth of the second and the third system of stator teeth (11, 12) in relation to the cooperating teeth (15, 16) of the rotor toothing deviates from the geometry of the teeth of the first and the fourth system of teeth (14, 17) in relation to the cooperating teeth (14, 17) of the rotor toothing, in such a way that the amplitude of the permeance of the air gap between the teeth of the second and the third system of stator teeth (11, 12) and the cooperating rotor toothing (15, 16) as a function of the rotor position is at least 1% smaller than the amplitude of the permeance of the air gap between the teeth of the first and the fourth system of stator teeth (11, 13) and the cooperating rotor toothing (14, 17) as a function of the rotor position, said geometries of the second and the third systems of teeth (11, 12) being identical to each other and said geometries of the first and the fourth systems of teeth also being identical to each other.

4,327,300
HELICAL SLIDING DRIVE STARTER
Wilhelm Hoven, Grüner Weg 43, D-51 Aachen, Fed. Rep. of Germany
Filed Dec. 12, 1978, Ser. No. 968,683
Claims priority, application Fed. Rep. of Germany, Dec. 14, 1977, 2755704
Int. Cl.³ F02N *11/00*
U.S. Cl. 310—75 C 18 Claims

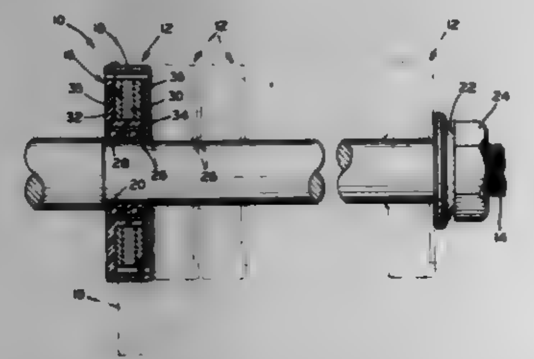
1. A helical sliding drive starter comprising a freewheel unit having a multiple disc clutch arranged between a starter motor shaft and a pinion shaft, said motor shaft formed with tooth-shaped channels on an interior surface, said pinion shaft formed with tooth-shaped ribs on an exterior surface, certain ones of said discs are provided with outer teeth and certain other ones of said discs are provided with inner teeth, said outer teeth configured to engage said tooth-shaped channels formed in said motor shaft and said inner teeth configured to engage said tooth-shaped ribs on said pinion shaft, said tooth-shaped chan-

nels extend along said starter motor shaft in the form of screw threads, said tooth-shaped ribs extend along said pinion shaft in the form of a sliding screw thread, said discs, said screw



threads, and said sliding screw thread interacting to cause axial engagement and disengagement of said freewheel unit with said motor shaft and said pinion shaft.

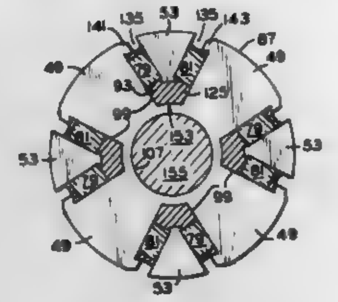
4,327,301
MAGNETIC CLUTCH HOUSING
Gunnar H. Janson, Dudley, Mass., assignor to Dana Corporation, Toledo, Ohio
Filed May 12, 1980, Ser. No. 149,062
Int. Cl.³ H02K *49/10*
U.S. Cl. 310—104 6 Claims



1. In a housing for a magnetic clutch, said housing defining a circumferential surface thereon for mounting a rotary member, an improvement in said housing comprising a plurality of detents in said mounting surface for axially locating said rotary member on said surface, said detents positioned in clusters, said clusters being circumferentially spaced about said mounting surface, wherein each of said clusters contains at least two axially spaced detents, each detent defining a circumferentially extending protuberance on said mounting surface, each of said detents comprising an integral portion of said mounting surface, each detent defining one end of a plurality of spaced, adjacent, axially extending cantilevered arms, at least two of said arms being joined to radially extending wall portions of said housing, wherein a third arm extends inversely, intermediately and parallel to aforesaid arms from a bridge, said bridge defining an interconnection between the detents of aforesaid arms.

4,327,302
ELECTRONICALLY COMMUTATED MOTOR, STATIONARY AND ROTATABLE ASSEMBLIES THEREFORE, AND LAMINATION
Doran D. Hershberger, Sycamore, Ill., assignor to General Electric Company, Fort Wayne, Ind.
Filed Sep. 21, 1979, Ser. No. 77,784
Int. Cl.³ H02K *21/08*
U.S. Cl. 310—156 53 Claims

1. A lamination adapted to be used in a core of a dynamoelectric machine, the lamination comprising:
a unitary body of generally thin ferromagnetic material;
an outer peripheral edge of said body;
an inner peripheral edge on said body and spaced generally radially from said outer peripheral edge;
a plurality of generally V-shaped openings through said body between said outer peripheral edge and said inner peripheral edge and disposed with respect to each other generally in arcuate spaced relation about said body, said openings each having first and second leg parts converging toward each other generally in a direction from said outer peripheral edge toward said inner peripheral edge, said first and second leg parts including first and second pairs of opposed side edges, first and second end edges interposed between said first and second side edge pairs and spaced adjacent said outer peripheral edge, and a common end edge interposed between one of said opposed side edges of said first and second side edge pairs and spaced adjacent said inner peripheral edge, respectively;
a plurality of first pole sections on said body between opposite ones of said one opposed side edges of said first and

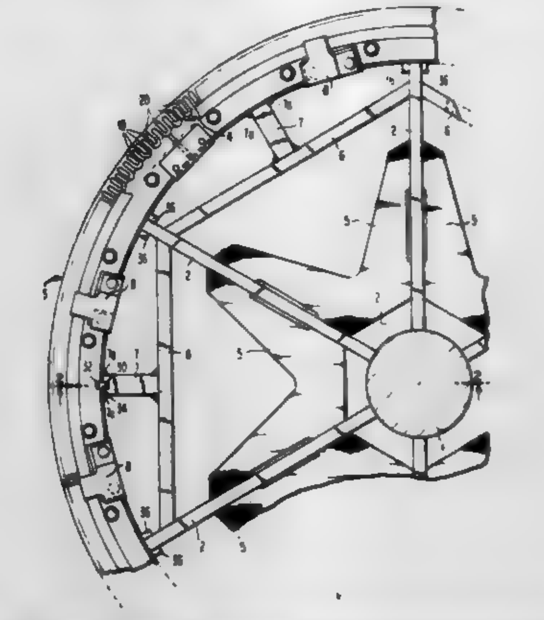


second side edge pairs in adjacent ones of said openings and extending generally between said outer peripheral edge and said inner peripheral edge, respectively;
a plurality of bridges on said body between said common end edges and said inner peripheral edge and integrally interconnected between adjacent ones of said first pole sections, respectively;
a plurality of second pole sections on said body disposed between the other of said opposed side edges of said first and second side edge pairs and extending from said outer peripheral edge generally toward said inner peripheral edge, said second pole sections including a plurality of free end edges interposed between said other opposed side edges of said first and second side edge pair and spaced from said bridges, respectively; and
a plurality of pairs of bridges on said body between said outer peripheral edge and said first and second end edges of said first and second leg parts and integrally interconnected between said first pole sections and said second pole sections, respectively.

4,327,303
ROTOR ASSEMBLY FOR A DYNAMOELECTRIC MACHINE
Jon E. Jacobsen, Greendale, Wis., assignor to Siemens-Allis, Inc., Atlanta, Ga.
Filed Sep. 29, 1980, Ser. No. 191,912
Int. Cl.³ H02K *1/30*
U.S. Cl. 310—261 10 Claims

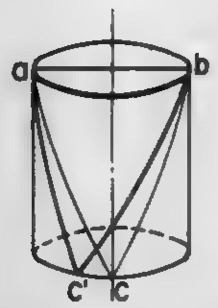
1. A rotor assembly for a dynamoelectric machine, comprising in combination:
(a) a rotor shaft having an axis of rotation;
(b) a rotor rim structure surrounding said shaft;
(c) a spider connecting said rotor rim structure and said shaft, said spider comprising a plurality of spider arms secured to and extending radially from said shaft;
(d) a plurality of flexible cross beams, each of said cross beams connecting at least two of said spider arms; and

(e) connection means for firmly connecting said cross beams to said rotor rim assembly, said cross beams thereby flex-



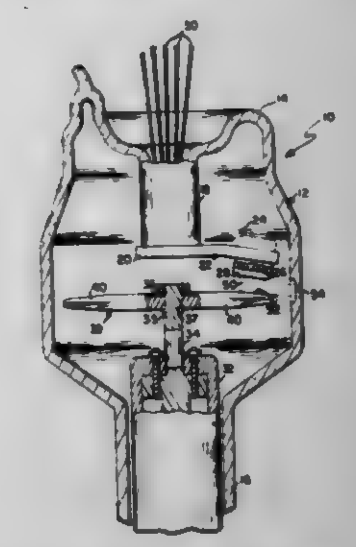
ing in an out in radial directions as said rotor rim assembly contracts and expands, respectively.

4,327,304
WINDING FOR SMALL ROTARY ELECTRIC DOUBLE AIR GAP MOTOR
Kanemasa Aoki, Yokohama, Japan, assignor to Canon Kabushiki Kaisha and Canon Seiki Kabushiki Kaisha, both of Tokyo, Japan
Filed Nov. 16, 1979, Ser. No. 94,787
Claims priority, application Japan, Nov. 25, 1978, 53/145518
Int. Cl.³ H02K *1/22*
U.S. Cl. 310—266 9 Claims



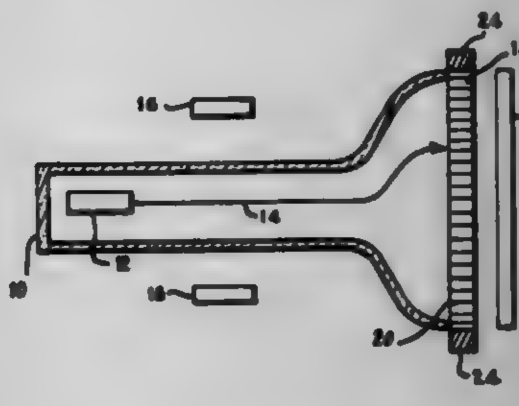
1. A coil for a coreless motor, comprising:
(a) end connecting wire portions provided on one end face of a cup-shaped coil body open at the other end thereof, each for connecting a first point on the circular periphery of said end face of said coil body with a second point on said periphery through said end face;
(b) first inclined coil wire portions each provided from said second point of said end connecting wire portion to a point on the circular periphery on the other end of said coil body along the generatrix of the cylindrical surface of the coil body; and
(c) second inclined coil wire portions each provided from said point on the other end of coil body to said second point of said end connecting wire portion along the generatrix of the cylindrical surface of the coil body, wherein said first and second inclined coil wire portions have asymmetric inclination angles.

4,327,305
ROTATABLE X-RAY TARGET HAVING OFF-FOCAL TRACK COATING
Richard G. Weber, Stamford, Conn., assignor to The Machlett Laboratories, Inc., Stamford, Conn.
Continuation of Ser. No. 962,445, Nov. 20, 1978. This application Feb. 15, 1980, Ser. No. 121,859
Int. Cl.³ H01J *35/08*
U.S. Cl. 313—330 10 Claims



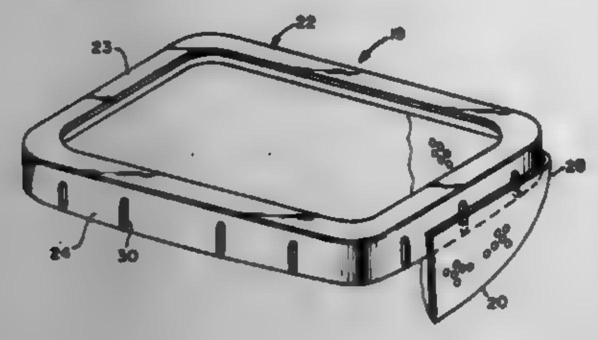
1. An X-ray target of the rotatable type adapted for mounting on a rotor and including:
a body having a first surface portion made of X-ray emissive material and a second surface portion made of a heat emissive material comprised of at least ninety-five percent by weight hafnium compound, said compound being at least one of the members from the group consisting of hafnium boride, hafnium oxide, hafnium nitride, hafnium silicide, and hafnium aluminide.

4,327,306
FACE PLATE FOR CATHODE RAY TUBE
Roy F. Stratton, Oriskany, and Edward J. Calucci, Syracuse, both of N.Y., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Filed Nov. 27, 1979, Ser. No. 97,596
Int. Cl.³ H01J *31/02, 29/86*
U.S. Cl. 313—419 4 Claims



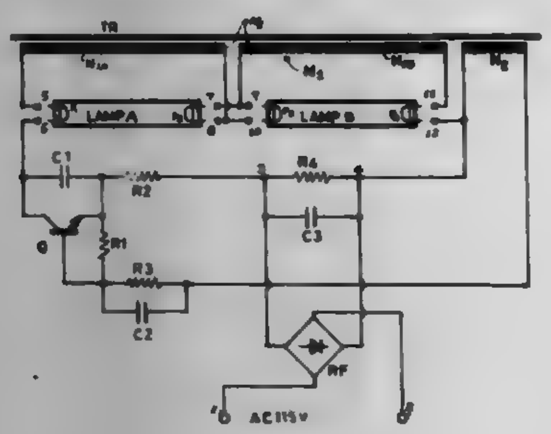
1. In a cathode ray tube having an elongated envelope, an electron gun positioned within said envelope at one end thereof, a face plate adhesively affixed to the other end of said envelope to form an evacuated enclosure, the improvement which comprises a faceplate composed substantially of a plurality of closely packed, electrically conducting boron fibers, each of which consists essentially of a central core of tungsten boride surrounded by a boron sheath, said fibers being positioned in parallel relationship to one another and in which the longitudinal axis of each fiber is coincident to the longitudinal axis of said elongated envelope.

4,327,307
SHADOW MASK FOR COLOR CATHODE RAY TUBE
Carl W. Peaird, Waterloo, and Peter G. Pubak, Seneca Falls, both of N.Y., assignors to North American Philips Consumer Electronics Corp., New York, N.Y.
Filed Mar. 19, 1979, Ser. No. 21,744
Int. Cl.³ H01J *29/07*
U.S. Cl. 313—407 3 Claims



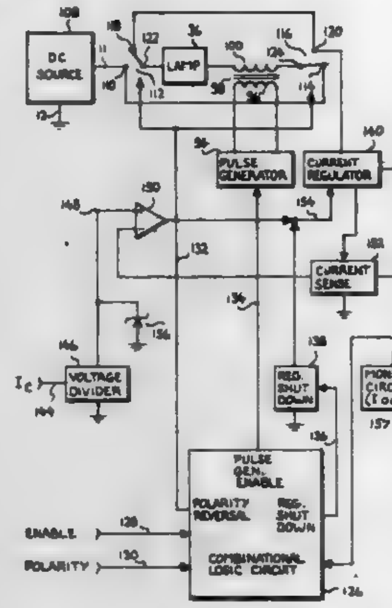
1. A shadow mask for a color cathode ray tube, said shadow mask having increased tolerance to doming caused by heat generated by impingement of an electron beam and comprising: a relatively rigid light weight frame of substantially rectangular configuration being formed to provide an inwardly extending flange having an attached sidewall thereabout and a relatively fragile portion having a curved foraminated face and a solid skirt surrounding said face, a portion of said skirt being formed to provide a substantially rectangular, peripheral, upstanding wall having four sides extending from said face and which upstanding wall telescopes over said sidewall, the improvement comprising: a plurality of spaced projections formed in said frame sidewall, said projections being incapable of movement independent of said frame sidewall and being extruded therefrom, and said fragile portion being attached to said frame by means of welds only between said upstanding wall and said projectons.

4,327,308
SIMPLIFIED POWER SOURCE FOR FLUORESCENT LAMPS
Top-Ping Hwang, and Chin-Liang Feng, both of 13F Wan-Chen Trade Bldg., No. 477 Tung-Hwa South Rd., Taipei, Taiwan
Filed Nov. 13, 1980, Ser. No. 206,678
Int. Cl.³ H05B *41/29*
U.S. Cl. 315—99 4 Claims



1. A simplified power source for fluorescent lamps comprising an oscillator circuit and a transformer, said transformer comprising a primary winding and a feed-back winding, said oscillator circuit comprising a transistor and being characterized in that the collector of said transistor is connected to one end of said primary winding through a filament of the load lamp and in that the emitter of said transistor is connected through a resistor, one pair of direct-current terminals, one end of said feed-back winding and another filament of the load lamp to another end of said primary winding and in that another end of said feed-back winding is connected to the base of said transistor through a resistor and a capacitor both being connected in parallel.

4,327,309
FLUORESCENT LAMP POWER SUPPLY WITH LOW VOLTAGE LAMP POLARITY REVERSAL
George P. Wallot, Fort Wayne, Ind., assignor to General Electric Company, Salem, Va.
Filed Jun. 23, 1980, Ser. No. 162,276
Int. Cl.³ H05B *41/14*
U.S. Cl. 315—170 12 Claims

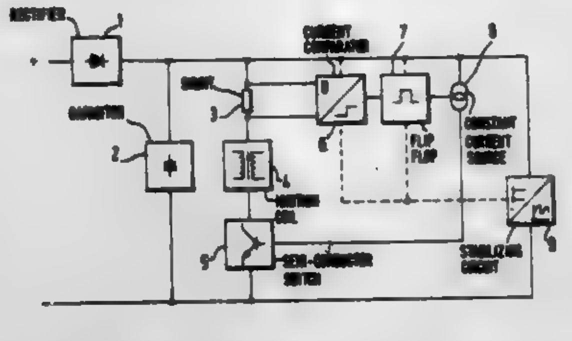


1. An electronic ballast circuit for controlling illumination from a gaseous discharge lamp having first and second electrode terminals, comprising:
(a) a source of relatively high voltage power having first and second power output terminals;
(b) normally noninterruptable means connecting said first terminal of said high voltage power source to the first terminal of the lamp;
(c) a d.c. source of relatively low voltage power having first and second power output terminals;
(d) first switching means arranged for selectively connecting the second terminal of the lamp to said first or to second terminal of said DC source;
(e) second switching means arranged for selectively connecting said second terminal of said high voltage power source to said second or to said first terminal of said DC source; and,
(f) means for controlling said first and said second switching means whereby the series combination of the lamp and said high voltage power source are selectively connected in forward or reverse polarity across said DC source.

4,327,310
SPARK CIRCUIT
Manfred Jörg, Stadelnerstrasse 18, D-8510 Fuerth, Fed. Rep. of Germany
Filed Feb. 14, 1980, Ser. No. 121,554
Claims priority, application Fed. Rep. of Germany, Feb. 20, 1979, 2906473
Int. Cl.³ H05B *37/02*, *39/04*, *41/36*
U.S. Cl. 315—209 R 8 Claims

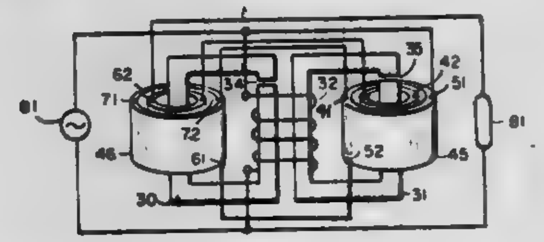
1. A spark circuit for producing an ignition spark for heating equipment comprising a first source of electrical energy, a charging circuit connected with said source and including an ignition coil having a primary winding and a secondary winding, and normally conductive electrically operated switch means connected to interrupt current flow in the primary winding; a second source of electrical energy connected to said switch means for supplying the same with current required to

keep the switch means conductive; and comparator means coupled to said primary winding and operative for comparing the value of current flowing in the primary with a predetermined nominal value, and for momentarily interrupting the supply of current from said second source to said switch means



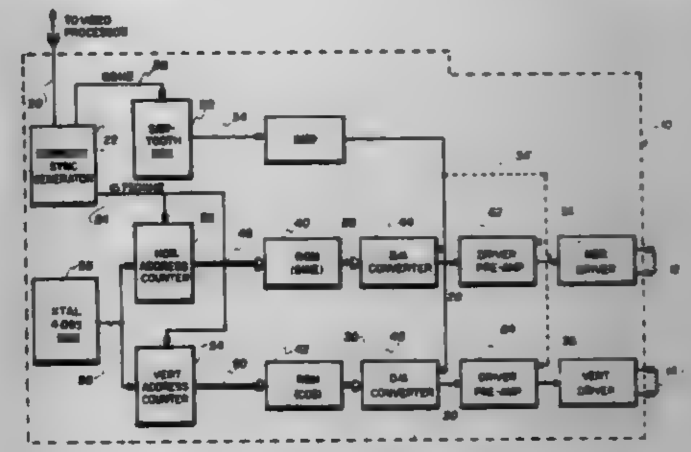
when said values reach parity, so as to render said switch means non-conductive during said interruption with resulting auto-induction in said secondary, and thus producing a high voltage pulse to produce said ignition spark for said heating equipment.

4,327,311
INDUCTOR-CAPACITOR IMPEDANCE DEVICES AND METHOD OF MAKING THE SAME
Theodore Wroblewski, Danvers, Mass., assignor to Frequency, Technology, Inc., Littleton, Mass.
Division of Ser. No. 71,706, Aug. 31, 1979. This application Oct. 6, 1980, Ser. No. 194,371
Int. Cl.³ H01F *15/14*; H05B *41/16*
U.S. Cl. 315—244 7 Claims



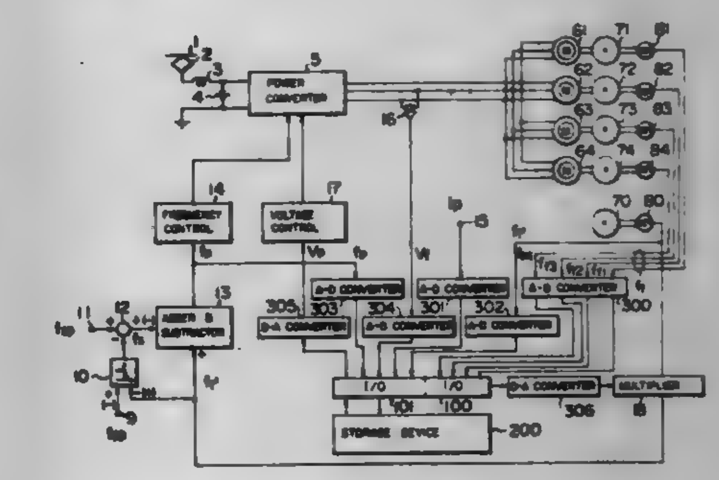
1. An improved discharge-lamp ballast circuit connected in series with a discharge lamp for regulating the source of power supplied to said discharge-lamp, said ballast circuit including combination inductor-capacitor type windings having input and output spaced foil windings, each of said spaced foil windings having at least one terminal means, said circuit comprising:
first and second magnetically permeable cores for confining the magnetic flux induced therein,
a primary winding magnetically coupled to both said magnetic cores for inducing flux changes therein, said primary winding being connected to said source of power,
a first inductor-capacitor type winding being magnetically coupled with said first magnetic core and having at least one terminal means for each of said respective input and output windings,
a second inductor-capacitor type winding being magnetically coupled with said second magnetic core and having at least one terminal means for each of said respective input and output windings,
the terminal means of the input windings of said first and second inductor-capacitor windings being electrically interconnected to each other through said respective terminal means, and said output windings of said first and second inductor-capacitor being electrically connected to each other through said respective terminal means, and
said output winding of said first inductor-capacitor being adaptable for electrical connection to one terminal of said discharge lamp through one of its terminal means while said input winding of said second inductor-capacitor winding being adaptable for electrical connection with said source of power through one of its terminal means.

4,327,312
CIRCULAR RASTER SWEEP GENERATOR
Don G. King, 1031 Shadow Wood, Lewisville, Tex. 75067, and Bill B. Bennett, 1101 Lopo Rd., Lewisville, Tex. 75028
Filed Jun. 16, 1980, Ser. No. 159,613
Int. Cl.³ H01J *29/78*
U.S. Cl. 315—378 8 Claims



6. A method for driving the horizontal and vertical scanning circuits of a video camera comprising the steps:
generating a horizontal scanning signal characterized by a composite waveform including a constant amplitude component followed by a sine wave component;
generating a vertical scanning signal characterized by a composite waveform including a constant amplitude component followed by a sine wave component which is phase shifted with respect to the sine wave component of the horizontalscanning signal; and,
amplitude modulating the composite horizontal and vertical scanning signals with a sawtooth waveform; and,
applying the amplitude modulated composite scanning signals to the horizontal and vertical scanning circuits, respectively.

4,327,313
CONTROL APPARATUS FOR ELECTRIC CAR
Takashi Tsuboi; Shigetoshi Okamatsu; Masahiko Ibamoto; Hiroshi Narita, all of Katsuta, and Eiji Kozu, Mito, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Feb. 29, 1980, Ser. No. 125,755
Claims priority, application Japan, Mar. 5, 1979, 54-24485
Int. Cl.³ H02P *5/46*
U.S. Cl. 318—52 15 Claims



1. A control apparatus for an electric car having power converting means for converting electric power received from a trolley wire to polyphase AC power of variable frequency, a

driving wheel and an induction motor supplied with said polyphase AC power and coupled to said driving wheel, said control apparatus comprising:

detector means for detecting the actual running speed of the electric car irrespective of whether said driving wheel causes adhesion or non-adhesion;

means for establishing a slip frequency of said induction motor;

frequency command means for adding said slip frequency to said actual running speed signal in response to powering operation of the electric car and subtracting said slip frequency from said actual running speed signal in response to a braking operation of the electric car; and

means for controlling the output frequency of said power converting means in accordance with a frequency command from said frequency command means.

4,327,314

INVERTER SYSTEM FOR DRIVING SYNCHRONOUS MOTOR

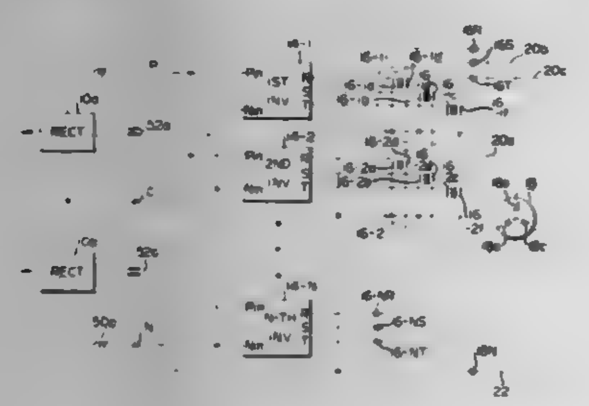
Yasuhiko Hosokawa; Kanji Katsuki, and Toshio Suzuki, all of Kobe, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 16, 1980, Ser. No. 187,976

Claims priority, application Japan, Sep. 19, 1979, 54-120963

Int. Cl.³ H02P *5/40, 1/26*

U.S. Cl. 318—722 **3 Claims**



1. An inverter system for driving a synchronous motor, comprising a synchronous motor including star-connected phase windings and a set of three-phase AC input terminals and a neutral terminal, a DC source including a positive terminal, a negative terminal and an intermediate terminal for deriving an intermediate voltage lying between voltages at the positive and negative terminals, the intermediate terminal being connected to said neutral terminal of said synchronous motor, N three-phase inverters connected in parallel circuit relationship across said positive and negative terminals of said DC source where N designates an integer having a value larger than unity, each of said three-phase inverters including a set of three-phase AC output terminals and transforming a DC power from said DC source to a three-phase AC power, (N−1) electrically insulated three-phase transformers connected to the (N−1) three-phase inverter respectively so that primary windings of each three-phase transformer are connected in a star configuration to said set of three-phase AC terminals of said three-phase inverter connected thereto and secondary windings thereof are connected in series circuit relationship to those of the other three-phase transformers to form series combinations one for each phase of the system, said star-connected primary windings of each of the three-phase transformers including a neutral point connected to said intermediate terminal of said DC source, said series combinations being connected at one end to said set of three-phase AC input terminals of said synchronous motor and at the other ends to said set of three-phase AC output terminals of the three-phase inverter not connected to the three-phase transformer.

4,327,315

INDUCTION MOTOR DRIVE APPARATUS

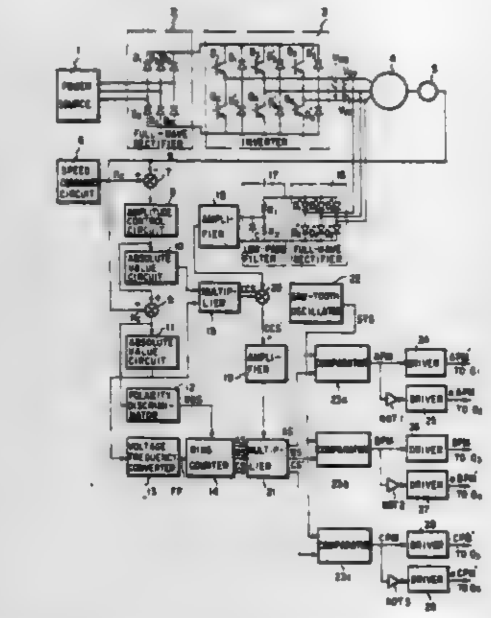
Shigeki Kawada, Hino; Hiroshi Ishida, Hamura, and Yutaka Koiwai, Tokyo, all of Japan, assignors to Fujitsu Fanuc Limited, Hino, Japan

Filed Oct. 31, 1979, Ser. No. 89,739

Claims priority, application Japan, Nov. 4, 1978, 53-136069

Int. Cl.³ H02P *5/40*

U.S. Cl. 318—811 **2 Claims**



1. An induction motor drive apparatus which includes an inverter for converting DC voltage into three-phase AC voltage, an induction motor driven by the three-phase AC voltage, speed command means for instructing that the induction motor rotates at a command speed, means for detecting the actual speed of the induction motor, deviation signal generating means for generating a speed deviation signal based on the deviation between the command speed and the actual speed of the induction motor, first amplitude control means for controlling the amplitude of the speed deviation signal, adding means for adding the output of said amplitude control means to the actual speed of the induction motor, means for controlling the effective value and the frequency of the three-phase AC voltage applied to the induction motor, on the basis of the output of the adding means, the actual speed of the induction motor being made to coincide with the command speed by controlling the frequency and effective value of the three-phase AC voltage, said means for controlling the effective value and the frequency of the three-phase AC voltage comprising; rectangular wave signal generating means for producing three-phase rectangular wave signals of a frequency in accordance with the output value of said adding means; pulse width modulating means for modulating the pulse width of the rectangular wave signal of each of the three phases; second amplitude control means for controlling the amplitude of the rectangular wave signal of each of the three phases, on the basis of the speed deviation signal and the output signal of said adding means, the amplitude-controlled rectangular wave signals being modulated in pulse width by said pulse width modulating means to provide pulse-width modulated signals, said inverter being controlled on the basis of said pulse-width modulated signals thereby to control the effective value and the frequency of the three-phase AC voltage, said second amplitude control means includes first multiplying means for multiplying together the speed deviation signal and the output of the adding means, the amplitude of the rectangular wave signals being controlled on the basis of the output of said first multiplying means, and the amplitude-controlled rectangular wave signals being modulated in pulse width by said pulse width modulating means, and said second amplitude control means further including second multiplying means for multiplying the three-phase rectangular wave signal by the output of said first multiplying means to control the amplitude of the three-phase rectangular wave signal.

4,327,316

BATTERY RECHARGING SOLAR CELL ARRANGEMENT FOR AN AUTOMOTIVE VEHICLE

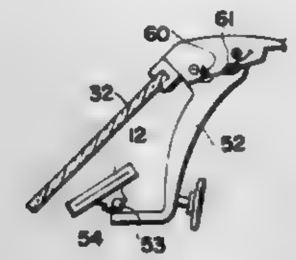
Yoshitake Fujikubo, Zushi, and Mamoru Tanaka, Hachioji, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Feb. 11, 1980, Ser. No. 120,030

Claims priority, application Japan, Feb. 26, 1979, 54-22913[U]

Int. Cl.³ H02J *7/00;* **H01L** *31/04;* **B60L** *11/18*

U.S. Cl. 320—2 **11 Claims**



1. An apparatus for recharging an automotive vehicle battery provided in an automotive vehicle comprising:

a first solar battery being secured on a rear view mirror support provided inside of a vehicle compartment adjacent a front windshield, a universal joint means interpositioned between said rear view mirror support and said solar battery for permitting adjustment of direction of said solar battery toward sunlight; and

a recharging current control means for feeding recharging current obtained from said solar battery to said vehicle battery.

4,327,317

APPARATUS FOR CHARGING A RECHARGEABLE BATTERY

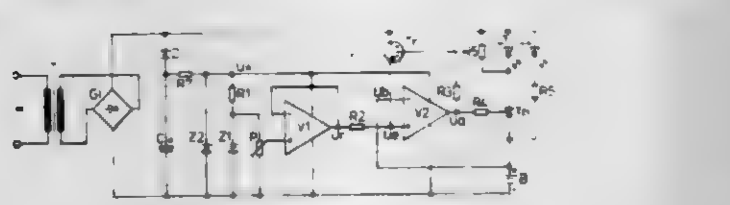
Helmut A. Heine, and Otto H. Schmidt, both of Herrsching, Fed. Rep. of Germany, assignors to Propper Manufacturing Co., Inc., New York, N.Y. and Optotechnik GmbH & Co. KG Heine, Fed. Rep. of Germany

Filed Jan. 21, 1980, Ser. No. 113,680

Claims priority, application Fed. Rep. of Germany, Jan. 25, 1979, 2902894

Int. Cl.³ H02J *7/10*

U.S. Cl. 320—23 **1 Claim**



1. A charging apparatus for charging a rechargeable battery when placed in contact therewith, comprising: monitoring means for monitoring the voltage of a rechargeable battery when said battery is placed in contact with said charging apparatus, operational amplifier comparing means comprising a positive feedback operational amplifier having an inverting input communicating with said rechargeable battery and a direct input communicating with a source for generating a reference voltage for comparing the monitored battery voltage to a charged reference voltage and a depleted reference voltage, charging means for charging said battery to substantially said charged reference voltage, maintaining means for maintaining said battery at substantially the monitored battery voltage, control means responsive to said comparing means to connect said battery to said charging means when the monitored battery voltage is less than or substantially equal to the depleted reference voltage so as to charge said battery to substantially said charged reference voltage and then connect said battery to said maintaining means until the monitored battery voltage is again less than or substantially equal to said depleted reference voltage, and switching means responsive to the output of said operational amplifier to control said comparing means to be operative in the absence of a charging voltage from said charging means, said switching means comprising a transistor connected between the output of said positive feedback operational amplifier and the direct input of said operational amplifier.

4,327,318

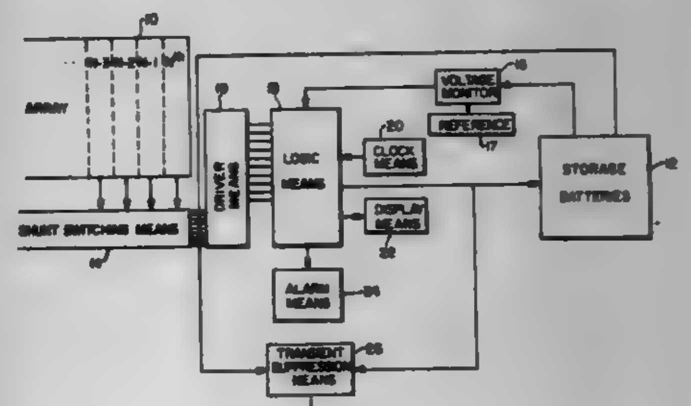
SOURCE SHEDDING REGULATOR

Yiduk Kwon, Bedford, and Paul Lawson, Hopedale, both of Mass., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Oct. 31, 1980, Ser. No. 202,544

Int. Cl.³ G05F *1/46;* **H02J** *7/04*

U.S. Cl. 320—39 **14 Claims**



1. A voltage regulator system for controlling photovoltaic charging of rechargeable storage batteries, said system comprising:

an array of photovoltaic solar cells having a number of serially connected solar cells coupled in first through nth parallel connected strings, each said string having blocking diode means connected in series with each of said strings, coupled between said string and said storage batteries;

voltage monitor means responsive to a voltage across said storage batteries, said monitor providing first, second, third and fourth control signals corresponding to monitored battery voltages of

a. greater than or equal to V_{normal};

b. less than or equal to V_{normal};

c. greater than or equal to $V_{maximum}$; and

d. less than or equal to $V_{minimum}$, respectively;

logic means, coupled to receive said first through third control signals, wherein response to said first control signal said logic means provides a first logic signal to initiate a sequential shedding of first through nth strings of said array, said first logic signal continuing until said monitoring battery voltage is less than about V_{normal}; and

in response to said second control signal, said logic means provides a second level signal to initiate sequential reinserting of array strings, said second logic signal continuing until the monitored battery voltage equals or exceeds V_{normal}; and

in response to said third signal continuing for a predetermined time period RC, said logic means provides a third logic signal to initiate simultaneous shedding of first through nth array, strings, said third logic signal continuing until said monitored battery voltage is less than $V_{maximum}$;

in response to said fourth signal continuing for a predetermined time period RC, said logic means provides a fourth logic signal to initiate simultaneous reinserting of first through nth array, strings, said fourth logic signal continu-

ing until said monitored battery voltage is greater than $V_{minimum}$;

switching means for each of said first through nth strings of said array, said switching means having a main current conduction path coupled to electrically disable each respective array string;

sequencing and driver means for providing sequential turn-on or turn-off signals to said first through th switching means, said sequencing means being responsive to said first logic signal to provide sequential turn-on signals to said switching means and responsive to said second logic signal to provide sequented turn-off signals to said switching means;

override and driver means for providing simultaneous turn on or turn off signals of first through nth switching means, said override being responsive to said third and fourth logic signals, respectively.

4,327,319

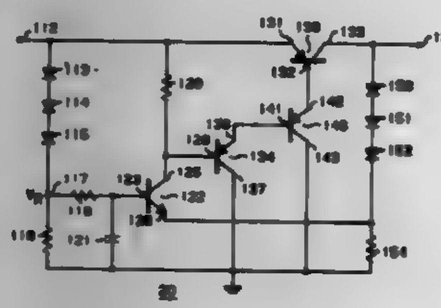
ACTIVE POWER SUPPLY RIPPLE FILTER

Scott N. Swisher, Elk Grove, Ill., and Edward L. Furman, Omaha, Nebr., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 15, 1980, Ser. No. 178,490

Int. Cl.³ G05F *5/00*

U.S. Cl. 323—303 4 Claims



1. A low noise electronic power supply filter circuit capable of high output currents for eliminating alternating current components from a direct current power supply and for tracking the direct current voltage of said power supply, comprising:

(a) control means having a control terminal, an input terminal and an output terminal, said input terminal coupled to the power supply and said output terminals adapted to be coupled to a load, said control means controlling current from the input terminal to the output terminal;

(b) reference means, coupled to the control means input terminal for generating a reference voltage which tracks approximately three diode drops below the power supply voltage;

(c) amplifier means having an output coupled to the control terminal and having first and second input terminals, for amplifying a signal applied across the input terminals comprising an input transistor coupled to a darlington pair;

(d) filter means, having an input coupled to the reference means for low pass filtering the reference voltage, and having an output coupled to the first input of the amplifier means thereby coupling the filtered reference voltage to said amplifier means; and

(e) feedback means, coupled from the control means output terminal to the second input of the amplifier means, comprising three diodes in series such that approximately one diode drop is maintained across the control means.

4,327,320

REFERENCE VOLTAGE SOURCE

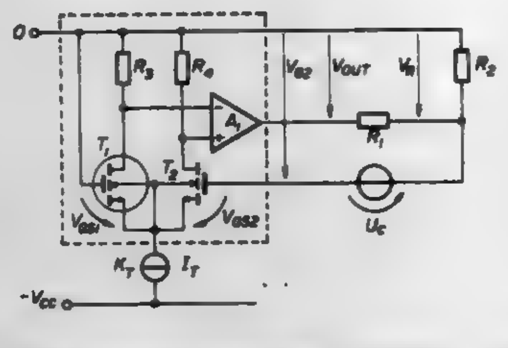
Henri Oguey, Corcelles, and Bernard Gerber, Neuchatel, both of Switzerland, assignors to Centre Electronique Horloger S.A., Neuchatel, Switzerland

Filed Dec. 19, 1979, Ser. No. 105,117

Claims priority, application Switzerland, Dec. 22, 1978, 13078/78

Int. Cl.³ G05F *1/48*

U.S. Cl. 323—313 7 Claims



1. A temperature-compensated reference voltage source comprising first and second reference transistors of the same conductivity type, said first reference transistor having its gate at least in part made of polycrystalline silicon the type of doping of which is opposite to that of the drain and source regions of said first transistor, said second reference transistor having its gate made of polycrystalline silicon the type of doping of which is the same as that of the drain and source regions of said second transistor, said reference transistors (T_1, T_2) having their sources connected together and through a current defining element (K_T) to the first terminal ($-V_{CC}$) of a voltage supply source, the drains of said reference transistors being connected each through a resistor element (R_3, R_4) to the second terminal (0) of said supply voltage source and being further connected to a respective input terminal of a differential amplifier (A_1) the output of which is connected to the said second terminal (0), wherein a circuitry (U_C), adapted to generate a compensation voltage increasing with temperature, is connected between the gate of said second reference transistor and the output terminal of said differential amplifier, said compensation voltage being thus subtracted from the potential difference between the gate of said second reference transistor and the second terminal (0) of said supply voltage source, to render the reference voltage (V_R) independent of temperature.

4,327,321

CONSTANT CURRENT CIRCUIT

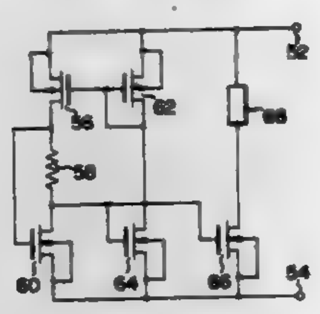
Hiroaki Suzuki, Tokyo, and Michio Kurihara, Oita, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Jun. 11, 1980, Ser. No. 158,521

Claims priority, application Japan, Jun. 19, 1979, 54-76278

Int. Cl.³ G05F *3/08*

U.S. Cl. 323—315 16 Claims



1. A constant current circuit comprising:

first and second power source terminals;

first and second MOS transistors of different channel types connected to said first and second power source terminals, respectively, and having current paths which are connected in series between said first and second power source terminals;

a third MOS transistor of the same channel type as that of said first MOS transistor, which is connected to said first power source terminal and said first MOS transistor to form constant current means in cooperation therewith;

resistive means connected at the first terminal to said first power source terminal through the current path of said third MOS transistor, and at the second terminal to the gate of said second MOS transistor;

a fourth MOS transistor of the same channel type as that of said second MOS transistor whose gate is connected to said first terminal of said resistive means and whose current path is connected between the second terminal of said resistive means and said second power source terminal; and

a fifth MOS transistor of the same type as that of said second MOS transistor, which has a gate connected to the second terminal of said resistive means and a current path connected in series with a load to which a constant current is to be supplied.

4,327,322

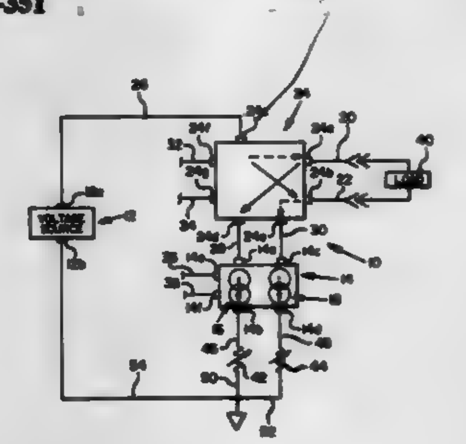
BIDIRECTIONAL CURRENT SUPPLY CIRCUIT

Tex N. Yuki, Banks, Oreg., assignor to Spatial Dynamics, Ltd., Beaverton, Oreg.

Filed Oct. 6, 1980, Ser. No. 194,339

Int. Cl.³ A61N *1/36*; G05F *3/02*

U.S. Cl. 323—351 4 Claims



1. A current supply circuit comprising

a pair of output terminals adapted for connection to a load,

a controlled changeable-direction current source operatively connected to said terminals for supplying current to a load connected therebetween, and

current control means operatively connected to said source, and therethrough to said terminals, for enabling independent adjusting of the level of current flowing in each of the two possible directions through such load via said terminals.

4,327,323

COMPARATOR APPARATUS AND PROCESS

Stanley E. Walker, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 3, 1979, Ser. No. 99,272

Int. Cl.³ G01R *27/26*

U.S. Cl. 324—61 R 23 Claims

1. Apparatus comprising:

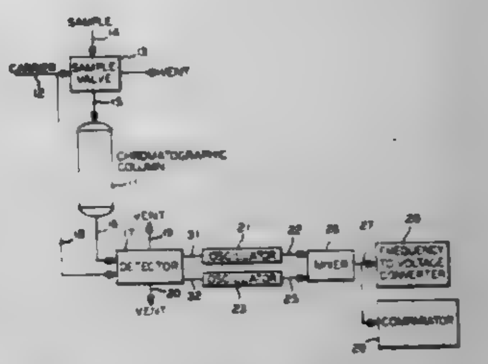
column means for chromatographically separating sample constituents to produce an eluate stream;

means for passing a first carrier fluid stream to the column means;

means for injecting sample constituents into the first carrier fluid stream being passed to the column means;

dielectric constant detector means including sample cell means having a first capacitance representative of a fluid passing therethrough and reference cell means having a second capacitance representative of a fluid passing therethrough;

means for passing the eluate stream through the sample cell means;



means for passing a second carrier fluid stream to the reference cell means;

first oscillator means comprising said sample cell means for producing a first frequency representative of the first capacitance;

second oscillator means comprising said reference cell means for producing a second frequency representative of the second capacitance;

means for combining the first frequency and the second frequency to produce an analysis frequency; and

comparator means for determining a threshold frequency and for producing a sensible signal representative of a difference between the threshold frequency and the analysis frequency.

4,327,324

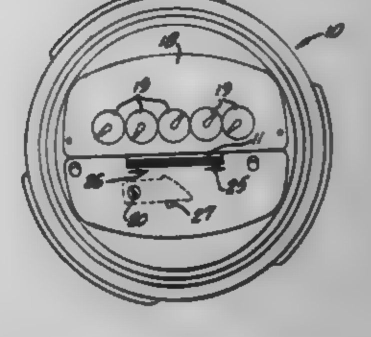
ANTI-THEFT ELECTRIC METER

Ronald C. Welz, Cerritos, Calif., assignor to Southern California Edison Company, Rosemead, Calif.

Filed May 6, 1980, Ser. No. 147,198

Int. Cl.³ G01R *11/24*, *11/02*; B60T *7/12*

U.S. Cl. 324—110 10 Claims



1. In a watthour meter including a metering movement adapted to rotate in response to the flow of energy in a pair of line conductors connected to terminals from the meter, reverse connection of the conductors with the terminals causing reverse rotation of the metering movement, forward rotation of the movement occurring on upright mounting of the meter, and reverse rotation occurring on inverse mounting of the

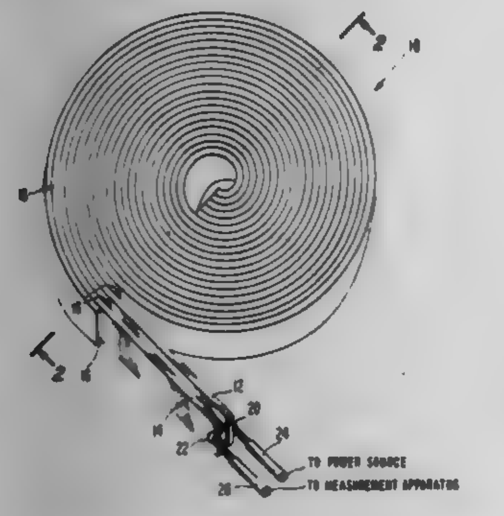
meter, the improvement comprising a gravity responsive stop element adapted to be spaced from the metering movement when the meter is connected forwardly with the line conductors, and adapted to contact the metering movement when the meter is reversibly connected with the line conductors for preventing reverse rotation of the metering movement.

4,327,325

CHUCK FOR USE IN TESTING OF SEMICONDUCTOR PELLETS

Joseph P. Pudlosky, Hunlocks Creek, Pa., assignor to RCA Corporation, New York, N.Y.

Continuation of Ser. No. 852,085, Nov. 16, 1977, abandoned. This application Oct. 2, 1979, Ser. No. 81,194
Int. Cl.³ G01R *1/06*
U.S. Cl. 324—158 F 12 Claims



1. A chuck for use in testing semiconductor pellets, said chuck comprising:

a first electrically conductive elongated member having a length, said first elongated member having a cross-section which is substantially uniform along substantially the entire length of said first member;

a second electrically conductive elongated member having a length, said second elongated member having a cross-section which is substantially uniform along substantially the entire length of said second member;

electrical isolation means electrically isolating said first and second elongated members from each other and for isolating adjacent portions of each of said first and second members;

said first and second elongated members and said electrical isolation means arranged together in a lapped configuration to form a substantially planar pellet receiving surface such that a straight line can be drawn thereon which will intersect each of said first and second elongated members more than once, each of said members having a contact portion which is exposed as a part of said pellet receiving surface for making electrical contact with a pellet placed on said pellet receiving surface;

means for connecting a power lead to said first member whereby during pellet testing said contact portion of said first members constitutes an input power contact to said chuck and said means for connecting a power lead constitutes an output power contact from said chuck; and

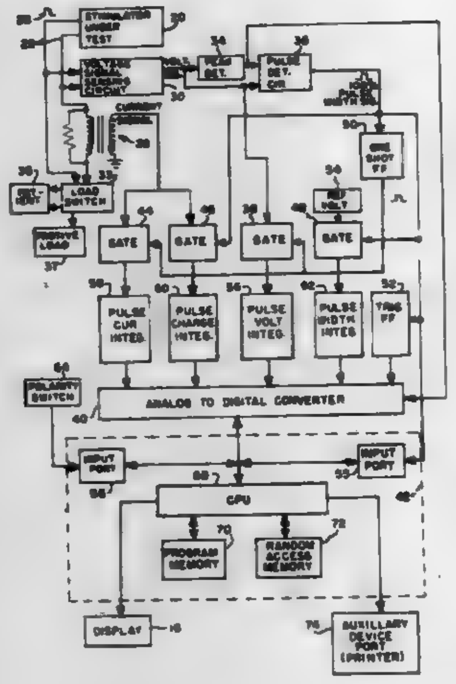
means for connecting a sensing lead to said second member whereby during pellet testing said contact portion of said second member constitutes an input sensing contact to said chuck and said means for connecting a sensing lead constitutes an output sensing contact from said chuck.

4,327,326

AUTOMATIC TESTING SYSTEM FOR ELECTRIC NERVE STIMULATOR UNITS

George J. Frye, Portland, Oreg., assignor to Frye Electronics, Inc., Tigard, Oreg.

Filed May 16, 1980, Ser. No. 150,332
Int. Cl.³ G01R *31/00, 11/00*
U.S. Cl. 324—158 R 17 Claims



1. An automatic stimulator testing system, comprising in combination:

signal sensing circuit means for sensing signals generated by a stimulator and generating voltage and current output signals representative of the stimulator generated signals;

gate means for receiving said voltage and current output signals;

peak detector means for receiving said voltage output signals and generating output signals equal to the peak voltage of said voltage output signals;

detection circuit means for receiving said output signals from said peak detector means and said voltage output signals from said signal sensing circuit means, said detection circuit means generating output pulses in the form of gate driving signals corresponding to the width of said voltage output signals and transmitting said gate driving signals to said gate means;

integrator means connected to said gate means for receiving said voltage and current output signals when said gate means are operated by said gate driving signals, said integrator means generating converter signals representative of the average of said voltage and current output signals during the time said gate driving signals are present;

analog to digital converter means for receiving said converter signals and said output signals from said peak detector means, all of said signals being converted into digital signals thereby;

digital computer means for receiving said digital signals, for controlling said integrator means and said peak detector means and for processing said digital signals; and

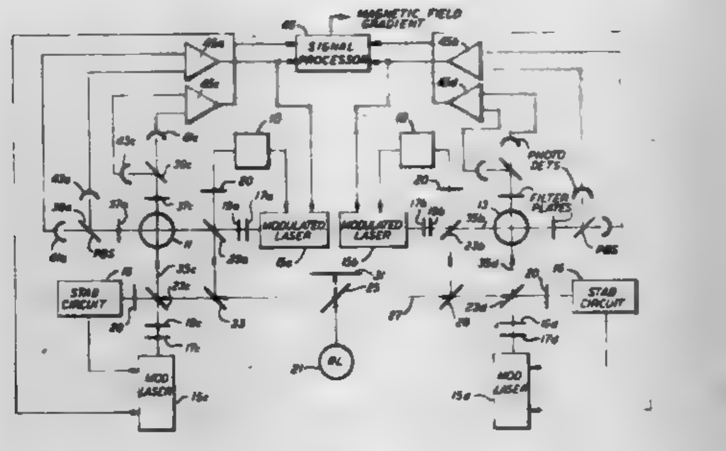
display means connected to said digital computer means for displaying information of the stimulator generated signals.

4,327,327

ALL-ANGLE GRADIENT MAGNETOMETER

Ivan A. Greenwood, Stamford, Conn., and James H. Simpson, Katonah, N.Y., assignors to The Singer Company, Little Falls, N.J.

Filed Jun. 5, 1980, Ser. No. 156,709
Int. Cl.³ G01N *27/00*
U.S. Cl. 324—304 14 Claims



1. An all angle gradient magnetometer comprising:

(a) first and second magnetic resonance cells containing an element adapted for optically pumped and optically readout magnetic resonance rigidly mounted to a common base and separated by a predetermined distance;

(b) means for generating circularly polarized first, second, third and fourth modulated beams of optical radiation at an optical pumping frequency coacting with the said resonance element, said means accepting first, second, third and fourth modulating inputs;

(c) means for directing said first and second beams through said first cell at right angles to each other;

(d) means for directing said third and fourth beams through said second cell at right angle to each other;

(e) a common readout source of light at an optical readout frequency coacting with the said resonance element frequency;

(f) means for mixing light from said readout source with each of said first, second, third and fourth beams before said beams pass through said first and second cells;

(g) means to simultaneously reject light at the pumping frequency and to detect the light from the readout source in each of said beams after passing through said cells and to provide modulating inputs to said means for generating.

(h) signal processing means receiving inputs from said means to detect and providing the magnetic field gradient as an output.

4,327,328

PROGRAMMABLE TIMING CIRCUIT

Malcolm F. MacDonald, Chelmsford, Mass., assignor to GTE Laboratories Incorporated, Waltham, Mass.

Filed Mar. 10, 1980, Ser. No. 129,132
Int. Cl.³ H03K *5/159*
U.S. Cl. 328—55 3 Claims

1. Apparatus for providing a timed delayed signal comprising:

an oscillator for providing signals at a constant frequency;

a multi-stage binary frequency divider;

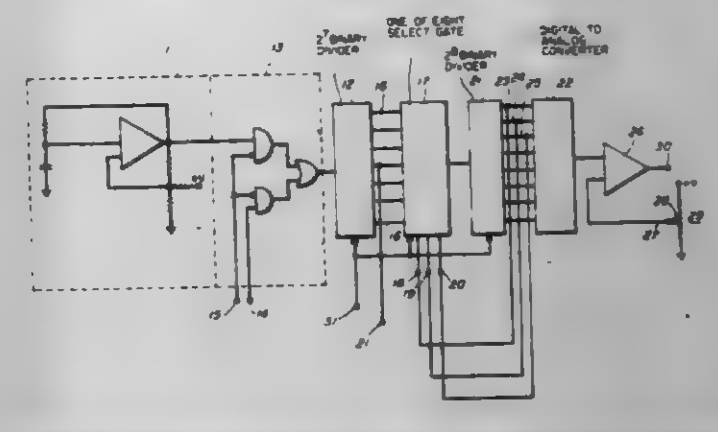
switching means for coupling said signals from said oscillator to an input of said frequency divider;

means for selecting an output from one of said stages of said frequency divider;

a multiple-stage binary frequency divider responsive to the selected output for providing a binary coded digital signal in parallel on output lines therefrom corresponding in number to the number of stages of said multiple-stage binary frequency divider;

a digital to analog converter responsive to said binary coded digital signal for providing an analog output therefrom;

a potentiometer adapted to be coupled across a voltage source for producing a variable voltage from a contact member therefrom;



a comparator adapted to provide an output signal therefrom when said analog output is at least equal to said variable voltage; and

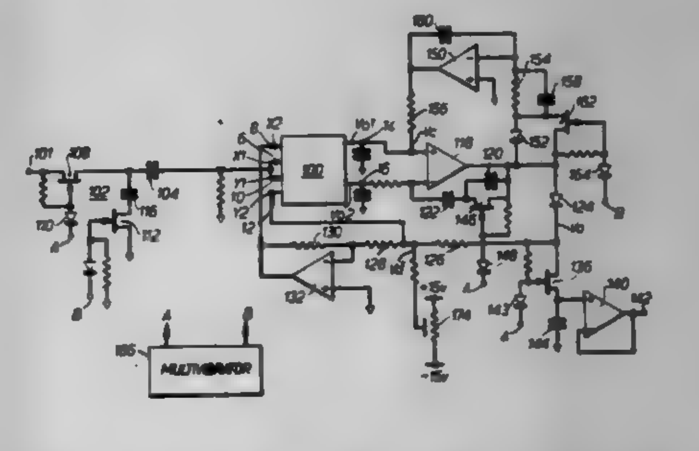
means responsive to at least a portion of said binary coded digital signal for controlling said selecting means.

4,327,329

ELECTRICAL SIGNAL PROCESSING

Derek F. Papworth, Wokingham, England, assignor to Racal-Dana Instruments Limited, Bracknell, England

Filed Dec. 10, 1979, Ser. No. 101,585
Claims priority, application United Kingdom, Dec. 9, 1978, 47014/78
Int. Cl.³ G06G *7/00, 7/12*
U.S. Cl. 328—144 15 Claims



1. An electrical circuit arrangement responsive to an input signal for producing an output signal dependent on its root mean square value, comprising

squaring means responsive to the input signal for producing a squared signal proportional to the square of the input signal,

averaging means connected to receive the squared signal to produce an average signal proportional to the mean of the squared signal,

means connected to receive the average signal to take the square root of the average signal to produce the said output signal,

switching means operative at spaced time instants to disconnect the input signal from the input of the squaring means and to maintain it disconnected each time for a predetermined duration,

feedback means connected to the output of the squaring means and operative when the input signal is disconnected from the input of the squaring means to produce a feedback signal of such polarity and magnitude as substantially to null any output produced by the squaring means during that predetermined duration,

storage means connected to receive the feedback signal during each said predetermined duration and to store it from the end of that duration until the next following predetermined duration, and

means connected to apply the stored feedback signal to the output of the squaring means between those said predetermined durations so as to tend to continue to offset any output produced by the squaring means between those durations.

4,327,330

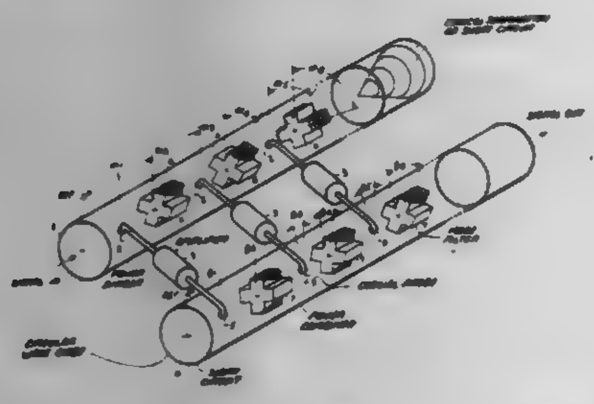
HIGH POWER AMPLIFICATION ARRANGEMENT

Joseph C. Ranghelli, Brooklyn, N.Y., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Apr. 7, 1980, Ser. No. 137,883

Int. Cl.³ H03F *3/60*; H01P *5/12*

U.S. Cl. 330—56 35 Claims



1. An arrangement to provide high power amplification of a microwave signal comprising:

a plurality of amplifiers;

a first means capable of propagating therein two independent orthogonal modes, said first means including a power divider capable of propagating therein two independent orthogonal modes having an input receiving said microwave signal and a plurality of output ports each coupled to a different one of said plurality of amplifiers, said power divider providing equal amplitude output signals at each of said plurality of output ports with a predetermined progressive and systematic phase change between adjacent ones thereof, said power divider including a circular waveguide and each of said plurality of output ports including a coaxial probe having a predetermined angular orientation with respect to a reference angle;

a plurality of mode filters each disposed within said circular waveguide between different adjacent ones of said plurality of coaxial probes and having a given angular orientation with respect to said reference angle; and

a second means capable of propagating therein two independent orthogonal modes, said second means coupled to said plurality of amplifiers to sum the output signals of each of said plurality of amplifiers to provide at the output of said second means said microwave signal with said high power amplification.

4,327,331

AUDIO AMPLIFIER DEVICE

Toshikazu Yoshimi, Tokorozawa, and Hiroshi Ono, Tokyo, both of Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan, a part interest

Filed Nov. 7, 1979, Ser. No. 91,995

Int. Cl.³ H03F *3/68*; H03G *11/04*

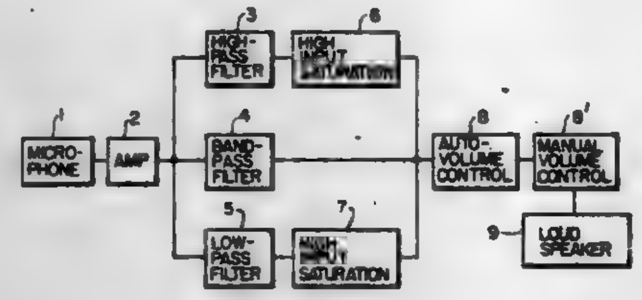
U.S. Cl. 330—126 6 Claims

1. An audio amplifier device comprising:

a first transducer means (1) for transducing an acoustic signal into an electric signal;

a first channel means (5, 7) having an input connected to an output of said first transducer means, said first channel means being adapted to pass and amplify a low frequency component of the electric signal while providing an output signal proportional to an input signal when the level thereof is low, and providing a saturated output signal when said input signal is above a predetermined level;

a second channel means having an input connected to said output of said first transducer means, said second channel means being adapted to pass the remaining component of the electric signal and comprising a band pass filter (4) adapted to pass a middle frequency component of said remaining component, and at least one set of a high pass filter (3) and an amplitude limiting means (6), said set



being connected in parallel with said band pass filter, said high pass filter being adapted to pass a component of said remaining component which is higher in frequency than said middle frequency component;

a signal combining and restricting means (8) having an input connected to outputs of said first and second channel means for combining and amplifying output signals of said first and second channel means with a variable gain; and

a second transducer means (9) connected to an output of said signal combining and restricting means for transducing an output signal thereof into an acoustic signal.

4,327,332

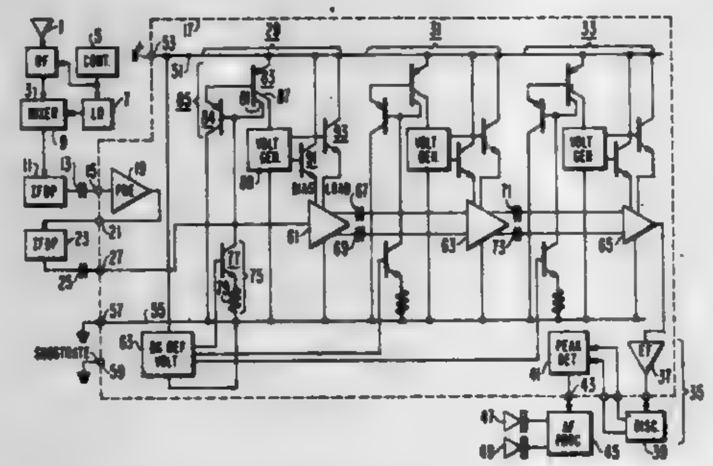
CIRCUIT ARRANGEMENT USEFUL IN DEVELOPING DECOUPLED OPERATING VOLTAGES FOR IF AMPLIFIER STAGES OF AN INTEGRATED CIRCUIT

Max E. Malchow, Flemington, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jan. 31, 1980, Ser. No. 117,079

Int. Cl.³ H03F *3/45*

U.S. Cl. 330—261 16 Claims



1. An integrated circuit constructed on a substrate, comprising:

at least two amplifier stages including respective amplifiers;

coupling means for coupling said amplifiers in cascade;

a power supply line;

a signal ground line;

each of said amplifiers coupled between said power supply line and said signal ground line;

means for applying the a-c potential at said signal ground line to said substrate;

each of said amplifier stages including its own voltage generating means including a respective receiving current point for developing at lest one operating voltage for the respective one of said amplifier in response to the application of a predetermined current to said current receiving point; and

current supplying means including a lateral transistor arrangement having a separate collector electrode connected to each of said current receiving points, at least one pair of base and emitter electrodes with said emitter electrode connected to said power supply line; and means for conditioning the junction between at least said pair of base and emitter electrodes so that predetermined currents are supplied to each of said current receiving points through the respective ones of said collector electrodes.

4,327,333

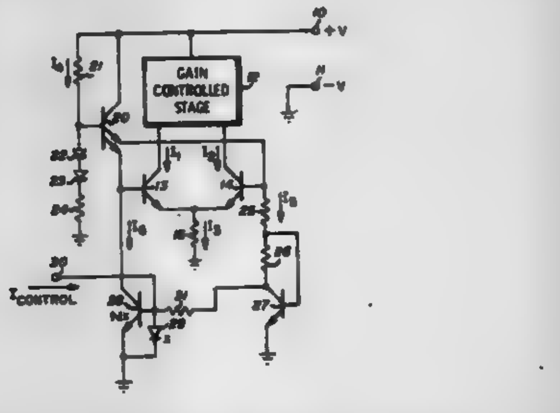
AGC CURRENT SOURCE

Milton E. Wilcox, San Jose, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Mar. 17, 1980, Ser. No. 130,803

Int. Cl.³ H03G *3/10*

U.S. Cl. 330—278 8 Claims



1. A circuit for automatic gain control wherein a pair of output currents are varied in opposite directions in response to a control current, said circuit comprising:

differential control stage means having tail current supply means, first and second inputs and providing first and second output currents;

voltage supply means coupled to said first and second inputs;

first current sink means coupled to said first input, said first current sink means including the series combination of a resistor and a conducting transistor;

a current mirror having an output coupled to said second input and an input coupled to a source of control current; said current mirror input being resistor coupled to said conducting transistor, whereby said current mirror acts as a second current sink for said second input variable as a function of said control current.

4,327,334

MULTI-CHANNEL ROTARY JOINT FOR ELECTROMAGNETIC DETECTION EQUIPMENT

Henri Becavin; Alain Bailly, and Philippe Lemerle, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed May 6, 1980, Ser. No. 147,289

Claims priority, application France, May 11, 1979, 79 11992; Japan, May 10, 1979, 54/57480

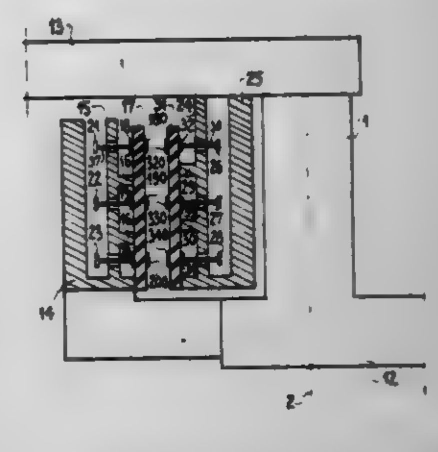
Int. Cl.³ H01P *1/06*

U.S. Cl. 333—1 5 Claims

1. A multi-channel rotary joint for coupling a stationary and a rotary component of an electromagnetic detection system to each other, comprising:

a main channel centered on an axis of rotation of said rotary component, said main channel communicating at opposite ends with an input waveguide and an output waveguide; and

a plurality of axially spaced ancillary channels coaxially surrounding said main channel, each of said ancillary channels being constituted by two coplanar concentric rings capacitively coupled to each other, each of said rings comprising two concentric annular conductors divided by angularly equispaced gaps into a multiplicity of closely



spaced arc segments, the gaps of said conductors being relatively offset whereby the arc segments of each ring overlap one another to form an electrically continuous transmission line over substantially a full circle.

4,327,335

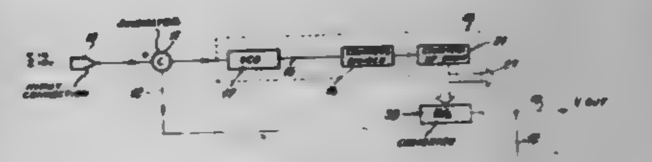
ELECTRONIC LOW-PASS FILTER CIRCUIT WITH AN ADJUSTABLE LONG TIME BASE

Gilles Missout, St-Bruno; Francois Lalonde, Varennes, and Marius Cloutier, Boucherville, all of Canada, assignors to Institut de Recherche de l'Hydro-Quebec, Quebec, Canada

Filed Nov. 19, 1979, Ser. No. 95,520

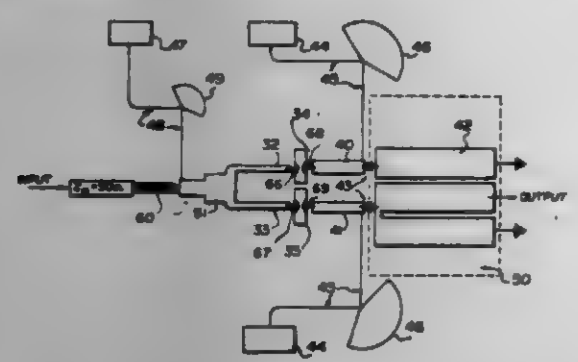
Int. Cl.³ H03L *7/08*; H04B *15/00*

U.S. Cl. 331—1 A 15 Claims



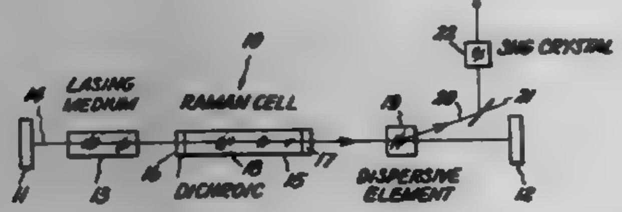
1. A filtering circuit having the behaviour of a low-pass filter capable of having a long time constant, said filtering circuit comprising input circuit means for receiving a voltage input signal to be filtered, a summator circuit for monitoring said input signal relative to a feedback analog output signal from an accumulator means and providing an error signal representative of the difference of said input and output signals of the filtering circuit, said error signal being fed to a voltage controlled oscillator to generate a frequency signal proportional to said error signal, a compensation offset network connected to an input of said oscillator to compensate for non-linearity errors in said oscillator at low voltages in the proximity of 0 volts, said accumulator means having a frequency dividing circuit to divide said frequency signal by a predetermined division factor to control the low cut-off frequency of the filtering circuit whereby to control the response time of the filtering circuit, said accumulator means also integrating said divided frequency signal, and output circuit means to provide an output of said integrated frequency signal to constitute said analog output signal.

4,327,336
MICROWAVE PHASE LOCKED LOOPS USING FET FREQUENCY DIVIDERS
William D. Cornish, and Trevor W. Tucker, both of Nepean, Canada, assignors to Her Majesty the Queen in right of Canada, as represented by the Minister of National Defence, Ottawa, Canada
Filed Jun. 5, 1980, Ser. No. 156,583
Claims priority, application Canada, Mar. 13, 1980, 347619
Int. Cl.³ H03L *7/08*
U.S. Cl. 331—8 10 Claims



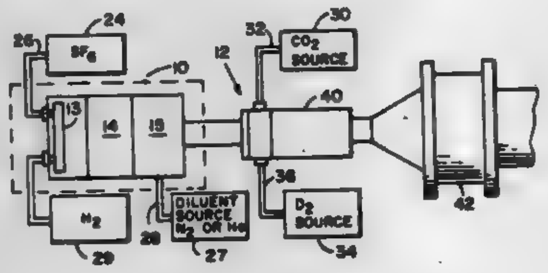
1. A microwave frequency generator comprising a microwave frequency rf oscillator having a control input and having an output forming the output of the microwave frequency generator, a microwave frequency divider having an input connected to receive the output of the rf oscillator and frequency divide it by a factor N and having an output connected to one input of a phase detector, said phase detector having another input connected to receive the output of a reference oscillator and having an output connected to said control input, whereby the rf oscillator produces an rf frequency of N times the frequency of the reference oscillator, said microwave frequency divider comprising at least one MESFET (metal semiconductor field effect transistor) having a gate, a source and a drain, a first transmission line connected to said gate and source and to input terminal means, said transmission line forming, with inherent frequency dependent non-linear capacitance between said gate and source, a resonant circuit at f_o/N, where f_o is the frequency to be applied to said input terminal means, a second transmission line being connected to said source and drain and to output terminal means, whereby said MESFET simultaneously provides parametric frequency division and amplification at microwave frequencies.

4,327,337
INTRACAVITY RAMAN FREQUENCY CONVERSION IN A HIGH POWER LASER
Yung S. Liu, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.
Filed Jan. 3, 1980, Ser. No. 109,359
Int. Cl.³ H01S *3/30*
U.S. Cl. 372—3 21 Claims



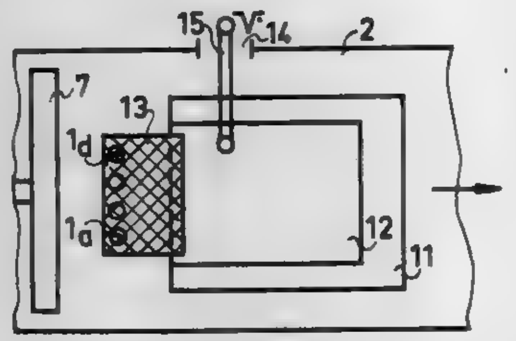
1. A method for tuning a laser in the visible and infrared range using intracavity Raman conversion comprising the steps of:
exciting a lasing medium to produce a pump beam of coherent electromagnetic radiation oscillating within a laser cavity;
passing said pump beam through a gaseous Raman-active medium disposed in said cavity such that said pump beam passes therethrough a plurality of times, said Raman-active medium scattering a portion of pump beam energy and shifting the frequency of said pump beam by a characteristic frequency of said Raman-active medium to create a Raman beam having a frequency equal to the difference between the frequency of said pump beam and the Raman characteristic frequency of said Raman medium; and
coupling at least part of said Raman beam out of said cavity as an output beam through a dispersive element disposed in said cavity.

4,327,338
NUCLEAR ACTIVATED cw CHEMICAL LASER
Thomas G. Roberts, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed May 9, 1980, Ser. No. 148,428
Int. Cl.³ H01S *3/095;* B01J *19/08*
U.S. Cl. 372—89 9 Claims



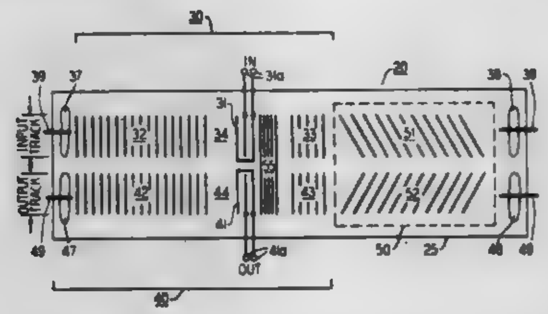
1. A chemical laser comprising: an active atom gas generator chamber having input, intermediate, and output sections for passing gas therethrough; an inactive gas source for supplying inactive gas to said generator input section; a nozzle section for expanding gases from said output section; means for supplying a lasing gas to the gas flow through said nozzle; a lasing chamber attached to the output of said nozzle, an exhaust system for exhausting gases passing through said lasing chamber; and said active gas generator chamber having gas dispersion means within the input section, said intermediate section being a radioactive energy exchanger having passageways therethrough to provide passage for gas into the output section and for affecting said inactive gas to provide an active atom gas output to said nozzle section.

4,327,339
SOLID STATE MICROWAVE SOURCE AND RADIO EQUIPMENT INCORPORATING SUCH A SOURCE
Alain Bert, Paris, France, assignor to Thomson-CSF, Paris, France
Filed Apr. 1, 1980, Ser. No. 136,400
Claims priority, application France, Apr. 6, 1979, 79 08790
Int. Cl.³ H03B *9/12*
U.S. Cl. 331—107 P 9 Claims



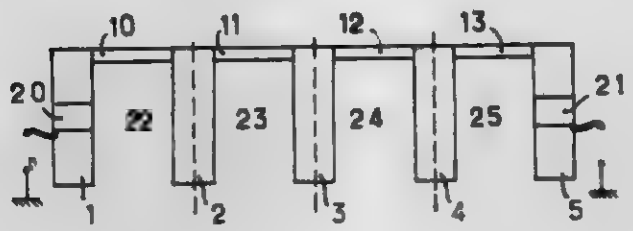
1. A solid state microwave source incorporating a plurality of negative resistance diodes arranged within a transmission waveguide, whose one end is closed by a short-circuiter, comprising a system of diodes aligned along one of the wider inner walls of the waveguide and perpendicularly to the transmission direction of the waveguide, at least one quarter wavelength resonant microband line suspended by means of a dielectric substrate placed on the waveguide wall and facing the system of diodes, a very low inductance connection means between the diode system and the resonant line and means for connecting the diode system with a d.c. polarization voltage source.

4,327,340
SURFACE WAVE RESONATOR CASCADE
Larry A. Coldren, Holmdel, N.J., assignor to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.
Continuation-in-part of Ser. No. 943,681, Sep. 19, 1978, abandoned. This application Sep. 28, 1979, Ser. No. 80,086
Int. Cl.³ H03H *9/64, 3/10, 9/25;* G02B *5/14*
U.S. Cl. 333—195 22 Claims



1. A grating resonator cascade comprised of
a medium on which surface waves will propagate, and
grating means disposed on said medium for forming first and second grating resonators for said surface waves, said resonators having respective longitudinal axes lying in different wave propagation tracks of said medium,
characterized by means including means external to the cavities of said resonators for coupling a predetermined fraction of resonant wave energy in each resonator out of that resonator along its said axis and into the other resonator along its said axis.

4,327,341
ELECTROMECHANICAL FILTER CELLS
Herbert Ernyei, Conflans-Sainte-Honorine, France, assignor to Lignes Telegraphiques et Telephoniques, Conflans-Sainte-Honorine, France
Filed Jul. 11, 1980, Ser. No. 167,702
Claims priority, application France, Jul. 13, 1979, 79 18221
Int. Cl.³ H03H *9/50, 9/00*
U.S. Cl. 333—197 1 Claim



1. An elemental cell for an electromechanical filter having a band of frequencies to be transmitted, comprising:
two parallel cylindrical bars forming longitudinally vibrating resonators; and
a flexurally vibrating cylindrical coupler connected between said two resonators; wherein the diameter (d_c) of said coupler is defined by the expression:

$d_c =$

-continued

$$\sqrt[3]{d_r^2 \cdot \frac{16}{3\pi} \cdot l_c \cdot \frac{\tan\alpha_r^+ (1 - \cos\alpha_c^+ \cosh\alpha_c^+)}{\sqrt{\Omega^+}\,[\sin\alpha_c^+ \sinh\alpha_c^+ + \cos\alpha_c^+ \cosh\alpha_c^+ \pm (\sin\alpha_c^+ + \sinh\alpha_c^+)]}}$$

where:
d_r is the diameter of said resonators
l_c is the length of said coupler
$\Omega^+ = f^+/f_o$ is the upper relative frequency of said band of frequencies to be transmitted, f^+ the upper frequency of said band and f_o the tuning frequency of said resonators

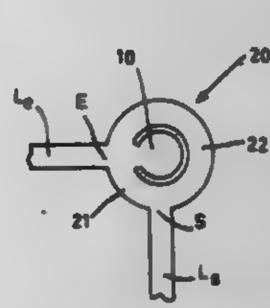
$$\alpha_c^+ = \frac{3\pi}{4} \sqrt{\Omega^+} \cdot \frac{l_c}{l_o}$$

with l_o the length of said coupler corresponding to a quarter wave effect

$$\alpha_r^+ = 2\pi n_r m \Omega^+$$

where m is the order of the vibration mode of said resonators and $n_r = l_r/\lambda_o$ with l_r the length of said resonators and λ_o the wavelength at the tuning frequency of said resonators in longitudinal vibration.

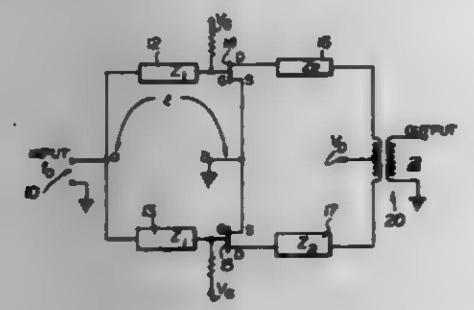
4,327,342
BANDSTOP FILTER FOR VERY HIGH FREQUENCY TRANSMISSION LINES AND BIASSING CIRCUIT FOR A VERY HIGH FREQUENCY TRANSISTOR COMPRISING THIS FILTER
Frans C. De Ronde, Lesigny, France, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Jul. 10, 1980, Ser. No. 168,821
Int. Cl.³ H01P *1/213, 1/203, 3/08*
U.S. Cl. 333—204 5 Claims



1. A bandstop filter for very high frequency transmission lines having distributed constants and implemented in a planar structure, more particularly in accordance with the microstrip technique, characterized in that is comprises:
(a) a first filtering element intended to prevent the transmission of a first frequency band and comprised of a quarter-wave filter having an electrical length equal to one quarter of the wavelength λ_1 associated with the center frequency of this first band, arranged at the input point of the bandstop filter and defining there a plane of short circuit,
(b) a second filtering element intended to prevent the transmission of a second frequency band which is adjacent to the first band and comprised of an assembly to two parallel transmission paths which separate at the input point of the bandstop filter and come together again at the output point of this bandstop filter such, that the electrical length of each of these two paths is equal to an odd number of times one quarter of the wavelength λ_2 associated with the center frequency of the second frequency band and that the difference between these lengths is equal to an odd number of times half this wavelength.

4,327,343
WIDEBAND MESFET MICROWAVE FREQUENCY DIVIDER

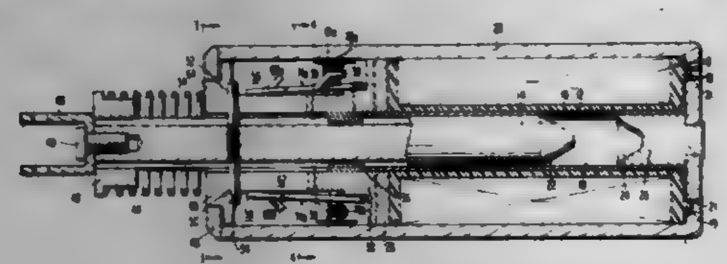
William D. Cornish, Ottawa, Canada, assignor to Her Majesty the Queen in right of Canada, as represented by the Minister of National Defence, Ottawa, Canada
Filed Jun. 10, 1980, Ser. No. 158,594
Claims priority, application Canada, Aug. 28, 1979, 334577
Int. Cl.³ H01P *1/20*; H03H *11/04*
U.S. Cl. 333—218 10 Claims



1. A microwave frequency divider comprising at least one MESFET (metal semiconductor field effect transistor) having a gate, a source and a drain, a first transmission line connected to said gate and source and to input terminal means, said transmission line forming, with the inherent frequency dependent non-linear capacitance between said gate and source, a resonant circuit the length of said transmission line being such that said resonant circuit resonates at the subharmonic frequency f_0/N, where f_0 is the frequency to be applied to said input terminal means, said resonant circuit acting to sustain said subharmonic frequency, a second transmission line being connected to said source and drain and to output terminal means, whereby said MESFET simultaneously provides parametric frequency division and amplification at microwave frequencies.

4,327,344
SOLENOID WITH MECHANICALLY LATCHABLE PLUNGER

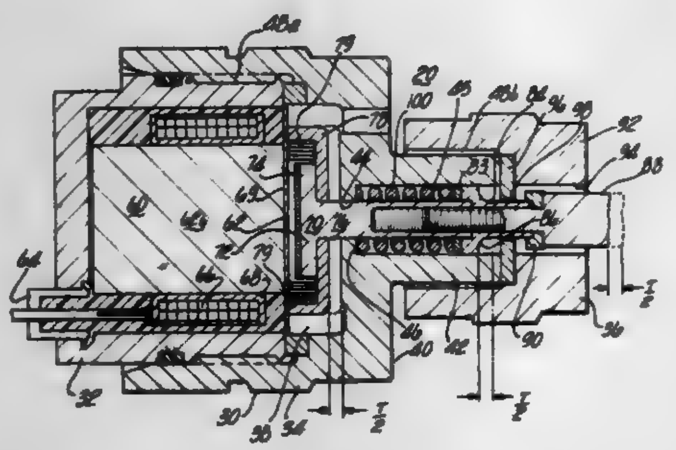
David Luckenbach, West Haven, Conn., assignor to Hi-G Incorporated, Windsor Locks, Conn.
Filed Mar. 31, 1980, Ser. No. 135,879
Int. Cl.³ H01F *7/08*
U.S. Cl. 335—253 10 Claims



1. A solenoid assembly having a latchable core plunger and comprising:
a single solenoid coil;
a single-piece core plunger;
means for energizing said solenoid coil with an electric current;
external means normally biasing said plunger to an unretracted position and away from a retracted position;
a latch pin fixed to the plunger and extending therefrom in a direction transverse to the path of travel of the plunger; and
mechanical latch means mounted on said solenoid assembly in the path of travel of said latch pin; and
latch spring means biasing said latch means to an unlatched position such that, when said solenoid coil is initially energized and said plunger is magnetically attracted to said retracted position, said latch pin mechanically engages said latch means and moves it against the bias of said spring means to a latched position where it engages said latch pin and blocks return movement of the plunger to said unretracted position when said solenoid coil is deenergized, and, when said solenoid coil is next energized, the plunger is again attracted in the direction toward said retracted position so that said latch pin moves out of engagement with said latch means to permit said latch means to return to its unlatched position under the force of the spring bias whereby, upon the next de-energization of said solenoid coil, said plunger is returned to its unretracted position by said external means.

4,327,345
SOLENOID HAVING A MULTI-PIECE ARMATURE

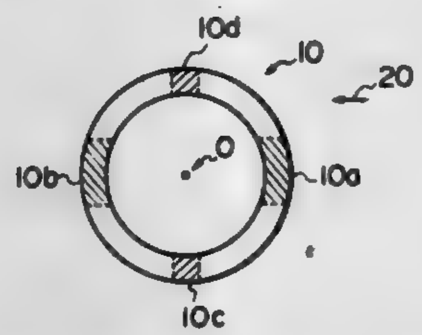
Charles R. Kelso, Farmington Hills, and Endre A. Mayer, Birmingham, both of Mich., assignors to The Bendix Corporation, Southfield, Mich.
Continuation of Ser. No. 71,914, Sep. 4, 1979, abandoned. This application Feb. 27, 1981, Ser. No. 238,777
Int. Cl.³ H01F *7/13, 7/16*
U.S. Cl. 335—265 7 Claims



1. A valve responsive to electrical command signals comprising:
a housing including a first passage extending therethrough and a fluid port adapted to receive fluid in communication therewith;
magnetic means, disposed within said housing for developing a magnetic field in response to the electric commands input thereto;
telescoping armature means including a plurality of members disposed within said housing between said magnetic means and said first passage for moving each of said members toward said magnetic means in a telescoping manner in response to said magnetic field, said telescoping armature means comprising:
a substantially rectangular first member that is responsive to said magnetic field,
receiving means responsive to the magnetic field for receiving and for moving said first member, said receiving means including a rectangular member having a U-shaped cross-section, said rectangular member having a rear wall having a hole therein and two opposingly situated sidewalls, said rear wall and said side walls forming a receiving cavity therebetween;
piston means slidably received through said rear wall and operatively connected to said first member and extending through said first passage for reciprocally moving within said first passage in response to the motion of said first member and for opening and closing said fluid first passage to permit fluid flow therethrough;
biasing means connected to said piston means for biasing said first member absent electric command signals into said receiving means in a spaced relationship relative to said magnetic means.

4,327,346
ANISOTROPIC POLYMERIC MAGNET IN THE TUBULAR FORM AND PROCESS FOR PRODUCING THE SAME

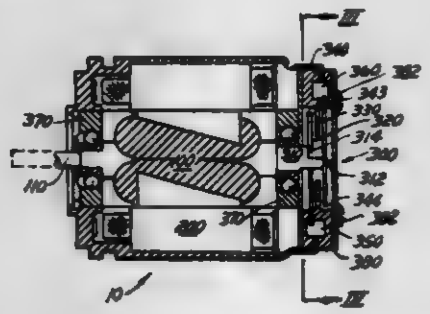
Takeo Tada, Urawa; Katsuji Honda, Yachiyo, and Yoshifumi Hirata, Tokyo, all of Japan, assignors to TDK Electronics Co., Ltd., Tokyo, Japan
Filed Feb. 14, 1980, Ser. No. 121,587
Claims priority, application Japan, Feb. 28, 1979, 54-22036; Feb. 28, 1979, 54-22038
Int. Cl.³ H01F *1/00*
U.S. Cl. 335—296 18 Claims



1. An anisotropic polymeric magnet in tubular form, wherein the tubular magnet is formed by injection molding of a mixture of ferromagnetic material and polymeric material, and the magnetization orientation of the magnet is directed in one direction perpendicular to the axial line of the tubular magnet, wherein a weld line or lines are formed at a portion or portions of the tubular magnet such that an imaginary horizontal line connecting said portion or portions with the axis of the tubular magnet is perpendicular to said one direction.

4,327,347
SYNCHRO

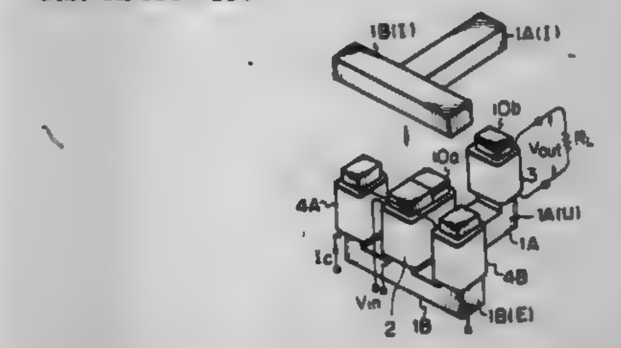
Casimer F. Remus, Tunkhannock, Pa., assignor to The Bendix Corporation, Teterboro, N.J.
Filed Apr. 25, 1980, Ser. No. 143,673
Int. Cl.³ H01F *21/06*
U.S. Cl. 336—120 8 Claims



8. An electrical apparatus comprising a rotor and a stator, the rotor having a winding thereon, a shaft defining an axis supporting said rotor for rotation relative to said stator and having a pair of electrical terminals associated with the rotor and coupled to the winding, the improvement comprising:
a housing surrounding at least a portion of the shaft-mounted terminals, said housing including a pair of axially-spaced radially-extending recesses separated by a radial insulating portion, each recess associated with an electrical terminal mounted to the housing for receiving a rotor power signal;
means for coupling the shaft-mounted terminals to the rotor terminals while allowing relative rotation of said rotor, said means including a first and a second spirally-wound hairsprings, each made of electrically conductive material, each of said hairsprings being mounted in a respective recess of said housing and coupling one of said housing mounted terminals to one of said rotor terminals, whereby when the rotor power signal is applied to the housing-mounted terminals, the signal is conducted by said hairsprings to the rotor terminals while the hairsprings allow a rotational movement of said rotor with respect to said stator.

4,327,348
VARIABLE LEAKAGE TRANSFORMER

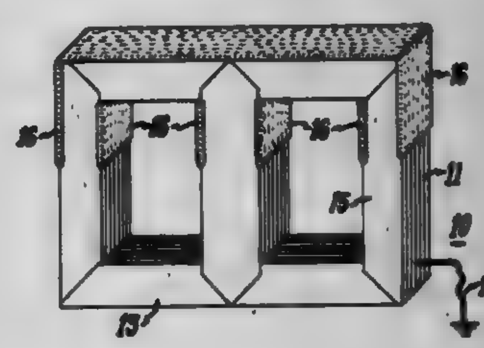
Hiromitsu Hirayama, Funabashi, Japan, assignor to TDK Electronics Co., Ltd., Tokyo, Japan
Continuation-in-part of Ser. No. 884,953, Mar. 9, 1978, Pat. No. 4,213,084. This application Oct. 3, 1979, Ser. No. 81,339
Claims priority, application Japan, Oct. 14, 1978, 53-140209[U]; Oct. 14, 1978, 53-140210[U]
Int. Cl.³ H01F *29/00*
U.S. Cl. 336—184 6 Claims



1. A variable leakage transformer comprising of a first closed magnetic path having a U shaped core and an I shaped core, a second closed magnetic path having an E shaped core and an I shaped core, the center leg of said E shaped core being connected to one leg of said U shaped core, a pair of spacers of non-magnetic material inserted between the top of the legs of said U shaped core and the related I shaped core, said U shaped core and the relating I shaped core constituting the main magnetic path and said E shaped core and the relating I shaped core constituting the sub-magnetic core, a primary winding wound common to the center leg of said E shaped core and one leg of said U shaped core, a secondary winding wound on the other leg of said U shaped core, and a pair of control windings wound on the pair of side legs of said E shaped core and being connected in series with each other.

4,327,349
TRANSFORMER CORE HAVING CHARGE DISSIPATION FACILITY

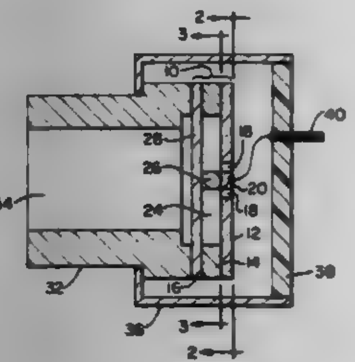
Robert H. Ettinger, Schenectady, N.Y., and Walter J. Pasko, Lee, Mass., assignors to General Electric Company, N.Y.
Filed Mar. 19, 1980, Ser. No. 131,652
Int. Cl.³ H01F *27/24*
U.S. Cl. 336—219 7 Claims



1. A transformer core comprising:
at least two legs;
upper and lower yokes joining said legs in a closed magnetic circuit, said legs and yokes each consisting of a plurality of steel laminations arranged in a stack and electrically insulated from each other;
coatings of semiconductor material applied to the exposed edge surfaces of said leg and yoke laminations to accommodate current flow between said laminations; and
an electrical ground lead connected with at least one of said

core laminations and cooperating with said semiconductor material coatings to provide a current leakage path to ground for excessive electrical charges created on said core laminations as a result of a transformer impulse voltage condition.

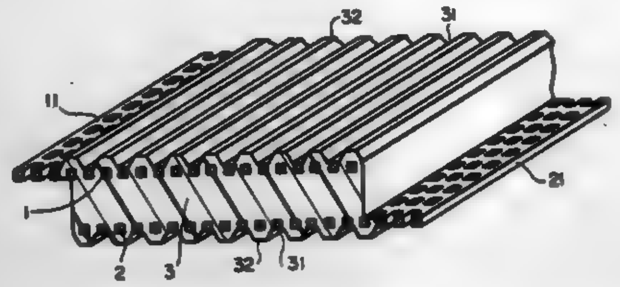
4,327,350
PRESSURE TRANSDUCER
Herman W. Erichsen, Medfield, Mass., assignor to Data Instruments, Inc., Lexington, Mass.
Filed Jul. 17, 1979, Ser. No. 58,282
Int. Cl.[3] G01L *1/22*
U.S. Cl. 338—4 14 Claims



1. A pressure transducer comprising:
a support member;
a first flat sheet of material comprising (a) two apertures arranged so as to form a beam having first and second opposite ends and (b) a margin section which surrounds said apertures and is coextensive with the periphery of said first sheet;
a second flat sheet having (a) an outer margin section coextensive with its periphery and (b) an inner section forming a flexible diaphragm which is surrounded by its said margin section, said second sheet being interposed between said support member and said first sheet so that said beam overlies and is spaced from said diaphragm;
means securing said margin sections of said first and second sheets to said support member so that the ends of said beam are fixed relative to said support member and said diaphragm and beam can flex relative to said support member;
force transmitting means coupling the approximate center of said beam to said diaphragm so that said beam will deflect responsively when said diaphragm is deflected in at least one direction; and
at least two strain sensors on said beam responsive to the deflection of said beam, said sensors being located on one side of said beam and arranged so that when said beam deflects in said at least one direction one of said two strain sensors senses a tension change in said beam and the other of said two strain sensors senses a compression change in said beam.

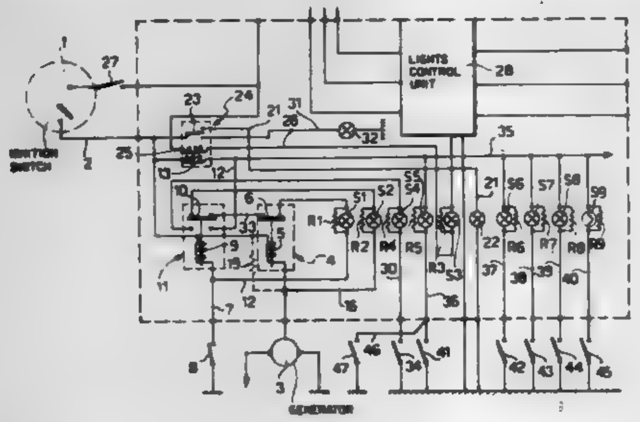
4,327,351
LAMINATES COMPRISING AN ELECTRODE AND A CONDUCTIVE POLYMER LAYER
Jack M. Walker, Portola Valley, Calif., assignor to Raychem Corporation, Menlo Park, Calif.
Division of Ser. No. 41,071, May 21, 1979, Pat. No. 4,272,471. This application Oct. 7, 1980, Ser. No. 194,793
Int. Cl.[3] H01C *7/02, 1/14*
U.S. Cl. 338—22 R 9 Claims

1. A laminate comprising a layer of a conductive polyer composition having a substantially constant cross-section and an electrode adherent to said layer, said electrode being in the form of a flat sheet having openings therein, said conductive polymer composition penetrating into but not through said openings in first areas of the electrode and penetrating through



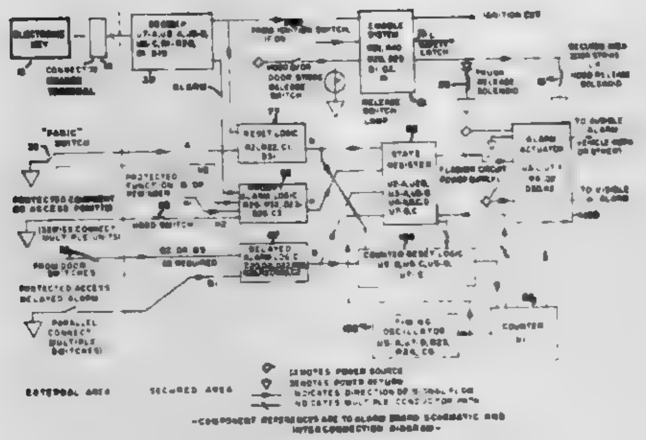
said openings in second areas of the electrode, said first and second areas being arranged in a regular pattern.

4,327,352
MONITORING APPARATUS FOR A MOTOR VEHICLE
Eraldo Cerruti, Turin, Italy, assignor to Fiat Auto S.p.A., Turin, Italy
Filed Aug. 28, 1980, Ser. No. 182,252
Claims priority, application Italy, Sep. 28, 1979, 68883 A/79
Int. Cl.[3] B60Q *1/00*
U.S. Cl. 340—52 F 11 Claims



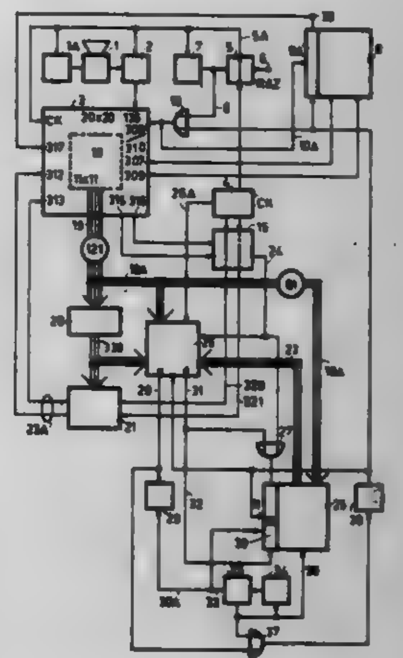
1. In a motor vehicle, monitoring apparatus for providing an indication of the malfunctioning of various components and systems of the vehicle, said apparatus comprising:
an oil-pressure warning circuit including a first warning light and an oil-pressure monitoring switch arranged to monitor the engine oil pressure, said monitoring switch being operative, whenever the oilpressure warning circuit is activated, to cause energization of said first warning light upon the engine oil pressure falling below a predetermined operating pressure,
a generator warning circuit including a second warning light and control means controlling energization of said second warning light, the generator warning circuit being so arranged that when activated the non-operation of the vehicle's generator is indicated by energization of said second warning light,
a first controllable switching device switchable between first and second states in the former of which said device is arranged to activate said oil-pressure warning circuit, the first switching device being controlled by the said control means of the generator warning circuit to be in its first state only during running of the vehicle engine as indicated by the operation of the generator, and
a second controllable switching device switchable between first and second states in the former of which the second switching device is arranged to activate the said generator warning circuit, the second switching device being controlled by said oil-pressure monitoring switch to be in its first state only during running of the vehicle engine as indicated by the presence of said predetermined oil pressure.

4,327,353
SECURITY SYSTEM
George W. Beard, 145 West Canton St., Boston, Mass. 02118, and James M. Mulvaney, Southborough, Mass., assignors to George W. Beard, Boston, Mass.
Continuation of Ser. No. 883,891, Mar. 6, 1978. This application May 9, 1980, Ser. No. 148,547
Int. Cl.[3] B60R *25/04, 25/10*
U.S. Cl. 340—64 2 Claims



1. A security system for a lock-controlled unit, comprising
(a) a reader connector having electrical contacts for connection with a cooperating electronic key,
(b) an electronic key having a plurality of electrically conductive elements defining continuous and discontinuous circuits in a predetermined, uniquely coded arrangement,
(c) a decoder operatively connected to said reader connector and having logical circuitry responsive to said electronic key seated in said reader connector and coding links and diodes connected to said contacts of said connector in a predetermined, uniquely coded arrangement complementary to the coded arrangement on said key whereby an error signal is generated upon connection of a differently coded key to said connector and an enable signal is generated only upon connection of a similarly coded key to said connector,
(d) alarm means operatively associated with said system,
(e) alarm control means operatively connected to said alarm means and to said decoder and responsive to the signals from said decoder whereby said alarm means is actuated by an error signal from said decoder, and,
(f) lock control means operatively connected to said alarm control means for enabling and disabling said lock and responsive to the signals from said decoder,
said key having said conductive elements in the form of spaced parallel strips including a first conducting strip and a second conductive strip and a common transverse strip for engagement with first and second ones of said contacts when said electronic key is seated in said reader connector,
said first and second strips being conductively interconnected by said common transverse strip so that upon mating engagement with said first and second contacts said first and second strips are in a conductive path carrying an input signal to said logical circuitry indicating that said electronic key is seated in said reader connector and comprising means for preventing false error signals during insertion of said electronic key into said reader connector,
said logical circuitry responsive to said input signal for enabling said decoder to provide the appropriate one of said error and enable signals.

4,327,354
LEARNING DEVICE FOR DIGITAL SIGNAL PATTERN RECOGNITION
Eric H. J. Persoon, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Nov. 1, 1979, Ser. No. 90,806
Claims priority, application Netherlands, Nov. 3, 1978, 7810943
Int. Cl.[3] G06K *9/00*
U.S. Cl. 340—146.3 MA 10 Claims

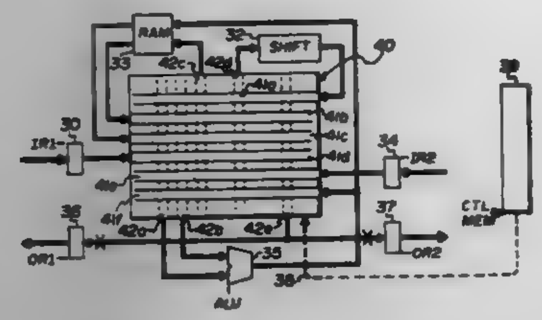


1. A device for recognizing a pattern of a predetermined number of separate digital signals which are arranged according to at least one coordinate and each of which has a signal value, the device comprising an input with first storage means for receiving and storing said pattern, second storage means with a predetermined number of storage locations, each of which has a storage capacity for a corresponding pattern, a difference determining device with a first input which is connected to a data output of the first storage means, a second input which is connected to a data output of the second storage means, and an output for alternatively supplying a non-correspondence/correspondence signal, characterized in that for the recognition of a local pattern which is selected from a overall pattern by way of a coordinate-wise adjustable window device, the window device comprises a stepping mechanism in order to be adjusted coordinate-wise over a step, a gradient determining device being provided for determining, for predetermined coordinate values within the window, the absolute value of a coordinate-wise gradient of the values of said digital signals prevailing at said coordinate values, a moment generator for receiving said absolute values and for determining a moment thereof with respect to a reference point of the window, and for generating an output signal when a predetermined minimum value of said moment is reached in order to indicate that a local high value is reached of the value of said coordinate-wise gradient averaged over the local pattern, a connection being provided for supplying said output signal as an activation signal to said difference determining device.

4,327,355
DIGITAL DEVICE WITH INTERCONNECT MATRIX
Melvyn E. Genter, San Diego, and Hassan Potash, La Jolla, both of Calif., assignors to Burroughs Corporation, Detroit, Mich.
Filed Jun. 23, 1980, Ser. No. 162,057
Int. Cl.[3] H04Q *3/42; G06F 7/38*
U.S. Cl. 340—825.9 16 Claims

9. On a semiconductor chip, a programmable interconnect matrix comprised of:
a plurality of multibit input busses and a plurality of multibit output busses for carrying signals thereon;

multiple sets of selectable electrical contacts, each set of contacts defining a set of parallel paths by which respective bits on any desired subset of said input busses pass to corresponding bits on any desired subset of said output busses;



control inputs for receiving multiple control signals; and means responsive to said control signals for transferring signals between said input and output busses via any set of said paths.

4,327,356

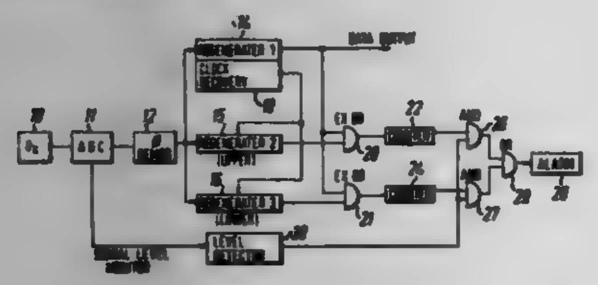
ARRANGEMENT FOR MONITORING THE PERFORMANCE OF A DIGITAL TRANSMISSION SYSTEM

John D. Gilliland, 63 Lockington Cresent, Stowmarket, Suffolk, England

Filed Jun. 19, 1979, Ser. No. 49,502

Int. Cl.³ H04Q *9/00;* H04J *3/14*

U.S. Cl. 340—825.77 5 Claims



1. A monitoring arrangement for monitoring the performance of a digital transmission system based upon characteristics of the eye diagram of a received signal, said system comprising:

three level sensors for sensing, at decision instants, the level of a signal derived from said received signal, a first of the sensors having a threshold corresponding substantially to the center of the eye diagram amplitude, a second of the sensors having a threshold near the upper level of the eye diagram amplitude, and the third of the sensors having a threshold near the lower level of the eye diagram amplitude,

means for producing an alarm signal when the upper or lower eye amplitude level is between the thresholds of the second and third level sensors, and

means for monitoring the level of said received signal to provide a signal to said means for producing for inhibiting said alarm signal when the carrier-to-noise ratio of the received signal falls below a predetermined value.

4,327,357

MAGNETIC INDICATOR ASSEMBLY

Alfred Skrobisch, Commack, N.Y., assignor to The Staver Company, Inc., Bay Shore, N.Y.

Filed Apr. 28, 1980, Ser. No. 144,763

Int. Cl.³ G08B *5/24*

U.S. Cl. 340—373 10 Claims

1. A magnetic indicator assembly comprising:

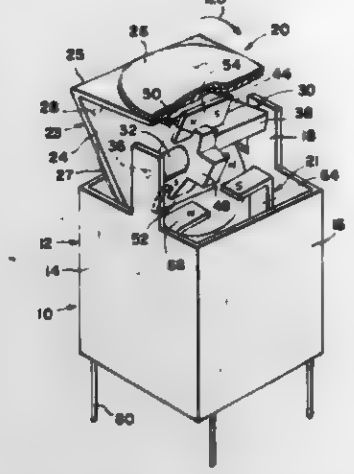
a support;

a rotor angularly rotatable on said support, said rotor comprising:

two indicating flags angularly positioned from each other by an acute angle thereinbetween; and

a permanent bar magnet associated with each of said flags;

a stator in said support, comprising a reversible magnetizable



magnetic core arranged for attracting one of said magnets when said core is magnetized with a particular polarity and wherein said core is comprised of four rectilinear legs which form a rectangle with a gap in one of said legs, said one leg juxtaposed to said rotor and a winding on said core, and wherein each of said magnets is longer than said gap in said one leg.

4,327,358

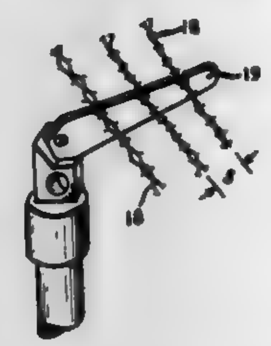
PHYSICAL DETERRENT BARRIER WITH UPWARD LOOKING DETECTION SENSOR FOR INTRUDER DETECTION SYSTEM

Nicholas V. Karas, Lowell, Mass., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Feb. 29, 1980, Ser. No. 126,073

Int. Cl.³ G08B *13/18;* H01P *3/10*

U.S. Cl. 340—541 5 Claims



1. In an intruder detection system utilizing leaky transmission line sensor means and having a transmitter for transmitting r.f. signals therealong and including a receiver and processing circuits for receiving and processing reflected r.f. signals resulting from intruder violations of said sensor means, the improvement residing in an intruder deterrent barrier and upward looking intruder detection sensor, said deterrent barrier and upward looking intruder detection sensor comprising:

a physical intrusion deterrent barrier,

an r.f. corner reflector antenna comprised of a multiplicity of strands of barbed wire and having an aperture, said corner reflector being disposed on the top surface of and coextensive with said barrier, the aperture of said corner reflector antenna being directed upwards, and

a leaky transmission line within and extending along the length of said corner reflector antenna and providing an r.f. signal therefor, said leaky transmission line being operatively connected into said intruder detection system.

4,327,359

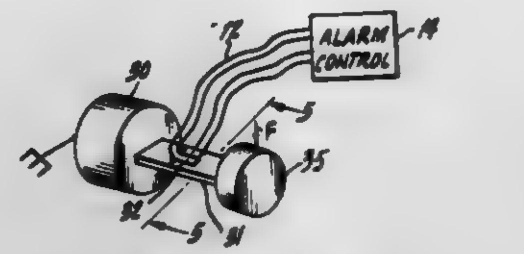
GLASS BREAKAGE DETECTORS EMPLOYING PIEZORESISTIVE DEVICES

Anthony D. Kurtz, Englewood, N.J., assignor to Kulite Semiconductor Products, Inc., Ridgefield, N.J.

Continuation of Ser. No. 46,263, Jun. 7, 1979, which is a continuation of Ser. No. 829,771, Sep. 1, 1977. This application Aug. 19, 1980, Ser. No. 179,509

Int. Cl.³ G08B *13/04*

U.S. Cl. 340—545 8 Claims



4. A glass breakage detector, comprising:

(a) a first cantilever detector having a base support member rigidly secured to said glass and a first beam coupled to said base support member and directed along a plane parallel to the plane of said glass, said first beam having positioned thereon at least one piezoresistive sensor adapted to provide a change in resistance for forces sufficient to deflect said beam upon breakage of said glass,

(b) a second cantilever detector having a base support member rigidly secured to said glass and a second beam coupled to said support member and directed along a plane transverse to the plane of said glass, said second beam having positioned thereon at least one other piezoresistive sensor adapted to provide a change in resistance for forces sufficient to deflect said second beam upon breakage of said glass, and

(c) logic means coupled to said sensors associated with said first and second cantilever detectors to monitor said resistance changes and to provide an alarm when forces sufficient to break said glass are applied to both sensors, whereby said logic means discriminates against typical forces applied to said glass during conventional conditions as when said window is moved conventionally to cause said logic means as coupled to said sensors to inhibit alarm operation.

4,327,360

ALARM DEVICE RESPONSIVE TO MOVEMENT OF PROTECTED OBJECT, POWER SOURCE CONDITION AND ALARM GROUND PATH

E. B. Brown, P.O. Box 9772, Fort Worth, Tex. 76107

Filed Jun. 10, 1980, Ser. No. 158,045

Int. Cl.³ G08B *13/14*

U.S. Cl. 340—571 16 Claims

1. An alarm adapted to be mounted on an object to be protected comprising:

first and second terminal signals, one of said first and second terminal signals being ground, the other at a potential with respect thereto;

first means (14) having two states and receiving at least a portion of said first terminal signal when said object remains fixed;

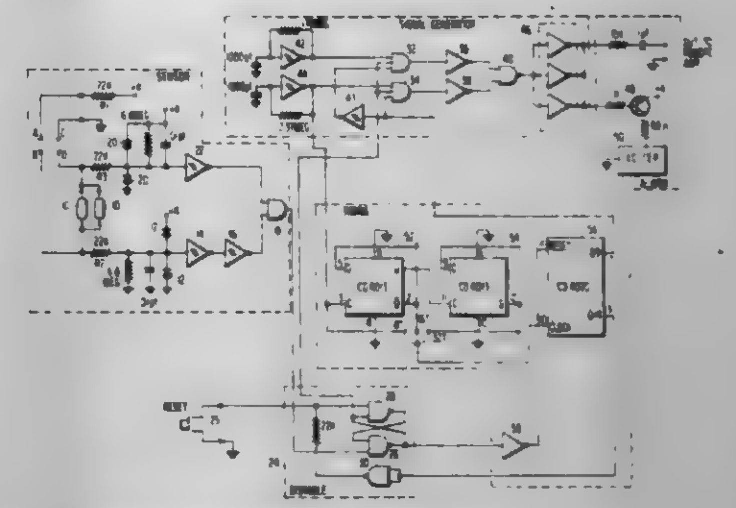
means (10) for applying at least a portion of said second terminal signal to said first means when said object is moved;

second means (22) in parallel with said first means, having two states, and receiving at least a portion of said second terminal signal;

means for applying at least a portion of said second terminal signal to said first means when a connection between said first terminal and said first means is disrupted;

means for applying at least a portion of said first terminal signal to said second means when a connection between said second terminal and said second means is disrupted;

whereby one of said first and second means changes state to signal an alarm to indicate:



(i) a movement of the protected object,

(ii) a disruption of said first terminal signal, or

(iii) a disruption of said second terminal signal.

4,327,361

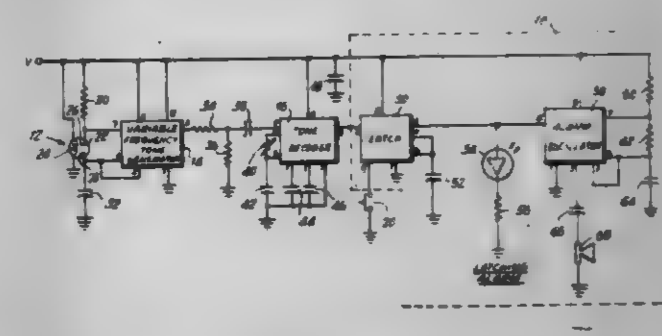
GAS SENSOR

Howard M. Berlin, Newark, Del., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 6, 1980, Ser. No. 204,444

Int. Cl.³ G08B *17/10*

U.S. Cl. 340—634 11 Claims



1. A gas sensor comprising:

sensing means for generating a varying output impedance as a function of the concentration of gases to which it is exposed, said sensing means including heater means for elevating said sensing means to a specific temperature range;

voltage supply means for supplying energy to said heater means;

a first resistor element operatively coupled to a first output terminal of said gas sensing means and to said voltage supply means;

a first capacitor element operatively connected to a second output terminal of said sensing means and to a ground connection;

linear integrated circuit timer means, having input terminal operatively coupled to said first resistor element and to said first capacitor element, said first resistor and capacitor having impedances selected to control the frequency of the output of said linear integrated timer means so that it is in the audio range;

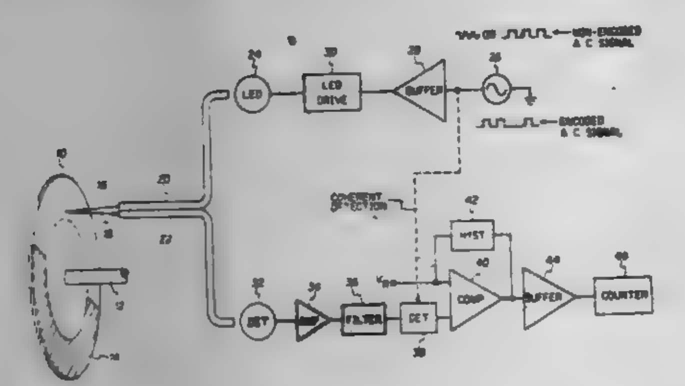
voltage divider means operatively coupled to the output of said timer means for reducing the voltage from the output of said timer means;

a second capacitor electrically coupled to a common junction of said voltage divider means;

tone decoder circuit means having an input terminal electrically AC coupled to said second capacitor;

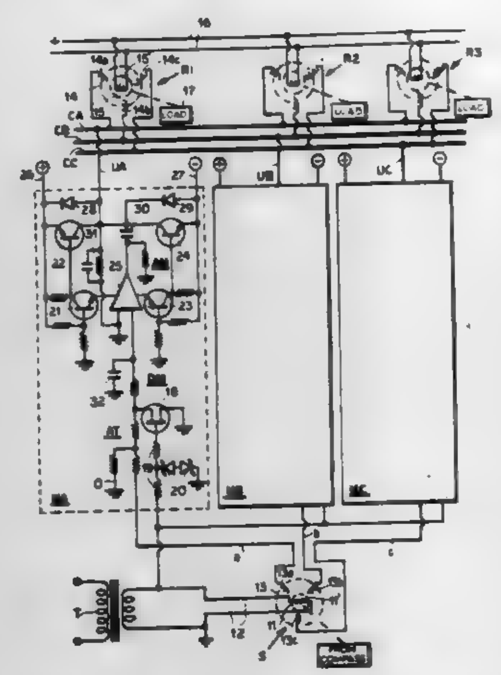
a variable resistor, electrically coupled to other adjacent input terminals of said tone decoder means;
capacitor means electrically coupled intermediate said ground connection and said variable resistor for cooperating therewith for filtering the input of said tone decoder means;
latch means electrically coupled to the output of said tone decoder means for generating a high output signal in response to a low signal from said tone decoder means, and for remaining at a high output state until reset;
a reset switch electrically coupled to said latch means and said ground connection, for resetting said latch means from said high output state to a low output state;
visual indicator means electrically coupled to the output of said latch means for visually indicating when said latch means generates a high output signal;
oscillator means electrically connected to the output of said latch means for generating an output signal of a specific frequency and duty cycle when said latch means is generating said high output signal, and for producing no signal when said latch means is at said low output state;
means for varying said specific frequency and duty cycle of said oscillator means; and
alarm means electrically coupled to the output of said oscillator means for generating a signal when said visual indicator means is responsive to said latch means.

4,327,362
METER ROTOR ROTATION OPTICAL SENSOR
Robert J. Hoss, Plano, Tex., assignor to Rockwell International Corporation, El Segundo, Calif.
Filed Oct. 23, 1978, Ser. No. 954,046
Int. Cl.³ G08C *19/36;* G01D *5/36*
U.S. Cl. 340—870.02 10 Claims



1. Rotation sensing apparatus for monitoring at a remote location the rotations of a meter rotor having a light reflecting surface except for a circumferentially disposed non-reflecting portion whose arc is less than the meter circumference, comprising:
a light source at the remote location from the meter whose rotor rotations are to be monitored including a transducer for converting electric energy to light and an AC signal source for energizing said transducer;
a first fiber optic bundle for routing the light from said source to the meter to be beamed onto the circumferential section of the surface of the rotor containing the non-reflecting and reflecting portions as it rotates therepast;
a second fiber optic bundle for routing light reflected from the surface of said rotor back to the remote location;
detection means at the remote location, including a transducer for converting the periodic light reflections from the surface of the rotor as it rotates to electrical AC analogs, discrimination means for passing only AC analogs which bear a predetermined relationship to said AC signal source and means for converting the passed AC analogs to electrical pulse analogs, and
counting means connected to said detection means for accumulating the number of said electrical pulse analogs.

4,327,363
SYSTEM FOR TRANSMITTING HEADING INFORMATION FROM A COMPASS TO SEVERAL FOLLOWERS
Piero M. Derossi, Corso Giovanni Lanza 55, Turin, Italy
Continuation-in-part of Ser. No. 973,807, Dec. 28, 1978, abandoned. This application Jul. 10, 1980, Ser. No. 168,462
Claims priority, application Italy, Dec. 30, 1977, 69955 A/77
Int. Cl.³ G05B *11/12;* G08C *19/06*
U.S. Cl. 340—870.34 9 Claims

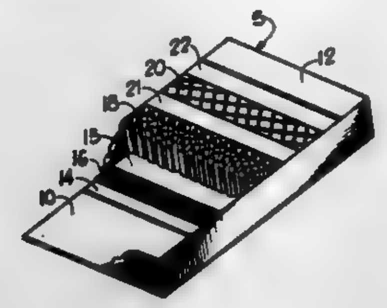


1. A system for transmitting heading information from a compass to a plurality of followers, comprising:
a synchro transmitter with a stator member and a rotor member, the latter being coupled with a compass for assuming an angular position corresponding to heading information furnished by said compass;
a source of single-phase alternating current connected across a winding on one of said members, the other of said members having three angularly spaced-apart windings;
a-c/d-c conversion means divided into three substantially identical modular units each having an input connection to a respective winding of said other of said members; and
a plurality of synchro receivers each having a stator part and a rotor part, one of said parts having three windings respectively connected to outputs of said modular units, the other of said parts being provided with magnetizing means for setting up a steady magnetic field, said followers being respectively coupled with the rotor parts of said synchro receivers.

4,327,364
APPARATUS FOR CONVERTING INCIDENT MICROWAVE ENERGY TO THERMAL ENERGY
Richard L. Moore, Cleveland, Okla., assignor to Rockwell International Corporation, El Segundo, Calif.
Filed Dec. 22, 1978, Ser. No. 972,195
Int. Cl.³ H01Q *17/00*
U.S. Cl. 343—18 A 8 Claims

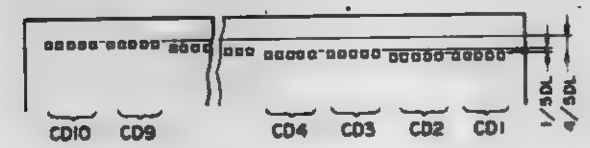
1. In an apparatus for converting incident microwave energy to thermal energy to substantially preclude reflection of the microwave energy, the apparatus having a ground plane sheet and having an electrical component sheet of admittance Y_2, separated from one another by a low dielectric spacer having an admittance Y_1, a phase constant β_1, and a thickness l_1; the improvement wherein said electrical component sheet comprises:
a low dielectric substrate having a coating thereon of a mixture of carbon and resin in a selected ratio and in a selected geometrical pattern, said ratio and said geometrical pattern being selected to result in an admittance Y_2 which is substantially defined by the following equation:

$$Y_i = Y_0 + j\cot 2\beta_1 l_1$$



where Y_0 is the intrinsic admittance of the environment in the vicinity of said apparatus.

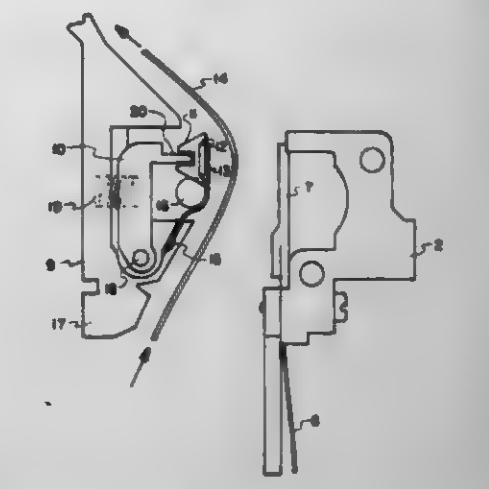
4,327,365
THERMAL PRINTER
Atsushi Noda, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 20, 1979, Ser. No. 105,883
Claims priority, application Japan, Dec. 27, 1978, 53-165873
Int. Cl.³ G01D *15/10*
U.S. Cl. 346—76 PH 1 Claim



1. A thermal printer comprising:
a thermal head having a plurality of one line dot thermal element groups (N) corresponding to a plurality of characters to be printed in a row or column on a recording medium, wherein said thermal element groups are disposed along a substantially longitudinal direction and are displaced relative to one another by a predetermined pitch perpendicular to said substantially longitudinal direction;
control means for driving the thermal element groups (N) of said thermal head in a time-divided fashion with time-divided signals N; and
means for changing the relative positional relationship between said recording medium and said thermal head by said predetermined pitch in response to each activation of each of said thermal element groups N by said control means.

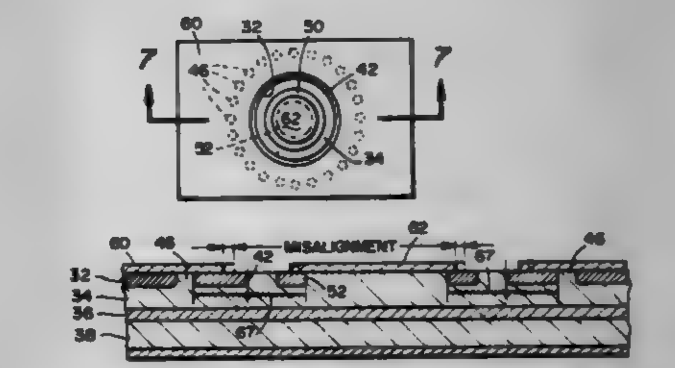
4,327,366
FLEXIBLE LOW FRICTION PLATEN COVER FOR RECORDING APPARATUS
William Schafter, Corvallis, and Terrag W. Bradley, Monroe, both of Oreg., assignors to Hewlett-Packard Company, Palo Alto, Calif.
Filed Jan. 24, 1980, Ser. No. 114,937
Int. Cl.³ G01D *15/10, 15/34;* B41J *3/20, 11/08*
U.S. Cl. 346—76 PH 6 Claims

1. In a moving head recording apparatus of the type wherein a recording medium is advanced between a moving head and a platen having a pliable and resilient layer that deforms at the location of contact of the moving head upon the recording medium, the improvement comprising a deformable sheet of low friction material interposed between the platen and the recording medium, the deformable sheet deforming at the



location of contact of the moving head and the recording medium to conform with the deformation thereat in the platen.

4,327,367
THYRISTOR WITH EVEN TURN-ON LINE POTENTIAL AND METHOD WITH 1-MICRON TO 5-MIL WIDE ALIGNMENT REGION BAND
Victor A. K. Temple, Clifton Park, N.Y., assignor to Electric Power Research Institute, Inc., Palo Alto, Calif.
Continuation-in-part of Ser. No. 899,309, Apr. 24, 1978, abandoned. This application Jul. 25, 1980, Ser. No. 172,449
Int. Cl.³ H01L *29/74*
U.S. Cl. 357—38 7 Claims

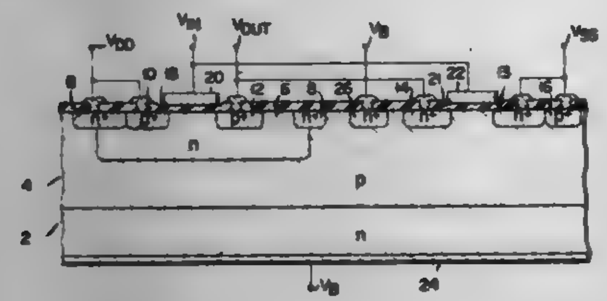


1. A thyristor comprising: a semiconductor body having a top surface and having at least four zones of alternate conductivity type; including an emitter zone of a first conductivity type extending to said top surface having an emitter electrode on said surface in contact with said emitter zone, and a base zone adjacent said emitter zone and also extending to said top surface and having a control electrode on said surface in contact with said base zone, a turn-on junction at the interface of said emitter and base zone, means for correcting for a predetermined expected misalignment, Δ, between said emitter and control electrodes and said emitter and base zones respectively, including an alignment band of said first conductivity type in said base zone spaced apart from said emitter zone and extending to said top surface, the interface of said base zone and said alignment band defining an alignment edge on said top surface spaced an equal minimum distance from said turn-on junction at all points, said alignment band being between said alignment edge and said emitter zone, and having a horizontal width between said alignment edge at one extremity and an outside edge facing said turn-on junction at the other extremity, such width being between 1 micron and 5 mils which corresponds to 1 to 3Δ, said control electrode being in contact with said alignment band and overlying said alignment edge, said alignment edge defining the line closest to said emitter zone at which said control electrode contacts said base zone.

4,327,368
CMOS TRANSISTOR PAIR WITH REVERSE BIASED SUBSTRATE TO PREVENT LATCH-UP

Yukimasa Uchida, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Sep. 19, 1979, Ser. No. 76,845
Claims priority, application Japan, Sep. 28, 1978, 53-118587
Int. Cl.[3] H01L *27/02*
U.S. Cl. 357—42 7 Claims



1. A semiconductor device comprising:
a semiconductor substrate of a first conductivity type;
a semiconductor layer having a second conductivity type opposite to said first conductivity type and formed on said semiconductor substrate;
a well region of the first conductivity type formed in the surface area of said semiconductor layer to a depth which avoids contact with said semiconductor substrate;
first and second semiconductor regions of the first conductivity type formed in the surface area of said semiconductor layer;
third and fourth semiconductor regions of a second conductivity type formed in the surface area of said well region;
a first gate electrode insulatively formed on that surface area of said semiconductor layer which lies between said first and second semiconductor regions to form a first transistor;
a second gate electrode insulatively arranged on that surface area of said well region which lies between said third and fourth semiconductor regions to form a second transistor;
means for interconnecting said first and second transistors to form a complementary metal oxide semiconductor inverter; and
means for applying a reverse bias voltage between said semiconductor substrate and semiconductor layer to prevent latch-up of said inverter.

4,327,369
ENCAPSULATING MOISTURE-PROOF COATING

Neil Kaplan, Great Neck, N.Y., assignor to Hi-Tech Industries, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 64,005, Aug. 6, 1979, abandoned. This application Aug. 25, 1980, Ser. No. 180,904
Int. Cl.[3] H01L *23/30*
U.S. Cl. 357—72 11 Claims

1. An encapsulated electric or electronic device, the device having a surface selected from the group consisting of metals and semi-metals, the capsule being formed from a thermosetting liquid resin composition designed and adapted for use in an injection molding process, the composition comprising an unsaturated thermosettable resin capable of cross-linking to form a thermoset polymer and a cross-linking monomer capable of copolymerizing with the thermosettable liquid to form a cross-linked thermoset polymer, and a trialkoxy organometalsilane compound in an amount sufficient to significantly improve the moisture resistance of the capsule to protect the device, the trialkoxy organometalsilane compound having the empirical formula:

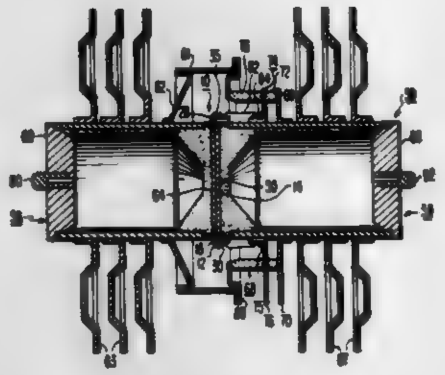
$$(C_xH_{2x+1}O)_3SiZ—M$$

wherein X is an integer from 1 to about 6, Z is an organic group containing up to about 28 carbon atoms and reactive with the encapsulating resin, Z being linked to the silicon atom by a carbon atom, and M is a metal, the capsule being formed in a mold having a metallic surface directly in contact with the molded material.

4,327,370
RESILIENT CONTACT RING FOR PROVIDING A LOW IMPEDANCE CONNECTION TO THE BASE REGION OF A SEMICONDUCTOR DEVICE

Sebastian W. Kessler, Jr., Lancaster, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Jun. 28, 1979, Ser. No. 53,510
Int. Cl.[3] H01L *23/42, 23/44, 23/46*
U.S. Cl. 357—79 13 Claims



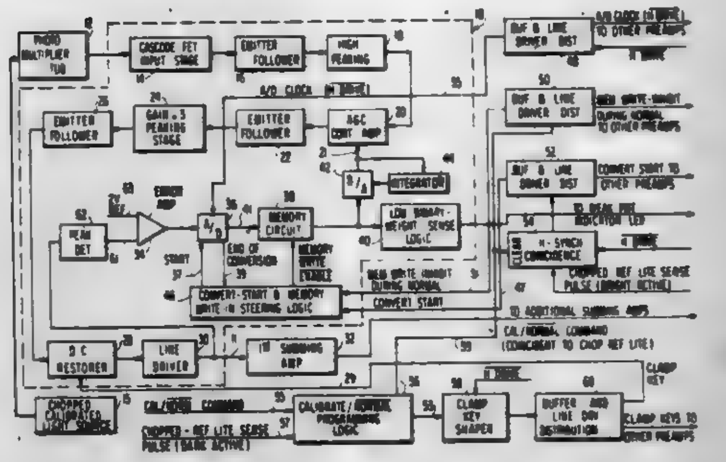
1. In a semiconductor device comprising a body of semiconductor material having first and second major surfaces, said first surface including an emitter-base structure having a plurality of discrete emitter regions interdigitated with a base region, said base region having a base contact ring thereon, and base terminal means electrically connected to said base contact ring, the improvement wherein said base terminal means comprise:
a conductive base feed-through ring including a base terminal, said base feed-through ring being concentric with and spaced from said base contact ring and having projecting means extending from and around the entire inner circumference of said base feed-through ring, said projecting means being directed towards said base contact ring, and
a resilient contact ring disposed between said base contract ring and said projecting means of said base feed-through ring thereby providing a low impedance electrical interconnection therebetween.

4,327,371
METHOD AND APPARATUS CALIBRATING A PLURALITY OF PREAMPLIFIERS

Alvin W. Edson, Binghamton, and Richard A. Windyka, Chenango Bridge, both of N.Y., assignors to The Singer Company, Binghamton, N.Y.

Filed Dec. 19, 1979, Ser. No. 105,067
Int. Cl.[3] H04N *9/62*
U.S. Cl. 358—10 30 Claims

1. A calibration circuit for a preamplifier connected to amplify the output from a photomultiplier tube or the like, which comprises:
automatic gain control circuit means for receiving said output of said tube;
a calibrated source of light for directing a predetermined level of light onto said tube during a calibration mode thereof;
means for comparing the output of said preamplifier during said calibration move with a predetermined voltage level and for generating an error voltage proportional to the difference therebetween, wherein said predetermined voltage level represents the response of a properly calibrated tube to said predetermined level of light; and

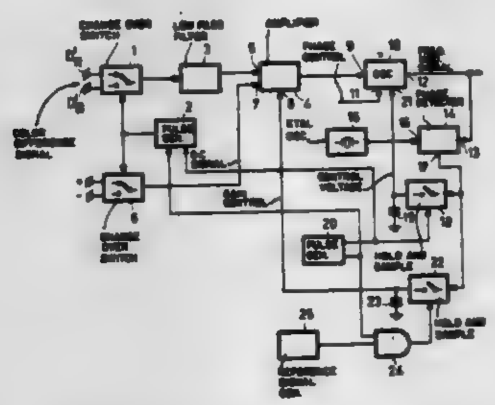


means for periodically storing said error voltage and for feeding same to said automatic gain control circuit means for adjusting the gain thereof.

4,327,372
ENCODING CIRCUIT FOR A SECAM COLOR TELEVISION TRANSMITTER

Nicolaas J. L. Van der Valk, Breda, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 9, 1980, Ser. No. 157,751
Claims priority, application Netherlands, Jun. 27, 1979, 7904985
Int. Cl.[3] H04N *9/40*
U.S. Cl. 358—14 13 Claims

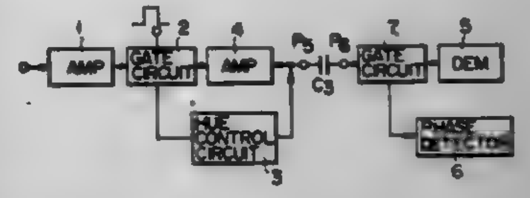


1. An encoding circuit for a SECAM colour television transmitter comprising:
a pulse generator for generating a line signal frequency and a field signal frequency, a frequency modulator circuit switchably connected to said pulse generator and comprising a frequency-modulatable oscillator for converting a modulating signal containing two color difference signals which follow one another line-sequentially each color difference signal having a direct current component added thereto, into a frequency-modulated signal having a first reference frequency at a first value of the first colour difference signal and a second reference frequency at a second value of the second colour difference signal,
a first phase control loop connected to said frequency modulator circuit for generating a first control voltage for said frequency modulator circuit and including a first sample and hold circuit, said first sample and hold circuit being operative in a time interval in which said first color difference signal has said first value,
a first reference signal generator connected to said first phase control loop for generating a signal having the first reference frequency, and
further comprising a second phase control loop connected to said frequency modulator circuit for generating a second control voltage for said frequency modulator circuit and including a second sample and hold circuit, said second sample and hold circuit being operative at field frequency and in a time interval in which said second color difference signal has said second value,
a second reference signal generator being connected to said second phase control loop, so that the frequency of the signal generated by said second reference signal generator is a harmonic of the line frequency and so that the second sample and hold circuit is operative during a period of time which is long relative to one period of the signal generated by said second reference signal generator.

4,327,373
COMPOSITE COLOR SIGNAL PROCESSING CIRCUIT

Hiroshi Gomi, Fukaya, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Continuation of Ser. No. 842,323, Oct. 14, 1977, Pat. No. 4,227,205. This application Aug. 7, 1979, Ser. No. 64,528
Claims priority, application Japan, Oct. 16, 1976, 51-123431
Int. Cl.[3] H04N *9/535*
U.S. Cl. 358—28 7 Claims



1. A composite color signal-processing circuit for processing a time-shared composite color signal including burst and chrominance signals, comprising:
an integrated circuit including
a gate circuit for separating and extracting said burst signal and said chrominance signal from said time-shared composite color signal;
a gain control circuit coupled to said gate circuit for controlling the gain of said chrominance signal; and
a common inactive load for combining said burst signal, without regenerating, with said gain controlled chrominance signal to form a second time-shared signal the combining of chrominance and phase-controlled burst signals in a common inactive load reducing any DC level difference therebetween; and
an AC coupling capacitor for delivering said second time-shared signal from said common load, said coupling capacitor removing any DC component of said combined chrominance and phase-controlled burst signals.

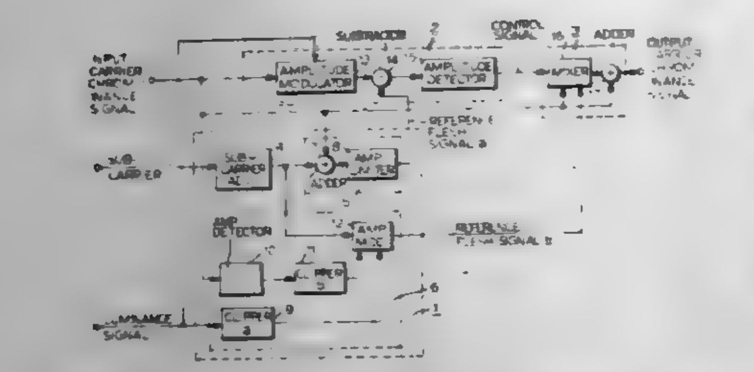
4,327,374
FLESH CORRECTION CIRCUIT FOR A COLOR TELEVISION RECEIVER

Yoshiteru Matsuda, Kadoma; Tetsuo Tomimoto, Osaka, and Yoshitomo Nagaoka, Neyagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed May 2, 1980, Ser. No. 146,118
Claims priority, application Japan, May 10, 1979, 54-57283
Int. Cl.[3] H04N *9/535*
U.S. Cl. 358—28 15 Claims

1. A flesh correction circuitry for a color television receiver, for obtaining a desired flesh reproduction and for minimizing color distortions included in a transmitted color signal, comprising:
a reference flesh signal generator for generating two kinds of reference flesh signals;
a flesh signal detector for receiving one of said reference flesh signals and an input carrier chrominance signal, and for generating a control signal corresponding to a phase difference and an amplitude difference between said reference flesh signal and said input carrier chrominance signal; and

a carrier chrominance signal corrector for receiving one of said reference flesh signals, said input carrier chrominance



signal, and said control signal, and for mixing the former two signals in response to the latter control signal.

4,327,375

PROCESS AND APPARATUS FOR PROVIDING DATA INDICATIVE OF THE SHAPE OF LEAF-LIKE ARTICLE

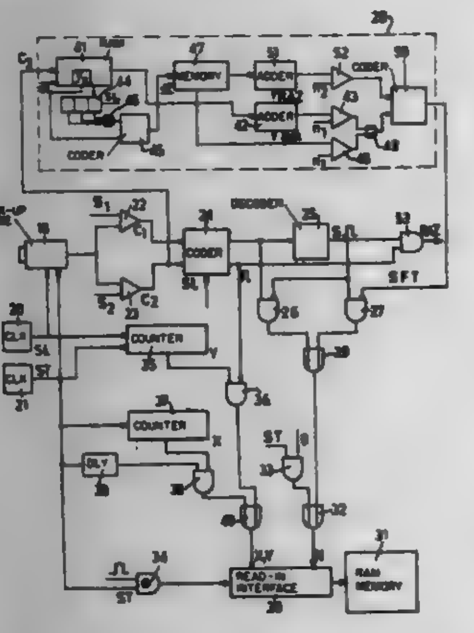
Jean F. Leclerc, Orleans, France, assignor to Service d'Exploitation Industrielle des Tabacs et des Allumettes, Paris, France

Filed Apr. 3, 1980, Ser. No. 136,775

Claims priority, application France, Apr. 11, 1979, 79 09126

Int. Cl.³ H04N *7/18*

U.S. Cl. 358—107 **7 Claims**



1. A process for deriving digital information indicative of the outer contour of a leaf-like article and of the holes which it may comprise, said holes having to be taken into consideration for the use of the article when their dimensions exceed a determined threshold, from a sampled analog video signal composed of image lines and representing the image of the article placed on a support, said process comprising the steps of comparing the video signal, for each image dot or sample, with a threshold and coding the dot "1" or "0" according to the result of the comparison; detecting the transitions in the digital signal thus obtained; coding this digital signal as a "leaf" signal or word when the signal is in state "0" (or "1") and as a "support" word when the signal is in state "1" (or "0") and when it relates to a hole; comparing with the above-mentioned threshold, expressed by a number n_1 of image dots, the number n of dots coded "1" (or "0") which follow one another, firstly in a line X (direction Y), then in consecutive lines X, X+1, etc. (direction X); converting the "support" signals if $n \div n_1$, into "flaw" signals and transmitting them unchanged if $n < n_1$; storing solely the signals preceding a transition, together with corresponding position data Y, by writing them line by line as said lines appear; reading the stored information in an order opposite the order of writing, whereby line X+1 is read before line X; transmitting the signals other than the "support" signals unaltered, and processing the "support" signals as follows: if a "support" signal of a line X is located in the vicinity of a "flaw" signal present in previously read line X+1, it is converted into a "flaw" signal, and if this is not the case, it is not transmitted.

4,327,376

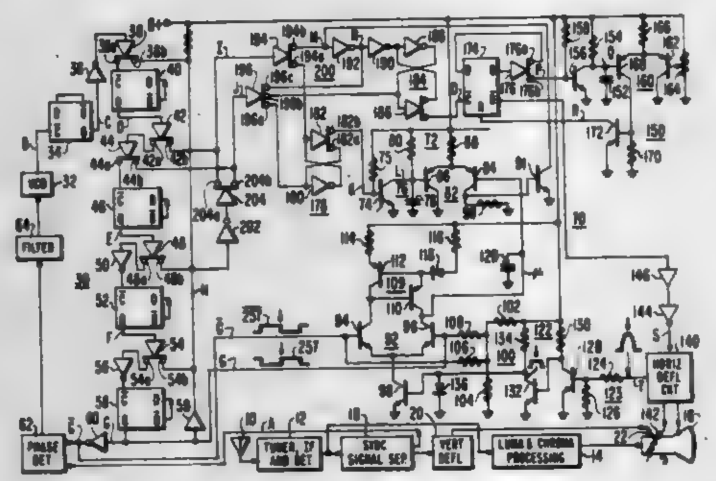
DUAL PHASE-CONTROL LOOP HORIZONTAL DEFLECTION SYNCHRONIZING CIRCUIT

Alvin R. Balaban, Lebanon, and Steven A. Steckler, Clark, both of N.J., assignors to RCA Corporation, New York, N.Y.

Continuation of Ser. No. 948,775, Oct. 5, 1978, abandoned. This application Mar. 13, 1980, Ser. No. 129,841

Int. Cl.³ H04N *5/04;* H03K *5/20;* H03B *3/04;* H03K *1/17*

U.S. Cl. 358—159 **8 Claims**



1. A horizontal synchronizing arrangement for a television display apparatus including a source of horizontal synchronizing signals and also including a horizontal deflection circuit responsive to drive pulses to produce deflection current defining recurrent trace and retrace intervals and producing retrace pulses variably delayed with respect to said drive pulses as a function of loading of said deflection circuit, comprising:

a phase-lock loop including a voltage controlled oscillator having a control input and an output at which an output signal is produced having a frequency substantially equal to a multiple of the frequency of said horizontal synchronizing signals;

a divider coupled to the output of said voltage controlled oscillator for producing a bilevel signal in synchronism with average horizontal synchronizing signals;

a first phase detector having a first input coupled to receive said horizontal synchronizing signals and a second input coupled to receive said bilevel signal, and an output for producing a first phase comparison signal; and

a first loop filter coupled between said output of said first phase detector and said control input of said voltage controlled oscillator; and

a phase control loop for maintaining said retrace pulses in synchronism with said bilevel signal, said phase control loop comprising:

a ramp generator responsive to said bilevel signal for producing a ramp signal exhibiting a period which is substantially equal to the period of said average horizontal synchronizing signals;

a second phase detector having a first input responsive to said bilevel signal and a second input responsive to said retrace pulses for producing at an output a second phase comparison signal;

a second loop filter coupled to said output of said second phase detector;

a delay circuit having a first input responsive to said ramp signal and a second input coupled to said second loop filter for initiating an output signal at a time delayed by up to approximately one period of said average horizontal synchronizing signals during the occurrence of one period of said ramp signal; and

a horizontal drive circuit responsive to said delayed output signal for producing horizontal drive signals.

4,327,377

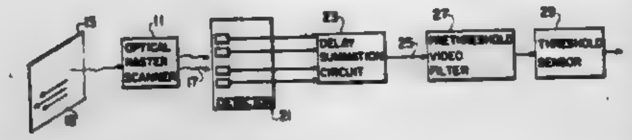
PHASE-SLIPPED TIME DELAY AND INTEGRATION SCANNING SYSTEM

Edward H. Takken, Alexandria, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 6, 1980, Ser. No. 157,126

Int. Cl.³ H04N *5/33*

U.S. Cl. 358—199 **10 Claims**



1. A scanning system comprising:

a linear array of N detector elements having a uniform spacing of X cm. between their centers;

means for scanning a field of view in two dimensions at a rate of V cm. per second along one of the two dimensions and applying received energy to the array,

the array being oriented parallel to the one of the scanning dimensions, each detector element adapted to produce, when sampled, an output signal proportional to integrated energy exposure thereof between samplings;

means for sampling the N detector elements every t_s seconds, where

$$t_s = \frac{1}{\left(k + \frac{1}{N}\right)}\left(\frac{X}{V}\right)$$

and k is an integer; and

delay summation means for delaying the output signals from each of the N detector elements as a function of the scan rate and relative position of each of the detector elements and summing the delayed output signals from each of the detector elements so as to provide a resultant output signal indicative of relative energy distribution within the field of view.

4,327,378

AUTOMATIC IRIS CONTROL FOR SOLID-STAGE IMAGING APPARATUS

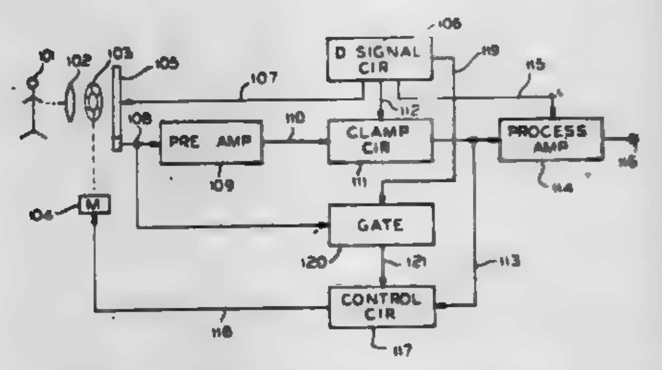
Takanori Tanaka, and Masanobu Morishita, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Jun. 3, 1980, Ser. No. 156,163

Claims priority, application Japan, Jun. 8, 1979, 54-72021

Int. Cl.³ H04N *5/26*

U.S. Cl. 358—228 **13 Claims**



1. A solid-state imaging apparatus comprising: charge-coupled imaging means including an imaging area for generating charges responsive to light incident thereon, output means responsive to the charges generated in the imaging areas for producing an electrical output signal; first means for obtaining a video information signal from said electrical output signal; second means for obtaining a reference signal from said electrical output signal; optical iris means for controlling the intensity of light incident upon at least a part of said imaging area; first iris control means responsive to said video information signal for controlling said optical iris means and to said reference signal; overflow detection means for detecting an overflow of charges from said imaging area; and second iris control means responsive to the output of said overflow detection means for controlling said optical iris to lower said intensity of the light; whereby, when there is not an overflow of charges from said imaging area, said optical iris is controlled by said first iris control means to maintain said intensity of the light to a proper value, and, when there is an overflow of charges from said imaging area, said optical iris is controlled by said second iris control means to lower the intensity of light and thereby prevent said overflow of charges.

4,327,379

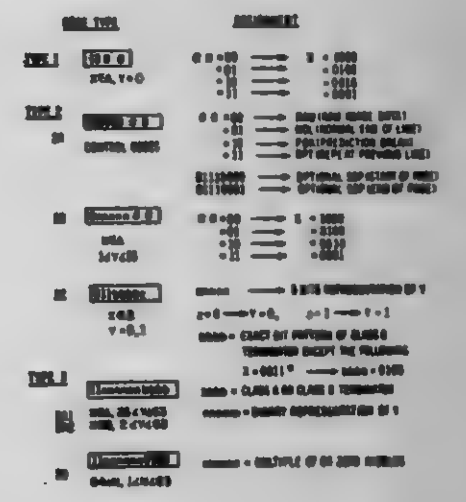
HARDWARE IMPLEMENTATION OF 4-PIXEL CODE ENCODER

Vinod K. Kadakia, Torrance; Glen D. Jones, Orange; Kedar D. Parikh, Seal Beach, and Ronald E. Rider, Palos Verdes Estates, all of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Apr. 11, 1980, Ser. No. 139,501

Int. Cl.³ H04N *1/40*

U.S. Cl. 358—261 **10 Claims**



1. An encoding circuit which receives data to be encoded in four bit nibbles and which produces code words encoding the run length of all-zero nibbles and the terminating pattern, said words being from four to twelve bits in length, in multiples of four bits, comprising

a counter for counting the number of four bit all-zero nibbles preceeding a terminating nibble

an encoder responsive to said count and to the reception of a terminating nibble, for producing a four, eight or twelve bit code word containing a coded run length portion, a coded terminating portion, and a plurality of code bits specifying the length of the code word, and

a packing circuit for packing said code words into a fixed length series of output words.

4,327,380

CONTROL METHOD FOR REPRODUCTION PICTURE POSITIONS IN A DIRECTION OF A CYLINDER'S AXIS

Mitsuhiko Yamada, and Toshiaki Nakade, both of Kyoto, Japan, assignors to Dainippon Screen Seizo Kabushiki Kaisha, Japan

Filed Aug. 20, 1980, Ser. No. 179,697

Claims priority, application Japan, Aug. 24, 1979, 54-107884

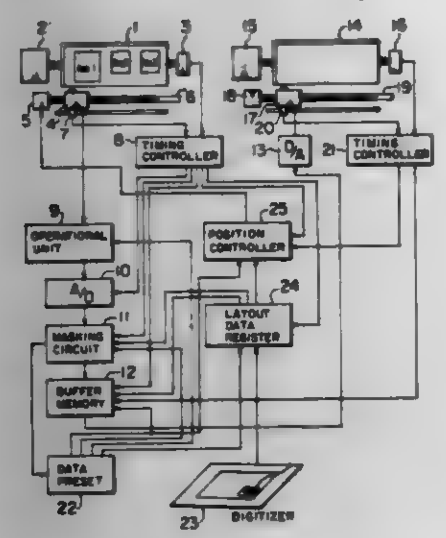
Int. Cl.³ H04N *1/36*

U.S. Cl. 358—264 **3 Claims**

1. A method for controlling the position at which pictures are reproduced on a recording film mounted on a recording

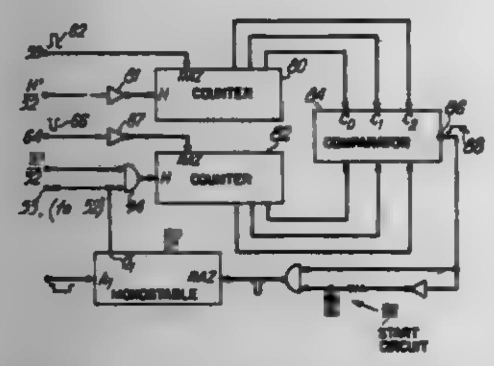
cylinder in the direction of the cylinder's axis, for use in a picture reproducing machine, comprising the steps of:

(a) detecting the distances of a pickup and a recording head from a scanning start point of each original picture and a recording start point of each reproduction picture, respectively, on the basis of a standard position through which the recording head is moved at a fixed speed; and



(b) controlling the moving speed of the pickup head according to the distances detected and reproduction scales which vary as a function of said distances so that the scanning start point of the original picture and the recording start point of the reproduction picture are scanned at substantially the same instant by the pickup and the recording heads, respectively.

4,327,381
BLANK JUMPING TELEPRINTING METHOD AND APPARATUS
Jean-Claude Amicel, 5, rue Jeanne d'Arc, 22300 Lannion, France
Filed Jan. 3, 1980, Ser. No. 156,108
Claims priority, application France, Jan. 19, 1979, 79 15681
Int. Cl.³ H04N *1/40*
U.S. Cl. 358—288 5 Claims



1. A blank jumping teleprinter comprising:

a means for reading a document line by line, each line having N points and being read point by point, said means delivering for each point a reading signal;

a means for controlling said reading means so that each line is read the same number of times as the reading means supplies groups of P reading signals incorporating at least one non-zero signal, P being a submultiple of N;

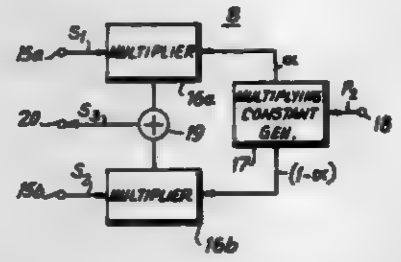
an electronic curtain placed after said means for reading, said electronic curtain permitting the passage of each group containing at least one non-zero signal at each reading of the line;

a memory connected to the electronic curtain, said memory having P cells successively receiving the P reading signals belonging to a group of P reading signals containing at least one non-zero signal;

a demultiplexer connected to said memory; and

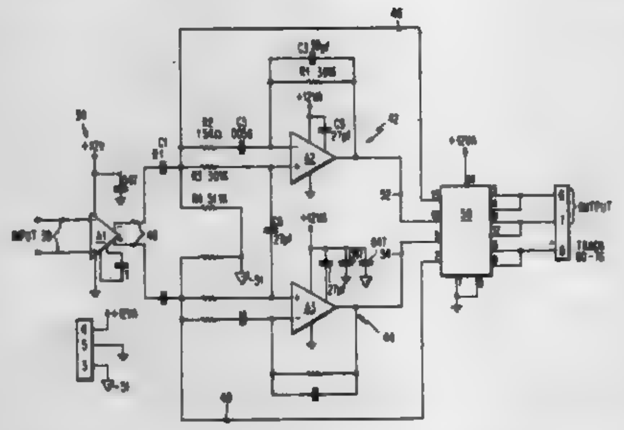
a writing means connected to said demultiplexer, said writing means having N writing points organized in groups of P points, said demultiplexer making it possible to address the contents of the P cells of the memory to the group of the writing means corresponding to the group of read points.

4,327,382
METHOD AND APPARATUS FOR EDITING DIGITAL SIGNALS RECORDED ON A RECORD MEDIUM
Masato Tanaka, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Jan. 29, 1980, Ser. No. 116,401
Claims priority, application Japan, Jan. 30, 1979, 54-9498; Jan. 30, 1979, 54-9500; Jan. 31, 1979, 54-10650
Int. Cl.³ G11B *27/02, 5/00*
U.S. Cl. 360—13 47 Claims



1. Apparatus for editing digital signals recorded on a record medium, comprising reproducing means for reproducing said digital signals from said record medium; recording means for recording digital signals on said record medium, said recording means being relatively spaced from said reproducing means; delay means for delaying the digital signals reproduced from said record medium by a time delay determined by the relative spacing between said recording and reproducing means; a source of edit digital signals; mixing means for mixing the delayed reproduced digital signals and the edit digital signals by gradually decreasing the value of one while concurrently gradually increasing the value of the other and combining the decreasing and increasing signals such that one of said digital signals gradually is replaced by the other; and means for supplying the mixed digital signals to said recording means.

4,327,383
READ CIRCUIT FOR A FLOPPY DISK DRIVE
Dewilton R. Holt, El Toro, Calif., assignor to Siemens Corporation, Iselin, N.J.
Filed Sep. 26, 1980, Ser. No. 190,972
Int. Cl.³ G11B *5/09*
U.S. Cl. 360—45 34 Claims



1. In apparatus for reading digital data recorded on a record medium, said apparatus comprising a read transducer for generating an electrical signal corresponding to the recorded data, amplifier means for amplifying said electrical signal, and equalizing filter means for modifying said electrical signal, the improvement wherein said equalizing filter means has a response, in the frequency domain, determined by the Laplace transform:

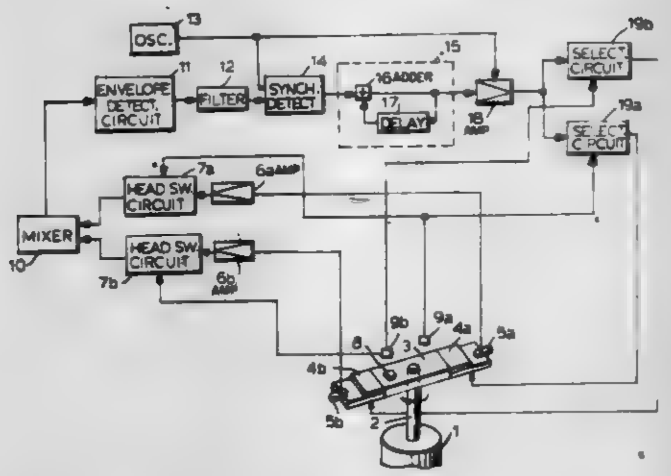
$$F(s) = \frac{1 - T_1T_2s^2}{T_2s + 1}\text{, where}$$

s is the complex frequency $\sigma + j\omega$,

T_1 is a time constant which creates a high frequency pole on the complex s plane, and

T_2 is a time constant which creates a low frequency zero on the complex s plane.

4,327,384
ROTARY HEAD TYPE MAGNETIC TAPE RECORDING REPRODUCING APPARATUS
Masao Tomita, Neyagawa; Takenobu Isaka, Moriguchi; Mineo Mino, Hirakata, and Kiyoji Fujisawa, Nara, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan
Filed Jan. 29, 1980, Ser. No. 116,464
Claims priority, application Japan, Jan. 31, 1979, 54-10127
Int. Cl.³ G11B *21/10, 5/54*
U.S. Cl. 360—77 3 Claims



1. A rotary head type magnetic tape recording/reproducing apparatus comprising:

rotary head means for reproducing video signals recorded along a track on a record medium;

a positionable element for mounting said rotary head means thereon for displacement lateral to the track;

oscillation means coupled to said positionable element to provide a continuous lateral vibration;

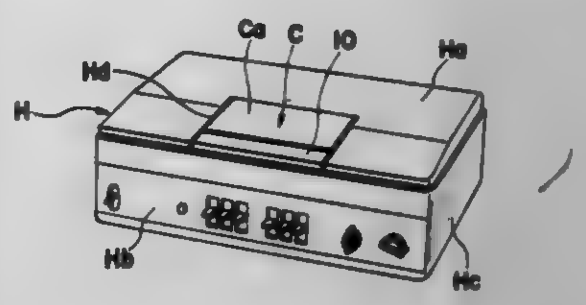
envelope detecting means which detects an envelope signal bearing a correspondence to an envelope of a signal derived from said rotary head means;

synchronous detection means which detects synchronous components of said envelope signal using a reference signal from said oscillation means;

integration adder means including an adder and a delay means; and

drive control means for supplying to said positionable element a compound signal which includes a signal from said integration adder means and said signal from said oscillation means.

4,327,385
CASSETTE LOADING AND UNLOADING DEVICE FOR VIDEO TAPE RECORDER
Kazuo Fujii, Osaka, Japan, assignor to Sanyo Electric Co., Ltd., Osaka, Japan
Filed Jun. 5, 1980, Ser. No. 156,653
Claims priority, application Japan, Jun. 11, 1979, 54/73663; Jun. 11, 1979, 54/79735[U]
Int. Cl.³ G11B *15/66, 19/18, 23/04*
U.S. Cl. 360—96.5 5 Claims



1. A cassette loading and unloading mechanism for a video tape recorder comprising a recorder housing constituted by top and bottom walls and a surrounding side wall, all of these walls being assembled together to provide a substantially container-like configuration, and a cassette holder having a generally rectangular entrance through which a video tape cassette is selectively inserted into and removed from the cassette holder, said cassette holder being supported for movement between the eject position, in which the cassette holder is positioned outside the housing and upwardly of the top wall in readiness for the insertion and removal of the tape cassette into and from the cassette holder, respectively, and the set position in which the cassette holder is positioned inside the housing with the top of said cassette holder held in flush with the top wall, said cassette loading and unloading mechanism comprising, in combination:

a first support means for supporting the cassette holder for movement between the eject and set positions;

a first biasing means for urging the cassette holder to assume the eject position;

an eject bar positioned frontwardly of the cassette holder in the set position and having its longitudinal extent extending in parallel to the top wall;

a second support means for supporting the eject bar for movement between upwardly biased and depressed positions, said eject bar when in the upwardly biased position concealing the entrance of the cassette holder, said eject bar when moved to the depressed position permitting the cassette holder to move from the set position towards the eject position;

a second biasing means for urging the eject bar to assume the upwardly biased position;

a first releasable locking means for locking the cassette holder in the set position when and after the cassette holder has been moved thereto and also for releasing the cassette holder from the set position to enable the cassette holder to move towards the eject position by the action of the first biasing means in response to the arrival of the eject bar at the depressed position; and

a second releasable locking means for locking the eject bar in the depressed position when and after the eject bar has been moved thereto and also for releasing the eject bar from the depressed position to enable the eject bar to move towards the upwardly biased position by the action of the second biasing means in response to the arrival of the cassette holder at the set position.

4,327,386

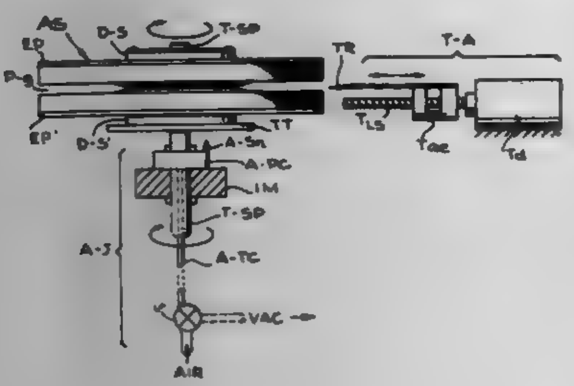
PNEUMATIC COMMUTATOR FOR END-WISE PARTITIONING

Dean DeMoss, Camarillo; Norman S. Blessum, Thousand Oaks; Ko Ko Gyi, Thousand Oaks, and Herbert U. Ragle, Thousand Oaks, all of Calif., assignors to Burroughs Corporation, Detroit, Mich.

Filed Aug. 31, 1979, Ser. No. 71,577

Int. Cl.³ G11B *5/016, 23/02, 25/04*

U.S. Cl. 360—99 **8 Claims**



1. An improved pneumatic directing arrangement adapted to direct at least one gas stream through a flexible disk pack, end-wise and axially, this pack being characterized by an array of bores extending axially through the pack cross-section, the bores terminating at a respective interdisk gap for conducting the gas stream thereto; this arrangement comprising, in combination therewith;

bore-Select means disposed externally of said pack and adapted to receive at least one gas stream and to controllably project the stream toward a prescribed intake locus, disposed remote from said pack at virtually any distance and direction therefrom; and

pneumatic Distributor means arranged in operative relation about this Select means, serving to extend said bores to said locus and adapted to couple a gas stream from said Select means to any selected one of the bores and associated inter-disk gaps;

said Distributor means comprising a hollow cylinder, and said Select means comprising a dual channel rotor disposed co-axially with said Distributor means and adapted to direct a pair of gas streams to respective bore-extending ducts in the Distributor means, selectably according to the rotational position of the rotor relative to the Distributor means.

4,327,387

MAGNETIC HEAD SLIDER ASSEMBLY COMPRISING AT LEAST ONE TRANSDUCER FOR READING AND/OR RECORDING INFORMATION CONTAINED ON A DATA CARRIER

Michel Plotto, Plaisir, France, assignor to Compagnie Internationale pour l'Informatique CII/Honeywell Bull, Paris, France

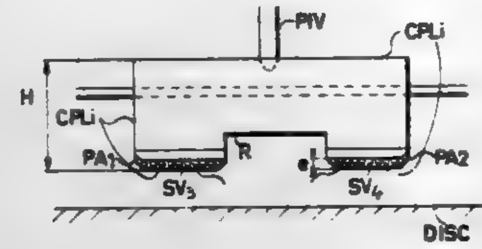
Filed Jan. 10, 1980, Ser. No. 110,921

Claims priority, application France, Jan. 17, 1979, 79 01142

Int. Cl.³ G11B *5/22, 5/60, 17/32*

U.S. Cl. 360—103 **4 Claims**

1. A magnetic head slider assembly comprising a body supporting at least one transducer for reading and/or recording of the data contained in a data carrier, one surface of said body adapted to face the data carrier, at least one part of said surface being constituted by a lubricating monomolecular layer having



polar termination and a thickness in the range of 30 to 50 angstroms.

4,327,388

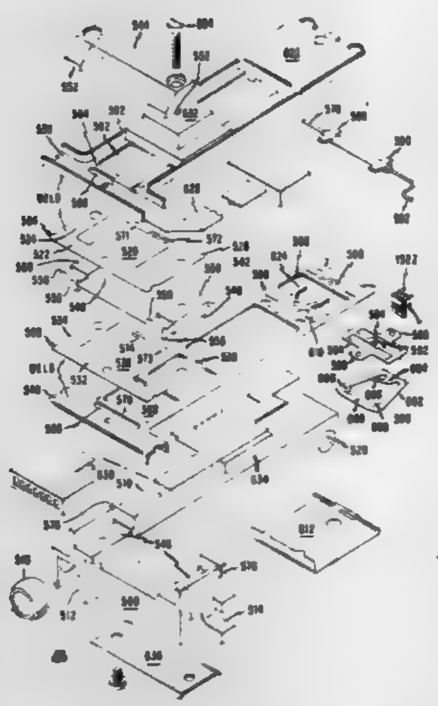
TRANSDUCER-CARRIAGE ASSEMBLY WITH SPRING SUSPENSION

Donald J. Wanek, Rochester, Minn., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 15, 1980, Ser. No. 121,947

Int. Cl.³ G11B *5/48, 5/54, 21/12, 21/20*

U.S. Cl. 360—104 **10 Claims**



1. A transducer-carriage assembly for use with a rotatable thin flexible disk having high frequency undulations and low frequency undulations as the disk rotates and comprising:

a pair of transducers,

a pair of arms adapted to embrace the disk,

a support,

a pair of leaf springs mounted on said support and respectively connected to said arms adjacent one end thereof and which lie in single planes in the unstressed condition so that the other, distal ends of said arms may swing without impediment by said support, and

a pair of gimbal springs having said pair of transducers respectively secured thereto and respectively attached to said pair of arms adjacent the distal ends thereof to position said pair of transducers at opposite sides of said disk,

said gimbal springs, when unstressed, being substantially coplanar to said leaf spring connected to the respective arm, and

a resilient load member carried by each of said arms adjacent to and engaging said gimbal spring to permit universal motion of the associated transducer about the point of contact between said gimbal spring and said load member, whereby said arm and transducer assemblies may swing simultaneously and as a unit both in the same direction or

both in the opposite direction in a plane parallel with the axis of the disk with flexing of said leaf springs for low frequency undulations of the disk and said gimbal springs may flex without substantial swinging movements of said arms with high frequency undulations of the disk with said transducers being in data transferring contact with the disk for both the low frequency undulations and also the high frequency undulations.

4,327,389

CASSETTE TYPE TAPE RECORDER

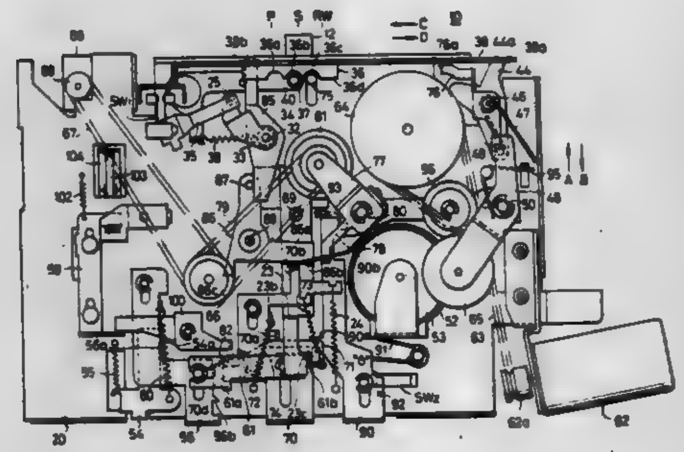
Kazuo Kohda, Yokohama, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Mar. 9, 1979, Ser. No. 19,125

Claims priority, application Japan, Mar. 10, 1978, 53/27458; Mar. 10, 1978, 53/30734[U]

Int. Cl.³ G11B *21/22, 5/54*

U.S. Cl. 360—105 **8 Claims**



1. A cassette type tape recorder comprising:

tape driving system having a capstan and a pinch roller for cooperatively driving and advancing a magnetic tape within a tape cassette, and a take-up reel disc driven by a drive roller for taking up the advanced tape;

a head base supported on said tape recorder structure having magnetic heads mounted thereon, said pinch roller being supported on said head base;

an ejection means for removal of a previously loaded tape cassette out of said tape recorder structure when manually operated, said ejection means urging said head base to move backward to a position separated from the cassette loaded position when manually operated;

means for moving said head base forward toward said cassette in the loaded position, responsive to loading of said cassette, said magnetic head thereby coming into contact with the magnetic tape within said cassette;

retaining means for holding the pinch roller and the drive roller at positions respectively separated from the capstan and the take-up reel disc, even when said head base is moved forward;

means for storing a force for urging said pinch roller and said drive roller forward when the pinch roller and the drive roller are being held by retaining means during movement of the head base; and

releasing means operable after said cassette has been loaded, for releasing the holding of said retaining means, said pinch roller and said drive roller being urged against said capstan and said take-up reel disc respectively by the force stored by said storing means.

4,327,390

CAPACITIVE VOLTAGE TRANSFORMERS WITH ELECTRONIC OUTPUT

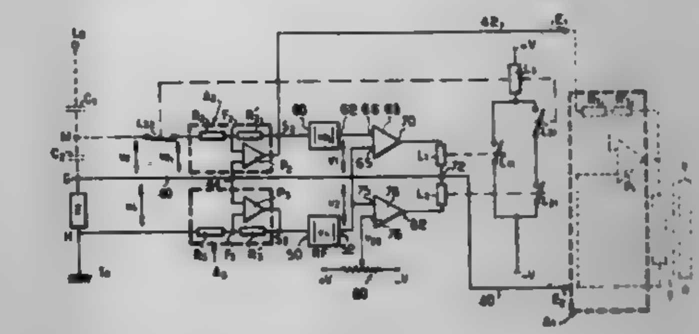
Philippe Despiney, le Perreux, France, assignor to Enertec, Montrouge, France

Filed Apr. 28, 1980, Ser. No. 144,466

Claims priority, application France, May 9, 1979, 79 11690

Int. Cl.³ H02H *7/16*

U.S. Cl. 361—16 **11 Claims**



1. A voltage detection means for a capacitive voltage divider which comprises a first and a second capacitor in series intended to be connected between a high voltage line and a means at reference potential, for the purposes of supplying an inductive load, comprising:

means for making a high-impedance connection between two points of the capacitive divider, on respective sides of said second capacitor, and said inductive load, to supply to said load a signal which depends on the voltage at the terminals of the second capacitor;

means for producing a current signal depending on the current passing through the capacitive divider;

means for forming a control signal depending on said current signal and a voltage at the terminals of a capacitive portion of said divider; and

means for modifying said high-impedance connection in response to said control signal when a predetermined relationship is established between said current and said voltage.

4,327,391

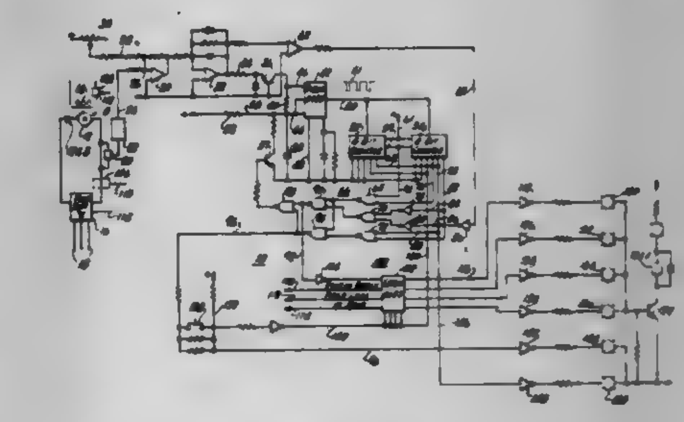
MOTOR PROTECTION CIRCUIT

Chester J. Grzebielski, Grafton, Wis., assignor to Allen-Bradley Company, Milwaukee, Wis.

Filed Jan. 31, 1980, Ser. No. 117,059

Int. Cl.³ H02H *7/085*

U.S. Cl. 361—31 **10 Claims**



1. A protection circuit for protecting a motor against inversely related, adverse conditions of excess current and exposure time, said motor having means associated therewith for providing a signal indicative of motor current, said protection circuit comprising:

means generating a reference signal corresponding to a predetermined level of motor current;

means connected to said reference signal means and said

motor current signal means for producing a difference signal indicative of current in excess of the predetermined level;

means responsive to said difference signal for generating a pulse train signal having a pulse rate corresponding to the difference signal;

counting means coupled to said pulse train signal generating means for counting the pulses of said signal and for providing an output signal indicative of the adverse conditions when a first predetermined number of pulses have been counted;

means connected to said difference signal producing means and to said counting means for causing said counter to count up when said motor current signal exceeds said reference signal and to count down when said reference signal exceeds said motor current signal;

means coupled to said pulse train signal generating means for changing the pulse rate of the pulse train signal when said counter is counting down;

output means coupled to said counting means and operable by said output signal for deenergizing the motor when adverse conditions are approached; and

means for altering said output signal when said counter has counted down to a second predetermined number for permitting the motor to be reenergized.

4,327,392

PROTECTIVE APPARATUS FOR USE WITH POWER LINES

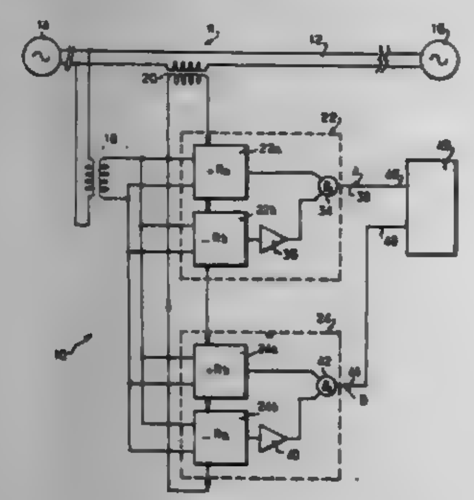
Michel Souillard, Fontenay aux Roses, France, assignor to Enertec, Montrouge, France

Filed Oct. 15, 1980, Ser. No. 197,050

Claims priority, application France, Oct. 17, 1979, 79 25784

Int. Cl.³ H02H *3/48, 3/42*

U.S. Cl. 361—80 **5 Claims**



1. Protective apparatus to be mounted at one end of an A.C. electrical power line coupled between normally-synchronised generators for producing at least a first output signal, the state of which differs according as a loss of synchronism between the generators or power oscillations occurs, this apparatus comprising at least first and second impedance sensing means producing respectively first and second indicative signals, said first indicative signal having a first or a second of two different states according as the apparent impedance of the line lies inside or outside a first impedance area, said second indicative signal having a first or a second of two different states according as said apparent impedance lies inside or outside a second impedance area, the first and second areas having an area of overlap in common through which the line impedance passes in the event of a loss of synchronism, this apparatus further comprising an output circuit connected to said impedance sensing means for generating at least said first output signal depending on at least one sequence of three changes of state of said first and second indicative signals, wherein said output circuit is responsive to sequences of at least three changes of states affecting indifferently said first and second indicative signals in order to produce said first output signal in a first or a second state only according as the sensing means sensed or not a sequence of at least three changes of state in which any two consecutive changes of state of the sequence concern two different signals.

4,327,393

PROTECTOR MODULE BASE ASSEMBLY WITH AN EXTERNAL SPARK GAP

William W. Hines, and Casimir Z. Cwirzen, both of Arlington Heights, Ill., assignors to Northern Telecom, Inc., Nashville, Tenn.

Filed Jan. 7, 1980, Ser. No. 110,115

Int. Cl.³ H02H *9/04*

U.S. Cl. 361—119 **7 Claims**

1. A building entry surge protector module having a modified base assembly to provide an external spark-gap, said modified base assembly comprising:

a conductive ground plate contiguous the insulating inner base surface of said protector module;

an insulator plate coextensive and contiguous with the grounding plate insulating it from plug contacts inside the protector module;

said grounding and insulator plates having openings therein for passage of external plugs of said protector module therethrough to establish contact with said plug contacts, the openings in said grounding plate being sufficiently large to preclude any contact with said plugs; and

said insulator plate having holes therein intermediate said plug contacts and said grounding plate to provide said external spark-gap.

4,327,394

INDUCTIVE LOAD DRIVE CIRCUIT UTILIZING A BI-LEVEL OUTPUT COMPARATOR AND A FLIP-FLOP TO SET THREE DIFFERENT LEVELS OF LOAD CURRENT

Patrick D. Harper, Seaford, Va., assignor to The Bendix Corporation, Southfield, Mich.

Continuation of Ser. No. 881,328, Feb. 27, 1978, abandoned. This application Jun. 28, 1979, Ser. No. 53,007

Int. Cl.³ H01H *47/32*

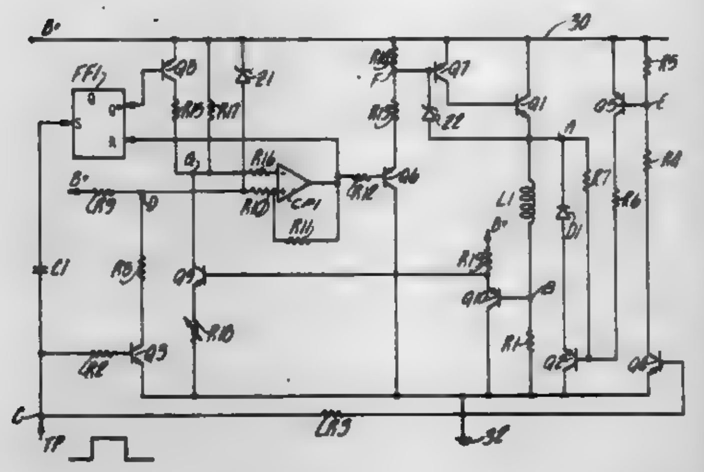
U.S. Cl. 361—154 **4 Claims**

1. In a current control circuit enabled by a load actuation signal and comprising switch means operative to actuate an inductive load by increasing the current thereto above a first current level and to thereafter alternatively connect and disconnect a power supply to the load so as to maintain load actuation with current in a range between a second current level and a third current level, each less than said first current level;

(a) load current sense means comprising a first sense resistor in series with said inductive load and second sense resistor connected in parallel with said first sense resistor;

(b) reference means providing at least two reference voltages representing two of said first, second, and third current levels;

(c) comparator means having a sense input coupled to said second sense resistor, a reference input coupled to said reference means, and an output coupled to the switch means, said comparator means adapted to generate a first comparator output level when a sense voltage at said sense input is a greater magnitude than a reference voltage at said reference input and a second comparator output level when said sense voltage is less than the magnitude of the reference voltage at said reference input;



(d) flip-flop means coupled to said comparator means and to circuit means responsive to the attainment of said first current level, said flip-flop means comprising variable current source means coupled in series with said second sense resistor and operative to change the current therethrough in response to said attainment of said first current level.

4,327,395

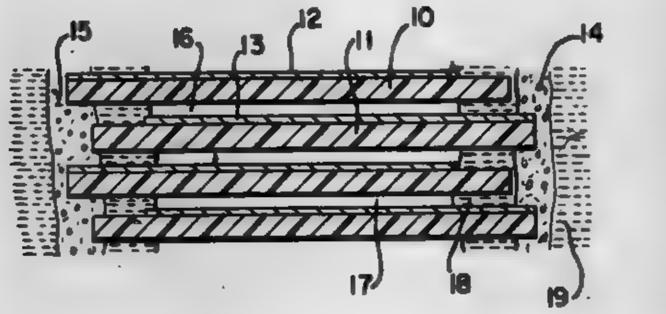
METALLIZED POLYPROPYLENE FILM CAPACITOR

Takayuki Yagitani, Nishinomiya, and Osamu Ebisu, Osaka, both of Japan, assignors to Shizuki Electric Co., Inc., Nishinomiya, Japan

Filed Sep. 15, 1980, Ser. No. 187,078

Int. Cl.³ H01G *4/02*

U.S. Cl. 361—326 **10 Claims**



1. A metallized polypropylene film capacitor comprising:

a. a container and

b. mounted within said container at least one wound body comprising concentric layers of metallized polypropylene film, with the layers of polypropylene alternating with layers of the metal employed to metallize said polypropylene,

c. said at least one body containing within the space between the alternating layers of polypropylene and metal at least one electronegative gas occupying a majority of said space said electronegative gas not being combined with a liquid and in the remaining space within said container a coolant oil having little or no swelling effect on said polypropylene.

4,327,396

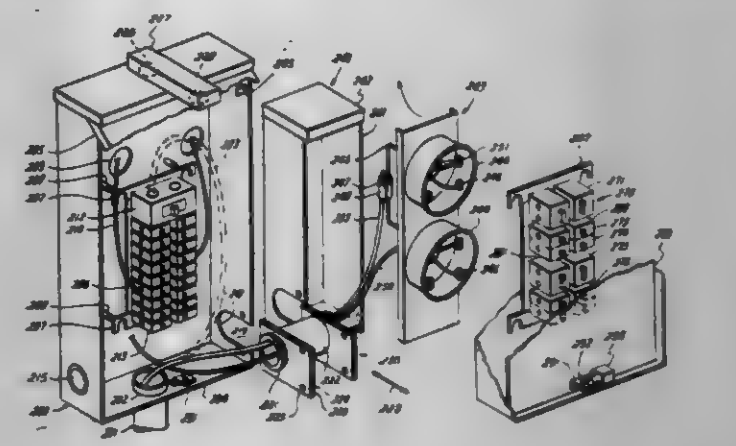
COMBINATION OF ELECTRICAL METER SOCKET COLUMN AND PANELBOARD FOR CONVERSION TO INDIVIDUAL TENANT METERING

Ezra L. Schacht, P.O. Box 8367, Houston, Tex. 77004

Continuation-in-part of Ser. No. 923,545, Jul. 11, 1978, abandoned. This application Nov. 7, 1979, Ser. No. 91,933

Int. Cl.³ H02B *1/04, 9/00*

U.S. Cl. 361—379 **5 Claims**



1. An improved apparatus converting a conventional panelboard, to a split-bussed panelboard in combination with means for individual-tenant metering, an enclosure of the conventional panelboard containing within it:

(i) a plurality of branch-circuit breakers with operating levers for a plurality of tenants;

(ii) a plurality of branch-circuit conductors connected to said breakers, said conductors entering the enclosure through at least one aperture in a wall thereof;

(iii) an interior mounting pan on which said breakers are mounted;

(iv) a plurality of buses, the buses insulatively mounted upon the interior mounting pan, said breakers electrically connected to the buses;

(v) mounting pan supporting means;

(vi) a feeder conduit containing a plurality of hot feeder conductors;

(vii) a dead-front panel, having apertures for access to the operating levers of said breakers and having means securing the dead-front panel;

(viii) a front cover;

the converting apparatus comprising, in combination:

(a) a replacement interior for the conventional panelboard, said replacement interior having mounting means, having split-busing insulatively supported upon said mounting means, said busing split to isolate electrically said plurality of branch-circuit breakers of each of said tenants, a plurality of branch circuit conductors for each of said tenants being fed through new tenant main breakers, said main breakers being electrically connected to the line side of said split-bus, and said main breakers having means for physical spacing from adjacent said branch-circuit breakers, the enclosure having within it mating mounting means attached to said mounting means of said replacement interior;

(b) a wall of said enclosure having an aperture formed therein;

(c) a first covering and sealing means for said aperture in said enclosure wall, said covering and sealing means having a mating aperture therein;

(d) means coupling said first covering means to a second covering means;

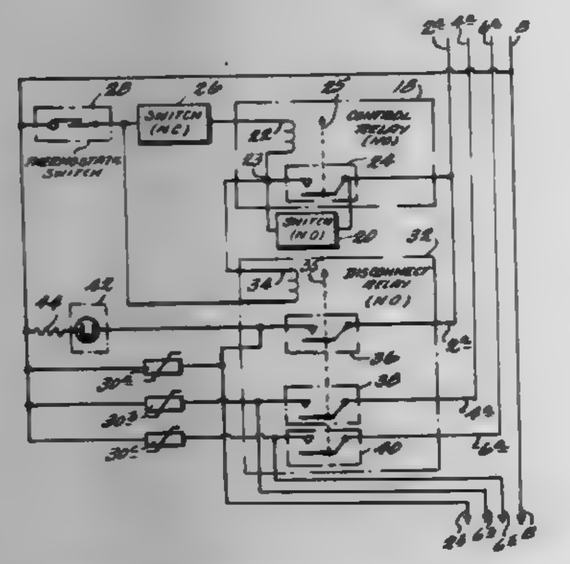
(e) a meter-supporting enclosure, into which said hot feeder conductors are deflected through said coupling means, said second covering means mating with a wall of said meter-supporting enclosure, said meter-supporting enclosure having an aperture in a wall thereof, said meter-supporting enclosure also having covering means, said covering means having means mounting a

plurality of said tenant metering means, said tenant metering means having a plurality of line terminals, said line terminals connected to said feeder conductors within said meter-supporting enclosure, said tenant metering means also having a plurality of load terminals, said load terminals having means for connection through said coupling means to a plurality of line terminals of said main tenant breakers, said meter-enclosure covering means engaged in sealing fashion with said meter-supporting enclosure;

(f) a new dead-front panel, having apertures therein for said individual tenant main-breaker and said branch-circuit breaker operating-levers, said new dead-front panel having means for locking it in position in said enclosure, and when in said-position, said dead-front panel enclosing said feeder conductors passing through said enclosure into said meter-supporting enclosure, said branch-circuit conductors, said breakers, and said replacement interior; and

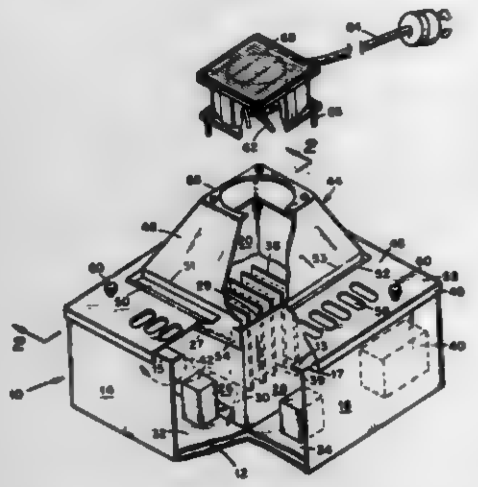
(g) ventilating means in said enclosure, said ventilating means removing excess heat from said bussing, from said maintenant breakers through said physical spacing around said main breakers, from said branch-circuit breakers, from said feeder conductors and said means for connection of said load terminals of said metering means to said tenant main breakers.

4,327,397
COMPUTER POWER/TEMPERATURE PROTECTOR
Winston T. McCleery, 4920 Cottage Hill Rd., Ste. 5, Mobile, Ala. 36609
Filed Jan. 4, 1980, Ser. No. 156,342
Int. Cl.³ H02H *3/20, 3/24, 5/04*
U.S. Cl. 361—90 11 Claims



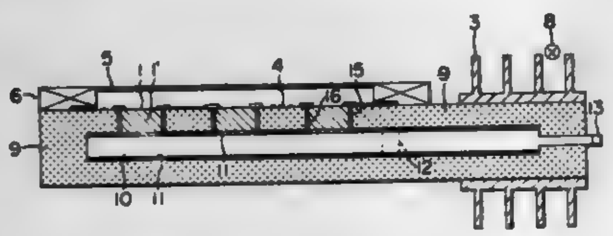
1. A computer power/temperature protector apparatus adapted for insertion into a power cable having at least one power line, said power cable supplying power to an associated computer load, comprising:
means for rendering said at least one power line controllably nonconductive and conductive;
means responsive to an interruption of power being provided thereto for controlling said rendering means to render said at least one power line nonconductive, and responsive to a reset signal for controlling said rendering means to render said at least one power line conductive;
means for manually generating said reset signal;
means for shunting voltage transients appearing on said power line;
temperature sensing means for automatically causing said interruption of power in response to a deviation of sensed temperature from a predetermined temperature range, said reset signal generating means being ineffective for rendering said at least one power line conductive as long as said sensed temperature has deviated from said predetermined range; and
means for causing said interruption of power manually.

4,327,398
COOLING SYSTEM FOR AUTOMATIC BOWLING PIN SPOTTER
Alan M. Christison, Knoxville, Tenn., assignor to Product Technologies, Inc., Knoxville, Tenn.
Filed Sep. 4, 1979, Ser. No. 72,149
Int. Cl.³ H01L *25/00, 23/46;* F28F *9/22*
U.S. Cl. 361—384 5 Claims



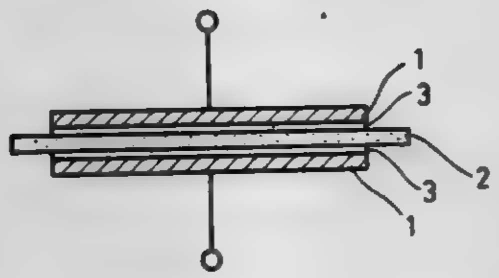
1. A cooling system for an automatic bowling pin spotter control cabinet including generally solid side walls and partition walls defining within said cabinet a first subcompartment having at least one low power electronic component mounted therein and having a generally solid bottom wall and a second subcompartment having at least one high power electronic component mounted therein and having a generally solid bottom wall, said subcompartments being in flow communication with one another adjacent said bottom walls, said cooling system comprising hood means including an inlet section providing cover means for said low power subcompartment and an outlet section providing cover means for said high power subcompartment, said inlet section including fan means and said outlet section including vent means whereby ambient atmospheric air is forced to flow downwardly from said inlet section through said low power subcompartment, laterally into said high power subcompartment, and upwardly through said high power subcompartment, returning to the ambient atmosphere through the vents of said outlet section.

4,327,399
HEAT PIPE COOLING ARRANGEMENT FOR INTEGRATED CIRCUIT CHIPS
Etsuro Sasaki, Fuchu, and Takaaki Ohsaki, Tokyo, both of Japan, assignors to Nippon Telegraph & Telephone Public Corp., Tokyo, Japan
Filed Dec. 27, 1979, Ser. No. 107,646
Claims priority, application Japan, Jan. 12, 1979, 54-2408
Int. Cl.³ H05K *7/20*
U.S. Cl. 361—385 13 Claims



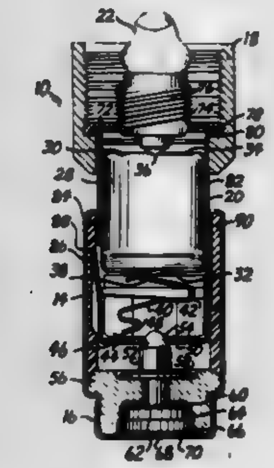
1. An integrated circuit construction comprising a heat pipe structure wiring substrate having a cavity in its interior, a heat pipe wick on the inner surface of said cavity, and a cooling device attached on the end of said substrate; at least one hole provided in this heat pipe structure wiring substrate to communicate with said cavity; a single crystal substrate with semiconductor integrated circuit devices attached thereto securely fixed within this hole and with a wick similar to said heat pipe wick disposed on the inner surface of the cavity; and a working fluid sealed within said cavity and directly contacting said single crystal substrate via said single crystal substrate wick.

4,327,400
ELECTRIC DOUBLE LAYER CAPACITOR
Takayoshi Muranaka, Moriguchi, and Hajime Mori, Uji, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan
Filed Jan. 3, 1980, Ser. No. 109,406
Claims priority, application Japan, Jan. 10, 1979, 54-1607; Jan. 10, 1979, 54-1608; Jan. 10, 1979, 54-1609; Jan. 10, 1979, 54-1610; Feb. 20, 1979, 54-19216; Oct. 12, 1979, 54-132335
Int. Cl.³ H01G *9/00;* B01J *17/00*
U.S. Cl. 361—433 15 Claims



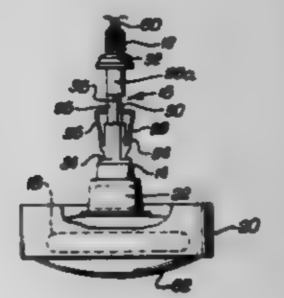
1. An electric double layer capacitor comprising:
a pair of polarization electrodes each electrode including a conducting member formed from an expanded metal sheet with a number of expanded holes, and a carbon electrode material including active carbon and a polyvinyl pyrrolidone binder; and
a separator impregnated with an electrolyte and disposed between said polarization electrodes.

4,327,401
RECHARGEABLE FLASHLIGHT WITH INTEGRAL VARIABLE RATE BATTERY CHARGER FOR AUTOMOTIVE USE
Hemming G. Silberg, New Providence, N.J., assignor to McGraw-Edison Company, Rolling Meadows, Ill.
Division of Ser. No. 932,644, Aug. 10, 1978, Pat. No. 4,224,658. This application Mar. 10, 1980, Ser. No. 128,808
Int. Cl.³ F21L *7/00*
U.S. Cl. 362—183 6 Claims



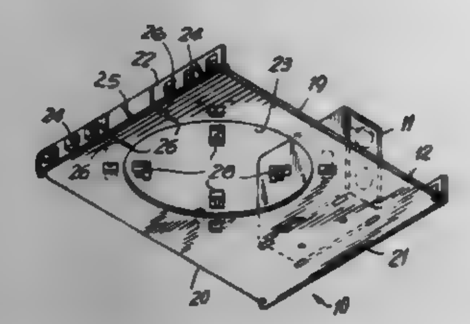
1. In a rechargeable flashlight, a switching device comprising:
(a) a housing;
(b) a sliding member in said housing, said sliding member being electrically conducting;
(c) said sliding member being movable between a first and second position;
(d) means for electrically connecting said sliding member into an electrical lamp circuit;
(e) a rechargeable battery in said housing, said rechargeable battery having two terminals, one of said terminals being electrically connected into said electrical lamp circuit;
(f) an electrically-conducting actuating member fixed in said housing;
(g) said actuation member being electrically insulated from said sliding member;
(h) means for electrically connecting said actuating member to a battery-charging means;
(i) a spring having two ends, said spring positioned between said actuation member and said rechargeable battery so as to be moved from a first position to a second position by said electrically conducting actuating member when said sliding member is moved from said first position to said second position;
(j) one end of said spring is electrically connected to the other terminal of said rechargeable battery;
(k) the other end of said spring is biased into electrical contact with said sliding member when said sliding member is in said first position; and
(l) said spring being lifted from electrical contact with said sliding member by mechanical and electrical contact with said actuating member when said sliding member is in said second position.

4,327,402
LIGHT FIXTURE
Truman Aubrey, 1472 Beaudry Blvd., Glendale, Calif. 91208
Filed Jul. 12, 1979, Ser. No. 57,260
Int. Cl.³ F21S *1/02*
U.S. Cl. 362—288 4 Claims



1. An adjustable-length light fixture suitable for adapting an incandescent light for operation with a light source of another type, said adjustable-length fixture comprising:
a screw-thread connector for electrical connection to a standard incandescent light socket;
an equipment housing to accommodate a light source; and
an adjustable-length member including
a first tube rigidly attached to said equipment housing,
a second tube rigidly attached to said screw-thread connector and telescopically engaged inside said first tube,
corresponding flattened regions on said first and second tubes to prevent relative rotation,
a plurality of saw-tooth-shaped notches formed on said flattened region of said second tube, each notch having a substantially horizontal ledge and an adjoining inclined surface,
a resilient latch member formed integrally with said first tube and having a free end with a leading edge urged into engagement with a selected one of said notches;
whereby said resilient latch member functions to resist further extension of said adjustable-length member but to allow retraction of said adjustable-length member during installation.

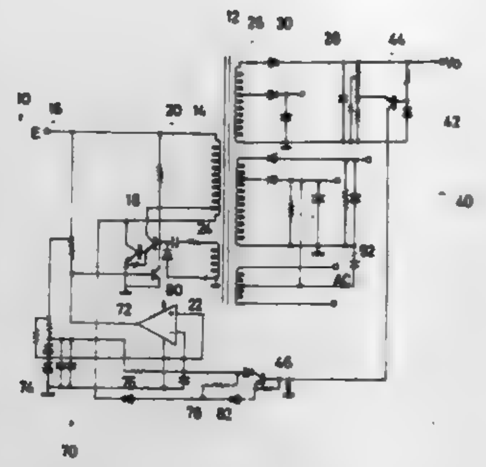
4,327,403
LIGHTING FIXTURE WITH UNIFORM MOUNTING FRAME FOR OLD INSTALLATIONS
Joseph A. Capostagno, Somerset, Mass.; Kingsley Chan, Rutherford, and Alexandre Kartavenko, Bayonne, both of N.J., assignors to Lightolier Incorporated, Jersey City, N.J.
Filed May 8, 1980, Ser. No. 147,853
Int. Cl.³ F21V 3/00
U.S. Cl. 362—306 8 Claims



1. A lighting fixture adapted to be mounted to a tile ceiling structure or the like having an aperture formed therein comprising a support frame including side and end portions defining a generally rectangular configuration having an opening, a transversely directed gap formed in one of said portions and extending to said opening, said frame including a generally planar undersurface portion adapted to rest on the upper surface of said ceiling surrounding said aperture, a plurality of angularly spaced apart guideway portions formed in said frame in proximate spaced relation to and extending in a direction generally parallel with said undersurface, a mounting member supported in each said guideway, said mounting members being generally U-shaped in transverse section and including a first leg slidably supported in said guideway for movement in a plane generally parallel with said undersurface, and a branch portion extending downwardly from said first leg to a position below the plane of said undersurface and an attachment leg of shorter length than said first leg and disposed in parallel spaced relation therebeneath, said attachment leg including a sharpened end portion adapted to be embedded into the material of said ceiling responsive to outward sliding movement of said mounting members in said guides, thereby clampingly to support said frame to said ceiling, said fixture including a reflector member and means for removably supporting said reflector member in said opening.

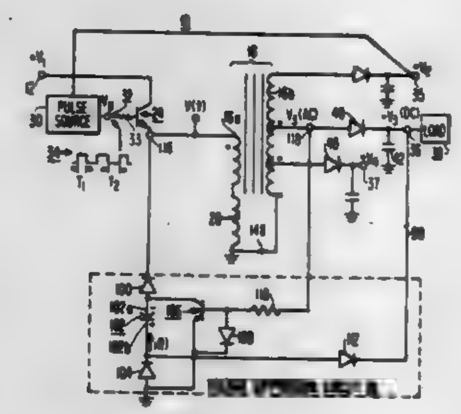
4,327,404
DC POWER SUPPLY CIRCUIT
Michiyuki Horiguchi, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Sep. 9, 1980, Ser. No. 185,873
Claims priority, application Japan, Sep. 18, 1979, 54-[illegible][U]
Int. Cl.³ H02M 3/335
U.S. Cl. 363—19 5 Claims

1. A power supply circuit comprising:
switching means for intermittently producing a DC power supply voltage;
smoothing means for smoothing the obtained DC voltage which is produced by said switching means;
activating means for driving said switching means in the self oscillation mode at the start of operation;
error detection means for detecting the difference between a preselected reference voltage level and the obtained and smoothed DC voltage level, and producing an error voltage in response thereto; and
control means responsive to an output signal of said error detection means for shortening the ON period of said switching means when said obtained and smoothed DC voltage is higher than said preselected reference voltage, and for lengthening the ON period of said switching means when said obtained and smoothed DC voltage is lower than said preselected reference voltage, said control means including variable resistance means connected to said error detection means and responsive to said error voltage for increasing the resistance of said variable resistance means when said obtained and smoothed DC voltage is lower than said preselected reference voltage and for decreasing the resistance of said variable resistance means when said obtained and smoothed DC voltage is higher than said preselected reference voltage; and



comparator means having one input terminal connected to said variable resistance means, another input terminal connected to a further reference potential, and an output terminal connected to said switching means for changing an output voltage at said output terminal in response to the increase and the decrease of said resistance of said variable resistance means, the changing output voltage shortening and lengthening the ON period of said switching means in response thereto.

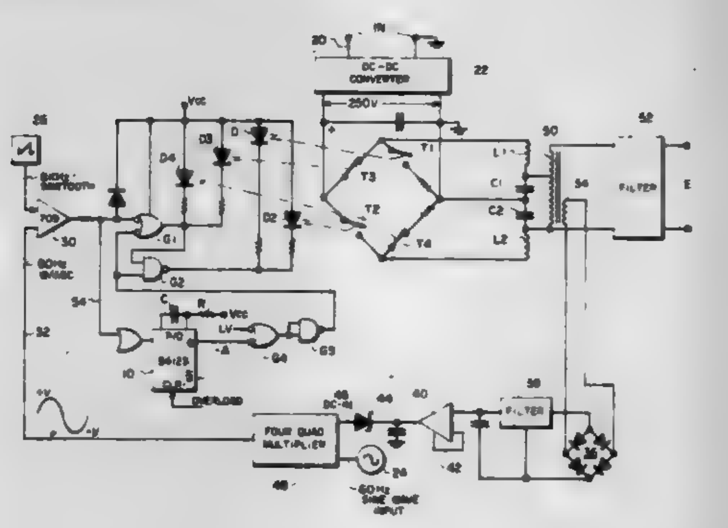
4,327,405
VOLTAGE SUPPRESSION CIRCUIT FOR A DC-TO-DC VOLTAGE CONVERTER CIRCUIT
Charles A. Clark, Jr., Chatsworth, Calif., assignor to Sperry Corporation, New York, N.Y.
Filed May 16, 1980, Ser. No. 150,285
Int. Cl.³ H02H 7/122; H02M 3/335
U.S. Cl. 363—56 3 Claims



1. An improved voltage converter of the type receptive of a d.c. input voltage including a transformer having primary and secondary windings, a d.c. output circuit coupled to said secondary winding for producing a d.c. output voltage of a first polarity, switching means for alternately coupling said d.c. voltage to said transformer primary for a first period and for decoupling said d.c. voltage from said transformer primary for a second period, the ratio of said first period to said second period being responsive to said d.c. output voltage, said primary winding, upon the decoupling of said d.c. input voltage thereto, producing a reversal of polarity and normally undesirably producing at one end of said primary winding, energy in

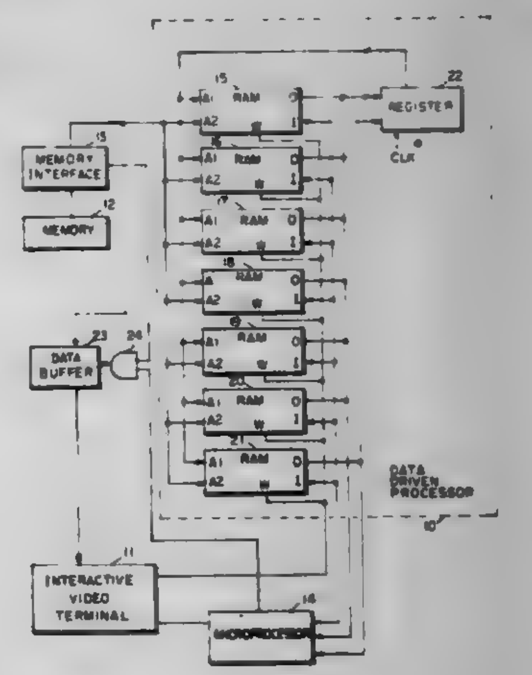
the form of a voltage spike of a second polarity opposite to said first polarity followed by a sustaining voltage having said second polarity and lower magnitude than said voltage spike, said lower magnitude being substantially equal to said d.c. output voltage, wherein the improvement comprises:
means coupled to said transformer primary winding for storing said voltage spike energy and for clamping said voltage at said one end of said primary winding to substantially said sustaining voltage; and
means coupled to said switching means and further coupled to said energy storage means for switchably applying energy stored in said energy storage means to said d.c. output circuit in response to and substantially simultaneously with the coupling of said d.c. input voltage to said transformer primary winding.

4,327,406
DC TO AC SYNTHESIZER WITH INVERTER CIRCUIT FAILURE AVOIDANCE
Albert H. Ashley, Holliston, Mass., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Oct. 1, 1980, Ser. No. 193,332
Int. Cl.³ H02H 7/122
U.S. Cl. 363—56 2 Claims



1. A D.C. to A.C. synthesizer system comprising a pulse width modulation device having a first high frequency sawtooth signal source wherein the sawtooth waveform comprises repetitive ramp signals rising from a lower to higher level at the start and close of an interval respectively, a second, lower frequency sinusoid signal source wherein its levels are between the levels of the said lower and higher levels of the said first signal source, a comparator device having the said first and second sources as inputs and having an output which is normally at a first logic value at the beginning of each said interval and changing to a second logic value when the first and second signals are equal, so that the pulse width at the output is representative of the amplitude of the second signal during each interval, and gate means coupled to said comparator output to supply the pulse width modulation to a DC-AC inverter means to convert direct current power to alternating current power at said lower second source frequency by demodulating said pulse width modulation which includes first high power solid state device switching means which in normal operation is "on" in response to said first logic value from the comparator and "off" in response to said second logic value; and second high power solid state device switching means which in normal operation is "on" in response to said second logic value and is "off" in response to said first logic value from the comparator; an inhibit of the gate means causes both the first and the second switching means to be "off", including means for protecting the components of said DC-AC inverter means from excessive power including monostable device having an input coupled to said output of the comparator, the monostable device having a timing period greater than said interval of the first signal, and being set by the leading edge of the comparator output and reset at the end of said timing period, the monostable device having an output coupled to said gate means to enable the gate means when it is in the set state and to inhibit the gate means when it is in the reset state to block the pulse width modulation and to maintain the signal to the inverter means in a safe state, whereby the monostable device remains normally in the set state and changes to the reset state upon failure of the output of the comparator to have a leading edge during said timing period and further including an overload line connected to a "clear" input of said monostable device, so that in response to an overload signal on said line the monostable device is held in its reset state to thereby inhibit said gate means.

4,327,407
DATA DRIVEN PROCESSOR
James L. Burrows, Merrimack, N.H., assignor to Sanders Associates, Inc., Nashua, N.H.
Filed Feb. 26, 1979, Ser. No. 15,278
Int. Cl.³ G06F 9/30; G11C 15/00
U.S. Cl. 364—200 3 Claims



1. Apparatus for processing binary information to locate predetermined sequences of characters amongst strings of characters in binary form being serially applied to an input of said apparatus from any data source comprising
a memory whose multi-bit addressing input is divided into multiple portions and binary words from different sources are applied to each of the multiple portions to make up a complete memory address which causes a binary word to be read out of said memory, said binary words read out of said memory being made up of all zeros or of ones and zeros, the latter being written into said memory to indicate said predetermined sequences of characters,
a register for storing ones of said binary words immediately after they are read out of said memory and applying a portion of whatever binary word is stored in said register to a first portion of said multiple portions of said memory addressing inputs to identify a block of bits in said memory said register only storing one binary word at a time and each binary word stored in said register being replaced by a subsequent binary word read out of said memory, and
means for applying said serial strings of characters in binary form to a second of said multiple portions of said memory addressing inputs to be searched for said predetermined sequences of characters, said predetermined sequences of characters being determined by binary words written into said memory before said strings of characters are applied to said second portion of said memory addressing inputs, each binary word being read out of said memory indicat-

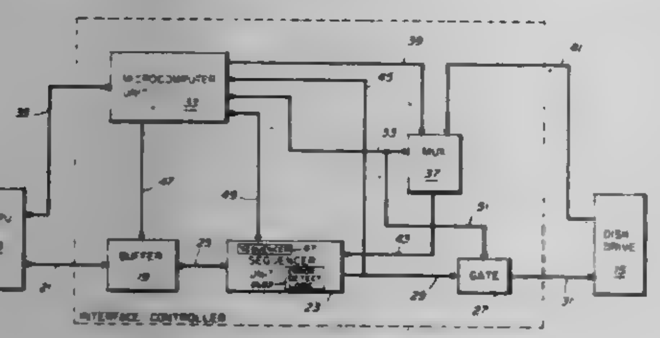
ing if the character in binary form presently being applied to said second portion of said memory addressing inputs in a character in proper character order in one of said predetermined sequences of characters.

4,327,408

CONTROLLER DEVICE WITH DIAGNOSTIC CAPABILITY FOR USE IN INTERFACING A CENTRAL PROCESSING UNIT WITH A PERIPHERAL STORAGE DEVICE

John M. Frissell, Dracut, and Kris E. Swanson, Grafton, both of Mass., assignors to Data General Corporation, Westboro, Mass.

Filed Apr. 17, 1979, Ser. No. 30,727
Int. Cl.³ G06F *3/00*
U.S. Cl. 364—200 17 Claims



1. In a controller for interfacing a central processor unit to a peripheral storage device, said controller including a sequencer coupled between said central processor unit and said peripheral storage device for controlling the transfer of data between said central processor unit and said peripheral storage device and further including a microprocessor coupled to said central processor unit and said sequencer for controlling said sequencer on commands from the central processor unit, said sequencer including error detecting logic, the improvement comprising circuitry for enabling said controller to be tested for proper operation independent of said peripheral storage device, said circuitry including:

a. gating means coupled in the data path between said sequencer and said peripheral storage device and connected to said microprocessor for enabling or disabling the transfer of data to said peripheral storage device from said sequencer in response to commands from the central processor unit so as to place the controller either in a diagnostic mode or a normal operating mode,

b. means coupled to said microprocessor, said peripheral storage device and said sequencer for selecting output data from either said microprocessor or said peripheral storage device and transferring said output data to said sequencer on commands from the central processor unit for processing, and

c. means coupled between said microprocessor and said sequencer for transferring data from said sequencer to said microprocessor on commands from the central processor unit when said controller is in a diagnostic mode, said data representing control signals generated during normal operation of said sequencer, said microprocessor transferring said data to said central processor unit on command signals from said central processor unit for comparison with expected data,

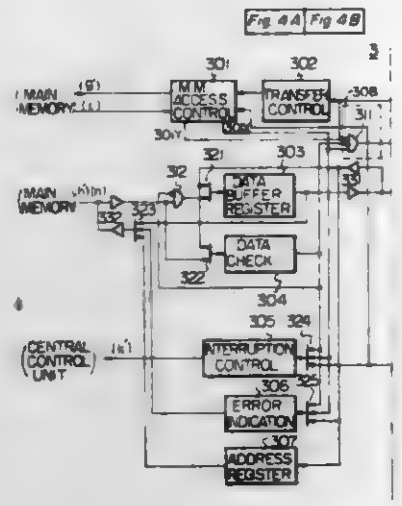
d. whereby, said peripheral storage device may be electrically disconnected from said sequencer and test signals sent to said sequencer from said microprocessor and to said microprocessor from said sequencer, allowing thereby said error detecting logic in said sequencer to be tested for proper operation.

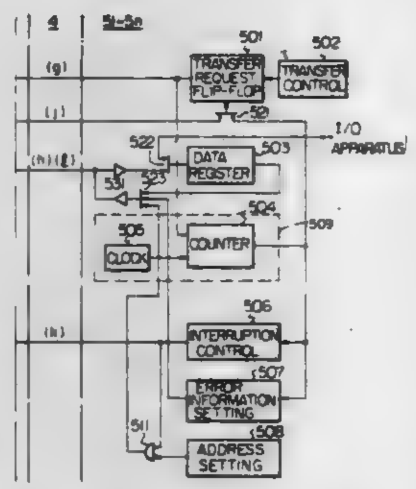
4,327,409

CONTROL SYSTEM FOR INPUT/OUTPUT APPARATUS

Minekazu Maruoka, and Tatsushi Hirotani, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Aug. 31, 1979, Ser. No. 71,084
Claims priority, application Japan, Sep. 8, 1978, 53-110508
Int. Cl.³ G06F *3/00*
U.S. Cl. 364—200 7 Claims





1. A control system, for a plurality of I/O apparatuses, comprising:

a central control unit for generating an instruction signal;

a channel control device, operatively connected to said central control unit, for receiving said instruction signal, for providing a control information signal, a response signal, a request for transfer signal, a data signal, a request for memory access signal and an I/O address and error information signal, and for providing a request for interruption signal to said central control unit;

a main memory circuit, operatively connected to said central control unit and said channel control device, for receiving said request for memory access signal, said I/O address and error information signal, said request for transfer signal, and said data signal from said channel control device, and for providing said control information signal and a main memory response signal to said channel control device;

a common bus operatively connected to said channel control device;

a plurality of I/O apparatus controlling devices, operatively connected to said common bus, for receiving said control information signal and said response signal from said channel control device via said common bus, and for providing said request for transfer signal, said data signal, said request for interruption signal, and said I/O address and error information signal to said channel control device via said common bus,

each of the plurality of I/O apparatuses being operatively connected to one of said plurality of I/O apparatus controlling devices,

said plurality of I/O apparatus controlling devices controlling the plurality of I/O apparatuses in dependence upon said control information signal and said response signal provided by said channel control device to said plurality of I/O apparatus controlling devices, via said common bus,

each of said plurality of I/O apparatus controlling devices comprising supervising means for measuring the time between generation of said request for transfer signal and receipt of said response signal by the I/O apparatus controlling device, said supervising means including means for generating a time-out signal when the measured time exceeds a predetermined time, so that when data transfer between said main memory circuit and one of the plurality of I/O apparatuses, through said channel control device, said common bus and a corresponding one of said plurality of I/O apparatus controlling devices, is normal, said response signal is sent from said channel control device to the corresponding one of said plurality of I/O apparatus controlling devices, and when errors occur in data transfer between said main memory circuit and the one of the plurality of I/O apparatuses, through said channel control device, said common bus, and the corresponding one of said plurality of I/O apparatus controlling devices, no response signal is sent from said channel control device to the corresponding one of said plurality of I/O apparatus controlling devices affected by the error, the absence of said response signal being detected by said supervising means, and only the one of the plurality of I/O apparatuses involved in the erroneous data transfer is stopped,

said I/O address and error information signal being sent to the main memory circuit via the corresponding one of said plurality of I/O apparatus controlling devices, said common bus and said channel control device, said I/O address and error information signal identifying the one of the plurality of I/O apparatuses involved in the erroneous data transfer,

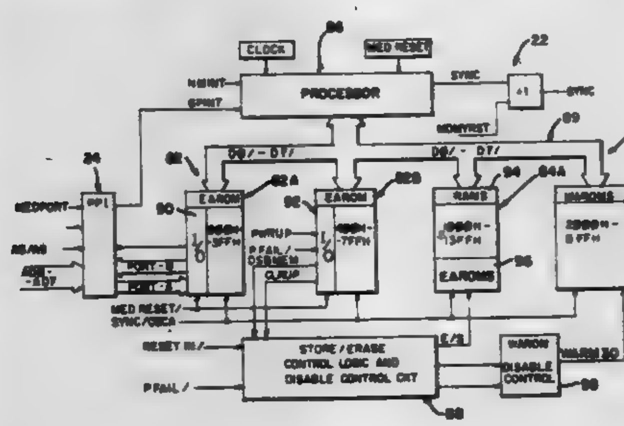
said request for interruption signal being sent to said central control unit via the corresponding one of said plurality of I/O apparatus controlling devices, said common bus, and said channel control device.

4,327,410

PROCESSOR AUTO-RECOVERY SYSTEM

Rameshchandra S. Patel, Kettering, Ohio, and Mark R. Easley, Cupertino, Calif., assignors to NCR Corporation, Dayton, Ohio

Filed Mar. 26, 1980, Ser. No. 134,246
Int. Cl.³ G06F *11/00, 9/46, 13/00*
U.S. Cl. 364—200 3 Claims



1. A system for preserving data comprising:

a memory unit comprising first and second sections for storing data, said first section being volatile and said second section being non-volatile;

means for processing data being operatively coupled to said memory unit for processing said data; said processing means including a processor and a multiple nested interrupt service routine; and

means for controlling the transfer of said data between said first and second sections; said controlling means being responsive to the occurrence of a restore signal from said processing means during initialization to transfer said data from said second section to said first section; said controlling means also being responsive to an erase signal from said processing means during initialization to clear said data from said second section; said controlling means also being responsive to a power fail signal to transfer said data from said first section to said cleared second section;

said power fail signal indicating at least an impending power failure to said memory unit;

a first circuit means included in said controlling means for generating an interrupt signal in response to a said power fail signal;

said controlling means being responsive to a first said power fail signal to transfer said data from said first section to said cleared second section;

said first circuit means generating said interrupt signal in response to said first power fail signal to interrupt said processor at a first point in the processing of said data and also to initiate said multiple nested interrupt service routine;

said multiple nested interrupt service routine and said processing means being effective to condition said first circuit means by resetting it to respond to second and subsequent said power fail signals to produce second and subsequent said interrupt signals to interrupt said processor at second and subsequent points in said multiple nested interrupt service routine in said processing of data to preserve said data;

said processing means including means for storing the location at which said first point in the interruption of the processing of said data occurred and for storing the locations of said second and subsequent points; and

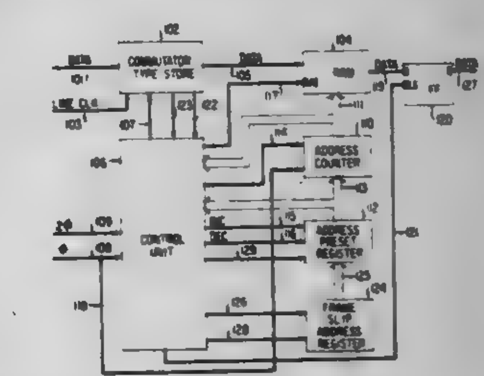
said multiple nested interrupt service routine and said processing means utilizing the locations in said storing means to return said processing of data to said first point in the absence of further subsequent said power fail signals.

4,327,411

HIGH CAPACITY ELASTIC STORE HAVING CONTINUOUSLY VARIABLE DELAY

Gary A. Turner, Newburyport, Mass., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 4, 1980, Ser. No. 127,262
Int. Cl.³ G06F *13/02, 13/06*
U.S. Cl. 364—900 6 Claims



1. An elastic store for receiving data bits at a variable line rate comprising

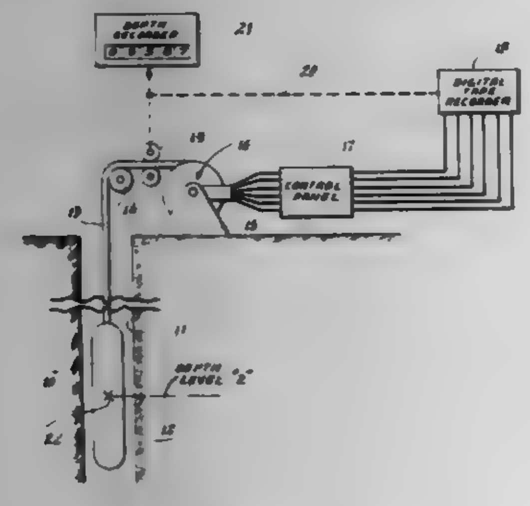
a first buffer store (102) having a number of storage cells (201, 202, 203, 204),

first means (205, 206) for writing in said data bits into said storage cells at said variable line rate, and

a second buffer store (104) having a number of addressable storage cells,

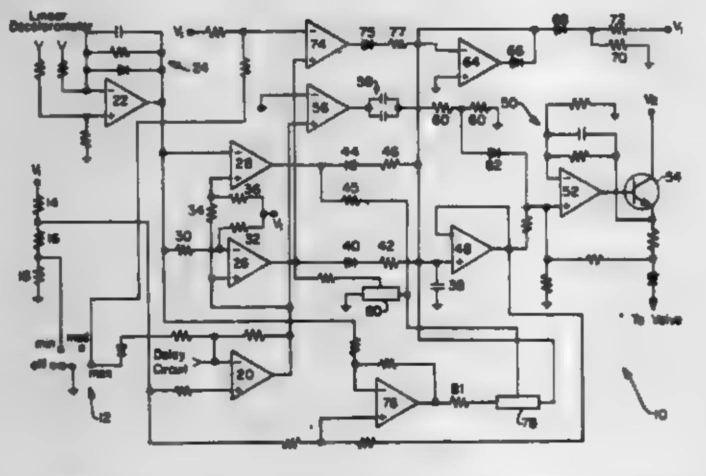
means for addressing (110) the storage cells in said second buffer,
characterized by
secod means (513, 514, 515, 516, 517, 518, 519) for reading out said data bits from said first buffer store and writing in said bits into addressed cells in said second buffer store at a given rate, the read-out cycle of said first buffer normally occurring subsequent to the write-in cycle of said first buffer,
third means (513, 514, 519, 120) for reading out said data from said second buffer store at a predetermined rate,
control means (112) for rendering variable the number of storage cells in said second buffer that are addressed, and
first buffer monitor means (501, 502, 503, 504, 506) for examining the phase between the read-out and write-in cycles of said first buffer and producing control signals when the phase drifts by a preselected amount, said control signals causing said given rate to increase or decrease depending upon the relative direction of said drift, said control signals further directing said control means to respectively increase or decrease the number of storage cells in said second buffer that are addressed.

4,327,412
WELL LOGGING DATA PROCESSING TECHNIQUE
John P. Timmons, White Plains, N.Y., assignor to Schlumberger Limited, New York, N.Y.
Continuation of Ser. No. 276,347, Jul. 31, 1972, abandoned. This application Oct. 12, 1979, Ser. No. 84,125
Int. Cl.³ G06F *15/20, 15/31*
U.S. Cl. 364—422 **37 Claims**



1. In the art of well logging, a method of producing an improved well log by filtering a well log to reduce erroneous depth displacements thereof relative to a base well log comprising the following machine—implemented steps:
a. producing a selected well log derived from an investigating device passed through a borehole in a subsurface earth formation and a base log derived from the same or a different investigating device passed through the same or a different borehole in the formation, each of said logs comprising samples taken at successive initially indicated borehole depth levels;
b. combining groups of samples of the base log and the selected log to produce, for each of a succession of initially indicated borehole depth levels, a group of normalized indications of fit each of which is related to the degree of fit of a span of the base log and a span of the selected log at a respective depth displacement therebetween;
c. wherein the selected groups of samples of the base log associated with successive initially indicated borehole depth levels substantially overlap with each other in terms of borehole depth and the respective groups of normalized indications of fit similarly overlap each other in terms of borehole depth;
d. combining at least some of said groups of overlapping normalized indications of fit to produce improved groups of indications of fit; and
e. using said selected well log and said improved groups of indications of fit to filter erroneous depth displacements of the selected well log relative to the base well log and to produce a tangible representation of the resulting filtered selected log.

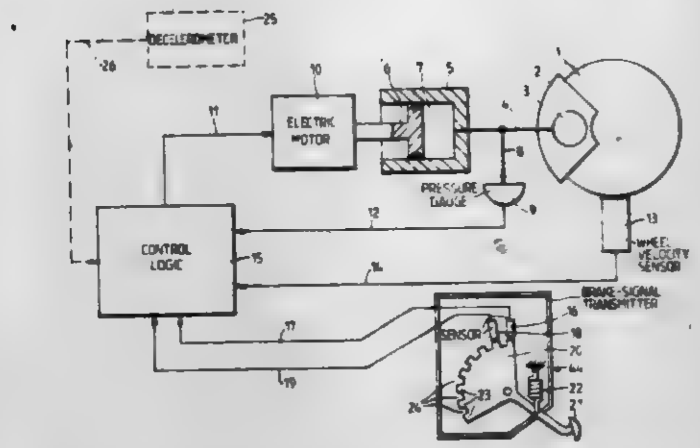
4,327,413
AUTOMATIC BRAKE CONTROL CIRCUIT FOR AIRCRAFT
Edgar J. Ruof, Akron, Ohio, assignor to Goodyear Aerospace Corporation, Akron, Ohio
Filed Sep. 12, 1979, Ser. No. 74,691
Int. Cl.³ B60T *8/12*
U.S. Cl. 364—426 **9 Claims**



1. A control circuit for use in an automatic braking system for an aircraft, comprising:
selection means for selecting a desired rate of deceleration and producing a first output signal corresponding thereto;
deceleration sensing means for producing a second output signal corresponding to the actual rate of deceleration;
valve control means connected to said selection means and said deceleration sensing means for controlling brake pressure and forcing said actual rate of deceleration to asymptotically approach said desired rate of deceleration, said valve control means comprising a comparator circuit means connected to a valve driver and receiving and comparing said first and second output signals, said comparator circuit means further controlling the charge on a capacitor at selected rates of charging and discharging, said charge presenting a control signal to said valve driver; and
wherein said valve control means further includes an amplifier interconnected with and controlled by said selection means and said comparator circuit means to charge said capacitor.

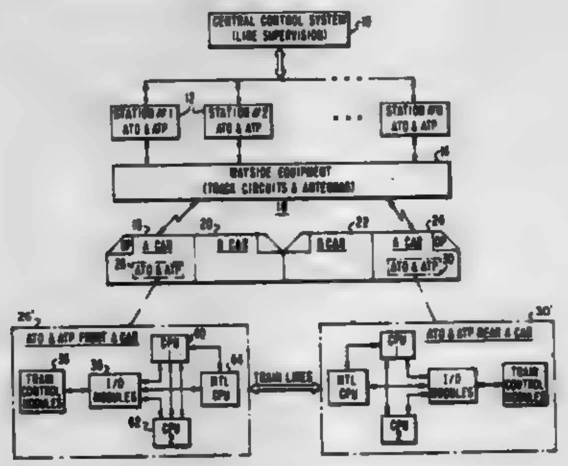
4,327,414
VEHICLE BRAKE SYSTEM
Hans-Christof Klein, Hattersheim, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.
Filed Jun. 2, 1980, Ser. No. 155,827
Claims priority, application Fed. Rep. of Germany, Jun. 28, 1979, 2926017
Int. Cl.³ B60T *8/08*
U.S. Cl. 364—426 **36 Claims**

1. A vehicle brake system comprising:
an electronic control unit to provide a control signal;
a plurality of electrically controllable pressure modulators each coupled to said control unit and to a different brake actuating device responsive to said control signal for controlling said brake actuating device associated therewith;
a brake pedal actuated brake-signal transmitter coupled to said control unit providing a first signal to said control unit representative of a desired value of vehicle deceleration; and



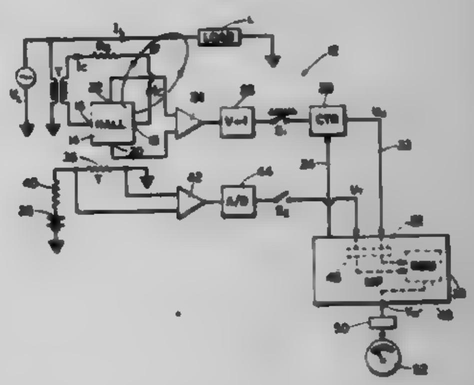
a decelerometer fastened to said vehicle and coupled to said control unit providing a second signal to said control unit representative of the actual value of vehicle deceleration, said control unit providing said control signal dependent on the difference between said first and second signals.

4,327,415
TRANSIT VEHICLE HANDBACK CONTROL APPARATUS AND METHOD
Donald L. Rush, Penn Hills; Robert H. Perry, Peters Township, Allegheny County, and Richard S. Rhoton, Mt. Lebanon, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Jan. 31, 1980, Ser. No. 117,417
Int. Cl.³ B61L *27/00*
U.S. Cl. 364—436 **16 Claims**



1. In control apparatus for a train of vehicles operative with a roadway track and having at least a primary control vehicle and a secondary control vehicle, with each control vehicle including an automatic train control equipment, the combination of
first means provided in said primary control vehicle for receiving a control signal from the roadway track,
second means provided in each of said primary and secondary control vehicles, with the second means in said primary control vehicle being coupled with the first means in the primary control vehicle and providing an interface control connection between said primary control vehicle and said secondary control vehicle,
third means provided in each of the primary control vehicle and the secondary control vehicle, with the third means in the primary control vehicle being coupled with the second means in the primary control vehicle for selecting either a normal operation with the primary control vehicle controlling the train or a handback operation with the secondary control vehicle controlling the train,
with said second means including first signal means in each of the primary and secondary control vehicles and being energized in the primary vehicle for determining the secondary control vehicle to control the train for said handback operation, and with said second means including second signal means in each of the primary and secondary control vehicles and being energized in each of the primary and secondary control vehicles for enabling the secondary control vehicle to control the train for said handback operation.

4,327,416
TEMPERATURE COMPENSATION SYSTEM FOR HALL EFFECT ELEMENT
John W. Jerrim, Lilburn, Ga., assignor to Sangamo Weston, Inc., Norcross, Ga.
Filed Apr. 16, 1980, Ser. No. 140,954
Int. Cl.³ G01R *33/06*
U.S. Cl. 364—481 **18 Claims**



1. A device for measuring the density of a magnetic flux field, comprising a Hall element for generating an output voltage as a function of a Hall element control current and the flux density of the magnetic field to which the element is exposed, said output voltage also being a function of Hall element temperature, means for measuring the temperature of said Hall element, memory means having storage locations containing Hall voltage compensation data as a function of Hall element temperature; means responsive to said temperature measuring means for generating a Hall temperature dependent digital signal, means for applying said temperature dependent digital signal as an address to said memory means to generate a correction voltage corresponding to the Hall element temperature, and means for combining said correction voltage with said Hall element output voltage to provide a temperature compensated output voltage.

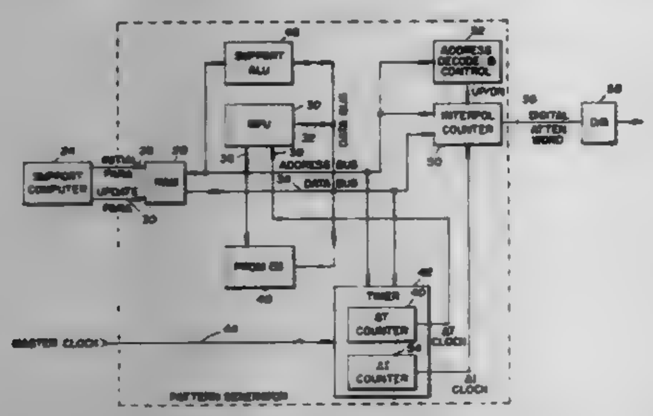
4,327,417
ANTENNA SCAN PATTERN GENERATOR
Thomas E. Zaczek, Littleton, Colo., assignor to Martin Marietta Corporation, Bethesda, Md.
Filed Jun. 6, 1980, Ser. No. 157,104
Int. Cl.³ G01S *7/40;* G06F *15/20*
U.S. Cl. 364—578 **15 Claims**

1. Apparatus for synthesizing in real time a sequence of signal attenuation values corresponding to the line of sight intersection of the surface envelope of a three dimensional antenna radiation beam pattern sensed by a receiver selectively positioned in space relative to an RF source emitting said radiation pattern, comprising:
addressable memory means having at least one stored data set of a two dimensional planar cut of a generalized typical radiation pattern having certain predetermined characteristics, said cut being defined in terms of signal attenuation values as a function of angle off of beam center (bore-

sight), and plural stored instruction sequences of a plurality of different scanning motions;

input means for inputting a set of operational parameter values for a desired type of antenna pattern which is symmetrical about boresight and which has a selected beamwidth and scanning motion;

signal processor means coupled to said input means and being responsive to said set of parameter values to sequentially address a selected one of said plural data sets in said memory means in successive operational time intervals to



generate respective angle values of the angle subtended by the line of sight between said receiver and source and the instant boresight direction for said selected scanning motion and thereafter address said memory means with said respective angle values;

said memory means being operable in response to said address in each operational time interval to provide a specific attenuation value; and

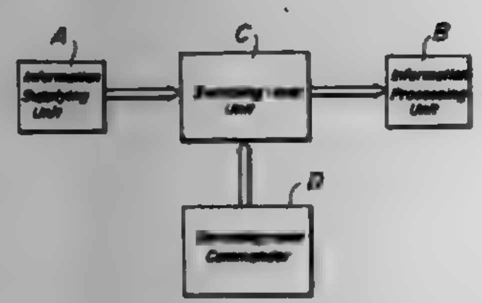
output means for reading out a specific attenuation value in each operational time interval.

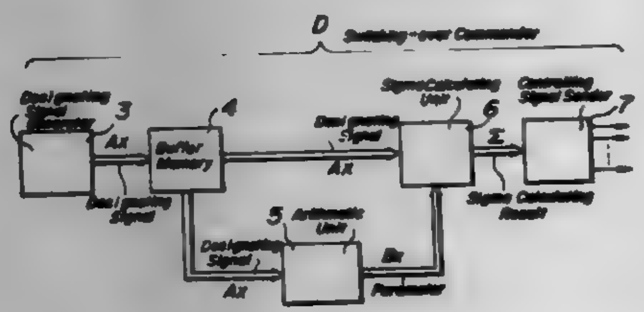
4,327,418

HIGH SPEED INFORMATION SELECTION AND TRANSFER SYSTEM

Norimasa Kishi, Yokosuka, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Dec. 14, 1979, Ser. No. 103,480
Claims priority, application Japan, Jan. 5, 1979, 54-50
Int. Cl.[3] H04Q *3/00*
U.S. Cl. 364—715 **6 Claims**





1. A high speed information selection and transfer system, comprising:

an information supplying unit for supplying a plurality of information units which are identified by a plurality of binary codes of n bits, respectively;

a switching over unit comprising a plurality of switching elements arranged in a matrix and connected with each other between successive columns of said matrix, each element being provided with a pair of input terminals and a pair of output terminals, a connection between said pair of input terminals and a pair of output terminals in each of said switching elements being switched over between two states of parallel and crossing, and said input terminals of said switching element in the input side column of said matrix being supplied with said plurality of information units derived from said information supplying unit, respectively;

a switching over commander for controlling the switching over of the states of connection in said plurality of switching elements to transfer selectively at least one of said plurality of information units from said input terminals of said switching elements in the input side column of said matrix to at least either of said pair of output terminals of at least one of said switching elements in the output side column of said matrix;

said switching over commander comprising:

a designated signal unit for forming a designating signal Ax, which is used for designating said switching elements to be switched over as:

$$Ax=(a_{n-1}a_{n-2}, \ldots, a_i, \ldots, a_1, a_0);$$

a buffer memory for storing said designating signal Ax in a predetermined time duration,

an arithmetic unit for effecting a calculation whereby, according to a result of comparison between i-th order bits of binary codes which identify desired information to be selected out of said plurality of information units, respectively, $a_i=0$ if all of said i-th order bits are "0", $a_i=1$ if all of said i-th order bits are "1", and $a_i=x$ if said i-th order bits are different from each other, and a parameter b_i, which represents a position of the symbol x in said designating signal Ax, being calculated by:

$$b_i=\left[\begin{array}{l}\beta_i-i\,(i=0, 1, 2, \ldots, |x|-1)\\ 0\,(i=|x|, |x|+1, \ldots, n-1)\end{array}\right.$$

where $|x|$ represents a number of x in said designating signal Ax, and further

the switching elements in each of the columns of said matrix of said switching-over unit being identified numerically by another plurality of binary codes, respectively,

a sigma calculating unit for effecting a calculation whereby the control of the switching over of the states of connection in said plurality of switching element is performed in such a manner that

with respect to the switching elements in the i-th column of said matrix of said switching-over unit:

if $a_i=0$, the states of connection in the switching elements, which are numbered by the binary codes the b_i-th order bits of which binary codes are "1", are switched over,

if $a_i=1$, initially, the states of connection in all of said switching elements in said i-th column of said matrix are switched over, and then the states of connection in the switching elements, which are numbered by the binary codes the b_i-th order figures of which binary codes are "1", are switched over, and

if $a_i=x$, initially, the states of connection in the switching elements, which are numbered by the binary codes the $n-b_i$-th order figures of which binary codes are "1", where the symbol z represents the value of the symbol x positioned between the terms a_0 and a_{z-1} of said designating signal Ax, are switched over, and then the states of connection in the switching elements, which are numbered by the binary codes the b_i-th order figures of which binary codes are "1", are switched over, and

a controlling signal sender for setting the state of connection of said plurality of switching elements in said switching over unit in response to the result of the calculation effected by said sigma calculating unit; and

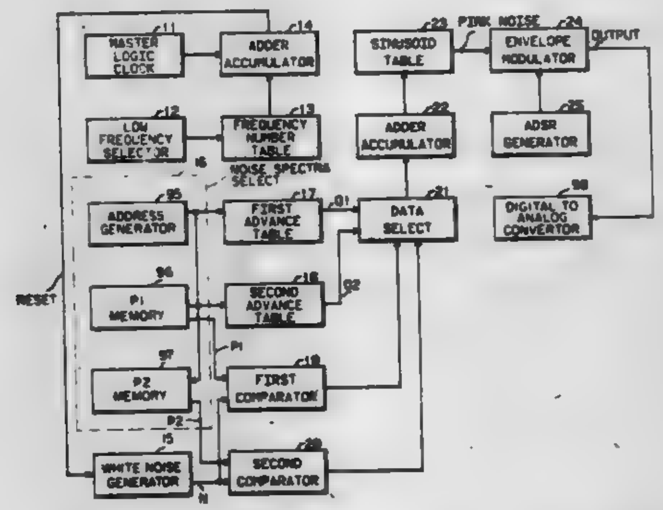
an information processing unit for processing the information units derived from said switching over unit with a plurality of input terminals which correspond in order to said output terminals of the switching elements in the output side column of the matrix.

4,327,419

DIGITAL NOISE GENERATOR FOR ELECTRONIC MUSICAL INSTRUMENTS

Ralph Deutsch, and Leslie J. Deutsch, both of Sherman Oaks, Calif., assignors to Kawai Musical Instrument Mfg. Co., Ltd., Hamamatsu, Japan

Filed Feb. 22, 1980, Ser. No. 123,632
Int. Cl.[3] G06F *15/31;* **G10H** *1/00*
U.S. Cl. 364—717 **16 Claims**



1. A digital noise generator for creating a sequence of digital data words having a controllable spectral shape comprising;

a timing clock for creating a source of timing signals,

a noise generator responsive to said timing signals for generating a sequence of noise digital words wherein each noise digital word has a random value,

a first memory containing stored values of a first advance increment,

a second memory containing stored values of a second advance increment,

a third memory containing stored values of a first comparison constant

a fourth memory containing stored values of a second comparison constant,

a spectral select means providing addressing signals for addressing out a first advance increment value from said first memory, a second advance increment value from said second memory, a first comparison constant from said third memory, and a second comparison constant from said fourth memory,

a first comparator means responsive to said addressed out first comparison constant and said noise digital word whereby a first comparison signal is generated if said noise digital word is larger in value than said first comparison constant,

a second comparator means responsive to said addressed out second comparison constant and said noise digital word whereby a second comparison signal is generated if said noise digital word is larger in value than said second comparison signal,

a data select means responsive to said first comparison signal and to said second comparison signal whereby a selection is made of either said first advance increment value addressed out from said first memory or said second advance increment value addressed out from said second memory,

a fifth memory means containing stored output data values, and

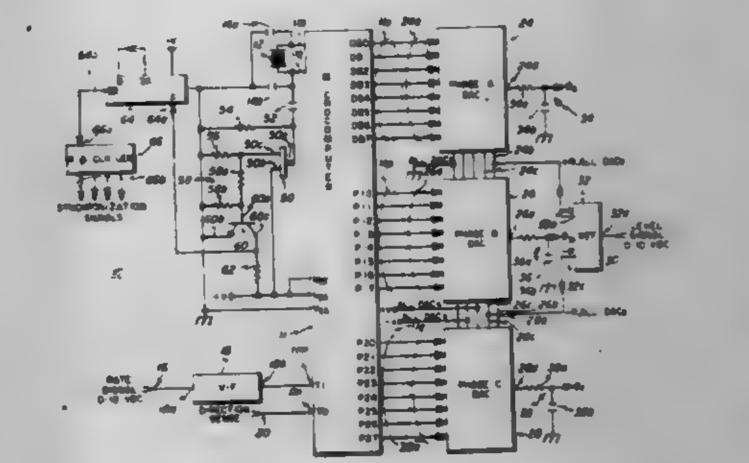
a memory addressing means responsive to said selection from said data select means for addressing output data values from said fifth memory means thereby creating said sequence of digital data words having a controllable spectral shape.

4,327,420

POLYPHASE REFERENCE GENERATOR

Michael Gdula, Albany; Raymond J. Hodsoll, Saratoga, and Edwin C. Underkoffler, Schenectady, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jun. 30, 1980, Ser. No. 164,259
Int. Cl.[3] G06F *15/31;* **H03B** *19/00*
U.S. Cl. 364—721 **10 Claims**



1. A reference generator for providing a plurality of differently phased output waveforms, each of preselected waveshape and amplitude, comprising:

a plurality of data output ports equal in number to the number of said output waveforms;

memory means for storing a lookup-table of step-wise approximations of the amplitudes of a complete repetition of each of the plurality of waveform phases, each step-wise approximation being stored as digital data at a uniquely addressed location and retrievable therefrom;

a timing register having an input for receiving an external signal to increment the count in said timing register, and having, upon commencement of operation, the count therein initialized with the address of the first location of said lookup-table for a first one of said plurality of waveform phases;

a plurality of addressable data registers, including an accumulator register for adding data from preselected ones of said plurality of addressable data registers to the digital count then presently contained in said timing register; each resulting number being provided by said accumulator register to said memory means as respective addresses of addressable locations therein at which are stored corresponding step-wise waveform approximation data for a present value of each of the remaining respective phases of said output waveforms;

means receiving a rate signal for providing said external signal to said timing register input for advancing the count stored therein to determine at any particular time the address in said lookup-table of said memory means and to cause said memory means to provide the first output waveform address;

said memory means providing the data stored at said first output waveform address to said first one of said plurality of output ports;

said memory means also sequentially providing said waveform approximation data to that one of said plurality of output ports associated with that one of said output phase

signals for which a present memory means address was provided; and

a plurality of means equal in number to the number of output waveform phases, each receiving the digital data from an associated one of said plurality of output ports for providing an analog voltage of magnitude established at least in part by the digital data then being received.

4,327,421

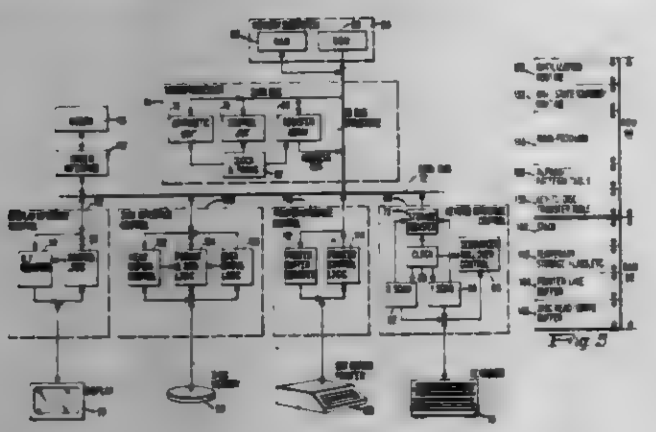
CHINESE PRINTING SYSTEM

Gary Y. Wang, Wellesley, Mass., assignor to Transtech International Corporation, Wellesley, Mass.

Filed May 13, 1976, Ser. No. 686,216

Int. Cl.³ G06F *3/09*; B41J *5/00*

U.S. Cl. 364—900 **15 Claims**



1. A method for entering and reproducing Chinese characters in a data processing system comprising the steps of:

selecting from a predetermined set of sub-structures a series of one or more sub-structures for forming Chinese characters which define a character to be entered;

entering the selected sub-structures into the data processing system by typing selected keys of a keyboard having a plurality of keys each for indicating a respective one of said predetermined set of sub-structures from which characters to be entered can be composed, the keys of said keyboard being manually actuable to indicate the corresponding sub-structure;

the entering step further including the steps of an actual Chinese writing sequence comprising:

first, entering sub-structures sequentially as they occur in a character or sub-structure from left to right;

next, entering sub-structures sequentially as they occur in a character or sub-structure from top to bottom; and

next, entering sub-structures sequentially as they occur in a character or sub-structure from outside to inside; and

providing a plurality of sub-structured data sets stored in the data processing system representing sub-structure sequences corresponding with individual Chinese characters;

providing a plurality of second data sets stored in the data processing system, each corresponding with a respective one of the sub-structure data sets and each of the second data sets representing the actual form of the Chinese character to be reproduced;

determining when a complete series of sub-structures defining a character has been entered;

comparing the entered, complete sub-structure series with the stored sub-structure data sets representing sub-structure sequences corresponding with individual Chinese characters;

providing a first signal indication upon detection of a match between the entered sub-structure series and one of the stored sub-structure data sets representing sub-structure sequences;

providing a second signal indication if no sub-structure data set is found in said stored sub-structure data sets which matches the substructure series entered; and

reproducing in response to said first signal indication and the stored sub-structure data set which matches the entered sub-structure series the Chinese character in the form represented by the second data set which corresponds to the stored sub-structure data set matched to the entered sub-structure series.

4,327,422

POWER SOURCE DEVICE FOR BUBBLE MEMORY UNIT

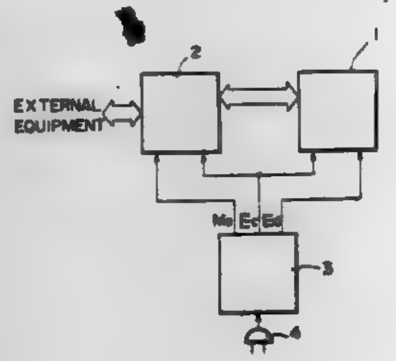
Ryoji Imazeki, and Masayuki Hattori, both of Hachioji, Japan, assignors to Fujitsu Fanuc Limited, Japan

Filed Jul. 17, 1980, Ser. No. 169,791

Claims priority, application Japan, Jul. 19, 1979, 54-091998

Int. Cl.³ G11C *19/08*; H04B *17/00*

U.S. Cl. 365—1 **17 Claims**



1. A power source device for a bubble memory unit having a control circuit, a drive circuit, and a bubble memory element, said power source device for supplying a first DC voltage signal E_c which is applied to the control circuit for controlling the reading and writing of data, a second DC voltage signal E_d which is applied to the drive circuit for driving the bubble memory element, and a memory enable signal M_e which enables data to be written in the bubble memory element or read out therefrom, the signals E_c, E_d and M_e being made to rise and fall according to a prescribed sequence as a commercial power supply is connected and disconnected, said power source device comprising:

a first DC power source circuit, coupled to the commercial power supply, for generating a reference level voltage V_M and said first DC voltage signal E_c;

a second DC power source circuit, coupled to the commercial power supply, for generating said second DC voltage signal E_d;

a comparator circuit for comparing the magnitude of said first DC voltage signal E_c with said reference level voltage V_M and for generating a comparison signal;

signal generating means, coupled to said comparator circuit, for generating the memory enable signal M_e; and

delay means for delaying said comparison signal and for providing a power enable signal P_e corresponding to the delayed comparison signal, to said second DC power source circuit; wherein when the commercial power supply has been connected, and after the lapse of time until the comparison signal indicates that the magnitude of said first DC voltage signal E_c surpasses the reference level voltage V_M, said delay means generating said power enable signal P_e, said power enable signal P_e actuating said second DC power source circuit so that said second DC voltage signal E_d is generated and thereafter said signal generating means generates the memory enable signal M_e.

4,327,423

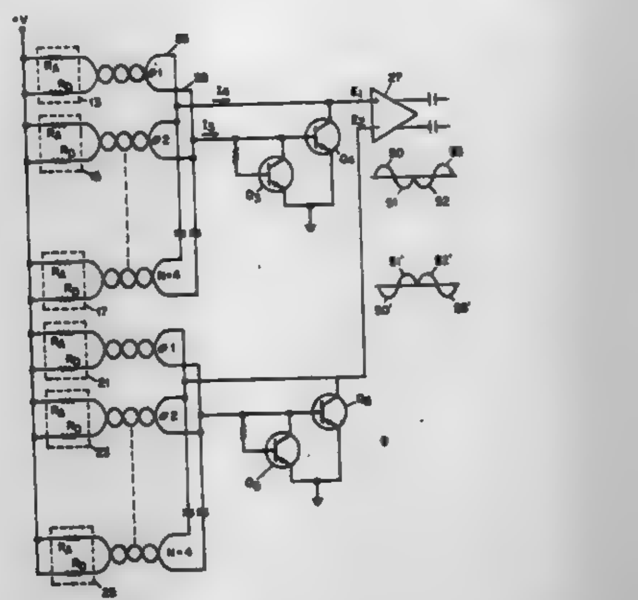
MAGNETIC BUBBLE TRANSDUCER

Joseph V. Reymersdal, Fairless Hills, Pa., and John H. Cooper, San Jose, Calif., assignors to Sperry Corporation, New York, N.Y.

Filed Jul. 21, 1980, Ser. No. 170,344

Int. Cl.³ G11C *19/08*

U.S. Cl. 365—8 **5 Claims**



1. A system for detecting a presence of a magnetic bubble comprising:

(a) first and second groups of bubble detectors wherein each said group has an equal number of resistive detectors;

(b) an amplifier means having first and second inputs wherein said amplifier operates in a differential mode;

(c) first and second semiconductor means wherein the first semiconductor is coupled between said first group of bubble detectors and one said amplifier input, and said second semiconductor means is coupled between said second group of bubble detectors and the other said amplifier input,

(d) said semiconductor means directly converting a resistance change within one said resistive detectors due to a presence of a magnetic bubble into a direct change of voltage.

4,327,424

READ-ONLY STORAGE USING ENHANCEMENT-MODE, DEPLETION-MODE OR OMITTED GATE FIELD-EFFECT TRANSISTORS

Philip T. Wu, Rochester, Minn., assignor to International Business Machines Corporation, Armonk, N.Y.

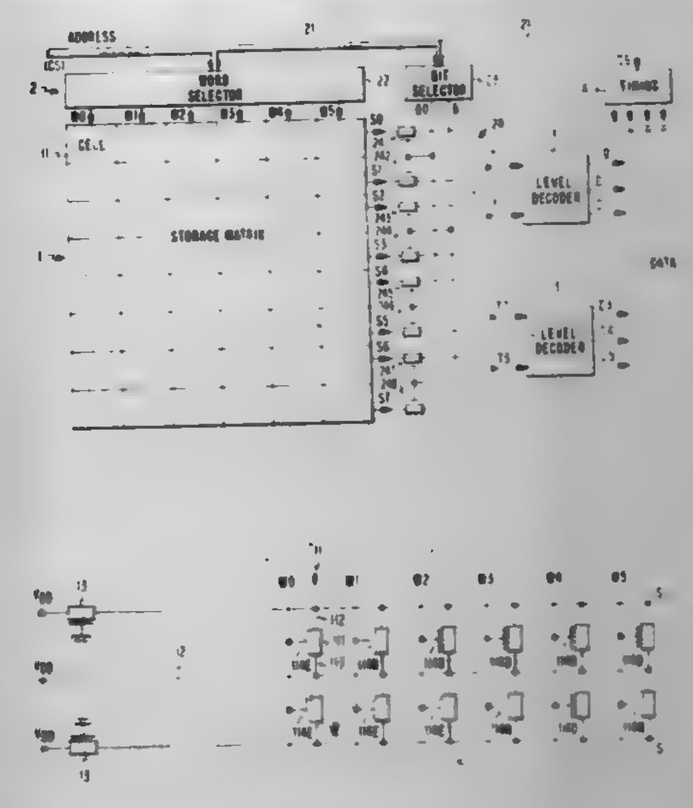
Filed Jul. 17, 1980, Ser. No. 169,542

Int. Cl.³ G11C *17/00, 11/40*

U.S. Cl. 365—104 **6 Claims**

1. A read-only storage, comprising:

a storage matrix having a number of cells each comprising a field-effect transistor having one of three different gate configurations, said configurations including an enhancement-mode gate, a depletion-mode gate and no gate, said cells being capable of producing three-level signals depending upon said gate configurations; and



at least one level decoder responsive to a pair of said three-level signals for producing a triplet of two-level data signals.

4,327,425

METHOD FOR THE RECORDING OF SPIN RESONANCE SPECTRA AND AN APPARATUS FOR THE IMPLEMENTATION OF SUCH METHOD

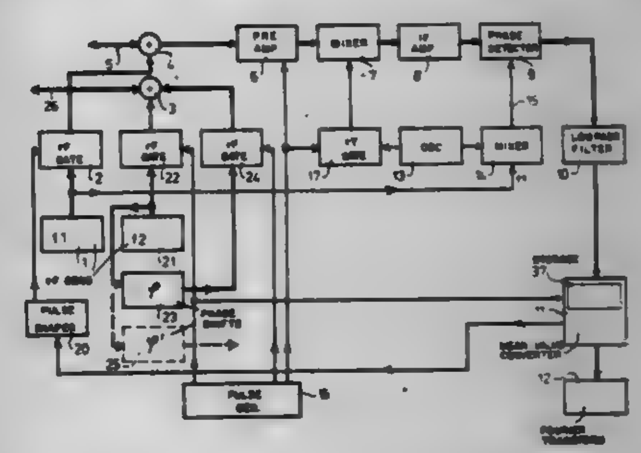
Richard R. Ernst, Winterthur, and Walter P. Aue, Zürich, both of Switzerland, assignors to Spectrospin AG, Switzerland

Filed Jul. 25, 1979, Ser. No. 60,286

Claims priority, application Fed. Rep. of Germany, Aug. 2, 1978, 2833853

Int. Cl.³ G11C *13/00*

U.S. Cl. 365—152 **11 Claims**



1. A method for determining the spin resonance spectra of a selected nuclear species in a sample comprising the steps of

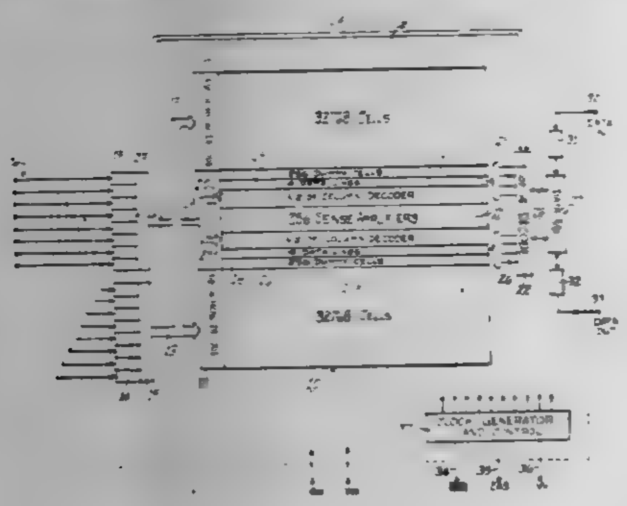
applying a pulsed rf signal of a frequency f_1 to said sample located in a magnetic field to excite the spin of at least said selected species,

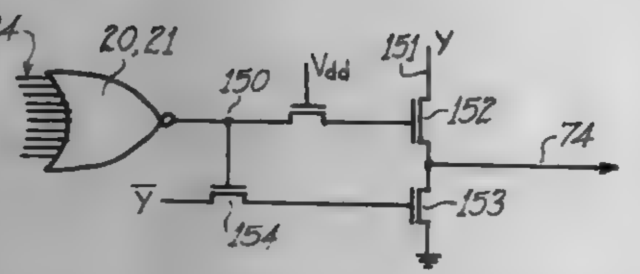
applying to said sample an rf frequency decoupling signal having a frequency f_2 different from that of f_1, said decoupling signal consisting of a periodic sequence of pulse groups at least in part occurring after the application of the rf signal of frequency f_1, said pulse groups comprising several pulses, the pulses being so short that the frequency mixture detectable in the pulses according to the Fourier

analysis covers the entire range of spin resonances at least of the nuclear species other than said given species, and that the pulses of a pulse group causes a total rotation of the spin momenta of the other nuclear species by $n \times 360°$ ($n=0, 1, 2, 3 \ldots$), and

repetitively sampling and recording the relaxation oscillations of the spins of said given species at predetermined intervals.

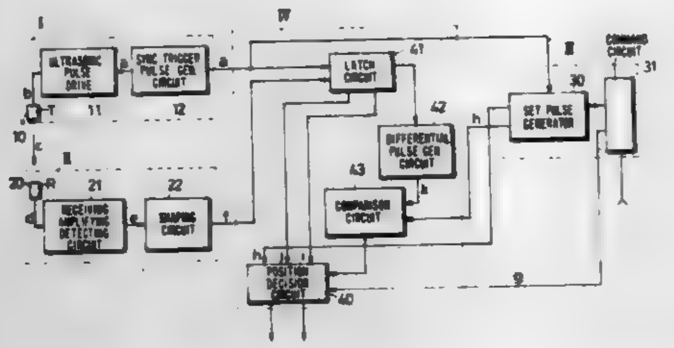
4,327,426
COLUMN DECODER DISCHARGE FOR SEMICONDUCTOR MEMORY
Hugh P. McAdams, Houston, Tex., assignor to Texas Instruments, Incorporated, Dallas, Tex.
Filed Feb. 11, 1980, Ser. No. 120,595
Int. Cl.³ G11C ***7/02***
U.S. Cl. 365—203 **9 Claims**





1. A semiconductor memory device of the type having an array of rows and columns of dynamic memory cells, comprising: means for accessing the device by a row address along with a column address, said means including a row decoder and a column decoder, the column decoder having a plurality of output lines, clock voltage means for applying a logic voltage to each output line is selected, and means for discharging said output lines when not selected by the column decoder to prevent unwanted buildup of voltage thereon, said means for discharging including a first transistor having source-drain path connected between each output line and reference potential and having a gate connected to a complement of said clock voltage means through the source-drain path of a second transistor which has its gate connected to the column decoder output.

4,327,427
SYSTEM OF AUTOMATICALLY CONTROLLING DISTANCE IN LINEAR MOVEMENT
Mitsuhiko Hotta; Akifumi Tachibana, both of Kyoto, and Takanori Shigihara, Hyogo, all of Japan, assignors to Kabushiki Kaisha Morita Seisakusho, Kyoto, Japan
Filed Jul. 3, 1980, Ser. No. 165,387
Claims priority, application Japan, Jul. 4, 1979, 54-85320
Int. Cl.³ G01S ***11/00***
U.S. Cl. 367—118 **9 Claims**



1. A method of automatically controlling a distance between a first member and a second member one placed in a relatively variable relation in distance with the other on a straight line, said method comprising the steps of:

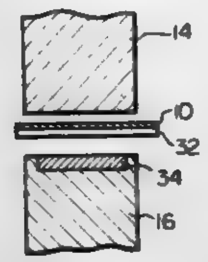
(a) disposing an ultrasonic transmitter and an ultrasonic receiver in a mutually opposed relation on a straight line so as to interlock with the linear movement;
(b) emitting an ultrasonic pulse from said transmitter to said receiver and receiving the pulse by the receiver;
(c) detecting the ultrasonic pulse received and generating a receiving pulse by an electrical means;
(d) generating a set pulse lagging for a period of time calculated in terms of time required for an ultrasonic pulse to propagate to a desired distance between said two members in synchronims with generation of the ultrasonic pulse from said transmitter;
(e) comparing the arrival time of said receiving pulse with that of a set pulse by an electrical means;
(f) generating a decision signal for deciding the distance between the transmitter and the receiver by said comparison in terms of distance toward and away from a desired distance; and
(g) controlling the distance between said two members to the desired distance in accordance with said decision signal.

4,327,428
DECORATIVE PLATE FOR A TIMEPIECE
Tadao Enomoto, Higashimurayama, and Hiroshi Koide, Tokyo, both of Japan, assignors to Citizen Watch Company Limited, Tokyo, Japan
Filed Jan. 30, 1979, Ser. No. 7,704
Claims priority, application Japan, Jan. 30, 1978, 53-9018; Feb. 15, 1978, 53-17088[U]
Int. Cl.³ G04B ***19/06;*** **B23P** ***23/00;*** **B41C** ***3/08***
U.S. Cl. 368—232 **14 Claims**

1. A method of forming a decorative plate for a timepiece, comprising the steps of:

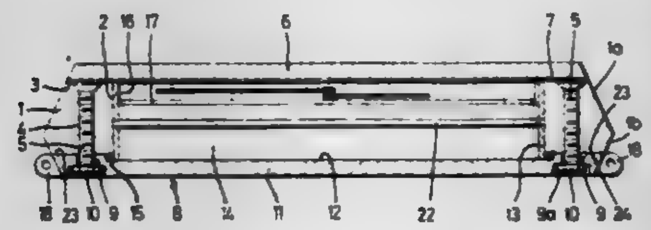
(a) preparing a pattern forming base material having a predetermined contoured surface pattern;
(b) transferring said predetermined contoured surface pattern to an electroforming matrix;
(c) flash plating a nickel alyer on said electroforming matrix;
(d) passivation treating said nickel layer to form a passivation layer;
(e) electroforming a mold on said passivation layer;
(f) stripping said mold from said passivation layer; and

(g) embossing a blank sheet of material with said mold to form said decorative plate having a decorative pattern



embossed thereon corresponding to said predetermined contoured surface pattern.

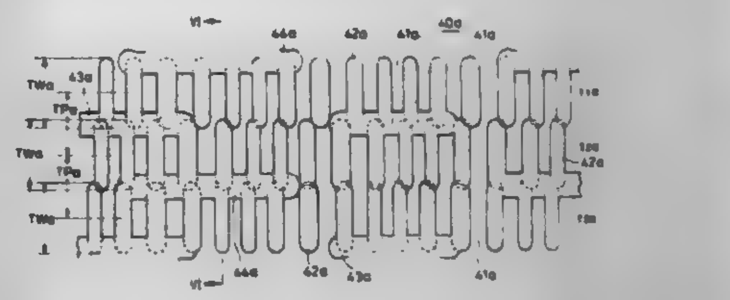
4,327,429
WATCHCASE
Hans U. Klingenberg, 3274 St. Niklaus bei Merzligen, Canton of Berne, Switzerland
Continuation of Ser. No. 921,607, Jul. 3, 1978, abandoned. This application Feb. 11, 1980, Ser. No. 120,324
Claims priority, application Switzerland, Jul. 15, 1977, 8813/77
Int. Cl.³ G04B ***37/00***
U.S. Cl. 368—294 **5 Claims**



1. A watchcase comprising an annular frustoconical caseband have a top flat annular surface, a glass made of a transparent material having a flat bottom annular surface complementary to the annular surface of the caseband, said glass and said caseband being of materials of substantially the same hardness and substantially the same coefficient of thermal expansion and both having faceted side faces, said complementary flat surfaces being cemented together with said faceted surfaces in mutual registry to form an integral main member, no portion of said caseband traversing the plane of said cemented surfaces, and a bottom removably secured to said main member.

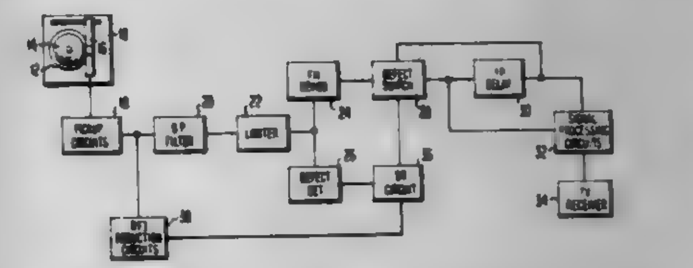
4,327,430
INFORMATION SIGNAL RECORDING MEDIUM OF ROTARY TYPE WITH OVERLAPPED TRACKS
Yoshiyo Wada; Hisao Kinjo, both of Yokohama, and Ichiro Ueno, Isehara, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan
Continuation of Ser. No. 876,558, Feb. 9, 1978, abandoned. This application Jul. 6, 1979, Ser. No. 55,752
Claims priority, application Japan, Feb. 9, 1977, 52-13322; Feb. 12, 1977, 52-14438; Feb. 14, 1977, 52-14870; Feb. 23, 1977, 52-18056
Int. Cl.³ H04N ***5/80;*** **G11B** ***11/00***
U.S. Cl. 369—43 **1 Claim**

1. An information signal recording medium of rotary type free of a guide groove on a flat surface with first successions of pits formed therein as respective concavities in response to a television composite video signal and with second successions of pits formed therein as respective concavities in response to a reference signal for tracking, said first successions of pits forming tracks of a specific pitch, each pit being formed with a width, equal to the width of a track, which is substantially greater than said pitch of the tracks, said second successions of pits being formed at positions substantially intermediate between the centerlines of adjacent tracks formed by the first successions of pits with partial overlap on the first successions of pits said medium being arranged for tracing by a reproduc-



ing stylus having a sliding contact whose width is greater than the width of the track of the first successions of pits.

4,327,431
VIDEO DISC PLAYER WITH VARIABLE OFFSET RFI REDUCTION CIRCUIT
Charles B. Dieterich, Princeton, and Frank B. Lang, Princeton Junction, both of N.J., assignors to RCA Corporation, New York, N.Y.
Filed Nov. 7, 1980, Ser. No. 204,827
Int. Cl.³ H04N ***5/80***
U.S. Cl. 369—126 **3 Claims**



1. In a video disc player of the type having: pickup apparatus for recovering an information signal recorded on a disc in the form of a modulated carrier signal; demodulation apparatus; defect detection apparatus for detecting defects in the recovered signal; and defect compensation apparatus responsive to the operation of the defect detection apparatus for providing a substitute signal in place of the recovered signal in the playback display of said information signals during occurrences of defects in the recovered signal; said player being subject to interference with normal playback display operations due to the pickup of unrecorded, externally applied signals; apparatus for reducing the influence of said external signals comprising:

an amplifier responsive to the signal provided by said pickup apparatus;
a signal detector for detecting amplitude variations in the amplifier output signal;
first and second conductive paths coupled to an output terminal of said detector, said first path being responsive to a wide band of frequencies, said second path being responsive to a relatively low band of frequencies, one of said paths having a means for providing a variable d.c. offset, said offset varying as a function of said detected amplitude variations;
said means for providing a variable d.c. offset comprising: an integrator circuit responsive the output of said detector; a transistor having a base electrode coupled to said integrator circuit, a collector electrode coupled to one end of a load resistor and an emitter electrode coupled to a point of reference potential; the other end of said load resistor being coupled to an output terminal of said signal detector; and said collector electrode being connected to said first conductive path;
a voltage comparator coupled to said first and second paths for providing an output signal in response to a detected signal having an amplitude greater than said offset voltage

and a frequency higher than said low band of frequencies; and

means coupling said comparator output signal to said defect compensation apparatus.

4,327,432

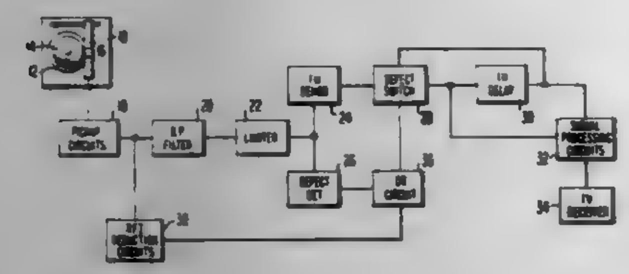
VIDEO DISC PLAYER WITH RFI REDUCTION CIRCUIT

Frank B. Lang, Princeton Junction, and Jon K. Clemens, Skillman, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Nov. 7, 1980, Ser. No. 204,828

Int. Cl.³ H04N *5/80*

U.S. Cl. 369—126 8 Claims



1. In a video disc player of the type having:

pickup apparatus for recovering an information signal recorded on a disc in the form of a modulated carrier signal; demodulation apparatus; defect detection apparatus for detecting defects in the recovered signal; and defect compensation apparatus responsive to the operation of the defect detection apparatus for providing a substitute signal in place of the recovered signal in the playback display of said information signals during occurrences of defects in the recovered signal; said player being subject to interference with normal playback display operations due to the pickup of recorded, externally applied signals; apparatus for reducing the influence of said external signals comprising:

circuit means connected in parallel with said defect detection apparatus between an output terminal of said pickup apparatus and an input terminal of said defect compensation apparatus and responsive to the amplitude and frequency of the signal provided by said pickup apparatus for actuating said defect compensation apparatus for reducing the influence of said externally applied signals in the playback display.

4,327,433

MAGNETIC PHONO CARTRIDGE

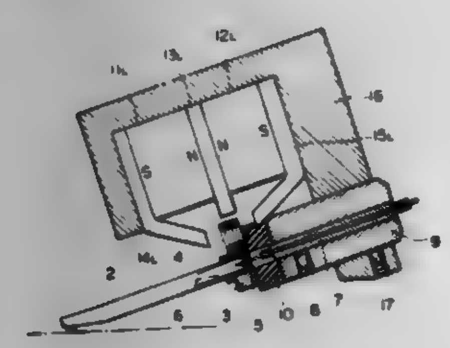
Keniti Okura, and Kazuo Nishikawa, both of Tokorozawa, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Sep. 25, 1980, Ser. No. 191,059

Claims priority, application Japan, Sep. 25, 1979, 54-121946; Sep. 25, 1979, 54-121947

Int. Cl.³ G11B *3/30*

U.S. Cl. 369—139 8 Claims



1. A pick-up phono cartridge comprising: a vibrating system comprising a non-magnetic vibrating body secured to a base end of a cantilever having a stylus at the other end thereof; first and second hollow coils having winding axes parallel to said cantilever and secured to said vibrating body, said first and second hollow coils being mounted on said non-magnetic vibrating body and positioned 90° apart from one another so that said first and second hollow coils are each disposed apart from the center axis of said cantilever, said vibrating system being vibratable around the center axis of said cantilever in said vibrating body; and a magnetic circuit for applying magnetic flux to the outer portion of said hollow coils normal to said winding axes of said coils, said magnetic circuit comprising front, center and rear yokes with poles, a line defined by said side poles being substantially arranged in parallel to the center axis of said cantilever, said center pole being arranged outside of the outer periphery of said coils and said front and rear poles being positioned outside of said coils so as to face each end of said coils.

4,327,434

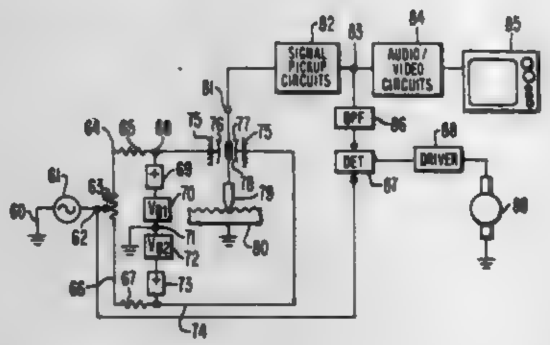
VIDEO DISC STYLUS POSITION SENSOR SYSTEM

Todd J. Christopher, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Jan. 28, 1980, Ser. No. 116,249

Int. Cl.³ G11B *17/06*

U.S. Cl. 369—220 10 Claims



1. A video disc stylus position sensor system of the type having a signal pickup stylus secured to a stylus arm, said stylus arm being compliantly mounted in a carriage assembly for translating the pickup stylus radially across a record disc and permitting relative movement between the pickup stylus and the carriage assembly, said sensor system having first and second variable capacitors formed by first and second electrodes secured to the carriage assembly and a third electrode disposed therebetween, said third electrode forming one plate of both said first and said second capacitors and having a fixed relation to said pickup stylus, and wherein the position of the stylus is determined by the resultant composite signal generated at the third electrode, said resultant composite signal being derived from the coupling of signals applied to said first and second electrodes through the capacitance of the variable capacitors wherein the improvement comprises:

means for providing a time varying signal of substantially constant amplitude;

first and second impedance means connected respectively between the means for providing the time varying signal and said first and second electrode;

a first voltage variable impedance means connected between said first electrode and a point of fixed potential, said first voltage variable impedance means increasing in value for increasing potential of a given polarity applied to the first electrode; and

a second voltage variable impedance means connected between said second electrode and a point of fixed potential, said second voltage variable impedance means decreasing in value for increasing potential of said given polarity applied to the second electrode, said first voltage variable impedance means causing an amplitude modulation of the signal applied to the first electrode complementary to an amplitude modulation caused by the second voltage variable impedance of the signal applied to the second electrode.

4,327,435

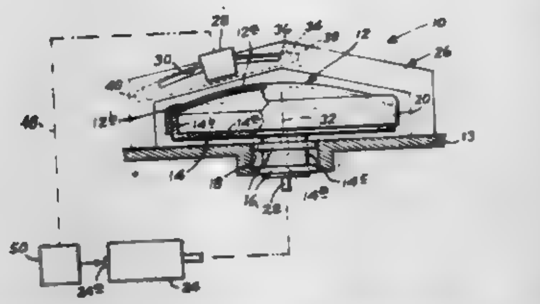
PLAYBACK SYSTEM FOR RECORDING DISK HAVING FLEXIBLE, DEFORMABLE RECORDING MEMBRANE

George S. Fenn, Box 8, Henderer Rd., Elkton, Oreg. 97436

Filed Feb. 1, 1980, Ser. No. 117,638

Int. Cl.³ G11B *25/00*

U.S. Cl. 369—261 10 Claims



1. Apparatus for reading information recorded on a particular side of a wafer-like rotary data-storage element, which element is axially deformable into a particular non-planar body of revolution, said apparatus including

a frame member,

a turntable rotatably mounted on said frame member and including a particular surface defining the particular body of revolution and constructed to receive the element,

deforming means located adjacent said turntable and operable, with the element received on said particular surface, produces a force to deform the element into the particular non-planar body of revolution with the recorded side of the element displaced from the particular surface of the turntable,

a head constructed for reading information recorded on the particular side of the element,

means responsive to signals produced by the head for controlling the force produced by the deforming means on the wafer-like element to maintain the element in the particular non-planar body of revolution, and

means mounting said head on said frame member for movement radially relative to the rotational axis of said turntable a substantially constant distance from the recorded side of the element.

4,327,436

SIGNAL MONITORING AND CONTROLLING SYSTEM IN A TIME DIVISION SWITCHING SYSTEM

Susumu Ohara, Yokosuka; Akira Horiki, Yokohama; Katsuyuki Miyazaki, Yokohama, and Kaoru Tokunaga, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 8, 1978, Ser. No. 967,846

Claims priority, application Japan, Dec. 9, 1977, 52/147044; Dec. 9, 1977, 52/147045; Dec. 9, 1977, 52/147046

Int. Cl.³ H04J *3/12*

U.S. Cl. 370—110.1 3 Claims

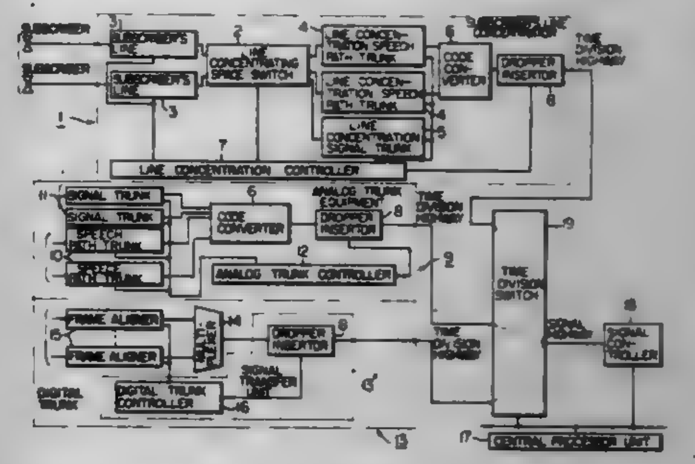
1. A signal monitoring and controlling system in a time division switching system for switching digital coded information, comprising:

a plurality of line interface means for monitoring and controlling status of lines;

a time division switch connected with said line interface means by signal time slots;

a signal controller connected with said time division switch by said signal time slots; and

a central processor unit connected with said time division switch and said signal controller whereby, in a receiving mode, said signal controller includes means for receiving multiplex monitor information from the time division switch representing the status of said lines from said line interface means and means for transferring said monitor information to said central processor unit after demultiplexing said multiplex monitor information, and said central processor unit includes means for processing said monitor information, and, in a transmitting mode, means for providing control information for controlling the status of said lines to said signal controller in accordance with said monitor information, and said signal controller further includes means for transmitting said control information to said line interface means through said signal time slots after multiplexing said control information, wherein said signal controller comprises a first memory for storing plural pieces of control information read out from said central processor unit, a second memory for storing a plurality of control words for processing said control information pieces, a first counter for reading out



said control words in synchronism with said signal time slots, a first arithmetic circuit including means for processing said control information pieces in accordance with said control words in a manner so that said control information pieces are classified into a cyclic signal needing renewal by transmitting a correct state with predetermined intervals and a random signal needing randomly a change of a state, a third memory for storing said classified control information pieces, and means for transmitting said classified control information pieces in a manner so that said classified control information pieces are read out at a given time with different transmitting time regions for said cyclic and random signals and multiplexed on said signal time slots by using a multi-frame technique whereby said cyclic and random signals are transmitted to said line interface means through a single signal time slot.

4,327,437

RECONFIGURING REDUNDANCY MANAGEMENT

Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of, and Hendrik J. C. Gelderloos, Largo, Fla.

Filed Jul. 30, 1980, Ser. No. 173,518

Int. Cl.³ G06F *11/18*; G05B *23/02*

U.S. Cl. 371—68 18 Claims

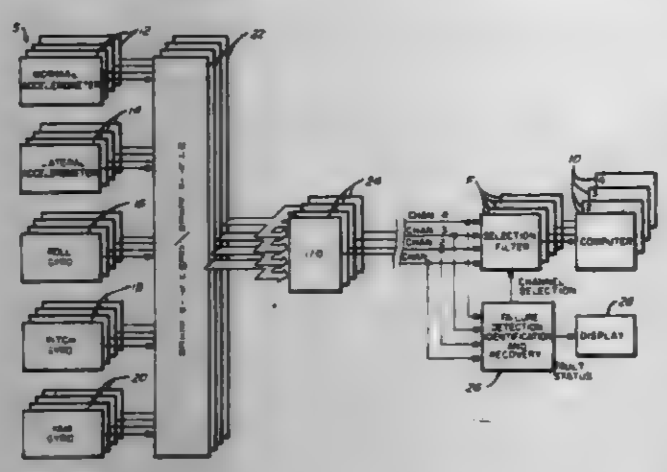
1. An apparatus for selecting a primary control signal for redundancy management in a system having a plurality of sensors providing input signals in parallel to a control computer to provide the computer with a primary control signal representing an output from a properly operating sensor, comprising:

(a) selector means for receiving and comparing input signals in groups of three from the sensors and detecting the median value signal of the three input signals;

(b) comparator means for comparing the detected median value signals to detemine if any one of the detected median value signals exceeds the others by an amount greater than the signal level for a failed sensor;

(c) said comparator means further including means for transmitting to the control computer as the primary control

signal a detector median value signal which exceeds the others by an amount greater than the signal level for a failed sensor and means for transmitting to the control



computer as the primary control signal the least of the detected median value signals when no detected median value so exceeds the others.

4,327,438

RECEIVING CIRCUIT IN AN INTERFERENCE-SUPPRESSING COMMUNICATIONS SYSTEM COMPRISING NARROW-BAND CONVENTIONAL MESSAGE MODULATION AND ADDITIONAL PSEUDO-NOISE PHASE SHIFT KEYING

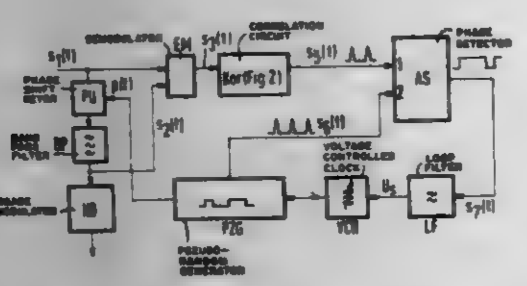
Paul W. Baier; Klaus Dostert; Madhukar Pandit, and Reinhard Simons, all of Kaiserslautern, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Dec. 12, 1979, Ser. No. 102,644

Claims priority, application Fed. Rep. of Germany, Dec. 19, 1978, 2854832

Int. Cl.[3] H04L *7/00*

U.S. Cl. 375—1 7 Claims



1. In a receiving circuit for an interference-suppressing communications system of the type having a narrow band conventional message modulation and additional pseudo-noise phase-shift keying, the receiving circuit comprising a pseudo-random generator whose continuous pseudo-random sequence conforms with the transmitting side pseudo-random sequence and consists of a pseudo-random combination of the binary values L and H in a fixed clock pulse scheme and which actuates a phase-shift keying element cancelling the phase shift modulation produced at the transmitting side, a correlation circuit for producing a correlation pulse which appears when the pseudo-random sequence of the received signal reaches a specified location of the pseudo-random code or when the correlation integral of the pseudo-random sequence of the received signal and the pseudo-random sequence produced at the receiving side reaches a maximum, the improvement therein comprising:

a demodulator connected to receive the entire message modulated and pseudo-random phase-shifted signal and to receive a signal which contains only the message modulated signal and providing a demodulated signal which contains only the pseudo-random phase-shift modulation to the correlation circuit.

4,327,439

METHOD FOR GENERATING MODEM TRANSMISSION SIGNALS WITH QUADRATURE AMPLITUDE MODULATION

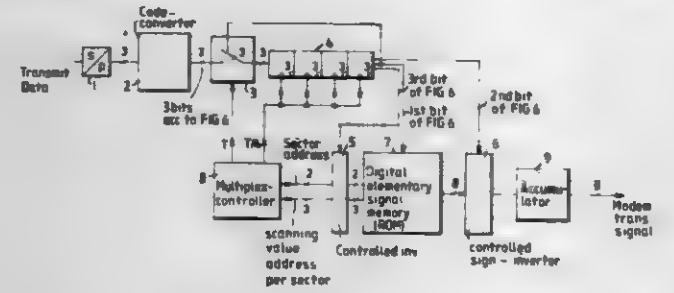
Heinz Göckler, Backnang, and Hagen Hofmeister, Korb, both of Fed. Rep. of Germany, assignors to Licentia-Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Fed. Rep. of Germany

Filed Apr. 2, 1980, Ser. No. 136,733

Claims priority, application Fed. Rep. of Germany, Apr. 5, 1979, 2913669

Int. Cl.[3] H03K *7/10*; H04L *5/12*

U.S. Cl. 375—67 9 Claims



1. In a method for generating modem transmission signals with quadrature amplitude modulation (QAM) wherein sample values of elementary bandpass signals are stored in digitally coded form, and including weighting the elementary bandpass signals with coefficients depending on the information to be transmitted and forming the modem transmission signals by superposition of the thus weighted elementary bandpass signals, the improvement, in the case of n-PSK modulation wherein $n=4, 8, 12, 16 \ldots$, comprising the steps of: selecting the phase positions of the elementary bandpass signals such that the two dimensional four quadrant phase diagram is symmetrical to the axis $\phi=0$, and no elementary bandpass signal coincides with the axis $\phi=0$; storing $\frac{1}{4}$n elementary bandpass signals, which cannot be derived from any other bandpass signal of said phase diagram neither due to symmetry with the axis $\phi=0$, or the axis $\phi=90°$, respectively, nor by symmetry to the origin of said phase diagram, in a digital memory; and obtaining the remaining elementary bandpass signals by one of the following:

(a) reading one of the stored signals out of the digital memory in a forward direction and weighting same with a -1 coefficient,

(b) reading one of the stored signals out of the digital memory in a backward direction and weighting same with a $+1$ coefficient, and

(c) reading one of the stored signals out of the digital memory in a backward direction and weighting same with a -1 coefficient.

4,327,440

SIGNAL DETECTOR FOR USE IN DIGITAL COMMUNICATION

Yukitsuna Furuya, and Fumio Akashi, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Mar. 19, 1980, Ser. No. 132,482

Int. Cl.[3] H03K *13/34*; H04L *27/06*

U.S. Cl. 375—76 48 Claims

1. A signal detector for use in digital signal communication, comprising:

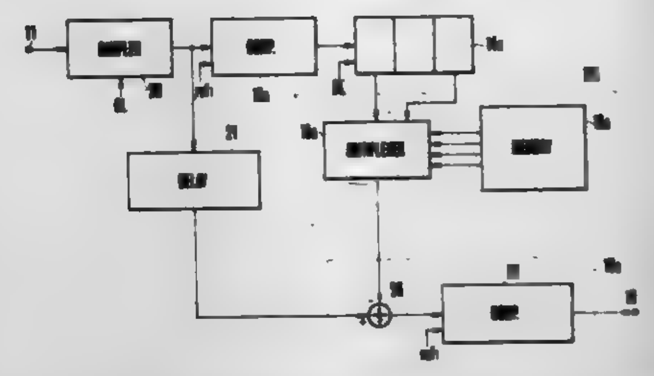
a tentative decision means for assigning certain symbols to receiving signals based on a predetermined value;

a first memory means for storing the output of said tentative decision means in sequence;

a second memory means for storing a plurality of reference values prepared in association with all the signal patterns

to be received, said signal patterns corresponding to the symbol sequence assigned by said first memory means, at least some of said reference values comprising a distortion correction quantity;

a selection means for selecting at least one said reference values based on at least a part of the contents of said first memory; and



a processing means wherein there is produced by using said selected reference value the process to relate said receiving signals with signals to be received that are the most likely receiving signals among all the signals to be received, thereby producing an output, said processing means including means using said distortion quantity for correcting the distortion of said receiving signals and means for assigning output signals based on a predetermined value.

4,327,441

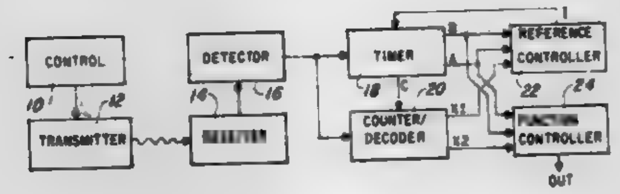
METHOD AND APPARATUS FOR SYNCHRONIZING AND CALIBRATING A RECEIVER TO A PULSE WIDTH MODULATION TRANSMITTER

David H. Bradshaw, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Mar. 31, 1980, Ser. No. 136,030

Int. Cl.[3] H04L *7/10*

U.S. Cl. 375—113 12 Claims



1. A communication system comprising, in combination:

(A) transmitter means for transmitting a pulse width modulated control signal having a synchronizing pulse, a reference pulse, and at least one control function pulse encoded therein; and

(B) receiver means for receiving said transmitted control signal, detecting said pulses encoded therein, and for performing a control function determined by the width of said control function pulse relative to the width of said reference pulse, said receiver means comprising:

(a) receiver means for receiving the transmitted control signal;

(b) detection means for detecting said synchronizing, reference and control function pulses in said received control signal:

(c) timing means for providing, in response to each said detected pulse, a timing pulse having a width related to a reference signal;

(d) reference controller means for comparing the width of the said detected reference pulse to the width of the said timing pulse, and for providing the said reference signal at a level automatically selected to calibrate the width of said timing pulse to the width of said detected reference pulse; and

(e) function controller means for comparing the width of the said detected control function pulse to the width of the said calibrated timing pulse, and for performing the said control function in response to a predetermined compared width difference.

4,327,442

CLOCK RECOVERY DEVICE

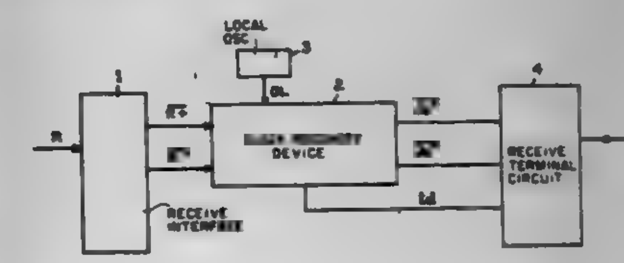
Claude Athenes; Jacques E. Salle, and Philippe Blouin, all of Colombes, France, assignors to Le Materiel Telephonique Thomson-CSF, Colombes, France

Filed Mar. 20, 1980, Ser. No. 139,104

Claims priority, application France, Mar. 26, 1979, 79 07536

Int. Cl.[3] H03B *3/06*

U.S. Cl. 375—119 4 Claims



1. A device for recovering the distant clock signal from one or more incident digital signals, comprising first means for generating a clock frequency having the same nominal frequency f as the distant clock signal from local oscillator means for producing a having a nominal frequency F, equal to nf, and said first means having a resetting input, second means including means for detecting the leading edges of the pulses of the received signal or signals and means for generating a synchronization pulse following each detection of a pulse leading edge, characterized by the fact that the second means has a resetting input and further includes means for regenerating the received signal or signals in the form of a signal or signals whose pulses are calibrated in width, and synchronous with, the local oscillator, first and second shift circuits, the output of said synchronization pulse generation means being connected to the input of said first shift circuit whose output is connected to said resetting input of the first means and also to the input of said second shift circuit which is selected as a function of the desired width of the regenerated pulses, and whose output is connected to said resetting input of the second means, and by the fact that the device further includes third means for retiming the regenerated pulses, said third means including a first shift circuit whose input is connected to the output of the first means and whose output produces the recovered distant clock, and a second shift circuit which includes for each received signal a shift system, the shift being the same for all the systems of the second shift circuit, whose input is connected to the output of the means regenerating the received signal and whose output produces a delayed signal, the number of shifts being selected such that the recovered clock signal retimes the pulses of the delayed signals obtained from the second circuit as late as possible, i.e. one local oscillator period before the end of each pulse in order to allow maximum possible jitter compensation.

4,327,443

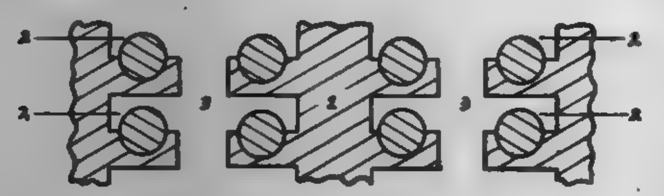
CAPILLARY LIQUID FUEL NUCLEAR REACTOR

Donald J. Cotton, 1101 3rd Street, S.W., Washington, D.C. 20024

Continuation-in-part of Ser. No. 912,731, Jun. 5, 1978, abandoned. This application Jan. 17, 1980, Ser. No. 112,739

Int. Cl.³ G21C *3/44*

U.S. Cl. 376—359 4 Claims



1. A nuclear reactor core comprised of a number of moderator components and fuel components wherein said fuel component is comprised of capillary fuel elements created by the method of confining a liquid fuel in a horizontal capillary trough to which said liquid fuel is nonadhesive so that a meniscus of said liquid fuel projects above said capillary trough edge, and said capillary fuel elements are arranged in a geometric and spatial pattern with support to form said fuel components; said fuel components are arranged in a geometric and spatial pattern in relationship to said moderator components with sufficient separation maintained between said components to create channels for a coolant to circulate therein; and the combination of said moderator components, said coolant, and said fuel components comprises a critical mass.

4,327,444

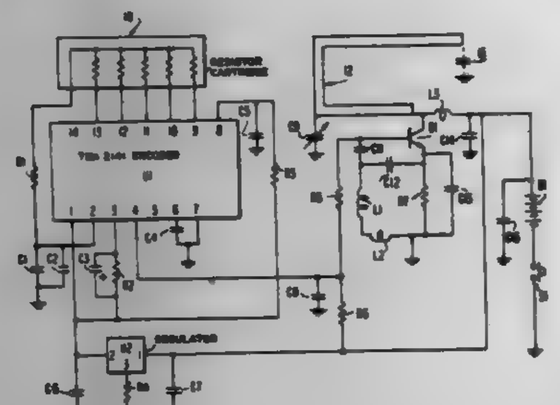
MINIATURE TRANSMITTER AND METHOD FOR MAKING SAME

Patrick R. J. Court, Los Angeles, Calif., assignor to TMX Systems Limited, Northern Ireland

Filed Jun. 4, 1979, Ser. No. 45,129

Int. Cl.³ H04B *1/034*

U.S. Cl. 455—100 40 Claims



1. A miniature hand-held radio-frequency transmitter comprising a housing; a fixed-frequency transmitter circuit mounted within said housing; battery means within said housing for powering said transmitter circuit; and switch means on the exterior of said housing, when operated, for controlling said transmitter circuit to generate a predetermined frequency; characterized by said transmitter circuit having a detuned antenna which is fed a signal which is integrally related, but not equal, to said predetermined frequency and which is tuned to a frequency which is slightly different from said signal such that the power radiated by the detuned antenna is at a level lower than the maximum power which would otherwise be radiated thereby, the clasping of said housing by a hand shifting the center frequency of the antenna characteristic toward the frequency of said signal such that absorption of radiated power by an enveloping hand is automatically compensated by hand-capacitance effects which shift the center frequency of the antenna characteristic toward the frequency of said signal so that the radiated power is approximately the same and equal to said lower level whether the transmitter operates in free space or is clasped by a hand.

4,327,445

FREQUENCY CONVERTER

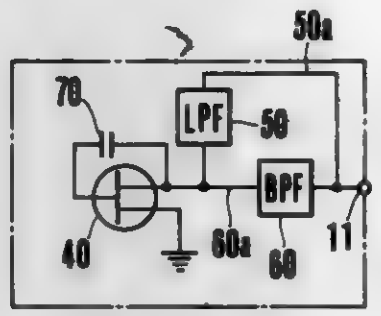
Masafumi Tanaka, Koganei, Japan, assignor to Hitachi Denshi Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 11, 1979, Ser. No. 56,472

Claims priority, application Japan, Jul. 14, 1978, 53-85087

Int. Cl.³ H04B *1/04, 1/28*

U.S. Cl. 455—118 4 Claims



2. In a frequency converter comprising a frequency converting circuit including a self-excited type oscillator; input filter means coupled to said frequency converting circuit for frequency filtering signals input thereto over a first frequency range, said input filter means including a low pass filter for passing an intermediate frequency; output filter means coupled to said frequency converting circuit for frequency filtering signals supplied by said frequency converting circuit over a second frequency range, said output filter means including a band pass filter for passing the signal output of the oscillator, said first frequency range being different from said second frequency range; and a single terminal coupled to the input of said input filter means for supplying input signals thereto and coupled to the output of said output filter means for supplying output signals therefrom.

4,327,446

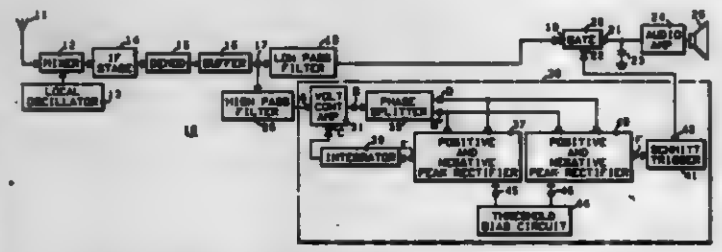
NOISE BLANKER WHICH TRACKS AVERAGE NOISE LEVEL

Roger W. Dressler, Palatine, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 32,625, Apr. 23, 1979, abandoned. This application Aug. 12, 1980, Ser. No. 177,341

Int. Cl.³ H04B *1/10*

U.S. Cl. 455—223 12 Claims



1. A noise blanker circuit for eliminating inpulse noise in a received information signal, comprising:

terminal means for receiving an input signal comprising an information signal which is accompanied by background noise and noise impulses;

noise detection means coupled to said terminal means for receiving said input signal and producing a noise detect signal related to said background noise and noise impulses but substantially independent of said information signal, said noise detect signal having peak magnitudes;

blanking pulse generating means coupled to said noise detection means for receiving said noise detect signal and producing noise blanking pulses in response thereto; and

controllable gate means coupled to said blanking pulse generating means and said terminal means for receiving said input signal and said noise blanking pulses and selectively passing and blocking said input signal in response to said noise blanking pulse;

wherein the improvement comprises said blanking pulse generating means including in combination;

noise amplifier means for receiving said noise detect signal and producing at an output terminal an amplified noise output signal, comprising amplified background noise and noise impulses, in response to said noise detect signal, said noise amplifier means substantially maintaining peak magnitudes of the amplified output signal at a first predetermined level by controlling the gain of said noise amplifier means in accordance with the average of the peak magnitudes of said noise detect signal; and

threshold switch means for receiving said amplified output signal and producing said blanking pulses in response to said amplified output signal exceeding a second predetermined level greater in absolute magnitude than said first predetermined level;

wherein said noise amplifier means includes circuitry including rectifier means and integrator means for controlling said noise amplifier gain by producing a DC control signal which is determined by the average of the peak magnitudes of said noise detect signal and wherein said DC control signal determines the gain of said noise amplifier means, wherein occasional large magnitude noise impulses in said noise detect signal which do not substantially change the average peak magnitude of said noise detect signal will result in blanking pulses since the gain of the noise amplifier means and said control signal will not be substantially changed in response to these large magnitude noise impulses.

DESIGN PATENTS

GRANTED APR. 27, 1982

ERRATA

For CLASS	See PATENT NO.
D32-037	264,040
D34-038	264,066
D34-038	264,067
D32-023	264,087

DESIGNS

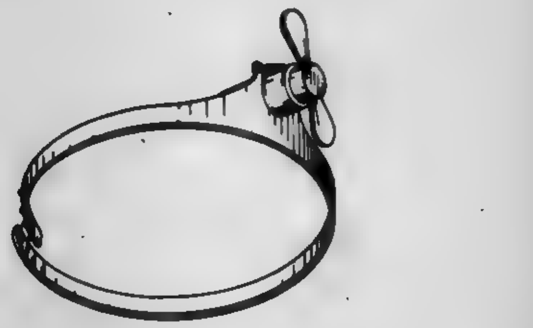
APRIL 27, 1982

264,015
CHOCOLATE CHRISTMAS TREE
Luigi Criveller, 64 Windward Dr., Apt. 604, St. Catharines, Ontario, Canada
Filed Nov. 30, 1979, Ser. No. 99,156
Claims priority, application Canada, Jun. 19, 1979, 19-06-79-1
Term of patent 14 years
Int. Cl. D01—*01*

U.S. Cl. D1—19

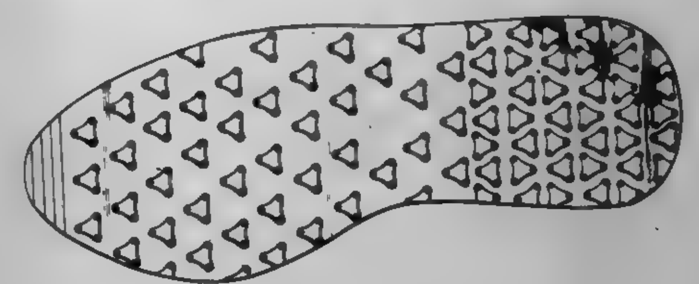
264,016
HEAD MOUNTED FAN
Mark E. Fournier, 3808 E. Dahlia, Phoenix, Ariz. 85032
Filed Feb. 7, 1980, Ser. No. 119,524
Term of patent 14 years
Int. Cl. D2—*03*

U.S. Cl. D2—253



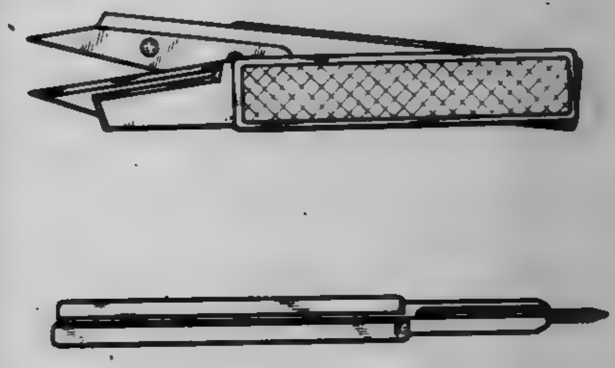
264,017
CLEATED SHOE SOLE
Jerome Turner, 7 Greenheather Ct., Pikesville, Md. 21208
Filed Jan. 29, 1979, Ser. No. 7,107
Term of patent 14 years
Int. Cl. D2—*04*

U.S. Cl. D2—320



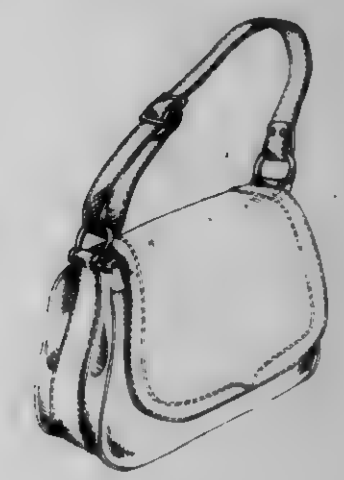
264,018
THREAD SNIPS
Clair H. Gingher, Jr., Greensboro, N.C., assignor to Gingher, Inc., Greensboro, N.C.
Filed Dec. 17, 1979, Ser. No. 104,295
Term of patent 14 years
Int. Cl. D08—*03*

U.S. Cl. D3—18

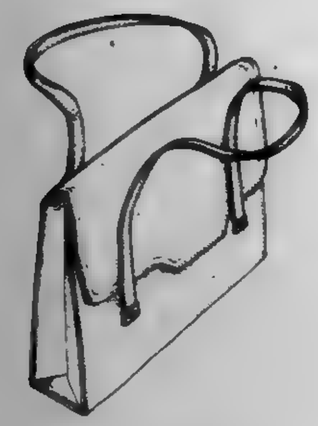


264,019
HANDBAG
Otto K. Schimmel, Scottsdale, Ariz., assignor to AMBA Marketing Systems, Inc., Tempe, Ariz.
Filed Jul. 14, 1980, Ser. No. 168,579
Term of patent 14 years
Int. Cl. D3—*01*

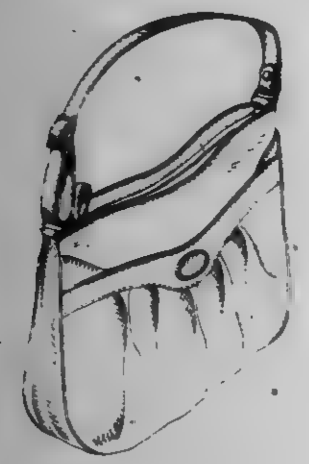
U.S. Cl. D3—52



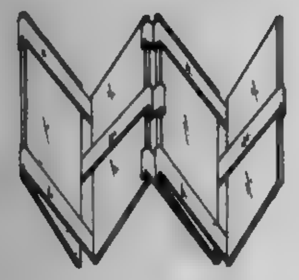
264,020
HANDBAG
Otto K. Schimmel, Scottsdale, Ariz., assignor to AMBA Marketing Systems, Inc., Tempe, Ariz.
Filed Jul. 14, 1980, Ser. No. 168,580
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D3—52



264,021
HANDBAG
Otto K. Schimmel, Scottsdale, Ariz., assignor to AMBA Marketing Systems, Inc., Tempe, Ariz.
Filed Jul. 14, 1980, Ser. No. 168,578
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D3—53



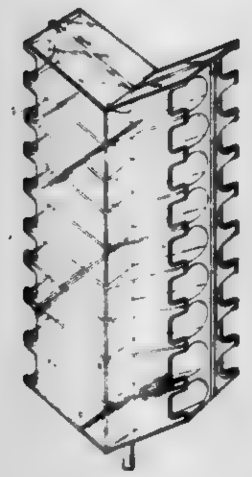
264,022
PHOTOGRAPH CARRIER
Philip B. Wayman, 1057 California Ave., Salt Lake City, Utah 84104
Filed Apr. 18, 1979, Ser. No. 31,234
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D3—60



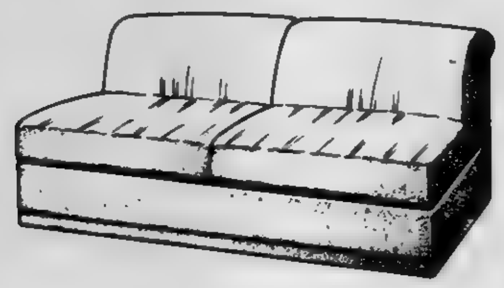
264,023
LUGGAGE
Ted Stark, Jersey City, N.J., assignor to M & M Luggage Co., Inc., Jersey City, N.J.
Filed Jan. 12, 1981, Ser. No. 224,330
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D3—71

264,024
LUGGAGE
Ted Stark, Jersey City, N.J., assignor to M & M Luggage Co., Inc., Jersey City, N.J.
Filed Jan. 15, 1981, Ser. No. 225,415
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D3—71

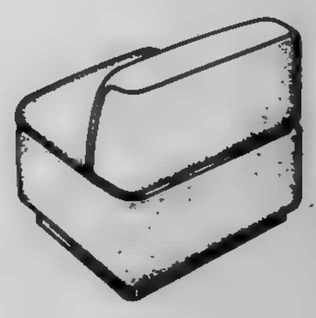
264,025
EYEGLASS DISPLAY RACK
Robert P. Franklin, Lake Hopatcong, and John G. Dewees, Morristown, both of N.J., assignors to Trans-World Manufacturing Corp., Little Ferry, N.J.
Division of Ser. No. 19,779, Mar. 12, 1979, Pat. No. Des. 258,099. This application Mar. 4, 1980, Ser. No. 127,222
Term of patent 14 years
Int. Cl. D20—*02*
U.S. Cl. D6—24



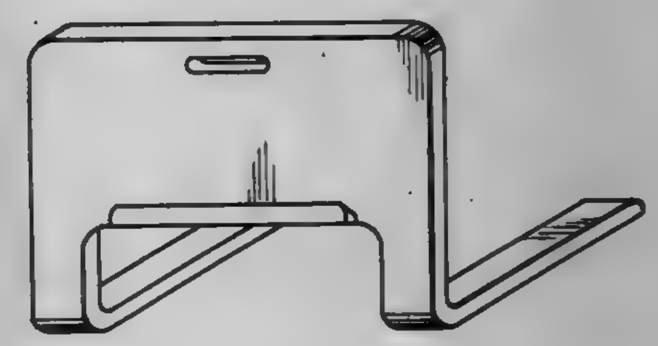
264,026
SOFA
John Mascheroni, 200 E. 64th St., New York, N.Y. 10021
Filed Aug. 29, 1979, Ser. No. 70,776
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—61



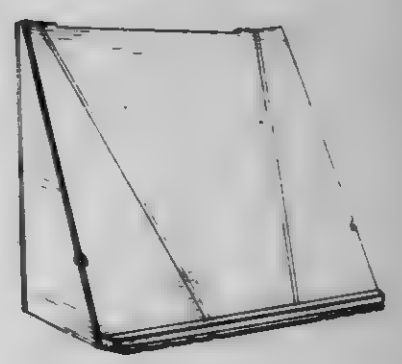
264,027
CHAIR
Robert J. Aronowitz, New York, and Bernard D. Katzneck, Brooklyn, both of N.Y., assignors to Robert Bernard Associates, Brooklyn, N.Y.
Filed Sep. 12, 1979, Ser. No. 74,612
The portion of the term of this patent subsequent to Nov. 24, 1998, has been disclaimed.
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—66



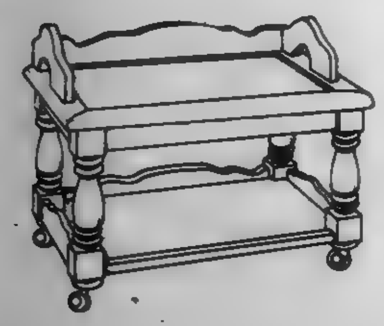
264,028
BOOK STAND
Dorothy H. Kellogg, 1711 G St. #7, Sacramento, Calif. 95814
Filed Jun. 25, 1979, Ser. No. 51,437
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D6—184



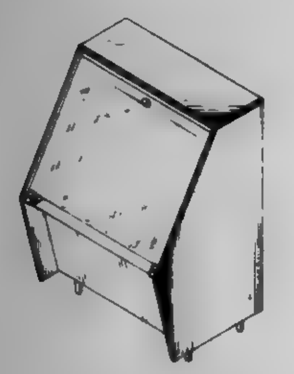
264,029
COLLAPSIBLE ARTICLE SUPPORT OR SIMILAR ARTICLE
Donald B. Smith, R.R. No. 1, Mount Brydges, Ontario, Canada (N0L 1W0)
Filed Jul. 12, 1979, Ser. No. 56,812
Claims priority, application Canada, Jun. 4, 1979, 04-06-79-6
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D6—184



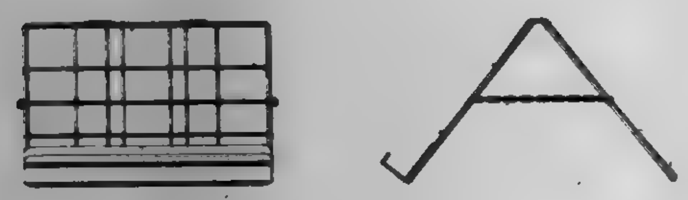
264,030
TABLE
Samuel T. Collins, Bassett, Va., assignor to Trend Line Furniture Corporation, Amsterdam, N.Y.
Filed Apr. 12, 1979, Ser. No. 29,245
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—153



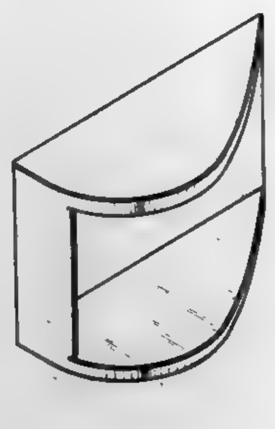
264,031
COMBINED FOOD PATTIE DISPLAY AND DISPENSER CABINET
Egon Sorensen, Cheyenne, Wyo., assignor to AMF Incorporated, White Plains, N.Y.
Filed Feb. 25, 1980, Ser. No. 124,367
Term of patent 14 years
Int. Cl. D06—*04*
U.S. Cl. D6—173



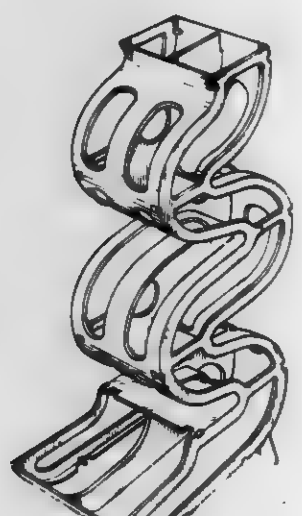
264,032
COMBINED NEWSPAPER AND BOOK HOLDER
Robert J. Rule, 709 Forrest Ave., Kansas City, Mo. 64106
Filed Dec. 3, 1979, Ser. No. 99,327
Term of patent 14 years
Int. Cl. D6—*06*; D19—*02*
U.S. Cl. D6—180



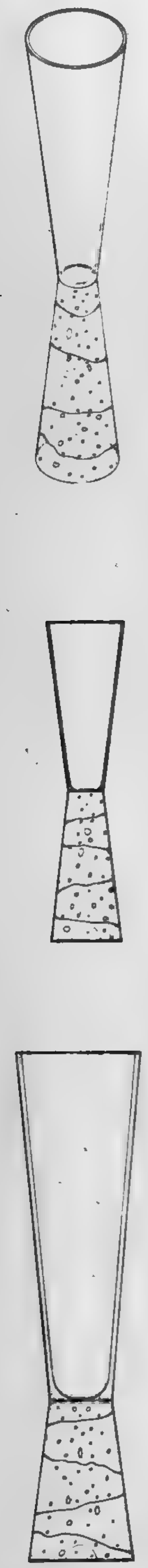
264,033
SHELVING UNIT
Frederick E. Markus, 20 Park Ave., Belmont, Mass. 02178
Filed Sep. 20, 1979, Ser. No. 77,296
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—186



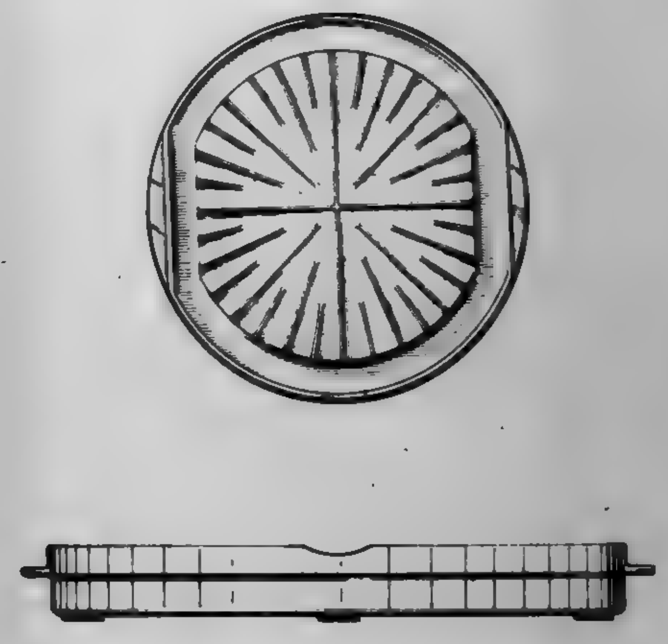
264,034
COMBINED DISPLAY AND DISPENSER FOR CANDY CONTAINERS OR THE LIKE
Amilcare Dogliotti, Alba, Italy, assignor to P. Ferrero & C. S.p.A., Alba, Italy
Filed Feb. 20, 1980, Ser. No. 122,904
Claims priority, application United Kingdom, Aug. 31, 1979, 991376/79
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—189



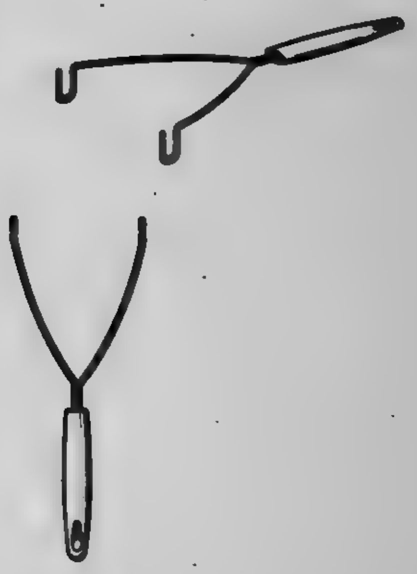
264,035
GOBLET
Timo Sarpaneva, Helsinki, Finland, assignor to A. Ahlstrom Osakeyhtio, Noormarkku, Finland
Filed Nov. 9, 1979, Ser. No. 92,761
Claims priority, application Finland, May 18, 1979, 79334
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—13



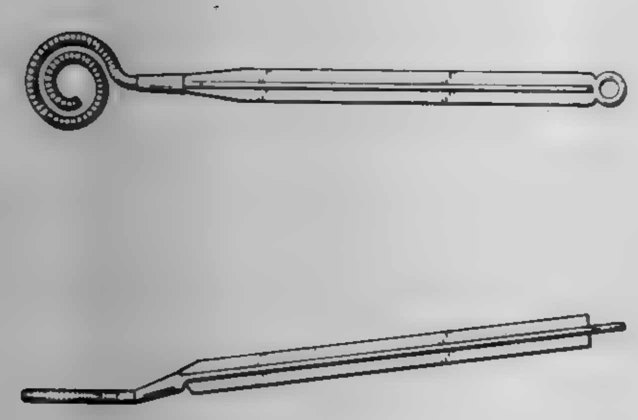
264,036
ROASTING RACK FOR FOOD
James F. Pomroy, St. Paul, Minn., and Albert E. Colato, Valencia, Calif., assignors to Plastics, Inc., St. Paul, Minn.
Filed Apr. 11, 1980, Ser. No. 139,239
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—94



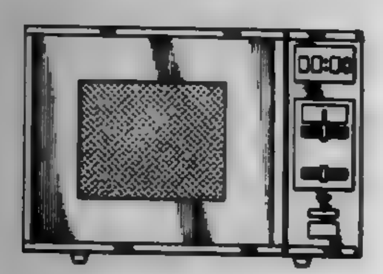
264,037
OVEN RACK MOVING TOOL
Ruth M. Johnson, 3537 W. 28th St., Minneapolis, Minn. 55416
Filed Dec. 5, 1979, Ser. No. 100,339
Term of patent 14 years
Int. Cl. D7—*99*
U.S. Cl. D7—99



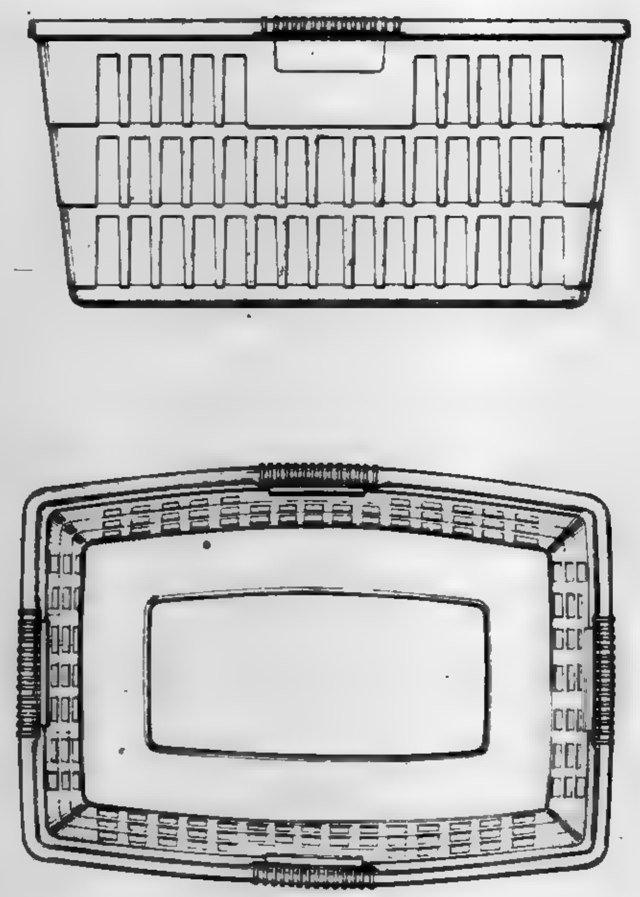
264,038
CANDY DIPPING TOOL
Ervan E. Guttman, Cincinnati, Ohio, assignor to The Ervan Guttman Company, Cincinnati, Ohio
Filed May 22, 1980, Ser. No. 152,506
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D7—103



264,039
MICROWAVE OVEN
Yoshio Suganoya, and Takao Miyake, both of Osaka, Japan, assignors to Sharp Corporation, Osaka, Japan
Filed May 25, 1979, Ser. No. 42,625
Claims priority, application Japan, Dec. 4, 1978, 53-51511
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—128

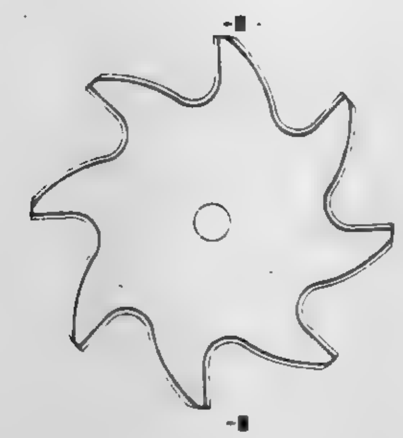


264,040
LAUNDRY BASKET
Walter A. Kunze, Coraopolis, Pa., assignor to Cities Service Company, Tulsa, Okla.
Filed Jul. 16, 1979, Ser. No. 57,876
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D32—37

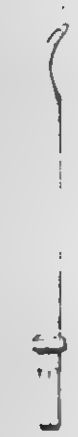


264,041
HAND-HELD ROPE WICK APPLICATOR
Ricks H. Pluenneke, Rte. 7, Box 441E, Fort Worth, Tex. 76119
Filed Jun. 3, 1980, Ser. No. 156,086
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—02

264,042
BLADE FOR POWER SCYTHE
Hisashi Inaga, Tokyo, and Masato Nogawa, Yokohama, both of Japan, assignors to Kioritz Corporation, Tokyo, Japan
Filed Jun. 5, 1979, Ser. No. 45,748
Claims priority, application Japan, Mar. 13, 1979, 54-9885
Term of patent 14 years
Int. Cl. D8—*03*; D15—*03*
U.S. Cl. D8—20

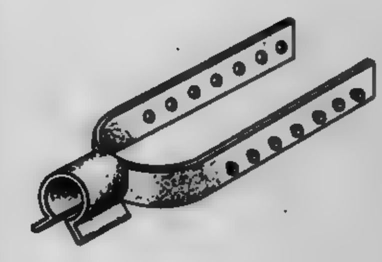


264,043
TIRE IMPLEMENT OR THE LIKE
Luther E. Edwards, 105 Oglesby Rd., Morehead City, N.C. 28557
Filed Feb. 25, 1980, Ser. No. 124,604
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—31

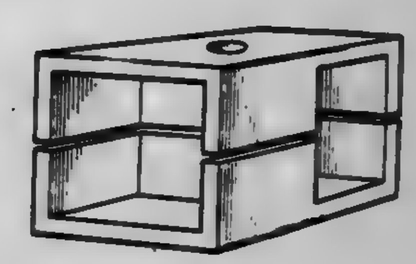


264,044
CAR DOOR UNLOCKING AND LOCKING DEVICE
Achille Lazazzera, 5721 Sheridan Rd., Youngstown, Ohio 44514
Filed Jan. 18, 1979, Ser. No. 4,568
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—88

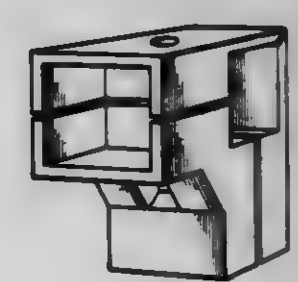
264,045
ADJUSTABLE ELECTRICAL CORD CLAMP
James M. Elliot, 3163 Coolidge Ave., Oakland, Calif. 94602; Eric A. Rickel, and Terri F. Rickel, both of 18018 Lazy Dog Rd., Nevada City, Calif. 95959
Filed Mar. 24, 1980, Ser. No. 133,357
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—355



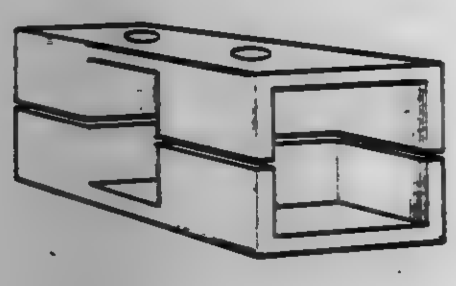
264,046
COUPLING
Bengt Magner, Mellösa, Sweden, assignor to Opto-System AB, Mellösa, Sweden
Filed Sep. 26, 1979, Ser. No. 79,104
Claims priority, application Sweden, Mar. 30, 1979, 79-0820
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—382



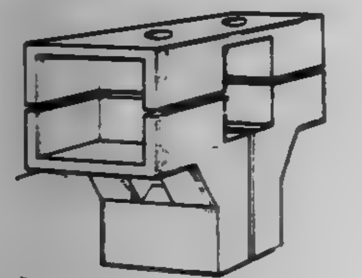
264,047
COUPLING
Bengt Magner, Mellösa, Sweden, assignor to Opto-System AB, Mellösa, Sweden
Filed Sep. 27, 1979, Ser. No. 79,447
Claims priority, application Sweden, Mar. 30, 1979, 79-0820
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—382



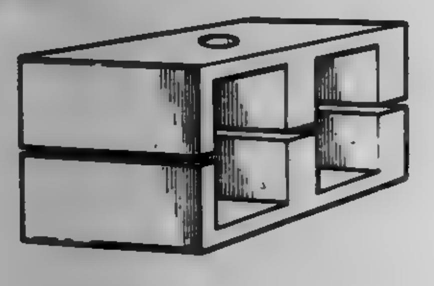
264,048
COUPLING OF AT LEAST TWO TUBES OR RODS CONNECTED THEREBY
Bengt Magner, Mellösa, Sweden, assignor to Opto-System AB, Mellösa, Sweden
Filed Sep. 27, 1979, Ser. No. 79,448
Claims priority, application Sweden, Mar. 30, 1979, 79-0820
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—382



264,049
COUPLING OF AT LEAST TWO TUBES OR RODS CONNECTED THEREBY
Bengt Magner, Mellösa, Sweden, assignor to Opto-System AB, Mellösa, Sweden
Filed Sep. 27, 1979, Ser. No. 79,449
Claims priority, application Sweden, Mar. 30, 1979, 79-0820
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—382

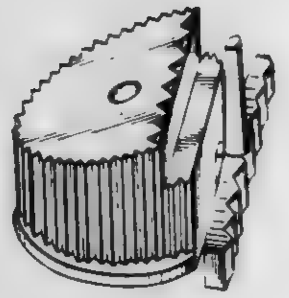


264,050
COUPLING OF AT LEAST TWO TUBES OR RODS CONNECTED THEREBY
Bengt Magner, Mellösa, Sweden, assignor to Opto-System AB, Mellösa, Sweden
Filed Sep. 27, 1979, Ser. No. 79,450
Claims priority, application Sweden, Mar. 30, 1979, 79-0820
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—382



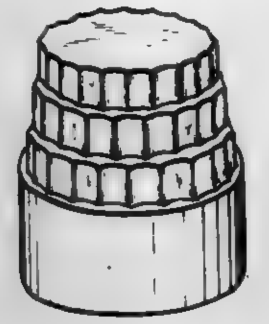
264,051
BOTTLE
Mirta R. Perales, 214 Andalusia Ave., Coral Gables, Fla. 33134
Filed Mar. 13, 1980, Ser. No. 130,025
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—404

264,052
COMBINED DISPENSER CAP AND SEPARABLE CLOSURE PLUG THEREFOR
Alan H. Bailey, Middlesbrough, England, assignor to USM Corporation, Farmington, Conn.
Filed Dec. 1, 1978, Ser. No. 965,728
Claims priority, application United Kingdom, Jun. 6, 1978, 984943/78
Term of patent 14 years
Int. Cl. D9—*07*
U.S. Cl. D9—449



264,053
DISPENSER SPOUT FOR A SQUEEZE-TYPE CONTAINER
Han S. Ma, 1450 Cooper Rd., Hoffman Estates, Ill. 60195, and Michael Melnik, 950 Washington Blvd., Oak Park, Ill. 60302
Filed Dec. 19, 1979, Ser. No. 105,198
Term of patent 14 years
Int. Cl. D9—*99*
U.S. Cl. D9—442

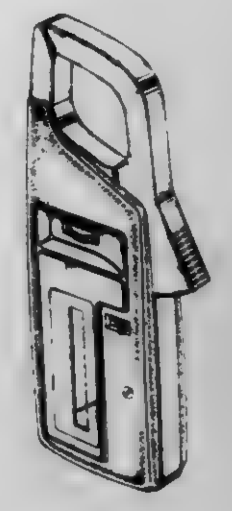
264,054
SPRAY CAN CAP
Lothar Kieber, Mülheim an der Ruhr, Fed. Rep. of Germany, assignor to Deutsche Calypsolgesellschaft mbH & Co., Dusseldorf, Fed. Rep. of Germany
Filed Feb. 1, 1980, Ser. No. 117,594
Claims priority, application Fed. Rep. of Germany, Aug. 9, 1979, MR 4956
Term of patent 14 years
Int. Cl. D9—*07*
U.S. Cl. D9—453



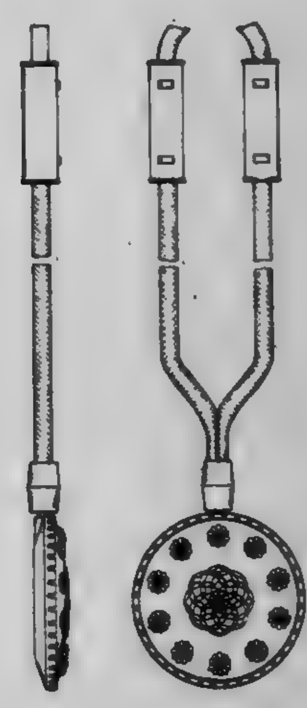
264,055
WATCH
Susumu Suzuki, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan
Filed Apr. 23, 1980, Ser. No. 142,947
Claims priority, application Japan, Oct. 26, 1979, 54-45134
Term of patent 3½ years
Int. Cl. D10—*02*
U.S. Cl. D10—38

264,056
WATCH
Susumu Suzuki, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan
Filed Apr. 23, 1980, Ser. No. 142,948
Claims priority, application Japan, Oct. 26, 1979, 54-45133
Term of patent 3½ years
Int. Cl. D10—*02*
U.S. Cl. D10—38

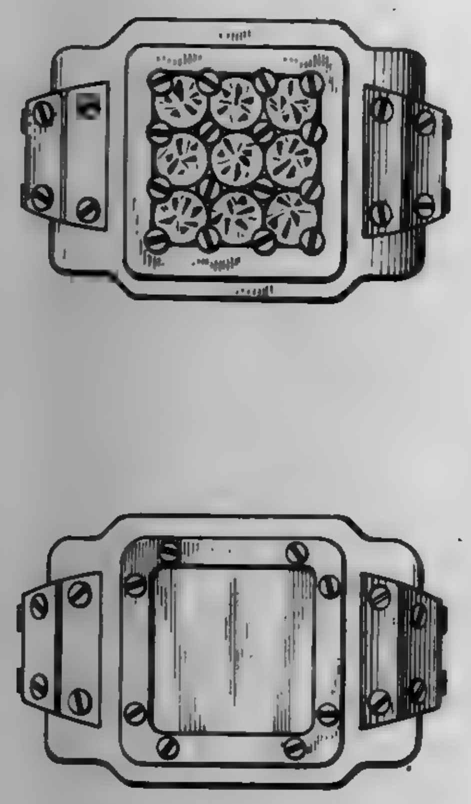
264,057
VOLT-OHM-AMMETER OR THE LIKE
Takeo Kuramoto, Tokyo, Japan, assignor to Kyoritsu Electrical Instruments Works, Ltd., Tokyo, Japan
Filed Sep. 10, 1979, Ser. No. 73,958
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—79



264,058
NECKLACE WITH ILLUMINABLE PENDANT
Miroslav Gordan, 2958 S. Laramie Ave., Cicero, Ill. 60650
Filed Jan. 3, 1980, Ser. No. 109,323
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—7



264,059
FINGER RING OR SIMILAR ARTICLE
Josef J. Barr, 125 Worth Ave., Palm Beach, Fla. 33480
Filed May 28, 1980, Ser. No. 153,935
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—34



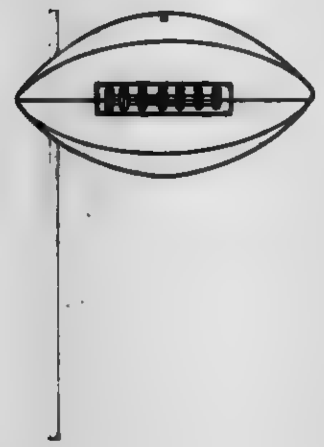
264,060
EARRING
Elias Epstein, Flushing, N.Y., assignor to Kasper & Esh, Inc., New York, N.Y.
Filed Jan. 4, 1980, Ser. No. 109,463
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—40

264,061
FIGURINE OF A SEAL PUP
Jesus A. C. Santa Eulalia, and Javier B. C. Santa Eulalia, both of Montevideo, Uruguay, assignors to John J. Madison Company, Inc., Laguna Hills, Calif.
Filed Dec. 17, 1979, Ser. No. 104,695
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—158

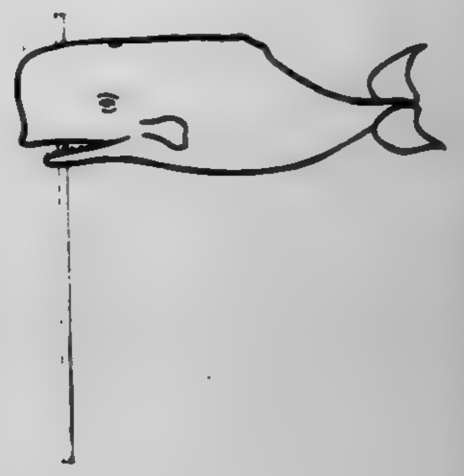
264,062
PENNANT
Larry B. Ornatek, 100 - 14th St., North Chicago, Ill. 60064
Filed Mar. 13, 1980, Ser. No. 115,895
Term of patent 3½ years
Int. Cl. D11—*05*
U.S. Cl. D11—166

264,063
PENNANT
Larry B. Ornatek, 100 - 14th St., North Chicago, Ill. 60064
Filed Mar. 13, 1980, Ser. No. 115,896
Term of patent 3½ years
Int. Cl. D11—*05*
U.S. Cl. D11—166

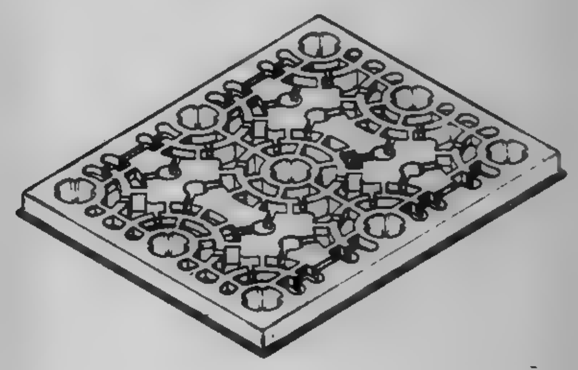
264,064
PENNANT
Larry B. Ornatek, 100 - 14th St., North Chicago, Ill. 60064
Filed Mar. 13, 1980, Ser. No. 116,018
Term of patent 3½ years
Int. Cl. D11—*05*
U.S. Cl. D11—166



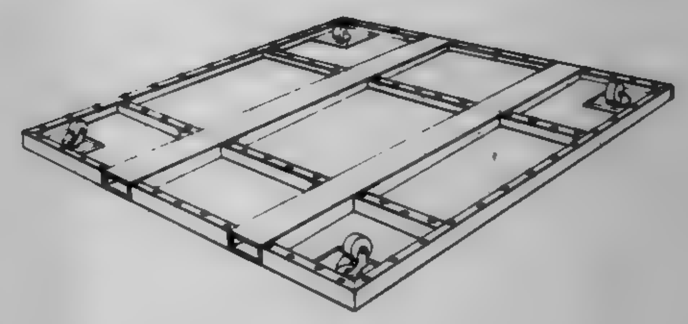
264,065
PENNANT
Larry B. Ornatek, 100-14th St., North Chicago, Ill. 60064
Filed Mar. 13, 1980, Ser. No. 116,047
Term of patent 3½ years
Int. Cl. D11—*05*
U.S. Cl. D11—166



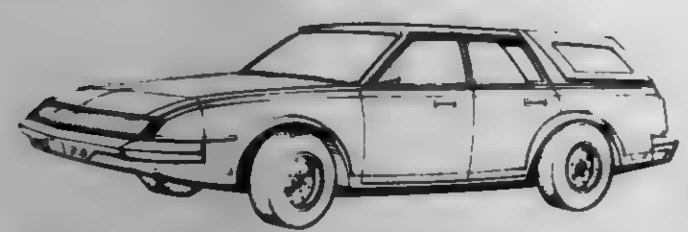
264,066
PALLET
Cecil H. Smith, and Bijan Mohraz, both of Dallas, Tex., assignors to Imperial Plastics Corporation, Dallas, Tex.
Filed Jan. 10, 1980, Ser. No. 110,913
Term of patent 14 years
Int. Cl. D9—*08*
U.S. Cl. D34—38



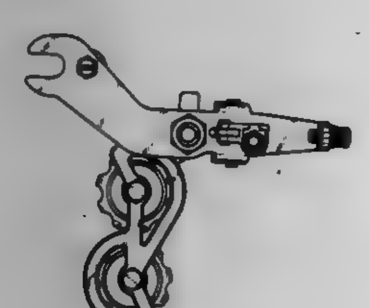
264,067
PALLET
Claes Nordström, Sigvard Grubbesgatan 12, S-230 40 Bara, Sweden
Filed Jan. 15, 1980, Ser. No. 112,180
Claims priority, application Sweden, Jul. 19, 1979, 79-1682
Term of patent 14 years
Int. Cl. D9—*08*
U.S. Cl. D34—38



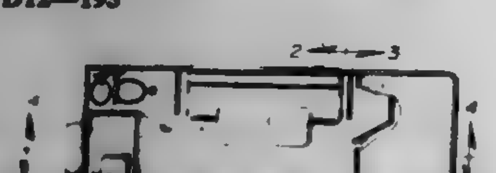
264,068
AUTOMOBILE
Henry D. Lauve, Troy, Mich., assignor to Electric Fuel Propulsion Corp., Troy, Mich.
Filed Oct. 23, 1979, Ser. No. 87,623
Term of patent 14 years
Int. Cl. D12—*08*
U.S. Cl. D12—91



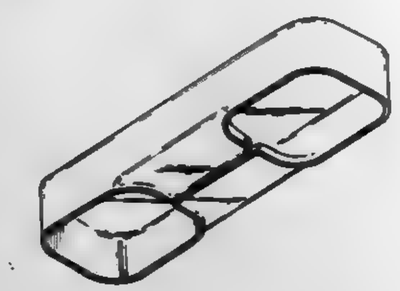
264,069
BICYCLE REAR DERAILLEUR
Nobuo Ozaki, Osaka, Japan, assignor to Maeda Industries, Ltd., Osaka, Japan
Filed Apr. 17, 1979, Ser. No. 30,740
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—124



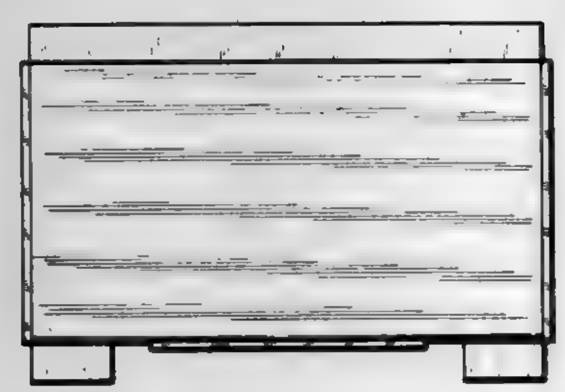
264,070
CAMPER INTERIOR
David E. Rowe, 2890 W. 62nd Ave., Denver, Colo. 80221
Filed Jan. 29, 1979, Ser. No. 7,416
Term of patent 14 years
Int. Cl. D12—*08*
U.S. Cl. D12—195



264,071
INSULATOR FOR BATTERY CONNECTORS
Ian D. MacKnight-Thomson, Plumsteadville, Pa., assignor to Arbonite Corporation, Doylestown, Pa.
Filed Oct. 4, 1979, Ser. No. 81,878
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—17

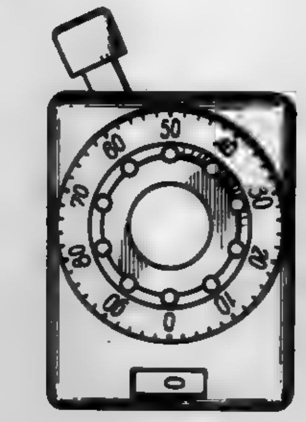


264,072
ELECTRICAL CONNECTOR
Nils G. Jonsson, Dunwoody, Ga., assignor to National Service Industries, Inc., Atlanta, Ga.
Filed Jan. 18, 1980, Ser. No. 113,225
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—24



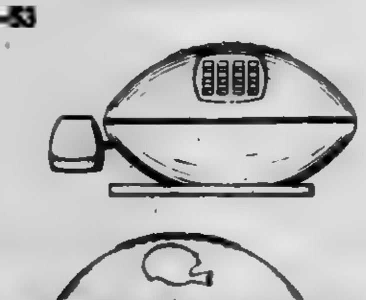
264,073
ELECTRICAL CONNECTOR
Nils G. Jonsson, Dunwoody, Ga., assignor to National Service Industries, Inc., Atlanta, Ga.
Filed Jan. 18, 1980, Ser. No. 113,395
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—24

264,074
DIAL FOR USE WITH ELECTRONIC INSTRUMENTS
Eitaro Shimoda, 322, Ichinotsubo, Nakahara-ku, Kawasaki-shi, Kanagawa-ken, Japan
Filed Aug. 24, 1977, Ser. No. 827,385
Claims priority, application Japan, Mar. 22, 1977, 52-10345
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—32

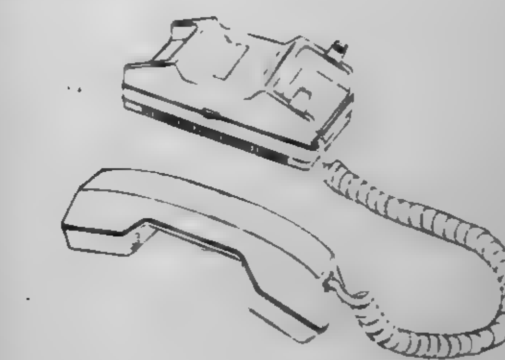


264,075
LOUD SPEAKER ENCLOSURE
Michael Levy, 160-15 Powels Cove Blvd., Beechhurst, N.Y. 11357
Filed Dec. 5, 1979, Ser. No. 100,647
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—33

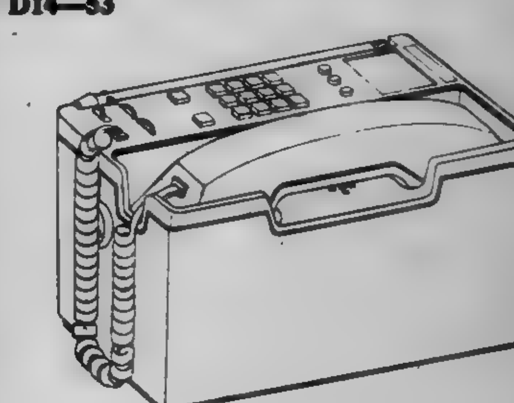
264,076
TELEPHONE
Steve D. Adams, Jr., 473 79th St., S., St. Petersburg, Fla. 33707
Filed Sep. 5, 1979, Ser. No. 72,664
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—53

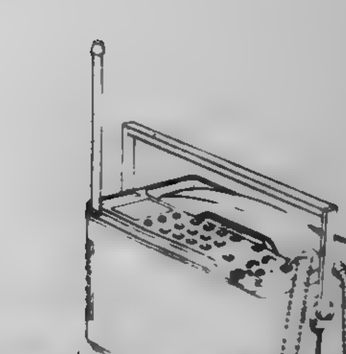


264,077
TELEPHONE SET
Hisao Fukushima, and Junji Hirooka, both of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan
Filed Sep. 24, 1979, Ser. No. 78,173
Claims priority, application Japan, Apr. 13, 1979, 54-014625
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—53

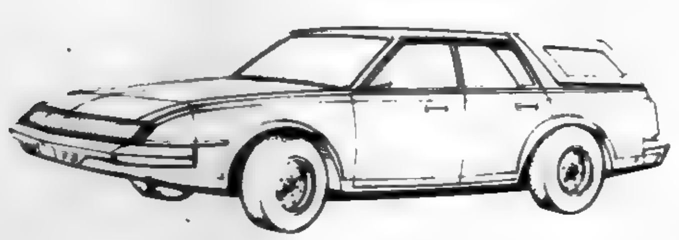


264,078
PORTABLE WIRELESS TELEPHONE SET
Hisao Fukushima, and Junji Hirooka, both of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan
Filed Oct. 5, 1979, Ser. No. 82,147
Claims priority, application Japan, Apr. 12, 1979, 54-014472
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—53

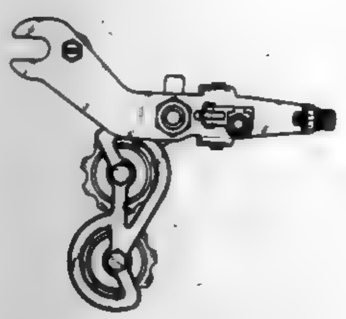




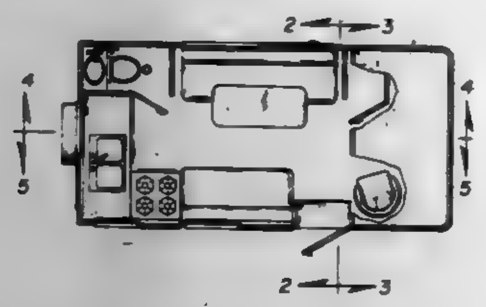
264,068
AUTOMOBILE
Henry D. Lauve, Troy, Mich., assignor to Electric Fuel Propulsion Corp., Troy, Mich.
Filed Oct. 23, 1979, Ser. No. 87,623
Term of patent 14 years
Int. Cl. D12—*08*
U.S. Cl. D12—91



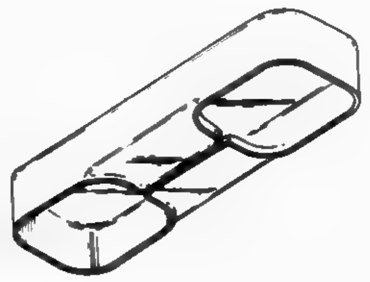
264,069
BICYCLE REAR DERAILLEUR
Nobuo Ozaki, Osaka, Japan, assignor to Maeda Industries, Ltd., Osaka, Japan
Filed Apr. 17, 1979, Ser. No. 30,740
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—124



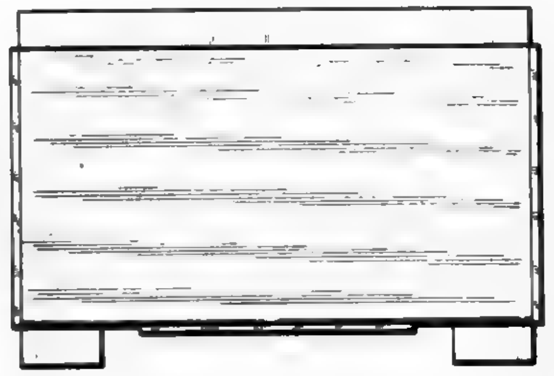
264,070
CAMPER INTERIOR
David E. Rowe, 2890 W. 62nd Ave., Denver, Colo. 80221
Filed Jan. 29, 1979, Ser. No. 7,416
Term of patent 14 years
Int. Cl. D12—*08*
U.S. Cl. D12—195



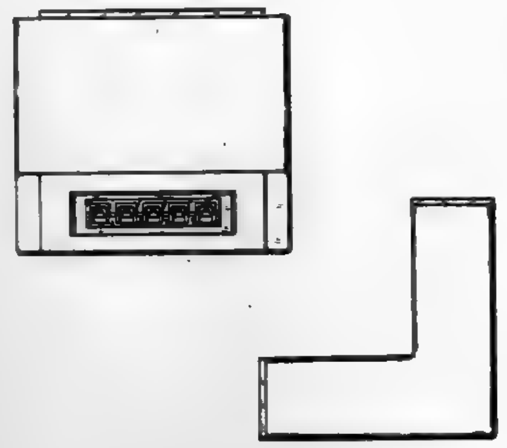
264,071
INSULATOR FOR BATTERY CONNECTORS
Ian D. MacKnight-Thomson, Plumsteadville, Pa., assignor to Arbonite Corporation, Doylestown, Pa.
Filed Oct. 4, 1979, Ser. No. 81,878
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—17



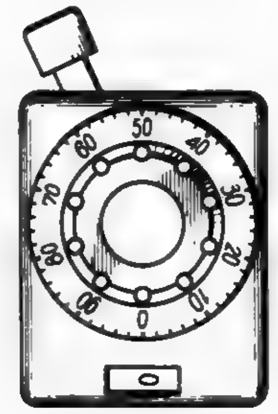
264,072
ELECTRICAL CONNECTOR
Nils G. Jonsson, Dunwoody, Ga., assignor to National Service Industries, Inc., Atlanta, Ga.
Filed Jan. 18, 1980, Ser. No. 113,225
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—24



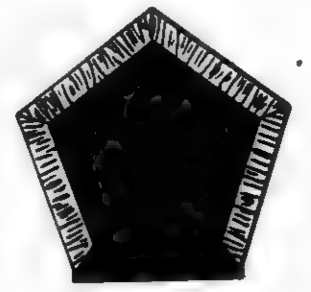
264,073
ELECTRICAL CONNECTOR
Nils G. Jonsson, Dunwoody, Ga., assignor to National Service Industries, Inc., Atlanta, Ga.
Filed Jan. 18, 1980, Ser. No. 113,395
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—24



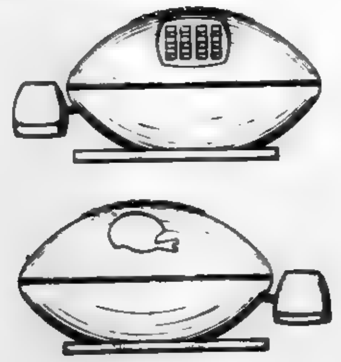
264,074
DIAL FOR USE WITH ELECTRONIC INSTRUMENTS
Eitaro Shimoda, 322, Ichinotsubo, Nakahara-ku, Kawasaki-shi, Kanagawa-ken, Japan
Filed Aug. 24, 1977, Ser. No. 827,385
Claims priority, application Japan, Mar. 22, 1977, 52-10345
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—32



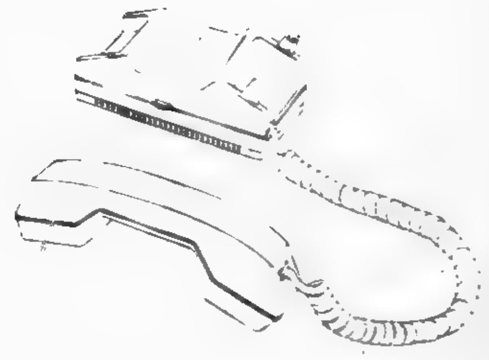
264,075
LOUD SPEAKER ENCLOSURE
Michael Levy, 160-15 Powels Cove Blvd., Beechhurst, N.Y. 11357
Filed Dec. 5, 1979, Ser. No. 100,647
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—33



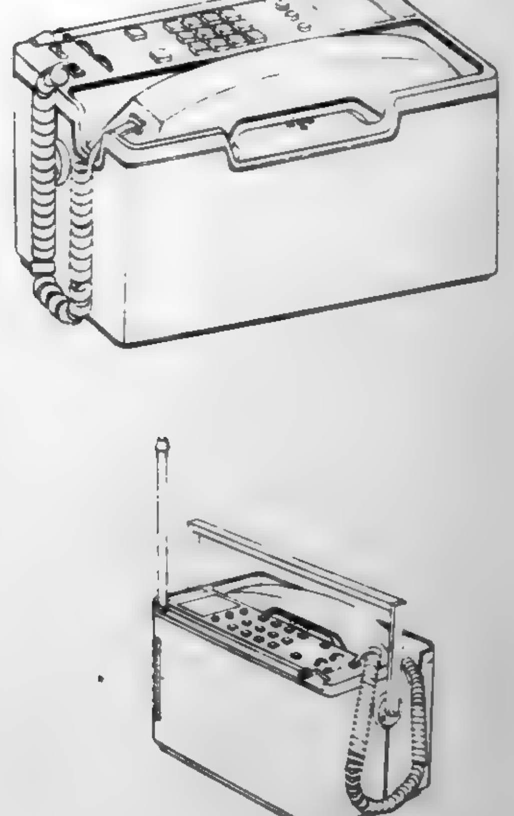
264,076
TELEPHONE
Steve D. Adams, Jr., 473 79th St., S., St. Petersburg, Fla. 33707
Filed Sep. 5, 1979, Ser. No. 72,664
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—53



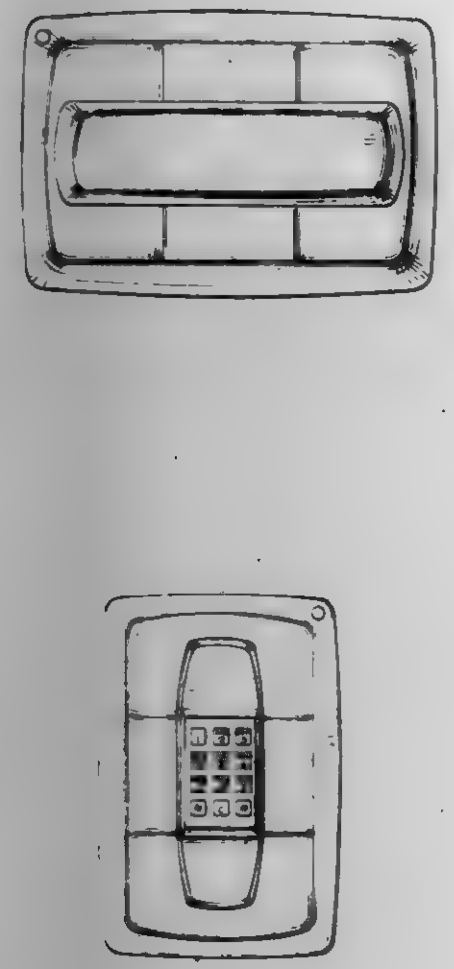
264,077
TELEPHONE SET
Hisao Fukushima, and Juaji Hirooka, both of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan
Filed Sep. 24, 1979, Ser. No. 78,175
Claims priority, application Japan, Apr. 13, 1979, 54-014625
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—53



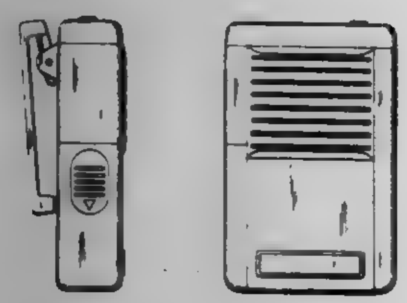
264,078
PORTABLE WIRELESS TELEPHONE SET
Hisao Fukushima, and Juaji Hirooka, both of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan
Filed Oct. 5, 1979, Ser. No. 82,147
Claims priority, application Japan, Apr. 12, 1979, 54-014472
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—53



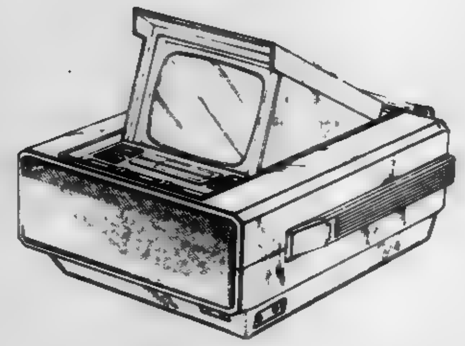
264,079
ELECTRONIC TELEPHONE UNIT
Fred Peterson, 1219 Tische Rd., Jefferson, Ohio 44047
Filed Oct. 26, 1979, Ser. No. 88,580
Term of patent 3½ years
Int. Cl. D14—*03*
U.S. Cl. D14—53



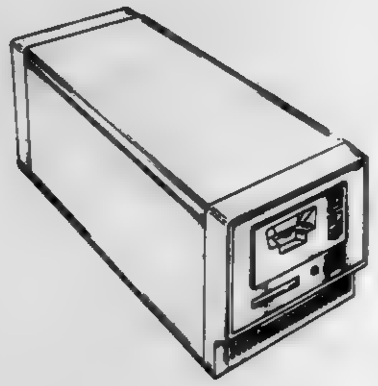
264,080
PAGING RECEIVER
Keisuke Iwata, Mansei Bldg., 1-16, 1-Chome, Soto-Kanda, Chiyoda-Ku, Tokyo, Japan
Filed Feb. 15, 1980, Ser. No. 121,665
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—70



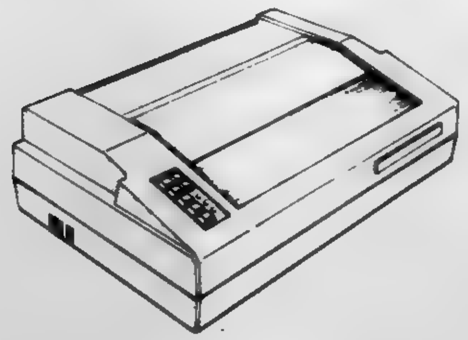
264,081
COMBINED RADIO AND TELEVISION RECEIVER
Isao Sekita, Kyoto; Kiyoshi Suzuki, Ibaraki; Kazuyoshi Sugisaki, Kyoto; Kenichi Ito, Kawanishi; Masaki Yamamoto, Kyoto, and Kazunori Mano, Ibaraki, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed May 29, 1980, Ser. No. 154,566
Claims priority, application Japan, Dec. 3, 1979, 54-50714[U]
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—70



264,082
MEDIA CONVERTER UNIT FOR A MAGNETIC CARD FOR DATA PROCESSING DISPLAY SYSTEM
Claude H. Hutcheson, Garland, Tex., assignor to Xerox Corporation, Stamford, Conn.
Filed Oct. 10, 1979, Ser. No. 83,433
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D14—107

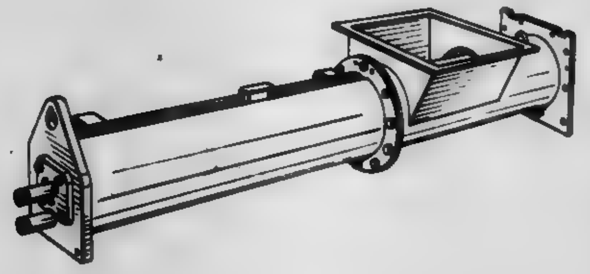


264,083
PRINTER HOUSING
Bernard A. Grae, Fort Worth, Tex., assignor to Tandy Corporation, Fort Worth, Tex.
Filed Nov. 1, 1979, Ser. No. 90,452
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D14—111

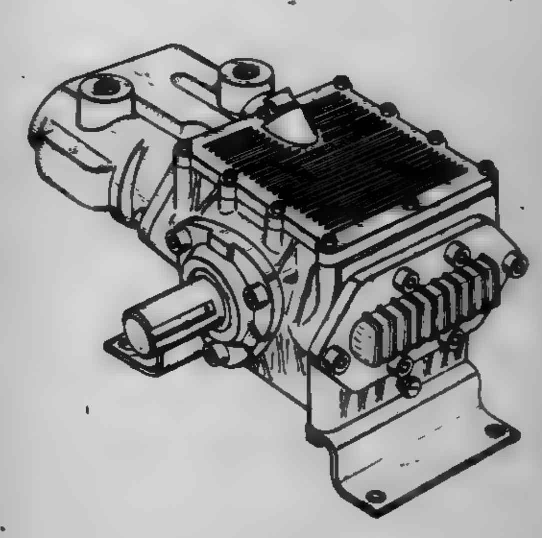


264,084
TROLLING MOTOR TILLER
Randall E. Morgan, 604 Wilson, Tahlequah, Okla. 74464
Filed Mar. 12, 1979, Ser. No. 19,490
Term of patent 14 years
Int. Cl. 15—*01*
U.S. Cl. D15—4

264,085
PUMP FOR A MANURE HANDLING SYSTEM OR THE LIKE
Tymen Clay, 904 Downie St., Box 788, Stratford, Ontario, Canada (N5A 6W1)
Filed Sep. 4, 1979, Ser. No. 72,406
Claims priority, application Canada, Jul. 26, 1979, 260779
Term of patent 7 years
Int. Cl. D15—*02*
U.S. Cl. D15—7

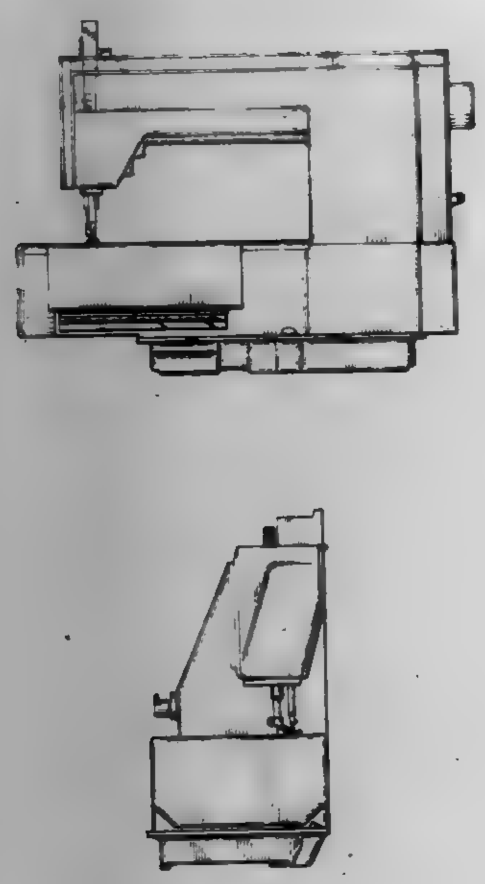


264,086
TRIPLEX PISTON PUMP
Ramon Pareja, Edina, Minn., assignor to Lear Siegler, Inc., Santa Monica, Calif.
Filed Dec. 26, 1979, Ser. No. 106,449
Term of patent 14 years
Int. Cl. D15—*02*
U.S. Cl. D15—7

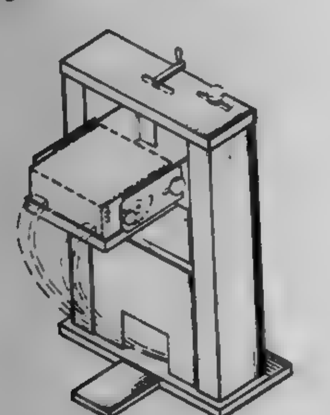


264,087
VACUUM CLEANER
Lester H. Bennett, Los Alamitos, Calif., assignor to Boo-Aire Industries, Inc., Signal Hill, Calif.
Filed Nov. 13, 1980, Ser. No. 206,470
Term of patent 14 years
Int. Cl. D15—*05*
U.S. Cl. D32—23

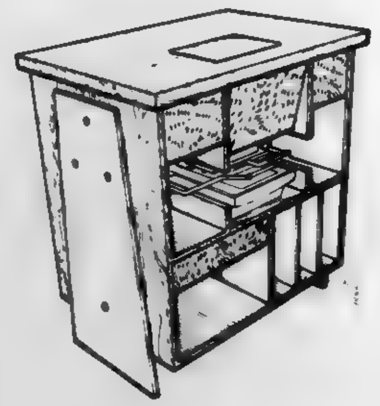
264,088
SEWING MACHINE
James H. Sullivan, Lincolnshire, and James C. Hsiao, Morton Grove, both of Ill., assignors to Union Special Corporation, Chicago, Ill.
Filed Dec. 17, 1979, Ser. No. 103,872
Term of patent 14 years
Int. Cl. D15—*06*
U.S. Cl. D15—69



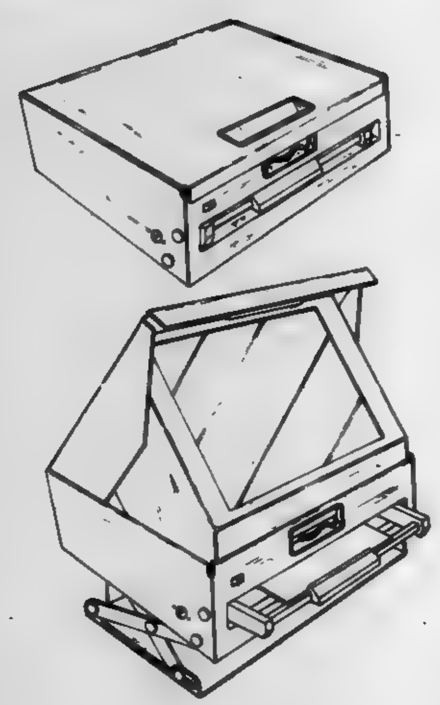
264,089
POSITIONER
Steven J. Reid, 4994 Capistrano Ave., San Jose, Calif. 95129, and Jack A. Ashman, 587 Woodstock Way, Santa Clara, Calif. 95050
Filed Mar. 3, 1980, Ser. No. 126,370
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D15—199



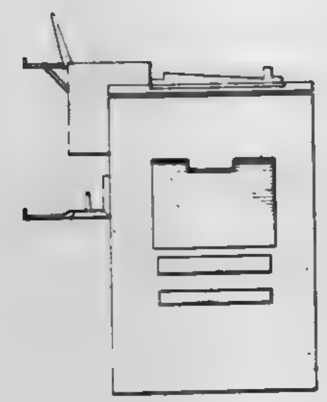
264,090
MICRO FICHE VIEWING CABINET
Gerald R. Walk, 2437 Russell Cir., Salt Lake City, Utah 84117
Filed Nov. 15, 1979, Ser. No. 94,582
Term of patent 3½ years
Int. Cl. D16—*03*
U.S. Cl. D16—11



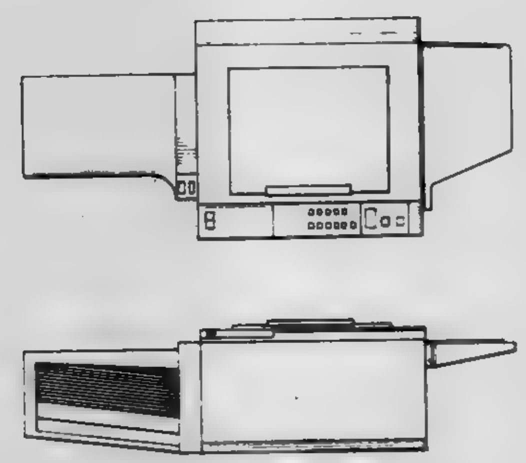
264,091
DESK DRAWER MICROFICHE READER
William T. Link, Berkeley, and Stephen Hobson, Palo Alto, both of Calif., assignors to Datagraphix, Inc., San Diego, Calif.
Filed Mar. 4, 1980, Ser. No. 127,264
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D16—18



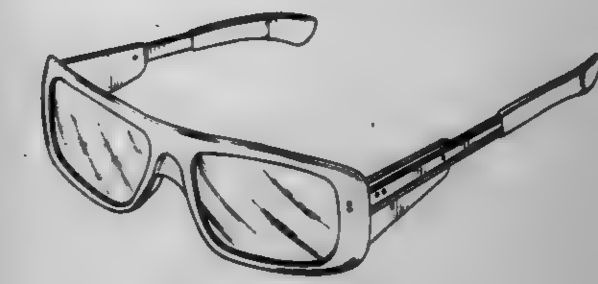
264,092
CONTINUOUS FORM FEEDING AND COPYING APPARATUS
R. Clark DuBois, Fairfield, and John C. Hamma, Milford, both of Conn., assignors to Gradco/Dendoki, Inc., Newport Beach, Calif.
Filed Jun. 25, 1980, Ser. No. 162,779
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D16—30



264,093
COPYING AND SORTING APPARATUS
Frederick J. Lawrence, Tustin, Calif., assignor to Gradco/Dendoki, Inc., Newport Beach, Calif.
Filed Jun. 12, 1980, Ser. No. 158,862
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D16—31

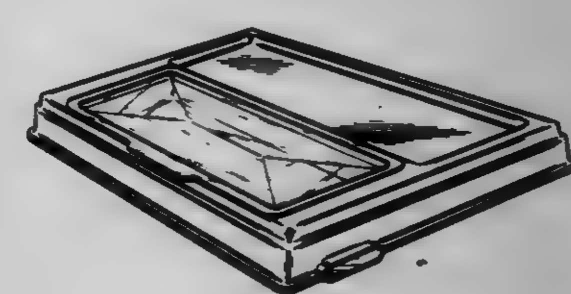


264,094
SUNGLASSES
John L. Morris, Springfield, Mo., assignor to Bass Pro Shops, Inc., Springfield, Mo.
Filed Mar. 6, 1980, Ser. No. 127,908
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D16—102

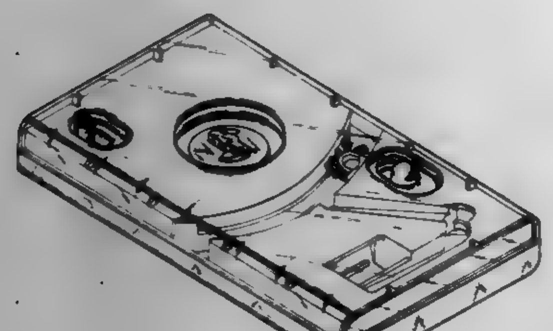


264,095
COMBINED ARTICLE SUPPORT AND BINDER
Donald B. Smith, R.R. No. 1, Mount Brydges, Ontario, Canada N0L 1W0
Filed Jul. 5, 1979, Ser. No. 54,830
Claims priority, application Canada, Jun. 4, 1979, 0406795
Term of patent 14 years
Int. Cl. D19—*04*
U.S. Cl. D19—27

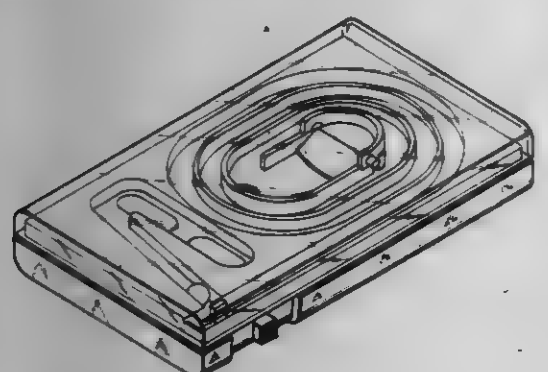
264,096
ART PALETTE
Jane E. Jones, 2805 S. Surrey Dr., Carrollton, Tex. 75006
Filed Feb. 2, 1979, Ser. No. 9,235
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D19—35



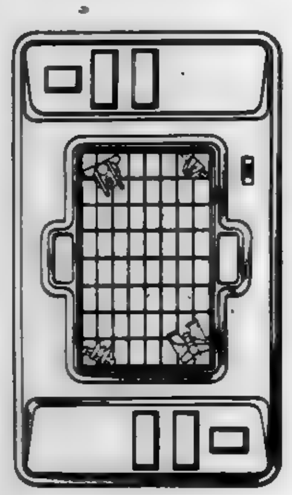
264,097
POCKET GAME
Masaki Mayuzumi, Tokyo, Japan, assignor to Tomy Kogyo Co., Inc., Tokyo, Japan
Filed Sep. 7, 1979, Ser. No. 73,204
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—9



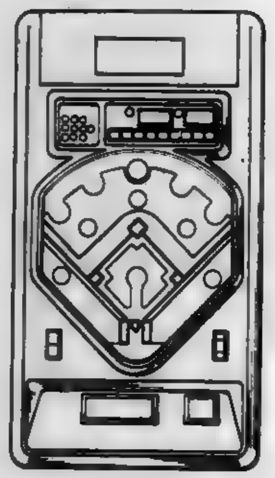
264,098
POCKET SIZE GAME BOX
Masaki Mayuzumi, Tokyo, Japan, assignor to Tomy Kogyo Co., Inc., Tokyo, Japan
Filed Jan. 29, 1980, Ser. No. 116,474
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—10



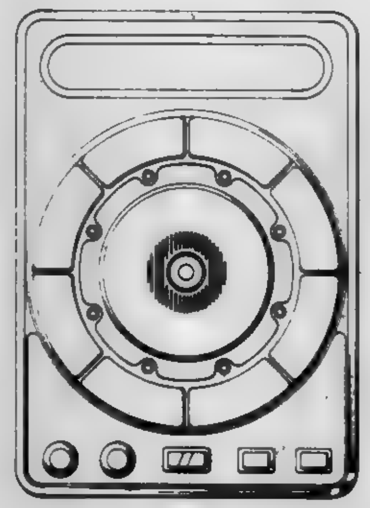
264,099
ELECTRONIC HAND-HELD SPACE BATTLE GAME HOUSING OR THE LIKE
Tsuneo Hanzawa, Tokyo, Japan, assignor to Entex Industries, Inc., Compton, Calif.
Filed Feb. 4, 1980, Ser. No. 118,061
Claims priority, application Japan, Dec. 17, 1979, 54-053037
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—13



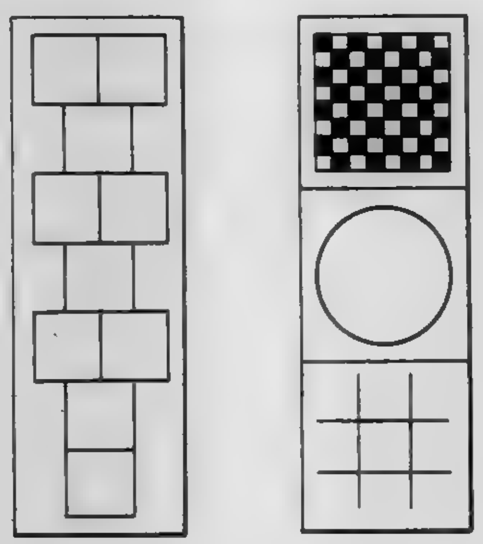
264,100
HAND-HELD ELECTRONIC BASEBALL GAME HOUSING OR THE LIKE
Tsuneo Hanzawa, Tokyo, Japan, assignor to Entex Industries, Inc., Compton, Calif.
Filed Mar. 13, 1980, Ser. No. 130,051
Claims priority, application Japan, Oct. 29, 1979, 54-45433
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—13



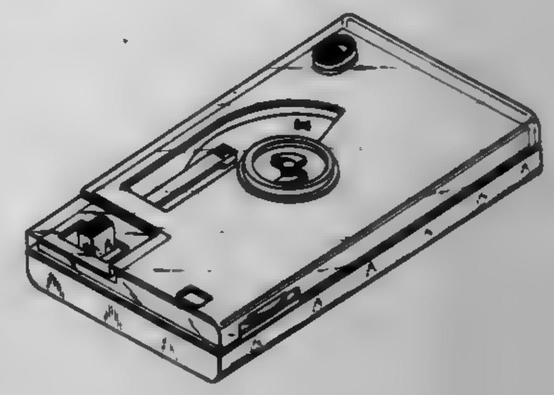
264,101
HAND-HELD ELECTRONIC GAME HOUSING OR THE LIKE
Tsuneo Hanzawa, Tokyo, Japan, assignor to Entex Industries, Inc., Compton, Calif.
Filed Mar. 14, 1980, Ser. No. 130,226
Claims priority, application Japan, Oct. 29, 1979, 54-45436
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—13



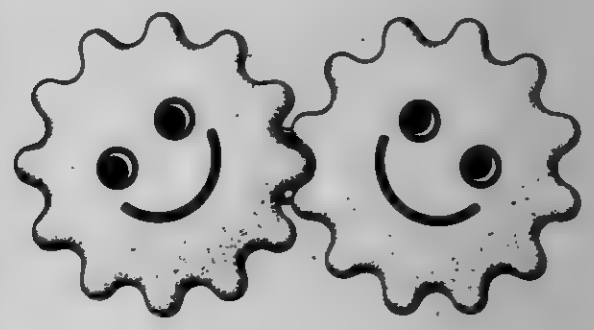
264,102
PLAY MAT
Jan Howard, 11270 Regal, Sterling Heights, Mich. 48078
Filed Jan. 18, 1979, Ser. No. 4,327
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—23



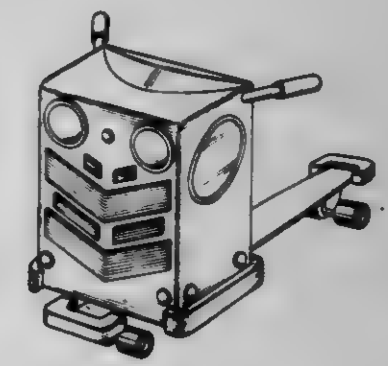
264,103
POCKET SIZE RACING GAME BOX
Masaaki Yoshimura, Tokyo, Japan, assignor to Tomy Kogyo Co., Inc., Tokyo, Japan
Filed Jan. 29, 1980, Ser. No. 116,488
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—27



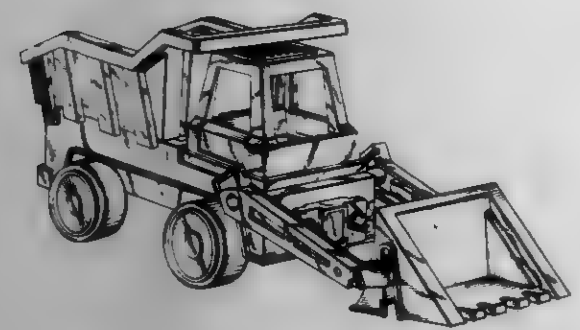
264,104
TOY RATTLE
Simon Gompes, Amsterdam, Netherlands, assignor to Europlastic B.V., Amsterdam, Netherlands
Filed Oct. 5, 1979, Ser. No. 82,008
Claims priority, application United Kingdom, Apr. 5, 1979, 989364/79
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—65



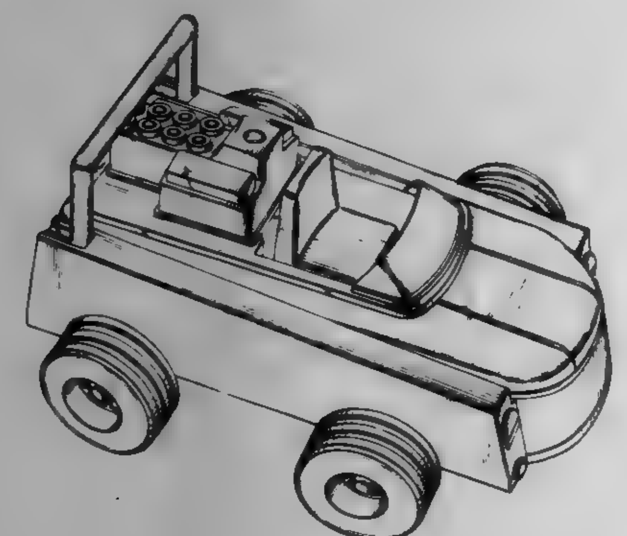
264,105
SKATEBOARD SCOOTER
Eugeno P. Dinnocente, 3836 Laurel Canyon, Studio City, Calif. 91604
Filed Sep. 21, 1979, Ser. No. 77,737
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—81



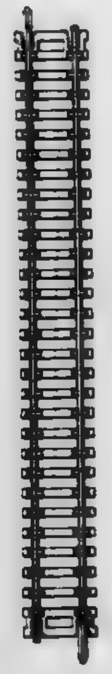
264,106
TOY TRUCK
Henry Orenstein, 136 Lakeside Ave., Verona, N.J. 07044
Filed Jul. 7, 1980, Ser. No. 165,861
Term of patent 3½ years
Int. Cl. D21—*01*
U.S. Cl. D21—132

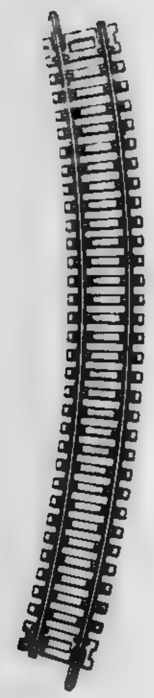


264,107
TOY CAR
Henry Orenstein, 136 Lakeside Ave., Verona, N.J. 07044
Filed Jul. 31, 1980, Ser. No. 174,033
Term of patent 3½ years
Int. Cl. D21—*01*
U.S. Cl. D21—137

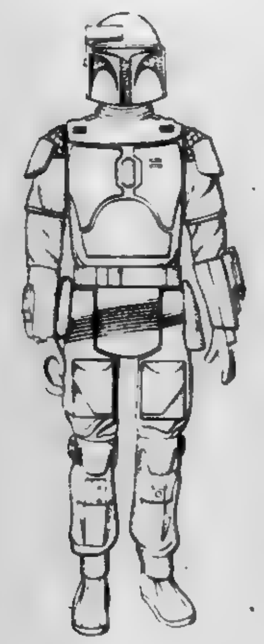


264,108
TOY RAILWAY TRACK SECTION
Duncan Tong, Hong Kong, Hong Kong, assignor to Playart Limited, Hong Kong, Hong Kong
Filed Mar. 29, 1979, Ser. No. 25,129
Claims priority, application United Kingdom, Nov. 29, 1978, 987466/78
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—143



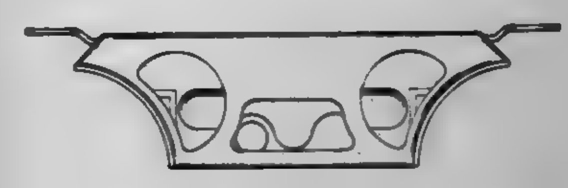


264,109
TOY ACTION FIGURE
George W. Lucas, San Anselmo; Ralph McQuarrie, Los Angeles, and Joe Johnston, San Rafael, all of Calif., assignors to Lucasfilm, Ltd., North Hollywood, Calif.
Filed Aug. 13, 1979, Ser. No. 65,304
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—150

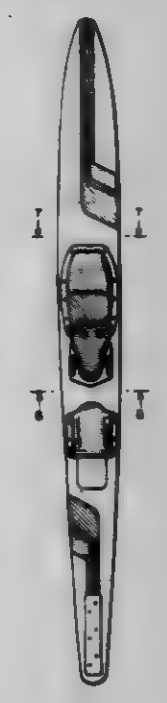


264,110
MONSTER WAGON
Henry Orenstein, 136 Lakeside Ave., Verona, N.J. 07044
Filed May 12, 1980, Ser. No. 148,711
Term of patent 3½ years
Int. Cl. D21—*01*
U.S. Cl. D21—174

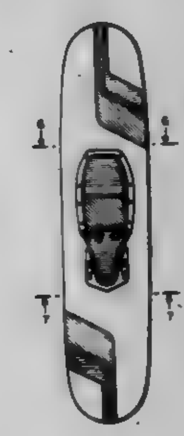
264,111
ACCESSORY HOUSING FOR SKATE, SKATEBOARD, BICYCLE OR THE LIKE
Walter L. Jimison, 360 Fulton St., Palo Alto, Calif. 94301, and James W. Jimison, 466 S. 5th St., #3, San Jose, Calif. 95112
Filed Jul. 8, 1980, Ser. No. 166,935
Term of patent 14 years
Int. Cl. D21—*02*; D12—*11*
U.S. Cl. D21—226



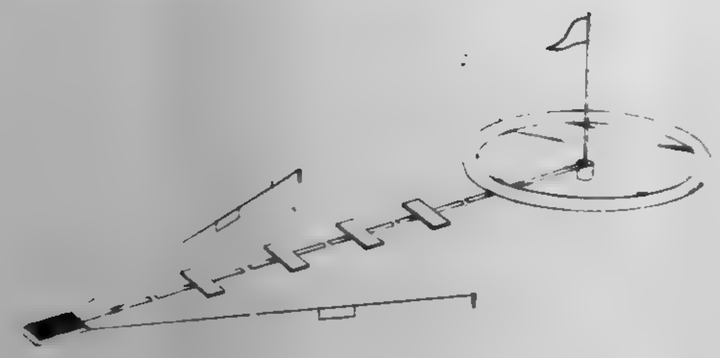
264,112
WATER SKI
Todd W. Roberts, Victoria, Minn. 55386
Filed Mar. 4, 1980, Ser. No. 127,102
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—229



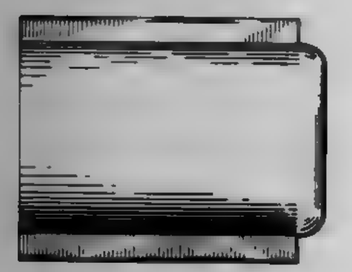
264,113
WATER SKI
Todd W. Roberts, Victoria, Minn. 55386
Filed Mar. 4, 1980, Ser. No. 127,103
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—229



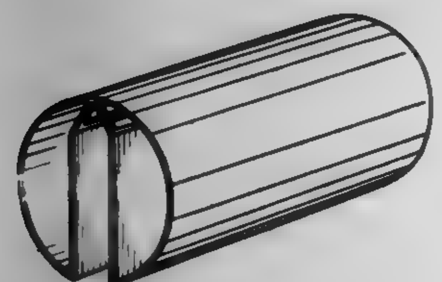
264,114
MINIATURE PRACTICE RANGE FOR PRACTICE TYPE GOLF BALLS
Christopher R. Wojciechowski, 3001 Antelo View Dr., Los Angeles, Calif. 90024
Filed Jun. 1, 1979, Ser. No. 44,560
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—234



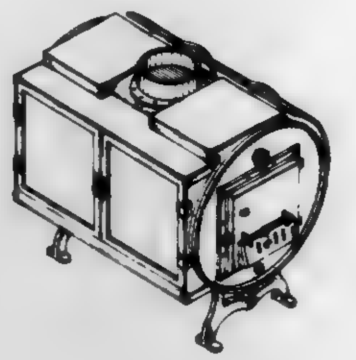
264,115
PRACTICE PUTTING CUP
William Murphy, DeCola Shores, Conesus, N.Y. 14435
Filed Oct. 24, 1979, Ser. No. 87,726
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—234



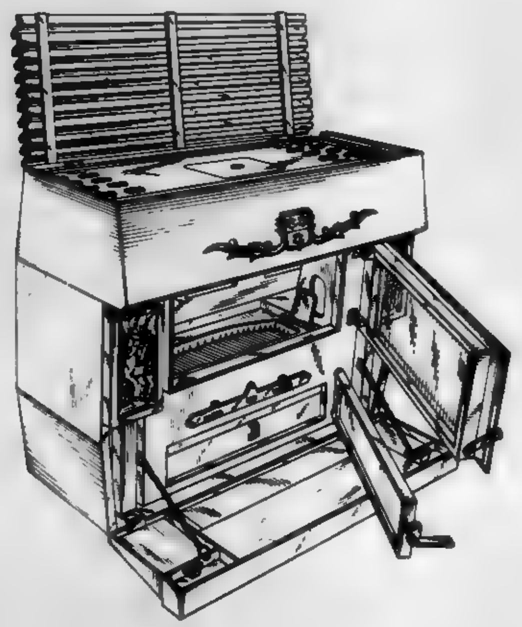
264,116
DRAIN PIPE
Gert Söderström, 62 Hammarbyvägen, S-19400 Upplands-Väsby, Sweden
Filed Jan. 15, 1980, Ser. No. 112,354
Claims priority, application Sweden, Jul. 16, 1979, 791672
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—45



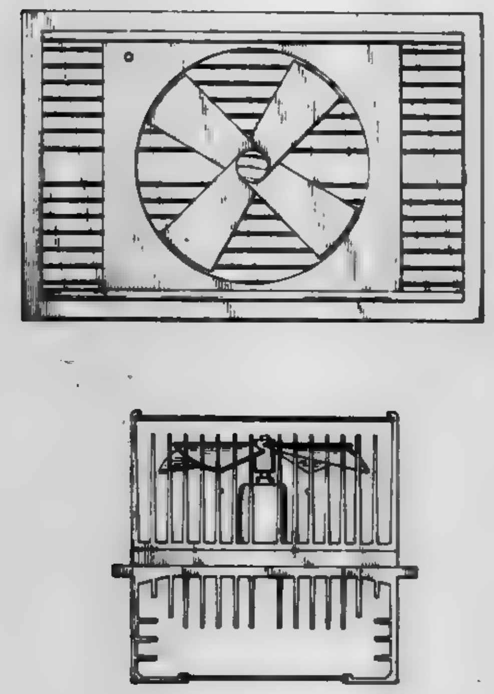
264,117
FREESTANDING FIREPLACE
Charles Jensen, 1914 Oakes Ave., Everett, Wash. 98201
Filed Feb. 8, 1980, Ser. No. 119,981
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—97



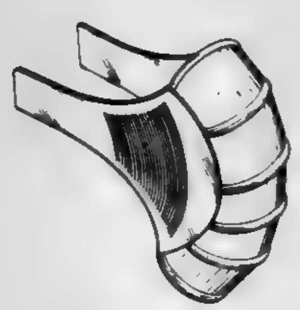
264,118
STOVE
Bernard Pringalle, Rue Orphee Variscotte, 59660 Merville, France
Filed Nov. 5, 1980, Ser. No. 204,301
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—97



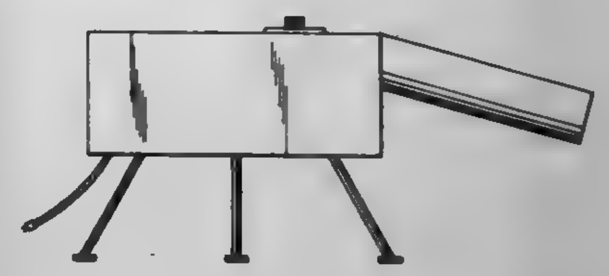
264,119
HEAT PUMP
Pavel Cech, Lerum, Sweden, assignor to Supercool AB, Goteborg, Sweden
Filed May 4, 1979, Ser. No. 35,808
Claims priority, application Sweden, Nov. 9, 1978, 2577
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—136



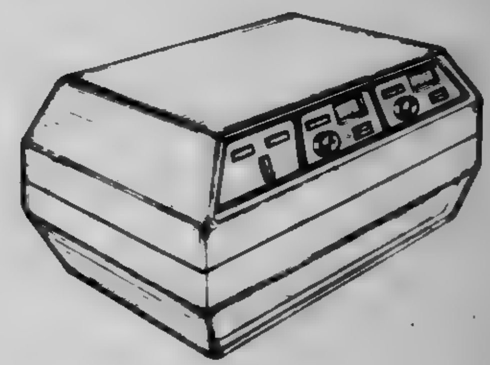
264,120
COVER FOR HEAT INSULATING MATERIAL AROUND ELBOW OR THE LIKE
Kazuo Karakawa, 12-12, Shizuka-cho, Koga-shi, Ibaragi-ken, Japan
Filed Oct. 17, 1978, Ser. No. 952,219
Claims priority, application Japan, Apr. 18, 1978, 53-15385
Term of patent 14 years
Int. Cl. D23—*99*
U.S. Cl. D23—137



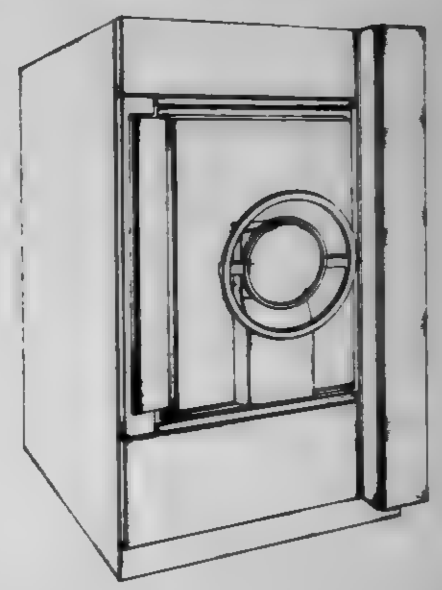
264,121
FIRE COMBUSTOR
Dennis K. Dewhurst, 1265 Palmetto Ave., Chico, Calif. 95926
Filed Aug. 9, 1979, Ser. No. 65,111
Term of patent 14 years
Int. Cl. D7—*08*
U.S. Cl. D23—161



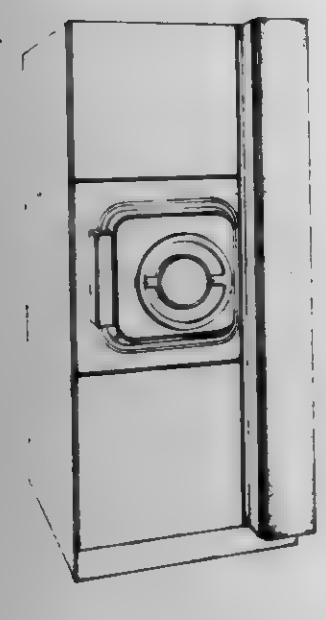
264,122
ELECTROSURGICAL GENERATOR
Roger L. Oosten, New Port Richey, and Bruce C. Randall, St. Petersburg, both of Fla., assignors to Medical Research Associates, Ltd., Clearwater, Fla.
Filed Oct. 25, 1979, Ser. No. 88,177
Term of patent 14 years
Int. Cl. D24—*01*
U.S. Cl. D24—8



264,123
STERILIZER
Thomas Brendgord, and Joseph T. Sestak, both of Erie, Pa., assignors to American Sterilizer Company, Erie, Pa.
Filed Jan. 29, 1980, Ser. No. 116,531
Term of patent 14 years
Int. Cl. D24—*01*
U.S. Cl. D24—9

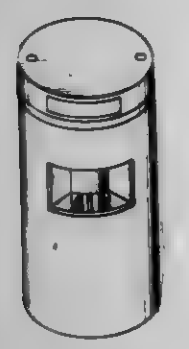


264,124
STERILIZER
Thomas Brendgord, and Joseph T. Sestak, both of Erie, Pa., assignors to American Sterilizer Company, Erie, Pa.
Filed Jan. 29, 1980, Ser. No. 116,532
Term of patent 14 years
Int. Cl. D24—*01*
U.S. Cl. D24—9

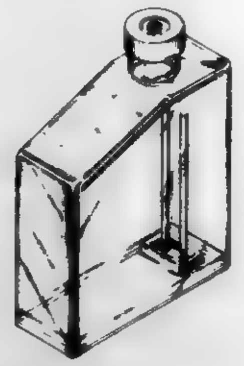


264,125
DENTAL PIN
Anthony J. Biggs, 9, Westdown, Great Bookham, Surrey, England
Filed Nov. 1, 1978, Ser. No. 956,799
Claims priority, application United Kingdom, May 3, 1978, [illegible]/78
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—10

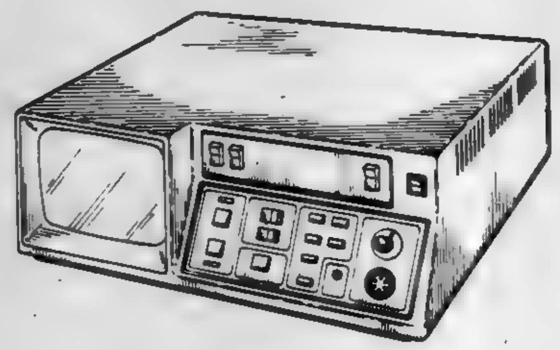
264,126
DENTAL ACCESSORY CABINET
Marvin Cutler, 220 E. 60th St., New York, N.Y. 10022
Filed May 3, 1979, Ser. No. 35,761
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—10



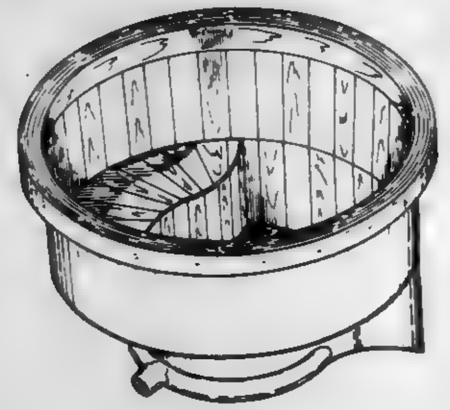
264,127
MEDICAL CULTURE BOTTLE
Dean M. Peterson, Escondido, Calif., assignor to Honeywell, Inc., Minneapolis, Minn.
Filed Jul. 9, 1979, Ser. No. 55,626
Term of patent 3½ years
Int. Cl. D14—*02*
U.S. Cl. D24—17



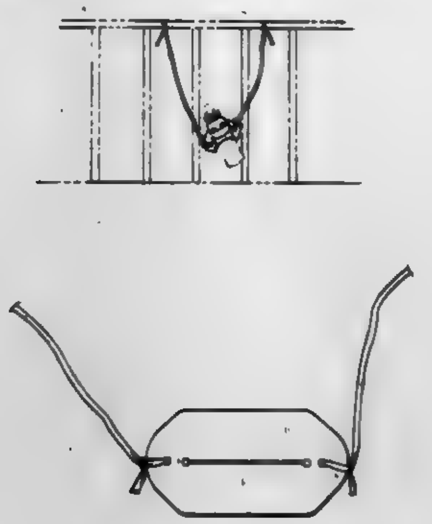
264,128
PATIENT MONITOR OR THE LIKE
Bruce J. Barnes, Winchester, and Robert H. Hendrix, Tullahoma, both of Tenn., assignors to Keuffel & Esser Company, Morristown, N.J.
Filed Dec. 5, 1979, Ser. No. 100,790
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—17



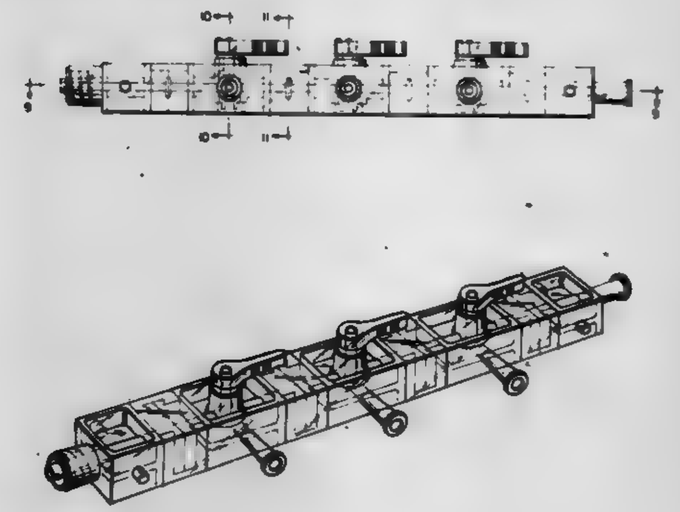
264,129
HYDROTHERAPY SPA
Victor J. Tulipani, Novato, Calif., assignor to Peregrine Industries, Incorporated, San Rafael, Calif.
Filed Apr. 2, 1979, Ser. No. 26,131
Term of patent 7 years
Int. Cl. D24—*02*; D23—*02*
U.S. Cl. D24—38



264,130
BABY BOTTLE HOLDER
David Rubin, 900 Whitmore, Detroit, Mich. 48203
Filed Oct. 23, 1978, Ser. No. 953,485
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D24—48

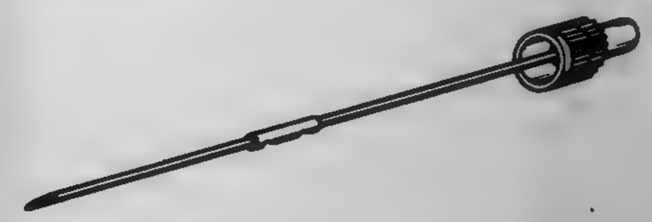


264,131
MEDICAL MULTIPORT VALVE COCK
Iwao Matsuura, Osaka, Japan, assignor to Nissho Corporation, Osaka, Japan
Filed Apr. 16, 1979, Ser. No. 30,639
Term of patent 14 years
Int. Cl. D24—*99*; D23—*01*
U.S. Cl. D24—53

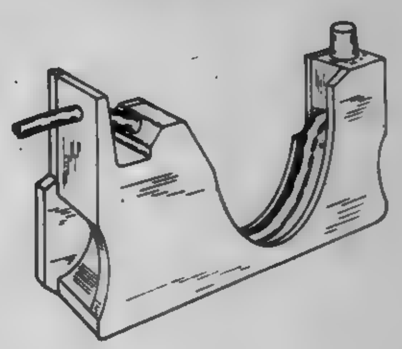


264,132
FLEXIBLE STYLET
Joseph N. Genese, Waukegan, Ill., assignor to Abbott Laboratories, North Chicago, Ill.
Filed May 3, 1979, Ser. No. 35,569
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—54

264,133
FLEXIBLE STYLET
Joseph N. Genese, Waukegan, Ill., assignor to Abbott Laboratories, North Chicago, Ill.
Filed May 3, 1979, Ser. No. 35,570
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—54



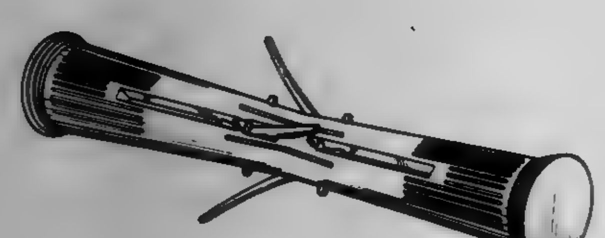
264,134
DISPOSABLE CASSETTE FOR USE IN A PERISTALTIC PUMP
Piritheos Xanthopoulos, San Jose, Calif., assignor to Stewart-Reiss Laboratories, Inc., Tarzana, Calif.
Filed May 7, 1979, Ser. No. 36,655
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—99



264,135
LUMINAIRE
Alexander Zwillich, and Dennis E. Bedel, both of Pittsburgh, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Oct. 2, 1979, Ser. No. 80,975
Term of patent 14 years
Int. Cl. D26—*03*
U.S. Cl. D26—71

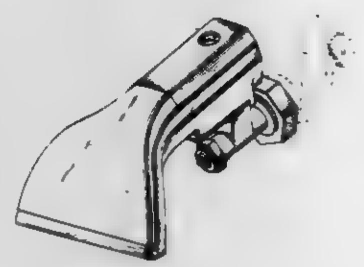
264,136
CEILING LAMP
Achille Castiglioni, Piazza Castello 27, Milano, Italy
Filed Apr. 2, 1979, Ser. No. 25,842
Term of patent 7 years
Int. Cl. D26—*05*
U.S. Cl. D26—85

264,137
CURLER
Harry Sundin, Karlshamn, Sweden, assignor to AB Karlshamns Plastindustri, Karlshamn, Sweden
Filed Oct. 12, 1978, Ser. No. 950,870
Claims priority, application Sweden, Apr. 20, 1978, 781105
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—37



264,138
HAY BALE FEEDER
Richard L. Harden, R.R. 1, Lineville, Iowa 50147
Filed Feb. 6, 1980, Ser. No. 119,180
Term of patent 14 years
Int. Cl. D30—*03*
U.S. Cl. D30—13

264,139
SURFACE CLEANING NOZZLE
Fred E. Pearman, Jr., Anderson, S.C., assignor to The Singer Company, Stamford, Conn.
Filed May 2, 1980, Ser. No. 146,732
Term of patent 14 years
Int. Cl. D15—*05*
U.S. Cl. D32—33



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TO WHOM

PATENTS WERE ISSUED ON THE 27TH DAY OF APRIL, 1982

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. H. Robins Company, Inc.: *See*—
Cale, Albert D., Jr., 4,327,098, Cl. 424-250.000.
Cale, Albert D., Jr., 4,327,107, Cl. 424-273.00R.
Cale, Albert D., Jr., 4,327,108, Cl. 424-273.00R.
AB Bonnierforetagen: *See*—
Luning, Bjorn, 4,327,075, Cl. 424-12.000.
AB Svenska Flaktfabriken: *See*—
Svensson, Gunnar, 4,326,365, Cl. 52-204.000.
Abbott Laboratories: *See*—
D'Alo, Herbert F.; and Muetterties, Andrew J., 4,326,519, Cl. 128-214.400.
Abel, Kent W.: *See*—
Ryan, Lenore S.; Murray, Frank C.; Sprangers, Ann M.; Santoski, William J.; Sciaraffa, Michael A.; Abel, Kent W.; and Donnelly, Harold F., 4,326,528, Cl. 128-287.000.
Abeyama, Shozo; Saito, Makoto; Kimura, Atsuyoshi; and Nakamura, Sadayuki, to Daido Tokushuko Kabushiki Kaisha. Steel for cold forging having good machinability and the method of making the same. 4,326,886, Cl. 75-129.000.
Abramovitz, Irwin J.: *See*—
Berg, Norman J.; Casseday, Michael W.; Lee, John N.; and Abramovitz, Irwin J., 4,326,778, Cl. 350-358.000.
ACCO Industries Inc.: *See*—
Parry, James L.; Redden, Martin J.; and Goldstein, Albert, 4,326,466, Cl. 104-172.00S.
ACF Chemiefarma VA: *See*—
van Zorge, Jacob A., 4,327,213, Cl. 544-336.000.
ACF Industries, Incorporated: *See*—
Behle, Gunter R., 4,326,557, Cl. 137-316.000.
Acker, Otto H. Steam driven road vehicle. 4,326,598, Cl. 180-304.000.
Acker, Stanley. Combination lipstick display and storage container. 4,326,546, Cl. 132-79.00C.
Ackermann, Otto; Leuck, Hans; Meyer, Gunther; and Schmeling, Gerhard, to Dynamit Nobel AG. Method for the continuous preparation of alcoholates. 4,327,230, Cl. 568-851.000.
Adachi, Toshio; and Hiratake, Susumu, to Daidotokushuko Kabushikikaisha. Device for the pulverization of radioactive wastes. 4,326,842, Cl. 425-10.000.
Adamaszek, Dieter: *See*—
Strugala, Alfred; Schilling, Robert; and Adamaszek, Dieter, 4,326,397, Cl. 72-110.000.
Adcock-Ingram Laboratories Limited: *See*—
Armitage, Rodney E., 4,327,082, Cl. 424-92.000.
Adolphi, Heinrich: *See*—
Buerstinghaus, Rainer; Kiehs, Karl; Siegel, Hardo; and Adolphi, Heinrich, 4,327,090, Cl. 424-203.000.
Agence National de Valorisation de la Recherache (ANVAR): *See*—
Audibert, Francoise; and Lefrancier, Pierre, 4,327,085, Cl. 424-177.000.
Agency of Industrial Science & Technology: *See*—
Nakao, Yukimichi; and Fujishige, Shoei, 4,327,235, Cl. 585-270.000.
Agip Petroli, S.p.A.: *See*—
Imparato, Luigi; Gerbaz, Giampaolo; and Betta, Enrico, 4,327,237, Cl. 585-648.000.
Agrigenetics Research Associates Limited: *See*—
Lawrence, Robert H., Jr.; and Hill, Phillip E., 4,326,358, Cl. 47-58.000.
Ahnemiller, James: *See*—
West, Robert W.; Stott, Paul E.; and Ahnemiller, James, 4,327,196, Cl. 521-120.000.
Ainsworth, Leonard H.: *See*—
Heywood, Joseph R.; and Ainsworth, Leonard H., 4,326,351, Cl. 40-467.000.
Air O Scoop Corporation: *See*—
Chatlos, Richard, 4,326,451, Cl. 98-2.120.
Akashi, Fumio: *See*—
Furuya, Yukitsuna; and Akashi, Fumio, 4,327,440, Cl. 375-76.000.
Akhremenko, Fedor, deceased: *See*—
Injushin, Viktor M.; Khokhlov, Valentin I.; Akhremenko, Fedor, deceased; and Akhremenko, Galina T., administrator, 4,327,276, Cl. 219-121.00L.
Akhremenko, Galina T., administrator: *See*—
Injushin, Viktor M.; Khokhlov, Valentin I.; Akhremenko, Fedor, deceased; and Akhremenko, Galina T., administrator, 4,327,276, Cl. 219-121.00L.
Akimoto, Keiichi; and Tsuchida, Tsuyoshi, to Kawasaki Seitetsu Kabushiki Kaisha. Measuring instrument for the profile of piled charge of a blast furnace. 4,326,337, Cl. 33-174.0PA.
Akron City Hospital: *See*—
Steffel, Charles R.; and Taylor, Bruce C., 4,326,535, Cl. 128-631.000.
Aktiebolaget Bahco Ventilation: *See*—
Mattsson, Agne T., 4,326,913, Cl. 162-17.000.
Aktiebolaget Bofors: *See*—
Blomqvist, Ake; and Dahlberg, Kurt, 4,326,340, Cl. 33-238.000.
Aktieseiskabet de Danske Sukkerfabrikker: *See*—
Madsen, Rud F.; and Nielsen, Werner K., 4,326,892, Cl. 127-43.000.
Akutsu, Yoji: *See*—
Kita, Hisanao; Karatsu, Yoshinori; Nakazaki, Takamitsu; and Akutsu, Yoji, 4,327,273, Cl. 219-121.0EC.
Alfa Laval Pty Ltd.: *See*—
Brockwell, Ian P., 4,326,626, Cl. 198-845.000.
Allen-Bradley Company: *See*—
Grzebielski, Chester J., 4,327,391, Cl. 361-31.000.
Allen, James A.; Knight, George W.; and Edmondson, Morris S., to Dow Chemical Company, The. Anti-block additives for olefin polymers. 4,327,009, Cl. 524-114.000.
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Lazarus, Stanley D., 4,327,207, Cl. 525-439.000.
Ray, Ranjan, 4,326,841, Cl. 425-8.000.
Vanderkooi, Nicholas, Jr.; and Tuller, Harold W., 4,327,007, Cl. 524-315.000.
Allis-Chalmers Corporation: *See*—
Hess, Paul D., 4,326,845, Cl. 432-106.000.
Alloy Surfaces Company, Inc.: *See*—
Baldi, Alfonso L., 4,327,134, Cl. 427-253.000.
Alpha Chemical Corporation: *See*—
West, Robert W.; Stott, Paul E.; and Ahnemiller, James, 4,327,196, Cl. 521-120.000.
Aluminum Company of America: *See*—
Anderson, Bruce E., 4,326,662, Cl. 228-111.000.
Alvarez, Jose A. A., to T & R Chemicals, Inc. Treatment of hypertension with bisulfite. 4,327,083, Cl. 424-162.000.
Alvino, William M.; Hammill, Janet L.; and Seidel, Martin P., to Westinghouse Electric Corp. Moisture resistant laminates impregnated with an impregnating composition comprising epoxy resin and a dicyandiamide derivative. 4,327,143, Cl. 428-236.000.
ALZA Corporation: *See*—
Swanson, David; and Edgren, David, 4,326,525, Cl. 128-260.000.
Amana Refrigeration, Inc.: *See*—
Austin, Buddy J.; and Simpson, James E., 4,327,266, Cl. 219-10.55F.
American Air Filter Company, Inc.: *See*—
Revell, Alan, 4,326,866, Cl. 55-479.000.
American Can Company: *See*—
Meyers, George L., 4,326,634, Cl. 206-626.000.
American Fabrics Company: *See*—
Gaiser, Gerhard O., 4,326,322, Cl. 28-187.000.
American Foam Latex Corporation: *See*—
Frankenberg, Carl R., 4,326,310, Cl. 5-448.000.
American Home Products Corporation: *See*—
Wei, Peter H. L., 4,327,221, Cl. 548-154.000.
American Optical Corporation: *See*—
Rybicki, Edward B.; and Sussman, Milton H., 4,326,779, Cl. 350-414.000.
American Standard Inc.: *See*—
Noble, Peter M., 4,326,693, Cl. 248-635.000.
Amicel, Jean-Claude. Blank jumping teleprinting method and apparatus. 4,327,381, Cl. 358-288.000.
AMP Incorporated: *See*—
Asick, John C.; and Huffnagle, Clifton W., 4,326,764, Cl. 339-[illegible]
Amrhein, Earl F., to Cummins Engine Company, Inc. Floating tappet guide plate. 4,326,484, Cl. 123-90.500.
Amtel, Inc.: *See*—
Tang, Phillip H., 4,326,312, Cl. 441-5.000.
An, Viktor B.: *See*—
Bukhtiyarov, Ivan D.; An, Viktor B.; Farshatov, Marat N.; Sapozhnikov, Fedor F.; Sidorov, Anatoly G.; Proskurina, Natalya A.; and Marakin, Vladimir I., 4,326,410, Cl. 73-117.300.
Anderson, Bruce E., to Aluminum Company of America. Process of ultrasonically soldering drawn aluminum tubing products. 4,326,662, Cl. 228-111.000.
Anderson, Conrad V.: *See*—
Beer, Robert E.; and Anderson, Conrad V., 4,326,791, Cl. 354-321.000.
Anderson, Max F. Drying method and apparatus for drying prunes, fish, brewers grain, shelled corn, and the like. 4,326,341, Cl. 34-27.000.
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Komatsu, Michiyasu; Tsuge, Akihiko; Komeya, Katsutoshi; and Ando, Akio, 4,327,187, Cl. 501-97.000.

Andra, Wolfhart: *See—*
Leonhardt, Fritz; Andra, Wolfhart; Zellner, Wilhelm; Schlaich, Jorg; and Mayr, Gunter, 4,326,363, Cl. 52-80.000.
Annand, Charles A. Rigid insulation assembly. 4,326,631, Cl. 206-389.000.
Antos, George J., to UOP Inc. Hydrocarbon isomerization catalyst and process. 4,327,240, Cl. 585-744.000.
Aoki, Hideki, to Dental Chemical Co., Ltd. Dentifrice compositions. 4,327,079, Cl. 424-57.000.
Aoki, Kanemasa, to Canon Kabushiki Kaisha; and Canon Seiki Kabushiki Kaisha. Winding for small rotary electric double air gap motor. 4,327,304, Cl. 310-266.000.
Aoki, Kozo; Seoka, Yoshio; and Yokota, Yukio, to Fuji Photo Film Co., Ltd. Color photographic light-sensitive material. 4,327,173, Cl. 430-505.000.
Aoyagi, Edward I., to Chevron Research Company. 2-Aminosubstituted-5-methylene-thiazole and 3-aminosubstituted-1 methylene-2,4-thiazaspiro[5.4]decane herbicides. 4,326,876, Cl. 71-090.000.
Aoyagi, Masao; and Kamata, Shigeru, to Canon Kabushiki Kaisha. Interchangeable lens assembly for a camera. 4,326,789, Cl. 354-286.000.
Aoyama, Takashi: *See—*
Kohara, Rikusei; Kakumoto, Susumu; Aoyama, Takashi; Shoji, Masami; and Shinagawa, Mutsuaki, 4,326,777, Cl. 350-357.000.
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Thoma, Andreas, 4,327,286, Cl. 250-231.00R.
Appleford, David E.: *See—*
Faulkner, Keith; and Appleford, David E., 4,326,645, Cl. 222-1.000.
Arai, Kiyotaka: *See—*
Suhara, Manabu; and Arai, Kiyotaka, 4,327,010, Cl. 524-388.000.
Arai, Nobukatsu: *See—*
Sato, Eiji; Arai, Nobukatsu; Tanaka, Hideki; Fukushima, Toshihiko; and Nakajima, Tadakatsu, 4,326,391, Cl. 62-402.000.
Arai, Yoshio. Oil seal. 4,326,723, Cl. 277-153.000.
Arcamone, Federico: *See—*
Bernardi, Luigi; Masi, Paolo; Suarato, Antonino; and Arcamone, Federico, 4,327,029, Cl. 260-351.100.
Archer, Sydney, to Sterling Drug Inc. α-[(Alkylamine)alkyl]-4-hydroxy-3-(alkylthio)benzenemethanols, derivatives thereof and intermediates therefor. 4,327,224, Cl. 560-142.000.
Arend, Gunter; and Feyen, Peter, to Bayer Aktiengesellschaft. Preparation of phosphoric acid propargyl esters. 4,327,040, Cl. 260-973.000.
Arendt, Franz: *See—*
Wirz, Arno; Sobotta, Peter; Arendt, Franz; and Gramlich, Otto K., 4,327,135, Cl. 428-600.000.
Ariga, Masao: *See—*
Miyamoto, Koichi; Kan, Yasuhito; Nitanda, Hiroshi; and Ariga, Masao, 4,326,797, Cl. 355-57.000.
Arlt, Dieter: *See—*
Jautelat, Manfred; Arlt, Dieter; Lantzsch, Reinhard; Fuchs, Rainer; Riebel, Hans-Jochem; Schroder, Rolf; and Harnisch, Horst, 4,327,025, Cl. 260-338.000.
Armitage, Rodney E., to Adcock-Ingram Laboratories Limited. Mastitis vaccination. 4,327,082, Cl. 424-92.000.
Arnhem, Erik M.: *See—*
Rock, Gregory, 4,326,727, Cl. 280-154.50R.
Arp, David F.; and Pariani, Ronald L., to Southware Company. Dual fuel burner for metal melting furnaces. 4,326,700, Cl. 266-219.000.
Arpin, John B.; and Di Vita, Sam, to United States of America, Army. Optical fiber dispenser. 4,326,657, Cl. 226-97.000.
Asaba, Shuuji; Nemoto, Minoru; Ushimi, Kenji; and Ono, Akira, to Tokyo Shibaura Denki Kabushiki Kaisha. Laser welding of an electron gun. 4,327,275, Cl. 219-121.0LD.
Asahi-Dow Limited: *See—*
Hoki, Tsuneo; and Matsuki, Yutaka, 4,327,193, Cl. 521-88.000.
Asahi Glass Company, Ltd.: *See—*
Endo, Yasuhiko; Mimori, Takashi; and Goto, Motohiro, 4,327,188, Cl. 501-134.000.
Kawahara, Hiroshi; and Yasuda, Tetsuro, 4,326,958, Cl. 210-501.000.
Suhara, Manabu; and Arai, Kiyotaka, 4,327,010, Cl. 524-388.000.
Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
Katoh, Tsuneyuki; Hiraga, Keishiro; Seki, Junji; and Suzuki, Makoto, 4,327,149, Cl. 428-332.000.
Matsui, Ryo; Matsushika, Tadao; Hayashi, Yoshio; and Shiga, Tetsuo, 4,327,176, Cl. 430-619.000.
Murakami, Masahiro; Kobayashi, Masateru; Sone, Takanori; and Shibuya, Chisei, 4,327,211, Cl. 544-27.000.
Asaoka, Sachio; Shiroto, Yoshimi; Nakamura, Munekazu; and Ono, Takeo, to Chiyoda Chemical Engineering & Construction Co., Ltd. Process for preparing a catalyst for hydrotreatment of heavy hydrocarbon oils. 4,326,991, Cl. 252-432.000.
Ashkin, Arthur; Bjorkholm, John E.; Freeman, Richard R.; and Pearson, David B., to Bell Telephone Laboratories, Incorporated. Method for focusing neutral atoms, molecules and ions. 4,327,288, Cl. 250-251.000.
Ashley, Albert H., to United States of America, Army. DC to AC synthesizer with inverter circuit failure avoidance. 4,327,406, Cl. [illegible]
Asick, John C.; and Huffnagle, Clifton W., to AMP Incorporated. Connector for terminating high density cable. 4,326,764, Cl. 339-14.00R.
Astarita, Domenico: *See—*
Senni, Paolo; and Astarita, Domenico, 4,326,925, Cl. 203-37.000.
Atencio, Francisco J. G. Functionally transformable hydrostation. 4,326,819, Cl. 405-78.000.
Athenes, Claude; Salle, Jacques E.; and Blouin, Philippe, to Le Materiel Telephonique Thomson-CSF. Clock recovery device. 4,327,442, Cl. 375-119.000.
Atlantic Richfield Company: *See—*
Di Giulio, Adolph V.; and Bauer, Jack N., 4,327,197, Cl. 521-147.000.
Aubrey, Truman. Light fixture. 4,327,402, Cl. 362-288.000.
Audibert, Francoise; and Lefrancier, Pierre, to Agence National de Valorisation de la Recherache (ANVAR). Biologically active compositions and methods of use. 4,327,085, Cl. 424-177.000.
Aue, Walter P.: *See—*
Ernst, Richard R.; and Aue, Walter P., 4,327,425, Cl. 365-152.000.
Austel, Volkhard; Reiffen, Manfred; Heider, Joachim; and Diederen, Willi, to Boehringer Ingelheim GmbH. 2-(Alkoxy-phenyl)-imidazo(4,5-b)pyridines and salts thereof. 4,327,100, Cl. 424-256.000.
Austin, Buddy J.; and Simpson, James E., to Amana Refrigeration, Inc. Microwave ovens for uniform heating. 4,327,266, Cl. 219-10.55F.
Autage, Roger; and Dupont, Georges. Valves with non-lubricated plug. 4,326,697, Cl. 251-174.000.
Automation Industries, Inc.: *See—*
Kutnyak, Thomas A., 4,326,561, Cl. 138-136.000.
Autotronic Controls, Corp.: *See—*
Merrick, James W., 4,326,493, Cl. 123-606.000.
Axelgaard, Jens; Howson, David C.; and Perhay, John A. Transcutaneous electrical muscle stimulation for treatment of scoliosis and other spinal deformities. 4,326,534, Cl. 128-421.000.
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Ikeda, Takashi; and Ayano, Shinya, 4,326,832, Cl. 415-219.00R.
Ayres, James T.; McAllister, David L.; and Sands, John L., to Great Lakes Chemical Corporation. Process for producing purified brominated aromatic compounds. 4,327,227, Cl. 568-639.000.
Baardson, Andrew B., to Robbins, E. H.; and Baardson, Andrew B. Power plant. 4,326,382, Cl. 60-655.000.
Babb, Albert L.; and Scribner, Belding H., to Diachem, Inc. Hemodialysis with sodium bicarbonate dialysate prepared in plural stages. 4,326,955, Cl. 210-638.000.
Babcock & Wilcox Company, The: *See—*
Kelly, Joseph J., Jr.; and Rambo, George E., 4,326,917, Cl. 376-216.000.
Bacino, Carl J.; and Lustig, Martin. Snelled hook package and packaging method. 4,326,630, Cl. 206-315.00R.
Bacquie, Serge B., to Poclain Hydraulics. Fluid mechanism with axially movable valve-seat. 4,326,450, Cl. 91-487.000.
Badalex Limited: *See—*
Stephens, Stanley W., 4,326,324, Cl. 29-25.190.
Badwal, Sukhvinder P. S.: *See—*
DeBruin, Henderikus J.; and Badwal, Sukhvinder P. S., 4,326,318, Cl. 23-232.00E.
Baier, Paul W.; Dostert, Klaus; Pandit, Madhukar; and Simons, Reinhard, to Siemens Aktiengesellschaft. Receiving circuit in an interference-suppressing communications system comprising narrow-band conventional message modulation and additional pseudo-noise phase shift keying. 4,327,438, Cl. 375-1.000.
Bailey, Denis M., to Sterling Drug Inc. Heterocyclic alkyl naphthols. 4,327,022, Cl. 260-239.00B.
Bailey, Donald L.; and Williams, Charles, to Marquest Medical Products, Inc. Syringe device with means for selectively isolating a blood sample after removal of contaminates. 4,326,540, Cl. 128-763.000.
Baillie, Kenneth D.; and Lafontan, J. Donald. Releasable toilet seat clamp. 4,326,307, Cl. 4-236.000.
Bailly, Alain: *See—*
Becavin, Henri; Bailly, Alain; and Lemerle, Philippe, 4,327,334, Cl. 333-1.000.
Bainbridge, Lester M.: *See—*
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Baird, John K.: *See—*
Cottrell, Ian W.; Baird, John K.; and Shim, Jaewon L., 4,326,970, Cl. 252-8.55D.
Baker, Frank J., II: *See—*
Shaffer, Mark A.; and Baker, Frank J., II, 4,326,515, Cl. 128-207.170.
Baker International Corporation: *See—*
McStravick, David M., 4,326,585, Cl. 166-244.00C.
McStravick, David M., 4,326,588, Cl. 166-387.000.
Balaban, Alvin R.; and Steckler, Steven A., to RCA Corporation. Dual phase-control loop horizontal deflection synchronizing circuit. 4,327,376, Cl. 358-159.000.
Balaban, John A. Racket stringing apparatus and method. 4,326,713, Cl. 273-73.00A.
Baldi, Alfonso L., to Alloy Surfaces Company, Inc. Stripping of diffusion treated metals. 4,327,134, Cl. 427-253.000.
Baldini, Luciano: *See—*
Pallaroni, Francesco; Baldini, Luciano; and Siccardi, Alberto, 4,326,574, Cl. 150-8.000.
Baldor Electric Company: *See—*
Ballman, Frederick C., 4,326,589, Cl. 169-5.000.
Baldwin, Michelle L.: *See—*
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Baldwin, Steven M.: *See—*
Nitzberg, Nadine R.; Baldwin, Michelle L.; and Baldwin, Steven M., 4,326,640, Cl. 220-4.00E.
Ball, Peter: *See—*
Heitz, Walter; and Ball, Peter, 4,327,035, Cl. 260-463.000.

Ball, William J.; Cotton, Leonard; and Stewart, David G., to British Petroleum Company Limited, The. Process for the production of C_1 to C_4 oxygenated hydrocarbons. 4,327,190, Cl. 518-714.000.
Ballerstein, George B.; and Kimmel, Spurgeon E., to Yorktowne Paper Mills, Inc. Cutoff machine for non-metallic tube stock. 4,326,438, Cl. 82-53.100.
Ballinger, Paul V. Narrow ditch trencher. 4,326,347, Cl. 37-94.000.
Ballman, Frederick C., to Baldor Electric Company. Anti-freeze arrangement for sprinkler systems. 4,326,589, Cl. 169-5.000.
Balouskus, Robert A.: *See—*
Feinberg, Stewart C.; Lundsager, Christian B.; Lundquist, Joseph T., Jr.; and Balouskus, Robert A., 4,327,164, Cl. 429-144.000.
Baltz, Gene F.; and Breckenfeld, Paul W., to Outboard Marine Corporation. Carburetor having a concentric tube fuel supply. 4,327,041, Cl. 261-41.00B.
Banda, Shunji, to Kabushiki Kaisha Suwa Seikosha. Matrix electrode construction. 4,326,776, Cl. 350-336.000.
Bandai Industry Co., Ltd.: *See—*
Ito, Hiroshi; and Tanaka, Haruyuki, 4,326,715, Cl. 273-88.000.
Banziger, Robert; Isenschmid, Roland; Menth, Anton; Muller, Rene; and Stucki, Samuel, to BBC Brown, Boveri & Company, Limited. Electrode in water electrolysis. 4,326,943, Cl. 204-290.00F.
Barkalow, Clare E., to Michigan Instruments, Inc. CPR Protocol and cardiopulmonary resuscitator for effecting the same. 4,326,507, Cl. 128-54.000.
Barksdale, Joe M.: *See—*
Hayden, Ralph P., Jr.; and Barksdale, Joe M., 4,326,701, Cl. 266-225.000.
Barmag Barmer Maschinenfabrik: *See—*
Schippers, Heinz; Schimmels, Bernd; and Salm, Dieter, 4,326,677, Cl. 242-18.0DD.
Barnowski, Henry G.: *See—*
Chandalia, Kiran B.; and Barnowski, Henry G., 4,327,194, Cl. 521-90.000.
Barr, William H., to Universal Tipping Company Incorporated. Tipping machine. 4,326,704, Cl. 270-58.000.
Barreca Products Co., Inc.: *See—*
Finnegan, Robert J., 4,326,747, Cl. 294-147.000.
Barth, Duane D., to Heritage Products Intl., Inc. Sign post. 4,326,352, Cl. 40-607.000.
BASF Aktiengesellschaft: *See—*
Buerstinghaus, Rainer; Kiehs, Karl; Siegel, Hardo; and Adolphi, Heinrich, 4,327,090, Cl. 424-203.000.
Eilingsfeld, Heinz; Hansen, Guenter; Seybold, Guenther; and Zeidler, Georg, 4,327,019, Cl. 260-158.000.
Hamprecht, Gerhard; Parg, Adolf; and Koenig, Karl-Heinz, 4,327,034, Cl. 260-455.00A.
Hickmann, Eckhard; Oeser, Heinz-Guenter; and Moebius, Leander, 4,327,215, Cl. 546-176.000.
Mohr, Heinz; Hoffmann, Walter; and Vyvial, Rudolf, 4,326,434, Cl. 76-107.00C.
Rentzea, Costin; Sauter, Hubert; and Jung, Johann, 4,327,214, Cl. 546-133.000.
Schaefer, Dieter; Motz, Herbert; Mayer, Dieter; Deigner, Paul; Hack, Joachim; and Falk, Roland, 4,327,139, Cl. 428-65.000.
BASF Wyandotte Corporation: *See—*
Ramlow, Gerhard G.; Heyman, Duane A.; and Moore, Richard A., 4,327,005, Cl. 524-377.000.
Schmolka, Irving R., 4,326,977, Cl. 252-106.000.
Basseches, Mark T. Optionally fused connector device. 4,326,766, Cl. 339-31.00R.
Battelle Development Corporation: *See—*
Litchfield, John H.; and Lawhon, William T., Jr., 4,327,181, Cl. 435-176.000.
Bauer, Jack N.: *See—*
Di Giulio, Adolph V.; and Bauer, Jack N., 4,327,197, Cl. 521-147.000.
Bauman, William C.: *See—*
Lee, John M.; and Bauman, William C., 4,326,961, Cl. 210-683.000.
Watson, John D., Sr.; and Bauman, William C., 4,326,963, Cl. 210-792.000.
Baur, Rudolf, to Swiss Aluminium Ltd. Oil-in-water emulsion for cold rolling light metals. 4,326,974, Cl. 252-49.500.
Bausch & Lomb Incorporated: *See—*
Deichert, William G.; Friends, Gary D.; Melpolder, John B.; and Park, Joon S., 4,327,203, Cl. 526-279.000.
Baxter Travenol Laboratories, Inc.: *See—*
Williams, Ronald A., 4,326,518, Cl. 128-214.200.
Bayer Aktiengesellschaft: *See—*
Arend, Gunter; and Feyen, Peter, 4,327,040, Cl. 260-973.000.
Charlet, Egbert; and Kludas, Martin, 4,327,078, Cl. 424-45.000.
Druschke, Frank; Margotte, Dieter; Cohnen, Wolfgang; and Idel, Karsten, 4,327,015, Cl. 524-162.000.
Heitz, Walter; and Ball, Peter, 4,327,035, Cl. 260-463.000.
Jautelat, Manfred; Arlt, Dieter; Lantzsch, Reinhard; Fuchs, Rainer; Riebel, Hans-Jochem; Schroder, Rolf; and Harnisch, Horst, 4,327,025, Cl. 260-338.000.
Lehr, Gunter; Hucks, Uwe; Vernaleken, Hugo; Nielinger, Werner; and Tresper, Erhard, 4,327,208, Cl. 528-323.000.
Schmidt, Adolf; and Bockmann, August, 4,327,004, Cl. 524-745.000.
Timmler, Helmut; Buchel, Karl; Brandes, Wilhelm; Frohberger, Paul-Ernst; and Scheinpflug, Hans, 4,327,104, Cl. 424-269.000.
Bayne, Robert T.; and Shireman, Phillip E., to Standard Change-Makers, Inc. Magnetic ticket dispenser. 4,326,643, Cl. 221-13.000.
BBC Brown, Boveri & Company, Limited: *See—*
Banziger, Robert; Isenschmid, Roland; Menth, Anton; Muller, Rene; and Stucki, Samuel, 4,326,943, Cl. 204-290.00F.
Horvath, Imre; and Kwasnitza, Kurt, 4,327,244, Cl. 174-15.00S.
Nagel, Hartmut; and Stucki, Samuel, 4,326,930, Cl. 204-20.000.
Beam, John E.: *See—*
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Beard, George W.; and Mulvaney, James M., to Beard, George W. Security system. 4,327,353, Cl. 340-64.000.
Becavin, Henri; Bailly, Alain; and Lemerle, Philippe, to Thomson-CSF. Multi-channel rotary joint for electromagnetic detection equipment. 4,327,334, Cl. 333-1.000.
Becher, Albert F.: *See—*
King, Paul V.; Becher, Albert F.; and Henderson, Wilmer P., 4,326,468, Cl. 109-49.500.
Beck, William P., to Borg-Erickson Corporation. Electronic weighing apparatus. 4,326,596, Cl. 177-178.000.
Becton, Dickinson and Company: *See—*
Buck, Robert T.; and Horres, Charles R., 4,326,526, Cl. 128-272.000.
Stetter, Joseph R.; and Rutt, Donald R., 4,326,927, Cl. 204-1.00T.
Bednar, Robert M. Soccer cuff. 4,326,299, Cl. 2-22.000.
Beecham Group Limited: *See—*
Evans, John M.; and Markwell, Roger E., 4,327,099, Cl. 424-256.000.
Smith, Paul, 4,327,228, Cl. 568-705.000.
Beer, Robert E.; and Anderson, Conrad V., to Pako Corporation. Transport system for processor of photosensitive web material. 4,326,791, Cl. 354-321.000.
Begue, Bernard, to Vallourec. Apparatus to equalize in height, by hammering, the line of welding of longitudinally welded tubes. 4,326,398, Cl. 72-193.000.
Behle, Gunter R., to ACF Industries, Incorporated. Top operated tank car bottom outlet valve assembly installed from the bottom of the car. 4,326,557, Cl. 137-316.000.
Behlke, Darwin D.: *See—*
Black, James B.; Behlke, Darwin D.; and Steinhagen, Horst G., 4,326,433, Cl. 74-740.000.
Beigl, William. Snap-on convex rear view mirror for bicycles. 4,326,774, Cl. 350-307.000.
Belden Corporation: *See—*
Kincaid, John W., 4,327,246, Cl. 174-36.000.
Bell Telephone Laboratories, Incorporated: *See—*
Ashkin, Arthur; Bjorkholm, John E.; Freeman, Richard R.; and Pearson, David B., 4,327,288, Cl. 250-251.000.
Coldren, Larry A., 4,327,340, Cl. 333-195.000.
Feldman, Martin; White, Alan D.; and White, Donald L., 4,326,805, Cl. 356-399.000.
Howard, Richard E.; and Hu, Evelyn L., 4,326,911, Cl. 156-643.000.
Turner, Gary A., 4,327,411, Cl. 364-900.000.
Bello, Ernesto; Kolber, Steven N.; and Coulter, Wallace H., to Coulter Electronics, Inc. Level sensor apparatus and method. 4,326,851, Cl. [illegible]
Bemiss, James M., to Cadillac Gage Company. Armored underbody for road vehicle. 4,326,445, Cl. 89-36.00F.
Bender, Fredrick L., to Bender's Sales & Service, Inc. Coupling construction. 4,326,749, Cl. 298-22.00R.
Bender's Sales & Service, Inc.: *See—*
Bender, Fredrick L., 4,326,749, Cl. 298-22.00R.
Bendit, Jean-Pierre; Pellaux, Jean-Paul; and Widmer, Georges. Process and device for fusion joining of fiber-optics fibers. 4,326,870, Cl. 65-4.210.
Bendix Corporation, The: *See—*
Harper, Patrick D., 4,327,394, Cl. 361-154.000.
Kelso, Charles R.; and Mayer, Endre A., 4,327,345, Cl. 335-265.000.
Pauwels, Edward M., 4,326,608, Cl. 188-181.00T.
Punako, Stephen, 4,326,768, Cl. 339-143.00R.
Remus, Casimer F., 4,327,347, Cl. 336-120.000.
Benedictus, Jorn D., to Connaught Laboratories Incorporated. Purification of influenza sub-unit vaccine. 4,327,182, Cl. 435-239.000.
Benichou, Alain. Bedding anchorage rods. 4,326,890, Cl. 106-77.000.
Benkmann, Christian, to Linde Aktiengesellschaft. Pressure buildup technique in pressure swing adsorption process. 4,326,858, Cl. 55-26.000.
Bennett, Bill B.: *See—*
King, Don G.; and Bennett, Bill B., 4,327,312, Cl. 315-378.000.
Benoit, Gordon L.; Bustin, Franz; and Donaldson, Jack J., to Mobil Oil Corporation. Thermoplastic bags having stress relief feature at handle connection. 4,326,664, Cl. 229-54.00R.
Bensley, Douglas W. Method of making footwear. 4,326,313, Cl. 12-142.000.
Bentley, Peter D.; and Pollock, James F., to United Kingdom Atomic Energy Authority. Condensation heating apparatus. 4,327,271, Cl. 219-85.00R.
Bentrem, George A. Fireplace grate. 4,326,496, Cl. 126-164.000.
Berg, Lloyd; McCandless, Frank P.; and Ramer, Ronald J., to United States of America, Energy. Catalyst for hydrotreating carbonaceous liquids. 4,326,995, Cl. 252-465.000.
Berg, Norman J.; Casseday, Michael W.; Lee, John N.; and Abramovitz, Irwin J., to United States of America, Army. Acousto-optic time integrating correlator. 4,326,778, Cl. 350-358.000.
Bergman, Raymond A. Apparatus for transferring a workpiece in an air float system. 4,326,831, Cl. 414-676.000.

Berlin, Howard M., to United States of America, Army. Gas sensor. 4,327,361, Cl. 340-634.000.
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Berte, Frank J., to Massachusetts Institute of Technology. Sailboat. 4,326,475, Cl. 114-39.000.
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  Leibrand, John G., Sr.; and Bessey, Marlin L., 4,326,492, Cl. 123-557.000.
Betta, Enrico: *See—*
  Imparato, Luigi; Gerbaz, Giampaolo; and Betta, Enrico, 4,327,237, Cl. 585-648.000.
Betz Laboratories, Inc.: *See—*
  Jones, Robert L.; Volgenau, Lewis; and Davis, Philip S., 4,326,962, Cl. 210-[illegible]
  Snyder, William R.; and Feuerstein, Diane, 4,326,980, Cl. [illegible]
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  Schillinger, Joseph F.; Bicksler, William B.; and Lambert, Herbert L., 4,326,633, Cl. 206-418.000.
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  Pallaroni, Francesco; Baldini, Luciano; and Siccardi, Alberto, 4,326,574, Cl. 150-8.000.
Billet, Rene, to Societe Anonyme Francaise du Ferodo. Diaphragm clutch cover assembly. 4,326,611, Cl. 192-89.00B.
Bishop, Craig V.: *See—*
  Eckles, William E.; Bishop, Craig V.; and Vaitekunas, Peter T., 4,326,940, Cl. 204-232.000.
BJ-Hughes Inc.: *See—*
  Sheldon, Loren B., 4,327,261, Cl. 200-61.410.
Bjorkholm, John E.: *See—*
  Ashkin, Arthur; Bjorkholm, John E.; Freeman, Richard R.; and Pearson, David B., 4,327,288, Cl. 250-251.000.
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  Phelps, Richard W.; and Tetro, Richard S., 4,326,679, Cl. 242-56.00A.
  Tetro, Richard S.; and Harmon, Paul E., 4,326,680, Cl. 242-56.00A.
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Blackwell, Joseph T., III, to Ciba-Geigy Corporation. Process for the production of methomyl oxime. 4,327,033, Cl. 260-453.300.
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  Kralowetz, Bruno; and Blaimschein, Gottfried, 4,326,323, Cl. 29-6.000.
Blair, Charles M., Jr., to Magna Corporation. Method for breaking petroleum emulsions and the like using micellar solutions of thin film spreading agents comprising polyepoxide condensates of resinous polyalkylene oxide adducts and polyether polyols. 4,326,968, Cl. [illegible].
Blair, Charles M., Jr., to Magna Corporation. Micellar solutions of thin film spreading agents comprising a polyether polyol. 4,326,983, Cl. 252-358.000.
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Blake, Gene J. Precious metal recovery apparatus. 4,326,952, Cl. 110-15.000.
Bleckmann, Ingo. Heater for heating flows of fluid and dishwashing machine provided therewith. 4,326,552, Cl. 134-99.000.
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  Leitner, Wolfgang; Pampouchidis, Georg; and Bleikolm, Anton, 4,327,200, Cl. 525-531.000.
Blessum, Norman S.: *See—*
  DeMoss, Dean; Blessum, Norman S.; Gyi, Ko Ko; and Ragle, Herbert U., 4,327,386, Cl. 360-99.000.
Blomgren, George E.: *See—*
  Jones, Steven D.; and Blomgren, George E., 4,327,159, Cl. [illegible]
  Jones, Steven D.; and Blomgren, George E., 4,327,160, Cl. 429-101.000.
Blomqvist, Ake; and Dahlberg, Kurt, to Aktiebolaget Bofors. Device for aiming of a weapon. 4,326,340, Cl. 33-238.000.
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  Sabatka, Winston E.; and Bloomquist, Wilburn M., 4,326,933, Cl. 204-129.600.
Blouin, Philippe: *See—*
  Athenes, Claude; Salle, Jacques E.; and Blouin, Philippe, 4,327,442, Cl. 375-119.000.
Blum, Helmut; and Worms, Karl-Heinz, to Henkel Kommanditgesellschaft auf Aktien (Henkel KGaA). Process for the production of 3-amino-1-hydroxypropane-1,1-diphosphonic acid. 4,327,039, Cl. 260-502.500.
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  Chen, Kuo-Chun, 4,327,180, Cl. 435-173.000.
Bockmann, August: *See—*
  Schmidt, Adolf; and Bockmann, August, 4,327,004, Cl. 524-745.000.
Boehringer Ingelheim GmbH: *See—*
  Austel, Volkhard; Reiffen, Manfred; Heider, Joachim; and Diederen, Willi, 4,327,100, Cl. 424-256.000.
  Brickl, Rolf; and Eberhardt, Hans, 4,327,114, Cl. 424-331.000.
  Stahle, Helmut; Koppe, Herbert; Kummer, Werner; and Lillie, Christian, 4,327,106, Cl. 424-273.00R.
Boettger, Erhard: *See—*
  Jager, Wolfgang; and Boettger, Erhard, 4,327,281, Cl. 219-523.000.
Boggs, John W.: *See—*
  Gradek, Walter A.; and Boggs, John W., 4,326,655, Cl. 224-324.000.
Boiardi, Mario J. Paving stone and walkway formed therewith. 4,326,817, Cl. 404-41.000.
Bolin, Philip C.: *See—*
  Hopkins, Melvyn D.; and Bolin, Philip C., 4,327,243, Cl. 174-14.00R.
Bolton, Deborah A.; and Schaefer, Jean E., to Buckeye Cellulose Corporation, The. Belt package with temporarily secured detachable belt end. 4,326,300, Cl. 2-114.000.
Bonneyrat, Alain M.: *See—*
  Gilson, Robert E.; Foster, George W.; and Bonneyrat, Alain M., 4,326,837, Cl. 417-12.000.
Bonsall, Samuel B., to Eltra Corporation. Refractory compositions with binder. 4,327,185, Cl. 501-89.000.
Booth, John L.: *See—*
  Rittmaster, Peter A.; and Booth, John L., 4,326,380, Cl. 60-595.000.
Borg-Erickson Corporation: *See—*
  Beck, William P., 4,326,596, Cl. 177-178.000.
Borg-Warner Corporation: *See—*
  Burgin, Albert J., 4,327,298, Cl. 307-66.000.
Borger, Waldemar, to Varta Batterie Aktiengesellschaft. Battery terminal for high temperature batteries. 4,327,162, Cl. 429-120.000.
Bornefeld, Horst; Fort, Hans P.; and Engel, Werner, to Goetze AG. Method of identifying piston rings. 4,326,907, Cl. 156-212.000.
Bosse-Platiere, Michel J.: *See—*
  Garcia, Jose B.; and Bosse-Platiere, Michel J., 4,326,462, Cl. 101-310.000.
Bostwick, Lewis S.; Filosa, Albert V.; and LaTorre, Richard R., to Raytheon Company. Two degree of freedom rate gyroscope. 4,326,428, Cl. 74-5.00F.
Botz, Jakob; Feger, Rolf; Mutschler, Erich; Spazierer, Hubert; and Weber, Adam, to ITT Industries, Inc. Fastening device for a switch. 4,327,264, Cl. 200-295.000.
Bouillet, Edmond: *See—*
  Logan, William R.; Sarot, Pierre; and Bouillet, Edmond, 4,326,976, Cl. 252-99.000.
Bouillon, Claude; Vayssie, Charles; and Richard, Francoise, to L'Oreal. Anti-solar cosmetic composition. 4,327,031, Cl. 260-429.900.
Bouvet, Jean-Victor: *See—*
  Henry, Raymond; Bouvet, Jean-Victor; Chapard, Alain; and Simon, Jacques, 4,326,771, Cl. 350-96.170.
Bradley, Daniel J. Electron-optical image tubes and streak cameras. 4,327,285, Cl. 250-213.0VT.
Bradley, Terrag W.: *See—*
  Schafter, William; and Bradley, Terrag W., 4,327,366, Cl. 346-76.0PH.
Bradshaw, David H., to Texas Instruments Incorporated. Method and apparatus for synchronizing and calibrating a receiver to a pulse width modulation transmitter. 4,327,441, Cl. 375-113.000.
Branca, Quirico; Fischli, Albert E.; and Szente, Andre', to Hoffmann-La Roche Inc. Benzodiazepine derivatives. 4,327,026, Cl. 260-239.30D.
Brancaleone, Salvatore T., to International Telephone and Telegraph Corporation. Electronic device carrier. 4,326,765, Cl. 339-17.0CF.
Brandes, Wilhelm: *See—*
  Timmler, Helmut; Buchel, Karl; Brandes, Wilhelm; Frohberger, Paul-Ernst; and Scheinpflug, Hans, 4,327,104, Cl. 424-269.000.
Brandon, Eugene M.: *See—*
  Ripley, Robert H.; Karsten, Robert W.; Brandon, Eugene M.; and Lockerby, James W., 4,327,011, Cl. 524-474.000.
Branovich, Louis E.; Daly, Edward; Newman, Albert F.; and Smith, Willis M., to United States of America, Army. Method of coating a ceramic substrate. 4,327,131, Cl. 427-229.000.
Branson Ultrasonics Corporation: *See—*
  Summo, Arthur M., 4,326,903, Cl. 156-73.100.
Braun, Ernst; and Braun, Gert, to Halbach & Braun. Device for the homogenization of material to be crushed. 4,326,674, Cl. 241-35.000.
Braun, Gert: *See—*
  Braun, Ernst; and Braun, Gert, 4,326,674, Cl. 241-35.000.
Breckenfeld, Paul W.: *See—*
  Baltz, Gene F.; and Breckenfeld, Paul W., 4,327,041, Cl. 261-41.000.
Brent, Albert: *See—*
  Muenger, James R.; Child, Edward T.; and Brent, Albert, 4,326,856, Cl. 48-197.00R.
Breslow, Jeffrey D.; and Erickson, Erick E., to Marvin Glass & Associates. Talking electronic game. 4,326,710, Cl. 273-1.00E.
Brickl, Rolf; and Eberhardt, Hans, to Boehringer Ingelheim GmbH. Substituted 1,8-dihydroxy-9-(10H)anthracenones. 4,327,114, Cl. 424-331.000.

British Petroleum Company Limited, The: *See—*
  Ball, William J.; Cotton, Leonard; and Stewart, David G., 4,327,190, Cl. 518-714.000.
Brock, Josef; and Surkamp, Paul, to Maschinenfabrik Carl Zangs Aktiengesellschaft. Control for a dobby mechanism. 4,326,563, Cl. 139-76.000.
Brock, Louis C. Collapsible sunshade. 4,326,301, Cl. 2-177.000.
Brockwell, Ian P., to Alfa Laval Pty Ltd. Slat conveyors. 4,326,626, Cl. 198-845.000.
Brook, Jon: *See—*
  Brown, Mike; and Brook, Jon, 4,326,573, Cl. 150-0.500.
Brooks, Robert B., to General Electric Company. Apparatus and method for thawing frozen food. 4,326,390, Cl. 62-382.000.
Brother Kogyo Kabushiki Kaisha: *See—*
  Yamashita, Chikao; Sugaya, Takao; and Yoshida, Noriyuki, 4,326,472, Cl. 112-158.00D.
Brown, E. B. Alarm device responsive to movement of protected object, power source condition and alarm ground path. 4,327,360, Cl. 340-571.000.
Brown, Mike; and Brook, Jon. Deformable fuel cell. 4,326,573, Cl. 150-0.500.
Brown Wooten Mills, Inc.: *See—*
  Dunlap, Albert R., 4,326,393, Cl. 66-172.00E.
Broz, Frank J. Electrostatic mineral concentrator. 4,326,951, Cl. 209-127.00R.
Bruning, Rolf; and Roth, Jurgen, to Heraeus Quarzschmelze GmbH. Apparatus for the combustion of harmful gases. 4,327,057, Cl. 422-173.000.
Brusasco, Enzo. Device for adjusting the relative angular position of two elements. 4,326,748, Cl. 297-362.000.
Bryant, Bill R., to Houston Tong Services, Inc. Portable stabbing board. 4,326,602, Cl. 182-82.000.
Bryant, Richard W., to National Semiconductor Corporation. Integrated organ circuit. 4,326,443, Cl. 84-1.260.
Bryer, Robert P.: *See—*
  Davis, Brian C.; and Bryer, Robert P., 4,327,021, Cl. 524-297.000.
Buchel, Karl: *See—*
  Timmler, Helmut; Buchel, Karl; Brandes, Wilhelm; Frohberger, Paul-Ernst; and Scheinpflug, Hans, 4,327,104, Cl. 424-269.000.
Buck, Robert T.; and Horres, Charles R., to Becton, Dickinson and Company. Dialysate bag assembly for continuous ambulatory peritoneal dialysis. 4,326,526, Cl. 128-272.000.
Buckeye Cellulose Corporation, The: *See—*
  Bolton, Deborah A.; and Schaefer, Jean E., 4,326,300, Cl. 2-114.000.
Buckles, Richard G., to World Health Organization. Barrier contraceptive torus. 4,326,510, Cl. 128-127.000.
Buerstinghaus, Rainer; Kiehs, Karl; Siegel, Hardo; and Adolphi, Heinrich, to BASF Aktiengesellschaft. Oximinophosphoric acid derivatives, their preparation and their use in pest control. 4,327,090, Cl. 424-203.000.
Buholtz, William F., to Burroughs Corporation. Full cantilever structural support apparatus for rotatable electrophotographic drum., 4,326,793, Cl. 355-3.0DR.
Bukhtiyarov, Ivan D.; An, Viktor B.; Farshatov, Marat N.; Sapozhnikov, Fedor F.; Sidorov, Anatoly G.; Proskurina, Natalya A.; and Marakin, Vladimir I. Engine test method. 4,326,410, Cl. 73-117.300.
Bunyan, Thomas W., to Pilgrim Engineering Developments Limited. Bolts and methods of bolting. 4,326,826, Cl. 411-339.000.
Burchett, Lawrence R. Fuel heater. 4,326,491, Cl. 123-557.000.
Burdeska, Kurt: *See—*
  Liechti, Hans W.; Burdeska, Kurt; and Markert, Jurgen, 4,327,018, Cl. 260-156.000.
Burghoff, Hans: *See—*
  Murzin, Horst; Woss, Rainer; Burghoff, Hans; Schmieder, Frank; Herzig, Alfred; Junge, Johannes; and Deckarm, Gunter, 4,326,625, Cl. 198-653.000.
Burgin, Albert J., to Borg-Warner Corporation. Battery backup system for a microcomputer. 4,327,298, Cl. 307-66.000.
Burke, James W. Starting fluid injection apparatus. 4,326,485, Cl. 123-180.0AC.
Burke, Leonard F.; and Dean, Arthur P., to United States of America, Army. Dye marker assembly for rocket practice round. 4,326,463, Cl. 102-513.000.
Burklin, Werner. Process and apparatus for preparing compostable material. 4,326,874, Cl. 71-9.000.
Burnham, Gerald E., Sr. Degassing of drilling fluids. 4,326,859, Cl. 55-52.000.
Burns, Robert B., to Texaco Development Corporation. Method for drilling deviated wells into an offshore substrate. 4,326,595, Cl. 175-9.000.
Burroughs Corporation: *See—*
  Buholtz, William F., 4,326,793, Cl. 355-3.0DR.
  DeMoss, Dean; Blessum, Norman S.; Gyi, Ko Ko; and Ragle, Herbert U., 4,327,386, Cl. 360-99.000.
  Genter, Melvyn E.; and Potash, Hanan, 4,327,355, Cl. 340-825.900.
Burrows, James L., to Sanders Associates, Inc. Data driven processor. 4,327,407, Cl. 364-200.000.
Burton, Charles A.; and Russell, Robert C., to Rexham Corporation. Packaging machine with continuous motion filler. 4,326,568, Cl. 141-114.000.
Bus, Jan; Mohlmann, Willem M. M.; and Pritchard, Norman J., to Lever Brothers Company. Non-aqueous, built liquid detergent composition and method for preparing same. 4,326,979, Cl. 252-158.000.
Bustin, Franz: *See—*
  Benoit, Gordon L.; Bustin, Franz; and Donaldson, Jack J., 4,326,664, Cl. 229-54.00R.
B.V. Beheermaatschappij T. denBreejen van den Bout: *See—*
  van Dee, Nicolaas F., 4,326,346, Cl. 37-72.000.
Cadet, Andre, to Compagnie Francaise de Raffinage. Process for storing heat with a eutectic composition containing at least one saturated aliphatic hydrocarbon and at least one fatty acid. 4,326,975, Cl. 252-70.000.
Cadillac Gage Company: *See—*
  Bemiss, James M., 4,326,445, Cl. 89-36.00F.
Cadwell, Dennis J., to Westinghouse Electric Corp. Control rod guide thimble for nuclear reactor fuel assemblies. 4,326,921, Cl. 376-353.000.
Calamari, James A., Jr.: *See—*
  Nyman, Frederick R.; Stevens, Barry; and Calamari, James A., Jr., 4,327,048, Cl. 264-107.000.
Calcol, Inc.: *See—*
  Kaplan, Norman C., 4,327,028, Cl. 260-345.300.
Cale, Albert D., Jr., to A. H. Robins Company, Inc. Pharmaceutical compositions useful in the treatment of cardiovascular hypertension and containing 4-substituted-2-iminoimadazolidine compounds. 4,327,098, Cl. 424-250.000.
Cale, Albert D., Jr., to A. H. Robins Company, Inc. Method useful in the treatment of sugar cataracts using 4-substituted-2-iminoimidazolidine compounds. 4,327,107, Cl. 424-273.00R.
Cale, Albert D., Jr., to A. H. Robins Company, Inc. Methods useful in the treatment of cardiac arrhythmia using 4-substituted-2-iminoimidazolidine compounds. 4,327,108, Cl. 424-273.00R.
Calgon Corporation: *See—*
  Reilly, Phillip B.; and Ralston, Paul H., 4,326,873, Cl. 65-134.000.
Calucci, Edward J.: *See—*
  Stratton, Roy F.; and Calucci, Edward J., 4,327,306, Cl. 313-419.000.
Cambridge Collaborative, Inc.: *See—*
  Fredberg, Jeffrey J., 4,326,416, Cl. 73-597.000.
Camilleri, Thomas M. Positive cycle mechanism for bowling pinsetter. 4,326,712, Cl. 273-43.00R.
Campbell, Larry J., to Eaton Corporation. Shielded electrical cable. 4,327,248, Cl. 174-107.000.
Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence: *See—*
  Cornish, William D., 4,327,343, Cl. 333-218.000.
Canevari, Gerard P., to Exxon Research & Engineering Co. Composition and method for suppressing vapor loss of volatile hydrocarbons. 4,326,986, Cl. 252-384.000.
Canica Crushers, Ltd.: *See—*
  Rose, Neil M., 4,326,676, Cl. 241-275.000.
Canon Kabushiki Kaisha: *See—*
  Aoki, Kanemasa, 4,327,304, Cl. 310-266.000.
  Aoyagi, Masao; and Kamata, Shigeru, 4,326,789, Cl. 354-286.000.
  Hirata, Noritsugu; Toyama, Masamichi; Okajima, Hidekazu; and Nishimura, Akimasa, 4,326,790, Cl. 354-288.000.
  Ichiyanagi, Toshikazu, 4,326,784, Cl. 354-53.000.
  Miyamoto, Koichi; Kan, Yasuhito; Nitanda, Hiroshi; and Ariga, Masao, 4,326,797, Cl. 355-57.000.
  Noda, Atsushi, 4,327,365, Cl. 346-76.0PH.
  Okajima, Hidekazu, 4,326,782, Cl. 352-91.00C.
  Senuma, Michio, 4,326,787, Cl. 354-246.000.
  Tajima, Hatsuo; Iwami, Naoki; Masuda, Shunichi; Shimizu, Katsuichi; Kawatsura, Yoshihiro; Suzuki, Koji; and Yokomizo, Yoshikazu, 4,326,795, Cl. 355-14.00E.
  Uchiyama, Takashi; Suzuki, Ryoichi; Saito, Syuichiro; and Sugiura, Yoji, 4,326,786, Cl. 354-234.000.
Canon Seiki Kabushiki Kaisha: *See—*
  Aoki, Kanemasa, 4,327,304, Cl. 310-266.000.
Capostagno, Joseph A.; Chan, Kingsley; and Kartavenko, Alexandre, to Lightolier Incorporated. Lighting fixture with uniform mounting frame for old installations. 4,327,403, Cl. 362-306.000.
Capshew, Charles E.: *See—*
  Welch, Melvin B.; Dietz, Richard E.; and Capshew, Charles E., 4,326,988, Cl. 252-429.00B.
Capuano, Italo A.; Turley, Patricia A.; and DuBord, Edward W., to Olin Corporation. Sodium amalgam monitor. 4,326,850, Cl. 23-230.00R.
Carl Walther GmbH: *See—*
  Ludwig, Walter; and Schmid, Franziska, deceased, 4,326,353, Cl. 42-7.000.
Carneim, Wilfried; Hillemanns, Herbert; Vollmecke, Hermann; Ribken, Hans; Schumacher, Heinz; and Roether, Kurt, to Mannesmann Aktiengesellschaft. Oil-tempering apparatus for pipes. 4,326,699, Cl. 266-114.000.
Carter, Rory A. C., to Vosper Hovermarine Limited. Gas-cushion vehicles. 4,326,477, Cl. 114-67.00A.
Casbohm, Chris E.: *See—*
  Sherrick, James W.; and Casbohm, Chris E., 4,326,670, Cl. [illegible]
Cashman, Richard J., to Produce Processors International Corporation. Racing sulky and harness. 4,326,367, Cl. 54-2.000.
Casseday, Michael W.: *See—*
  Berg, Norman J.; Casseday, Michael W.; Lee, John N.; and Abramovitz, Irwin J., 4,326,778, Cl. 350-358.000.
Caterpillar Tractor Co.: *See—*
  Goloff, Alexander, 4,326,672, Cl. 239-91.000.

CDC Life Sciences Inc.: *See*—
Micetich, Ronald G.; Shaw, Chia-Cheng; and Rastogi, Ram B., 4,327,222, Cl. 548-247.000.
Cegedur Societe de Transformation de l'Aluminium Pechiney: *See*—
Colas, Francois, 4,326,773, Cl. 350-292.000.
Ceintrey, Claude, to La Cellophane. Writing liquid for use with an opaque recording material for forming transparencies for overhead projection and the like. 4,327,006, Cl. 524-315.000.
Centre Electronique Horloger S.A.: *See*—
Oguey, Henri; and Gerber, Bernard, 4,327,320, Cl. 323-313.000.
Century Inks Corporation: *See*—
Ripley, Robert H.; Karsten, Robert W.; Brandon, Eugene M.; and Lockerby, James W., 4,327,011, Cl. 524-474.000.
Cerruti, Eraldo, to Fiat Auto S.p.A. Monitoring apparatus for a motor vehicle. 4,327,352, Cl. 340-52.00F.
Ceskoslovenska akademie ved: *See*—
Novak, Jan; Sorm, Miloslav; Ulbert, Karel; Nespurek, Stanislav; Mikulcova, Dagmar; and Cmolik, Jiri, 4,326,966, Cl. 252-8.800.
Chafetz, Harry: *See*—
Hammond, Kenneth G.; and Chafetz, Harry, 4,326,973, Cl. 252-34.000.
Chakuparakal, Thomas, to General Motors Corporation. Evaporated electrodes for zirconia exhaust gas oxygen sensors. 4,327,122, Cl. 427-37.000.
Chamberlin, William B., III, to Lubrizol Corporation, The. Concentrates, lubricant compositions and methods for improving fuel economy of internal combustion engine. 4,326,972, Cl. 252-33.300.
Chambers, Robert W.; and Cuomo, Frank, Jr., to RCA Corporation. Method and apparatus for deflashing molded recorded discs. 4,326,325, Cl. 29-27.00C.
Champion International Corporation: *See*—
Schillinger, Joseph F.; Bicksler, William B.; and Lambert, Herbert L., 4,326,633, Cl. 206-418.000.
Scott, Raymond G., 4,326,665, Cl. 229-87.00R.
Thompson, Kenneth P.; and Ihde, Richard C., 4,327,136, Cl. 411-33.000.
Champion, James R.; Ernst, Larry M.; Ford, Leland W.; and Velarde, Ronald G., to International Business Machines Corporation. Apparatus and method for measuring and maintaining copy quality in an electrophotographic copier. 4,326,796, Cl. 355-14.0CH.
Chan, Kingsley: *See*—
Capostagno, Joseph A.; Chan, Kingsley; and Kartavenko, Alexandre, 4,327,403, Cl. 362-306.000.
Chandalia, Kiran B.; and Barnowski, Henry G., to Olin Corporation. Flexible polyurethane foam prepared from a reaction mixture which includes a polyether triol containing an effectively dispersed finely divided solid particulate material. 4,327,194, Cl. 521-99.000.
Chang, M. C.: *See*—
Hao, Paul L. C.; Hsu, W. W.; Lin, W. S.; Tong, S. N.; Hung, H. K.; and Chang, M. C., 4,327,003, Cl. 523-336.000.
Chapard, Alain: *See*—
Henry, Raymond; Bouvet, Jean-Victor; Chapard, Alain; and Simon, Jacques, 4,326,771, Cl. 350-96.170.
Chapman, Richard A.; Kinch, Michael A.; and Hynecek, Jaroslav, to Texas Instruments Incorporated. Infrared charge injection device imaging system. 4,327,291, Cl. 250-332.000.
Chapski, David L.: *See*—
Stearns, Charles F.; Chapski, David L.; and Vosseller, Kenneth F., 4,326,376, Cl. 60-39.28R.
Charlet, Egbert; and Kludas, Martin, to Bayer Aktiengesellschaft. Cosmetic agents including soluble elastin. 4,327,078, Cl. 424-45.000.
Chatlos, Richard, to Air O Scoop Corporation. Attachment for motor vehicles with rear windows. 4,326,451, Cl. 98-2.120.
Chemie Linz Aktiengesellschaft: *See*—
Groke, Karl, 4,327,084, Cl. 424-176.000.
Chen, Kuo-Chun, to Board of Governors, Wayne State Univ. Method and apparatus for electromagnetic radiation of biological material. 4,327,180, Cl. 435-173.000.
Cheng, Paul J., to Phillips Petroleum Company. Process for making carbon black. 4,327,069, Cl. 423-450.000.
Chester, Arthur W.; and Stover, William A., to Mobil Oil Corporation. Novel cracking catalysts and catalyst supports. 4,326,993, Cl. 252-455.00Z.
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Ziman, Stephen D., 4,326,878, Cl. 71-92.000.
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Drudy, William A., to R.F.I. Inc. Apparatus for injecting fluids into aggregates. 4,326,560, Cl. 137-897.000.
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Jackson, Winston J., Jr.; and Darnell, William R., 4,327,206, Cl. 528-179.000.
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Ellzey, Floyd P. Cooperative escalator and wheel chair. 4,326,622, Cl. [redacted].
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Erlich, David. Chess pieces with detachable markers. 4,326,720, Cl. 273-239.000.
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Ernst, Richard R.; and Aue, Walter P., to Spectrospin AG. Method for the recording of spin resonance spectra and an apparatus for the implementation of such method. 4,327,425, Cl. 365-152.000.
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  Canevari, Gerard P., 4,326,986, Cl. 252-384.000.
  Kwon, Yiduk; and Lawson, Paul, 4,327,318, Cl. 320-39.000.
  Luckenbach, Edward C.; and Worley, Arthur C., 4,327,055, Cl. 422-110.000.
  Sawyer, Willard H.; and Cull, Neville L., 4,326,947, Cl. 208-111.000.
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Falk, Richard A. Molded sand insulated sampler. 4,326,426, Cl. [illegible]
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  Schaefer, Dieter; Motz, Herbert; Mayer, Dieter; Deigner, Paul; Hack, Joachim; and Falk, Roland, 4,327,139, Cl. 428-65.000.
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  Marsili, Leonardo; Franceschi, Giovanni; and Sanfilippo, Aurora, 4,327,096, Cl. 424-250.000.
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  Botz, Jakob; Feger, Rolf; Mutschler, Erich; Spazierer, Hubert; and Weber, Adam, 4,327,264, Cl. 200-295.000.
Feinberg, Stewart C.; Lundsager, Christian B.; Lundquist, Joseph T., Jr.; and Balouskus, Robert A., to W. R. Grace & Co. Battery separator. 4,327,164, Cl. 429-144.000.
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Feng, Chin-Liang: *See—*
  Hwang, Top-Ping; and Feng, Chin-Liang, 4,327,308, Cl. 315-99.000.
Fenn, George S. Playback system for recording disk having flexible, deformable recording membrane. 4,327,435, Cl. 369-261.000.
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  Fieldhouse, John W.; and Fenske, Steven L., 4,327,064, Cl. 423-300.000.
Ferrara, Louis T. Blood separator and dispenser. 4,326,959, Cl. 210-515.000.
Ferrari, Harry M.; and Dollard, Walter J., to Westinghouse Electric Corp. Composite nuclear fuel assembly. 4,326,922, Cl. 376-435.000.
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  Constantino, Daniel G., 4,326,698, Cl. 251-327.000.
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Fitton, David L., to United Technologies Corporation. Shroud for a rotor blade. 4,326,836, Cl. 416-196.00R.
Fitts, John M., to Hughes Aircraft Company. Laser beam wavefront and line-of-sight error correction system. 4,326,800, Cl. 356-152.000.
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Flaum, Dennis M. Bedding device. 4,326,309, Cl. 5-12.00R.
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Forrest, Sid. Automobile tow wheel attachment. 4,326,465, Cl. 104-165.000.
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Frank, William E., to Westinghouse Electric Corp. Current control system for an induction heating apparatus. 4,327,268, Cl. 219-10.770.
Frankenberg, Carl R., to American Foam Latex Corporation. Mattress pad. 4,326,310, Cl. 5-448.000.
Fredberg, Jeffrey J., to Cambridge Collaborative, Inc. Acoustic pulse response measuring. 4,326,416, Cl. 73-597.000.
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  Fink, Hans-Ferdi; and Freiberger, Rolf, 4,326,999, Cl. 524-261.000.
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Fretz, George C., III, to Goodyear Aerospace Corporation. Deceleration control circuit. 4,326,755, Cl. 303-96.000.
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Frey, Dieter. Motor vehicle roof carrier for the affixation of skis and other objects to be transported. 4,326,654, Cl. 224-315.000.
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Friedberg, Martin F. Slide fastener with improved end connections. 4,326,319, Cl. 24-205.11R.
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Frissell, John M.; and Swanson, Kris E., to Data General Corporation. Controller device with diagnostic capability for use in interfacing a central processing unit with a peripheral storage device. 4,327,408, Cl. 364-200.000.
Fritz, Adolf: *See—*
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  Timmler, Helmut; Buchel, Karl; Brandes, Wilhelm; Frohberger, Paul-Ernst; and Scheinpflug, Hans, 4,327,104, Cl. 424-269.000.
Froling, Albert; de Jongh, Rudolph O.; and Kemps, Josephus M. A., to Lever Brothers Company. Hydrogenation. 4,326,932, Cl. 204-59.00R.
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Frye Electronics, Inc.: *See—*
  Frye, George J., 4,327,326, Cl. 324-158.00R.
Frye, George J., to Frye Electronics, Inc. Automatic testing system for electric nerve stimulator units. 4,327,326, Cl. 324-158.00R.
Fuchigami, Mitsuru: *See—*
  Toyama, Kohji; Fuchigami, Mitsuru; Nagayasu, Isao; and Tsukahara, Hirokazu, 4,327,148, Cl. 428-320.800.
Fuchs, Rainer: *See—*
  Jautelat, Manfred; Arlt, Dieter; Lantzsch, Reinhard; Fuchs, Rainer; Riebel, Hans-Jochem; Schroder, Rolf; and Harnisch, Horst, 4,327,025, Cl. 260-338.000.
Fudala, Chester S.: *See—*
  Pickles, Joseph; and Fudala, Chester S., 4,326,690, Cl. 248-396.000.
Fuji Kiko Kabushiki Kaisha: *See—*
  Mochida, Haruo; and Kawashima, Hatsuo, 4,326,616, Cl. 192-111.00A.
Fuji Photo Film Co., Ltd.: *See—*
  Aoki, Kozo; Seoka, Yoshio; and Yokota, Yukio, 4,327,173, Cl. [illegible]
  Toda, Yuzo; Kobayashi, Hidetoshi; and Koizumi, Juaji, 4,327,175, Cl. 430-546.000.
Fujii, Kazuo, to Sanyo Electric Co., Ltd. Cassette loading and unloading device for video tape recorder. 4,327,385, Cl. 360-96.500.
Fujikubo, Yoshitake; and Tanaka, Mamoru, to Nissan Motor Company, Limited. Battery recharging solar cell arrangement for an automotive vehicle. 4,327,316, Cl. 320-2.000.
Fujimura, Kensuke; Yamamoto, Naomichi; Ogawa, Masahiro; and Tanigawa, Nobuyoshi, to UBE Industries Ltd. Apparatus for dispersing a liquid into another liquid. 4,327,059, Cl. 422-259.000.
Fujisawa, Kiyoji: *See—*
  Tomita, Masao; Isaka, Takenobu; Mino, Mineo; and Fujisawa, Kiyoji, 4,327,384, Cl. 360-77.000.
Fujisawa Pharmaceutical Co., Ltd.: *See—*
  Ueda, Ikuo; Kobayashi, Masakazu; Yamada, Hisashi; and Ono, Hiroki, 4,327,093, Cl. 424-246.000.
Fujishige, Shoei: *See—*
  Nakao, Yukimichi; and Fujishige, Shoei, 4,327,235, Cl. 585-270.000.
Fujishiro, Takeshi: *See—*
  Kobayashi, Hiroshi; Kita, Toru; and Fujishiro, Takeshi, 4,326,412, Cl. 73-204.000.
Fujitsu Fanuc Limited: *See—*
  Imazeki, Ryoji; and Hattori, Masayuki, 4,327,422, Cl. 365-1.000.
  Kawada, Shigeki; Ishida, Hiroshi; and Koiwai, Yutaka, 4,327,315, Cl. 318-811.000.
Fujitsu Limited: *See—*
  Maruoka, Minekazu; and Hirotani, Tatsushi, 4,327,409, Cl. 364-200.000.
Fujiwara, Kiyoshi; Nagatomo, Katsuaki; Yoshinaga, Shoji; Tamura, Zensuke; Shibata, Fumio; and Kanekiyo, Hiroshi, to Hitachi, Ltd. Centrifugal type counterflow contact apparatus. 4,326,666, Cl. 233-15.000.
Fukatsu, Yoshiaki: *See—*
  Hattori, Katsuhide; Fukatsu, Yoshiaki; and Takahashi, Masao, 4,326,900, Cl. 149-2.000.
Fukino, Kunihiro: *See—*
  Ohmori, Sachio; Fukino, Kunihiro; and Ishizaka, Sunao, 4,326,788, Cl. 354-286.000.
Fukui, Isao: *See—*
  Ono, Junichi; Fukui, Isao; and Imamura, Naoki, 4,326,801, Cl. 356-313.000.
Fukuoka, Tatsuhiko: *See—*
  Nozue, Shigehiro; Fukuoka, Tatsuhiko; and Sugiura, Hideaki, 4,326,758, Cl. 308-170.000.
Fukushima, Toshihiko: *See—*
  Sato, Eiji; Arai, Nobukatsu; Tanaka, Hideki; Fukushima, Toshihiko; and Nakajima, Tadakatsu, 4,326,391, Cl. 62-402.000.
Fukushima, Tsunekazu; Matsunaga, Tomiyuki; and Funakoshi, Satoshi, to Green Cross Corporation, The. Process for heat treatment of aqueous solution containing human blood coagulation factor XIII. 4,327,086, Cl. 424-177.000.
Funakoshi, Satoshi: *See—*
  Fukushima, Tsunekazu; Matsunaga, Tomiyuki; and Funakoshi, Satoshi, 4,327,086, Cl. 424-177.000.
Funakoshi, Takashi: *See—*
  Kawahara, Haruyuki; Makita, Teruo; Kudo, Shozo; and Funakoshi, Takashi, 4,327,014, Cl. 523-116.000.
Furman, Edward L.: *See—*
  Swisher, Scott N.; and Furman, Edward L., 4,327,319, Cl. [illegible]
Furukawa, Hiroshi: *See—*
  Okumura, Yoshiharu; Furukawa, Hiroshi; and Kaneko, Katsumi, 4,327,231, Cl. 568-899.000.
Furuya, Yukitsuna; and Akashi, Fumio, to Nippon Electric Co., Ltd. Signal detector for use in digital communication. 4,327,440, Cl. 375-76.000.
Gaea Trade and Development Company Limited: *See—*
  Davies, Ronald C., 4,326,621, Cl. 194-100.00A.
Gage, Douglas M., to Deere & Company. Steering system including accumulator for supplying emergency reserve of fluid. 4,326,558, Cl. 137-554.000.
Gaiser, Conrad J. Deodorant dispenser. 4,327,056, Cl. 422-124.000.
Gaiser, Gerhard O., to American Fabrics Company. Beaming machine. 4,326,322, Cl. 28-187.000.
Gall, John C.; and Meharg, Richard D., to Sears, Roebuck and Co. Foldable wheelchair. 4,326,732, Cl. 280-642.000.
Gall Thomson Maritime Limited: *See—*
  Thomson, John G., 4,326,555, Cl. 137-68.00R.
Gallaher Limited: *See—*
  Hardwick, Michael J.; and McMeekan, Kenneth R., 4,326,544, Cl. 131-369.000.
Gant, Robert C.; and Reeves, John E., to Halliburton Company. Method and apparatus for monitoring fluid flow. 4,326,411, Cl. 73-155.000.
Garcia, Jose B.; and Bosse-Platiere, Michel J., to Schlumberger Technology Corporation. Shaped charge retention and barrier clip. 4,326,462, Cl. 102-310.000.
Gardner, Beth A.: *See—*
  Helsley, Grover C.; Strupczewski, Joseph T.; and Gardner, Beth A., 4,327,103, Cl. 424-267.000.
Gardner, Richard N.: *See—*
  Dillon, Kenneth R.; and Gardner, Richard N., 4,327,156, Cl. 428-568.000.
Garnett, David M. Relating to bearing assemblies for use in conveyor rollers. 4,326,619, Cl. 193-37.000.
Gatsis, John G.: *See—*
  Flagg, John F.; Johnson, Russell W.; and Gatsis, John G., 4,326,945, Cl. 208-8.0LE.
Gauthier, Charles F.; and Martin, Michael L. Casing hanger and stabilizer apparatus and method. 4,326,587, Cl. 166-379.000.
Gdula, Michael; Hodsoll, Raymond J.; and Underkoffler, Edwin C., to General Electric Company. Polyphase reference generator. 4,327,420, Cl. 364-721.000.
Gefitec S.A.: *See—*
  Posso, Patrick, 4,326,688, Cl. 248-178.000.
Geier, Leonard W.; and Dunn, Kenneth F., to Raytheon Company. Turbulent solar collector. 4,326,503, Cl. 126-443.000.
Geisthoff, Hubert; and Nienhaus, Clemens, to Jean Walterscheid GmbH. Multipartite protective device for universal joint shafts. 4,326,392, Cl. 64-3.000.
Gelbein, Abraham P., to Lummus Company, The. Nicotinamide production. 4,327,219, Cl. 546-317.000.
Gelderloos, Hendrik J. C.: *See—*
  United States of America, National Aeronautics and Space Administration; and Gelderloos, Hendrik J. C., 4,327,437, Cl. [illegible]
Genaro, Donald M.: *See—*
  Felix, Cristian J.; and Genaro, Donald M., 4,326,620, Cl. 194-1.00A.
General Dynamics, Convair Division: *See—*
  Peddie, Gerald D., 4,326,902, Cl. 156-73.100.
General Dynamics, Pomona Division: *See—*
  Dugan, William P., 4,326,928, Cl. 204-9.000.
General Electric Company: *See—*
  Brooks, Robert B., 4,326,390, Cl. 62-382.000.
  Ettinger, Robert H.; and Pasko, Walter J., 4,327,349, Cl. 336-219.000.
  Gdula, Michael; Hodsoll, Raymond J.; and Underkoffler, Edwin C., 4,327,420, Cl. 364-721.000.
  Giles, Walter B., 4,326,373, Cl. 60-39.020.
  Hanneman, Rodney E., 4,327,155, Cl. 428-556.000.
  Hershberger, Doran D., 4,327,302, Cl. 310-156.000.

Liu, Yung S., 4,327,337, Cl. 372-3.000.
Mendiratta, Ashok K., 4,327,229, Cl. 568-728.000.
Mossey, Paul W., 4,326,804, Cl. 356-375.000.
Otto, Charles W., 4,326,333, Cl. 29-598.000.
Siemers, Paul A.; and Solomon, Harvey D., 4,327,120, Cl. 427-34.000.
Wallot, George P., 4,327,309, Cl. 315-170.000.
White, James A.; Rice, Frank L.; and Lewis, Walter E., 4,327,274, Cl. 219-10.55R.
Zelahy, John W.; and Raeburn, Alexander, Jr., 4,326,833, Cl. 416-96.00R.
General Electric Company Limited, The: *See—*
Crooks, Stephen J.; and Stevenson, Robert A., 4,327,256, Cl. 179-99.00R.
General Motors Corporation: *See—*
Chakupurakal, Thomas, 4,327,122, Cl. 427-57.000.
Miller, Douglas A., 4,326,432, Cl. 74-475.000.
Wertz, John L., 4,326,835, Cl. 416-193.00A.
Wheadon, Ellis G., 4,327,163, Cl. 429-139.000.
Genter, Melvyn E.; and Potash, Hanan, to Burroughs Corporation. Digital device with interconnect matrix. 4,327,355, Cl. 340-825.900.
Georg Fischer Aktiengesellschaft: *See—*
Lehmann, Ernesto, 4,326,737, Cl. 285-112.000.
Georg Menshen & Co. KG: *See—*
Stahl, Otto; and Schulz, Horst, 4,326,639, Cl. 215-252.000.
George, Larry T.; and Egan, Herbert W., Jr., to Wallace Murray Corporation. Constant belt tension device. 4,326,848, Cl. 474-135.000.
Georgen, Daniel; and Tintignac, Jean P., to Rhone-Poulenc Industries. Process for the preparation of new lysine-containing solid compositions for addition to animal feed. 4,327,118, Cl. 426-656.000.
Geosource Inc.: *See—*
Day, Roger W.; Dunavent, Sidney W.; and Rich, Elvis, 4,326,863, Cl. 55-171.000.
Gerbaz, Giampaolo: *See—*
Imparato, Luigi; Gerbaz, Giampaolo; and Betta, Enrico, 4,327,237, Cl. 585-648.000.
Gerber, Bernard: *See—*
Oguey, Henri; and Gerber, Bernard, 4,327,320, Cl. 323-313.000.
Gerhard Collardin GmbH: *See—*
Konnert, Wolfgang, 4,326,894, Cl. 148-6.14R.
Gernandt, Helmut, to Linde Aktiengesellschaft. Piston and seal assembly. 4,326,724, Cl. 277-171.000.
Gerow, Gordon P., to FMC Corporation. Method of distilling a volatile constituent from a liquid mixture. 4,326,926, Cl. 203-91.000.
Gesellschaft fur Strahlen-und Umweltforschung mbH Munchen: *See—*
Uerpmann, Ernst-Peter; Staupendahl, Gerhard; and Schmidt, Manfred, 4,326,820, Cl. 405-128.000.
GFM Gesellschaft fur Fertigungstechnik und Maschinenbau Gesellschaft m.b.H.: *See—*
Kralowetz, Bruno; and Blaimschein, Gottfried, 4,326,323, Cl. 29-6.10R.
Giallombardo, Gary P. Question and answer game employing chance-taking means. 4,326,711, Cl. 273-1.00R.
Gibby, Richard A.; and Potter, Stanley B. Device for removing contaminating particles from lubricating oil. 4,326,953, Cl. 210-168.000.
Giles, Walter B., to General Electric Company. Integrated gas turbine power generation system and process. 4,326,373, Cl. 60-39.020.
Gilliland, John D. Arrangement for monitoring the performance of a digital transmission system. 4,327,356, Cl. 340-825.770.
Gilson Medical Electronics: *See—*
Gilson, Robert E.; Foster, George W.; and Bonneyrat, Alain M., 4,326,837, Cl. 417-12.000.
Gilson, Robert E.; Foster, George W.; and Bonneyrat, Alain M., to Gilson Medical Electronics. Pumping apparatus using a stepping motor. 4,326,837, Cl. 417-12.000.
GKN Sankey Limited: *See—*
Powell, Robin F., 4,326,615, Cl. 192-93.00R.
Gladysz, Carl V.: *See—*
McAllister, John H.; Stewart, Lindsay G.; Gladysz, Carl V.; and Wilson, Jim, 4,326,887, Cl. 75-257.000.
Glatt, Werner, to Werner Glatt GmbH. Rotatable coating vessel. 4,326,480, Cl. 118-50.000.
Glatthorn, Raymond, to Westinghouse Electric Corp. Apparatus for continuously welding a portion of a row of tubes to a tubesheet. 4,327,269, Cl. 219-60.200.
Glaxo Group Limited: *See—*
Collington, Eric W.; Hallett, Peter; and Wallis, Christopher J., 4,327,092, Cl. 424-246.000.
Gockler, Heinz; and Hofmeister, Hagen, to Licentia-Patent-Verwaltungs-G.m.b.H. Method for generating modem transmission signals with quadrature amplitude modulation. 4,327,439, Cl. 375-67.000.
Godar, Richard L.: *See—*
Hendricks, Carl C.; Godar, Richard L.; and Roux, Kenneth R., 4,326,987, Cl. 252-392.000.
Goddijn, Bernardus H. A., to U.S. Philips Corporation. Stepping motor. 4,327,299, Cl. 310-49.00R.
Goetze AG: *See—*
Bornefeld, Horst; Fort, Hans P.; and Engel, Werner, 4,326,907, Cl. 156-212.000.
Goguen, Robert P. Anti-siphon selector valve. 4,326,671, Cl. 139-66.000.
Goldstein, Albert: *See—*
Parry, James L.; Redden, Martin J.; and Goldstein, Albert, 4,326,466, Cl. 104-172.00S.
Goloff, Alexander, to Caterpillar Tractor Co. Rotary fuel injection apparatus. 4,326,672, Cl. 239-91.000.
Gomi, Hiroshi, to Tokyo Shibaura Electric Co., Ltd. Composite color signal processing circuit. 4,327,373, Cl. 358-28.000.
Gongwer, Calvin A., to Innerspace Corporation. Fluid control valve. 4,326,554, Cl. 137-14.000.
Goodyear Aerospace Corporation: *See—*
Fretz, George C., III, 4,326,755, Cl. 303-96.000.
Ruof, Edgar J., 4,327,413, Cl. 364-426.000.
Gordon, Frank J.: *See—*
Scianna, Anthony, Sr.; and Gordon, Frank J., 4,326,660, Cl. 226-190.000.
Goto, Motohiro: *See—*
Endo, Yasuhiko; Mimori, Takashi; and Goto, Motohiro, 4,327,188, Cl. 501-134.000.
Graben, Melvin M.: *See—*
Spencer, Homer K.; and Graben, Melvin M., 4,326,879, Cl. 71-94.000.
Gradek, Walter A.; and Boggs, John W., to Foam Design, Incorporated. Vehicle roof carrier for skis and ski poles. 4,326,655, Cl. 224-324 000.
Gramlich, Otto K.: *See—*
Wirz, Arno; Sobotta, Peter; Arendt, Franz; and Gramlich, Otto K., 4,327,135, Cl. 428-600.000.
Granda, Edward J.: *See—*
Klemarczyk, Philip T.; Sanders, James M.; Vock, Manfred H.; Vinals, Joaquin F.; Schmitt, Frederick L.; and Granda, Edward J., 4,326,998, Cl. 252-522.00R.
Granryd, Thorvald G. Low cost vehicle traction device employing pivotally mounted anchoring means. 4,326,668, Cl. 238-14.000.
Grasselli, Robert K.; Suresh, Dev D.; and Hardman, Harley F., to Standard Oil Company, The. Production of unsaturated nitriles. 4,327,037, Cl. 260-465.300.
Graves, Daniel F.: *See—*
Fieldhouse, John W.; and Graves, Daniel F., 4,327,063, Cl. 423-300.000.
Gray, John B.: *See—*
Pipe, William J. C.; and Gray, John B., 4,326,384, Cl. 62-62.000.
Gray, Lorin S., III, to Scott Paper Company. Release coatings. 4,327,121, Cl. 427-44.000.
Great Lakes Chemical Corporation: *See—*
Ayres, James T.; McAllister, David L.; and Sands, John L., 4,327,227, Cl. 568-639.000.
Green Cross Corporation, The: *See—*
Fukushima, Tsunekazu; Matsunaga, Tomiyuki; and Funakoshi, Satoshi, 4,327,086, Cl. 424-177.000.
Greenwood, Ivan A.; and Simpson, James H., to Singer Company, The. All-angle gradient magnetometer. 4,327,327, Cl. 324-304.000.
Gregory, Floyd A.; Manning, Donald F.; Oranchak, William; and Student, Joseph J., deceased (by Student, Sophie A., administratrix), to International Business Machines. Evacuated printing platen. 4,326,656, Cl. 226-59.000.
Grihalva, Lawrence A. Rollerskate carrier. 4,326,746, Cl. 294-146.000.
Groke, Karl, to Chemie Linz Aktiengesellschaft. Aqueous solution for intravenous administration. 4,327,084, Cl. 424-176.000.
Grove, John L.; and Kuhne, Frederick W., to JLG Industries, Inc. Aerial lift platform apparatus with capacity indicator. 4,326,601, Cl. 182-2.000.
Grove, William S.: *See—*
Richter, Sidney B.; and Grove, William S., 4,326,882, Cl. 562-472.000.
Grundmann, Edgard: *See—*
Bernhardt, Winfried; Grundmann, Edgard; and Kroll, Rudolf, 4,326,500, Cl. 126-426.000.
Grune, Burkhard: *See—*
Kratel, Gunter; Dummer, Gerhard; Niessner, Peter; Grune, Burkhard; and Stohr, Gunter, 4,326,852, Cl. 23-293.00R.
Gruss, John E. Urine collection procedure for cats and apparatus therefor. 4,326,481, Cl. 119-1.000.
Grzebielski, Chester J., to Allen-Bradley Company. Motor protection circuit. 4,327,391, Cl. 361-31.000.
GTE Laboratories Incorporated: *See—*
MacDonald, Malcolm F., 4,327,328, Cl. 328-55.000.
Guadard, Yves; and Guillemaud, Henri, to Rhone-Poulenc-Textile. Textile solar collector. 4,326,504, Cl. 126-449.000.
Guenon, Jean-Pierre, to Sperry Corporation. Bale wagons. 4,326,828, Cl. 414-39.000.
Guerrero, Jorge; Mellon, Alice D.; Fritz, Charles G.; and Doddi, Namassivaya, to Pitman-Moore, Inc. Mesh-covered bolus. 4,326,522, Cl. 128-/260.000.
Guibert, Raul. Two-zone hot air oven for food-loaded cartridges. 4,326,497, Cl. 126-261.000.
Guibert, Raul, to Sunsetl, Ltd. Counter-top reheating unit for packaged pre-cooked meals. 4,327,279, Cl. 219-400.000.
Guier and Affiliates, Inc.: *See—*
Guier, William C., 4,326,745, Cl. 294-90.000.
Guier, William C., to Guier and Affiliates, Inc. Link control system for use with dual elevators. 4,326,745, Cl. 294-90.000.
Guiler, Richard S., to E. J. Brooks Company. Security seal. 4,326,740, Cl. 292-307.00B.
Guillemaud, Henri: *See—*
Guadard, Yves; and Guillemaud, Henri, 4,326,504, Cl. 126-449.000.
Guillot, Preston F.; and Guthrie, Sheldon W., Jr. Hydraulic power tong. 4,326,435, Cl. 81-57.340.
Gulf & Western Manufacturing Company: *See—*
West, Archie; and Radadia, Dhirajlal B., 4,327,001, Cl. 524-322.000.
Gundersen, Ray S.; Colledge, Ronald J.; Jenkins, Roy H.; and Crook, Michael, to Sverdrup & Parcel and Associates, Inc. Drive control

arrangement for swing arm material sampler. 4,326,425, Cl. 73-863.530.
Guterman, Daniel C., to Texas Instruments Incorporated. High coupling ratio electrically programmable ROM. 4,326,331, Cl. 29-571.000.
Guthrie, Phillip K.; and Pillow, Richard W., to Fitness Concepts, Inc. Jogging glove. 4,326,706, Cl. 272-119.000.
Guthrie, Sheldon W., Jr.: *See—*
Guillot, Preston F.; and Guthrie, Sheldon W., Jr., 4,326,435, Cl. 81-57.340.
Gutman, Arnold D., to Stauffer Chemical Company. N-Aryl, 2-phenoxy nicotinamide compounds and the herbicidal use thereof. 4,327,218, Cl. 546-291.000.
Gyi, Ko Ko: *See—*
DeMoss, Dean; Blessum, Norman S.; Gyi, Ko Ko; and Ragle, Herbert U., 4,327,386, Cl. 360-99.000.
Haag, Peter C.: *See—*
Oka, Ken K.; and Haag, Peter C., 4,326,594, Cl. 172-328.000.
Haag, Werner O.; and Lago, Rudolph M., to Mobil Oil Corporation. Enhancement of zeolite catalytic activity. 4,326,994, Cl. 252-455.00Z.
Haas, Georges: *See—*
Sele, Alex; Ferrini, Pier G.; Haas, Georges; Jaeggi, Knut A.; and Rossi, Alberto, 4,327,091, Cl. 424-246.000.
Hack, Joachim: *See—*
Schaefer, Dieter; Motz, Herbert; Mayer, Dieter; Deigner, Paul; Hack, Joachim; and Falk, Roland, 4,327,139, Cl. 428-65.000.
Haendler & Natermann GmbH: *See—*
Roske, Dieter, 4,326,350, Cl. 40-310.000.
Haga, Takahiro; Toki, Tadaaki; Koyanagi, Toru; and Imai, Osamu, to Ishihara Sangyo Kaisha Ltd. O-(N-Alkoxy-pyridinecarboximidoyl) phosphates, process for producing the same, and insecticidal or acaridical compositions containing the same. 4,327,089, Cl. 424-200.000.
Hagberg, Carl E. Recreational kit for constructing objects. 4,326,354, Cl. 46-26.000.
Hageniers, Omer L.: *See—*
Pryor, Timothy R.; Hageniers, Omer L.; Pastorius, Walter J.; Liptay-Wagner, Nicholas; Clarke, Donald A.; and Richards, Blaine, 4,326,808, Cl. 356-445.000.
Hagino, Hiroshi; Odagiri, Hideo; and Okutani, Junichi, to Kyowa Hakko Kogyo Co., Ltd. Draft device for a bubble column. 4,327,042, Cl. 261-77.000.
Halbach & Braun: *See—*
Braun, Ernst; and Braun, Gert, 4,326,674, Cl. 241-35.000.
Halcyon, Inc.: *See—*
Zumbahlen, Louis H., Jr.; and Volkland, Charles, 4,327,258, Cl. 179-175.30R.
Hall, William B., to RCA Corporation. Megasonic jet cleaner apparatus. 4,326,553, Cl. 134-153.000.
Hallett, Peter: *See—*
Collington, Eric W.; Hallett, Peter; and Wallis, Christopher J., 4,327,092, Cl. 424-246.000.
Halliburton Company: *See—*
Gant, Robert C.; and Reeves, John E., 4,326,411, Cl. 73-155.000.
Hamada, Morio, to Shinwa Audio Company, Ltd. Indication element driving device. 4,326,430, Cl. 74-10.520.
Hamm, Earl L. Toilet tissue holder. 4,326,678, Cl. 242-55.200.
Hammar, Walton J., to Minnesota Mining and Manufacturing Company. Antithrombogenic articles. 4,326,532, Cl. 128-349.00R.
Hammill, Janet L.: *See—*
Alvino, William M.; Hammill, Janet L.; and Seidel, Martin P., 4,327,143, Cl. 428-236.000.
Hammond, Kenneth G.; and Chafetz, Harry, to Texaco Inc. Quaternary ammonium succinimide salt composition and lubricating oil containing same. 4,326,973, Cl. 252-34.000.
Hamprecht, Gerhard; Parg, Adolf; and Koenig, Karl-Heinz, to BASF Aktiengesellschaft. Sulfamic acid halides and processes for the preparation of sulfamic acid halides. 4,327,034, Cl. 260-455.00A.
Hanneman, Rodney E., to General Electric Company. Coated metal structures and method for making. 4,327,155, Cl. 428-556.000.
Hansen, Guenter: *See—*
Eilingsfeld, Heinz; Hansen, Guenter; Seybold, Guenther; and Zeidler, Georg, 4,327,019, Cl. 260-158.000.
Hao, Paul L. C.; Hsu, W. W.; Lin, W. S.; Tong, S. N.; Hung, H. K.; and Chang, M. C., to Industrial Technology Research Institute. Polymerization process for the production of PVC latex and paste resin. 4,327,003, Cl. 523-336.000.
Harding, Bruce L., to Smith Valve Corporation. Valve and actuator assembly for railroad car air brake system. 4,326,754, Cl. 303-81.000.
Hardman, Harley F.: *See—*
Grasselli, Robert K.; Suresh, Dev D.; and Hardman, Harley F., 4,327,037, Cl. 260-465.300.
Hardwick, Michael J.; and McMeekan, Kenneth R., to Gallaher Limited. Smoking product. 4,326,544, Cl. 131-369.000.
Harmant, Michel, to Ems Industrie. Metal cutting machines. 4,326,440, Cl. 83-482.000.
Harmon, Paul E.: *See—*
Tetro, Richard S.; and Harmon, Paul E., 4,326,680, Cl. 242-56.00A.
Harnisch, Horst: *See—*
Jautelat, Manfred; Arlt, Dieter; Lantzsch, Reinhard; Fuchs, Rainer; Riebel, Hans-Jochem; Schroder, Rolf; and Harnisch, Horst, 4,327,025, Cl. 260-338.000.
Harper, Patrick D., to Bendix Corporation, The. Inductive load drive circuit utilizing a bi-level output comparator and a flip-flop to set three different levels of load current. 4,327,394, Cl. 361-154.000.
Harper, Stanley A.: *See—*
Levine, Aaron W.; Tomeczek, Kazimiera D.; and Harper, Stanley A., 4,327,123, Cl. 427-64.000.
Harris, Walter W., to Manville Service Corporation. Cooling tubes for glass filament production apparatus. 4,326,871, Cl. 65-12.000.
Harrison, Hubert H. System for generating energy from tidal activity. 4,327,297, Cl. 290-53.000.
Hartemann, Pierre, to Thomson-CSF. Pressure transducer with elastic surface waves and ignition system for internal combustion engine utilizing this transducer. 4,326,423, Cl. 73-861.630.
Hartmann & Braun Aktiengesellschaft: *See—*
Zochbauer, Michael, 4,326,807, Cl. 356-418.000.
Hashimoto, Kazunori: *See—*
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fiber and an optoelectronic diode, and a transmitting or receiving head fabricated by means of said method. 4,326,771, Cl. 350-96.170.
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Herth, Harro; Peter, Cornelius; and Schnurle, Hans, to Robert Bosch GmbH. System for increasing the fuel feed in internal combustion engines during acceleration. 4,326,488, Cl. 123-492.000.
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Hi Shear Corporation: *See—*
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Hinding, John H. Dental hygiene appliance. 4,326,549, Cl. 132-92.00R.
Hinds, Robert S. Method for using elastic cable exercizer bar. 4,326,708, Cl. 272-138.000.
Hines, William W.; and Cwirzen, Casimir Z., to Northern Telecom, Inc. Protector module base assembly with an external spark gap. 4,327,393, Cl. 361-119.000.
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Ohara, Susumu; Horiki, Akira; Miyazaki, Katsuyuki; and Tokunaga, Kaoru, 4,327,436, Cl. 370-110.100.
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Montavon, Marc; and Reiner, Roland, 4,327,210, Cl. 544-027.000.
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Hoki, Tsuneo; and Matsuki, Yutaka, to Asahi-Dow Limited. Foaming synthetic resin compositions stabilized with certain higher ethers, esters or anhydrides. 4,327,193, Cl. 521-88.000.
Holden, Kenneth G.; Kaiser, Carl; and Weinstock, Joseph, to SmithKline Corporation. Intermediates for preparing 7,8-amino, hydroxy-1-phenyl-2,3,4,5-tetrahydro-1H-3-benzazepines. 4,327,023, Cl. 260-[illegible]
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Horn, Werner; and Hennings, Jurgen, to Swiss Aluminium Ltd. Process for manufacturing aluminum strip or sheet having improved weldability. 4,326,895, Cl. 148-11.50A.
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Horvath, Imre; and Kwasnitza, Kurt, to BBC Brown, Boveri & Company, Limited. Superconductive cable. 4,327,244, Cl. 174-15.00S.
Hosokawa, Motoyuki: *See—*
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Hosokawa, Yasuhiko; Katsuki, Kanji; and Suzuki, Toshio, to Mitsubishi Kenki Kabushiki Kaisha. Inverter system for driving synchronous motor. 4,327,314, Cl. 318-722.000.
Hoss, Robert J., to Rockwell International Corporation. Meter rotor rotation optical sensor. 4,327,362, Cl. 340-870.020.
Hotta, Mitsuhiko; Tachibana, Akifumi; and Shigihara, Takanori, to Kabushiki Kaisha Morita Seisakusho. System of automatically controlling distance in linear movement. 4,327,427, Cl. 367-118.000.
Houlberg, Don M., to Joerns Furniture Company. Solenoid activated spring clutch. 4,326,613, Cl. 192-21.000.
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Howard, Kenneth J.; and Sidwell, Albert E., to Vertac Chemical Corporation. Chemical detoxification of toxic chlorinated aromatic compounds. 4,327,027, Cl. 260-340.300.
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Hsu, W. W.: *See—*
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Hu, Evelyn L.: *See—*
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Huang, Henry V. Automated method for quantitative analysis of biological fluids. 4,327,073, Cl. 424-1.000.
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Huffnagle, Clifton W.: *See—*
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Rosen, Harold A., 4,326,684, Cl. 244-158.00R.
Wang, Victor; and Seliger, Robert L., 4,327,292, Cl. 250-491.000.
Hughes, John M. O. Situ bore hole test probe. 4,326,409, Cl. 73-84.000.
Hunder, David N.; and Hervig, Harold C., Jr., to Minnesota Mining & Manufacturing Company. Mold useful in sealing leaks in pipes. 4,326,735, Cl. 285-15.000.
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Hutson, Richard L.: *See—*
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Hwang, Top-Ping; and Feng, Chin-Liang. Simplified power source for fluorescent lamps. 4,327,308, Cl. 315-99.000.
Hydro AG-Tech, Inc.: *See—*
Engle, Carl E.; and Moldenhauer, Donald, 4,326,675, Cl. 241-236.000.
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Ichiyanagi, Toshikazu, to Canon Kabushiki Kaisha. Information display device for camera. 4,326,784, Cl. 354-53.000.
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Ikeda, Nobuo; and Yoshimura, Hirofumi, to Matsushita Electric Industrial Co., Ltd. High frequency energy supply in a high frequency heating appliance. 4,327,267, Cl. 219-10.55F.
Ikeda, Takashi; and Ayano, Shinya, to Tokyo Shibaura Denki Kabushiki Kaisha. Exhaust outer casing. 4,326,832, Cl. 415-219.00R.
Ilmensky, Vladimir V.: *See—*
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Imai, Osamu: *See—*
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Imamura, Akio; and Oya, Akiyoshi, to Nippon Gakki Seizo Kabushiki Kaisha. Automatic performance device. 4,326,441, Cl. 84-1.030.
Imamura, Naoki: *See—*
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Imazeki, Ryoji; and Hattori, Masayuki, to Fujitsu Fanuc Limited. Power source device for bubble memory unit. 4,327,422, Cl. 365-1.000.
Imparato, Luigi; Gerbaz, Giampaolo; and Betta, Enrico, to Agip Petroli, S.p.A. Process for preparing viscosity index improvers for lubricating oils by cracking synthetic rubbers in the liquid phase. 4,327,237, Cl. 585-648.000.
Imperial Chemical Industries Limited: *See—*
Cogswell, Frederic N.; and Mitchell, David T., 4,327,053, Cl. 264-515.000.
Smith, Leslie H., 4,327,113, Cl. 424-321.000.
Industrial Technology Research Institute: *See—*
Hao, Paul L. C.; Hsu, W. W.; Lin, W. S.; Tong, S. N.; Hung, H. K.; and Chang, M. C., 4,327,003, Cl. 523-336.000.
Industrie Pirelli, S.p.A.: *See—*
Metra, Piero, 4,327,245, Cl. 174-19.000.
Ing. C. Olivetti & C., S.p.A.: *See—*
Pasini, Arnaldo; and Knirsch, Franco, 4,326,812, Cl. 400-121.000.
Ingenuity Incorporated: *See—*
Miles, Felix A.; and Roush, Dale P., 4,326,315, Cl. 15-77.000.
Inger, Siegfried, to Palitex Project-Company GmbH. Apparatus for braking and positioning a spinning or twisting spindle. 4,326,372, Cl. [illegible]
Ingersoll-Rand Company: *See—*
Larson, John A.; and Fischer, Robert B., 4,326,885, Cl. 75-125.000.
Ingle, Harold R., Jr. Apparatus for detecting bonding defects in laminates. 4,326,405, Cl. 73-37.000.
Ingram, Harry T.; and Ingram, Larry R., to Woodtech, Inc. Wood molding routing apparatus. 4,326,572, Cl. 144-133.00R.
Ingram, Larry R.: *See—*
Ingram, Harry T.; and Ingram, Larry R., 4,326,572, Cl. 144-133.00R.

Ingram, W. Frank. Method and apparatus for inserting and removing soft contact lens. 4,326,742, Cl. 294-1.0CA.

Injushin, Viktor M.; Khokhlov, Valentin I.; Akhremenko, Fedor, deceased; and by Akhremenko, Galina T., administrator. Water treatment apparatus. 4,327,276, Cl. 219-121.00L.

Inland Steel Company: *See—*
  Schwarz, Arthur M., 4,326,883, Cl. 75-5.000.

Innerspace Corporation: *See—*
  Gongwer, Calvin A., 4,326,554, Cl. 137-14.000.

Innocenti Santeustacchio S.p.A.: *See—*
  Nessi, Aurindo, 4,326,829, Cl. 414-357.000.

Innova, Inc.: *See—*
  Moeglich, Karl, 4,326,935, Cl. 204-180.00P.

Inoshita, Yasushi: *See—*
  Murata, Yukiho; and Inoshita, Yasushi, 4,326,667, Cl. 237-12.30A.

Inoue, Kenichi, to Daiwa Can Company, Ltd. Apparatus for reverse redrawing. 4,326,401, Cl. 72-350.000.

Inouye, Ken; Kono, Masao; Yoshida, Nobuo; Nakamura, Masuhisa; Okabayashi, Tadashi; and Igano, Ken'ichi, to Shionogi & Co., Ltd. Tyrosylated proinsulin C-peptide derivatives. 4,327,072, Cl. 424-1.000.

Institut de Recherche de l'Hydro-Quebec: *See—*
  Missout, Gilles; Lalonde, Francois; and Cloutier, Marius, 4,327,335, Cl. 331-1.00A.

Instrumentation Laboratory Inc.: *See—*
  Smith, Stanley B., Jr.; Schleicher, Robert G.; and Dennison, Allan G., 4,326,802, Cl. 356-316.000.

Instytut Odlewnictwa: *See—*
  Pajak, Andrzej; Olszowski, Tadeusz; Mazur, Antoni, deceased; Holtzer, Mariusz; Marzencki, Andrzej; and Jachowicz, Adam, 4,326,578, Cl. 164-15.000.

International Business Machines: *See—*
  Gregory, Floyd A.; Manning, Donald F.; Oranchak, William; and Student, Joseph J., deceased, 4,326,656, Cl. 226-59.000.

International Business Machines Corporation: *See—*
  Champion, James R.; Ernst, Larry M.; Ford, Leland W.; and Velarde, Ronald G., 4,326,796, Cl. 355-14.0CH.
  Darrow, Berwin W.; and Wilkinson, David J., 4,326,603, Cl. 114-4.100.
  Kenney, Donald M., 4,326,332, Cl. 29-571.000.
  Pipkin, David J., 4,327,130, Cl. 427-209.000.
  Schaffer, Robert R.; and Skinner, Dean W., 4,326,814, Cl. 400-125.100.
  Wanek, Donald J., 4,327,388, Cl. 360-104.000.
  Wu, Philip T., 4,327,424, Cl. 365-104.000.

International Flavors & Fragrances Inc.: *See—*
  Klemarczyk, Philip T.; Sanders, James M.; Vock, Manfred H.; Vinals, Joaquin F.; Schmitt, Frederick L.; and Granda, Edward J., 4,326,998, Cl. 252-522.00R.

International Minerals & Chemical Corp.: *See—*
  Wolfrom, Glen W.; Williams, Robert D.; Peeler, Herbert T.; and Ivy, Richard E., 4,326,523, Cl. 128-260.000.

International Telephone and Telegraph Corporation: *See—*
  Brancaleone, Salvatore T., 4,326,765, Cl. 339-17.0CF.
  Ranghelli, Joseph C., 4,327,330, Cl. 330-56.000.

Interox: *See—*
  Logan, William R.; Sarot, Pierre; and Bouillet, Edmond, 4,326,976, Cl. 252-99.000.

Irving, Christopher L.: *See—*
  Laszlo, Tibor S.; Nienow, John F.; Sherwood, John F.; and Irving, Christopher L., 4,326,542, Cl. 131-280.000.

Isaka, Takenobu: *See—*
  Tomita, Masao; Isaka, Takenobu; Mino, Mineo; and Fujisawa, Kiyoji, 4,327,384, Cl. 360-77.000.

Isenschmid, Roland: *See—*
  Banziger, Robert; Isenschmid, Roland; Menth, Anton; Muller, Rene; and Stucki, Samuel, 4,326,943, Cl. 204-290.00F.

Ishibe, Nobuyuki: *See—*
  Pryor, Alvetta; and Ishibe, Nobuyuki, 4,327,232, Cl. 570-108.000.

Ishida, Hiroshi: *See—*
  Kawada, Shigeki; Ishida, Hiroshi; and Koiwai, Yutaka, 4,327,315, Cl. 318-811.000.

Ishihara Sangyo Kaisha Ltd.: *See—*
  Haga, Takahiro; Toki, Tadaaki; Koyanagi, Toru; and Imai, Osamu, 4,327,089, Cl. 424-200.000.

Ishikawa, Eizi; Matsuura, Ryouichi; and Yano, Kiyotosi, to Nippondenso Co., Ltd. Solenoid valve. 4,326,696, Cl. 251-129.000.

Ishikawa, Yukio: *See—*
  Iwao, Takayuki; Ono, Takemitsu; and Ishikawa, Yukio, 4,326,459, Cl. 101-93.300.

Ishitsuka, Hideo: *See—*
  Shinma, Nobuo; Umeda, Isao; Ishitsuka, Hideo; and Suhara, Yasuji, 4,327,088, Cl. 424-180.000.

Ishizaka, Sunao: *See—*
  Ohmori, Sachio; Fukino, Kunihiro; and Ishizaka, Sunao, 4,326,788, Cl. 354-286.000.

Isogai, Nobuo; Hosokawa, Motoyuki; Okawa, Takashi; and Wakui, Natsuko, to Mitsubishi Gas Chemical Co., Inc. Process for producing 2-pentenoic ester. 4,327,225, Cl. 560-205.000.

Itaya, Nobushige: *See—*
  Mizutani, Toshio; Itaya, Nobushige; Ohno, Nobuo; Matsuo, Takashi; Kitamura, Shigeyoshi; and Okuno, Yositosi, 4,327,109, Cl. 424-275.000.

Ito, Hiroshi; and Tanaka, Haruyuki, to Bandai Industry Co., Ltd. Simulated baseball game device. 4,326,715, Cl. 273-88.000.

Itoh, Hiroshi: *See—*
  Ozu, Masao; Morita, Keiichi; and Itoh, Hiroshi, 4,326,868, Cl. 62-324.600.

ITT Industries, Inc.: *See—*
  Botz, Jakob; Feger, Rolf; Mutschler, Erich; Spazierer, Hubert; and Weber, Adam, 4,327,264, Cl. 200-295.000.
  Klein, Hans-Christof, 4,327,414, Cl. 364-426.000.

Ivy, Richard E.: *See—*
  Wolfrom, Glen W.; Williams, Robert D.; Peeler, Herbert T.; and Ivy, Richard E., 4,326,523, Cl. 128-260.000.

Iwahori, Hiroshi; and Matsumoto, Shigetoshi, to Nitto Electric Industrial Company Ltd. Tubular permselective membrane module and method. 4,326,960, Cl. 210-650.000.

Iwai, Tadashi; Mizuno, Hisayuki; and Miura, Masao, to UBE Industries, Ltd. Process for producing chloride of elements of Group III, IV or V of Periodic Table. 4,327,062, Cl. 423-292.000.

Iwami, Naoki: *See—*
  Tajima, Hatsuo; Iwami, Naoki; Masuda, Shunichi; Shimizu, Katsuichi; Kawatsura, Yoshihiro; Suzuki, Koji; and Yokomizo, Yoshikazu, 4,326,795, Cl. 355-14.00E.

Iwamoto, Seigo; and Saito, Eiichi, to Nihonshikizai Kogyo Co., Ltd.; and Takeda Chemical Industries, Ltd., part interest to each. Improving agent of chroma and brightness for pigments. 4,327,017, Cl. 260-105.000.

Iwao, Takayuki; Ono, Takemitsu; and Ishikawa, Yukio, to Mitsumi Electric Co., Ltd. Hammer lock releasing mechanism for a printing device. 4,326,459, Cl. 101-93.300.

J. M. Voith, GmbH: *See—*
  Flaig, Heinrich; and Wolf, Karl, 4,326,916, Cl. 162-344.000.

Jachowicz, Adam: *See—*
  Pajak, Andrzej; Olszowski, Tadeusz; Mazur, Antoni, deceased; Holtzer, Mariusz; Marzencki, Andrzej; and Jachowicz, Adam, 4,326,578, Cl. 164-15.000.

Jackson, Winston J., Jr.; and Darnell, William R., to Eastman Kodak Co. Process for preparing poly-1,4-cyclohexanedicarboxylate polyesters having high trans isomer content. 4,327,206, Cl. 528-179.000.

Jacobs, James K.: *See—*
  Das Gupta, Sankar; Jacobs, James K.; and Mohanta, Samaresh, 4,326,938, Cl. 204-228.000.

Jacobsen, Jon E., to Siemens-Allis, Inc. Rotor assembly for a dynamoelectric machine. 4,327,303, Cl. 310-261.000.

Jaeggi, Knut A.: *See—*
  Sele, Alex; Ferrini, Pier G.; Haas, Georges; Jaeggi, Knut A.; and Rossi, Alberto, 4,327,091, Cl. 424-246.000.

Jager, Wolfgang; and Boettger, Erhard, to Ebo-Jager, Inc. Aquarium immersion heater with dry operation prevention thermostatic switch. 4,327,281, Cl. 219-523.000.

James Brown & Sons, Ltd.: *See—*
  Widmer, Colin F., 4,326,770, Cl. 339-278.00C.

James David Mfg. Corp.: *See—*
  Clyburn, C. Wayne, 4,326,687, Cl. 248-168.000.

James, Roger T. Hang-rack assembly. 4,326,637, Cl. 211-175.000.

Janser, Herbert: *See—*
  Ewertowski, Norbert; and Janser, Herbert, 4,326,624, Cl. 198-170.000.

Janson, Gunnar H., to Dana Corporation. Magnetic clutch housing. 4,327,301, Cl. 310-104.000.

Jaqua, Vance W., to Rockwell International Corporation. Injection shut-off valve for regenerative injection. 4,326,377, Cl. 60-247.000.

Jardin, Albert C. Solar furnace. 4,326,501, Cl. 126-430.000.

Jautelat, Manfred; Arlt, Dieter; Lantzsch, Reinhard; Fuchs, Rainer; Riebel, Hans-Jochem; Schroder, Rolf; and Harnisch, Horst, to Bayer Aktiengesellschaft. Preparation of styryl-cyclopropane-carboxylic acid esters and intermediate therefor. 4,327,025, Cl. 260-338.000.

Jean Walterscheid GmbH: *See—*
  Geisthoff, Hubert; and Nienhaus, Clemens, 4,326,392, Cl. 64-3.000.

Jelalian, Albert V.: *See—*
  Keene, Wayne H.; and Jelalian, Albert V., 4,326,799, Cl. 356-152.000.

Jenkins, Roy H.: *See—*
  Gundersen, Ray S.; Colledge, Ronald J.; Jenkins, Roy H.; and Crook, Michael, 4,326,425, Cl. 73-863.530.

Jensen, Ronald N., to United States of America, National Aeronautics and Space Administration. Solar engine. 4,326,381, Cl. 60-641.140.

Jerrim, John W., to Sangamo Weston, Inc. Temperature compensation system for Hall effect element. 4,327,416, Cl. 364-481.000.

JLG Industries, Inc.: *See—*
  Grove, John L.; and Kuhne, Frederick W., 4,326,601, Cl. 182-2.000.

Joerns Furniture Company: *See—*
  Houlberg, Don M., 4,326,613, Cl. 192-21.000.

John Wyeth & Brother Limited: *See—*
  Crossley, Roger, 4,327,102, Cl. 424-263.000.

Johnson, Marvin M.: *See—*
  Nowack, Gerhard P.; and Johnson, Marvin M., 4,327,234, Cl. 585-267.000.

Johnson, Russell W.: *See—*
  Flagg, John F.; Johnson, Russell W.; and Gatsis, John G., 4,326,945, Cl. 208-8.0LE.

Johnson, Steven A.; and Seader, Junior D., to University of Utah. Inert-gas stripping and distillation apparatus. 4,327,184, Cl. 435-287.000.

Jones, Addison B., to Rockwell International Corporation. Repeatable method for sloping walls of thin film material. 4,326,936, Cl. 204-192.00E.

Jones, Glen D.: *See—*
  Kadakia, Vinod K.; Jones, Glen D.; Parikh, Kedar D.; and Rider, Ronald E., 4,327,379, Cl. 358-261.000.

Jones, Robert L.; Volgenau, Lewis; and Davis, Philip S., to Betz Laboratories, Inc. Sulfur-containing lignins as magnesium sulfite trihydrate dispersants. 4,326,962, Cl. 210-698.000.

Jones, Steven D.; and Blomgren, George E., to Union Carbide Corporation. Non-aqueous electrochemical cell. 4,327,159, Cl. 429-101.000.

Jones, Steven D.; and Blomgren, George E., to Union Carbide Corporation. Non-aqueous cell. 4,327,160, Cl. 429-101.000.

Jorg, Manfred. Spark circuit. 4,327,310, Cl. 315-209.00R.

Jousson, Pierre-Jean: *See—*
  Moret, Michel-Antoine; and Jousson, Pierre-Jean, 4,326,314, Cl. 15-22.00R.

Juery, Gerard: *See—*
  Vignaud, Jean-Claude; and Juery, Gerard, 4,327,260, Cl. 200-50.00C.

Jung, Johann: *See—*
  Rentzea, Costin; Sauter, Hubert; and Jung, Johann, 4,327,214, Cl. 546-133.000.

Junge, Johannes: *See—*
  Murzin, Horst; Woss, Rainer; Burghoff, Hans; Schmieder, Frank; Herzig, Alfred; Junge, Johannes; and Deckarm, Gunter, 4,326,625, Cl. 198-653.000.

Kabushiki Kaisha Kohjin: *See—*
  Kazutoyo, Yahiro, 4,326,877, Cl. 71-92.000.

Kabushiki Kaisha Morita Seisakusho: *See—*
  Hotta, Mitsuhiko; Tachibana, Akifumi; and Shigihara, Takanori, 4,327,427, Cl. 367-118.000.
  Sugai, Hiroshi; and Nakayama, Shoji, 4,326,846, Cl. 433-132.000.

Kabushiki Kaisha Suwa Seikosha: *See—*
  Banda, Shunji, 4,326,776, Cl. 350-336.000.

Kadakia, Vinod K.; Jones, Glen D.; Parikh, Kedar D.; and Rider, Ronald E., to Xerox Corporation. Hardware implementation of 4-pixel code encoder. 4,327,379, Cl. 358-261.000.

Kahn, David A., to Negretti & Zambra (Aviation) Limited. Pyrometer system using separated spectral components from a heat source. 4,326,798, Cl. 356-45.000.

Kaiho, Mamoru: *See—*
  Kato, Tsutomu; and Kaiho, Mamoru, 4,326,857, Cl. 48-210.000.

Kaiser, Carl: *See—*
  Holden, Kenneth G.; Kaiser, Carl; and Weinstock, Joseph, 4,327,023, Cl. 260-239.0BB.

Kaiser Steel Corporation: *See—*
  Hayden, Ralph P., Jr.; and Barksdale, Joe M., 4,326,701, Cl. 366-225.000.

Kakuichi Company Ltd.: *See—*
  Tanaka, Kenichi, 4,326,905, Cl. 156-149.000.

Kakumoto, Susumu: *See—*
  Kohara, Rikusei; Kakumoto, Susumu; Aoyama, Takashi; Shoji, Masami; and Shinagawa, Mutsuaki, 4,326,777, Cl. 350-357.000.

Kamata, Shigeru: *See—*
  Aoyagi, Masao; and Kamata, Shigeru, 4,326,789, Cl. 354-286.000.

Kamijo, Eiji; Murakami, Kazuhito; and Tani, Katsuto, to Sumitomo Electric Industries, Ltd. Process for continuous production of porous metal. 4,326,931, Cl. 204-22.000.

Kan, Yasuhito: *See—*
  Miyamoto, Koichi; Kan, Yasuhito; Nitanda, Hiroshi; and Ariga, Masao, 4,326,797, Cl. 355-57.000.

Kanebo Ltd.: *See—*
  Kawahara, Haruyuki; Makita, Teruo; Kudo, Shozo; and Funakoshi, Takashi, 4,327,014, Cl. 523-116.000.

Kanekiyo, Hiroshi: *See—*
  Fujiwara, Kiyoshi; Nagatomo, Katsuaki; Yoshinaga, Shoji; Tamura, Zensuke; Shibata, Fumio; and Kanekiyo, Hiroshi, 4,326,666, Cl. 233-15.000.

Kaneko, Katsumi: *See—*
  Okumura, Yoshiharu; Furukawa, Hiroshi; and Kaneko, Katsumi, 4,327,231, Cl. 568-899.000.

Kankaanpaa, Matti, to Valmet Oy. Method and apparatus for calendering paper webs or the like. 4,326,456, Cl. 100-41.000.

Kanoh, Chiyuki. Airtightness testing apparatus for watches. 4,326,408, Cl. 73-49.300.

Kaplan, Neil, to Hi-Tech Industries, Inc. Encapsulating moisture-proof coating. 4,327,369, Cl. 357-72.000.

Kaplan, Norman C., to Calcol, Inc. Composition of matter. 4,327,028, Cl. 260-345.300.

Kaplow, Roy; and Russo, Carl J., to Massachusetts Institute of Technology. Method for forming material surfaces. 4,326,898, Cl. 148-16.600.

Kapp, Ludwig J., to Ziyad Incorporated. Paper feeding apparatus and method for printing apparatus. 4,326,815, Cl. 400-625.000.

Karas, Nicholas V., to United States of America, Air Force. Physical deterrent barrier with upward looking detection sensor for intruder detection system. 4,327,358, Cl. 340-541.000.

Karatsu, Yoshinori: *See—*
  Kita, Hisanao; Karatsu, Yoshinori; Nakazaki, Takamitsu; and Akutsu, Yoji, 4,327,273, Cl. 219-121.0EC.

Karl M. Reich, Maschinenfabrik GmbH: *See—*
  Maurer, Werner; and Farian, Gerhard, 4,326,661, Cl. 227-120.000.

Karsten, Robert W.: *See—*
  Ripley, Robert H.; Karsten, Robert W.; Brandon, Eugene M.; and Lockerby, James W., 4,327,011, Cl. 524-474.000.

Kartavenko, Alexandre: *See—*
  Capostagno, Joseph A.; Chan, Kingsley; and Kartavenko, Alexandre, 4,327,403, Cl. 362-306.000.

Kato, Kunio; Sugiyama, Yoshiki; and Enomoto, Ryo, to Ibigawa Electric Industry Co., Ltd. Method for refining metal carbides containing free carbon. 4,327,067, Cl. 423-345.000.

Kato, Tsutomu; and Kaiho, Mamoru, to Director-General of Agency of Industrial Science and Technology. Production of a gas of a high heating value from coal. 4,326,857, Cl. 48-210.000.

Kato, Yasuyuki; Suzuki, Haruo; Kondo, Masatsune; Sugimoto, Hiroaki; Kimura, Junichi; and Saito, Zyunso, to Sumitomo Chemical Company, Limited. Bulk Polycondensation process for producing aromatic polyesters. 4,327,205, Cl. 528-128.000.

Katoh, Tsuneyuki; Hiraga, Keishiro; Seki, Junji; and Suzuki, Makoto, to Asahi Kasei Kogyo Kabushiki Kaisha. Extruded rigid thermoplastic sheet having optically smooth surfaces. 4,327,149, Cl. 428-332.000.

Katsuki, Kanji: *See—*
  Hosokawa, Yasuhiko; Katsuki, Kanji; and Suzuki, Toshio, 4,327,314, Cl. 318-722.000.

Kauer, Harald; Overlach, Knud; and Wilken, Joachim, to Dr.-Ing. Ludwig Pietzsch. Device for the positioning and position stabilization of an inert mass, positioned with mobility on a base. 4,326,447, Cl. 89-41.00H.

Kawabata, Ichiro. Vibratile mat. 4,326,506, Cl. 128-33.000.

Kawada, Shigeki; Ishida, Hiroshi; and Koiwai, Yutaka, to Fujitsu Fanuc Limited. Induction motor drive apparatus. 4,327,315, Cl. 318-811.000.

Kawahara, Haruyuki; Makita, Teruo; Kudo, Shozo; and Funakoshi, Takashi, to Kanebo Ltd. Resin-forming material, implant material and compositions for restorative material suitable for medical or dental use. 4,327,014, Cl. 523-116.000.

Kawahara, Hiroshi; and Yasuda, Tetsuro, to Asahi Glass Company, Ltd. Permselective membrane. 4,326,958, Cl. 210-500.200.

Kawai Musical Instrument Mfg. Co., Ltd.: *See—*
  Deutsch, Ralph; and Deutsch, Leslie J., 4,327,419, Cl. 364-717.000.

Kawakami, Moriatsu, to Laurel Bank Machine Co., Ltd. Apparatus for processing sheets. 4,326,636, Cl. 209-534.000.

Kawamura, Kunio; and Ueda, Hiroshi, to Minolta Camera Kabushiki Kaisha. Interchangeable objective lens single-lens reflex camera focusing device. 4,326,783, Cl. 354-25.000.

Kawasaki, Masasuke. Movable skeg for non-propelled barges. 4,326,479, Cl. 114-248.000.

Kawasaki Seitetsu Kabushiki Kaisha: *See—*
  Akimoto, Keiichi; and Tsuchida, Tsuyoshi, 4,326,337, Cl. 33-174.0PA.

Kawashima, Hatsuo: *See—*
  Mochida, Haruo; and Kawashima, Hatsuo, 4,326,616, Cl. 192-111.00A.

Kawashima, Kenichi; Horibe, Kiyoshi; and Degawa, Takashi, to Hitachi, Ltd. Swash plate type compressor for use in air-conditioning system for vehicles. 4,326,838, Cl. 417-269.000.

Kawatsura, Yoshihiro: *See—*
  Tajima, Hatsuo; Iwami, Naoki; Masuda, Shunichi; Shimizu, Katsuichi; Kawatsura, Yoshihiro; Suzuki, Koji; and Yokomizo, Yoshikazu, 4,326,795, Cl. 355-14.00E.

Kazutoyo, Yahiro, to Kabushiki Kaisha Kohjin. Method of stimulating grass root growth with 6-benzylaminopurine. 4,326,877, Cl. 71-92.000.

Keene, Wayne H.; and Jelalian, Albert V., to Raytheon Company. Active-passive scanning system. 4,326,799, Cl. 356-152.000.

Kelly, Joseph J., Jr.; and Rambo, George E., to Babcock & Wilcox Company, The. Method of nuclear reactor control using a variable temperature load dependent set point. 4,326,917, Cl. 376-216.000.

Kelso, Charles R.; and Mayer, Endre A., to Bendix Corporation, The. Solenoid having a multi-piece armature. 4,327,345, Cl. 335-265.000.

KemaNord AB: *See—*
  Westerlund, Sture, 4,326,941, Cl. 204-268.000.

Kemps, Josephus M. A.: *See—*
  Froling, Albert; de Jongh, Rudolph O.; and Kemps, Josephus M. A., 4,326,932, Cl. 204-59.00R.

Kendall Company, The: *See—*
  Rappleyea, Frederick A., 4,326,303, Cl. 2-411.000.

Kennametal Inc.: *See—*
  Stephenson, Earle W., 4,326,592, Cl. 172-123.000.

Kennecott Corporation: *See—*
  Long, William W., III, 4,326,744, Cl. 294-81.00R.
  Murata, Yorihiro; and Weber, Gary W., 4,327,186, Cl. 501-92.000.

Kennedy, Joseph P.; and Frisch, Kurt C., Jr., to University of Akron, The. Cationically polymerizable macromolecular monomers and graft copolymers therefrom. 4,327,201, Cl. 526-131.000.

Kenney, Donald M., to International Business Machines Corp. Method of making a high density V-MOS memory array. 4,326,332, Cl. 29-571.000.

Kerr-McGee Chemical Corporation: *See—*
  Hermann, John A.; and Lucid, Michael F., 4,327,061, Cl. 423-8.000.

Kessler, Sebastian W., Jr., to RCA Corporation. Resilient contact ring for providing a low impedance connection to the base region of a semiconductor device. 4,327,370, Cl. 357-79.000.

Khokhlov, Valentin I.: *See—*
  Injushin, Viktor M.; Khokhlov, Valentin I.; Akhremenko, Fedor, deceased; and Akhremenko, Galina T., administrator, 4,327,276, Cl. 219-121.00L.

Khromov, Vladimir I.: *See—*
  Davydov, Vadim A.; Khromov, Vladimir I.; Makeev, Igor M.; Kogos, Aizik M.; and Rymarenko, Leonid I., 4,326,400, Cl. 72-280.000.

Kieber, Lothar, to Deutsche Calypsolgesellschaft mbH & Co. Holding device for holding a dispenser container. 4,326,648, Cl. 222-162.000.

Kiehl, Arthur H. Golf swing training and exercising device. 4,326,718, Cl. 273-183.00B.

Kiehs, Karl: *See—*

Buerstinghaus, Rainer; Kiehs, Karl; Siegel, Hardo; and Adolphi, Heinrich, 4,327,090, Cl. 424-203.000.

Kiesbye, Peter: *See—*

Moebus, Otto; Teuber, Michael; and Kiesbye, Peter, 4,327,179, Cl. 435-42.000.

Kigawa, Teruo, to Tokyo Shibaura Electric Co., Ltd. Sewing control system for multiple-pattern sewing machine. 4,326,473, Cl. 112-[illegible]

Kim, Dae Sik. Portable thermo-anemometer with bimetallic sensor. 4,326,780, Cl. 340-594.000.

Kimberly-Clark Corporation: *See—*

Ryan, Lenore S.; Murray, Frank C.; Sprangers, Ann M.; Santoski, William J.; Sciaraffa, Michael A.; Abel, Kent W.; and Donnelly, Harold F., 4,326,528, Cl. 128-287.000.

Wollangk, Edward G.; and Lilaonitkul, Amnuey, 4,326,527, Cl. [illegible]

Kime, Robert W., to Cornell Research Foundation, Inc. Clarification of fruit juice with honey. 4,327,115, Cl. 426-12.000.

Kimmel, Spurgeon E.: *See—*

Ballerstein, George B.; and Kimmel, Spurgeon E., 4,326,438, Cl. 82-53.100.

Kimura, Atsuyoshi: *See—*

Abeyama, Shozo; Saito, Makoto; Kimura, Atsuyoshi; and Nakamura, Sadayuki, 4,326,886, Cl. 75-129.000.

Kimura, Junichi: *See—*

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Kobayashi, Hiroshi; and Kita, Toru, 4,326,422, Cl. 73-861.220.

Kitagawa, Fumio; and Ichinomiya, Tsutomu, to Matsushita Electric Works, Ltd. Sphygmomanometer. 4,326,536, Cl. 128-682.000.

Kitamura, Shigeyoshi: *See—*

Mizutani, Toshio; Itaya, Nobushige; Ohno, Nobuo; Matsuo, Takashi; Kitamura, Shigeyoshi; and Okuno, Yositosi, 4,327,109, Cl. 424-275.000.

Kitamura, Takehiko: *See—*

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Klawitter, Jerome J., to Hemex, Inc. Heart valve with pivoted occluder. 4,326,304, Cl. 3-1.500.

Klein, Hans-Christof, to ITT Industries, Inc. Vehicle brake system. 4,327,414, Cl. 364-426.000.

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Klingenberg, Hans U. Watchcase. 4,327,429, Cl. 368-294.000.

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Charlet, Egbert; and Kludas, Martin, 4,327,078, Cl. 424-45.000.

Knight, George W.: *See—*

Allen, James A.; Knight, George W.; and Edmondson, Morris S., 4,327,009, Cl. 524-114.000.

Knirsch, Franco: *See—*

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Saikawa, Isamu; Takano, Shuntaro; Yoshida, Chosaku; Takashima, Okuta; Momonoi, Kaishu; Kuroda, Seietsu; Komatsu, Miwako; Yasuda, Takashi; and Kodama, Yutaka, 4,327,097, Cl. 424-250.000.

Koenig, Karl-Heinz: *See—*

Hamprecht, Gerhard; Parg, Adolf; and Koenig, Karl-Heinz, 4,327,034, Cl. 260-455.00A.

Koenig, Robert G., to Cleveland Machine Controls, Inc. Web tension transducer arrangement. 4,326,424, Cl. 73-862.480.

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Kohara, Rikusei; Kakumoto, Susumu; Aoyama, Takashi; Shoji, Masami; and Shinagawa, Mutsuaki, to Matsushita Electric Industrial Co., Ltd. Electrochromic display device. 4,326,777, Cl. 350-357.000.

Kohda, Kazuo, to Victor Company of Japan, Ltd. Cassette type tape recorder. 4,327,389, Cl. 360-105.000.

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Oyaizu, Yoshijiro; Koike, Wataro; and Yazawa, Chihiro, 4,327,204, Cl. 528-61.000.

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Kono, Masao: *See—*

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Koob, Friedrich, to Hilti Aktiengesellschaft. Two-component adhesive body. 4,326,632, Cl. 206-389.000.

Kool, Lawrence B.: *See—*

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Reed, Kingstone L. H.; and Hatcher, Ian, 4,326,383, Cl. 62-3.000.

Koppe, Herbert: *See—*

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Koppers Company, Inc.: *See—*

Moult, Roy H.; and McIntyre, Craig R., 4,326,669, Cl. 238-36.000.

Pilesi, William D.; and Trautmann, Harry J., 4,326,421, Cl. 73-852.000.

Koskela, Marvin O. Solar water heating system and heat exchanger therefor. 4,326,499, Cl. 126-420.000.

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Kozaki, Shuichi: *See—*

Minezaki, Shigehiro; Takamatsu, Toshiaki; and Kozaki, Shuichi, 4,326,929, Cl. 204-15.000.

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Kratel, Gunter; Dummer, Gerhard; Niessner, Peter; Grune, Burkhard; and Stohr, Gunter, to Wacker-Chemie GmbH. Method for increasing the bulk weight of silicon dioxide. 4,326,852, Cl. 23-293.00R.

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Kroniger, Wilhelm, to Dr. Ing. h.c.F. Porsche AG. Rear axle for motor vehicles. 4,326,734, Cl. 280-724.000.

Kronogard, Sven-Olof. Gas turbine-transmission plant. 4,326,375, Cl. 60-39.16S.

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Kudo, Shozo: *See—*

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Kuhl, Thomas, to Varta Batterie Aktiengesellschaft. Seal for galvanic element. 4,327,165, Cl. 429-174.000.

Kuhne, Frederick W.: *See—*

Grove, John L.; and Kuhne, Frederick W., 4,326,601, Cl. 182-2.000.

Kulite Semiconductor Products, Inc.: *See—*

Kurtz, Anthony D., 4,327,359, Cl. 340-545.000.

Kull, Peter, to Sprecher & Schuh AG. Gas-blast switch. 4,327,262, Cl. 200-148.00A.

Kumazaki, Katsuaki, to Tandy Corporation. Ringer circuit for telephone. 4,327,254, Cl. 179-84.00T.

Kummer, Werner: *See—*

Stahle, Helmut; Koppe, Herbert; Kummer, Werner; and Lillie, Christian, 4,327,106, Cl. 424-273.00R.

Kunke, Stefan: *See—*

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Kureha Kagaku Kogyo Kabushiki Kaisha: *See—*

Sawa, Yuji; Endo, Shigeru; and Uehara, Tsutomu, 4,327,137, Cl. 428-35.000.

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Kurtz, Anthony D., to Kulite Semiconductor Products, Inc. Glass breakage detectors employing piezoresistive devices. 4,327,359, Cl. 340-545.000.

Kusumi, Hiroshi; and Wada, Masami, to Hitachi Construction Machinery Co. Ltd. Swivel joint for reverse circulation drill. 4,326,736, Cl. 285-98.000.

Kutnyak, Thomas A., to Automation Industries, Inc. Double-channel electrical conduit. 4,326,561, Cl. 138-136.000.

Kuzunuki, Soshiro; Hirasawa, Kotaro; Sakata, Kazuhiro; and Yoneda, Kenji, to Hitachi, Ltd. Apparatus for controlling rescue operation of an elevator. 4,326,606, Cl. 187-29.00R.

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Kwon, Yiduk; and Lawson, Paul, to Exxon Research & Engineering Co. Source shedding regulator. 4,327,318, Cl. 320-39.000.

Kyowa Hakko Kogyo Co., Ltd.: *See—*

Hagino, Hiroshi; Odagiri, Hideo; and Okutani, Junichi, 4,327,042, Cl. 261-77.000.

L.S. Starrett Company, The: *See—*

Plante, Robert A., 4,326,338, Cl. 33-174.0PA.

La Cellophane: *See—*

Ceintrey, Claude, 4,327,006, Cl. 524-315.000.

La Telemecanique Electrique: *See—*

Vignaud, Jean-Claude; and Juery, Gerard, 4,327,260, Cl. 200-50.00C.

LaBoda, John A.; and Fortlage, Paul R., to MTD Products Inc. Air transfer device. 4,326,453, Cl. 98-87.000.

LaCoste, Francois R., to Patentex, S.A. Polyurethane golf club. 4,326,716, Cl. 273-167.00R.

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Lagana, Vincenzo; and Zardi, Umberto, to Snamprogetti, S.p.A. Method and the reuse of sewage waters of the combined urea-ammonia installations. 4,327,068, Cl. 423-359.000.

Lagervall, Otto L. Sleds. 4,326,725, Cl. 280-22.000.

Lago, Rudolph M.: *See—*

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McVay, Kenneth R.; Lakes, Stephen C.; and Zilch, Karl T., 4,327,030, Cl. 260-407.000.

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Lampaert, Roger R., to N. V. Weefautomaten Picanol. Color selector. 4,326,566, Cl. 139-453.000.

Landa, Benzion, to Savin Corporation. Sawtooth feeder with jam preventer. 4,326,644, Cl. 221-263.000.

Landa, Benzion, to Savin Corporation. Combined registration image transfer and pickoff assembly for electrophotographic copier. 4,326,792, Cl. 355-3.0TR.

Lang, Frank B.; and Clemens, Jon K., to RCA Corporation. Video disc player with RFI reduction circuit. 4,327,432, Cl. 369-126.000.

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Lange, Wolfgang: *See—*

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Lapides, Melvin E., to Electric Power Research Institute, Inc. Storage assembly for spent nuclear fuel. 4,326,918, Cl. 376-272.000.

Larkin, Sam. Disposable waste receptacle. 4,326,575, Cl. 150-50.000.

Larson, John A.; and Fischer, Robert B., to Ingersoll-Rand Company. Precipitation hardening chromium steel casting alloy. 4,326,885, Cl. 75-125.000.

Lasermann, Franz; and Wittenbreder, Eduard, to Droop, Firma; and Herr Dipl.-Ing. M. G. Dronsek. Process for longitudinal adjustment of tools. 4,326,824, Cl. 409-132.000.

Laszlo, Tibor S.; Nienow, John F.; Sherwood, John F.; and Irving, Christopher L., to Philip Morris Incorporated. Firmness control in a cigarette maker. 4,326,542, Cl. 131-280.000.

LaTorre, Richard R.: *See—*

Bostwick, Lewis S.; Filosa, Albert V.; and LaTorre, Richard R., 4,326,428, Cl. 74-5.00F.

Laugesen, Thomas C., to NWL Transformers. Ripple insensitive electric precipitators. 4,326,860, Cl. 55-105.000.

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Kawakami, Moriatsu, 4,326,636, Cl. 209-534.000.

Lavery, Lawrence P.; Wilcox, David G.; and Thomas, Dale C., to Xerox Corporation. Automatic development dispenser control. 4,326,646, Cl. 222-56.000.

Laviron, Michel: *See—*

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Lawhon, William T., Jr.: *See—*

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Lawrence, Anthony W., to Northrop Corporation. Thin film laser gyro. 4,326,803, Cl. 356-350.000.

Lawrence, Robert H., Jr.; and Hill, Phillip E., to Agrigenetics Research Associates Limited. Hybrids. 4,326,358, Cl. 47-58.000.

Lawson, Paul: *See—*

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Lazarus, Stanley D., to Allied Chemical Corporation. Production of thermally stabilized polyester with alkylene carbonates and sodium or potassium iodide. 4,327,207, Cl. 525-439.000.

Le Materiel Telephonique Thomson-CSF: *See—*

Athenes, Claude; Salle, Jacques E.; and Blouin, Philippe, 4,327,442, Cl. 375-119.000.

Lechner, Robert, to Siemens Aktiengesellschaft. Circuit arrangement for consecutively monitoring operating conditions of direct current devices. 4,327,253, Cl. 179-18.0FG.

Leclerc, Jean F., to Service d'Exploitation Industrielle des Tabacs et des Allumettes. Process and apparatus for providing data indicative of the shape of leaf-like article. 4,327,375, Cl. 358-107.000.

Ledbetter, Frank E., III: *See—*

White, William T.; Clemons, Johnny M.; and Ledbetter, Frank E., III, 4,327,150, Cl. 428-332.000.

Lee, Jiunn-Feng. Speed indicating apparatus for vehicles. 4,326,415, Cl. 73-499.000.

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Lee, John N.: *See—*

Berg, Norman J.; Casseday, Michael W.; Lee, John N.; and Abramovitz, Irwin J., 4,326,778, Cl. 350-358.000.

Leeds, Harry D.: *See—*

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Leger, Violeta Z., to Union Carbide Corporation. Nonaqueous cell having a MNO_2/poly-carbon fluoride cathode. 4,327,166, Cl. 429-194.000.
Lehmann, Ernesto, to Georg Fischer Aktiengesellschaft. Tube coupling assembly. 4,326,737, Cl. 285-112.000.
Lehr, Gunter; Hucks, Uwe; Vernaleken, Hugo; Nielinger, Werner; and Tresper, Erhard, to Bayer Aktiengesellschaft. Continuous process for the hydrolytic production of polycaprolactam having a low-monomer and low-dimer content. 4,327,208, Cl. 528-323.000.
Leibrand, John G., Sr.; and Bessey, Marlin L., to Runfree Enterprise, Inc. Method and apparatus for preheating fuel. 4,326,492, Cl. 123-557.000.
Leitner, Wolfgang; Pampouchidis, Georg; and Bleikolm, Anton, to Vianova Kunstharz, A.G. Water-dilutable oxazolidine group containing epoxy resin esters, coating compositions prepared therefrom, and their use as cathodically depositable paints. 4,327,200, Cl. 525-531.000.
Lejon, Jean, to Controle Bailey. Electronic regulation procedures using a servomotor. 4,326,448, Cl. 91-363.00R.
Lemerle, Philippe: *See—*
Becavin, Henri; Bailly, Alain; and Lemerle, Philippe, 4,327,334, Cl. 333-1.000
Lenack, Isidore J., deceased: *See—*
Lenack, Roger D.; and Lenack, Isidore J., deceased, 4,327,117, Cl. [illegible]
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Lenack, Roger D.; and Lenack, Isidore J., deceased, 4,327,117, Cl. [illegible]
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Leonhardt, Fritz; Andra, Wolfhart; Zellner, Wilhelm; Schlaich, Jorg; and Mayr, Gunter. Waisted envelope for tubular building structures. 4,326,363, Cl. 52-80.000.
LePage, Joel; Laviron, Michel; and Derewonko, Henri, to Thomson-CSF. Process for producing a self-aligned grid field-effect transistor. 4,326,330, Cl. 29-571.000.
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Les Produits Associes. LPA: *See—*
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Leva, Max. Tower packing element. 4,327,043, Cl. 261-94.000.
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Froling, Albert; de Jongh, Rudolph O.; and Kemps, Josephus M. A., 4,326,932, Cl. 204-59.00R.
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Rudy, Jerome; and Rapisarda, Anthony A., 4,327,133, Cl. 427-242.000.
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Lew, Hyok S. Sealess pressurized mixing vessels. 4,326,811, Cl. [illegible].
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Moroz, Viktor M.; Lezin, Nikolai Y.; Pavlov, Tengiz A.; and Ilmensky, Vladimir V., 4,326,756, Cl. 308-3.900.
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Gockler, Heinz; and Hofmeister, Hagen, 4,327,439, Cl. 375-67.000.
Lichtman, Sandra: *See—*
Stein, Frederick, 4,326,394, Cl. 70-14.000.
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Lienhard, Paul; and L'Eplattenier, Francois, to Ciba-Geigy Corporation. Isoindoline-azine nickel complex with piperazine. 4,327,212, Cl. 544-225.000.
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Puglia, Wayne J.; Patanasinth, Kanit J.; Lombardo, Andrew T.; and Vink, Walter, 4,327,077, Cl. 424-38.000.
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Capostagno, Joseph A.; Chan, Kingsley; and Kartavenko, Alexandre, 4,327,403, Cl. 362-306.000.
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Ernyei, Herbert, 4,327,341, Cl. 333-197.000.
Lilaonitkul, Amnuey: *See—*
Wollangk, Edward G.; and Lilaonitkul, Amnuey, 4,326,527, Cl. [illegible]
Lillie, Christian: *See—*
Stahle, Helmut; Koppe, Herbert; Kummer, Werner; and Lillie, Christian, 4,327,106, Cl. 424-273.00R.
Lin, W. S.: *See—*
Hao, Paul L. C.; Hsu, W. W.; Lin, W. S.; Tong, S. N.; Hung, H. K.; and Chang, M. C., 4,327,003, Cl. 523-336.000.
Lincoln, Edgar B. Positive opening device for pinch valve sleeves. 4,326,695, Cl. 251-7.000.
Linde Aktiengesellschaft: *See—*
Benkmann, Christian, 4,326,858, Cl. 55-26.000.
Gernandt, Helmut, 4,326,724, Cl. 277-171.000.
Lips, Alexander; and Pratley, Stuart K., to Levers Brothers Company. Liquid fabric-softening composition. 4,326,965, Cl. 252-8.800.
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Pryor, Timothy R.; Hageniers, Omer L.; Pastorius, Walter J.; Liptay-Wagner, Nicholas; Clarke, Donald A.; and Richards, Blaine, 4,326,808, Cl. 356-445.000.
Lis, Steven A.; Serreze, Harvey B.; and Sienkiewicz, Peter M., to Radiation Monitoring Devices, Inc. Method to synthesize and produce thin films by spray pyrolysis. 4,327,119, Cl. 427-74.000.
Litchfield, John H.; and Lawhon, William T., Jr., to Battelle Development Corporation. Aerobic submerged fermentation of sporulating, ectomycorrhizal fungi. 4,327,181, Cl. 435-176.000.
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Dorsey, Glenn F.; and Hassall, James C., II, 4,326,769, Cl. 339-177.00E.
Loomer, Weston R., 4,326,692, Cl. 248-488.000.
Liu, Yung S., to General Electric Company. Intracavity raman frequency conversion in a high power laser. 4,327,337, Cl. 372-3.000.
Lloyd, Bert A. Music holder. 4,326,691, Cl. 248-443.000.
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Ripley, Robert H.; Karsten, Robert W.; Brandon, Eugene M.; and Lockerby, James W., 4,327,011, Cl. 524-474.000.
Lockheed Corporation: *See—*
Miller, Robert N.; and Smith, Richard L., 4,327,152, Cl. 428-419.000.
Lockheed Missiles & Space Company, Inc.: *See—*
Weyers, Paul F. R., 4,327,296, Cl. 290-53.000.
Loftus, Barry N.; and Young, Hugh J. Door knobs and levers. 4,326,738, Cl. 292-172.000.
Logan, William R.; Sarot, Pierre; and Bouillet, Edmond, to Interox, BEX. Composition and process for washing and bleaching. 4,326,976, Cl. 252-99.000.
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Loomer, Weston R., to Litton Systems, Inc. Mirror bracket. 4,326,692, Cl. 248-488.000.
Lord Corporation: *See—*
Sherrick, James W.; and Casbohm, Chris E., 4,326,670, Cl. 238-341.000.
L'Oreal: *See—*
Bouillon, Claude; Vayssie, Charles; and Richard, Francoise, 4,327,031, Cl. 260-429.900.
Lowe, David R.; and Hay, Gerard J., to Courtaulds Limited. Underpants. 4,326,302, Cl. 2-405.000.
Lowther, Frank E., to Purification Sciences, Inc. Internal combustion engine with oxidant manufacture. 4,326,483, Cl. 123-3.000.
Lubrizol Corporation, The: *See—*
Chamberlin, William B., III, 4,326,972, Cl. 252-33.300.
Lucas, Edward J.: *See—*
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Lucid, Michael F.: *See—*
Hermann, John A.; and Lucid, Michael F., 4,327,061, Cl. 423-8.000.
Luckenbach, David, to Hi-G Incorporated. Solenoid with mechanically latchable plunger. 4,327,344, Cl. 335-253.000.

Luckenbach, Edward C.; and Worley, Arthur C., to Exxon Research & Engineering Co. Continuous catalyst unloading device. 4,327,055, Cl. 422-110.000.
Luckowski, Edwin E.; and Bainbridge, Lester M. Bicycle training wheel bracket support. 4,326,729, Cl. 280-304.000.
Ludwig, Walter; and Schmid, Franziska, deceased (by Schmid, Hans, heir), to Carl Walther GmbH. Magazine catch release for a hand firearm. 4,326,353, Cl. 42-7.000.
Lummus Company, The: *See—*
Gelbein, Abraham P., 4,327,219, Cl. 546-317.000.
Sze, Morgan C.; and Simone, Andre A., 4,326,853, Cl. 44-1.00F.
Lundin, Borje R., to ESAB Aktiebolag. Submerged-arc spot welding apparatus. 4,327,270, Cl. 219-73.200.
Lundquist, Joseph T., Jr.: *See—*
Feinberg, Stewart C.; Lundsager, Christian B.; Lundquist, Joseph T., Jr.; and Balouskus, Robert A., 4,327,164, Cl. 429-144.000.
Lundsager, Christian B.: *See—*
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Lustig, Martin: *See—*
Bacino, Carl J.; and Lustig, Martin, 4,326,630, Cl: 206-315.00R.
Lynell Medical Technology, Inc.: *See—*
Poler, Stanley, 4,326,306, Cl. 3-13.000.
Lyu, Seung W.; and Misra, Surya K., to National Can Corporation. Method of making tin-layered stock material and containers therefrom. 4,326,896, Cl. 148-12.00D.
M.C.C. Nederland B.V.: *See—*
Van Zijderveld, George J., 4,326,849, Cl. 474-161.000.
MacDonald, Malcolm F., to GTE Laboratories Incorporated. Programmable timing circuit. 4,327,328, Cl. 328-55.000.
MacDonald, Paul, to Merion Corporation, The. Method of making metal golf club head. 4,326,326, Cl. 29-428.000.
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Machlett Laboratories, Inc., The: *See—*
Weber, Richard G., 4,327,305, Cl. 313-330.000.
Mackay, Donald A. M.: *See—*
Puglia, Wayne J.; Patanasinth, Kanit J.; Lombardo, Andrew T.; Beam, John E.; and Mackay, Donald A. M., 4,327,076, Cl. 424-38.000.
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Magna Corporation: *See—*
Blair, Charles M., Jr., 4,326,968, Cl. 252-8.55D.
Blair, Charles M., Jr., 4,326,983, Cl. 252-358.000.
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Magnuson, Roland A., to United States of America, Army. Linkage of actuating system for elevating gun mount. 4,326,446, Cl. 89-38.000.
Maisch, Wolfgang; Peters, Klaus-Jurgen; Wissmann, Michael; and Schelhas, Peter, to Robert Bosch GmbH. Fuel injection system. 4,326,487, Cl. 123-453.000.
Makeev, Igor M.: *See—*
Davydov, Vadim A.; Khromov, Vladimir I.; Makeev, Igor M.; Kogos, Aizik M.; and Rymarenko, Leonid I., 4,326,400, Cl. 72-280.000.
Makita, Teruo: *See—*
Kawahara, Haruyuki; Makita, Teruo; Kudo, Shozo; and Funakoshi, Takashi, 4,327,014, Cl. 523-116.000.
Malchow, Max E., to RCA Corporation. Circuit arrangement useful in developing decoupled operating voltages for IF amplifier stages of an integrated circuit. 4,327,332, Cl. 330-261.000.
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Carneim, Wilfried; Hillemanns, Herbert; Vollmecke, Hermann; Ribken, Hans; Schumacher, Heinz; and Roether, Kurt, 4,326,699, Cl. 266-114.000.
Manning, Donald F.: *See—*
Gregory, Floyd A.; Manning, Donald F.; Oranchak, William; and Student, Joseph J., deceased, 4,326,656, Cl. 226-59.000.
Manville Service Corporation: *See—*
Harris, Walter W., 4,326,871, Cl. 65-12.000.
Sadler, Thomas H., 4,326,891, Cl. 106-99.000.
Marakin, Vladimir I.: *See—*
Bukhtiyarov, Ivan D.; An, Viktor B.; Farshatov, Marat N.; Sapozhnikov, Fedor F.; Sidorov, Anatoly G.; Proskurina, Natalya A.; and Marakin, Vladimir I., 4,326,410, Cl. 73-117.300.
Maranhao, Luiz E. C. Individual bagasse drier. 4,326,470, Cl. 110-220.000.
Marchese, Robert T.: *See—*
Smith, Edward H.; Dent, Thomas H.; and Marchese, Robert T., 4,326,317, Cl. 15-302.000.
Maresca, Louis M.: *See—*
Colon, Ismael; Maresca, Louis M.; and Kwiatkowski, George T., 4,326,989, Cl. 252-429.00R.
Margotte, Dieter: *See—*
Druschke, Frank; Margotte, Dieter; Cohnen, Wolfgang; and Idel, Karsten, 4,327,015, Cl. 524-162.000.
Marino A., Carmin: *See—*
Soriano G., Vicente; Marino A., Carmin; and Valdez, Enrique R., 4,326,884, Cl. 75-71.000.
Marino, Carlo. Device for locating center positions. 4,326,339, Cl. 33-191.000.
Marino, Samuel F.; and Hidding, Daniel P., to Hunt-Wesson Foods, Inc. Dust cover with assurance lug. 4,326,649, Cl. 222-182.000.
Mark, Harold W.; and Zuech, Ernest A., to Phillips Petroleum Company. Passivating agent composition and method for its preparation. 4,326,990, Cl. 252-431.00C.
Markert, Jurgen: *See—*
Liechti, Hans W.; Burdeska, Kurt; and Markert, Jurgen, 4,327,018, Cl. 260-156.000.
Markley, Donald D. Musical instrument string. 4,326,444, Cl. 84-297.00S.
Markwell, Roger E.: *See—*
Evans, John M.; and Markwell, Roger E., 4,327,099, Cl. 424-256.000.
Marley, William R. Cut log section holder for log splitting operation. 4,326,703, Cl. 269-156.000.
Marquest Medical Products, Inc.: *See—*
Bailey, Donald L.; and Williams, Charles, 4,326,540, Cl. 128-163.000.
Marsan, Arthur E. Appliance for the treatment of colostomy and the like. 4,326,521, Cl. 128-283.000.
Marsh, Frank D., to Du Pont de Nemours, E. I., and Company. Chlorination process. 4,327,036, Cl. 260-465.00G.
Marsili, Leonardo; Franceschi, Giovanni; and Sanfilippo, Aurora, to Farmitalia Carlo Erba S.p.A. 3-Amidino ansamycins. 4,327,096, Cl. 424-250.000.
Martin, Charles E.; and Rachwal, Ervin J., to Western Electric Company, Inc. Photographic image definition improvement. 4,327,172, Cl. 430-407.000.
Martin, John K., III: *See—*
Whitney, Douglass G.; and Martin, John K., III, 4,326,517, Cl. [illegible]
Martin, Julian R.; and Sides, Larry W., to R. J. Reynolds Tobacco Company. Smoking product and process for manufacturing same. 4,326,543, Cl. 131-362.000.
Martin Marietta Corporation: *See—*
Zaczek, Thomas E., 4,327,417, Cl. 364-578.000.
Martin, Michael L.: *See—*
Gauthier, Charles F.; and Martin, Michael L., 4,326,587, Cl. 156-379.000.
Martin, Pierre, to Ciba-Geigy Corporation. Process for producing 2,3,5,6-tetrachloropyridine and 3,5,6-trichloropyridin-2-ol. 4,327,216, Cl. 546-250.000.
Martinez, Richard I.; and Herron, John T., to United States of America, Commerce. Method for producing carbocyclic compounds from cyclic sulfide. 4,327,233, Cl. 585-357.000.
Maruoka, Minekazu; and Hirotani, Tatsushi, to Fujitsu Limited. Control system for input/output apparatus. 4,327,409, Cl. 364-200.000.
Marvin Glass & Associates: *See—*
Breslow, Jeffrey D.; and Erickson, Erick E., 4,326,710, Cl. 273-1.00E.
Marzencki, Andrzej: *See—*
Pajak, Andrzej; Olszowski, Tadeusz; Mazur, Antoni, deceased; Holtzer, Mariusz; Marzencki, Andrzej; and Jachowicz, Adam, 4,326,578, Cl. 164-15.000.
Maschinenfabrik Carl Zangs Aktiengesellschaft: *See—*
Brock, Josef; and Surkamp, Paul, 4,326,563, Cl. 139-76.000.
Masi, Paolo: *See—*
Bernardi, Luigi; Masi, Paolo; Suarato, Antonino; and Arcamone, Federico, 4,327,029, Cl. 260-351.100.
Mason, Thomas A., to Western Publishing Company, Inc. Cardboard food tray and puppet device. 4,326,356, Cl. 46-154.000.
Massachusetts Institute of Technology: *See—*
Berte, Frank J., 4,326,475, Cl. 114-39.000.
Kaplow, Roy; and Russo, Carl J., 4,326,898, Cl. 148-16.600.
Wurtman, Richard J., 4,327,112, Cl. 424-319.000.
Massey, Roger G.; and Holloway, David G., to Parker & Harper Mfg. Co. Limit switch for rotary control device. 4,326,627, Cl. 200-47.000.
Masuda, Shunichi: *See—*
Tajima, Hatsuo; Iwami, Naoki; Masuda, Shunichi; Shimizu, Katsuichi; Kawatsura, Yoshihiro; Suzuki, Koji; and Yokomizo, Yoshikazu, 4,326,795, Cl. 355-14.00E.
Masuda, Takayoshi; Honjo, Masaru; Takase, Tsutomu; and Watanabe, Yoshimoto, to Mitsui Toatsu Chemicals, Inc. Method for purifying fatty acid esters of saccharide. 4,327,183, Cl. 435-274.000.
Matagrano, Theodore T. Disc caliper clutch with easy access and burnout proof rotor. 4,326,614, Cl. 192-70.130.
Matsuda, Akira; Yoshioka, Osamu; Takahashi, Katsutoshi; Yoshida, Kooichi; and Ninomiya, Hiroshi, to Nippon Kayaku Kabushiki Kaisha. Method of enhancing absorption of antitumor agent into gastrointestinal tumor site and orally administrable antitumor compositions therefor. 4,327,081, Cl. 424-81.000.
Matsuda, Yoshiteru; Tomimoto, Tetsuo; and Nagaoka, Yoshitomo, to Matsushita Electric Industrial Co., Ltd. Flesh correction circuit for a color television receiver. 4,327,374, Cl. 358-28.000.
Matsui, Hisanori; Tanaka, Hiroshi; Yabutani, Kunihiro; and Kurono, Hitoshi, to Nihon Nohyaku Co., Ltd. Process for producing 1,3-dithiol-2-ylidene malonates. 4,327,223, Cl. 549-39.000.
Matsui, Ryo; Matsushika, Tadao; Hayashi, Yoshio; and Shiga, Tetsuo, to Asahi Kasei Kogyo Kabushiki Kaisha. Dry image forming material. 4,327,176, Cl. 430-619.000.
Matsuki, Yutaka: *See—*
Hoki, Tsuneo; and Matsuki, Yutaka, 4,327,193, Cl. 521-88.000.

Matsumoto, Shigetoshi: *See—*
Iwahori, Hiroshi; and Matsumoto, Shigetoshi, 4,326,960, Cl. 210-650.000.
Matsumoto, Yoichi, to Metallgesellschaft Aktiengesellschaft. Dust-collecting assembly for electrostatic precipitator. 4,326,861, Cl. 55-112.000.
Matsunaga, Tomiyuki: *See—*
Fukushima, Tsunekazu; Matsunaga, Tomiyuki; and Funakoshi, Satoshi, 4,327,086, Cl. 424-177.000.
Matsuo, Takashi: *See—*
Mizutani, Toshio; Itaya, Nobushige; Ohno, Nobuo; Matsuo, Takashi; Kitamura, Shigeyoshi; and Okuno, Yositosi, 4,327,109, Cl. 424-275.000.
Matsushika, Tadao: *See—*
Matsui, Ryo; Matsushika, Tadao; Hayashi, Yoshio; and Shiga, Tetsuo, 4,327,176, Cl. 430-619.000.
Matsushita Electric Industrial Co., Ltd.: *See—*
Hiya, Koji; Miyoshi, Yoshiyuki; and Machida, Kanji, 4,326,908, Cl. 156-215.000.
Ikeda, Nobuo; and Yoshimura, Hirofumi, 4,327,267, Cl. 219-10.55F.
Kohara, Rikusei; Kakumoto, Susumu; Aoyama, Takashi; Shoji, Masami; and Shinagawa, Mutsuaki, 4,326,777, Cl. 350-357.000.
Matsuda, Yoshiteru; Tomimoto, Tetsuo; and Nagaoka, Yoshitomo, 4,327,374, Cl. 358-28.000.
Muranaka, Takayoshi; and Mori, Hajime, 4,327,400, Cl. 361-433.000.
Nawa, Motoyuki; Sugawara, Norio; and Takahashi, Yutaka, 4,326,452, Cl. 98-40.0VT.
Terada, Jiro; and Nitta, Tsuneharu, 4,326,414, Cl. 73-336.500.
Tomita, Masao; Isaka, Takenobu; Mino, Mineo; and Fujisawa, Kiyoji, 4,327,384, Cl. 360-77.000.
Matsushita Electric Works, Ltd.: *See—*
Kitagawa, Fumio; and Ichinomiya, Tsutomu, 4,326,536, Cl. 118-642.000.
Matsushita Industry Co., Ltd.: *See—*
Sabase, Makoto; and Sakaitani, Mario, 4,326,651, Cl. 222-439.000.
Matsuura, Ryouichi: *See—*
Ishikawa, Eizi; Matsuura, Ryouichi; and Yano, Kiyotosi, 4,326,696, Cl. 251-129.000.
Matsuyama Petrochemicals Inc.: *See—*
Shigeyasu, Motoo; and Kitamura, Takehiko, 4,327,226, Cl. 361-416.000.
Mattel, Inc.: *See—*
Tran, Luan G.; Effler, Timothy A.; and Wat, Karen K., 4,326,719, Cl. 273-238.000.
Mattsson, Agne T., to Aktiebolaget Bahco Ventilation. Method and apparatus in defibration. 4,326,913, Cl. 162-17.000.
Matumoto, Kunio: *See—*
Mituhashi, Kazuyuki; Matumoto, Kunio; Shirai, Haruo; and Tanaka, Yoshikatu, 4,327,247, Cl. 174-68.500.
Maurer, Werner; and Farian, Gerhard, to Karl M. Reich, Maschinenfabrik GmbH. Magazine for feeding headed fasteners into a driving apparatus. 4,326,661, Cl. 227-120.000.
Mayer, Dieter: *See—*
Schaefer, Dieter; Motz, Herbert; Mayer, Dieter; Deigner, Paul; Hack, Joachim; and Falk, Roland, 4,327,139, Cl. 428-65.000.
Mayer, Endre A.: *See—*
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Mayr, Gunter: *See—*
Leonhardt, Fritz; Andra, Wolfhart; Zellner, Wilhelm; Schlaich, Jorg; and Mayr, Gunter, 4,326,363, Cl. 52-80.000.
Mazur, Antoni, deceased: *See—*
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Mazur, Irena, legal representative: *See—*
Pajak, Andrzej; Olszowski, Tadeusz; Mazur, Antoni, deceased; Holtzer, Mariusz; Marzencki, Andrzej; and Jachowicz, Adam, 4,326,578, Cl. 164-15.000.
Mazzola, Louis R., to Lever Brothers Company. Encapsulated bleaches and methods for their preparation. 4,327,151, Cl. 428-407.000.
McAdams, Hugh P., to Texas Instruments, Incorporated. Column decoder discharge for semiconductor memory. 4,327,426, Cl. 365-201.000.
McAllister, David L.: *See—*
Ayres, James T.; McAllister, David L.; and Sands, John L., 4,327,227, Cl. 568-639.000.
McAllister, John H.; Stewart, Lindsay G.; Gladysz, Carl V.; and Wilson, Jim, to Dofasco Inc. Basic process of producing basic fluxed pellets for iron-making. 4,326,887, Cl. 75-257.000.
McBride, Thomas: *See—*
Colognori, Aldo, 4,326,321, Cl. 24-265.00B.
McCandless, Frank P.: *See—*
Berg, Lloyd; McCandless, Frank P.; and Ramer, Ronald J., 4,326,995, Cl. 252-465.000.
McCarry, John D.: *See—*
Foley, William M., Jr., 4,327,202, Cl. 526-245.000.
McCleery, Winston T. Computer power/temperature protector. 4,327,397, Cl. 361-90.000.
McClimon, Robert A. Golf driving target apparatus. 4,326,717, Cl. 273-181.00W.
McDonnell Douglas Corporation: *See—*
Roe, George W., 4,326,847, Cl. 434-12.000.
Thompson, Phillip B.; and Roberts, Hill W., 4,326,599, Cl. 181-175.000.
McElroy, David J., to Texas Instruments Incorporated. Method of making a contact programmable double level polysilicon MOS read only memory. 4,326,329, Cl. 29-571.000.
McFee, Richard. Dual open cycle heat pump and engine. 4,326,388, Cl. 62-324.000.
McGill, William C., to Union Carbide Corporation. Adjustable hub mount for circular saw blade. 4,326,361, Cl. 51-168.000.
McGraw-Edison Company: *See—*
Siiberg, Hemming G., 4,327,401, Cl. 362-183.000.
McGraw, Val R. Combination adjustable/lockable/measuring wrench, and methods of constructing and utilizing same. 4,326,436, Cl. 81-165.000.
McIntyre, Craig R.: *See—*
Moult, Roy H.; and McIntyre, Craig R., 4,326,669, Cl. 238-36.000.
McMeekan, Kenneth R.: *See—*
Hardwick, Michael J.; and McMeekan, Kenneth R., 4,326,544, Cl. 131-369.000.
McNeely, Michael L., to RCA Corporation. Method for producing disc records having molded-in center holes. 4,327,047, Cl. 264-107.000.
McNutt, Darrell A. Hay bale handling apparatus. 4,326,827, Cl. 414-24.500.
McStravick, David M., to Baker International Corporation. Method and apparatus for treating well components with a corrosion inhibiting fluid. 4,326,585, Cl. 166-244.00C.
McStravick, David M., to Baker International Corporation. Well tool having knitted wire mesh seal means and method of use thereof. 4,326,588, Cl. 166-387.000.
McVay, Kenneth R.; Lakes, Stephen C.; and Zilch, Karl T., to Emery Industries, Inc. Process for reducing the polyunsaturates content in mixtures of unsaturated fatty acids and/or fatty acid esters. 4,327,030, Cl. 260-407.000.
McWilliams, Joseph A., to Micropore International Limited. Smooth top cookers. 4,327,280, Cl. 219-464.000.
Mead Corporation, The: *See—*
Wood, Prentice J., 4,326,628, Cl. 206-158.000.
Meharg, Richard D.: *See—*
Gall, John C.; and Meharg, Richard D., 4,326,732, Cl. 280-642.000.
Mehta, Jasu G. Respiratory monitor. 4,326,404, Cl. 73-29.000.
Mellon, Alice D.: *See—*
Guerrero, Jorge; Mellon, Alice D.; Fritz, Charles G.; and Doddi, Namassivaya, 4,326,522, Cl. 128-/260.000.
Melpolder, John B.: *See—*
Deichert, William G.; Friends, Gary D.; Melpolder, John B.; and Park, Joon S., 4,327,203, Cl. 526-279.000.
Melville, James B., to Lever Brothers Company. Liquid formulations for depositing perfumes on fabrics. 4,326,967, Cl. 252-8.800.
Mendehall, Robert L. Recycling apparatus for asphaltic concrete. 4,326,809, Cl. 366-4.000.
Mendiratta, Ashok K., to General Electric Company. Recovery of bisphenol-A values. 4,327,229, Cl. 568-728.000.
Menth, Anton: *See—*
Banziger, Robert; Isenschmid, Roland; Menth, Anton; Muller, Rene; and Stucki, Samuel, 4,326,943, Cl. 204-290.00F.
Merck & Co., Inc.: *See—*
Cottrell, Ian W.; Baird, John K.; and Shim, Jaewon L., 4,326,970, Cl. 252-8.55D.
Merion Corporation, The: *See—*
MacDonald, Paul, 4,326,326, Cl. 29-428.000.
Merrick, James W., to Autotronic Controls, Corp. Multiple spark discharge ignition system. 4,326,493, Cl. 123-606.000.
Messenger, David F.: *See—*
Moodgil, Brij M.; and Messenger, David F., 4,326,950, Cl. 209-3.000.
Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung: *See—*
Sepp, Gunther, 4,327,129, Cl. 427-164.000.
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"Metallurgie Hoboken - Overpelt": *See—*
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Micro Metalsmiths Limited: *See—*
Shaw, Christopher W., 4,326,357, Cl. 46-217.000.

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McWilliams, Joseph A., 4,327,280, Cl. 219-464.000.
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Miller, Robert N.; and Smith, Richard L., to Lockheed Corporation. Protective coating to retard crack growth in aluminum alloy. 4,327,152, Cl. 428-419.000.
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Chiu, Kuen-Wai; and Strickler, John R., 4,327,071, Cl. 423-646.000.
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Nakao, Yukimichi; and Fujishige, Shoei, 4,327,235, Cl. 585-270.000.
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Slavik, Raymond F., 4,326,909, Cl. 156-253.000.
Minnesota Mining and Manufacturing Company: *See—*
Dillon, Kenneth R.; and Gardner, Richard N., 4,327,156, Cl. 428-568.000.
Drake, James F., Jr.; and Ramboesk, G. Phillip, 4,326,524, Cl. 128-260.000.
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Hammar, Walton J., 4,326,532, Cl. 128-349.00R.
Hunder, David N.; and Hervig, Harold C., Jr., 4,326,735, Cl. 285-15.000.
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Kawamura, Kunio; and Ueda, Hiroshi, 4,326,783, Cl. 354-25.000.
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Mistarz, Robert J., to Vercon Inc. Variable volume, positive displacement sanitary liquid dispensing machine. 4,326,567, Cl. 141-90.000.
Mitani, Tomomasa; Ogasawara, Yoshimi; and Hiraishi, Shunichi, to Dainippon Inc. & Chemicals, Inc. Process for producing sheet molding compound. 4,327,145, Cl. 428-290.000.
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Cogswell, Frederic N.; and Mitchell, David T., 4,327,053, Cl. 264-515.000.
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Sakurai, Takeyoshi; and Kobayashi, Noboru, 4,327,263, Cl. 200-144.00A.
Mitsubishi Gas Chemical Co., Inc.: *See—*
Isogai, Nobuo; Hosokawa, Motoyuki; Okawa, Takashi; and Wakui, Natsuko, 4,327,225, Cl. 560-205.000.
Mitsubishi Kenki Kabushiki Kaisha: *See—*
Hosokawa, Yasuhiko; Katsuki, Kanji; and Suzuki, Toshio, 4,327,314, Cl. 318-722.000.
Mitsubishi Paper Mills, Ltd.: *See—*
Toyama, Kohji; Fuchigami, Mitsuru; Nagayasu, Isao; and Tsukahara, Hirokazu, 4,327,148, Cl. 428-320.800.
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Oshima, Masanao; and Yashima, Nobuyoshi, 4,326,822, Cl. 405-217.000.
Mitsui Toatsu Chemicals, Inc.: *See—*
Masuda, Takayoshi; Honjo, Masaru; Takase, Tsutomu; and Watanabe, Yoshimoto, 4,327,183, Cl. 435-274.000.
Mitsumi Electric Co., Ltd.: *See—*
Iwao, Takayuki; Ono, Takemitsu; and Ishikawa, Yukio, 4,326,459, Cl. 101-93.300.
Mituhashi, Kazuyuki; Matumoto, Kunio; Shirai, Haruo; and Tanaka, Yoshikatu, to Shin-Kobe Electric Machinery Co., Ltd.; and Shirai Eenshi Kogyo Co., Ltd. Printed wiring board. 4,327,247, Cl. 174-68.500.
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Ohara, Susumu; Horiki, Akira; Miyazaki, Katsuyuki; and Tokunaga, Kaoru, 4,327,436, Cl. 370-110.100.
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Hiya, Koji; Miyoshi, Yoshiyuki; and Machida, Kanji, 4,326,908, Cl. 156-215.000.
Mizumoto, Yasuhiro; Tozawa, Yukio; Kozima, Masatoshi; and Hirai, Masaru, to Yokohama Rubber Co., Ltd., The. Rubber composition employing soft black and a thermosetting resin and tires employing said composition. 4,326,576, Cl. 152-356.00R.
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Mizutani, Masato; Tsushima, Kazunori; Senemitsu, Yuzuru; and Hirano, Masachika, to Sumitomo Chemical Company, Limited. Insecticidal and acaricidal 3,5-diozo-2,3,4,5-triazine compounds. 4,327,094, Cl. 424-149.000.
Mizutani, Toshio; Itaya, Nobushige; Ohno, Nobuo; Matsuo, Takashi; Kitamura, Shigeyoshi; and Okuno, Yositosi, to Sumitomo Chemical Company Limited. Novel alkadienylcyclopropanecarboxylates. 4,327,109, Cl. 424-275.000.
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Benoit, Gordon L.; Bustin, Franz; and Donaldson, Jack J., 4,326,664, Cl. 229-54.00R.
Chester, Arthur W.; and Stover, William A., 4,326,993, Cl. 252-455.00Z.
Haag, Werner O.; and Lago, Rudolph M., 4,326,994, Cl. 252-455.00Z.
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Mochida, Haruo; and Kawashima, Hatsuo, to Nissan Motor Company Limited; and Fuji Kiko Kabushiki Kaisha. Clutch system for a vehicle. 4,326,616, Cl. 192-111.00A.
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Model, Ernst, to Ciba-Geigy Corporation. Iminoisoindolinone pigments, process for their production and use thereof. 4,327,024, Cl. 260-325.0PH.
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Hickmann, Eckhard; Oeser, Heinz-Guenter; and Moebius, Leander, 4,327,215, Cl. 546-176.000.
Moebus, Otto; Teuber, Michael; and Kiesbye, Peter. Method of breeding of yeast on solutions, containing lactose, and ground cereal products and/or other sugar and polysaccharide products. 4,327,179, Cl. 435-42.000.
Moeglich, Karl, to Innova, Inc. Electrochemical processes utilizing a layered membrane. 4,326,935, Cl. 204-180.00P.
Moesch, Boris, to Ciba-Geigy Corporation. Soap bar with antimicrobial action. 4,326,978, Cl. 252-107.000.
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Das Gupta, Sankar; Jacobs, James K.; and Mohanta, Samaresh, 4,326,938, Cl. 204-228.000.
Mohlmann, Willem M. M.: *See—*
Bus, Jan; Mohlmann, Willem M. M.; and Pritchard, Norman J., 4,326,979, Cl. 252-158.000.
Mohr, Heinz; Hoffmann, Walter; and Vyvial, Rudolf, to BASF Aktiengesellschaft. Process for underlaying a flat-bed steel rule die. 4,326,434, Cl. 76-107.00C.
Moldenhauer, Donald: *See—*
Engle, Carl E.; and Moldenhauer, Donald, 4,326,675, Cl. 141-236.000.
Molina, Orlando G., to Rockwell International Corporation. Nonstaining leak tracer solution and method employing same. 4,326,981, Cl. 252-301.190.
Mollett, Christopher C., to Pira, The Research Association for the Paper and Board, Printing and Packaging Industries. Process for improving the quality of pulp obtained from wastepaper. 4,326,912, Cl. 162-5.000.
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Momonoi, Kaishu: *See—*
Saikawa, Isamu; Takano, Shuntaro; Yoshida, Chosaku; Takashima, Okuta; Momonoi, Kaishu; Kuroda, Seietsu; Komatsu, Miwako; Yasuda, Takashi; and Kodama, Yutaka, 4,327,097, Cl. 424-250.000.
Monsanto Company: *See—*
Coran, Aubert Y.; and Patel, Raman, 4,327,199, Cl. 525-176.000.
Crutchfield, Marvin M., 4,327,189, Cl. 501-148.000.
Montavon, Marc; and Reiner, Roland, to Hoffmann-La Roche Inc. Thiazolylacelamide cephalosporins. 4,327,210, Cl. 544-027.000.
Moore, Richard A.: *See—*
Ramlow, Gerhard G.; Heyman, Duane A.; and Moore, Richard A., 4,327,005, Cl. 524-377.000.
Moore, Richard L., to Rockwell International Corporation. Apparatus for converting incident microwave energy to thermal energy. 4,327,364, Cl. 343-18.00A.

Moret, Michel-Antoine; and Jousson, Pierre-Jean, to Les Produits Associes. LPA. Electrically driven hand-held apparatus for body care, in particular a toothbrush or massage apparatus. 4,326,314, Cl. 15-22.00R.
Mori, Hajime: *See—*
  Muranaka, Takayoshi; and Mori, Hajime, 4,327,400, Cl. 361-433.000.
Morisawa, Kunio, to Toyota Jidosha Kogyo Kabushiki Kaisha. Transmission support assembly in vehicle. 4,326,816, Cl. 403-228.000.
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  Tanaka, Takanori; and Morishita, Masanobu, 4,327,378, Cl. 358-228.000.
Morita, Keiichi: *See—*
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Mortensen, Harold R., to Facet Enterprises, Inc. Engine starter drive assembly with shielding means. 4,326,429, Cl. 74-7.00R.
Mortenson, Carl W. Purification apparatus. 4,326,923, Cl. 202-185.00R.
Morton, Ray E. Metal shears. 4,326,335, Cl. 30-254.000.
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  Fridley, Robert B.; and Moser, Raymond L., 4,326,570, Cl. 144-[redacted]
Mossey, Paul W., to General Electric Company. Apparatus and method for optical clearance determination. 4,326,804, Cl. 356-375.000.
Motegi, Akio; and Saitoh, Takao, to Sanyei Corporation. Curling iron. 4,326,545, Cl. 132-33.00R.
Motoren- und Turbinen-Union Muenchen GmbH: *See—*
  Rossmann, Axel, 4,327,154, Cl. 428-545.000.
Motorola, Inc.: *See—*
  Dressler, Roger W., 4,327,446, Cl. 455-223.000.
  Scianna, Anthony, Sr.; and Gordon, Frank J., 4,326,660, Cl. [redacted]
  Swisher, Scott N.; and Furman, Edward L., 4,327,319, Cl. [redacted]
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Moult, Roy H.; and McIntyre, Craig R., to Koppers Company, Inc. Laminated wooden railroad crossite having exposed end-grain forming part of the load bearing surface. 4,326,669, Cl. 238-36.000.
Mouza, Jean-Claude, to Societe Anonyme Francaise du Ferodo. Protective shield device for brake. 4,326,610, Cl. 188-218.00A.
MTD Products Inc.: *See—*
  LaBoda, John A.; and Fortlage, Paul R., 4,326,453, Cl. 98-87.000.
Muenger, James R.; Child, Edward T.; and Brent, Albert, to Texaco Development Corporation. Production of cleaned and cooled synthesis gas. 4,326,856, Cl. 48-197.00R.
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  D'Alo, Herbert F.; and Muetterties, Andrew J., 4,326,519, Cl. [redacted]
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  Wehner, Wolfgang; Muller, Horst; and Kostler, Hans-Gunter, 4,327,016, Cl. 524-180.000.
Muller, Otto, to Sulzer Brothers Limited. Backwashable filter system. 4,326,956, Cl. 210-277.000.
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  Banziger, Robert; Isenschmid, Roland; Menth, Anton; Muller, Rene; and Stucki, Samuel, 4,326,943, Cl. 204-290.00F.
Mulvaney, James M.: *See—*
  Beard, George W.; and Mulvaney, James M., 4,327,353, Cl. 340-64.000.
Murakami, Kazuhito: *See—*
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Murakami, Masahiro; Kobayashi, Masateru; Sone, Takanori; and Shibuya, Chisei, to Asahi Kasei Kogyo Kabushiki Kaisha. Method for preparation of cephalosporin compounds. 4,327,211, Cl. 544-27.000.
Muranaka, Takayoshi; and Mori, Hajime, to Matsushita Electric Industrial Co., Ltd. Electric double layer capacitor. 4,327,400, Cl. [redacted]
Murata, Yorihiro; and Weber, Gary W., to Kennecott Corporation. Sintered silicon carbide-titanium diboride mixtures and articles thereof. 4,327,186, Cl. 501-92.000.
Murata, Yukiho; and Inoshita, Yasushi, to Nissan Motor Company, Limited. Automatic temperature adjusting type air conditioner. 4,326,667, Cl. 237-12.30A.
Murayama, Yoshinobu; and Yoshii, Takashi, to Kubota, Ltd. Agricultural tractor. 4,326,597, Cl. 180-70.0MS.
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  Ryan, Lenore S.; Murray, Frank C.; Sprangers, Ann M.; Santoski, William J.; Sciaraffa, Michael A.; Abel, Kent W.; and Donnelly, Harold F., 4,326,528, Cl. 128-287.000.
Murzin, Horst; Woss, Rainer; Burghoff, Hans; Schmieder, Frank; Herzig, Alfred; Junge, Johannes; and Deckarm, Gunter, to VEB Kombinat Walzlager und Normteile. Transverse conveyor for conveying pin-shaped work pieces in a multi-station. 4,326,625, Cl. [redacted]
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  Beznosjuk, Evgeny I.; Doktorov, Leonid B.; Musyakin, Vyacheslav E.; and Kolomeets, Sergei V., 4,326,823, Cl. 407-51.000.
Mutschler, Edward C., Jr., to Xerox Corporation. Sheet de-curler. 4,326,915, Cl. 162-271.000.
Mutschler, Erich: *See—*
  Botz, Jakob; Feger, Rolf; Mutschler, Erich; Spazierer, Hubert; and Weber, Adam, 4,327,264, Cl. 200-295.000.
N. V. Weefautomaten Picanol: *See—*
  Lampaert, Roger R., 4,326,566, Cl. 139-453.000.
Nagaoka, Yoshitomo: *See—*
  Matsuda, Yoshiteru; Tomimoto, Tetsuo; and Nagaoka, Yoshitomo, 4,327,374, Cl. 358-28.000.
Nagatomo, Katsuaki: *See—*
  Fujiwara, Kiyoshi; Nagatomo, Katsuaki; Yoshinaga, Shoji; Tamura, Zensuke; Shibata, Fumio; and Kanekiyo, Hiroshi, 4,326,666, Cl. 233-15.000.
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  Yamada, Mitsuhiko; and Nakade, Toshiaki, 4,327,380, Cl. 358-264.000.
Nakajima, Tadakatsu: *See—*
  Sato, Eiji; Arai, Nobukatsu; Tanaka, Hideki; Fukushima, Toshihiko; and Nakajima, Tadakatsu, 4,326,391, Cl. 62-402.000.
Nakamura, Masuhisa: *See—*
  Inouye, Ken; Kono, Masao; Yoshida, Nobuo; Nakamura, Masuhisa; Okabayashi, Tadashi; and Igano, Ken'ichi, 4,327,072, Cl. 424-1.000.
Nakamura, Munekazu: *See—*
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Nakamura, Sadayuki: *See—*
  Abeyama, Shozo; Saito, Makoto; Kimura, Atsuyoshi; and Nakamura, Sadayuki, 4,326,886, Cl. 75-129.000.
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Nakayama, Shoji: *See—*
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Nakazaki, Takamitsu: *See—*
  Kita, Hisanao; Karatsu, Yoshinori; Nakazaki, Takamitsu; and Akutsu, Yoji, 4,327,273, Cl. 219-121.0EC.
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  Lyu, Seung W.; and Misra, Surya K., 4,326,896, Cl. 148-12.00D.
  Sauer, Donald G., 4,327,052, Cl. 264-512.000.
National Gypsum Company: *See—*
  White, George H., 4,327,146, Cl. 428-308.800.
National Research Development Corporation: *See—*
  Schofield, Clive; and Miles, John E. P., 4,326,810, Cl. 366-106.000.
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  Bryant, Richard W., 4,326,443, Cl. 84-1.260.
  Wilcox, Milton E., 4,327,333, Cl. 330-278.000.
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  Pond, Robert B., Sr.; and Winter, John M., Jr., 4,326,579, Cl. [redacted]
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Nauerth, Karl-Heinz, to Fritz Eichenauer, Firma. Electrical resistance heating element. 4,327,282, Cl. 219-541.000.
Nawa, Motoyuki; Sugawara, Norio; and Takahashi, Yutaka, to Matsushita Electric Industrial Co., Ltd. Fluid diverting assembly. 4,326,452, Cl. 98-40.0VT.
NCR Corporation: *See—*
  Patel, Rameshchandra S.; and Easley, Mark R., 4,327,410, Cl. [redacted]
Negretti & Zambra (Aviation) Limited: *See—*
  Kahn, David A., 4,326,798, Cl. 356-45.000.
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  Novak, Jan; Sorm, Miloslav; Ulbert, Karel; Nespurek, Stanislav; Mikulcova, Dagmar; and Cmolik, Jiri, 4,326,966, Cl. 252-8.800.
Nessi, Aurindo, to Innocenti Santeustacchio S.p.A. Apparatus for lifting a heavy load and transporting it over an obstruction. 4,326,829, Cl. 414-357.000.
Neumann, Konrad; and Schenkenberger, Ernst, to Ciba-Geigy Corporation. Process for the manufacture of fine-crystalline fluorescent brighteners of the bis-triazinylaminostilbene series in the β-crystal form. 4,326,982, Cl. 252-301.230.
Neumeier, Karl E.; and Sullivan, Robert J., to PaR Systems Corp. Grab mechanism. 4,326,937, Cl. 204-198.000.

Nevamar Corporation: *See—*
  Scher, Herbert I.; and Ungar, Israel S., 4,327,141, Cl. 428-148.000.
Newman, Albert F.: *See—*
  Branovich, Louis E.; Daly, Edward; Newman, Albert F.; and Smith, Willis M., 4,327,131, Cl. 427-229.000.
Nickel, Gerhard E. B.; and Darr, Richard C., to Plastipak Packaging Division, Beatrice Food Co. Combination base cup and bottle. 4,326,638, Cl. 215-12.00R.
Nickerson, James H. D.: *See—*
  Ruhe, Anthony; Chitty, John A.; and Nickerson, James H. D., 4,326,897, Cl. 148-13.100.
Nielinger, Werner: *See—*
  Lehr, Gunter; Hucks, Uwe; Vernaleken, Hugo; Nielinger, Werner; and Tresper, Erhard, 4,327,208, Cl. 528-323.000.
Nielsen, Werner K.: *See—*
  Madsen, Rud F.; and Nielsen, Werner K., 4,326,892, Cl. 127-43.000.
Nienhaus, Clemens: *See—*
  Geisthoff, Hubert; and Nienhaus, Clemens, 4,326,392, Cl. 64-3.000.
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  Laszlo, Tibor S.; Nienow, John F.; Sherwood, John F.; and Irving, Christopher L., 4,326,542, Cl. 131-280.000.
Niessner, Peter: *See—*
  Kratel, Gunter; Dummer, Gerhard; Niessner, Peter; Grune, Burkhard; and Stohr, Gunter, 4,326,852, Cl. 23-293.00R.
Nightingale, Douglas J., to Rolls-Royce Limited. Mounting for gas turbine powerplant. 4,326,682, Cl. 244-54.000.
Nihon Nohyaku Co., Ltd.: *See—*
  Matsui, Hisanori; Tanaka, Hiroshi; Yabutani, Kunihiro; and Kurono, Hitoshi, 4,327,223, Cl. 549-39.000.
Nihonshikizai Kogyo Co., Ltd.: *See—*
  Iwamoto, Seigo; and Saito, Eiichi, 4,327,017, Cl. 260-105.000.
Ninomiya, Hiroshi: *See—*
  Matsuda, Akira; Yoshioka, Osamu; Takahashi, Katsutoshi; Yoshida, Kooichi; and Ninomiya, Hiroshi, 4,327,081, Cl. 424-81.000.
Nippon Electric Co., Ltd.: *See—*
  Furuya, Yukitsuna; and Akashi, Fumio, 4,327,440, Cl. 375-76.000.
  Tanaka, Takanori; and Morishita, Masanobu, 4,327,378, Cl. [redacted]
Nippon Gakki Seizo Kabushiki Kaisha: *See—*
  Imamura, Akio; and Oya, Akiyoshi, 4,326,441, Cl. 84-1.030.
  Suzuki, Hideo, 4,326,442, Cl. 84-1.190.
Nippon Kayaku Kabushiki Kaisha: *See—*
  Matsuda, Akira; Yoshioka, Osamu; Takahashi, Katsutoshi; Yoshida, Kooichi; and Ninomiya, Hiroshi, 4,327,081, Cl. 424-81.000.
Nippon Kogaku K.K.: *See—*
  Ohmori, Sachio; Fukino, Kunihiro; and Ishizaka, Sunao, 4,326,788, [redacted]
  Tsukamoto, Masaaki; Ohkubo, Yuji; and Tomino, Naoki, 4,326,785, Cl. 354-60.00F.
Nippon Oil and Fats Company Limited: *See—*
  Hattori, Katsuhide; Fukatsu, Yoshiaki; and Takahashi, Masao, 4,326,900, Cl. 149-2.000.
Nippon Soda Company Limited: *See—*
  Ueda, Akiyoshi; Takagi, Hideo; and Ohkuma, Kazuhiko, 4,326,881, Cl. 71-95.000.
Nippon Soken, Inc.: *See—*
  Yasuda, Eturo; and Ohta, Minoru, 4,327,054, Cl. 422-95.000.
Nippon Telegraph & Telephone Public Corp.: *See—*
  Sasaki, Etsuro; and Ohsaki, Takaaki, 4,327,399, Cl. 361-385.000.
Nippondenso Co., Ltd.: *See—*
  Ishikawa, Eizi; Matsuura, Ryouichi; and Yano, Kiyotosi, 4,326,696, Cl. 251-129.000.
  Takeshita, Mikio; and Tashiro, Hiroyuki, 4,326,413, Cl. 73-313.000.
Nishikawa, Kazuo: *See—*
  Okura, Keniti; and Nishikawa, Kazuo, 4,327,433, Cl. 369-139.000.
Nishikawa, Shigeo; and Yokoyama, Masaaki, to Yuka Badische Company Limited. Cooling process suitable for foam molding of a synthetic resin and its cooling apperatus. 4,327,045, Cl. 264-51.000.
Nishimura, Akimasa: *See—*
  Hirata, Noritsugu; Toyama, Masamichi; Okajima, Hidekazu; and Nishimura, Akimasa, 4,326,790, Cl. 354-288.000.
Nishimura, Fuminobu, to Tokyo Shibaura Denki Kabushiki Kaisha. Electrostatic copying apparatus. 4,326,794, Cl. 355-3.00R.
Nishioka, Kunihiko: *See—*
  Chikata, Tsukasa; Sunami, Yoshihiko; Sasaki, Keiichi; and Nishioka, Kunihiko, 4,326,946, Cl. 208-93.000.
Nisii, Alessandro. Sterilizing-containing device for dental tools. 4,327,060, Cl. 422-300.000.
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  Kobayashi, Hiroshi; and Kita, Toru, 4,326,422, Cl. 73-861.220.
Nissan Motor Company, Limited: *See—*
  Fujikubo, Yoshitake; and Tanaka, Mamoru, 4,327,316, Cl. 320-2.000.
  Kishi, Norimasa, 4,327,418, Cl. 364-715.000.
  Kobayashi, Hiroshi; Kita, Toru; and Fujishiro, Takeshi, 4,326,412, Cl. 73-204.000.
  Mochida, Haruo; and Kawashima, Hatsuo, 4,326,616, Cl. 192-111.00A.
  Mochida, Haruo; and Kobayashi, Tetsuo, 4,326,617, Cl. 192-[redacted]
  Murata, Yukiho; and Inoshita, Yasushi, 4,326,667, Cl. 237-12.30A.
Nitanda, Hiroshi: *See—*
  Miyamoto, Koichi; Kan, Yasuhito; Nitanda, Hiroshi; and Ariga, Masao, 4,326,797, Cl. 355-57.000.
Nitta, Tsuneharu: *See—*
  Terada, Jiro; and Nitta, Tsuneharu, 4,326,414, Cl. 73-336.500.
Nitto Electric Industrial Company Ltd.: *See—*
  Iwabori, Hiroshi; and Matsumoto, Shigetoshi, 4,326,960, Cl. [redacted]
Nitzberg, Nadine R.; Baldwin, Michelle L.; and Baldwin, Steven M. Container system for carrying and supplying food and water for pets. 4,326,640, Cl. 220-4.00E.
Noble, Peter M., to American Standard Inc. Shelf mount for vital plug-in relay. 4,326,693, Cl. 248-635.000.
Noda, Atsushi, to Canon Kabushiki Kaisha. Thermal printer. 4,327,365, Cl. 346-76.0PH.
North American Philips Consumer Electronics Corp.: *See—*
  Penird, Carl W.; and Puhak, Peter G., 4,327,307, Cl. 313-407.000.
North American Philips Corporation: *See—*
  Pell, James W., Jr., 4,326,418, Cl. 73-644.000.
Northern Telecom, Inc.: *See—*
  Hines, William W.; and Cwirzen, Casimir Z., 4,327,393, Cl. 361-119.000.
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  Lawrence, Anthony W., 4,326,803, Cl. 356-350.000.
Norzi, Vittorio. Method of manufacturing goods of laminates and goods so manufactured. 4,327,142, Cl. 428-198.000.
Novack, Robert L. Game implement. 4,326,714, Cl. 273-73.00C.
Novak, Jan; Sorm, Miloslav; Ulbert, Karel; Nespurek, Stanislav; Mikulcova, Dagmar; and Cmolik, Jiri, to Ceskoslovenska akademie ved. Agent for textile livening with an antistatic effect and favorable dermatologic properties. 4,326,966, Cl. 252-8.800.
Nowack, Gerhard P.; and Johnson, Marvin M., to Phillips Petroleum Company. Hydrogenation process using supported nickel catalyst. 4,327,234, Cl. 585-267.000.
Nozue, Shigehiro; Fukuoka, Tatsuhiko; and Sugiura, Hideaki, to Taiho Kogyo Co., Ltd. Thrust bearing with tapered lands. 4,326,758, Cl. [redacted].
Nuckel, Klaus, to Postalia GmbH. Indicating device for an option printing cylinder. 4,326,460, Cl. 101-110.000.
NWL Transformers: *See—*
  Laugesen, Thomas C., 4,326,860, Cl. 55-105.000.
Nyman, Frederick R.; Stevens, Barry; and Calamari, James A., Jr., to RCA Corporation. High density information disc processing. 4,327,048, Cl. 264-107.000.
Obenchain, Richard F. Explosion venting means for metallurgical furnace. 4,327,241, Cl. 373-9.000.
Obermajer, Wladimir. Process for measuring the cardiac volume. 4,326,539, Cl. 128-713.000.
Occidental Oil Shale Inc.: *See—*
  Ricketts, Thomas E., 4,326,751, Cl. 299-2.000.
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Occidental Petroleum Corporation: *See—*
  Cropsey, Leo M., 4,326,505, Cl. 128-1.00R.
Occidental Research Corporation: *See—*
  Moudgil, Brij M.; and Messenger, David F., 4,326,950, Cl. [redacted]
Odagiri, Hideo: *See—*
  Hagino, Hiroshi; Odagiri, Hideo; and Okutani, Junichi, 4,327,042, Cl. 261-77.000.
Oeser, Heinz-Guenter: *See—*
  Hickmann, Eckhard; Oeser, Heinz-Guenter; and Moebius, Leander, 4,327,215, Cl. 546-176.000.
Oettel, Friedrich H., to Eltec Instruments, Inc. Pyroelectric detector. 4,326,663, Cl. 228-123.000.
Ogasawara, Yoshimi: *See—*
  Mitani, Tomomasa; Ogasawara, Yoshimi; and Hiraishi, Shunichi, 4,327,145, Cl. 428-290.000.
Ogawa, Masahiro: *See—*
  Fujimura, Kensuke; Yamamoto, Naomichi; Ogawa, Masahiro; and Tanigawa, Nobuyoshi, 4,327,059, Cl. 422-259.000.
Ogden, Ralph. Method of making printed circuit boards. 4,327,126, Cl. [redacted]
Oguey, Henri; and Gerber, Bernard, to Centre Electronique Horloger S.A. Reference voltage source. 4,327,320, Cl. 323-313.000.
Ogura, Wataru, to Chinon Industries Incorporation. Film sag detecting device for sound cinecamera. 4,326,781, Cl. 352-14.000.
Ohara, Susumu; Horiki, Akira; Miyazaki, Katsuyuki; and Tokunaga, Kaoru, to Hitachi, Ltd. Signal monitoring and controlling system in a time division switching system. 4,327,436, Cl. 370-110.100.
Ohkita, Ryozo: *See—*
  Okazaki, Masaki; and Ohkita, Ryozo, 4,326,600, Cl. 181-229.000.
Ohkubo, Yuji: *See—*
  Tsukamoto, Masaaki; Ohkubo, Yuji; and Tomino, Naoki, 4,326,785, Cl. 354-60.00F.
Ohkuma, Kazuhiko: *See—*
  Ueda, Akiyoshi; Takagi, Hideo; and Ohkuma, Kazuhiko, 4,326,881, Cl. 71-95.000.
Ohmori, Sachio; Fukino, Kunihiro; and Ishizaka, Sunao, to Nippon Kogaku K.K. Information transmission means in an intermediate lens tube for camera. 4,326,788, Cl. 354-286.000.
Ohno, Nobuo: *See—*
  Mizutani, Toshio; Itaya, Nobushige; Ohno, Nobuo; Matsuo, Takashi; Kitamura, Shigeyoshi; and Okuno, Yositosi, 4,327,109, Cl. [redacted]
Ohsaki, Takaaki: *See—*
  Sasaki, Etsuro; and Ohsaki, Takaaki, 4,327,399, Cl. 361-385.000.
Ohshima, Satoshi: *See—*
  Mushika, Yoshitaka; Tani, Junichi; Yamaguchi, Totaro; and Ohshima, Satoshi, 4,327,101, Cl. 424-258.000.

Ohta, Masafumi: *See*—
Sasaki, Masaomi; Ohta, Masafumi; and Tsutsui, Kyoji, 4,327,020, Cl. [illegible]
Ohta, Minoru: *See*—
Yasuda, Eturo; and Ohta, Minoru, 4,327,054, Cl. 422-95.000.
Oka, Ken K.; and Haag, Peter C., to Deere & Company. Raising and lowering mechanism for farm implement. 4,326,594, Cl. 172-328.000.
Okabayashi, Tadashi: *See*—
Inouye, Ken; Kono, Masao; Yoshida, Nobuo; Nakamura, Masuhisa; Okabayashi, Tadashi; and Igano, Ken'ichi, 4,327,072, Cl. [illegible]
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Okamatsu, Shigetoshi: *See*—
Tsuboi, Takashi; Okamatsu, Shigetoshi; Ibamoto, Masahiko; Narita, Hiroshi; and Kozu, Eiji, 4,327,313, Cl. 318-52.000.
Okawa, Takashi: *See*—
Isogai, Nobuo; Hosokawa, Motoyuki; Okawa, Takashi; and Wakui, Natsuko, 4,327,225, Cl. 560-205.000.
Okazaki, Masaki; and Ohkita, Ryozo, to Yamaha Hatsudoki Kabushiki Kaisha. Intake silencer for outboard motor. 4,326,600, Cl. 181-229.000.
Okumura, Yoshiharu; Furukawa, Hiroshi; and Kaneko, Katsumi, to Toa Nenryo Kogyo Kabushiki Kaisha. Process for the production of tertiary alcohols. 4,327,231, Cl. 568-899.000.
Okuni, Tetsuo: *See*—
Wada, Takeshi; and Okuni, Tetsuo, 4,326,580, Cl. 164-497.000.
Okuno, Yositosi: *See*—
Mizutani, Toshio; Itaya, Nobushige; Ohno, Nobuo; Matsuo, Takashi; Kitamura, Shigeyoshi; and Okuno, Yositosi, 4,327,109, Cl. 424-275.000.
Okura, Keniti; and Nishikawa, Kazuo, to Pioneer Electronic Corporation. Magnetic phono cartridge. 4,327,433, Cl. 369-139.000.
Okutani, Junichi: *See*—
Hagino, Hiroshi; Odagiri, Hideo; and Okutani, Junichi, 4,327,042, Cl. 261-77.000.
Olin Corporation: *See*—
Capuano, Italo A.; Turley, Patricia A.; and DuBord, Edward W., 4,326,850, Cl. 23-230.00R.
Chandalia, Kiran B.; and Barnowski, Henry G., 4,327,194, Cl. 521-99.000.
Olszowski, Tadeusz: *See*—
Pajak, Andrzej; Olszowski, Tadeusz; Mazur, Antoni, deceased; Holtzer, Mariusz; Marzencki, Andrzej; and Jachowicz, Adam, 4,326,578, Cl. 164-15.000.
Olympus Optical Co., Ltd.: *See*—
Sato, Masaaki, 4,326,659, Cl. 226-190.000.
Shimonaka, Hideki, 4,326,531, Cl. 128-326.000.
Ono, Akira: *See*—
Asaba, Shuuji; Nemoto, Minoru; Ushimi, Kenji; and Ono, Akira, 4,327,275, Cl. 219-121.0LD.
Ono, Hiroki: *See*—
Ueda, Ikuo; Kobayashi, Masakazu; Yamada, Hisashi; and Ono, Hiroki, 4,327,093, Cl. 424-246.000.
Ono, Hiroshi: *See*—
Yoshimi, Toshikazu; and Ono, Hiroshi, 4,327,331, Cl. 330-126.000.
Ono, Junichi; Fukui, Isao; and Imamura, Naoki, to Shimadzu Seisakusho, Ltd. Method for emission spectrochemical analysis. 4,326,801, Cl. 356-313.000.
Ono, Takemitsu: *See*—
Iwao, Takayuki; Ono, Takemitsu; and Ishikawa, Yukio, 4,326,459, Cl. 101-93.300.
Ono, Takeo: *See*—
Asaoka, Sachio; Shiroto, Yoshimi; Nakamura, Munekazu; and Ono, Takeo, 4,326,991, Cl. 252-432.000.
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Gregory, Floyd A.; Manning, Donald F.; Oranchak, William; and Student, Joseph J., deceased, 4,326,656, Cl. 226-59.000.
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Dorrance, William H., 4,327,239, Cl. 585-733.000.
Orvik, Jon A., to Dow Chemical Company, The. Process for reducing picoline derivatives using copper catalyst. 4,327,220, Cl. 546-345.000.
Oshima, Masanao; and Yashima, Nobuyoshi, to Mitsui Engineering and Shipbuilding Co., Ltd. Artificial island for installing oil drilling equipment in ice covered sea areas. 4,326,822, Cl. 405-217.000.
Ostrowski, Stanislaw. Helicopter rotor assembly and blade pitch control. 4,326,834, Cl. 416-134.00A.
Otto, Charles W., to General Electric Company. Methods of manufacturing a prime mover and a rotatable assembly therefore. 4,326,333, Cl. [illegible]
Ou-Yang, David T., to Minnesota Mining and Manufacturing Company. Shear-activated innerseal. 4,327,147, Cl. 156-69.000.
Oueneau, Paul E.; Richter, Horst J.; and Schuhmann, Reinhardt, Jr. Sprinkler burner for introducing particulate material and a gas into a reactor. 4,326,702, Cl. 266-267.000.
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Baltz, Gene F.; and Breckenfeld, Paul W., 4,327,041, Cl. 261-[illegible]
Overlach, Knud: *See*—
Kauer, Harald; Overlach, Knud; and Wilken, Joachim, 4,326,447, Cl. [illegible]
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Kissell, Ronald E., 4,326,844, Cl. 432-13.000.

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Ozaki, Sozaburo, to Hitachi, Ltd. Bearing device for rotary machines. 4,326,757, Cl. 308-121.000.
Ozu, Masao; Morita, Keiichi; and Itoh, Hiroshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Refrigeration system utilizing a gaseous refrigerant bypass. 4,326,868, Cl. 62-324.600.
Pajak, Andrzej; Olszowski, Tadeusz; Mazur, Antoni, deceased (by Mazur, Irena, legal representative); Holtzer, Mariusz; Marzencki, Andrzej; and Jachowicz, Adam, to Instytut Odlewnictwa. Method for making foundry moulds and cores. 4,326,578, Cl. 164-15.000.
Pako Corporation: *See*—
Beer, Robert E.; and Anderson, Conrad V., 4,326,791, Cl. 354-321.000.
Palau, Joseph, to S.A. des Etablissements Staubli (France). Dobbies for forming the shed on weaving looms. 4,326,562, Cl. 139-68.000.
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Inger, Siegfried, 4,326,372, Cl. 57-88.000.
Pall Corporation: *See*—
Rosenberg, David J., 4,326,957, Cl. 210-436.000.
Pallaroni, Francesco; Baldini, Luciano; and Siccardi, Alberto, to Safta S.p.A.; and Bieffe S.P.A. Flexible container with valve. 4,326,574, Cl. 150-8.000.
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Leitner, Wolfgang; Pampouchidis, Georg; and Bleikolm, Anton, 4,327,200, Cl. 525-531.000.
Pandit, Madhukar: *See*—
Baier, Paul W.; Dostert, Klaus; Pandit, Madhukar; and Simons, Reinhard, 4,327,438, Cl. 375-1.000.
Papworth, Derek F., to Racal-Dana Instruments Limited. Electrical signal processing. 4,327,329, Cl. 328-144.000.
PaR Systems Corp.: *See*—
Neumeier, Karl E.; and Sullivan, Robert J., 4,326,937, Cl. 204-198.000.
Parg, Adolf: *See*—
Hamprecht, Gerhard; Parg, Adolf; and Koenig, Karl-Heinz, 4,327,034, Cl. 260-455.00A.
Pariani, Ronald L.: *See*—
Arp, David F.; and Pariani, Ronald L., 4,326,700, Cl. 266-219.000.
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Kadakia, Vinod K.; Jones, Glen D.; Parikh, Kedar D.; and Rider, Ronald E., 4,327,379, Cl. 358-261.000.
Paripovich, Michael D. Self-releasing locking unit for an inner spring assembly. 4,326,311, Cl. 5-475.000.
Park, Joon S.: *See*—
Deichert, William G.; Friends, Gary D.; Melpolder, John B.; and Park, Joon S., 4,327,203, Cl. 526-279.000.
Parker & Harper Mfg. Co.: *See*—
Massey, Roger G.; and Holloway, David G., 4,326,627, Cl. 200-47.000.
Parks-Cramer Company: *See*—
Soar, Brian, 4,326,371, Cl. 57-87.000.
Parry, James L.; Redden, Martin J.; and Goldstein, Albert, to ACCO Industries Inc. Anti-back up device for conveyor trolley. 4,326,466, Cl. 104-172.00S.
Pasini, Arnaldo; and Knirsch, Franco, to Ing. C. Olivetti & C., S.p.A. Non impact printer. 4,326,812, Cl. 400-121.000.
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Ettinger, Robert H.; and Pasko, Walter J., 4,327,349, Cl. 336-219.000.
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Pryor, Timothy R.; Hageniers, Omer L.; Pastorius, Walter J.; Liptay-Wagner, Nicholas; Clarke, Donald A.; and Richards, Blaine, 4,326,808, Cl. 356-445.000.
Patanasinth, Kanit J.: *See*—
Puglia, Wayne J.; Patanasinth, Kanit J.; Lombardo, Andrew T.; Beam, John E.; and Mackay, Donald A. M., 4,327,076, Cl. 424-38.000.
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Wong, Thomas M.; and Patel, Mahendra R., 4,327,080, Cl. 424-80.000.
Patel, Raman: *See*—
Coran, Aubert Y.; and Patel, Raman, 4,327,199, Cl. 525-176.000.
Patel, Rameshchandra S.; and Easley, Mark R., to NCR Corporation. Processor auto-recovery system. 4,327,410, Cl. 364-200.000.
Patentex, S.A: *See*—
LaCoste, Francois R., 4,326,716, Cl. 273-167.00R.
Pauwels, Edward M., to Bendix Corporation, The. Traction control brake energizer. 4,326,608, Cl. 188-181.00T.
Pavlov, Tengiz A.: *See*—
Moroz, Viktor M.; Lezin, Nikolai Y.; Pavlov, Tengiz A.; and Ilmensky, Vladimir V., 4,326,756, Cl. 308-3.900.
Pearson, David B.: *See*—
Ashkin, Arthur; Bjorkholm, John E.; Freeman, Richard R.; and Pearson, David B., 4,327,288, Cl. 250-251.000.
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Edinger, Egon; and Pedall, Friedrich, 4,327,265, Cl. 219-10.410.
Peddie, Gerald D., to General Dynamics, Convair Division. Method for ultrasonically welding composite structures. 4,326,902, Cl. 156-73.100.

Peeler, Herbert T.: *See*—
Wolfrom, Glen W.; Williams, Robert D.; Peeler, Herbert T.; and Ivy, Richard E., 4,326,523, Cl. 128-260.000.
Peerless, Sidney A. Composite ventilation tube for the middle ear. 4,326,512, Cl. 128-151.000.
Pell, James W., Jr., to North American Philips Corporation. Acoustic impedance matching device. 4,326,418, Cl. 73-644.000.
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Bendit, Jean-Pierre; Pellaux, Jean-Paul; and Widmer, Georges, 4,326,870, Cl. 65-4.210.
Penird, Carl W.; and Puhak, Peter G., to North American Philips Consumer Electronics Corp. Shadow mask for color cathode ray tube. 4,327,307, Cl. 313-407.000.
PepsiCo Inc.: *See*—
Felix, Cristian J.; and Genaro, Donald M., 4,326,620, Cl. 194-1.00A.
Perham, Roscoe E. Kerf pressure plate material tester. 4,326,420, Cl. 73-768.000.
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Axelgaard, Jens; Howson, David C.; and Perhay, John A., 4,326,534, Cl. 128-421.000.
Perlstein, Jerome H.: *See*—
Clark, Suzanne P.; Reynolds, George A.; and Perlstein, Jerome H., 4,327,169, Cl. 430-75.000.
Perraud, Raymond, to Societe d'Etude et de Construction de Machines pour Toutes Industries S.E.C.O.M.A., Societe Anonyme. Double acting hydraulic jack with an end of stroke device. 4,326,449, Cl. 91-401.000.
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Rush, Donald L.; Perry, Robert H.; and Rhoton, Richard S., 4,327,415, Cl. 364-436.000.
Persoon, Eric H. J., to U.S. Philips Corporation. Learning device for digital signal pattern recognition. 4,327,354, Cl. 340-146.3MA.
Peter, Cornelius: *See*—
Herth, Harro; Peter, Cornelius; and Schnurle, Hans, 4,326,488, Cl. 123-493.000.
Peters, Edward N., to Union Carbide Corporation. Poly(acrylate) containing compositions and process for producing molded articles. 4,327,013, Cl. 524-538.000.
Peters, Klaus-Jurgen: *See*—
Maisch, Wolfgang; Peters, Klaus-Jurgen; Wissmann, Michael; and Schelhas, Peter, 4,326,487, Cl. 123-453.000.
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Hendricks, Carl C.; Godar, Richard L.; and Roux, Kenneth R., 4,326,987, Cl. 252-392.000.
Phelps, Richard W.; and Tetro, Richard S., to Black Clawson Company, The. Method and apparatus for roll changing on a winder device. 4,326,679, Cl. 242-56.00A.
Philip Morris Incorporated: *See*—
Laszlo, Tibor S.; Nienow, John F.; Sherwood, John F.; and Irving, Christopher L., 4,326,542, Cl. 131-280.000.
Phillips Petroleum Company: *See*—
Cheng, Paul J., 4,327,069, Cl. 423-450.000.
Cox, Russell C., 4,326,327, Cl. 29-434.000.
Eastman, Alan D., 4,327,238, Cl. 585-661.000.
Mark, Harold W.; and Zuech, Ernest A., 4,326,990, Cl. 252-431.00C.
Nowack, Gerhard P.; and Johnson, Marvin M., 4,327,234, Cl. 585-267.000.
Salmon, Emigdio J., 4,327,050, Cl. 264-142.000.
Walker, Starnes E., 4,327,323, Cl. 324-61.00R.
Welch, Melvin B.; Dietz, Richard E.; and Capshew, Charles E., 4,326,988, Cl. 252-429.00B.
Pickles, Joseph; and Fudala, Chester S., to Ferro Manufacturing Corporation. Seat adjusting mechanism. 4,326,690, Cl. 248-396.000.
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Clifford, Jack R., 4,326,893, Cl. 134-8.000.
Pilesi, William D.; and Trautmann, Harry J., to Koppers Company, Inc. Continuous proofloader. 4,326,421, Cl. 73-852.000.
Pilgrim Engineering Developments Limited: *See*—
Bunyan, Thomas W., 4,326,826, Cl. 411-339.000.
Pillow, Richard W.: *See*—
Guthrie, Phillip K.; and Pillow, Richard W., 4,326,706, Cl. 172-119.000.
Pioneer Electronic Corporation: *See*—
Okura, Keniti; and Nishikawa, Kazuo, 4,327,433, Cl. 369-139.000.
Yoshimi, Toshikazu; and Ono, Hiroshi, 4,327,331, Cl. 330-126.000.
Pipe, William J. C.; and Gray, John B. Method for cooling blocks of hot porous material. 4,326,384, Cl. 62-62.000.
Pipkin, David J., to International Business Machines Corporation. Method and apparatus for forming a coating on both sides of a substrate. 4,327,130, Cl. 427-209.000.
Pira, The Research Association for the Paper and Board, Printing and Packaging Industries: *See*—
Mollett, Christopher C., 4,326,912, Cl. 162-5.000.
Pitman-Moore, Inc.: *See*—
Guerrero, Jorge; Mellon, Alice D.; Fritz, Charles G.; and Doddi, Namassivaya, 4,326,522, Cl. 128-/260.000.
Plante, Robert A., to L.S. Starrett Company, The. Area comparison gage. 4,326,338, Cl. 33-174.0PA.
Plasek, Ronald E., to Schlumberger Technology Corp. Method and apparatus for nuclear well logging with optimized timing for simultaneous measurement of thermal neutron decay time and gamma ray pulse height spectra. 4,327,290, Cl. 250-262.000.
Plastiers Limited: *See*—
Edmondson, Ronald, 4,327,051, Cl. 264-318.000.

Plastipak Packaging Division, Beatrice Food Co.: *See*—
Nickel, Gerhard E. B.; and Darr, Richard C., 4,326,638, Cl. 215-12.00R.
Pleass, Charles M.: *See*—
Hicks, Douglas C.; and Pleass, Charles M., 4,326,840, Cl. 417-331.000.
Plotto, Michel, to Compagnie Internationale pour l'Informatique CII/-Honeywell Bull. Magnetic head slider assembly comprising at least one transducer for reading and/or recording information contained on a data carrier. 4,327,387, Cl. 360-103.000.
Poclain Hydraulics: *See*—
Bacquie, Serge B., 4,326,450, Cl. 91-487.000.
Pohl, Herbert A. Continuous dielectrophoretic cell classification method. 4,326,934, Cl. 204-180.00R.
Pole, Charles D., to Upper Lakes Shipping Ltd. Navigation in ice covered waterways. 4,326,476, Cl. 114-40.000.
Poler, Stanley, to Lynell Medical Technology, Inc. Intraocular lens and manipulating tool therefor. 4,326,306, Cl. 3-13.000.
Poler, Stanley. Method of making an intra-ocular lens-mount element. 4,327,171, Cl. 430-323.000.
Pollock, James F.: *See*—
Bentley, Peter D.; and Pollock, James F., 4,327,271, Cl. 219-85.00E.
Pond, Robert B., Sr.; and Winter, John M., Jr., to National-Standard Company. Method of forming a filament through melt extraction. 4,326,579, Cl. 164-461.000.
Ponsinet, Gerard: *See*—
Farge, Daniel; Leger, Andre; and Ponsinet, Gerard, 4,327,095, Cl. 424-250.000.
Pool, Daniel L. Device for dispensing fluent material from a collapsible container. 4,326,647, Cl. 222-103.000.
Portlandzementwerk Dottemhausen Rudolf Rohrbach Kommanditgesellschaft: *See*—
Rohrbach, Gerhard; and Hollman, Bernd, 4,326,471, Cl. 110-341.000.
Posso, Patrick, to Gefitec S.A. Platform for photographic or cinematographic stand. 4,326,688, Cl. 248-178.000.
Postalia GmbH: *See*—
Nuckel, Klaus, 4,326,460, Cl. 101-110.000.
Potash, Hanan: *See*—
Genter, Melvyn E.; and Potash, Hanan, 4,327,355, Cl. 340-825.900.
Potter, Stanley B.: *See*—
Gibby, Richard A.; and Potter, Stanley B., 4,326,953, Cl. 210-168.000.
Powell, Robin F., to GKN Sankey Limited. Mechanical coupling assembly. 4,326,615, Cl. 192-93.00R.
PPG Industries, Inc.: *See*—
Cummings, Frances M., 4,326,924, Cl. 203-6.000.
Richter, Sidney B.; and Grove, William S., 4,326,882, Cl. 562-472.000.
Schimme, Karl F.; Seiner, Jerome A.; Christenson, Roger M.; and Dowbenko, Rostyslaw, 4,327,008, Cl. 524-104.000.
Pratley, Stuart K.: *See*—
Lips, Alexander; and Pratley, Stuart K., 4,326,965, Cl. 252-8.800.
Pratt, Paul L.: *See*—
Clifford, Jack R., 4,326,893, Cl. 134-8.000.
Preston, Joseph R., to RCA Corporation. High density information disc lubricants. 4,327,140, Cl. 428-65.000.
Price, Renata F., to United States of America, Army. Gusset discarding sabot munition. 4,326,464, Cl. 102-523.000.
Pritchard, Norman J.: *See*—
Bus, Jan; Mohlmann, Willem M. M.; and Pritchard, Norman J., 4,326,979, Cl. 252-158.000.
Produce Processors International Corporation: *See*—
Cashman, Richard J., 4,326,367, Cl. 54-2.000.
Product Technologies, Inc.: *See*—
Christison, Alan M., 4,327,398, Cl. 361-384.000.
Propper Manufacturing Co., Inc.: *See*—
Heine, Helmut A.; and Schmidt, Otto H., 4,327,317, Cl. 320-23.000.
Proskurina, Natalya A.: *See*—
Bukhtiyarov, Ivan D.; An, Viktor B.; Farshatov, Marat N.; Sapozhnikov, Fedor F.; Sidorov, Anatoly G.; Proskurina, Natalya A.; and Marakin, Vladimir I., 4,326,410, Cl. 73-117.300.
Pryor, Alvetta; and Ishibe, Nobuyuki, to Dow Chemical Company, The. Cyclopropane ring-containing compounds as inhibitor components in methylchloroform. 4,327,232, Cl. 570-108.000.
Pryor, Timothy R.; Hageniers, Omer L.; Pastorius, Walter J.; Liptay-Wagner, Nicholas; Clarke, Donald A.; and Richards, Blaine, to Diffracto Ltd. Method and apparatus for determining physical characteristics of object outer surfaces. 4,326,808, Cl. 356-445.000.
Pudlosky, Joseph P., to RCA Corporation. Chuck for use in testing of semiconductor pellets. 4,327,325, Cl. 324-158.00F.
Puglia, Wayne J.; Patanasinth, Kanit J.; Lombardo, Andrew T.; Beam, John E.; and Mackay, Donald A. M., to Life Savers, Inc. Compressed chewable antacid tablet and method for forming same. 4,327,076, Cl. [illegible]
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Puhak, Peter G.: *See*—
Penird, Carl W.; and Puhak, Peter G., 4,327,307, Cl. 313-407.000.
Punako, Stephen, to Bendix Corporation, The. Electrical connector grounding strap connection. 4,326,768, Cl. 339-143.00R.
Purification Sciences, Inc.: *See*—
Lowther, Frank E., 4,326,483, Cl. 123-3.000.
Q-dot Corporation: *See*—
Smith, David G., 4,326,344, Cl. 34-54.000.

Quinn, Robert L.: *See*—
Heyman, Philip M.; and Quinn, Robert L., 4,327,283, Cl. 235-487.000.
R.F.I. Inc.: *See*—
Drudy, William A., 4,326,560, Cl. 137-897.000.
R. J. Reynolds Tobacco Company: *See*—
Martin, Julian R.; and Sides, Larry W., 4,326,543, Cl. 131-362.000.
Racal-Dana Instruments Limited: *See*—
Papworth, Derek F., 4,327,329, Cl. 328-144.000.
Rachwal, Ervin J.: *See*—
Martin, Charles E.; and Rachwal, Ervin J., 4,327,172, Cl. 430-407.000.
Radadia, Dhirajlal B.: *See*—
West, Archie; and Radadia, Dhirajlal B., 4,327,001, Cl. 524-322.000.
Rademaker, Gerrit, to U.S. Philips Corporation. Direct current telegraphy systems. 4,327,249, Cl. 178-3.000.
Radenkovic, Ljubomir. Solar energy collecting system. 4,326,502, Cl. 126-439.000.
Radiation Monitoring Devices, Inc.: *See*—
Lis, Steven A.; Serreze, Harvey B.; and Sienkiewicz, Peter M., 4,327,119, Cl. 427-74.000.
Radionics Inc.: *See*—
Fomenko, Joseph; Kuecken, John A.; and Sloboda, James J., 4,327,251, Cl. 179-1.0SM.
Raeburn, Alexander, Jr.: *See*—
Zelahy, John W.; and Raeburn, Alexander, Jr., 4,326,833, Cl. 416-96.000.
Ragle, Herbert U.: *See*—
DeMoss, Dean; Blessum, Norman S.; Gyi, Ko Ko; and Ragle, Herbert U., 4,327,386, Cl. 360-99.000.
Ralston, Paul H.: *See*—
Reilly, Phillip B.; and Ralston, Paul H., 4,326,873, Cl. 65-134.000.
Ramanadin: *See*—
Dromard, Adrien; and Ramanadin, 4,327,191, Cl. 521-31.000.
Rambo, George E.: *See*—
Kelly, Joseph J., Jr.; and Rambo, George E., 4,326,917, Cl. 376-216.000.
Rambosek, G. Phillip: *See*—
Drake, James F., Jr.; and Rambosek, G. Phillip, 4,326,524, Cl. 118-260.000.
Ramer, Ronald J.: *See*—
Berg, Lloyd; McCandless, Frank P.; and Ramer, Ronald J., 4,326,995, Cl. 252-465.000.
Ramlow, Gerhard G.; Heyman, Duane A.; and Moore, Richard A., to BASF Wyandotte Corporation. Process for the preparation of stabilized polymer dispersions in polyol at low temperature. 4,327,005, Cl. 524-377.000.
Ranghelli, Joseph C., to International Telephone and Telegraph Corporation. High power amplification arrangement. 4,327,330, Cl. 330-54.000.
Ransomes Sims & Jefferies Limited: *See*—
Hawes, Richard J., 4,326,593, Cl. 172-226.000.
Rapier, Pascal M., to United States of America, Energy. Direct contact, binary fluid geothermal boiler. 4,326,581, Cl. 165-45.000.
Rapisarda, Anthony A.: *See*—
Rudy, Jerome; and Rapisarda, Anthony A., 4,327,133, Cl. 427-242.000.
Rappleyea, Frederick A., to Kendall Company, The. Protective headgear. 4,326,303, Cl. 2-411.000.
Rasmus, Adam M. Anti-friction bearing. 4,326,759, Cl. 308-183.000.
Rastogi, Ram B.: *See*—
Micetich, Ronald G.; Shaw, Chia-Cheng; and Rastogi, Ram. B., 4,327,222, Cl. 548-247.000.
Rathmell, Richard K. Apparatus and method for recovering volatile compounds. 4,326,343, Cl. 34-51.000.
Ray, Ranjan, to Allied Chemical Corporation. Apparatus for making metallic glass powder. 4,326,841, Cl. 425-8.000.
Raychem Corporation: *See*—
Walker, Jack M., 4,327,351, Cl. 338-22.00R.
Raytheon Company: *See*—
Bostwick, Lewis S.; Filosa, Albert V.; and LaTorre, Richard R., 4,326,428, Cl. 74-5.00F.
Daly, Kevin R., 4,327,277, Cl. 219-121.0LD.
Geier, Leonard W.; and Dunn, Kenneth F., 4,326,503, Cl. 175-441.000.
Keene, Wayne H.; and Jelalian, Albert V., 4,326,799, Cl. 356-152.000.
RCA Corporation: *See*—
Balaban, Alvin R.; and Steckler, Steven A., 4,327,376, Cl. 358-159.000.
Chambers, Robert W.; and Cuomo, Frank, Jr., 4,326,325, Cl. 29-27.00C.
Christopher, Todd J., 4,327,434, Cl. 369-220.000.
Demers, Robert R., 4,326,494, Cl. 125-12.000.
Dieterich, Charles B.; and Lang, Frank B., 4,327,431, Cl. 369-126.000.
Hall, William B., 4,326,553, Cl. 134-153.000.
Heyman, Philip M.; and Quinn, Robert L., 4,327,283, Cl. 235-487.000.
Kessler, Sebastian W., Jr., 4,327,370, Cl. 357-79.000.
Lang, Frank B.; and Clemens, Jon K., 4,327,432, Cl. 369-126.000.
Levine, Aaron W.; Tomeczek, Kazimiera D.; and Harper, Stanley A., 4,327,123, Cl. 427-64.000.
Malchow, Max E., 4,327,332, Cl. 330-261.000.
McNeely, Michael L., 4,327,047, Cl. 264-107.000.
Nyman, Frederick R.; Stevens, Barry; and Calamari, James A., Jr., 4,327,048, Cl. 264-107.000.
Preston, Joseph R., 4,327,140, Cl. 428-65.000.
Pudlosky, Joseph P., 4,327,325, Cl. 324-158.00F.
Redden, Martin J.: *See*—
Parry, James L.; Redden, Martin J.; and Goldstein, Albert, 4,326,466, Cl. 104-172.00S.
Reed, Kingstone L. H.; and Hatcher, Ian, to Koolatron Industries, Ltd. Compact thermoelectric refrigerator. 4,326,383, Cl. 62-3.000.
Reed, Robert D., to United States of America, National Aeronautics and Space Administration. Sun-sensing guidance system for high-altitude aircraft. 4,326,685, Cl. 244-175.000.
Reed, Terry J.: *See*—
Smith, Jack R.; and Reed, Terry J., 4,327,294, Cl. 290-40.00C.
Reeves, John E.: *See*—
Gant, Robert C.; and Reeves, John E., 4,326,411, Cl. 73-155.000.
Regan Offshore International, Inc.: *See*—
Watkins, Bruce J., 4,326,328, Cl. 29-464.000.
Watkins, Bruce J., 4,326,584, Cl. 166-82.000.
Reiffen, Manfred: *See*—
Austel, Volkhard; Reiffen, Manfred; Heider, Joachim; and Diederen, Willi, 4,327,100, Cl. 424-256.000.
Reilly, Phillip B.; and Ralston, Paul H., to Calgon Corporation. Process for the manufacture of fused polyphosphate glasses. 4,326,873, Cl. 65-134.000.
Reiner, Roland: *See*—
Montavon, Marc; and Reiner, Roland, 4,327,210, Cl. 544-027.000.
Reitz, Ronald P. Electrochemical storage cell device. 4,327,161, Cl. 429-110.000.
Rempfler, Hermann, to Ciba-Geigy Corporation. Derivatives of 5-(pyridyl-2-oxy)-2-nitrobenzoic acid, and herbicidal compositions containing them, and herbicidal methods for using same. 4,326,880, Cl. 71-94.000.
Remus, Casimer F., to Bendix Corporation, The. Synchro. 4,327,347, Cl. 336-120.000.
Rentzea, Costin; Sauter, Hubert; and Jung, Johann, to BASF Aktiengesellschaft. Substituted alkylammonium salts, the manufacture thereof, the use thereof for regulating plant growth, and agents therefor. 4,327,214, Cl. 546-133.000.
Reschly, David C., to Detroit Stoker Company. Multi-fuel feeder distributor. 4,326,469, Cl. 110-115.000.
Revell, Alan, to American Air Filter Company, Inc. Discharge apparatus for removing granular filter material from a filter housing and a filter apparatus having same. 4,326,866, Cl. 55-479.000.
Rexham Corporation: *See*—
Burton, Charles A.; and Russell; Robert C., 4,326,568, Cl. 141-114.000.
Reymersdal, Joseph V.; and Cooper, John H., to Sperry Corporation. Magnetic bubble transducer. 4,327,423, Cl. 365-8.000.
Reynolds, George A.: *See*—
Clark, Suzanne P.; Reynolds, George A.; and Perlstein, Jerome H., 4,327,169, Cl. 430-75.000.
Rhone-Poulenc Industries: *See*—
Dromard, Adrien; and Ramanadin, 4,327,191, Cl. 521-31.000.
Farge, Daniel; Leger, Andre; and Ponsinet, Gerard, 4,327,095, Cl. 424-250.000.
Georgen, Daniel; and Tintignac, Jean P., 4,327,118, Cl. 426-656.000.
Rhone-Poulenc-Textile: *See*—
Guadard, Yves; and Guillemaud, Henri, 4,326,504, Cl. 126-449.000.
Rhoton, Richard S.: *See*—
Rush, Donald L.; Perry, Robert H.; and Rhoton, Richard S., 4,327,415, Cl. 364-436.000.
Ribken, Hans: *See*—
Carneim, Wilfried; Hillemanns, Herbert; Vollmecke, Hermann; Ribken, Hans; Schumacher, Heinz; and Roether, Kurt, 4,326,699, Cl. 266-114.000.
Rice, Frank L.: *See*—
White, James A.; Rice, Frank L.; and Lewis, Walter E., 4,327,274, Cl. 219-10.55R.
Rich, Elvis: *See*—
Day, Roger W.; Dunavent, Sidney W.; and Rich, Elvis, 4,326,863, Cl. 55-171.000.
Richard, Francoise: *See*—
Bouillon, Claude; Vayssie, Charles; and Richard, Francoise, 4,327,031, Cl. 260-429.900.
Richards, Blaine: *See*—
Pryor, Timothy R.; Hageniers, Omer L.; Pastorius, Walter J.; Liptay-Wagner, Nicholas; Clarke, Donald A.; and Richards, Blaine, 4,326,808, Cl. 356-445.000.
Richter, Horst J.: *See*—
Oueneau, Paul E.; Richter, Horst J.; and Schuhmann, Reinhardt, Jr., 4,326,702, Cl. 266-267.000.
Richter, Sidney B.; and Grove, William S., to PPG Industries, Inc. Trichlorophenoxy alkanoic acid free of chlorinated dibenzo-p-dioxins. 4,326,882, Cl. 562-472.000.
Ricketts, Thomas E., to Occidental Oil Shale Inc. Blasting to a horizontal free face with mixing of fragments. 4,326,751, Cl. 299-2.000.
Ricketts, Thomas E., to Occidental Oil Shale, Inc. Method for forming an in situ oil shale retort. 4,326,752, Cl. 299-13.000.
Ricoh Co., Ltd.: *See*—
Hashimoto, Mitsuru, 4,327,168, Cl. 430-57.000.
Sasaki, Masaomi; Ohta, Masafumi; and Tsutsui, Kyoji, 4,327,020, Cl. 260-160.000.
Suzuki, Toshitatsu, 4,327,284, Cl. 250-204.000.
Takahashi, Yasuhiro, 4,326,705, Cl. 271-9.000.

Rider, Ronald E.: *See*—
Kadakia, Vinod K.; Jones, Glen D.; Parikh, Kedar D.; and Rider, Ronald E., 4,327,379, Cl. 358-261.000.
Riebel, Hans-Jochem: *See*—
Jautelat, Manfred; Arlt, Dieter; Lantzsch, Reinhard; Fuchs, Rainer; Riebel, Hans-Jochem; Schroder, Rolf; and Harnisch, Horst, 4,327,025, Cl. 260-338.000.
Riedel-de Haen Aktiengesellschaft: *See*—
Stahl, Otto; and Schulz, Horst, 4,326,639, Cl. 215-252.000.
Riedel, Tilo H., to Sesamat Anstalt. Lever-operable fastener for a shoe. 4,326,320, Cl. 24-70.0SK.
Ripley, Robert H.; Karsten, Robert W.; Brandon, Eugene M.; and Lockerby, James W., to Century Inks Corporation. Printing ink and vehicle therefor. 4,327,011, Cl. 524-474.000.
Ristovski, Djoko: *See*—
Ristovski, Ilija, 4,326,763, Cl. 339-14.00P.
Ristovski, Ilija, to Ristovski, Djoko. Electrical plug. 4,326,763, Cl. 339-14.00P.
Rittmaster, Peter A.; and Booth, John L. Hydraulic engine. 4,326,380, Cl. 60-595.000.
Robbins, E. H.: *See*—
Baardson, Andrew B., 4,326,382, Cl. 60-655.000.
Robert Bosch GmbH: *See*—
Edel, Harry; and Lange, Wolfgang, 4,326,689, Cl. 248-359.000.
Herden, Werner, 4,326,419, Cl. 73-708.000.
Herth, Harro; Peter, Cornelius; and Schnurle, Hans, 4,326,488, Cl. 123-492.000.
Maisch, Wolfgang; Peters, Klaus-Jurgen; Wissmann, Michael; and Schelhas, Peter, 4,326,487, Cl. 123-453.000.
Mezger, Manfred; Leussink, Reinhard; and Fritz, Adolf, 4,326,486, Cl. 123-418.000.
Roberts, Hill W.: *See*—
Thompson, Phillip B.; and Roberts, Hill W., 4,326,599, Cl. 181-175.000.
Roberts, Thomas G., to United States of America, Army. Nuclear activated cw chemical laser. 4,327,338, Cl. 372-89.000.
Robinson, Ken K.: *See*—
Meyer, James S.; Robinson, Ken K.; Forgac, John M.; and Tatterson, David F., 4,326,944, Cl. 208-8.00R.
Rock, Gregory, to Arnhem, Erik M. Mud guard. 4,326,727, Cl. 280-154.50R.
Rockwell International Corporation: *See*—
Hoss, Robert J., 4,327,362, Cl. 340-870.020.
Jaqua, Vance W., 4,326,377, Cl. 60-247.000.
Jones, Addison B., 4,326,936, Cl. 204-192.00E.
Molina, Orlando G., 4,326,981, Cl. 252-301.190.
Moore, Richard L., 4,327,364, Cl. 343-18.00A.
Rosman, Irwin E.; and Wagner, William R., 4,326,582, Cl. 165-83.000.
Roe, George W., to McDonnell Douglas Corporation. Launch environment simulator. 4,326,847, Cl. 434-12.000.
Roether, Kurt: *See*—
Carneim, Wilfried; Hillemanns, Herbert; Vollmecke, Hermann; Ribken, Hans; Schumacher, Heinz; and Roether, Kurt, 4,326,699, Cl. 266-114.000.
ROHCO Incorporated: *See*—
Eckles, William E.; Bishop, Craig V.; and Vaitekunas, Peter T., 4,326,940, Cl. 204-232.000.
Rohrbach, Gerhard; and Hollman, Bernd, to Portlandzementwerk Dotternhausen Rudolf Rohrbach Kommanditgellschaft. Process for the carbonization of oil shale and other carbonizable materials. 4,326,471, Cl. 110-341.000.
Rolls-Royce Limited: *See*—
Nightingale, Douglas J., 4,326,682, Cl. 244-54.000.
Roocroft, Syd: *See*—
Dolan, John J.; and Roocroft, Syd, 4,327,044, Cl. 264-36.000.
Rose, Neil M., to Canica Crushers, Ltd. Reciprocating infeed tube for centrifugal impact rock crusher. 4,326,676, Cl. 241-275.000.
Rosen, Harold A., to Hughes Aircraft Company. Spacecraft with internal propulsion stages. 4,326,684, Cl. 244-158.00R.
Rosenbaum, Glen F., to CMI Corporation. Gate assembly and control assembly therefor. 4,326,750, Cl. 298-35.00M.
Rosenberg, David J., to Pall Corporation. Vented filter spigot for intravenous liquid administration apparatus. 4,326,957, Cl. 210-436.000.
Rosenkrantz, Bernard E.; and Stupak, Elliot, to Schering Corporation. Stabilized Netilmicin formulations. 4,327,087, Cl. 424-180.000.
Roske, Dieter, to Haendler & Natermann GmbH. Aluminum foil label for bottles. 4,326,350, Cl. 40-310.000.
Rosman, Irwin E.; and Wagner, William R., to Rockwell International Corporation. Single element tube row heat exchanger. 4,326,582, Cl. 165-83.000.
Ross, William L., to Sigma Electronics Limited. Printing apparatus, 4,326,458, Cl. 101-1.000.
Rossi, Alberto: *See*—
Sele, Alex; Ferrini, Pier G.; Haas, Georges; Jaeggi, Knut A.; and Rossi, Alberto, 4,327,091, Cl. 424-246.000.
Rossmann, Axel, to Motoren- und Turbinen-Union Muenchen GmbH. High-strength components of complex geometric shape and method for their manufacture. 4,327,154, Cl. 428-545.000.
Roth, Jurgen: *See*—
Bruning, Rolf; and Roth, Jurgen, 4,327,057, Cl. 422-173.000.
Roush, Dale P.: *See*—
Miles, Felix A.; and Roush, Dale P., 4,326,315, Cl. 15-77.000.
Roux, Kenneth R.: *See*—
Hendricks, Carl C.; Godar, Richard L.; and Roux, Kenneth R., 4,326,987, Cl. 252-392.000.
Roux, Steven J. Hand held restraining cutter. 4,326,334, Cl. 30-124.000.
Rubalcava, Carlos A. Hydro-pneumatic suspensions for automotive vehicles. 4,326,733, Cl. 280-708.000.
Rubin, David; and Rubin, David, to Schwimmer, Adolf W.; and Schwartz, Erwin S. Method for diagnosis and selective treatment of infections of bacteria having β-glucuronidase activity. 4,327,074, Cl. 424-1.500.
Rubin, David: *See*—
Rubin, David; and Rubin, David, 4,327,074, Cl. 424-1.500.
Rubio, Manuel J. Continuous production of grain products. 4,326,455, Cl. 99-483.000.
Rudd, Wallace C., to Thermatool Corporation. Heat exchanger panels. 4,326,583, Cl. 165-183.000.
Rudy, Jerome; and Rapisarda, Anthony A., to Lever Brothers Company. Additives for clothes dryers. 4,327,133, Cl. 427-242.000.
Ruhe, Anthony; Chitty, John A.; and Nickerson, James H. D. Post weld heat treatment of shell and tube heat exchangers and apparatus. 4,326,897, Cl. 148-13.100.
Runfree Enterprise, Inc.: *See*—
Leibrand, John G., Sr.; and Bessey, Marlin L., 4,326,492, Cl. 123-557.000.
Runge, Thomas M. Fan jet engine bypass air delivery system for blown wing aircraft lift augmentation device. 4,326,686, Cl. 244-207.000.
Ruof, Edgar J., to Goodyear Aerospace Corporation. Automatic brake control circuit for aircraft. 4,327,413, Cl. 364-426.000.
Rush, Donald L.; Perry, Robert H.; and Rhoton, Richard S., to Westinghouse Electric Corp. Transit vehicle handback control apparatus and method. 4,327,415, Cl. 364-436.000.
Russell, Robert C.: *See*—
Burton, Charles A.; and Russell, Robert C., 4,326,568, Cl. 141-114.000.
Russo, Carl J.: *See*—
Kaplow, Roy; and Russo, Carl J., 4,326,898, Cl. 148-16.600.
Rutt, Donald R.: *See*—
Stetter, Joseph R.; and Rutt, Donald R., 4,326,927, Cl. 204-1.00T.
Ryan, James W.; and Chung, Alfred, to University of Miami. Urinary kallikrein assay: specific substrates and assay method. 4,327,178, Cl. 435-13.000.
Ryan, Lenore S.; Murray, Frank C.; Sprangers, Ann M.; Santoski, William J.; Sciaraffa, Michael A.; Abel, Kent W.; and Donnelly, Harold F., to Kimberly-Clark Corporation. Elastic legged diapers. 4,326,528, Cl. 128-287.000.
Rybicki, Edward B.; and Sussman, Milton H., to American Optical Corporation. 10× Microscope objective. 4,326,779, Cl. 350-414.000.
Rymarenko, Leonid I.: *See*—
Davydov, Vadim A.; Khromov, Vladimir I.; Makeev, Igor M.; Kogos, Aizik M.; and Rymarenko, Leonid I., 4,326,400, Cl. 72-280.000.
Rynik, Jan. Advance mechanism, preferably for mining machines. 4,326,753, Cl. 299-43.000.
Sabase, Makoto; and Sakaitani, Mario, to Matsushita Industry Co., Ltd. Apertured plate with adjustable-constriction member for providing shiftable bottom wall of hopper for granular material that is juxtaposed upon a plurality of metering compartments. 4,326,651, Cl. 222-439.000.
Sabatka, Winston E.; and Bloomquist, Wilburn M., to Finishing Equipment, Inc. Electro-chemical deburring method. 4,326,933, Cl. 104-125.000.
Sadler, Thomas H., to Manville Service Corporation. Crystalline calcium carbonate as a diluent in hydrothermally cured hydraulic cement compositions. 4,326,891, Cl. 106-99.000.
Safta S.p.A.: *See*—
Pallaroni, Francesco; Baldini, Luciano; and Siccardi, Alberto, 4,326,574, Cl. 150-8.000.
Saikawa, Isamu; Takano, Shuntaro; Yoshida, Chosaku; Takashima, Okuta; Momonoi, Kaishu; Kuroda, Seietsu; Komatsu, Miwako; Yasuda, Takashi; and Kodama, Yutaka, to Toyama Chemical Co., Ltd. Novel penicillins. 4,327,097, Cl. 424-250.000.
Saito, Eiichi: *See*—
Iwamoto, Seigo; and Saito, Eiichi, 4,327,017, Cl. 260-105.000.
Saito, Makoto: *See*—
Abeyama, Shozo; Saito, Makoto; Kimura, Atsuyoshi; and Nakamura, Sadayuki, 4,326,886, Cl. 75-129.000.
Saito, Syuichiro: *See*—
Uchiyama, Takashi; Suzuki, Ryoichi; Saito, Syuichiro; and Sugiura, Yoji, 4,326,786, Cl. 354-234.000.
Saito, Tutomu; and Yamaguchi, Ryoji, to Tokyo Shibaura Denki Kabushiki Kaisha. Laser scanning apparatus. 4,327,287, Cl. 250-234.000.
Saito, Yasunori, to Sumitomo Electric Industries, Ltd. Method for controlling gas pressure sealed in coaxial communication cable. 4,327,242, Cl. 174-11.00R.
Saito, Zyunso: *See*—
Kato, Yasuyuki; Suzuki, Haruo; Kondo, Masatsune; Sugimoto, Hiroaki; Kimura, Junichi; and Saito, Zyunso, 4,327,205, Cl. 128-170.000.
Saitoh, Takao: *See*—
Motegi, Akio; and Saitoh, Takao, 4,326,545, Cl. 132-33.00R.
Sakaitani, Mario: *See*—
Sabase, Makoto; and Sakaitani, Mario, 4,326,651, Cl. 222-439.000.
Sakata, Kazuhiro: *See*—
Kuzunuki, Soshiro; Hirasawa, Kotaro; Sakata, Kazuhiro; and Yoneda, Kenji, 4,326,606, Cl. 187-29.00R.

Sakurai, Takeyoshi; and Kobayashi, Noboru, to Mitsubishi Denke Kabushiki Kaisha. Switching device. 4,327,263, Cl. 200-148.00A.
Sala, Franco, to Steelyamamoto International Company Ltd. Device for automatically reducing excess play in movable parts of brakes. 4,326,609, Cl. 188-196.0BA.
Salee, Gideon, to Hooker Chemicals & Plastics Corp. Polymer blends with improved hydrolytic stability. 4,327,012, Cl. 523-203.000.
Salle, Jacques E.: *See—*
  Athenes, Claude; Salle, Jacques E.; and Blouin, Philippe, 4,327,442, Cl. 375-119.000.
Salm, Dieter: *See—*
  Schippers, Heinz; Schimmels, Bernd; and Salm, Dieter, 4,326,677, Cl. 242-18.0DD.
Salmon, Emigdio J., to Phillips Petroleum Company. Extrusion and pelleting apparatus and method. 4,327,050, Cl. 264-142.000.
Sander, Jurgen; and Horn, Klaus, to Hoechst Aktiengesellschaft. Photopolymerizable unsaturated polyesters and copying material prepared therewith. 4,327,170, Cl. 430-285.000.
Sanders Associates, Inc.: *See—*
  Burrows, James L., 4,327,407, Cl. 364-200.000.
Sanders, James M.: *See—*
  Klemarczyk, Philip T.; Sanders, James M.; Vock, Manfred H.; Vinals, Joaquin F.; Schmitt, Frederick L.; and Granda, Edward J., 4,326,998, Cl. 252-522.00R.
Sandoz, Inc.: *See—*
  Spencer, Homer K.; and Graben, Melvin M., 4,326,879, Cl. 71-94.000.
Sands, John L.: *See—*
  Ayres, James T.; McAllister, David L.; and Sands, John L., 4,327,227, Cl. 568-639.000.
Sanemitsu, Yuzuru: *See—*
  Mizutani, Masato; Tsushima, Kazunori; Sanemitsu, Yuzuru; and Hirano, Masachika, 4,327,094, Cl. 424-249.000.
Sanfilippo, Aurora: *See—*
  Marsili, Leonardo; Franceschi, Giovanni; and Sanfilippo, Aurora, 4,327,096, Cl. 424-250.000.
Sangamo Weston, Inc.: *See—*
  Jerrim, John W., 4,327,416, Cl. 364-481.000.
Sankyo Electric Company Limited: *See—*
  Tamura, Yasushi, 4,326,386, Cl. 62-150.000.
Santoski, William J.: *See—*
  Ryan, Lenore S.; Murray, Frank C.; Sprangers, Ann M.; Santoski, William J.; Sciaraffa, Michael A.; Abel, Kent W.; and Donnelly, Harold F., 4,326,528, Cl. 128-287.000.
Sanyei Corporation: *See—*
  Motegi, Akio; and Saitoh, Takao, 4,326,545, Cl. 132-33.00R.
Sanyo Electric Co., Ltd.: *See—*
  Fujii, Kazuo, 4,327,385, Cl. 360-96.500.
Sapozhnikov, Fedor F.: *See—*
  Bukhtiyarov, Ivan D.; An, Viktor B.; Farshatov, Marat N.; Sapozhnikov, Fedor F.; Sidorov, Anatoly G.; Proskurina, Natalya A.; and Marakin, Vladimir I., 4,326,410, Cl. 73-117.300.
Sarot, Pierre: *See—*
  Logan, William R.; Sarot, Pierre; and Bouillet, Edmond, 4,326,976, Cl. 252-99.000.
Sasaki, Etsuro; and Ohsaki, Takaaki, to Nippon Telegraph & Telephone Public Corp. Heat pipe cooling arrangement for integrated circuit chips. 4,327,399, Cl. 361-385.000.
Sasaki, Keiichi: *See—*
  Chikata, Tsukasa; Sunami, Yoshihiko; Sasaki, Keiichi; and Nishioka, Kunihiko, 4,326,946, Cl. 208-93.000.
Sasaki, Masaomi; Ohta, Masafumi; and Tsutsui, Kyoji, to Ricoh Company, Ltd. Bis-azo compounds. 4,327,020, Cl. 260-160.000.
Sather, George A. Can crushing apparatus. 4,326,457, Cl. 100-218.000.
Sato, Eiji; Arai, Nobukatsu; Tanaka, Hideki; Fukushima, Toshihiko; and Nakajima, Tadakatsu, to Hitachi, Ltd. Rankine-cycle-engine-driven cooling-and-heating system. 4,326,391, Cl. 62-402.000.
Sato, Masaaki, to Olympus Optical Co., Ltd. Magnetic recording-reproducing apparatus. 4,326,659, Cl. 226-190.000.
Sauer, Donald G., to National Can Corporation. Process for making containers. 4,327,052, Cl. 264-512.000.
Sauer, Walter. Feeding apparatus for small animals. 4,326,482, Cl. 119-51.000.
Saurenman, Donald G., to Consan Pacific Incorporated. Ion treatment enhancement. 4,326,454, Cl. 99-451.000.
Sauter, Hubert: *See—*
  Rentzea, Costin; Sauter, Hubert; and Jung, Johann, 4,327,214, Cl. 546-111.000.
Savin Corporation: *See—*
  Landa, Benzion, 4,326,644, Cl. 221-263.000.
  Landa, Benzion, 4,326,792, Cl. 355-3.0TR.
Sawa, Yuji; Endo, Shigeru; and Uehara, Tsutomu, to Kureha Kagaku Kogyo Kabushiki Kaisha. Multilayered hollow container. 4,327,137, Cl. 428-35.000.
Sawyer, Willard H.; and Cull, Neville L., to Exxon Research & Engineering Co. Hydrocracking over alumina-aluminum fluorophosphate-containing catalysts. 4,326,947, Cl. 208-111.000.
Sbicca, Peter J. Article of footwear. 4,326,345, Cl. 36-135.000.
Scalesciani, Juan B. A. Amino-penicillin derivative, and therapeutic composition containing the same. 4,327,105, Cl. 424-271.000.
Schacht, Ezra L. Combination of electrical meter socket column and panelboard for conversion to individual tenant metering. 4,327,396, Cl. 361-379.000.
Schaefer, Dieter; Motz, Herbert; Mayer, Dieter; Deigner, Paul; Hack, Joachim; and Falk, Roland, to BASF Aktiengesellschaft. Rigid magnetic recording disk having perfluoropolyether lubricant. 4,327,139, Cl. 428-65.000.
Schaefer, Jean E.: *See—*
  Bolton, Deborah A.; and Schaefer, Jean E., 4,326,300, Cl. 2-114.000.
Schaffer, Robert R.; and Skinner, Dean W., to International Business Machines Corporation. Document printing device having a platen with character segments thereon. 4,326,814, Cl. 400-125.100.
Schafter, William; and Bradley, Terrag W., to Hewlett-Packard Company. Flexible low friction platen cover for recording apparatus. 4,327,366, Cl. 346-76.0PH.
Scheinpflug, Hans: *See—*
  Timmler, Helmut; Buchel, Karl; Brandes, Wilhelm; Frohberger, Paul-Ernst; and Scheinpflug, Hans, 4,327,104, Cl. 424-269.000.
Schelhas, Peter: *See—*
  Maisch, Wolfgang; Peters, Klaus-Jurgen; Wissmann, Michael; and Schelhas, Peter, 4,326,487, Cl. 123-453.000.
Schenkenberger, Ernst: *See—*
  Neumann, Konrad; and Schenkenberger, Ernst, 4,326,982, Cl. 252-301.230.
Scher, Herbert I.; and Ungar, Israel S., to Nevamar Corporation. Abrasion-resistant laminate. 4,327,141, Cl. 428-148.000.
Schering Corporation: *See—*
  Rosenkrantz, Bernard E.; and Stupak, Elliot, 4,327,087, Cl. 424-180.000.
Schillerstrom, Merl S.; and Tufts, Robert A., to Deere & Company. Apparatus for checking the spindle plane on a cotton harvester. 4,326,369, Cl. 56-41.000.
Schilling, Robert: *See—*
  Strugala, Alfred; Schilling, Robert; and Adamaszek, Dieter, 4,326,397, Cl. 72-110.000.
Schillinger, Joseph F.; Bicksler, William B.; and Lambert, Herbert L., to Champion International Corporation. Sealed beam headlight carton. 4,326,633, Cl. 206-418.000.
Schimme, Karl F.; Seiner, Jerome A.; Christenson, Roger M.; and Dowbenko, Rostyslaw, to PPG Industries, Inc. Urethane rheology modifiers and coating compositions containing same. 4,327,008, Cl. 524-104.000.
Schimmels, Bernd: *See—*
  Schippers, Heinz; Schimmels, Bernd; and Salm, Dieter, 4,326,677, Cl. 242-18.0DD.
Schippers, Heinz; Schimmels, Bernd; and Salm, Dieter, to Barmag Barmer Maschinenfabrik. Monitoring circuit for high speed spindle assembly. 4,326,677, Cl. 242-18.0DD.
Schlaich, Jorg: *See—*
  Leonhardt, Fritz; Andra, Wolfhart; Zellner, Wilhelm; Schlaich, Jorg; and Mayr, Gunter, 4,326,363, Cl. 52-80.000.
Schleicher, Hermann; and Vogel, Norbert, to Hermann Schleicher GmbH & Co. Pallet formed of folded profiled metal sheet. 4,326,467, Cl. 108-51.100.
Schleicher, Robert G.: *See—*
  Smith, Stanley B., Jr.; Schleicher, Robert G.; and Dennison, Allan G., 4,326,802, Cl. 356-316.000.
Schlosberg, Richard H., to Exxon Research & Engineering Co. Oxygen alkylation of phenol-containing hydrocarbonaceous streams. 4,326,949, Cl. 208-263.000.
Schlueter, Ernest, to Simmons Fastener Corporation. Fastener with pivotable handle member. 4,326,739, Cl. 292-247.000.
Schlumberger Limited: *See—*
  Timmons, John P., 4,327,412, Cl. 364-422.000.
Schlumberger Technology Corporation: *See—*
  Garcia, Jose B.; and Bosse-Platiere, Michel J., 4,326,462, Cl. 102-310.000.
  Plasek, Ronald E., 4,327,290, Cl. 250-262.000.
Schmeling, Gerhard: *See—*
  Ackermann, Otto; Leuck, Hans; Meyer, Gunther; and Schmeling, Gerhard, 4,327,230, Cl. 568-851.000.
Schmid, Franziska, deceased: *See—*
  Ludwig, Walter; and Schmid, Franziska, deceased, 4,326,353, Cl. 42-7.000.
Schmid, Hans, heir: *See—*
  Ludwig, Walter; and Schmid, Franziska, deceased, 4,326,353, Cl. 42-7.000.
Schmid, Rolf: *See—*
  Lohse, Friedrich; Schmid, Rolf; and Fatzer, Willy, 4,327,032, Cl. 260-448.00R.
Schmidt, Adolf; and Bockmann, August, to Bayer Aktiengesellschaft. Aqueous dispersions of plastics in which the average diameter of the dispersion particles is in the range from about 50 to 500 nm, and a process for their preparation. 4,327,004, Cl. 524-745.000.
Schmidt-Hatting, Wolfgang, to Swiss Aluminium Ltd. Anode support system for a molten salt electrolytic cell. 4,326,939, Cl. 204-228.000.
Schmidt, Manfred: *See—*
  Uerpmann, Ernst-Peter; Staupendahl, Gerhard; and Schmidt, Manfred, 4,326,820, Cl. 405-128.000.
Schmidt, Otto H.: *See—*
  Heine, Helmut A.; and Schmidt, Otto H., 4,327,317, Cl. 320-23.000.
Schmieder, Frank: *See—*
  Murzin, Horst; Woss, Rainer; Burghoff, Hans; Schmieder, Frank; Herzig, Alfred; Junge, Johannes; and Deckarm, Gunter, 4,326,625, Cl. 198-653.000.
Schmitt, Frederick L.: *See—*
  Klemarczyk, Philip T.; Sanders, James M.; Vock, Manfred H.; Vinals, Joaquin F.; Schmitt, Frederick L.; and Granda, Edward J., 4,326,998, Cl. 252-522.00R.

Schmolka, Irving R., to BASF Wyandotte Corporation. Liquid antiseptic cleaners with improved foaming properties. 4,326,977, Cl. 252-106.000.
Schmuck, Guenter E.: *See—*
  Eckert, Rene A.; and Schmuck, Guenter E., 4,326,904, Cl. 156-85.000.
Schnurle, Hans: *See—*
  Herth, Harro; Peter, Cornelius; and Schnurle, Hans, 4,326,488, Cl. 123-491.000.
Schoeller, Felix, Jr.: *See—*
  von Meer, Walter, 4,327,174, Cl. 430-530.000.
Schofield, Clive; and Miles, John E. P., to National Research Development Corporation. Mixing devices. 4,326,810, Cl. 366-106.000.
Schregenberger, Alex J., to Midland-Ross Corporation. Multi-zone oven with cool air modulation. 4,326,342, Cl. 34-47.000.
Schreiber, Werner, to Ciba-Geigy Corporation. Process for the production of dibenzazolyl compounds. 4,327,209, Cl. 542-466.000.
Schreier, Ulrich: *See—*
  Miltenberger, Charles W.; Lucas, Edward J.; and Schreier, Ulrich, 4,326,872, Cl. 65-112.000.
Schroder, Rolf: *See—*
  Jautelat, Manfred; Arlt, Dieter; Lantzsch, Reinhard; Fuchs, Rainer; Riebel, Hans-Jochem; Schroder, Rolf; and Harnisch, Horst, 4,327,025, Cl. 260-338.000.
Schuder, Maurice E.; and Stafford, Richard W., to Emhart Industries, Inc. Timing mechanism. 4,327,259, Cl. 200-38.00A.
Schuhmann, Reinhardt, Jr.: *See—*
  Oueneau, Paul E.; Richter, Horst J.; and Schuhmann, Reinhardt, Jr., 4,326,702, Cl. 266-267.000.
Schultz, Kenneth E.; and Craycraft, Mary. Intracatheter-intravenous tubing lock. 4,326,516, Cl. 128-214.00R.
Schulz, Horst: *See—*
  Stahl, Otto; and Schulz, Horst, 4,326,639, Cl. 215-252.000.
Schulz, Volker; Kunke, Stefan; and Heim, Ulrich, to Dragerwerk AG. Patient data controlled respiration system. 4,326,513, Cl. 128-203.140.
Schumacher, Heinz: *See—*
  Carneim, Wilfried; Hillemanns, Herbert; Vollmecke, Hermann; Ribken, Hans; Schumacher, Heinz; and Roether, Kurt, 4,326,699, Cl. 266-114.000.
Schuster, Michael M.: *See—*
  Volkmann, Josef F.; Hatter, Edwin E.; and Schuster, Michael M., 4,326,825, Cl. 411-5.000.
Schwartz, Erwin S.: *See—*
  Rubin, David; and Rubin, David, 4,327,074, Cl. 424-1.500.
Schwartz, James W.: *See—*
  Hockenbrock, Richard L.; and Schwartz, James W., 4,326,762, Cl. 316-1.000.
Schwartz, Leslie H. Alignment device for electro-acoustical transducers. 4,327,257, Cl. 179-115.50R.
Schwartz, Samuel. Key and lock core combination. 4,326,761, Cl. 312-326.000.
Schwarz, Arthur M., to Inland Steel Company. Process for deoiling and agglomerating oil-bearing mill scale. 4,326,883, Cl. 75-5.000.
Schwimmer, Adolf W.: *See—*
  Rubin, David; and Rubin, David, 4,327,074, Cl. 424-1.500.
Scianna, Anthony, Sr.; and Gordon, Frank J., to Motorola Inc. Combined cassette tape guide and tape stripper. 4,326,660, Cl. 226-190.000.
Sciaraffa, Michael A.: *See—*
  Ryan, Lenore S.; Murray, Frank C.; Sprangers, Ann M.; Santoski, William J.; Sciaraffa, Michael A.; Abel, Kent W.; and Donnelly, Harold F., 4,326,528, Cl. 128-287.000.
Scott, Michael A.: *See—*
  Dapp, George P.; and Scott, Michael A., 4,327,127, Cl. 427-146.000.
Scott Paper Company: *See—*
  Gray, Lorin S., III, 4,327,121, Cl. 427-44.000.
Scott, Raymond G., to Champion International Corporation. Gift package sleeve. 4,326,665, Cl. 229-87.00R.
Scribner, Belding H.: *See—*
  Babb, Albert L.; and Scribner, Belding H., 4,326,955, Cl. 210-638.000.
Seader, Junior D.: *See—*
  Johnson, Steven A.; and Seader, Junior D., 4,327,184, Cl. 435-287.000.
Sears, Roebuck and Co.: *See—*
  Gall, John C.; and Meharg, Richard D., 4,326,732, Cl. 280-642.000.
SECIM: *See—*
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Seidel, Martin P.: *See—*
  Alvino, William M.; Hammill, Janet L.; and Seidel, Martin P., 4,327,143, Cl. 428-236.000.
Seimiya, Motoo, to Tokyo Shibaura Denki Kabushiki Kaisha. Method of preparing silicon carbide. 4,327,066, Cl. 423-345.000.
Seiner, Jerome A.: *See—*
  Schimme, Karl F.; Seiner, Jerome A.; Christenson, Roger M.; and Dowbenko, Rostyslaw, 4,327,008, Cl. 524-104.000.
Seki, Junji: *See—*
  Katoh, Tsuneyuki; Hiraga, Keishiro; Seki, Junji; and Suzuki, Makoto, 4,327,149, Cl. 428-332.000.
Sele, Alex; Ferrini, Pier G.; Haas, Georges; Jaeggi, Knut A.; and Rossi, Alberto, to Ciba-Geigy Corporation. N,N-Di and N,N,N-tri(hydroxy-lower alkyl) ammonium salts of substituted 3,4-dihydro-2H-1,2-benzothiazine 1,1 dioxide and pharmaceutical compositions thereof. 4,327,091, Cl. 424-246.000.
Seliger, Robert L.: *See—*
  Wang, Victor; and Seliger, Robert L., 4,327,292, Cl. 250-491.000.
Senni, Paolo; and Astarita, Domenico, to SNIA Viscosa Societa' Nazionale Industria Applicazioni Viscosa S.p.A. Process for the purification of caprolactame. 4,326,925, Cl. 203-37.000.
Senuma, Michio, to Canon Kabushiki Kaisha. Magnetized shutter blades. 4,326,787, Cl. 354-246.000.
Seoka, Yoshio: *See—*
  Aoki, Kozo; Seoka, Yoshio; and Yokota, Yukio, 4,327,173, Cl. 430-503.000.
Sepp, Gunther, to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung. Method of making laser beam optical decoupling element for an astable laser resonator. 4,327,129, Cl. 427-164.000.
Serreze, Harvey B.: *See—*
  Lis, Steven A.; Serreze, Harvey B.; and Sienkiewicz, Peter M., 4,327,119, Cl. 427-74.000.
Service d'Exploitation Industrielle des Tabacs et des Allumettes: *See—*
  Leclerc, Jean F., 4,327,375, Cl. 358-107.000.
Sesamat Anstalt: *See—*
  Riedel, Tilo H., 4,326,320, Cl. 24-70.0SK.
Seton Company: *See—*
  Cioca, Gheorghe; and Fertell, Paul A., 4,327,195, Cl. 521-102.000.
Seybold, Guenther: *See—*
  Eilingsfeld, Heinz; Hansen, Guenter; Seybold, Guenther; and Zeidler, Georg, 4,327,019, Cl. 260-158.000.
Seymour, Robert W.: *See—*
  Weemes, Doyle A.; and Seymour, Robert W., 4,327,198, Cl. 525-63.000.
Shaffer, Mark A.; and Baker, Frank J., II. Endotracheal tube retainer. 4,326,515, Cl. 128-207.170.
Sharp Kabushiki Kaisha: *See—*
  Horiguchi, Michiyuki, 4,327,404, Cl. 363-19.000.
  Minezaki, Shigehiro; Takamatsu, Toshiaki; and Kozaki, Shuichi, 4,326,929, Cl. 204-15.000.
  Mochizuki, Daisuke; and Sugitani, Toshio, 4,326,550, Cl. 133-2.000.
Shaw, Chia-Cheng: *See—*
  Micetich, Ronald G.; Shaw, Chia-Cheng; and Rastogi, Ram B., 4,327,222, Cl. 548-247.000.
Shaw, Christopher W., to Micro Metalsmiths Limited. Model locomotive suspension system. 4,326,357, Cl. 46-217.000.
Sheldon, Loren B., to BJ-Hughes Inc. Apparatus for sensing a distended location on a drill pipe. 4,327,261, Cl. 200-61.410.
Shell Oil Company: *See—*
  Slaugh, Lynn H.; and Hoxmeier, Ronald J., 4,326,992, Cl. 252-441.000.
Sherrick, James W.; and Casbohm, Chris E., to Lord Corporation. Adjustable spring clip. 4,326,670, Cl. 238-341.000.
Sherwood, John F.: *See—*
  Laszlo, Tibor S.; Nienow, John F.; Sherwood, John F.; and Irving, Christopher L., 4,326,542, Cl. 131-280.000.
Shibata, Fumio: *See—*
  Fujiwara, Kiyoshi; Nagatomo, Katsuaki; Yoshinaga, Shoji; Tamura, Zensuke; Shibata, Fumio; and Kanekiyo, Hiroshi, 4,326,666, Cl. 233-15.000.
Shibuya, Chisei: *See—*
  Murakami, Masahiro; Kobayashi, Masateru; Sone, Takanori; and Shibuya, Chisei, 4,327,211, Cl. 544-27.000.
Shiga, Tetsuo: *See—*
  Matsui, Ryo; Matsushika, Tadao; Hayashi, Yoshio; and Shiga, Tetsuo, 4,327,176, Cl. 430-619.000.
Shigeyasu, Motoo; and Kitamura, Takehiko, to Matsuyama Petrochemicals Inc. Process and apparatus for producing aromatic dicarboxylic acids. 4,327,226, Cl. 562-416.000.
Shigihara, Takanori: *See—*
  Hotta, Mitsuhiko; Tachibana, Akifumi; and Shigihara, Takanori, 4,327,427, Cl. 367-118.000.
Shim, Jaewon L.: *See—*
  Cottrell, Ian W.; Baird, John K.; and Shim, Jaewon L., 4,326,970, Cl. 252-8.55D.
Shimada, Katsutoshi: *See—*
  Tanaka, Satoru; Shimada, Katsutoshi; Hashimoto, Kazunori; Ema, Kiichi; and Ueda, Koichiro, 4,327,217, Cl. 546-281.000.
Shimadzu Seisakusho, Ltd.: *See—*
  Ono, Junichi; Fukui, Isao; and Imamura, Naoki, 4,326,801, Cl. 356-312.000.
Shimizu, Katsuichi: *See—*
  Tajima, Hatsuo; Iwami, Naoki; Masuda, Shunichi; Shimizu, Katsuichi; Kawatsura, Yoshihiro; Suzuki, Koji; and Yokomizo, Yoshikazu, 4,326,795, Cl. 355-14.00E.
Shimonaka, Hideki, to Olympus Optical Co., Ltd. Device for operating a coeliac tubular member-closing implement. 4,326,531, Cl. 128-326.000.
Shin-Kobe Electric Machinery Co., Ltd.: *See—*
  Mituhashi, Kazuyuki; Matumoto, Kunio; Shirai, Haruo; and Tanaka, Yoshikatu, 4,327,247, Cl. 174-68.500.
Shinagawa, Mutsuaki: *See—*
  Kohara, Rikusei; Kakumoto, Susumu; Aoyama, Takashi; Shoji, Masami; and Shinagawa, Mutsuaki, 4,326,777, Cl. 350-357.000.
Shinma, Nobuo; Umeda, Isao; Ishitsuka, Hideo; and Suhara, Yasuji, to Hoffmann-La Roche Inc. Phosphonooxy- or glycosyloxy-substituted acrylophenones, compositions and uses thereof. 4,327,088, Cl. 424-180.000.
Shinno, Kiyonori. Method for lining of inner surface of a pipe. 4,327,132, Cl. 427-235.000.
Shinwa Audio Company, Ltd.: *See—*
  Hamada, Morio, 4,326,430, Cl. 74-10.520.

Shionogi & Co., Ltd.: *See*—
Inouye, Ken; Kono, Masao; Yoshida, Nobuo; Nakamura, Masuhisa; Okabayashi, Tadashi; and Igano, Ken'ichi, 4,327,072, Cl. 424-1.000.
Shirai Eenshi Kogyo Co., Ltd.: *See*—
Mituhashi, Kazuyuki; Matumoto, Kunio; Shirai, Haruo; and Tanaka, Yoshikatu, 4,327,247, Cl. 174-68.500.
Shirai, Haruo: *See*—
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Shireman, Phillip E.: *See*—
Bayne, Robert T.; and Shireman, Phillip E., 4,326,643, Cl. 221-13.000.
Shiroto, Yoshimi: *See*—
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Yagitani, Takayuki; and Ebisu, Osamu, 4,327,395, Cl. 361-326.000.
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Shroyer, Larry L., to Ener-Tec, Inc. Fluid treating apparatus. 4,326,954, Cl. 210-222.000.
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Martin, Julian R.; and Sides, Larry W., 4,326,543, Cl. 131-362.000.
Sidorov, Anatoly G.: *See*—
Bukhtiyarov, Ivan D.; An, Viktor B.; Farshatov, Marat N.; Sapozhnikov, Fedor F.; Sidorov, Anatoly G.; Proskurina, Natalya A.; and Marakin, Vladimir I., 4,326,410, Cl. 73-117.300.
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Howard, Kenneth J.; and Sidwell, Albert E., 4,327,027, Cl. 260-340.300.
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Siemens Aktiengesellschaft: *See*—
Baier, Paul W.; Dostert, Klaus; Pandit, Madhukar; and Simons, Reinhard, 4,327,438, Cl. 375-1.000.
Edinger, Egon; and Pedall, Friedrich, 4,327,265, Cl. 219-10.410.
Hohne, Karl, 4,326,914, Cl. 162-105.000.
Lechner, Robert, 4,327,253, Cl. 179-18.0FG.
Weigert, Kurt; and Molz, Claudius, 4,326,538, Cl. 128-702.000.
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Jacobsen, Jon E., 4,327,303, Cl. 310-261.000.
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Holt, Dewilton R., 4,327,383, Cl. 360-45.000.
Siemens Medical Laboratories, Inc.: *See*—
Taumann, Leonhard, 4,327,293, Cl. 250-505.000.
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Lis, Steven A.; Serreze, Harvey B.; and Sienkiewicz, Peter M., 4,327,119, Cl. 427-74.000.
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Fry, Emanuel D.; and Siewert, Herbert G., 4,326,839, Cl. 417-295.000.
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Ross, William L., 4,326,458, Cl. 101-1.000.
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Silbernagel, Raymond A.; and Sjolander, Garry L., to Minnesota Mining and Manufacturing Company. Wire cutting electrical connector. 4,326,767, Cl. 339-98.000.
Silver, Louis. Hygienic device providing sitz bath, shower, and douche. 4,326,308, Cl. 4-420.300.
Silvey, Elmer R. In-ground, insulated swimming pool construction and method. 4,326,364, Cl. 52-169.700.
Simmons Fastener Corporation: *See*—
Schlueter, Ernest, 4,326,739, Cl. 292-247.000.
Simon, Jacques: *See*—
Henry, Raymond; Bouvet, Jean-Victor; Chapard, Alain; and Simon, Jacques, 4,326,771, Cl. 350-96.170.
Simone, Andre A.: *See*—
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Simpson, James H.: *See*—
Greenwood, Ivan A.; and Simpson, James H., 4,327,327, Cl. 324-304.000.
Singer Company, The: *See*—
Edson, Alvin W.; and Windyka, Richard A., 4,327,371, Cl. 338-10.000.
Greenwood, Ivan A.; and Simpson, James H., 4,327,327; Cl. [illegible]
Zylbert, Thaddeus J., 4,326,474, Cl. 112-184.000.

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Skinner, Dean W.: *See*—
Schaffer, Robert R.; and Skinner, Dean W., 4,326,814, Cl. 400-125.100.
Skrobisch, Alfred, to Staver Company, Inc., The. Magnetic indicator assembly. 4,327,357, Cl. 340-373.000.
SL Container Corporation: *See*—
Dunchock, Richard S., 4,326,726, Cl. 280-79.10A.
Slaugh, Lynn H.; and Hoxmeier, Ronald J., to Shell Oil Company. Process for preparing a supported molybdenum carbide composition. 4,326,992, Cl. 252-443.000.
Slavik, Raymond F., to Minnesota Diversified Products, Inc. Method and apparatus for forming a permeable insulation board for building construction. 4,326,909, Cl. 156-253.000.
Sloboda, James J.: *See*—
Fomenko, Joseph; Kuecken, John A.; and Sloboda, James J., 4,327,251, Cl. 179-1.0SM.
Smith, David G., to Q-dot Corporation. Laundry drying system and method. 4,326,344, Cl. 34-54.000.
Smith, Edward H.; Dent, Thomas H.; and Marchese, Robert T., to Westinghouse Electric Corp. Decontamination apparatus. 4,326,317, Cl. 15-302.000.
Smith, Eugene D. Pressure tester for pipes. 4,326,406, Cl. 73-49.100.
Smith, Jack R.; and Reed, Terry J., to Westinghouse Electric Corp. Combined cycle electric power plant and a gas turbine having an improved overspeed protection system. 4,327,294, Cl. 290-40.00C.
Smith, Leslie H., to Imperial Chemical Industries Limited. Alkanolamine derivatives. 4,327,113, Cl. 424-321.000.
Smith, Paul, to Beecham Group Limited. 3-Nitro-1-phenyl-1-(m-chlorophenyl)-propan-2-ol. 4,327,228, Cl. 568-705.000.
Smith, Richard L.: *See*—
Miller, Robert N.; and Smith, Richard L., 4,327,152, Cl. 428-419.000.
Smith, Stanley B., Jr.; Schleicher, Robert G.; and Dennison, Allan G., to Instrumentation Laboratory Inc. Dual monochromator type of spectroanalysis system. 4,326,802, Cl. 356-316.000.
Smith, Thomas M. Gas-fired infra-red generators and use thereof. 4,326,843, Cl. 431-264.000.
Smith Valve Corporation: *See*—
Harding, Bruce L., 4,326,754, Cl. 303-81.000.
Smith, Willis M.: *See*—
Branovich, Louis E.; Daly, Edward; Newman, Albert F.; and Smith, Willis M., 4,327,131, Cl. 427-229.000.
SmithKline Corporation: *See*—
Holden, Kenneth G.; Kaiser, Carl; and Weinstock, Joseph, 4,327,023, Cl. 260-239.0BB.
Snamprogetti, S.p.A.: *See*—
Lagana, Vincenzo; and Zardi, Umberto, 4,327,068, Cl. 423-359.000.
SNIA Viscosa Societa' Nazionale Industria Applicazioni Viscosa S.p.A.: *See*—
Senni, Paolo; and Astarita, Domenico, 4,326,925, Cl. 203-37.000.
Snyder, William R.; and Feuerstein, Diane, to Betz Laboratories, Inc. Acrylic copolymer composition inhibits scale formation and disperses oil in aqueous systems. 4,326,980, Cl. 252-180.000.
Soar, Brian, to Parks-Cramer Company. Supply strand interruption mechanism for textile yarn spinning machine. 4,326,371, Cl. 57-87.000.
Sobotta, Peter: *See*—
Wirz, Arno; Sobotta, Peter; Arendt, Franz; and Gramlich, Otto K., 4,327,135, Cl. 428-600.000.
S.A. des Etablissements Staubli (France): *See*—
Palau, Joseph, 4,326,562, Cl. 139-68.000.
Societe Anonyme Francaise du Ferodo: *See*—
Billet, Rene, 4,326,611, Cl. 192-89.00B.
Dauvergne, Jean L. R., 4,326,379, Cl. 60-550.000.
Mouza, Jean-Claude, 4,326,610, Cl. 188-218.00A.
Societe d'Etude et de Construction de Machines pour Toutes Industries S.E.C.O.M.A., Societe Anonyme: *See*—
Perraud, Raymond, 4,326,449, Cl. 91-401.000.
Societe Nationale des Poudres et Explosifs: *See*—
Leneveu, Louis; and Treneules, Didier, 4,326,901, Cl. 149-12.000.
Solomon, Elias E. Ionization detector calibration. 4,327,289, Cl. 250-252.000.
Solomon, Harvey D.: *See*—
Siemers, Paul A.; and Solomon, Harvey D., 4,327,120, Cl. 427-34.000.
Solus Ocean Systems, Inc.: *See*—
Stefens, Walter L., 4,326,821, Cl. 405-171.000.
Sone, Takanori: *See*—
Murakami, Masahiro; Kobayashi, Masateru; Sone, Takanori; and Shibuya, Chisei, 4,327,211, Cl. 544-27.000.
Sony Corporation: *See*—
Tanaka, Masato, 4,327,382, Cl. 360-13.000.
Soriano G., Vicente; Marino A., Carmin; and Valdez, Enrique R., to Comision de Fomento Minero. Process for obtaining metal values from ores containing such metals as oxides or convertible into such oxides. 4,326,884, Cl. 75-71.000.
Sorm, Miloslav: *See*—
Novak, Jan; Sorm, Miloslav; Ulbert, Karel; Nespurek, Stanislav; Mikulcova, Dagmar; and Cmolik, Jiri, 4,326,966, Cl. 252-8.800.
Sotiropoulos, Peter. Vehicle lubrication system. 4,326,604, Cl. 184-7.00C.

Souillard, Michel, to Enertec. Protective apparatus for use with power lines. 4,327,392, Cl. 361-80.000.
Southern California Edison Company: *See*—
Welz, Ronald C., 4,327,324, Cl. 324-110.000.
Southern Research Institute: *See*—
Davis, Thomas A.; and Cowsar, Donald R., 4,327,046, Cl. 264-102.000.
Southland Manufacturing Co., Inc.: *See*—
Wintringham, Henry J., 4,327,144, Cl. 428-264.000.
Southware Company: *See*—
Arp, David F.; and Pariani, Ronald L., 4,326,700, Cl. 266-219.000.
Spatial Dynamics, Ltd.: *See*—
Yukl, Tex N., 4,327,322, Cl. 323-351.000.
Spazierer, Hubert: *See*—
Botz, Jakob; Feger, Rolf; Mutschler, Erich; Spazierer, Hubert; and Weber, Adam, 4,327,264, Cl. 200-295.000.
Spector, George: *See*—
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Spectrospin AG: *See*—
Ernst, Richard R.; and Aue, Walter P., 4,327,425, Cl. 365-152.000.
Spencer, Homer K.; and Graben, Melvin M., to Sandoz, Inc. 1-Phenoxy-4-pyridylbutanes and derivatives. 4,326,879, Cl. 71-94.000.
Sperner, Franz, to W. C. Heraeus GmbH. Dental composition from gold particles, terpineol and ethyl cellulose. 4,326,889, Cl. 106-35.000.
Sperry Corporation: *See*—
Clark, Charles A., Jr., 4,327,405, Cl. 363-56.000.
Guenon, Jean-Pierre, 4,326,828, Cl. 414-39.000.
Reymersdal, Joseph V.; and Cooper, John H., 4,327,423, Cl. 365-8.000.
Sprangers, Ann M.: *See*—
Ryan, Lenore S.; Murray, Frank C.; Sprangers, Ann M.; Santoski, William J.; Sciaraffa, Michael A.; Abel, Kent W.; and Donnelly, Harold F., 4,326,528, Cl. 128-287.000.
Sprecher & Schuh AG: *See*—
Kull, Peter, 4,327,262, Cl. 200-148.00A.
Stafford, Richard W.: *See*—
Schuder, Maurice E.; and Stafford, Richard W., 4,327,259, Cl. [illegible]
Stahl, Otto; and Schulz, Horst, to Georg Menshen & Co. KG; and Riedel-de Haen Aktiengesellschaft. Screw cap for bottle-type containers. 4,326,639, Cl. 215-252.000.
Stahle, Helmut; Koppe, Herbert; Kummer, Werner; and Lillie, Christian, to Boehringer Ingelheim GmbH. 2-(Phenyl-amino)-2-imidazolines and salts. 4,327,106, Cl. 424-273.00R.
STAMAG Stadkauer Malzfabrik Aktiengesellschaft: *See*—
Weith, Alois, 4,327,116, Cl. 426-19.000.
Standard Change-Makers, Inc.: *See*—
Bayne, Robert T.; and Shireman, Phillip E., 4,326,643, Cl. 221-13.000.
Standard Oil Company, The: *See*—
Feldman, Daniel W., 4,327,002, Cl. 524-114.000.
Grasselli, Robert K.; Suresh, Dev D.; and Hardman, Harley F., 4,327,037, Cl. 260-465.300.
Standard Oil Company (Indiana): *See*—
Klotz, Marvin R., 4,327,236, Cl. 585-481.000.
Meyer, James S.; Robinson, Ken K.; Forgac, John M.; and Tatterson, David F., 4,326,944, Cl. 208-8.00R.
Wilder, Lawrence B., 4,326,586, Cl. 166-285.000.
Stauffer Chemical Company: *See*—
Gutman, Arnold D., 4,327,218, Cl. 546-291.000.
Stauffer, Robert. Massaging device. 4,326,508, Cl. 128-57.000.
Staupendahl, Gerhard: *See*—
Uerpmann, Ernst-Peter; Staupendahl, Gerhard; and Schmidt, Manfred, 4,326,820, Cl. 405-128.000.
Staver Company, Inc., The: *See*—
Skrobisch, Alfred, 4,327,357, Cl. 340-373.000.
Stearns, Charles F.; Chapski, David L.; and Vosseller, Kenneth F., to United Technologies Corporation. Governorless gas turbine fuel control. 4,326,376, Cl. 60-39.28R.
Steckler, Steven A.: *See*—
Balaban, Alvin R.; and Steckler, Steven A., 4,327,376, Cl. 358-159.000.
Steelyamamoto International Company Ltd.: *See*—
Sala, Franco, 4,326,609, Cl. 188-196.0BA.
Stefens, Walter L., to Solus Ocean Systems, Inc. Installing submerged pipeline. 4,326,821, Cl. 405-171.000.
Steffel, Charles R.; and Taylor, Bruce C., to Akron City Hospital. Circuit and method for the radiotelemetry of esophageal pH in an ECG radiotelemetry system. 4,326,535, Cl. 128-631.000.
Stein, Frederick, to Lichtman, Sandra. Portable door lock. 4,326,394, Cl. 70-14.000.
Steinbach, Robert L., to Chicago Lock Co. Plate tumbler for a cylinder lock mechanism. 4,326,396, Cl. 70-364.00R.
Steinhagen, Horst G.: *See*—
Black, James B.; Behlke, Darwin D.; and Steinhagen, Horst G., 4,326,433, Cl. 74-740.000.
Stephens, Stanley W., to Badalex Limited. Manufacture of electric light sources. 4,326,324, Cl. 29-25.190.
Stephenson, Earle W., to Kennametal Inc. Tool for earthworking machine. 4,326,592, Cl. 172-123.000.
Stephenson, Roger. Variable-speed transmission device with positive action. 4,326,431, Cl. 74-63.000.
Sterling Drug Inc.: *See*—
Archer, Sydney, 4,327,224, Cl. 560-142.000.
Bailey, Denis M., 4,327,022, Cl. 260-239.00B.

Stetter, Joseph R.; and Rutt, Donald R., to Becton, Dickinson and Company. Method and device for the detection and measurement of electrochemically active compounds. 4,326,927, Cl. 204-1.00T.
Stevens, Barry: *See*—
Nyman, Frederick R.; Stevens, Barry; and Calamari, James A., Jr., 4,327,048, Cl. 264-107.000.
Stevenson, Robert A.: *See*—
Crooks, Stephen J.; and Stevenson, Robert A., 4,327,256, Cl. 179-[illegible]
Stewart, David G.: *See*—
Ball, William J.; Cotton, Leonard; and Stewart, David G., 4,327,190, Cl. 518-714.000.
Stewart, Lindsay G.: *See*—
McAllister, John H.; Stewart, Lindsay G.; Gladysz, Carl V.; and Wilson, Jim, 4,326,887, Cl. 75-257.000.
Stohr, Gunter: *See*—
Kratel, Gunter; Dummer, Gerhard; Niessner, Peter; Grune, Burkhard; and Stohr, Gunter, 4,326,852, Cl. 23-293.00R.
Stokes, Anthony D. Gas recovery. 4,326,867, Cl. 62-10.000.
Stoll, Kurt. Band-feeding device. 4,326,658, Cl. 226-141.000.
Stone, H. Spencer. Visor-connected tape cartridge holder. 4,326,653, Cl. 224-312.000.
Stott, Paul E.: *See*—
West, Robert W.; Stott, Paul E.; and Ahnemiller, James, 4,327,196, Cl. 521-120.000.
Stover, William A.: *See*—
Chester, Arthur W.; and Stover, William A., 4,326,993, Cl. 252-455.00Z.
Stratton, Roy F.; and Calucci, Edward J., to United States of America, Air Force. Face plate for cathode ray tube. 4,327,306, Cl. 313-419.000.
Streb, Herbert R., to United States of America, Navy. High velocity exhaust diffuser and water baffle. 4,326,374, Cl. 60-39.09P.
Strecker, Dennis C. Hydraulic exerciser. 4,326,707, Cl. 272-130.000.
Strickler, John R.: *See*—
Chiu, Kuen-Wai; and Strickler, John R., 4,327,071, Cl. 423-646.000.
Strugala, Alfred; Schilling, Robert; and Adamaszek, Dieter, to Thyssen Industrie AG. Multiple mandrel-ring rolling machine. 4,326,397, Cl. 72-110.000.
Strupczewski, Joseph T.: *See*—
Helsley, Grover C.; Strupczewski, Joseph T.; and Gardner, Beth A., 4,327,103, Cl. 424-267.000.
Stucki, Samuel: *See*—
Banziger, Robert; Isenschmid, Roland; Menth, Anton; Muller, Rene; and Stucki, Samuel, 4,326,943, Cl. 204-290.00F.
Nagel, Hartmut; and Stucki, Samuel, 4,326,930, Cl. 204-20.000.
Student, Joseph J., deceased: *See*—
Gregory, Floyd A.; Manning, Donald F.; Oranchak, William; and Student, Joseph J., deceased, 4,326,656, Cl. 226-59.000.
Student, Sophie A., administratrix: *See*—
Gregory, Floyd A.; Manning, Donald F.; Oranchak, William; and Student, Joseph J., deceased, 4,326,656, Cl. 226-59.000.
Stupak, Elliot: *See*—
Rosenkrantz, Bernard E.; and Stupak, Elliot, 4,327,087, Cl. 424-180.000.
Suarato, Antonino: *See*—
Bernardi, Luigi; Masi, Paolo; Suarato, Antonino; and Arcamone, Federico, 4,327,029, Cl. 260-351.100.
Sugai, Hiroshi; and Nakayama, Shoji, to Kabushiki Kaisha Morita Seisakusho. Dental handpiece. 4,326,846, Cl. 433-132.000.
Sugawara, Norio: *See*—
Nawa, Motoyuki; Sugawara, Norio; and Takahashi, Yutaka, 4,326,452, Cl. 98-40.0VT.
Sugaya, Takao: *See*—
Yamashita, Chikao; Sugaya, Takao; and Yoshida, Noriyuki, 4,326,472, Cl. 112-158.00D.
Sugimoto, Hiroaki: *See*—
Kato, Yasuyuki; Suzuki, Haruo; Kondo, Masatsune; Sugimoto, Hiroaki; Kimura, Junichi; and Saito, Zyunso, 4,327,205, Cl. 528-128.000.
Sugitani, Toshio: *See*—
Mochizuki, Daisuke; and Sugitani, Toshio, 4,326,550, Cl. 133-2.000.
Sugiura, Hideaki: *See*—
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Sugiura, Yoji: *See*—
Uchiyama, Takashi; Suzuki, Ryoichi; Saito, Syuichiro; and Sugiura, Yoji, 4,326,786, Cl. 354-234.000.
Sugiyama, Yoshiki: *See*—
Kato, Kunio; Sugiyama, Yoshiki; and Enomoto, Ryo, 4,327,067, Cl. 423-345.000.
Suhara, Manabu; and Arai, Kiyotaka, to Asahi Glass Company, Ltd. Solution of fluorinated polymer having carboxylic acid salt groups. 4,327,010, Cl. 524-388.000.
Suhara, Yasuji: *See*—
Shinma, Nobuo; Umeda, Isao; Ishitsuka, Hideo; and Suhara, Yasuji, 4,327,088, Cl. 424-180.000.
Sullivan, Robert J.: *See*—
Neumeier, Karl E.; and Sullivan, Robert J., 4,326,937, Cl. 204-[illegible]
Sulzer Brothers Limited: *See*—
Muller, Otto, 4,326,956, Cl. 210-277.000.
Sumitomo Chemical Company, Limited: *See*—
Kato, Yasuyuki; Suzuki, Haruo; Kondo, Masatsune; Sugimoto, Hiroaki; Kimura, Junichi; and Saito, Zyunso, 4,327,205, Cl. 528-128.000.

Mizutani, Masato; Tsushima, Kazunori; Sanemitsu, Yuzuru; and Hirano, Masachika, 4,327,094, Cl. 424-249.000.

Mizutani, Toshio; Itaya, Nobushige; Ohno, Nobuo; Matsuo, Takashi; Kitamura, Shigeyoshi; and Okuno, Yositosi, 4,327,109, Cl. 424-175.000.

Suzuki, Yukio, 4,327,038, Cl. 260-501.160.

Sumitomo Electric Industries, Ltd.: *See—*

Kamijo, Eiji; Murakami, Kazuhito; and Tani, Katsuto, 4,326,931, Cl. 204-22.000.

Kurosaki, Shiro; Watanabe, Minoru; and Usui, Yuichi, 4,326,869, Cl. 65-3.140.

Saito, Yasunori, 4,327,242, Cl. 174-11.00R.

Sumitomo Metal Industries Ltd.: *See—*

Chikata, Tsukasa; Sunami, Yoshihiko; Sasaki, Keiichi; and Nishioka, Kunihiko, 4,326,946, Cl. 208-93.000.

Summo, Arthur M., to Branson Ultrasonics Corporation. Method for securing parts together by ultrasonic energy. 4,326,903, Cl. 156-73.100.

Sunami, Yoshihiko: *See—*

Chikata, Tsukasa; Sunami, Yoshihiko; Sasaki, Keiichi; and Nishioka, Kunihiko, 4,326,946, Cl. 208-93.000.

Sundeen, Joseph E.; and Dejneka, Tamara, to E. R. Squibb & Sons, Inc. N-Substituted mercaptoacyl pripionamides. 4,327,111, Cl. 424-178.000.

Sunsetl, Ltd.: *See—*

Guibert, Raul, 4,327,279, Cl. 219-400.000.

Suntech, Inc.: *See—*

Davis, Brian C.; and Bryer, Robert P., 4,327,021, Cl. 524-297.000.

Suresh, Dev D.: *See—*

Grasselli, Robert K.; Suresh, Dev D.; and Hardman, Harley F., 4,327,037, Cl. 260-465.300.

Surkamp, Paul: *See—*

Brock, Josef; and Surkamp, Paul, 4,326,563, Cl. 139-76.000.

Sussman, Milton H.: *See—*

Rybicki, Edward B.; and Sussman, Milton H., 4,326,779, Cl. 330-414.000.

Suszylo, Jacky, to Compagnie Industrielle des Telecommunications Cit-Alcatel. Keypad caller for a telephone set. 4,327,255, Cl. 179-90.00K.

Suzuki, Haruo: *See—*

Kato, Yasuyuki; Suzuki, Haruo; Kondo, Masatsune; Sugimoto, Hiroaki; Kimura, Junichi; and Saito, Zyunso, 4,327,205, Cl. 318-128.000.

Suzuki, Hideo, to Nippon Gakki Seizo Kabushiki Kaisha. Electronic musical instruments with tone color selection. 4,326,442, Cl. 84-1.190.

Suzuki, Hiroaki; and Kurihara, Michio, to Tokyo Shibaura Denki Kabushiki Kaisha. Constant current circuit. 4,327,321, Cl. 323-313.000.

Suzuki, Koji: *See—*

Tajima, Hatsuo; Iwami, Naoki; Masuda, Shunichi; Shimizu, Katsuichi; Kawatsura, Yoshihiro; Suzuki, Koji; and Yokomizo, Yoshikazu, 4,326,795, Cl. 355-14.00E.

Suzuki, Makoto: *See—*

Katoh, Tsuneyuki; Hiraga, Keishiro; Seki, Junji; and Suzuki, Makoto, 4,327,149, Cl. 428-332.000.

Suzuki, Nagatoshi. Air cleaner for engines, having back flow gas shut-off function. 4,326,862, Cl. 55-127.000.

Suzuki, Ryoichi: *See—*

Uchiyama, Takashi; Suzuki, Ryoichi; Saito, Syuichiro; and Sugiura, Yoji, 4,326,786, Cl. 354-234.000.

Suzuki, Toshio: *See—*

Hosokawa, Yasuhiko; Katsuki, Kanji; and Suzuki, Toshio, 4,327,314, Cl. 318-722.000.

Suzuki, Toshitatsu, to Ricoh, Co., Ltd. Focusing detection device. 4,327,284, Cl. 250-204.000.

Suzuki, Yukio, to Sumitomo Chemical Company, Limited. Method for preparing optically active 2,2-dimethyl-3-(2,2-dichlorovinyl)cyclopropanecarboxylic acid. 4,327,038, Cl. 260-501.160.

Svensson, Gunnar, to AB Svenska Flaktfabriken. Joint system for walls, doors and the like. 4,326,365, Cl. 52-204.000.

Svensson, Leif O. G.: *See—*

von Dardel, Guy; Henning, Sten A.; and Svensson, Leif O. G., 4,327,065, Cl. 423-338.000.

Sverdrup & Parcel and Associates, Inc.: *See—*

Gundersen, Ray S.; Colledge, Ronald J.; Jenkins, Roy H.; and Crook, Michael, 4,326,425, Cl. 73-863.530.

Swanson, David; and Edgren, David, to ALZA Corporation. Osmotic device that improves delivery properties of agent in situ. 4,326,525, Cl. [illegible]

Swanson, Kris E.: *See—*

Frissell, John M.; and Swanson, Kris E., 4,327,408, Cl. 364-200.000.

Sweeney, William M., to Texaco Inc. Filter for an internal combustion engine having rejuvenation capabilities. 4,326,378, Cl. 60-311.000.

Swisher, Scott N.; and Furman, Edward L., to Motorola, Inc. Active power supply ripple filter. 4,327,319, Cl. 323-303.000.

Swiss Aluminium Ltd.: *See—*

Baur, Rudolf, 4,326,974, Cl. 252-49.500.

Horn, Werner; and Hennings, Jurgen, 4,326,895, Cl. 148-11.50A.

Schmidt-Hatting, Wolfgang, 4,326,939, Cl. 204-228.000.

Sze, Morgan C.; and Simone, Andre A., to Lummus Company, The. Coke production from liquid derived from sub-bituminous and/or lignitic coal. 4,326,853, Cl. 44-1.00F.

Szente, Andre': *See—*

Branca, Quirico; Fischli, Albert E.; and Szente, Andre', 4,327,026, Cl. 260-239.30D.

T & R Chemicals, Inc.: *See—*

Alvarez, Jose A. A., 4,327,083, Cl. 424-162.000.

Tabacchi, Frank E. Device and process for fruit tree insect control. 4,326,359, Cl. 47-58.000.

Tachibana, Akifumi: *See—*

Hotta, Mitsuhiko; Tachibana, Akifumi; and Shigihara, Takanori, 4,327,427, Cl. 367-118.000.

Tada, Takeo; Honda, Katsuji; and Hirata, Yoshifumi, to TDK Electronics Co., Ltd. Anisotropic polymeric magnet in the tubular form and process for producing the same. 4,327,346, Cl. 335-296.000.

Taiho Kogyo Co., Ltd.: *See—*

Nozue, Shigehiro; Fukuoka, Tatsuhiko; and Sugiura, Hideaki, 4,326,758, Cl. 308-170.000.

Tajima, Hatsuo; Iwami, Naoki; Masuda, Shunichi; Shimizu, Katsuichi; Kawatsura, Yoshihiro; Suzuki, Koji; and Yokomizo, Yoshikazu, to Canon Kabushiki Kaisha. Image forming process and apparatus therefor. 4,326,795, Cl. 355-14.00E.

Takagi, Hideo: *See—*

Ueda, Akiyoshi; Takagi, Hideo; and Ohkuma, Kazuhiko, 4,326,881, Cl. 71-95.000.

Takahashi, Katsutoshi: *See—*

Matsuda, Akira; Yoshioka, Osamu; Takahashi, Katsutoshi; Yoshida, Kooichi; and Ninomiya, Hiroshi, 4,327,081, Cl. 424-81.000.

Takahashi, Masao: *See—*

Hattori, Katsuhide; Fukatsu, Yoshiaki; and Takahashi, Masao, 4,326,900, Cl. 149-2.000.

Takahashi, Yasuhiro, to Ricoh Company, Ltd. Original sheet circulation apparatus of copying machine. 4,326,705, Cl. 271-9.000.

Takahashi, Yutaka: *See—*

Nawa, Motoyuki; Sugawara, Norio; and Takahashi, Yutaka, 4,326,452, Cl. 98-40.0VT.

Takamatsu, Toshiaki: *See—*

Minezaki, Shigehiro; Takamatsu, Toshiaki; and Kozaki, Shuichi, 4,326,929, Cl. 204-15.000.

Takano, Shuntaro: *See—*

Saikawa, Isamu; Takano, Shuntaro; Yoshida, Chosaku; Takashima, Okuta; Momonoi, Kaishu; Kuroda, Seietsu; Komatsu, Miwako; Yasuda, Takashi; and Kodama, Yutaka, 4,327,097, Cl. 424-250.000.

Takase, Tsutomu: *See—*

Masuda, Takayoshi; Honjo, Masaru; Takase, Tsutomu; and Watanabe, Yoshimoto, 4,327,183, Cl. 435-274.000.

Takashima, Okuta: *See—*

Saikawa, Isamu; Takano, Shuntaro; Yoshida, Chosaku; Takashima, Okuta; Momonoi, Kaishu; Kuroda, Seietsu; Komatsu, Miwako; Yasuda, Takashi; and Kodama, Yutaka, 4,327,097, Cl. 424-250.000.

Takeda Chemical Industries, Ltd.: *See—*

Iwamoto, Seigo; and Saito, Eiichi, 4,327,017, Cl. 260-105.000.

Takeshita, Mikio; and Tashiro, Hiroyuki, to Nippondenso Co., Ltd. Liquid-level gauge for vehicles. 4,326,413, Cl. 73-313.000.

Takken, Edward H., to United States of America, Navy. Phase-slipped time delay and integration scanning system. 4,327,377, Cl. 355-199.000.

Tamura, Kazutaka. Weeding tool. 4,326,743, Cl. 294-55.500.

Tamura, Yasushi, to Sankyo Electric Company Limited. Temperature control circuit for automobile air-conditioning system. 4,326,386, Cl. 62-158.000.

Tamura, Zensuke: *See—*

Fujiwara, Kiyoshi; Nagatomo, Katsuaki; Yoshinaga, Shoji; Tamura, Zensuke; Shibata, Fumio; and Kanekiyo, Hiroshi, 4,326,666, Cl. 233-15.000.

Tanabe, Osamu, to Dainippon Screen Manufacturing Co., Ltd. Method of producing printed circuit boards. 4,327,167, Cl. 430-31.000.

Tanabe Seikaku Co., Ltd.: *See—*

Mushika, Yoshitaka; Tani, Junichi; Yamaguchi, Totaro; and Ohshima, Satoshi, 4,327,101, Cl. 424-258.000.

Tanaka, Haruyuki: *See—*

Ito, Hiroshi; and Tanaka, Haruyuki, 4,326,715, Cl. 273-88.000.

Tanaka, Hideki: *See—*

Sato, Eiji; Arai, Nobukatsu; Tanaka, Hideki; Fukushima, Toshihiko; and Nakajima, Tadakatsu, 4,326,391, Cl. 62-402.000.

Tanaka, Hiroshi: *See—*

Matsui, Hisanori; Tanaka, Hiroshi; Yabutani, Kunihiro; and Kurono, Hitoshi, 4,327,223, Cl. 549-39.000.

Tanaka, Kenichi, to Kakuichi Company Ltd. Process for manufacturing synthetic resin hose having a reinforcing member embedded therein and apparatus thereof. 4,326,905, Cl. 156-149.000.

Tanaka, Mamoru: *See—*

Fujikubo, Yoshitake; and Tanaka, Mamoru, 4,327,316, Cl. 320-2.000.

Tanaka, Masafumi, to Hitachi Denshi Kabushiki Kaisha. Frequency converter. 4,327,445, Cl. 455-118.000.

Tanaka, Masato, to Sony Corporation. Method and apparatus for editing digital signals recorded on a record medium. 4,327,382, Cl. 360-13.000.

Tanaka, Satoru; Shimada, Katsutoshi; Hashimoto, Kazunori; Ema, Kiichi; and Ueda, Koichiro, to Eisai Co., Ltd. Cyanoguanidine derivatives. 4,327,217, Cl. 546-281.000.

Tanaka, Takanori; and Morishita, Masanobu, to Nippon Electric Co., Ltd. Automatic iris control for solid-stage imaging apparatus. 4,327,378, Cl. 358-228.000.

Tanaka, Yoshikatu: *See—*

Mituhashi, Kazuyuki; Matumoto, Kunio; Shirai, Haruo; and Tanaka, Yoshikatu, 4,327,247, Cl. 174-68.500.

Tandy Corporation: *See—*

Kumazaki, Katsuaki, 4,327,254, Cl. 179-84.00T.

Tang, Phillip H., to Amtel, Inc. Single leg mooring terminal. 4,326,312, Cl. 441-5.000.

Tani, Junichi: *See—*

Mushika, Yoshitaka; Tani, Junichi; Yamaguchi, Totaro; and Ohshima, Satoshi, 4,327,101, Cl. 424-258.000.

Tani, Katsuto: *See—*

Kamijo, Eiji; Murakami, Kazuhito; and Tani, Katsuto, 4,326,931, Cl. 204-22.000.

Tanigawa, Nobuyoshi: *See—*

Fujimura, Kensuke; Yamamoto, Naomichi; Ogawa, Masahiro; and Tanigawa, Nobuyoshi, 4,327,059, Cl. 422-259.000.

Tanner, John D. Synthetic firelog. 4,326,854, Cl. 44-10.00B.

Tashiro, Hiroyuki: *See—*

Takeshita, Mikio; and Tashiro, Hiroyuki, 4,326,413, Cl. 73-313.000.

Tatch, Fred G. Fairing for ground-travelling vehicle. 4,326,728, Cl. 280-289.00S.

Tate, Benjamin. Bottle carrier. 4,326,629, Cl. 206-203.000.

Tatterson, David F.: *See—*

Meyer, James S.; Robinson, Ken K.; Forgac, John M.; and Tatterson, David F., 4,326,944, Cl. 208-8.00R.

Taumann, Leonhard, to Siemens Medical Laboratories, Inc. Electron accelerator and target with collimator. 4,327,293, Cl. 250-505.000.

Taylor, Bruce C.: *See—*

Steffel, Charles R.; and Taylor, Bruce C., 4,326,535, Cl. 128-631.000.

TDK Electronics Co., Ltd.: *See—*

Hirayama, Hiromitsu, 4,327,348, Cl. 336-184.000.

Tada, Takeo; Honda, Katsuji; and Hirata, Yoshifumi, 4,327,346, Cl. 335-296.000.

Technology Glass Corporation: *See—*

Miltenberger, Charles W.; Lucas, Edward J.; and Schreier, Ulrich, 4,326,872, Cl. 65-112.000.

Tecumseh Products Company: *See—*

Fry, Emanuel D.; and Siewert, Herbert G., 4,326,839, Cl. 417-295.000.

Teixeira, Manuel G.; and Valois, Rene J., to Lessona Corporation. Loom stop motion system and method. 4,326,564, Cl. 139-370.200.

Temple, Victor A. K., to Electric Power Research Institute, Inc. Thyristor with even turn-on line potential and method with 1-micron to 5-mil wide alignment region band. 4,327,367, Cl. 357-38.000.

Terada, Jiro; and Nitta, Tsuneharu, to Matsushita Electric Industrial Co., Ltd. Humidity detecting apparatus. 4,326,414, Cl. 73-336.500.

Tetro, Richard S.; and Harmon, Paul E., to Black Clawson Company, The. Web cutter for a surface winder. 4,326,680, Cl. 242-56.00A.

Tetro, Richard S.: *See—*

Phelps, Richard W.; and Tetro, Richard S., 4,326,679, Cl. 242-56.00A.

Teuber, Michael: *See—*

Moebus, Otto; Teuber, Michael; and Kiesbye, Peter, 4,327,179, Cl. 435-42.000.

Texaco Development Corporation: *See—*

Burns, Robert B., 4,326,595, Cl. 175-9.000.

Hunter, Walter D., 4,326,969, Cl. 252-8.55D.

Muenger, James R.; Child, Edward T.; and Brent, Albert, 4,326,856, Cl. 48-197.00R.

Texaco Inc.: *See—*

Donner, Gary L., 4,326,806, Cl. 356-410.000.

Hammond, Kenneth G.; and Chafetz, Harry, 4,326,973, Cl. 252-34.000.

Sweeney, William M., 4,326,378, Cl. 60-311.000.

Zang, Hyung K., 4,326,948, Cl. 208-177.000.

Texas Instruments Incorporated: *See—*

Bradshaw, David H., 4,327,441, Cl. 375-113.000.

Chapman, Richard A.; Kinch, Michael A.; and Hynecek, Jaroslav, 4,327,291, Cl. 250-332.000.

Guterman, Daniel C., 4,326,331, Cl. 29-571.000.

McAdams, Hugh P., 4,327,426, Cl. 365-203.000.

McElroy, David J., 4,326,329, Cl. 29-571.000.

Th. Goldschmidt AG: *See—*

Fink, Hans-Ferdi; and Freiberger, Rolf, 4,326,999, Cl. 524-261.000.

Thene, Anthony A. Aggregate distributor. 4,326,673, Cl. 239-657.000.

Thermatool Corporation: *See—*

Rudd, Wallace C., 4,326,583, Cl. 165-183.000.

Thermowag AG: *See—*

Werner, Beat, 4,326,366, Cl. 52-220.000.

Thoma, Andreas, to Apparatebau Gauting GmbH. Method and apparatus for measuring the risk of ice formation. 4,327,286, Cl. 250-231.00R.

Thomas, Dale C.: *See—*

Lavery, Lawrence P.; Wilcox, David G.; and Thomas, Dale C., 4,326,646, Cl. 222-56.000.

Thompson, Kenneth P.; and Ihde, Richard C., to Champion International Corporation. Polymeric multi-layer sheet material and tray. 4,327,136, Cl. 428-35.000.

Thompson, Phillip B.; and Roberts, Hill W., to McDonnell Douglas Corporation. Speaker bezel/retainer. 4,326,599, Cl. 181-175.000.

Thomson-CSF: *See—*

Becavin, Henri; Bailly, Alain; and Lemerle, Philippe, 4,327,334, Cl. 333-1.000.

Bert, Alain, 4,327,339, Cl. 331-107.00P.

Hartemann, Pierre, 4,326,423, Cl. 73-861.630.

Henry, Raymond; Bouvet, Jean-Victor; Chapard, Alain; and Simon, Jacques, 4,326,771, Cl. 350-96.170.

LePage, Joel; Laviron, Michel; and Derewonko, Henri, 4,326,330, Cl. 29-571.000.

Micheron, Francois, 4,327,153, Cl. 428-421.000.

Thomson, John G., to Gall Thomson Maritime Limited. Breakaway coupling. 4,326,555, Cl. 137-68.00R.

Thorud, Richard A., to Toro Company, The. Rotary lawn mower. 4,326,370, Cl. 56-202.000.

Thurlow, John F., to Dennison Manufacturing Company. Transfer coating methods, compositions and products. 4,327,128, Cl. 427-153.000.

Thyssen Industrie AG: *See—*

Strugala, Alfred; Schilling, Robert; and Adamaszek, Dieter, 4,326,397, Cl. 72-110.000.

Tillinghast, John A., to Wheelabrator-Frye, Inc. Capillary processing unit. 4,327,058, Cl. 422-232.000.

Timmler, Helmut; Buchel, Karl; Brandes, Wilhelm; Frohberger, Paul-Ernst; and Scheinpflug, Hans, to Bayer Aktiengesellschaft. 1-Phenyl-2-(1,2,4-triazolyl-1-yl)-ethyl ether. 4,327,104, Cl. 424-269.000.

Timmons, John P., to Schlumberger Limited. Well logging data processing technique. 4,327,412, Cl. 364-422.000.

Tintignac, Jean P.: *See—*

Georgen, Daniel; and Tintignac, Jean P., 4,327,118, Cl. 426-656.000.

TMX Systems Limited: *See—*

Court, Patrick R. J., 4,327,444, Cl. 455-100.000.

Toa Nenryo Kogyo Kabushiki Kaisha: *See—*

Okumura, Yoshiharu; Furukawa, Hiroshi; and Kaneko, Katsumi, 4,327,231, Cl. 568-899.000.

Toda, Yuzo; Kobayashi, Hidetoshi; and Koizumi, Junji, to Fuji Photo Film Co., Ltd. Silver halide color photographic light-sensitive material. 4,327,175, Cl. 430-546.000.

Toki, Tadaaki: *See—*

Haga, Takahiro; Toki, Tadaaki; Koyanagi, Toru; and Imai, Osamu, 4,327,089, Cl. 424-200.000.

Tokunaga, Kaoru: *See—*

Ohara, Susumu; Horiki, Akira; Miyazaki, Katsuyuki; and Tokunaga, Kaoru, 4,327,436, Cl. 370-110.100.

Tokyo Eizai Laboratory Co. Ltd.: *See—*

Usukura, Koji, 4,326,509, Cl. 128-90.000.

Tokyo Shibaura Denki Kabushiki Kaisha: *See—*

Asaba, Shuuji; Nemoto, Minoru; Ushimi, Kenji; and Ono, Akira, 4,327,275, Cl. 219-121.0LD.

Ikeda, Takashi; and Ayano, Shinya, 4,326,832, Cl. 415-219.00R.

Komatsu, Michiyasu; Tsuge, Akihiko; Komeya, Katsutoshi; and Ando, Akio, 4,327,187, Cl. 501-97.000.

Nishimura, Fuminobu, 4,326,794, Cl. 355-3.00R.

Ozu, Masao; Morita, Keiichi; and Itoh, Hiroshi, 4,326,868, Cl. 62-324.600.

Saito, Tutomu; and Yamaguchi, Ryoji, 4,327,287, Cl. 250-234.000.

Seimiya, Motoo, 4,327,066, Cl. 423-345.000.

Suzuki, Hiroaki; and Kurihara, Michio, 4,327,321, Cl. 323-315.000.

Uchida, Yukimasa, 4,327,368, Cl. 357-42.000.

Tokyo Shibaura Electric Co., Ltd.: *See—*

Gomi, Hiroshi, 4,327,373, Cl. 358-28.000.

Kigawa, Teruo, 4,326,473, Cl. 112-158.00E.

Tomaro, John W., to Conair Corporation. Simplified multiple speed hair dryer. 4,327,278, Cl. 219-364.000.

Tomatis, Alfred A. A. A. Apparatus for conditioning hearing. 4,327,252, Cl. 179-1.00N.

Tomeczek, Kazimiera D.: *See—*

Levine, Aaron W.; Tomeczek, Kazimiera D.; and Harper, Stanley A., 4,327,123, Cl. 427-64.000.

Tomen, Dan. Quick transfer tow bar. 4,326,730, Cl. 280-502.000.

Tomimoto, Tetsuo: *See—*

Matsuda, Yoshiteru; Tomimoto, Tetsuo; and Nagaoka, Yoshitomo, 4,327,374, Cl. 358-28.000.

Tomino, Naoki: *See—*

Tsukamoto, Masaaki; Ohkubo, Yuji; and Tomino, Naoki, 4,326,785, Cl. 354-60.00F.

Tomita, Masao; Isaka, Takenobu; Mino, Mineo; and Fujisawa, Kiyoji, to Matsushita Electric Industrial Co., Ltd. Rotary head type magnetic tape recording reproducing apparatus. 4,327,384, Cl. 360-77.000.

Toms, Maxwell H., to Commonwealth of Australia. Time delay device. 4,326,461, Cl. 102-277.000.

Tomy Kogyo Co., Inc.: *See—*

Minami, Koichi; and Watanabe, Hiroyuki, 4,326,721, Cl. 273-313.000.

Watanabe, Saburo, 4,326,355, Cl. 46-44.000.

Tong, S. N.: *See—*

Hao, Paul L. C.; Hsu, W. W.; Lin, W. S.; Tong, S. N.; Hung, H. K.; and Chang, M. C., 4,327,003, Cl. 523-336.000.

Toro Company, The: *See—*

Thorud, Richard A., 4,326,370, Cl. 56-202.000.

Toyama Chemical Co., Ltd.: *See—*

Saikawa, Isamu; Takano, Shuntaro; Yoshida, Chosaku; Takashima, Okuta; Momonoi, Kaishu; Kuroda, Seietsu; Komatsu, Miwako; Yasuda, Takashi; and Kodama, Yutaka, 4,327,097, Cl. 424-250.000.

Toyama, Kohji; Fuchigami, Mitsuru; Nagayasu, Isao; and Tsukahara, Hirokazu, to Mitsubishi Paper Mills, Ltd. Self-contained color forming pressure sensitive record paper of the single coating type. 4,327,148, Cl. 428-320.800.

Toyama, Masamichi: *See—*

Hirata, Noritsugu; Toyama, Masamichi; Okajima, Hidekazu; and Nishimura, Akimasa, 4,326,790, Cl. 354-288.000.

Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
  Chuwman, Tsutomu, 4,326,607, Cl. 188-79.50S.
  Morisawa, Kunio, 4,326,816, Cl. 403-228.000.
Tozawa, Yukio: *See—*
  Mizumoto, Yasuhiro; Tozawa, Yukio; Kozima, Masatoshi; and Hirai, Masaru, 4,326,576, Cl. 152-356.00R.
Tran, Luan G.; Effler, Timothy A.; and Wat, Karen K., to Mattel, Inc. Electronic maze game. 4,326,719, Cl. 273-238.000.
Transtech International Corporation: *See—*
  Wang, Gary Y., 4,327,421, Cl. 364-900.000.
Trautmann, Harry J.: *See—*
  Pilesi, William D.; and Trautmann, Harry J., 4,326,421, Cl. 71-452.000.
Treneules, Didier: *See—*
  Leneveu, Louis; and Treneules, Didier, 4,326,901, Cl. 149-12.000.
Tresper, Erhard: *See—*
  Lehr, Gunter; Hucks, Uwe; Vernaleken, Hugo; Nielinger, Werner; and Tresper, Erhard, 4,327,208, Cl. 528-323.000.
TRW Inc.: *See—*
  Meyers, Robert A., 4,327,070, Cl. 423-555.000.
Tse, Brian H. Vertically positioning window shading system. 4,326,577, Cl. 160-133.000.
Tsuboi, Takashi; Okamatsu, Shigetoshi; Ibamoto, Masahiko; Narita, Hiroshi; and Kozu, Eiji, to Hitachi, Ltd. Control apparatus for electric car. 4,327,313, Cl. 318-52.000.
Tsuchida, Tsuyoshi: *See—*
  Akimoto, Keiichi; and Tsuchida, Tsuyoshi, 4,326,337, Cl. 33-174.0PA.
Tsuge, Akihiko: *See—*
  Komatsu, Michiyasu; Tsuge, Akihiko; Komeya, Katsutoshi; and Ando, Akio, 4,327,187, Cl. 501-97.000.
Tsukahara, Hirokazu: *See—*
  Toyama, Kohji; Fuchigami, Mitsuru; Nagayasu, Isao; and Tsukahara, Hirokazu, 4,327,148, Cl. 428-320.800.
Tsukamoto, Masaaki; Ohkubo, Yuji; and Tomino, Naoki, to Nippon Kogaku K.K. Camera having a connector common to a flash bulb unit and an electronic flash unit. 4,326,785, Cl. 354-60.00F.
Tsushima, Kazunori: *See—*
  Mizutani, Masato; Tsushima, Kazunori; Sanemitsu, Yuzuru; and Hirano, Masachika, 4,327,094, Cl. 424-249.000.
Tsutsui, Kyoji: *See—*
  Sasaki, Masaomi; Ohta, Masafumi; and Tsutsui, Kyoji, 4,327,020, Cl. 260-160.000.
Tucker, Trevor W.: *See—*
  Cornish, William D.; and Tucker, Trevor W., 4,327,336, Cl. 331-8.000.
Tufts, Robert A.: *See—*
  Schillerstrom, Merl S.; and Tufts, Robert A., 4,326,369, Cl. 56-41.000.
Tuller, Harold W.: *See—*
  Vanderkooi, Nicholas, Jr.; and Tuller, Harold W., 4,327,007, Cl. 524-115.000.
Turley, Patricia A.: *See—*
  Capuano, Italo A.; Turley, Patricia A.; and DuBord, Edward W., 4,326,850, Cl. 23-230.00R.
Turner, Gary A., to Bell Telephone Laboratories, Incorporated. High capacity elastic store having continuously variable delay. 4,327,411, Cl. 364-900.000.
Twin Disc, Incorporated: *See—*
  Black, James B.; Behlke, Darwin D.; and Steinhagen, Horst G., 4,326,433, Cl. 74-740.000.
Tyler Refrigeration Corporation: *See—*
  Ibrahim, Fayez F., 4,326,385, Cl. 62-82.000.
UBE Industries Ltd.: *See—*
  Fujimura, Kensuke; Yamamoto, Naomichi; Ogawa, Masahiro; and Tanigawa, Nobuyoshi, 4,327,059, Cl. 422-259.000.
  Iwai, Tadashi; Mizuno, Hisayuki; and Miura, Masao, 4,327,062, Cl. 423-292.000.
Uchida, Yukimasa, to Tokyo Shibaura Denki Kabushiki Kaisha. CMOS Transistor pair with reverse biased substrate to prevent latch-up. 4,327,368, Cl. 357-42.000.
Uchiyama, Takashi; Suzuki, Ryoichi; Saito, Syuichiro; and Sugiura, Yoji, to Canon Kabushiki Kaisha. Electromagnetically driven shutter. 4,326,786, Cl. 354-234.000.
Ueberschaer, Hubert J., to Mobil Oil Corporation. Liquid sampling gauge apparatus. 4,326,427, Cl. 73-864.650.
Ueda, Akiyoshi; Takagi, Hideo; and Ohkuma, Kazuhiko, to Nippon Soda Company Limited. Phenylpyrol derivatives. 4,326,881, Cl. 71-93.000.
Ueda, Hiroshi: *See—*
  Kawamura, Kunio; and Ueda, Hiroshi, 4,326,783, Cl. 354-25.000.
Ueda, Ikuo; Kobayashi, Masakazu; Yamada, Hisashi; and Ono, Hiroki, to Fujisawa Pharmaceutical Co., Ltd. 3,7-Disubstituted-2 or 3-cephem-4-carboxylic acid compounds. 4,327,093, Cl. 424-246.000.
Ueda, Koichiro: *See—*
  Tanaka, Satoru; Shimada, Katsutoshi; Hashimoto, Kazunori; Ema, Kiichi; and Ueda, Koichiro, 4,327,217, Cl. 546-281.000.
Uehara, Tsutomu: *See—*
  Sawa, Yuji; Endo, Shigeru; and Uehara, Tsutomu, 4,327,137, Cl. 428-35.000.
Ueno, Ichiro: *See—*
  Wada, Yoshiyo; Kinjo, Hisao; and Ueno, Ichiro, 4,327,430, Cl. 369-43.000.
Uerpmann, Ernst-Peter; Staupendahl, Gerhard; and Schmidt, Manfred, to Gesellschaft fur Strahlen-und Umweltforschung mbH Munchen. Final depository for radioactive wastes. 4,326,820, Cl. 405-128.000.
Ulbert, Karel: *See—*
  Novak, Jan; Sorm, Miloslav; Ulbert, Karel; Nespurek, Stanislav; Mikulcova, Dagmar; and Cmolik, Jiri, 4,326,966, Cl. 252-8.800.
Umeda, Isao: *See—*
  Shinma, Nobuo; Umeda, Isao; Ishitsuka, Hideo; and Suhara, Yasuji, 4,327,088, Cl. 424-180.000.
Underkoffler, Edwin C.: *See—*
  Gdula, Michael; Hodsoll, Raymond J.; and Underkoffler, Edwin C., 4,327,420, Cl. 364-721.000.
Ungar, Israel S.: *See—*
  Scher, Herbert I.; and Ungar, Israel S., 4,327,141, Cl. 428-148.000.
Union Carbide Corporation: *See—*
  Colon, Ismael; Maresca, Louis M.; and Kwiatkowski, George T., 4,326,989, Cl. 252-429.00R.
  D'Silva, Themistocles D. J., 4,327,110, Cl. 424-277.000.
  Jones, Steven D.; and Blomgren, George E., 4,327,159, Cl. 429-101.000.
  Jones, Steven D.; and Blomgren, George E., 4,327,160, Cl. 429-101.000.
  Leger, Violeta Z., 4,327,166, Cl. 429-194.000.
  McGill, William C., 4,326,361, Cl. 51-168.000.
  Peters, Edward N., 4,327,013, Cl. 524-538.000.
Union Oil Company of California: *See—*
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  Goddijn, Bernardus H. A., 4,327,299, Cl. 310-49.00R.
  Persoon, Eric H. J., 4,327,354, Cl. 340-146.3MA.
  Rademaker, Gerrit, 4,327,249, Cl. 178-3.000.
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  Stearns, Charles F.; Chapski, David L.; and Vosseller, Kenneth F., 4,326,376, Cl. 60-39.28R.
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VEB Kombinat Walzlager und Normteile: *See—*
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  Champion, James R.; Ernst, Larry M.; Ford, Leland W.; and Velarde, Ronald G., 4,326,796, Cl. 355-14.0CH.
Vercon Inc.: *See—*
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Victor Company of Japan, Ltd.: *See—*
  Kohda, Kazuo, 4,327,389, Cl. 360-105.000.
  Wada, Yoshiyo; Kinjo, Hisao; and Ueno, Ichiro, 4,327,430, Cl. 369-43.000.
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Vollmecke, Hermann: *See—*
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  Carter, Rory A. C., 4,326,477, Cl. 114-67.00A.
Vosseller, Kenneth F.: *See—*
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W. C. Heraeus GmbH: *See—*
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  Deutsch, Hans; and Heger, Norbert, 4,326,556, Cl. 137-240.000.
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Wagner, Otto C.: *See—*
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Walker, Starnes E., to Phillips Petroleum Company. Comparator apparatus and process. 4,327,323, Cl. 324-61.00R.
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Wallis, Bernard J. Stock lifter for progressive dies. 4,326,402, Cl. 72-420.000.
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Wanek, Donald J., to International Business Machines Corporation. Transducer-carriage assembly with spring suspension. 4,327,388, Cl. 360-104.000.
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Murata, Yorihiro; and Weber, Gary W., 4,327,186, Cl. 501-92.000.
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Wehner, Wolfgang; Muller, Horst; and Kostler, Hans-Gunter, to Ciba-Geigy Corporation. Organotin compounds, and their use. 4,327,016, Cl. [illegible]
Wei, Peter H. L., to American Home Products Corporation. 2-Substituted-3-hydroxythiazolo(2,3-8)-thiazolium salts and mesoionic didehydro derivatives thereof. 4,327,221, Cl. 548-154.000.
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Holden, Kenneth G.; Kaiser, Carl; and Weinstock, Joseph, 4,327,023, Cl. 260-239.0BB.
Weith, Alois, to STAMAG Stadkauer Malzfabrik Aktiengesellschaft. Bakery products consisting predominantly of bran and method of producing them. 4,327,116, Cl. 426-19.000.
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Welz, Ronald C., to Southern California Edison Company. Anti-theft electric meter. 4,327,324, Cl. 324-110.000.
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Westerlund, Sture, to KemaNord AB. Electrolytic cell. 4,326,941, Cl. 204-268.000.
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Martin, Charles E.; and Rachwal, Ervin J., 4,327,172, Cl. 430-407.000.
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Alvino, William M.; Hammill, Janet L.; and Seidel, Martin P., 4,327,143, Cl. 428-236.000.
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Ferrari, Harry M.; and Dollard, Walter J., 4,326,922, Cl. 376-435.000.
Frank, William E., 4,327,268, Cl. 219-10.770.
Glatthorn, Raymond, 4,327,269, Cl. 219-60.200.
Hill, Donald J., 4,326,919, Cl. 376-267.000.
Hopkins, Melvyn D.; and Bolin, Philip C., 4,327,243, Cl. 174-14.00R.
Rush, Donald L.; Perry, Robert H.; and Rhoton, Richard S., 4,327,415, Cl. 364-436.000.
Smith, Edward H.; Dent, Thomas H.; and Marchese, Robert T., 4,326,317, Cl. 15-302.000.
Smith, Jack R.; and Reed, Terry J., 4,327,294, Cl. 290-40.00C.
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Yancey, Michael J., 4,326,590, Cl. 171-61.000.
Weyers, Paul F. R., to Lockheed Missiles & Space Company, Inc. Wave-powered motor. 4,327,296, Cl. 290-53.000.
Wheadon; Ellis G., to General Motors Corporation. Half-envelope separator assemblies on individual plates. 4,327,163, Cl. 429-139.000.
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White, James A.; Rice, Frank L.; and Lewis, Walter E., to General Electric Company. Ventilation system for combination microwave oven and exhaust vent. 4,327,274, Cl. 219-10.55R.
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Whitney, Douglass G.; and Martin, John K., III. Self contained injection system. 4,326,517, Cl. 128-214.00F.
Widmer, Colin F., to James Brown & Sons, Ltd. Electrode clamp. 4,326,770, Cl. 339-278.00C.
Widmer, Georges: *See*—
Bendit, Jean-Pierre; Pellaux, Jean-Paul; and Widmer, Georges, 4,326,870, Cl. 65-4.210.
Wilcox, David G.: *See*—
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Wilcox, Milton E., to National Semiconductor Corporation. AGC Current source. 4,327,333, Cl. 330-278.000.
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Wilken, Robert J. Liquid tank anti-theft device. 4,326,641, Cl. 220-86.0AT.
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Williams, Charles: *See*—
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Williams, James M., Jr.: *See*—
Williams, Virgil R.; and Williams, James M., Jr., 4,326,362, Cl. 51-417.000.
Williams, Robert D.: *See*—
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Willis, Dudley L. Techniques for the storage of water. 4,326,818, Cl. 405-55.000.
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Wilson, Jim: *See*—
McAllister, John H.; Stewart, Lindsay G.; Gladysz, Carl V.; and Wilson, Jim, 4,326,887, Cl. 75-257.000.
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Windyka, Richard A.: *See*—
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Wissmann, Michael: *See*—
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Wittenbreder, Eduard: *See*—
Lasermann, Franz; and Wittenbreder, Eduard, 4,326,824, Cl. 409-112.000.
Wixon, Harold E., to Colgate Palmolive Company. Detergent softener compositions. 4,326,971, Cl. 252-8.750.
WOCO Franz-Josef Wolf & Co.: *See*—
Wolf, Franz-Josef, 4,326,642, Cl. 220-200.000.
Wolf, Franz-Josef, to WOCO Franz-Josef Wolf & Co. Tubular case sealing means and method of manufacturing same. 4,326,642, Cl. 220-200.000.
Wolf, Karl: *See*—
Flaig, Heinrich; and Wolf, Karl, 4,326,916, Cl. 162-344.000.
Wolfrom, Glen W.; Williams, Robert D.; Peeler, Herbert T.; and Ivy, Richard E., to International Minerals & Chemical Corp. Method of supplying micronutrients to animals. 4,326,523, Cl. 128-260.000.
Wollangk, Edward G.; and Lilaonitkul, Amnuey, to Kimberly-Clark Corporation. Microwave heat setting of tampon. 4,326,527, Cl. [illegible]
Wong, Thomas M.; and Patel, Mahendra R., to E. R. Squibb & Sons, Inc. Novel Bendroflumethiazide formulations and method. 4,327,080, Cl. [illegible]
Wood, Prentice J., to Mead Corporation, The. Bottle carrier. 4,326,628, Cl. [illegible]
Woodtech, Inc.: *See*—
Ingram, Harry T.; and Ingram, Larry R., 4,326,572, Cl. 144-133.00R.
World Health Organization: *See*—
Buckles, Richard G., 4,326,510, Cl. 128-127.000.
Worley, Arthur C.: *See*—
Luckenbach, Edward C.; and Worley, Arthur C., 4,327,055, Cl. 422-110.000.
Worms, Karl-Heinz: *See*—
Blum, Helmut; and Worms, Karl-Heinz, 4,327,039, Cl. 260-502.500.
Woss, Rainer: *See*—
Murzin, Horst; Woss, Rainer; Burghoff, Hans; Schmieder, Frank; Herzig, Alfred; Junge, Johannes; and Deckarm, Gunter, 4,326,625, Cl. 198-653.000.
Woychio, Stephen; and Spector, George. Folding cart. 4,326,731, Cl. 280-641.000.
Wroblewski, Theodore, to Frequency, Technology, Inc. Inductor-capacitor impedance devices and method of making the same. 4,327,311, Cl. 315-244.000.
Wu, Philip T., to International Business Machines Corporation. Read-only storage using enhancement-mode, depletion-mode or omitted gate field-effect transistors. 4,327,424, Cl. 365-104.000.
Wurtman, Richard J., to Massachusetts Institute of Technology. Process for increasing blood pressure. 4,327,112, C.. 424-319.000.
Xerox Corporation: *See*—
Kadakia, Vinod K.; Jones, Glen D.; Parikh, Kedar D.; and Rider, Ronald E., 4,327,379, Cl. 358-261.000.
Lavery, Lawrence P.; Wilcox, David G.; and Thomas, Dale C., 4,326,646, Cl. 222-56.000.
Mutschler, Edward C., Jr., 4,326,915, Cl. 162-271.000.
Yabutani, Kunihiro: *See*—
Matsui, Hisanori; Tanaka, Hiroshi; Yabutani, Kunihiro; and Kurono, Hitoshi, 4,327,223, Cl. 549-39.000.
Yagitani, Takayuki; and Ebisu, Osamu, to Shizuki Electric Co., Inc. Metallized polypropylene film capacitor. 4,327,395, Cl. 361-326.000.
Yamada, Hisashi: *See*—
Ueda, Ikuo; Kobayashi, Masakazu; Yamada, Hisashi; and Ono, Hiroki, 4,327,093, Cl. 424-246.000.
Yamada, Mitsuhiko; and Nakade, Toshiaki, to Dainippon Screen Seizo Kabushiki Kaisha. Control method for reproduction picture positions in a direction of a cylinder's axis. 4,327,380, Cl. 358-264.000.
Yamaguchi, Ryoji: *See*—
Saito, Tutomu; and Yamaguchi, Ryoji, 4,327,287, Cl. 250-234.000.
Yamaguchi, Totaro: *See*—
Mushika, Yoshitaka; Tani, Junichi; Yamaguchi, Totaro; and Ohshima, Satoshi, 4,327,101, Cl. 424-258.000.
Yamaha Hatsudoki Kabushiki Kaisha: *See*—
Okazaki, Masaki; and Ohkita, Ryozo, 4,326,600, Cl. 181-229.000.
Yamamoto, Naomichi: *See*—
Fujimura, Kensuke; Yamamoto, Naomichi; Ogawa, Masahiro; and Tanigawa, Nobuyoshi, 4,327,059, Cl. 422-259.000.
Yamashita, Chikao; Sugaya, Takao; and Yoshida, Noriyuki, to Brother Kogyo Kabushiki Kaisha. Needle oscillating mechanism for a sewing machine. 4,326,472, Cl. 112-158.00D.
Yancey, Michael J., to Weyerhaeuser Company. Plant-harvesting device for use with variable crop row spacing. 4,326,590, Cl. 171-61.000.
Yano, Kiyotosi: *See*—
Ishikawa, Eizi; Matsuura, Ryouichi; and Yano, Kiyotosi, 4,326,696, Cl. 251-129.000.
Yashima, Nobuyoshi: *See*—
Oshima, Masanao; and Yashima, Nobuyoshi, 4,326,822, Cl. 405-217.000.
Yasuda, Eturo; and Ohta, Minoru, to Nippon Soken, Inc. Gas sensor assembly. 4,327,054, Cl. 422-95.000.
Yasuda, Takashi: *See*—
Saikawa, Isamu; Takano, Shuntaro; Yoshida, Chosaku; Takashima, Okuta; Momonoi, Kaishu; Kuroda, Seietsu; Komatsu, Miwako; Yasuda, Takashi; and Kodama, Yutaka, 4,327,097, Cl. 424-250.000.
Yasuda, Tetsuro: *See*—
Kawahara, Hiroshi; and Yasuda, Tetsuro, 4,326,958, Cl. 210-500.200.
Yazawa, Chihiro: *See*—
Oyaizu, Yoshijiro; Koike, Wataro; and Yazawa, Chihiro, 4,327,204, Cl. [illegible]
Yokohama Rubber Co., Ltd., The: *See*—
Mizumoto, Yasuhiro; Tozawa, Yukio; Kozima, Masatoshi; and Hirai, Masaru, 4,326,576, Cl. 152-356.00R.
Yokomizo, Yoshikazu: *See*—
Tajima, Hatsuo; Iwami, Naoki; Masuda, Shunichi; Shimizu, Katsuichi; Kawatsura, Yoshihiro; Suzuki, Koji; and Yokomizo, Yoshikazu, 4,326,795, Cl. 355-14.00E.
Yokota, Yukio: *See*—
Aoki, Kozo; Seoka, Yoshio; and Yokota, Yukio, 4,327,173, Cl. 430-505.000.
Yokoyama, Masaaki: *See*—
Nishikawa, Shigeo; and Yokoyama, Masaaki, 4,327,045, Cl. 264-51.000.
Yoneda, Kenji: *See*—
Kuzunuki, Soshiro; Hirasawa, Kotaro; Sakata, Kazuhiro; and Yoneda, Kenji, 4,326,606, Cl. 187-29.00R.
Yorktowne Paper Mills, Inc.: *See*—
Ballerstein, George B.; and Kimmel, Spurgeon E., 4,326,438, Cl. 82-53.100.
Yoshida, Chosaku: *See*—
Saikawa, Isamu; Takano, Shuntaro; Yoshida, Chosaku; Takashima, Okuta; Momonoi, Kaishu; Kuroda, Seietsu; Komatsu, Miwako; Yasuda, Takashi; and Kodama, Yutaka, 4,327,097, Cl. 424-250.000.
Yoshida, Kooichi: *See*—
Matsuda, Akira; Yoshioka, Osamu; Takahashi, Katsutoshi; Yoshida, Kooichi; and Ninomiya, Hiroshi, 4,327,081, Cl. 424-81.000.
Yoshida, Nobuo: *See*—
Inouye, Ken; Kono, Masao; Yoshida, Nobuo; Nakamura, Masuhisa; Okabayashi, Tadashi; and Igano, Ken'ichi, 4,327,072, Cl. 424-1.000.
Yoshida, Noriyuki: *See*—
Yamashita, Chikao; Sugaya, Takao; and Yoshida, Noriyuki, 4,326,472, Cl. 112-158.00D.
Yoshii, Takashi: *See*—
Murayama, Yoshinobu; and Yoshii, Takashi, 4,326,597, Cl. 180-[illegible]
Yoshimi, Toshikazu; and Ono, Hiroshi, to Pioneer Electronic Corporation, a part interest. Audio amplifier device. 4,327,331, Cl. 330-126.000.
Yoshimura, Hirofumi: *See*—
Ikeda, Nobuo; and Yoshimura, Hirofumi, 4,327,267, Cl. 219-10.55F.
Yoshinaga, Shoji: *See*—
Fujiwara, Kiyoshi; Nagatomo, Katsuaki; Yoshinaga, Shoji; Tamura, Zensuke; Shibata, Fumio; and Kanekiyo, Hiroshi, 4,326,666, Cl. 233-15.000.
Yoshioka, Osamu: *See*—
Matsuda, Akira; Yoshioka, Osamu; Takahashi, Katsutoshi; Yoshida, Kooichi; and Ninomiya, Hiroshi, 4,327,081, Cl. 424-81.000.
Young, Donald C., to Union Oil Company of California. Sulfur product and method. 4,326,875, Cl. 71-11.000.
Young, Hugh J.: *See*—
Loftus, Barry N.; and Young, Hugh J., 4,326,738, Cl. 292-172.000.
Yuka Badische Company Limited: *See*—
Nishikawa, Shigeo; and Yokoyama, Masaaki, 4,327,045, Cl. 264-51.000.
Yukl, Tex N., to Spatial Dynamics, Ltd. Bidirectional current supply circuit. 4,327,322, Cl. 323-351.000.
Yurecko, John M., Jr.: *See*—
Willis, Brian J.; Eilerman, Robert G.; and Yurecko, John M., Jr., 4,326,997, Cl. 252-522.00R.
Zacharias, Theodor; and Diel, Hartmut, to Friedrich Kocks GmbH & Company. Method and apparatus for feeding, clamping, and removal of bar of tube goods. 4,326,623, Cl. 198-345.000.
Zaczek, Thomas E., to Martin Marietta Corporation. Antenna scan pattern generator. 4,327,417, Cl. 364-578.000.
Zang, Hyung K., to Texaco Inc. Coal liquefaction. 4,326,948, Cl. 208-177.000.
Zardi, Umberto: *See*—
Lagana, Vincenzo; and Zardi, Umberto, 4,327,068, Cl. 423-359.000.
Zeidler, Georg: *See*—
Eilingsfeld, Heinz; Hansen, Guenter; Seybold, Guenther; and Zeidler, Georg, 4,327,019, Cl. 260-158.000.
Zelahy, John W.; and Raeburn, Alexander, Jr., to General Electric Company. Method and replacement member for repairing a gas turbine engine blade member. 4,326,833, Cl. 416-96.00R.
Zellner, Wilhelm: *See*—
Leonhardt, Fritz; Andra, Wolfhart; Zellner, Wilhelm; Schlaich, Jorg; and Mayr, Gunter, 4,326,363, Cl. 52-80.000.
Zenith Radio Corporation: *See*—
Hockenbrock, Richard L.; and Schwartz, James W., 4,326,762, Cl. 316-1.000.
Ziegelheim, Irwin I.; and Lerner, Lawrence. Work stations of knock-down modular components. 4,326,760, Cl. 312-257.00R.
Zilch, Karl T.: *See*—
McVay, Kenneth R.; Lakes, Stephen C.; and Zilch, Karl T., 4,327,030, Cl. 260-407.000.
Ziman, Stephen D., to Chevron Research. Herbicidal and plant-growth-regulating 1,2,4-trisubstituted-1,2,4-triazolidin-3,5-dithiones. 4,326,878, Cl. 71-92.000.
Zimerman, Clota E. Intrauterine contraceptive device. 4,326,511, Cl. [illegible]

Ziyad Incorporated: *See—*
Kapp, Ludwig J., 4,326,815, Cl. 400-625.000.
Zochbauer, Michael, to Hartmann & Braun Aktiengesellschaft. Photoelectric gas analyzer. 4,326,807, Cl. 356-418.000.
Zuech, Ernest A.: *See—*
Mark, Harold W.; and Zuech, Ernest A., 4,326,990, Cl. 252-431.00C.
Zumbahlen, Louis H., Jr.; and Volkland, Charles, to Halcyon, Inc. Method and apparatus for rapid evaluation of parameters affecting voiceband data transmission. 4,327,258, Cl. 179-175.30R.
Zuptichini, Sebastian: *See—*
Colognori, Aldo, 4,326,321, Cl. 24-265.00B.
Zylbert, Thaddeus J., to Singer Company, The. In-place bobbin winding mechanism for a sewing machine. 4,326,474, Cl. 112-184.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 27TH DAY OF APRIL, 1982

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Cartwright, Cyril A.; Emmett, James S.; Michael, Arthur E.; Peleckis, Anthony J.; and Symes, Ernest M., to Warner-Lambert Company. Safety razor with flexible blade cartridge. Re. 30,913, Cl. 30-47.000.
Chisum, Finis L. Truck frame alignment apparatus. Re. 30,914, Cl. 72-457.000.
Emmett, James S.: *See—*
Cartwright, Cyril A.; Emmett, James S.; Michael, Arthur E.; Peleckis, Anthony J.; and Symes, Ernest M., Re. 30,913, Cl. 30-47.000.
Hagiwara, Yoshiaki; and Yamazaki, Hiroshi, to Sony Corporation. Two-phase charge transfer device image sensor. Re. 30,917, Cl. 357-24.000.
Hancock Laboratories, Inc.: *See—*
Hancock, Warren D., Re. 30,912, Cl. 3-1.500.
Hancock, Warren D., to Hancock Laboratories, Inc. Stent for heart valve. Re. 30,912, Cl. 3-1.500.
Ishizaka, Sunao, to Nippon Kogaku K.K. Aperture interlocking device for a single lens reflex camera of the interchangeable viewfinder type. Re. 30,915, Cl. 354-219.000.
McWaters, Lynn, to Recognition Equipment Incorporated. Wand turn-on control. Re. 30,916, Cl. 250-214.00R.
Michael, Arthur E.: *See—*
Cartwright, Cyril A.; Emmett, James S.; Michael, Arthur E.; Peleckis, Anthony J.; and Symes, Ernest M., Re. 30,913, Cl. 30-47.000.
Nippon Kogaku K.K.: *See—*
Ishizaka, Sunao, Re. 30,915, Cl. 354-219.000.
Peleckis, Anthony J.: *See—*
Cartwright, Cyril A.; Emmett, James S.; Michael, Arthur E.; Peleckis, Anthony J.; and Symes, Ernest M., Re. 30,913, Cl. 30-47.000.
Recognition Equipment Incorporated: *See—*
McWaters, Lynn, Re. 30,916, Cl. 250-214.00R.
Sony Corporation: *See—*
Hagiwara, Yoshiaki; and Yamazaki, Hiroshi, Re. 30,917, Cl. 357-24.000.
Symes, Ernest M.: *See—*
Cartwright, Cyril A.; Emmett, James S.; Michael, Arthur E.; Peleckis, Anthony J.; and Symes, Ernest M., Re. 30,913, Cl. 30-47.000.
Warner-Lambert Company: *See—*
Cartwright, Cyril A.; Emmett, James S.; Michael, Arthur E.; Peleckis, Anthony J.; and Symes, Ernest M., Re. 30,913, Cl. 30-47.000.
Yamazaki, Hiroshi: *See—*
Hagiwara, Yoshiaki; and Yamazaki, Hiroshi, Re. 30,917, Cl. 357-24.000.

LIST OF DESIGN PATENTEES

A. Ahlstrom Osakeyhtio: *See—*
Sarpaneva, Timo, 264,035, Cl. D7-13.000.
AB Karlshamns Plastindustri: *See—*
Sundin, Harry, 264,137, Cl. D28-37.000.
Abbott Laboratories: *See—*
Genese, Joseph N., 264,132, Cl. D24-54.000.
Genese, Joseph N., 264,133, Cl. D24-54.000.
Adams, Steve D., Jr. Telephone. 264,076, 4-27-82, Cl. D14-53.000.
AMBA Marketing Systems, Inc.: *See—*
Schimmel, Otto K., 264,019, Cl. D3-52.000.
Schimmel, Otto K., 264,020, Cl. D3-52.000.
Schimmel, Otto K., 264,021, Cl. D3-53.000.
American Sterilizer Company: *See—*
Brendgord, Thomas; and Sestak, Joseph T., 264,123, Cl. D24-9.000.
Brendgord, Thomas; and Sestak, Joseph T., 264,124, Cl. D24-9.000.
AMF Incorporated: *See—*
Sorensen, Egon, 264,031, Cl. D6-173.000.
Arbonite Corporation: *See—*
MacKnight-Thomson, Ian D., 264,071, Cl. D13-17.000.
MacKnight-Thomson, Ian D., 264,071, Cl. D13-17.000.
Aronowitz, Robert J.; and Katzanek, Bernard D., to Robert Bernard Associates. Chair. 264,027, 4-27-82, Cl. D6-66.000.
Ashman, Jack A.: *See—*
Reid, Steven J.; and Ashman, Jack A., 264,089, Cl. D15-199.000.
Bailey, Alan H., to USM Corporation. Combined dispenser cap and separable closure plug therefor. 264,052, 4-27-82, Cl. D9-449.000.
Barnes, Bruce J.; and Hendrix, Robert H., to Keuffel & Esser Company. Patient monitor or the like. 264,128, 4-27-82, Cl. D24-17.000.
Barr, Josef J. Finger ring or similar article. 264,059, 4-27-82, Cl. D11-34.000.
Bass Pro Shops, Inc.: *See—*
Morris, John L., 264,094, Cl. D16-102.000.
Bedel, Dennis E.: *See—*
Zwillich, Alexander; and Bedel, Dennis E., 264,135, Cl. D26-71.000.
Bennett, Lester H., to Bon-Aire Industries, Inc. Vacuum cleaner. 264,087, 4-27-82, Cl. D32-23.000.
Biggs, Anthony J. Dental pin. 264,125, 4-27-82, Cl. D24-10.000.
Bon-Aire Industries, Inc.: *See—*
Bennett, Lester H., 264,087, Cl. D32-23.000.
Brendgord, Thomas; and Sestak, Joseph T., to American Sterilizer Company. Sterilizer. 264,123, 4-27-82, Cl. D24-9.000.
Brendgord, Thomas; and Sestak, Joseph T., to American Sterilizer Company. Sterilizer. 264,124, 4-27-82, Cl. D24-9.000.
Castiglioni, Achille. Ceiling lamp. 264,136, 4-27-82, Cl. D26-85.000.
Cech, Pavel, to Supercool AB. Heat pump. 264,119, 4-27-82, Cl. D23-136.000.
Cities Service Company: *See—*
Kunze, Walter A., 264,040, Cl. D32-37.000.
Clay, Tymen. Pump for a manure handling system or the like. 264,085, 4-27-82, Cl. D15-7.000.
Colato, Albert E.: *See—*
Pomroy, James F.; and Colato, Albert E., 264,036, Cl. D7-94.000.
Collins, Samuel T., to Trend Line Furniture Corporation. Table. 264,030, 4-27-82, Cl. D6-153.000.
Criveller, Luigi. Chocolate Christmas tree. 264,015, 4-27-82, Cl. D1-19.000.
Cutler, Marvin. Dental accessory cabinet. 264,126, 4-27-82, Cl. D24-10.000.
Datagraphix, Inc.: *See—*
Link, William T.; and Hobson, Stephen, 264,091, Cl. D16-18.000.
Dewees, John G.: *See—*
Franklin, Robert P.; and Dewees, John G., 264,025, Cl. D6-24.000.
Dewhurst, Dennis K. Fire combustor. 264,121, 4-27-82, Cl. D23-111.000.
Dinnocente, Eugeno P. Skateboard scooter. 264,105, 4-27-82, Cl. D21-81.000.
Dogliotti, Amilcare, to P. Ferrero & C. S.p.A. Combined display and dispenser for candy containers or the like. 264,034, 4-27-82, Cl. D6-189.000.
DuBois, R. Clark; and Hamma, John C., to Gradco/Dendoki, Inc. Continuous form feeding and copying apparatus. 264,092, 4-27-82, Cl. D16-30.000.
Edwards, Luther E. Tire implement or the like. 264,043, 4-27-82, Cl. D8-31.000.
Electric Fuel Propulsion Corp.: *See—*
Lauve, Henry D., 264,068, Cl. D12-91.000.
Elliot, James M.; Rickel, Eric A.; and Rickel, Terri F. Adjustable electrical cord clamp. 264,045, 4-27-82, Cl. D8-355.000.
Entex Industries, Inc.: *See—*
Hanzawa, Tsuneo, 264,099, Cl. D21-13.000.
Hanzawa, Tsuneo, 264,100, Cl. D21-13.000.
Hanzawa, Tsuneo, 264,101, Cl. D21-13.000.
Epstein, Elias, to Kaspar & Esh, Inc. Earring. 264,060, 4-27-82, Cl. D11-40.000.

Ervan Guttman Company, The: *See—*
  Guttman, Ervan E., 264,038, Cl. D7-103.000.
Europlastic B.V.: *See—*
  Gompes, Simon, 264,104, Cl. D21-65.000.
Fournier, Mark E. Head mounted fan. 264,016, 4-27-82, Cl. D2-253.000.
Franklin, Robert P.; and Dewees, John G., to Trans-World Manufacturing Corp. Eyeglass display rack. 264,025, 4-27-82, Cl. D6-24.000.
Fukushima, Hisao; and Hirooka, Junji, to Oki Electric Industry Co., Ltd. Telephone set. 264,077, 4-27-82, Cl. D14-53.000.
Fukushima, Hisao; and Hirooka, Junji, to Oki Electric Industry Co., Ltd. Portable wireless telephone set. 264,078, 4-27-82, Cl. D14-53.000.
Genese, Joseph N., to Abbott Laboratories. Flexible stylet. 264,132, 4-27-82, Cl. D24-54.000.
Genese, Joseph N., to Abbott Laboratories. Flexible stylet. 264,133, 4-27-82, Cl. D24-54.000.
Gingher, Clair H., Jr., to Gingher, Inc. Thread snips. 264,018, 4-27-82, Cl. D3-18.000.
Gingher, Inc.: *See—*
  Gingher, Clair H., Jr., 264,018, Cl. D3-18.000.
Gompes, Simon, to Europlastic B.V. Toy rattle. 264,104, 4-27-82, Cl. D21-65.000.
Gordan, Miroslav. Necklace with illuminable pendant. 264,058, 4-27-82, Cl. D11-7.000.
Gradco/Dendoki, Inc.: *See—*
  DuBois, R. Clark; and Hamma, John C., 264,092, Cl. D16-30.000.
  Lawrence, Frederick J., 264,093, Cl. D16-31.000.
Grae, Bernard A., to Tandy Corporation. Printer housing. 264,083, 4-27-82, Cl. D14-111.000.
Guttman, Ervan E., to Ervan Guttman Company, The. Candy dipping tool. 264,038, 4-27-82, Cl. D7-103.000.
Hamma, John C.: *See—*
  DuBois, R. Clark; and Hamma, John C., 264,092, Cl. D16-30.000.
Hanzawa, Tsuneo, to Entex Industries, Inc. Electronic hand-held space battle game housing or the like. 264,099, 4-27-82, Cl. D21-13.000.
Hanzawa, Tsuneo, to Entex Industries, Inc. Hand-held electronic baseball game housing or the like. 264,100, 4-27-82, Cl. D21-13.000.
Hanzawa, Tsuneo, to Entex Industries, Inc. Hand-held electronic game housing or the like. 264,101, 4-27-82, Cl. D21-13.000.
Harden, Richard L. Hay bale feeder. 264,138, 4-27-82, Cl. D30-13.000.
Hendrix, Robert H.: *See—*
  Barnes, Bruce J.; and Hendrix, Robert H., 264,128, Cl. D24-17.000.
Hirooka, Junji: *See—*
  Fukushima, Hisao; and Hirooka, Junji, 264,077, Cl. D14-53.000.
  Fukushima, Hisao; and Hirooka, Junji, 264,078, Cl. D14-53.000.
Hobson, Stephen: *See—*
  Link, William T.; and Hobson, Stephen, 264,091, Cl. D16-18.000.
Honeywell, Inc.: *See—*
  Peterson, Dean M., 264,127, Cl. D24-17.000.
Howard, Jan. Play mat. 264,102, 4-27-82, Cl. D21-23.000.
Hsiao, James C.: *See—*
  Sullivan, James H.; and Hsiao, James C., 264,088, Cl. D15-69.000.
Hutcheson, Claude H., to Xerox Corporation. Media converter unit for a magnetic card for data processing display system. 264,082, 4-27-82, Cl. D14-107.000.
Imperial Plastics Corporation: *See—*
  Smith, Cecil H.; and Mohraz, Bijan, 264,066, Cl. D34-38.000.
Inaga, Hisashi; and Nogawa, Masato, to Kioritz Corporation. Blade for power scythe. 264,042, 4-27-82, Cl. D8-20.000.
Ito, Kenichi: *See—*
  Sekita, Isao; Suzuki, Kiyoshi; Sugisaki, Kazuyoshi; Ito, Kenichi; Yamamoto, Masaki; and Mano, Kazunori, 264,081, Cl. D14-70.000.
Iwata, Keisuke. Paging receiver. 264,080, 4-27-82, Cl. D14-70.000.
Jensen, Charles. Freestanding fireplace. 264,117, 4-27-82, Cl. D23-97.000.
Jimison, James W.: *See—*
  Jimison, Walter L.; and Jimison, James W., 264,111, Cl. D21-226.000.
Jimison, Walter L.; and Jimison, James W. Accessory housing for skate, skateboard, bicycle or the like. 264,111, 4-27-82, Cl. D21-226.000.
John J. Madison Company, Inc.: *See—*
  Santa Eulalia, Jesus A. C.; and Santa Eulalia, Javier B. C., 264,061, Cl. D11-158.000.
Johnson, Ruth M. Oven rack moving tool. 264,037, 4-27-82, Cl. D7-99.000.
Johnston, Joe: *See—*
  Lucas, George W.; McQuarrie, Ralph; and Johnston, Joe, 264,109, Cl. D21-150.000.
Jones, Jane E. Art palette. 264,096, 4-27-82, Cl. D19-35.000.
Jonsson, Nils G., to National Service Industries, Inc. Electrical connector. 264,072, 4-27-82, Cl. D13-24.000.
Jonsson, Nils G., to National Service Industries, Inc. Electrical connector. 264,073, 4-27-82, Cl. D13-24.000.
Kabushiki Kaisha Suwa Seikosha: *See—*
  Suzuki, Susumu, 264,055, Cl. D10-38.000.
  Suzuki, Susumu, 264,056, Cl. D10-38.000.
Karakawa, Kazuo. Cover for heat insulating material around elbow or the like. 264,120, 4-27-82, Cl. D23-137.000.
Kaspar & Esh, Inc.: *See—*
  Epstein, Elias, 264,060, Cl. D11-40.000.
Katzanek, Bernard D.: *See—*
  Aronowitz, Robert J.; and Katzanek, Bernard D., 264,027, Cl. D6-66.000.
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Lucas, George W.; McQuarrie, Ralph; and Johnston, Joe, to Lucasfilm, Ltd. Toy action figure. 264,109, 4-27-82, Cl. D21-150.000.
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Magner, Bengt, to Opto-System AB. Coupling. 264,047, 4-27-82, Cl. D8-382.000.
Magner, Bengt, to Opto-System AB. Coupling. 264,048, 4-27-82, Cl. D8-382.000.
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Magner, Bengt, to Opto-System AB. Coupling. 264,050, 4-27-82, Cl. D8-382.000.
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Morgan, Randall E. Trolling motor tiller. 264,084, 4-27-82, Cl. D15-4.000.
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Murphy, William. Practice putting cup. 264,115, 4-27-82, Cl. D21-134.000.
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Ornatek, Larry B. Pennant. 264,063, 4-27-82, Cl. D11-166.000.
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Peterson, Dean M., to Honeywell, Inc. Medical culture bottle. 264,127, 4-27-82, Cl. D24-17.000.
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Sorensen, Egon, to AMF Incorporated. Combined food pattie display and dispenser cabinet. 264,031, 4-27-82, Cl. D6-173.000.
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Stark, Ted, to M & M Luggage Co., Inc. Luggage. 264,024, 4-27-82, Cl. D3-71.000.
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Sundin, Harry, to AB Karlshamns Plastindustri. Curler. 264,137, 4-27-82, Cl. D28-37.000.
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Turner, Jerome. Cleated shoe sole. 264,017, 4-27-82, Cl. D2-320.000.
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Walk, Gerald R. Micro fiche viewing cabinet. 264,090, 4-27-82, Cl. D16-11.000.
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Mungia, Fred, Sr. Climbing Caribia. 4,841, 4-27-82, Cl. 2.000.

CLASSIFICATION OF PATENTS

ISSUED APRIL 27, 1982

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349 R	4,326,532
402	4,326,533
421	4,326,534
631	4,326,535
662	4,326,536
687	4,326,537
702	4,326,538
713	4,326,539
763	4,326,540
766	4,326,541

CLASS 131

280	4,326,542
362	4,326,543
369	4,326,544

CLASS 132

33 R	4,326,545
79 C	4,326,546
89	4,326,547
90	4,326,548
92 R	4,326,549

CLASS 133

2	4,326,550

CLASS 134

8	4,326,893
58 D	4,326,551
99	4,326,552
153	4,326,553

CLASS 137

14	4,326,554
68 R	4,326,555
240	4,326,556
316	4,326,557
554	4,326,558
804	4,326,559
897	4,326,560

CLASS 138

136	4,326,561

CLASS 139

68	4,326,562
76	4,326,563
370.2	4,326,564
435	4,326,565
453	4,326,566

CLASS 141

90	4,326,567
114	4,326,568
383	4,326,569

CLASS 144

34 E	4,326,571
34 R	4,326,570
133 R	4,326,572

CLASS 148

6.14 R	4,326,894
11.5 A	4,326,895
12 D	4,326,896
13.1	4,326,897
16.6	4,326,898
120	4,326,899

CLASS 149

2	4,326,900
12	4,326,901

CLASS 150

0.5	4,326,573
8	4,326,574
50	4,326,575

CLASS 152

356 R	4,326,576

CLASS 156

69	4,327,147
73.1	4,326,902
	4,326,903
85	4,326,904
149	4,326,905
201	4,326,906
212	4,326,907
215	4,326,908
253	4,326,909
540	4,326,910
643	4,326,911

CLASS 160

259	4,326,577

CLASS 162

5	4,326,912
17	4,326,913
105	4,326,914
271	4,326,915
344	4,326,916

CLASS 164

15	4,326,578
461	4,326,579
497	4,326,580

CLASS 165

45	4,326,581
83	4,326,582
183	4,326,583

CLASS 166

82	4,326,584
244 C	4,326,585
285	4,326,586
379	4,326,587
387	4,326,588

CLASS 169

5	4,326,589

CLASS 171

61	4,326,590

CLASS 172

22	4,326,591
123	4,326,592
226	4,326,593
328	4,326,594

CLASS 174

11 R	4,327,242
14 R	4,327,243
15 S	4,327,244
19	4,327,245
36	4,327,246
68.5	4,327,247
107	4,327,248

CLASS 175

9	4,326,595

CLASS 177

178	4,326,596

CLASS 178

3	4,327,249

CLASS 179

1 F	4,327,250
1 N	4,327,252
1 SM	4,327,251
18 FG	4,327,253
84 T	4,327,254
90 K	4,327,255
99 R	4,327,256
115.5 R	4,327,257
175.3 R	4,327,258

CLASS 180	
70 MS	4,326,597
304	4,326,598
CLASS 181	
175	4,326,599
229	4,326,600
CLASS 182	
2	4,326,601
82	4,326,602
CLASS 186	
6.1	4,326,603
7 C	4,326,604
15 R	4,326,605
CLASS 187	
29 R	4,326,606
CLASS 188	
79.5 S	4,326,607
181 T	4,326,608
196 BA	4,326,609
218 A	4,326,610
CLASS 192	
0.096	4,326,612
21	4,326,613
70.13	4,326,614
89 B	4,326,611
93 R	4,326,615
111 A	4,326,616
111 B	4,326,617
CLASS 193	
17	4,326,618
37	4,326,619
CLASS 194	
1 A	4,326,620
100 A	4,326,621
CLASS 198	
322	4,326,622
345	4,326,623
370	4,326,624
653	4,326,625
845	4,326,626
CLASS 200	
38 A	4,327,259
47	4,326,627
50 C	4,327,260
61.41	4,327,261
148 A	4,327,262
	4,327,263
295	4,327,264
CLASS 202	
185 R	4,326,923
CLASS 203	
6	4,326,924
37	4,326,925
91	4,326,926
CLASS 204	
1 T	4,326,927
9	4,326,928
15	4,326,929
20	4,326,930
22	4,326,931
59 R	4,326,932
129.6	4,326,933
180 P	4,326,935
180 R	4,326,934
192 E	4,326,936
198	4,326,937
228	4,326,938
	4,326,939
232	4,326,940
268	4,326,941
275	4,326,942
290 F	4,326,943
CLASS 206	
158	4,326,628
203	4,326,629
315 R	4,326,630
389	4,326,631
	4,326,632
418	4,326,633
626	4,326,634
CLASS 208	
8 LE	4,326,945
8 R	4,326,944
93	4,326,946
111	4,326,947
177	4,326,948
263	4,326,949
CLASS 209	
3.3	4,326,950
127 R	4,326,951
474	4,326,635
534	4,326,636
CLASS 210	
85	4,326,952
168	4,326,953
222	4,326,954
277	4,326,956
436	4,326,957
500.2	4,326,958
515	4,326,959
638	4,326,955
650	4,326,960
683	4,326,961
698	4,326,962
792	4,326,963
793	4,326,964
CLASS 211	
175	4,326,637
CLASS 215	
12 R	4,326,638
252	4,326,639
CLASS 219	
10.41	4,327,265
10.55 F	4,327,266
	4,327,267
10.55 R	4,327,274
10.77	4,327,268
60.2	4,327,269
73.2	4,327,270
85 E	4,327,271
94	4,327,272
121 EC	4,327,273
121 L	4,327,276
121 LD	4,327,275
	4,327,277
364	4,327,278
400	4,327,279
464	4,327,280
523	4,327,281
541	4,327,282
CLASS 220	
4 E	4,326,640
86 AT	4,326,641
200	4,326,642
CLASS 221	
13	4,326,643
263	4,326,644
CLASS 222	
1	4,326,645
56	4,326,646
103	4,326,647
162	4,326,648
182	4,326,649
356	4,326,650
439	4,326,651
CLASS 224	
232	4,326,652
312	4,326,653
315	4,326,654
324	4,326,655
CLASS 226	
59	4,326,656
97	4,326,657
141	4,326,658
190	4,326,659
	4,326,660
CLASS 227	
120	4,326,661
CLASS 228	
111	4,326,662
123	4,326,663
CLASS 229	
34 R	4,326,664
87 R	4,326,665
CLASS 233	
15	4,326,666
CLASS 235	
487	4,327,283
CLASS 237	
12.3 A	4,326,667
CLASS 238	
14	4,326,668
36	4,326,669
341	4,326,670
CLASS 239	
66	4,326,671
91	4,326,672
657	4,326,673
CLASS 241	
35	4,326,674
236	4,326,675
275	4,326,676
CLASS 242	
18 DD	4,326,677
55.2	4,326,678
56 A	4,326,679
	4,326,680
CLASS 244	
30	4,326,681
54	4,326,682
145	4,326,683
158 R	4,326,684
175	4,326,685
207	4,326,686
CLASS 248	
168	4,326,687
178	4,326,688
359	4,326,689
396	4,326,690
443	4,326,691
488	4,326,692
635	4,326,693
676	4,326,694
CLASS 250	
204	4,327,284
213 VT	4,327,285
214 R	Re.30,916
231 R	4,327,286
234	4,327,287
251	4,327,288
252	4,327,289
262	4,327,290
332	4,327,291
491	4,327,292
505	4,327,293
CLASS 251	
7	4,326,695
129	4,326,696
174	4,326,697
327	4,326,698
CLASS 252	
8.55 D	4,326,968
	4,326,969
	4,326,970
8.75	4,326,971
8.8	4,326,965
	4,326,966
	4,326,967
33.3	4,326,972
34	4,326,973
49.5	4,326,974
70	4,326,975
99	4,326,976
106	4,326,977
107	4,326,978
158	4,326,979
180	4,326,980
301.19	4,326,981
301.33	4,326,982
358	4,326,983
	4,326,984
	4,326,985
384	4,326,986
392	4,326,987
429 B	4,326,988
429 R	4,326,989
431 C	4,326,990
432	4,326,991
443	4,326,992
455 Z	4,326,993
	4,326,994
461	4,326,995
521 R	4,326,996
	4,326,997
	4,326,998
CLASS 260	
103	4,327,017
154	4,327,018
158	4,327,019
160	4,327,020
239 B	4,327,022
239 BB	4,327,023
239.3 D	4,327,026
331 PH	4,327,024
338	4,327,025
340.3	4,327,027
345.3	4,327,028
351.1	4,327,029
407	4,327,030
429.9	4,327,031
446 R	4,327,032
453.3	4,327,033
455 A	4,327,034
463	4,327,035
465 G	4,327,036
465.2	4,327,037
501.16	4,327,038
502.5	4,327,039
973	4,327,040
CLASS 261	
41 B	4,327,041
77	4,327,042
94	4,327,043
CLASS 264	
36	4,327,044
51	4,327,045
102	4,327,046
107	4,327,047
	4,327,048
138	4,327,049
142	4,327,050
318	4,327,051
512	4,327,052
515	4,327,053
CLASS 266	
114	4,326,699
219	4,326,700
225	4,326,701
267	4,326,702
CLASS 269	
156	4,326,703
CLASS 270	
58	4,326,704
CLASS 271	
9	4,326,705
CLASS 272	
119	4,326,706
130	4,326,707
138	4,326,708
CLASS 273	
1 E	4,326,710
1 GC	4,326,709
1 R	4,326,711
43 R	4,326,712
73 A	4,326,713
73 C	4,326,714
88	4,326,715
167 R	4,326,716
181 F	4,326,717
183 B	4,326,718
238	4,326,719
239	4,326,720
315	4,326,721
400	4,326,722
CLASS 277	
153	4,326,723
171	4,326,724
CLASS 280	
22	4,326,725
79.1 A	4,326,726
154.5 R	4,326,727
289 S	4,326,728
304	4,326,729
502	4,326,730
641	4,326,731
642	4,326,732
708	4,326,733
724	4,326,734
CLASS 285	
15	4,326,735
98	4,326,736
112	4,326,737
CLASS 290	
40 C	4,327,294
	4,327,295
53	4,327,296
	4,327,297
CLASS 292	
172	4,326,738
247	4,326,739
307 B	4,326,740
307 R	4,326,741
CLASS 294	
1 CA	4,326,742
55.5	4,326,743
81 R	4,326,744
90	4,326,745
146	4,326,746
147	4,326,747
CLASS 297	
362	4,326,748
CLASS 298	
22 R	4,326,749
35 M	4,326,750
CLASS 299	
2	4,326,751
13	4,326,752
43	4,326,753
CLASS 303	
81	4,326,754
96	4,326,755
CLASS 307	
66	4,327,298
CLASS 308	
3.9	4,326,756
121	4,326,757
170	4,326,758
183	4,326,759
CLASS 310	
49 R	4,327,299
75 C	4,327,300
104	4,327,301
156	4,327,302
261	4,327,303
266	4,327,304
CLASS 312	
257 R	4,326,760
326	4,326,761
CLASS 313	
330	4,327,305
407	4,327,307
419	4,327,306
CLASS 315	
99	4,327,308
170	4,327,309
209 R	4,327,310
244	4,327,311
378	4,327,312
CLASS 316	
1	4,326,762
CLASS 318	
52	4,327,313
722	4,327,314
811	4,327,315
CLASS 320	
2	4,327,316
23	4,327,317
39	4,327,318
CLASS 323	
303	4,327,319
313	4,327,320
315	4,327,321
351	4,327,322
CLASS 324	
61 R	4,327,323
110	4,327,324
158 F	4,327,325
158 R	4,327,326
304	4,327,327
CLASS 328	
55	4,327,328
144	4,327,329
CLASS 330	
56	4,327,330
126	4,327,331
261	4,327,332
278	4,327,333
CLASS 331	
1 A	4,327,335
8	4,327,336
107 P	4,327,339
CLASS 333	
1	4,327,334
195	4,327,340
197	4,327,341
204	4,327,342
218	4,327,343
CLASS 335	
253	4,327,344
265	4,327,345
296	4,327,346
CLASS 336	
120	4,327,347
184	4,327,348
219	4,327,349
CLASS 338	
4	4,327,350
22 R	4,327,351
CLASS 339	
14 P	4,326,763
14 R	4,326,764
17 CF	4,326,765
31 R	4,326,766
98	4,326,767
143 R	4,326,768
177 E	4,326,769
278 C	4,326,770
CLASS 340	
52 F	4,327,352
64	4,327,353
146.3 MA	4,327,354
373	4,327,357
541	4,327,358
545	4,327,359
571	4,327,360
594	4,326,780
634	4,327,361
825.77	4,327,356
825.9	4,327,355
870.02	4,327,362
870.34	4,327,363
CLASS 343	
18 A	4,327,364
CLASS 346	
76 PH	4,327,365
	4,327,366
CLASS 350	
96.17	4,326,771
134	4,326,772
292	4,326,773
307	4,326,774
320	4,326,775
336	4,326,776
357	4,326,777
358	4,326,778
414	4,326,779
CLASS 352	
14	4,326,781
91 C	4,326,782
CLASS 354	
25	4,326,783
53	4,326,784
80 F	4,326,785
219	Re.30,915
234	4,326,786
246	4,326,787
286	4,326,788
	4,326,789
288	4,326,790
321	4,326,791
CLASS 355	
3 DR	4,326,793
3 R	4,326,794
3 TR	4,326,792
14 CH	4,326,796
14 E	4,326,795
57	4,326,797
CLASS 356	
45	4,326,798
152	4,326,799
	4,326,800
313	4,326,801
316	4,326,802
350	4,326,803
375	4,326,804
399	4,326,805
410	4,326,806
418	4,326,807
445	4,326,808
CLASS 357	
24	Re.30,917
38	4,327,367
42	4,327,368
72	4,327,369
79	4,327,370
CLASS 358	
10	4,327,371
14	4,327,372
28	4,327,373
	4,327,374
107	4,327,375
159	4,327,376
199	4,327,377
228	4,327,378
261	4,327,379
264	4,327,380
288	4,327,381
CLASS 360	
13	4,327,382
45	4,327,383
77	4,327,384
96.5	4,327,385
99	4,327,386
103	4,327,387
104	4,327,388
105	4,327,389
CLASS 361	
16	4,327,390
31	4,327,391
80	4,327,392
90	4,327,397
119	4,327,393
154	4,327,394
326	4,327,395
379	4,327,396
384	4,327,398
385	4,327,399

433	4,327,400
CLASS 362	
183	4,327,401
288	4,327,402
306	4,327,403
CLASS 363	
19	4,327,404
56	4,327,405
	4,327,406
CLASS 364	
200	4,327,407
	4,327,408
	4,327,409
	4,327,410
422	4,327,412
426	4,327,413
	4,327,414
436	4,327,415
481	4,327,416
578	4,327,417
715	4,327,418
717	4,327,419
721	4,327,420
900	4,327,411
	4,327,421
CLASS 365	
1	4,327,422
8	4,327,423
104	4,327,424
152	4,327,425
203	4,327,426
CLASS 366	
4	4,326,809
106	4,326,810
290	4,326,811
CLASS 367	
118	4,327,427
CLASS 368	
232	4,327,428
294	4,327,429
CLASS 369	
43	4,327,430
126	4,327,431
	4,327,432
139	4,327,433
220	4,327,434
261	4,327,435
CLASS 370	
110.1	4,327,436
CLASS 371	
68	4,327,437
CLASS 372	
3	4,327,337
89	4,327,338
CLASS 373	
9	4,327,241
CLASS 375	
1	4,327,438
67	4,327,439
76	4,327,440
113	4,327,441
119	4,327,442
CLASS 376	
205	4,326,920
216	4,326,917
267	4,326,919
272	4,326,918
353	4,326,921
359	4,327,443
435	4,326,922
CLASS 400	
121	4,326,812
124	4,326,813
125.1	4,326,814
625	4,326,815
CLASS 403	
228	4,326,816
CLASS 404	
41	4,326,817
CLASS 405	
55	4,326,818
78	4,326,819
128	4,326,820
171	4,326,821
217	4,326,822
CLASS 407	
51	4,326,823
CLASS 409	
132	4,326,824
CLASS 411	
5	4,326,825
339	4,326,826
CLASS 414	
24.5	4,326,827
39	4,326,828
357	4,326,829
470	4,326,830
676	4,326,831
CLASS 415	
219 R	4,326,832
CLASS 416	
96 R	4,326,833
134 A	4,326,834
193 A	4,326,835
196 R	4,326,836
CLASS 417	
12	4,326,837
269	4,326,838
295	4,326,839
331	4,326,840
CLASS 422	
95	4,327,054
110	4,327,055
124	4,327,056
173	4,327,057
232	4,327,058
259	4,327,059
300	4,327,060
CLASS 423	
8	4,327,061
292	4,327,062
300	4,327,063
	4,327,064
338	4,327,065
345	4,327,066
	4,327,067
359	4,327,068
450	4,327,069
555	4,327,070
646	4,327,071
CLASS 424	
1	4,327,072
	4,327,073
1.5	4,327,074
12	4,327,075
38	4,327,076
	4,327,077
45	4,327,078
57	4,327,079
80	4,327,080
81	4,327,081
92	4,327,082
162	4,327,083
176	4,327,084
177	4,327,085
	4,327,086
180	4,327,087
	4,327,088
200	4,327,089
203	4,327,090
246	4,327,091
	4,327,092
	4,327,093
249	4,327,094
250	4,327,095
	4,327,096
	4,327,097
	4,327,098
256	4,327,099
	4,327,100
258	4,327,101
263	4,327,102
267	4,327,103
269	4,327,104
271	4,327,105
273 R	4,327,106
	4,327,107
	4,327,108
275	4,327,109
277	4,327,110
278	4,327,111
319	4,327,112
321	4,327,113
331	4,327,114
CLASS 425	
8	4,326,841
10	4,326,842
CLASS 426	
12	4,327,115
19	4,327,116
88	4,327,117
656	4,327,118
CLASS 427	
34	4,327,120
44	4,327,121
57	4,327,122
64	4,327,123
74	4,327,119
96	4,327,124
97	4,327,125
	4,327,126
146	4,327,127
153	4,327,128
164	4,327,129
209	4,327,130
229	4,327,131
235	4,327,132
242	4,327,133
253	4,327,134
CLASS 428	
35	4,327,136
	4,327,137
36	4,327,138
65	4,327,139
	4,327,140
148	4,327,141
198	4,327,142
236	4,327,143
264	4,327,144
290	4,327,145
308.8	4,327,146
320.8	4,327,148
332	4,327,149
	4,327,150
407	4,327,151
419	4,327,152
421	4,327,153
545	4,327,154
556	4,327,155
568	4,327,156
600	4,327,135
CLASS 429	
61	4,327,157
101	4,327,158
	4,327,159
	4,327,160
110	4,327,161
120	4,327,162
139	4,327,163
144	4,327,164
174	4,327,165
194	4,327,166
CLASS 430	
31	4,327,167
57	4,327,168
75	4,327,169
285	4,327,170
323	4,327,171
407	4,327,172
505	4,327,173
530	4,327,174
546	4,327,175
619	4,327,176
CLASS 431	
264	4,326,843
CLASS 432	
13	4,326,844
106	4,326,845
CLASS 433	
132	4,326,846
CLASS 434	
12	4,326,847
CLASS 435	
2	4,327,177
23	4,327,178
42	4,327,179
173	4,327,180
176	4,327,181
239	4,327,182
274	4,327,183
287	4,327,184
CLASS 441	
5	4,326,312
CLASS 455	
100	4,327,444
118	4,327,445
223	4,327,446
CLASS 474	
135	4,326,848
161	4,326,849
CLASS 501	
89	4,327,185
92	4,327,186
97	4,327,187
134	4,327,188
148	4,327,189
CLASS 518	
714	4,327,190
CLASS 521	
31	4,327,191
56	4,327,192
88	4,327,193
99	4,327,194
102	4,327,195
120	4,327,196
147	4,327,197
CLASS 523	
116	4,327,014
203	4,327,012
336	4,327,003
CLASS 524	
104	4,327,008
114	4,327,002
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162	4,327,015
180	4,327,016
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474	4,327,011
538	4,327,013
745	4,327,004
CLASS 525	
63	4,327,198
176	4,327,199
439	4,327,207
531	4,327,200
CLASS 526	
131	4,327,201
245	4,327,202
279	4,327,203
CLASS 528	
81	4,327,204
128	4,327,205
179	4,327,206
323	4,327,208
CLASS 542	
466	4,327,209
CLASS 544	
27	4,327,211
027	4,327,210
225	4,327,212
336	4,327,213
CLASS 546	
133	4,327,214
176	4,327,215
250	4,327,216
281	4,327,217
291	4,327,218
317	4,327,219
345	4,327,220
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154	4,327,221
247	4,327,222
CLASS 549	
39	4,327,223
CLASS 560	
142	4,327,224
205	4,327,225
CLASS 562	
416	4,327,226
472	[illegible]
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639	4,327,227
705	4,327,228
728	4,327,229
851	4,327,230
899	4,327,231
CLASS 570	
108	4,327,232
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270	4,327,235
357	4,327,233
481	4,327,236
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	53	264,021
	60	264,022
	71	264,023
		264,024
D6—	24	264,025
	61	264,026
	66	264,027
	153	264,030
	173	264,031
	180	264,032
	184	264,028
		264,029
	186	264,033
	189	264,034
D7—	13	264,035
	94	264,036
	99	264,037
	103	264,038
	128	264,039
D8—	02	264,041
	20	264,042
	31	264,043
	88	264,044
	355	264,045
	382	264,046
		264,047
		264,048
		264,049
		264,050
D9—	404	264,051
	442	264,053
	449	264,052
	453	264,054
D10—	38	264,055
		264,056
	79	264,057
D11—	7	264,058
	34	264,059
	40	264,060
	158	264,061
	166	264,062
		264,063
		264,064
		264,065
D12—	81	264,068
	124	264,069
	195	264,070
D13—	17	264,071
	24	264,072
		264,073
	32	264,074
D14—	33	264,075
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	31	264,093
	102	264,094
D19—	27	264,095
	35	264,096
D21—	9	264,097
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	13	264,099
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	11	264,102
	27	264,103
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	174	264,110
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	234	264,114
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D23—	45	264,116
	57	264,117
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	136	264,119
	137	264,120
	161	264,121
D24—	8	264,122
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	17	264,127
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	38	264,129
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	54	264,132
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	99	264,134
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	33	264,139
	37	264,040
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01 :	4,327,150
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08 :	264,070
09 :	264,092
12 :	264,051
	264,059
	264,076
	264,122
13 :	264,072
	264,073
17 :	264,053
	264,058
	264,062
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	264,064
	264,065
	264,088
	264,132
	264,133
19 :	[illegible]
24 :	264,017
25 :	264,033
26 :	264,068
	264,102
	264,130
27 :	[illegible]
	264,037
	[illegible]
	264,112
	264,113
29 :	264,032
	264,094
34 :	264,023
	264,024
	264,025
	264,106
	264,107
	264,110
36 :	264,026
	264,027
	[illegible]
	[illegible]
	264,115
	264,126
37 :	264,018
	264,043
39 :	[illegible]
	264,044
	[illegible]
40 :	264,084
42 :	264,040
	264,071
	264,123
	264,124
	264,135
45 :	264,139
47 :	[illegible]
48 :	264,041
	[illegible]
	264,082
	[illegible]
	[illegible]
49 :	264,022
	264,090
51 :	[illegible]
53 :	264,117
56 :	[illegible]

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